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**Moment Versus Graphic Measures in Granulometry**

**by**

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# MOMENT VERSUS GRAPHIC MEASURES IN GRANULOMETRY

by

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## ABSTRACT

Statistical measures such as the mean, standard deviation, skewness, and kurtosis are precisely calculated using the method of moments. However, this method requires considerable computational resources that were not available during the majority of the preceding century. There resulted, therefore, the invention of abbreviated, surrogate predictive equations that could be expediently evaluated to provide approximations (called graphic measures) of respective moment measures. By the mid-1980's computers had become common in the work place, and by the mid-1990's to the public-at-large. Most researchers have taken advantage of the available computing power and now employ the method of moments. There are others, however, who continue to endorse the use of graphic measures.

This work compares the two methods using 333 marine sediment samples. It was found that the means show approximate agreement, with graphic means underestimating the moment means by a maximum of 0.6 $\phi$ . All higher graphic measures, however, are not successful in replicating moment measures, the degree of disagreement progressively increasing with the order of the moment measure. Standard deviation measures had a correlation of  $r^2 = 0.6486$ , for the skewness  $r^2 = 0.0865$ , and for the kurtosis  $r^2 = 0.0098$ . Average ratios between moment measures and graphic measures become increasingly worse as the degree of the moment measure increases. We conclude, therefore, that graphic measures are not good approximations of moment measures, and their use should be discontinued.

## INTRODUCTION

There are two popular approaches used in assessing environmental aspects of sediment samples. One approach is to plot grain size data. Two types of plotted representations are commonly used: 1) the frequency plot, and 2) the cumulative frequency plot using arithmetic probability paper. Such plots allow the researcher to visually assess the entire sediment distribution and to identify certain useful environmental characteristics about the sample.

The other approach is to calculate statistical measures that provide more abbreviated representations of the character of the sample. Such measures include the mean, standard deviation, skewness, and kurtosis. There are two types of statistical measures that have been used - moment measures and graphical measures. Graphically derived statistical measures

constitute only an estimate of true statistical representations afforded by the method of moments. We address the subject by addressing the history behind graphic measures, the degree of discrepancy between moment and graphic measures and, finally, the reasons as to why discrepancy occurs.

### *Moment Measures*

Statistically, the Gaussian distribution is defined in terms of **moments**, calculated using the **method of moments**. The term moment was introduced into statistics by analogy. In mechanics, the moment of a force about a point of rotation, e.g., about a fulcrum, is determined by multiplying the magnitude of the force by the distance to the point of rotation (see Friedman and Sanders, 1978 [p. 78-79] for a more detailed description).

**Moments** and **moment measures** are not identical quantities. **Moment**, in statistical

context, refers to the sum of deviations from the mean relative to the sample size (Fogiel, 1985). The **mean**,  $\mu$ , for grouped or classified data is calculated by:

$$\mu = MM_1 = \frac{\sum_{i=1}^k f_i x_i}{n} \quad (1)$$

in which  $x_i$  is the class midpoint, and  $f_i$  is the frequency of the class. The **first moment**,  $m_1$ , for classified data is given by:

$$m_1 = \frac{\sum_{i=1}^k f_i (x_i - \mu)^p}{n} \quad (2a)$$

where  $p = 1.0$ . While we do not, here, present the proof, it has been demonstrated (e.g., Fogiel, 1985) that following from equation (2a):

$$m_1 = \frac{\sum_{i=1}^k f_i x_i}{n} - \mu \quad (2b)$$

and that by substitution of equation (1) into equation (2b), the **first moment**,  $m_1$ , will always have a value of zero.

In granulometry as in many data sets, the “fulcrum” will seldom have a value of zero and, instead, the mean,  $\mu$ , is used and specified as the **first moment measure**,  $MM_1$ . All higher **moments** and **moment measures** apply equally well about the **first moment** or **first moment measure** when consistently applied.

Grain size and mean grain size are normally expressed in millimeters or dimensionless phi ( $\phi$ ) units. The latter units were defined by Krumbein (1934) and adopted by the Society of Economic Paleontologists and Mineralogists (S.E.P.M.) Inter-Society Grain Size Study Committee in 1963 (Tanner, 1969). They were determined specifically for the Wentworth (1922) size scale, subsequently

clarified by McManus (1963) and Krumbein (1964). Progressively higher moments are determined according to:

$$m_p = \frac{\sum_{i=1}^k f_i (x_i - \mu)^p}{n - 1} \quad (3)$$

in which  $p$  is an integer, and  $m_p$  is the  $p^{\text{th}}$  moment about the mean. The sole difference between equations (2a) and (3) is the specified degrees of freedom. For  $n > 30$ ,  $n$  degrees of freedom is considered appropriate and the equations are identical. For  $n \leq 30$ ,  $n - 1$  degrees of freedom is the normally applied convention, designed to yield more conservative numerical outcomes. In sieving granulometric work, the number of classified size classes which is optimal at  $1/4\text{-}\phi$  intervals, commonly ranges from  $12 \leq n \leq 26$  and  $n - 1$  degrees of freedom is appropriate to apply.

The second moment,  $m_2$ , is the variance,  $\sigma^2$ , and the **standard deviation** (or **sorting coefficient**),  $\sigma$ , or second moment measure,  $MM_2$ , becomes:

$$\sigma = MM_2 = (m_2)^{1/2} \quad (4)$$

which has units of millimeters, or phi-units whose specification was clarified by McManus (1963).

Higher **moment measures** are determined according to:

$$MM_p = \frac{m_p}{\sqrt{m_2^p}} = \frac{m_p}{m_2^{p/2}} \quad (5)$$

which all have truly dimensionless units. The **third moment measure**,  $MM_3$  ( $p = 3$ ) is the **skewness**,  $Sk$ , where:

$$Sk = MM_3 = \frac{m_3}{m_2^{1.5}} \quad (6)$$

and the **fourth moment measure**,  $MM_4$  ( $p = 4$ ) is the **kurtosis**,  $K$ , or:

$$K = MM_4 = \frac{m_p}{m_2^2} \quad (7)$$

In this work we shall utilize only the first four moment measures. There are higher moment measures that can be calculated provided that there are sufficient data to do so (Tanner, 1991; Balsillie, 1995; Balsillie and Tanner, 1999). Moment measures higher than order four have not been assigned names. Also, in this work moment measures are evaluated for grouped (or classified) data since particle sizes are collected for 1/4-phi sieve intervals. Ungrouped (or unclassified) data would require that one know the size of each and every grain. Statistical ramifications of grouped and ungrouped data in granulometric pursuits are discussed in detail by Swan and others (1978, 1979).

### Graphic Measures

Over the years various investigators (e.g., Krumbein and Pettijohn, 1938; Trask, 1932; Inman, 1952; Folk and Ward, 1957, and Folk, 1974) have suggested formulae to calculate statistical measures that are extracted from the cumulative probability plot. Here we evaluate those graphic measures as given by Folk and Ward (1957). These are assessed in  $\phi$  units where, for instance,  $\phi_5$  is the phi value corresponding to a cumulative frequency of 5%,  $\phi_{16}$  is the phi value corresponding to a cumulative frequency of 16%, etc.

The **graphic mean**,  $\mu_{\phi g}$  is given by:

$$\mu_{\phi g} = \frac{\phi_{16} + \phi_{50} + \phi_{84}}{3} \quad (8)$$

We assess, here, two types of graphic standard deviations, the **graphic standard deviation**,  $\sigma_{\phi g}$ , and the **inclusive graphic standard deviation**,  $\sigma_{\phi i}$ , which are given by:

$$\sigma_{\phi g} = \frac{\phi_{84} - \phi_{16}}{2} \quad (9)$$

and,

$$\sigma_{\phi i} = \frac{\phi_{84} - \phi_{16}}{4} + \frac{\phi_{95} - \phi_5}{6.6} \quad (10)$$

Two types of graphic skewnesses are also assessed. They are the **graphic skewness**,  $Sk_{\phi g}$ , and the **inclusive graphic skewness**,  $Sk_{\phi i}$ , given by:

$$Sk_{\phi g} = \frac{(\phi_{84} + \phi_{16}) - 2\phi_{50}}{\phi_{84} - \phi_{16}} \quad (11)$$

and,

$$k_{\phi i} = \frac{(\phi_{84} + \phi_{16}) - 2\phi_{50}}{2(\phi_{84} - \phi_{16})} + \frac{(\phi_5 + \phi_{95}) - 2\phi_{50}}{2(\phi_{95} - \phi_5)} \quad (12)$$

The last graphic measure, the **graphic kurtosis**,  $K_{\phi g}$ , is given by:

$$K_{\phi g} = \frac{\phi_{95} - \phi_5}{2.44(\phi_{75} - \phi_{25})} \quad (13)$$

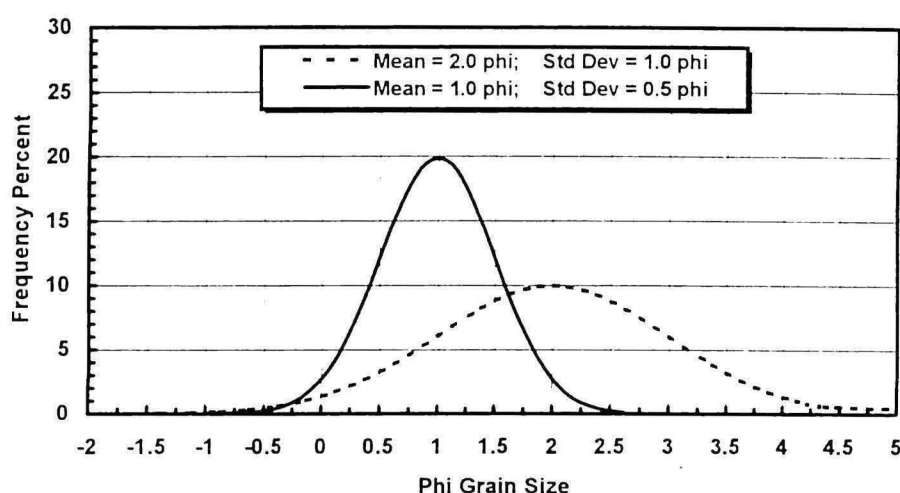
### BACKGROUND

When analyzing sediment samples to produce the above descriptive statistical measures, it is most desirable to obtain an optimal number of data points in terms of size class intervals. Collecting data at 1/4-phi class intervals has been found to be successful in producing robust statistics. Sedimentologic studies of depositional environments, including littoral, marine, estuarine, lacustrine, and fluvial environments normally encompass a minimum of a dozen, or so, 1/4-phi class sizes across a nominal maximum domain ranging from  $-2\phi$  to  $12\phi$ . This range includes granule-,



**Table 1. Number of data points per sediment sample sieved at  $1/4\phi$  intervals.**

| Descriptive Size | Phi Grain Size Range  | Number of Data Points (i.e., Class Intervals) | Cumulative Number of Data Points (i.e., Class Intervals) |
|------------------|-----------------------|-----------------------------------------------|----------------------------------------------------------|
| Granule          | $-2\phi$ to $-1\phi$  | 4                                             | 4                                                        |
| Sand             | $-1.0\phi$ to $4\phi$ | 20                                            | 24                                                       |
| Silt             | $4\phi$ to $8\phi$    | 16                                            | 40                                                       |
| Clay             | $8\phi$ to $12\phi$   | 16                                            | 56                                                       |



**Figure 1. Illustration of different means and standard deviations (sorting coefficients) for two Gaussian distributions. The dashed distribution is more poorly sorted than the other distribution.**

sand-, silt-, and clay-sized particulate matter. Table 1 lists the maximum number of data points in terms of  $1/4\phi$ -phi class intervals.

What do the mean, standard deviation, skewness, and kurtosis statistical measures tell us? The mean is a measure of the central tendency of the distribution (Figure 1). The standard deviation (or sorting coefficient) is a measure of the degree of spread of the distribution about the mean (Figure 1). The larger the standard deviation, the larger the spread. The skewness is a measure of asymmetry of the distribution (Figure 2), wherein it may be skewed to the right or left of the mean, or skewed to the fine or coarse end

of the distribution. Kurtosis is a measure of the peakedness of the curve (Figure 3), termed platykurtic if flat and leptokurtic if peaked. These four measures constitute, at a minimum, the measures required to define the basic characteristics of granulometric distributions.

The most accurate way of calculating statistical measures describing granulometric distributions is using the **method of moments**. This is because all data for the distribution are included in determining final statistical results. However, the method of moments requires formidable computing power that was not available during the bulk of the last century. It

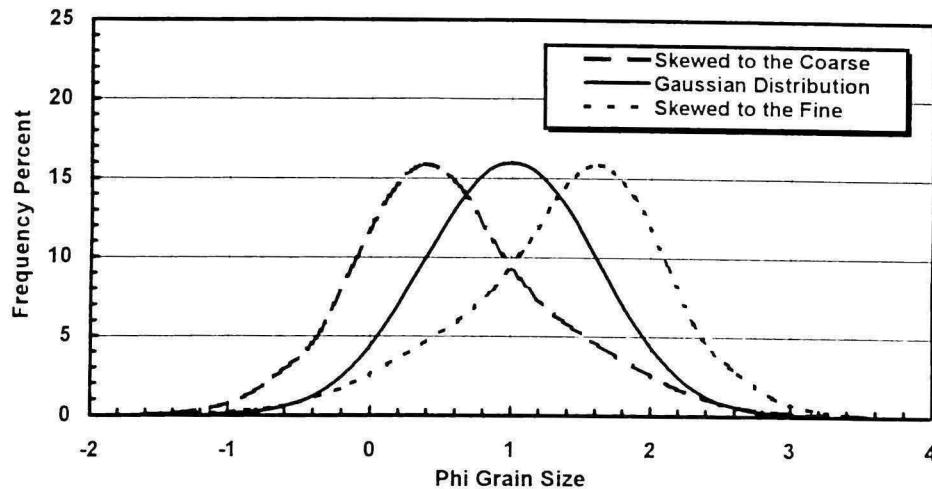


Figure 2. Illustration of the effect of skewness.

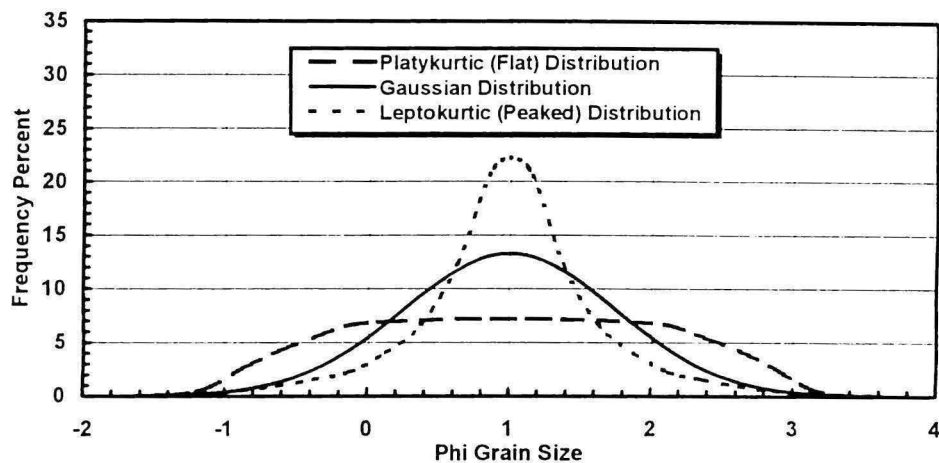


Figure 3. Illustration of the effects of kurtosis.

was not until about the late 1960's to early 1970's that mainframe computing power became available, and then but to elite academic and U. S. government programs. It was not until the mid- to late-1980's that the personal computer (PC) would be commonly found in the workplace, and the mid-1990's available to the public-at-large.

Prior to the 1980's, without computer resources and knowledge of programming language capabilities, evaluation of equations (1) through (7), would have been from cumbersome to overwhelming for the researcher, even for a relatively small number of sediment samples. Necessity being the "mother of invention" therefore resulted in

researchers inventing abbreviated surrogate approximating equations that could be more expediently evaluated. Hence, predictive methods such as equations (8) through (13), providing for graphic measures, were devised.

Many sedimentologists of the time were apparently convinced that the graphic measures provided accurate results. Folk (1974) stated, for instance, that ... *the method of moments, is far more complicated and probably of not greater value* ... than the graphic method. We demonstrate, here, just how much this assertion was in error. In addition, we conducted a cursory check of recent texts on sedimentology published within the last 15 years, a period within which

computing power from PCs has been abundantly available. Selley (1988), Herve (1990), and Prothero and Schwab (1996) discuss graphic measures, and do not even mention moment measures. Friedman and others (1992) discuss both, but state that the graphic approach is but an approximation to the *more rigorous* method of moments to calculate statistical properties of frequency distributions. Lewis and McConchie (1994) discuss both, but promote graphic measures. Sengupta (1994) discusses both moment and graphic measures, and promotes moment measures because ... *they take care of every part of the frequency distribution*. Boggs (1995) discusses both moment measures and graphic measures, but does not promote one method over the other, and states ... *it had not been definitely proven that moment statistics are of greater value than graphical statistics*. And so, even in more recent years, mixed messages have been proffered, even though several are quite correct regarding the use of moment measures.

None of the above sources, however, acknowledges the work and results of Cadigan (1954), and Swan and others (1978, 1979). Cadigan (1954) using 20 samples found that use of the graphic method for obtaining the standard deviation from equation (9) yielded results significantly disagreeing with those obtained from the method of moments, and cautioned the reader about the veracity of graphic measures. Swan and others (1978, 1979) digitally generated 100 artificial sediment samples, each representing a different hypothetical grain size distribution in order to assess ungrouped moment versus graphic measures (Swan and others, 1978), and ungrouped versus grouped moment measures (Swan and others, 1979). They found that ... *grouped moment measures yield far more reliable results than the graphic approximations, particularly for skewness and kurtosis*. They did not, however, directly compare graphic and moment measures. We do, in this work, conduct a direct comparison between moment and graphic measures. In

addition, we consider a significantly large number of natural sediment samples to which we now turn.

## DATA AND RESULTS

One-hundred eleven cored marine sediment samples were analyzed using standard 1/4-phi sieving techniques. Granulometric results for these samples are listed in Appendix I. Additionally, the fine fraction (*i.e.*, silts and clays) was treated further. Pipette analyses identified silt ( $4\phi$  to  $8\phi$ ), and the pan fraction was assigned the designation of clay-sized particulate matter ( $8\phi$  to  $12\phi$ ). These samples were subdivided into three data sets: 1) the entire sample (sand+silt+clay) which encompasses 56 1/4-phi size class intervals, 2) pan excluded (sand plus silt) which encompasses 40 1/4-phi size class intervals, and 3) sand only (assigned here as the interval from  $-2\phi$  to  $4\phi$  and, hence, additionally includes smaller granule-sized particles) which encompasses 24 1/4-phi size class intervals.

The question arises as to whether samples from a particular depositional environment will adequately address the issue at hand? We have dealt here with cored marine sediments. Could samples from fluvial, littoral, estuarine, eolian, lacustrine, *etc.* yield different outcomes? The concern can be addressed from two perspectives. The first is that because the samples utilized in this work are from cores, they could represent diverse depositional environments including non-marine sediments. Second, the variability of data sets in terms of obtaining a relatively large range in resulting moment measures is a more important concern, which becomes more likely as the sample size becomes large.

Therefore, 333 samples were produced for the purposes of this study, for which moment and graphic measures were assessed. The range of measures for these samples is listed in Table 2, providing some idea as to the variability of the data set. The

**Table 2. General characteristics of the 333 sediment samples addressed in this study.**

| Type of Measure | Statistic         | Range of Values   | Number of Successful Measures | Percent Not Successful |
|-----------------|-------------------|-------------------|-------------------------------|------------------------|
| Moment          | $\mu$             | -0.9525 to 5.4270 | 333                           | 0                      |
|                 | $\sigma$          | 0.3887 to 3.4427  | 333                           | 0                      |
|                 | Sk                | -4.5726 to 5.2538 | 333                           | 0                      |
|                 | K                 | 1.7541 to 36.6811 | 333                           | 0                      |
| Graphic         | $\mu_{\phi g}$    | -0.8072 to 5.0822 | 298                           | 10.5                   |
|                 | $\sigma_{\phi g}$ | 0.2220 to 3.0051  | 298                           | 10.5                   |
|                 | $\sigma_{\phi i}$ | 0.2497 to 3.2040  | 226                           | 32.1                   |
|                 | $SK_{\phi g}$     | -0.6918 to 0.7764 | 298                           | 10.5                   |
|                 | $SK_{\phi i}$     | -0.6423 to 0.7671 | 226                           | 32.1                   |
|                 | $K_{\phi g}$      | 0.6341 to 4.7773  | 226                           | 32.1                   |

degree of variability is important, since we would like it to be considerable so that our results cover as many sample characteristics as is possible. The degree of variability can be statistically assessed using the relative dispersion (also termed the coefficient of variation). This parameter can be used to compare variabilities between data sets even if there are large differences in magnitudes of both the means and standard deviations (Rees, 1995). The relative dispersion is simply the standard deviation divided by the mean, and, therefore, tells us how many means are contained in the standard deviation. The relative dispersion is not new, but there are two considerations about the relative dispersion that must be accounted for when using the phi scale. The first, is that means can have a negative value. The second is that the mean can have a value of zero, while the standard deviation for naturally encountered sediments will always be greater than zero. Hence, a value of infinity is possible. In fact, for phi mean values less than 1.0 and greater than -1.0, relative dispersion outcomes can be greatly distorted. One might think that the most straightforward way in which to eliminate the problem is to transform phi means and phi standard deviations to their millimeter counterparts. One must understand, however, that there is no millimeter equivalent to the phi standard deviation as detailed by McManus

(1963). Hence, the only way in which it can be determined is to calculate means and standard deviations in millimeters using original retaining sieve sizes and midpoint values. A relative dispersion of 0.5 or less is considered to be a "tight" distribution or to have "excellent homogeneity". The full scale is listed in Table 3, as is a breakdown of our 333 samples, and we have assurance that our samples, indeed, have a considerable amount of variability.

**Table 3. Descriptive assessment of the relative dispersion.**

| Numerical Range | Homogeneity | Per Cent of Samples of Our 333-Sample Data Set Complying |
|-----------------|-------------|----------------------------------------------------------|
| < 0.5           | Excellent   | 25                                                       |
| 0.5 to 1.0      | Good        | 24                                                       |
| 1.0 to 1.33     | Fair        | 11                                                       |
| > 1.33          | Poor        | 40                                                       |

Table 2 has also been compiled to illustrate that while all moment measures can be assessed, there can be graphic measures which cannot. This occurred for our data because in certain instances phi values for the 5 (i.e.,  $\phi_5$ ), 16 (i.e.,  $\phi_{16}$ ), and 25 (i.e.,  $\phi_{25}$ ) cumulative percentiles were not present, because our coarsest sieve was -2.0 $\phi$ . For instance, suppose that for a sample the



coarsest percentile on the cumulative probability plot is 8%. For this case the phi size at 5% cannot be pulled from the plot, and graphic measures for equations (9), (11), and (12) cannot be evaluated. Such problems can also occur for the fine tail. It should, therefore, be expected to be a possibility occurring for any data set.

Moment and graphic measures for the sand+silt+clay samples are listed in Appendix II, those for the sand+silt samples in Appendix III, and those for the sand only samples in Appendix IV.

### Moment Mean Versus Graphic Mean

Moment means are plotted versus graphic means in Figure 4. (Note: it was necessary, to assure clarity, to have multiple plots on the same illustration so that data sets were not plotted on top of one another.) The correlation between the two measures is good at  $r^2 \geq 0.99$  ( $r$  is the Pearson product-moment correlation coefficient). The correlation coefficient, in this instance, tells us how parallel the plotted data are to a one-to-one fit (diagonal solid line). In reality, however, the graphic data slightly underestimate the moment measure data, by an average of 11% (*i.e.*,  $100 \times (1.0 - 0.889)$ ; Table 4).

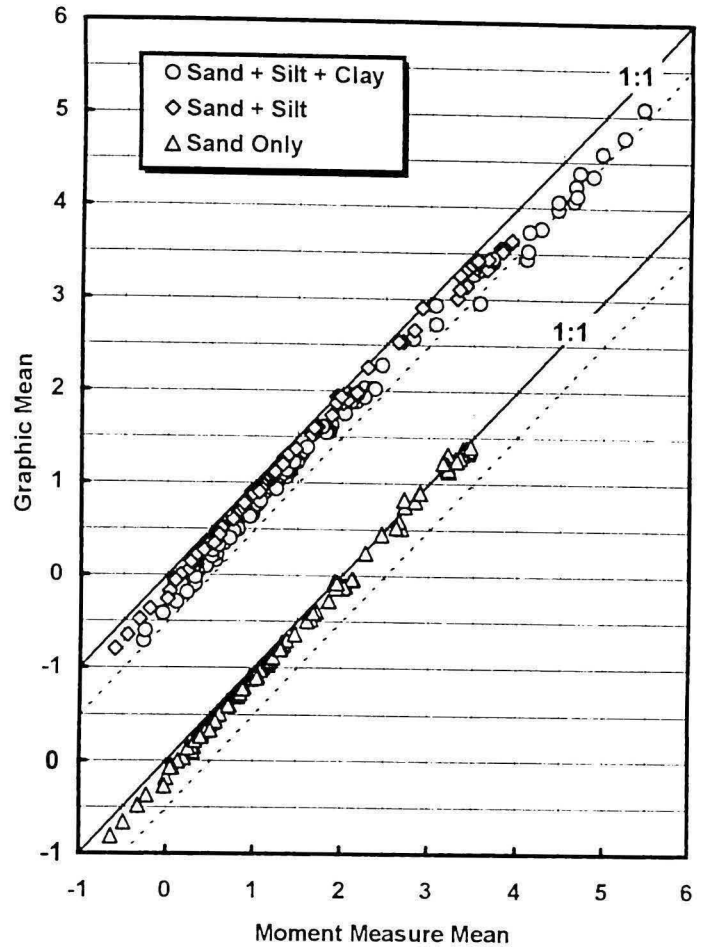


Figure 4. Moment measure mean versus graphic mean.

Sand+silt+clay graphic means underestimate the actual mean (*i.e.*, moment mean) by an average value of about  $0.3\phi$ , and a maximum of about  $0.6\phi$ . This is determined by measuring downward from the one-to-one

Table 4. Average graphic/moment measure ratios, and  $r^2$  values between graphic and moment measure data sets.

| Measure                              | Average Ratio                   | $r^2$  | Average Ratio                   | $r^2$  |
|--------------------------------------|---------------------------------|--------|---------------------------------|--------|
| Graphic Mean                         | $\mu_g = 0.8890 \mu_{mm}$       | 0.9917 |                                 |        |
| Graphic Standard Deviation           | $\sigma_g = 0.7330 \sigma_{mm}$ | 0.5508 | $\sigma_g = 0.7332 \sigma_{mm}$ | 0.6486 |
| Inclusive Graphic Standard Deviation | $\sigma_g = 0.7333 \sigma_{mm}$ | 0.7736 |                                 |        |
| Graphic Skewness                     | $Sk_g = -0.2395 Sk_{mm}$        | 0.0520 | $Sk_g = -0.2182 Sk_{mm}$        | 0.0865 |
| Inclusive Graphic Skewness           | $Sk_g = -0.1889 Sk_{mm}$        | 0.1276 |                                 |        |
| Graphic Kurtosis                     | $K_g = 0.1310 K_{mm}$           | 0.0098 |                                 |        |

(1:1) line to a parallel line encompassing the maximum deviating point or points (the dashed line lies  $0.5\phi$  below the one-to-one line).

Sand+silt and sand only graphic means more closely represent actual means, underestimating the moment mean by about  $0.1$  or  $0.2\phi$ .

Differences between moment and graphic means depend upon the character of individual samples comprising a suite of samples. Hence, a maximum underestimation of  $0.6\phi$  for the graphic mean as found for our data might be of consequence, depending on the accuracy required for application of results.

### ***Moment Standard Deviation Versus Graphic Standard Deviations***

The moment standard deviation is plotted against the graphic standard deviation (which incorporates  $\phi_{16}$  and  $\phi_{84}$  values) and inclusive graphic standard deviation (which considers  $\phi_5$ ,  $\phi_{16}$ ,  $\phi_{84}$ , and  $\phi_{95}$  values) in Figure 5. The degree of scatter between moment and graphic measures is extensive. In fact,  $r^2$  has a value of only  $0.5508$  for the graphic standard deviation. This means that the moment standard deviation can explain only  $55.08\%$  of the variability of the graphic standard deviation. Since the moment measure is ultimately the more accurate, it does not speak well of the accuracy of the

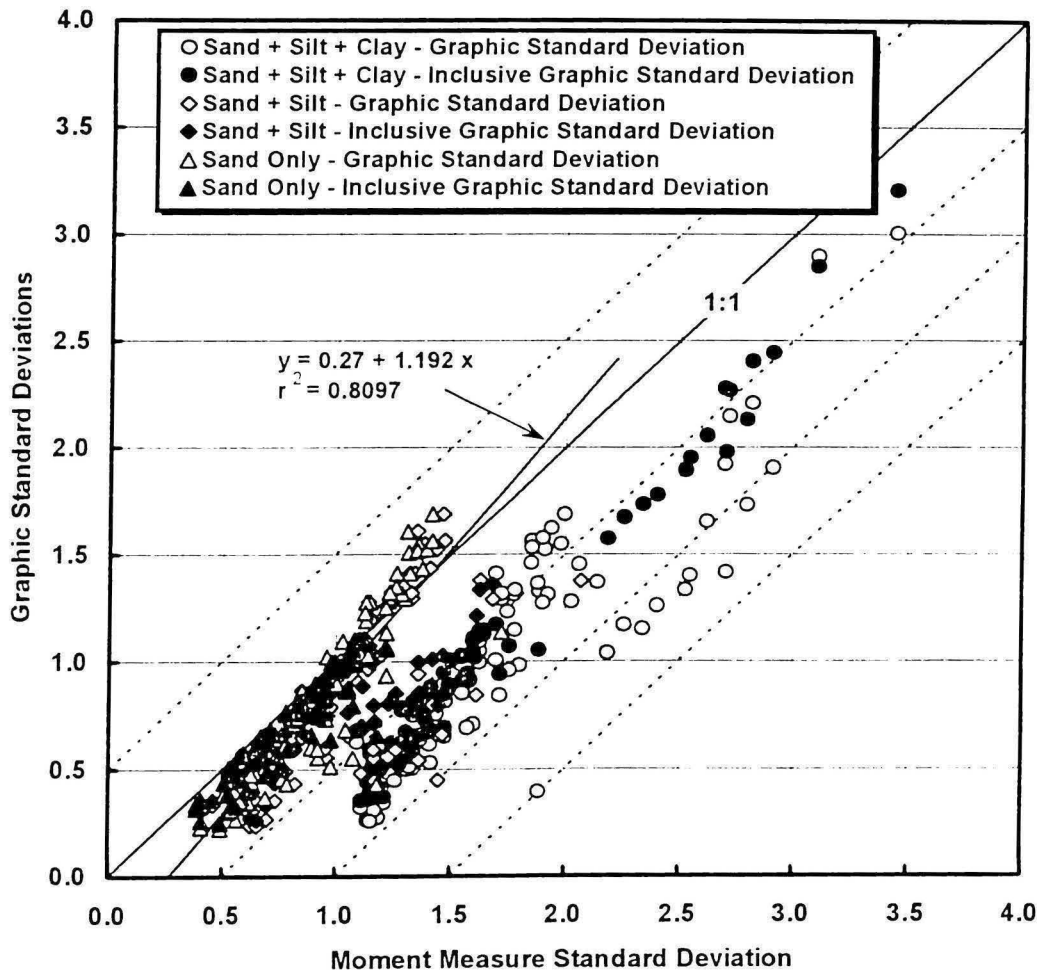


Figure 5. Moment measure standard deviation (sorting coefficient) versus graphic and inclusive graphic standard deviations.

graphic standard deviation. The inclusive graphic standard deviation fares somewhat better with  $r^2 = 0.7736$ . However, on the average, both types of graphic measures underestimate moment measure values by a factor of 0.73 (Table 4).

The sand+silt+clay sample standard deviations underestimate the moment standard deviations by a maximum of 1.5 phi units.

The inclusive graphic standard deviation for the sand+silt+clay samples, and the graphic and inclusive graphic measures for the sand+silt samples underestimate the actual standard deviation from close to 0.75 to 1.0 phi units.

Sand only samples resulted in the most accurate results for the analysis of the mean. However, the graphic standard deviation results do not even parallel the moment standard deviation results. A linear regression example is illustrated in Figure 5 for the sand only data which results in  $r^2 = 0.8097$ .

We can conclude as did Cadigan (1954), therefore, that graphic measures for

determining the standard deviation are not accurate.

### ***Moment Skewness Versus Graphic Skewnesses***

Moment measure skewness is plotted versus graphic skewness and inclusive graphic skewness in Figure 6. Without question, there is virtually no useful correlation between the moment and graphic measures. Moment skewness versus graphic skewness has an  $r^2$  value of 0.0520; for the moment skewness versus inclusive graphic skewness  $r^2 = 0.1276$ . Moreover, the graphic skewness underestimates the moment measure skewness by an average factor of -0.2395; the inclusive graphic skewness by -0.1889 (Table 4).

### ***Moment Kurtosis Versus Graphic Kurtosis***

Moment measure kurtosis is plotted against the graphic kurtosis in Figure 7. Again, there is no useful correlation between the two measures ( $r^2 = 0.0098$ ), and the graphic kurtosis underestimates the moment measure kurtosis by an average factor of 0.131 (Table 4). In fact, the degree of

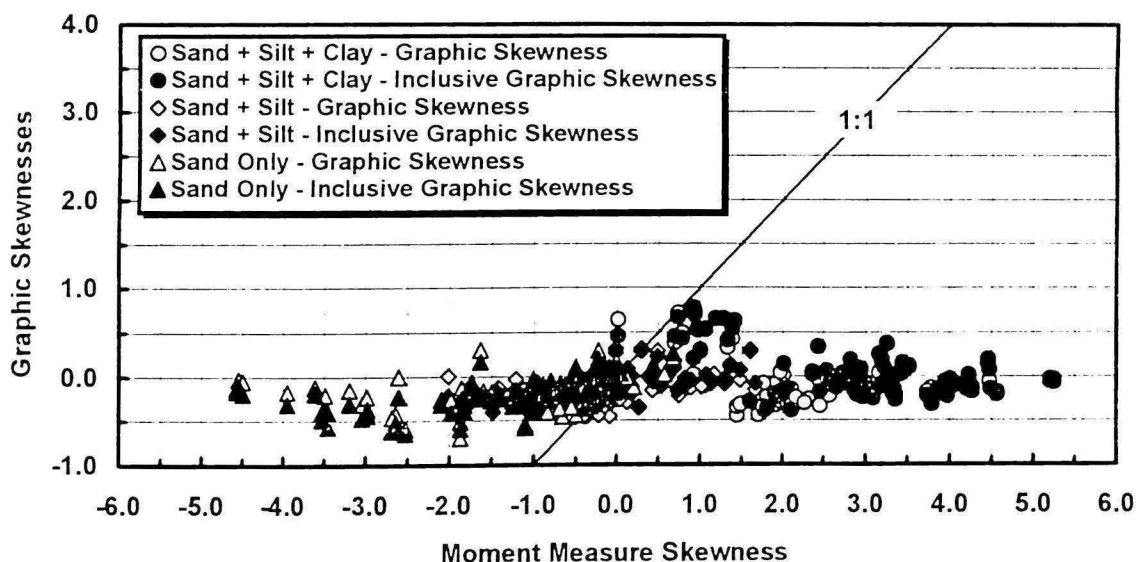


Figure 6. Moment measure skewness versus graphic and inclusive graphic skewnesses.

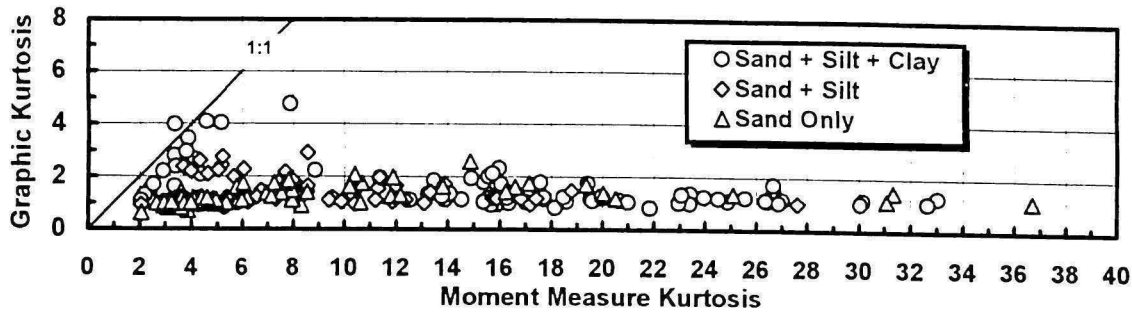


Figure 7. Moment measure kurtosis versus graphic kurtosis.

correlation is an order of magnitude less than that for skewness measures. moment measures.

### F-Test Assessments

The standard statistical test for assessing regression results from two samples is the F-test. Moment and graphic measure regression assessments for our data groups are listed in Table 5. Where  $F$ , computed from the data, is larger than the theoretical  $F_{cdf}$  value, the regressed results are deemed to be significantly different.

Moment and graphic means are not significantly different for any of the data groups.

One-third of the tested data groups for the moment and graphic and inclusive graphic standard deviations are significantly different. In addition, we performed F-tests for all of the samples to further pin-down test results; both graphic and inclusive graphic standard deviations are significantly different than moment standard deviations. The conclusion is, therefore, that graphic and inclusive graphic standard deviations may or may not represent moment standard deviations. From the scientific perspective, then, we are obliged to choose the more conservative outcome, and accept that the graphic measures can not consistently replicate the standard deviation moment measure.

For all the higher measures for the skewness and kurtosis, the graphic measures resoundingly do not represent the respective

### DISCUSSION

There is a property of probability distributions that is not generally known or appreciated. It is a property that is the key to understanding how probability distributions work. The casual observer immediately assumes that a probability distribution is defined by its central characteristics. To do otherwise is counter-intuitive. This, however, is not the case. It is, in fact, the content of the tails of a distribution that determines the character of the central portion of the distribution. This has been discussed by various workers (Doeglas, 1946; W. R. James, 1973, personal communications; Tanner, 1991; Balsillie, 1995; Balsillie and Tanner, 1999). Balsillie and Tanner (1999) note that each successively higher moment measure "reaches deeper" (*i.e.*, gives progressively greater numerical weight) into the tails of the distribution. Moreover, except for the mean, *odd* moment measures deal with differences between the tails; hence, the third moment measure identifies to which tail the distribution is skewed. *Even* moment measures treat the tails as if they are combined; hence, the peakedness of the central part of the curve is forthcoming from the kurtosis.

Graphic measures are dependent solely upon the values of  $\Phi_5$ ,  $\Phi_{16}$ ,  $\Phi_{25}$ ,  $\Phi_{50}$ ,  $\Phi_{75}$ ,  $\Phi_{84}$ , and  $\Phi_{95}$  which are, depending on the equation (*i.e.*, equations (8) through (13)), assessed in combinations of from two to five of the above values. Hence, on the average,



Table 5 F-Test results for two-sample variances to assess regression outcomes ( $\alpha = 0.05$  for all one-tailed tests).

|                |                  | Moment<br>Mean | Graphic<br>Mean | Moment<br>Standard<br>Deviation | Graphic<br>Standard<br>Deviation | Inclusive<br>Moment<br>Standard<br>Deviation | Inclusive<br>Graphic<br>Standard<br>Deviation | Moment<br>Skewness | Graphic<br>Skewness | Inclusive<br>Moment<br>Skewness | Inclusive<br>Moment<br>Skewness |
|----------------|------------------|----------------|-----------------|---------------------------------|----------------------------------|----------------------------------------------|-----------------------------------------------|--------------------|---------------------|---------------------------------|---------------------------------|
| Sand+Silt+Clay | Mean             | 1.8438         | 1.5416          | 1.7015                          | 1.0064                           | 1.6496                                       | 1.0342                                        | 2.6394             | -0.0263             | 2.7993                          | 0.0515                          |
|                | Variance         | 2.1701         | 2.0381          | 0.2465                          | 0.2775                           | 0.3104                                       | 0.3923                                        | 1.1876             | 0.0775              | 1.3860                          | 0.0812                          |
|                | Observations     | 99             | 99              | 99                              | 99                               | 75                                           | 75                                            | 99                 | 99                  | 75                              | 75                              |
|                | df               | 98             | 98              | 98                              | 98                               | 74                                           | 74                                            | 98                 | 98                  | 74                              | 74                              |
|                | F                | 1.0648         |                 | 1.1259                          |                                  | 1.2639                                       |                                               | 15.3258            |                     | 17.0656                         |                                 |
|                | P                | 0.3784         |                 | 0.2792                          |                                  | 0.1580                                       |                                               | 2.4246E-33         |                     | 3.7319E-27                      |                                 |
|                | F <sub>cdf</sub> | 1.3964         |                 | 1.3964                          |                                  | 1.4695                                       |                                               | 1.3964             |                     | 1.4695                          |                                 |
| Sand+Silt      | Mean             | 1.5317         | 1.3902          | 1.0257                          | 0.8406                           | 0.9241                                       | 0.7444                                        | -0.0985            | -0.1390             | -0.1039                         | -0.1171                         |
|                | Variance         | 1.5491         | 1.4940          | 0.0984                          | 0.1418                           | 0.0794                                       | 0.0569                                        | 0.6059             | 0.0247              | 0.7301                          | 0.0225                          |
|                | Observations     | 99             | 99              | 99                              | 99                               | 74                                           | 74                                            | 99                 | 99                  | 74                              | 74                              |
|                | df               | 98             | 98              | 98                              | 98                               | 73                                           | 73                                            | 98                 | 98                  | 73                              | 73                              |
|                | F                | 1.0369         |                 | 1.4409                          |                                  | 1.3947                                       |                                               | 24.5785            |                     | 32.4391                         |                                 |
|                | P                | 0.4291         |                 | 0.0360                          |                                  | 0.0788                                       |                                               | 2.0193E-42         |                     | 3.5677E-36                      |                                 |
|                | F <sub>cdf</sub> | 1.3964         |                 | 1.3964                          |                                  | 1.4734                                       |                                               | 1.3964             |                     | 1.4734                          |                                 |
| Sand Only      | Mean             | 1.4383         | 1.3474          | 0.9129                          | 0.8213                           | 0.7928                                       | 0.6925                                        | -1.1064            | -0.1782             | -1.3361                         | -0.1460                         |
|                | Variance         | 1.2667         | 1.3596          | 0.0811                          | 0.1423                           | 0.0439                                       | 0.0480                                        | 1.3961             | 0.0305              | 1.5967                          | 0.0283                          |
|                | Observations     | 99             | 99              | 99                              | 99                               | 74                                           | 74                                            | 99                 | 99                  | 74                              | 74                              |
|                | df               | 98             | 98              | 98                              | 98                               | 73                                           | 73                                            | 98                 | 98                  | 73                              | 73                              |
|                | F                | 1.0734         |                 | 1.7550                          |                                  | 1.0919                                       |                                               | 45.7349            |                     | 56.3426                         |                                 |
|                | P                | 0.3633         |                 | 0.0029                          |                                  | 0.3537                                       |                                               | 7.0961E-55         |                     | 1.5655E-44                      |                                 |
|                | F <sub>cdf</sub> | 1.3965         |                 | 1.3965                          |                                  | 1.4734                                       |                                               | 1.3964             |                     | 1.4734                          |                                 |
| All Samples    | Mean             | 1.6046         | 1.4264          | 1.1245                          | 0.7352                           | 1.1245                                       | 0.8247                                        | 0.4637             | -0.0677             | 0.4637                          | -0.0876                         |
|                | Variance         | 1.6809         | 1.6265          | 0.2872                          | 0.1511                           | 0.2872                                       | 0.1881                                        | 4.2572             | 0.0484              | 4.2572                          | 0.0573                          |
|                | Observations     | 297            | 297             | 223                             | 223                              | 223                                          | 223                                           | 223                | 223                 | 223                             | 223                             |
|                | df               | 296            | 296             | 222                             | 222                              | 222                                          | 222                                           | 222                | 222                 | 222                             | 222                             |
|                | F                | 1.0334         |                 | 1.9011                          |                                  | 1.5274                                       |                                               | 88.0290            |                     | 74.2869                         |                                 |
|                | P                | 0.3888         |                 | 1.0662E-06                      |                                  | 8.4343E-04                                   |                                               | 2.1046E-152        |                     | 2.0279E-144                     |                                 |
|                | F <sub>cdf</sub> | 1.2111         |                 | 1.2477                          |                                  | 1.2477                                       |                                               | 1.2477             |                     | 1.2477                          |                                 |

**Table 6. Average number of data points in sample distribution tails not considered by graphic measures that are considered in moment measures.**

| (1)                                                                          | (2)                      | (3)                                                                                | (4)                                      | (5)                                                                    |
|------------------------------------------------------------------------------|--------------------------|------------------------------------------------------------------------------------|------------------------------------------|------------------------------------------------------------------------|
| Domain of Percentile Assessed                                                | Data Points Per Sample * | Average Number of Data Points Less or Greater Than $\phi$ Percentile of Column (1) | Standard Deviation of Data of Column (3) | Tails Combined: Average % of Sample Not Included in the Graphic Method |
| Sand + Silt + Clay (n = 111) **                                              |                          |                                                                                    |                                          |                                                                        |
| < $\phi_5$                                                                   | 22 to 27                 | 6                                                                                  | $\pm 6$ points                           | } 40.8                                                                 |
| > $\phi_{95}$                                                                |                          | 7                                                                                  | $\pm 4$ points                           |                                                                        |
| < $\phi_{16}$                                                                |                          | 8                                                                                  | $\pm 6$ points                           | } 40.8                                                                 |
| > $\phi_{84}$                                                                |                          | 9                                                                                  | $\pm 4$ points                           |                                                                        |
| Sand + Silt (n = 111)                                                        |                          |                                                                                    |                                          |                                                                        |
| < $\phi_5$                                                                   | 21 to 26                 | 6                                                                                  | $\pm 6$ points                           | } 42.6                                                                 |
| > $\phi_{95}$                                                                |                          | 7                                                                                  | $\pm 4$ points                           |                                                                        |
| < $\phi_{16}$                                                                |                          | 8                                                                                  | $\pm 6$ points                           | } 42.6                                                                 |
| > $\phi_{84}$                                                                |                          | 8                                                                                  | $\pm 4$ points                           |                                                                        |
| Sand Only (n = 111)                                                          |                          |                                                                                    |                                          |                                                                        |
| < $\phi_5$                                                                   | 20 to 25                 | 6                                                                                  | $\pm 6$ points                           | } 40.0                                                                 |
| > $\phi_{95}$                                                                |                          | 7                                                                                  | $\pm 3$ points                           |                                                                        |
| < $\phi_{16}$                                                                |                          | 8                                                                                  | $\pm 6$ points                           | } 44.4                                                                 |
| > $\phi_{84}$                                                                |                          | 7                                                                                  | $\pm 4$ points                           |                                                                        |
| *Number of data points is the number of classified sieve intervals assessed. |                          |                                                                                    |                                          |                                                                        |
| **n = number of sediment samples assessed.                                   |                          |                                                                                    |                                          |                                                                        |

graphic measures do not consider from 78% to 92% of the data available per sample.

More importantly, however, it is the tails of the granulometric distributions that are essential in determining sample statistics. Here, we have identified the number of data points less than  $\phi_5$  and  $\phi_{16}$ , and greater than  $\phi_{84}$  and  $\phi_{95}$  for each sample. Average results are listed in Table 6. By analyzing our data in sub-suites of sand+silt+clay, sand+silt, and sand only, higher moment measures become exacerbated as the fine fraction mass increases and as size becomes finer (Figures 5, 6, and 7). As it turns out, however, such influence is not central to our needs if we look at average data for each sub-suite. What is important is that for the  $<\phi_{16}$  and  $>\phi_{84}$  tails

combined, 40.8% to 44.4% of sample data points are not considered by graphic measures. For the tails  $<\phi_5$  and  $>\phi_{95}$  from 40.0% to 42.5% of the sample data are not considered. That the tails are not considered in graphic measures is precisely why the degree of discrepancy between moment measures and graphic measures advances so quickly as the order of the moment measure increases.

## CONCLUSIONS

Two methods for assessing statistical measures describing granulometric distributions are recognized in the literature - moment measures and graphic measures. In this work, we have compared graphic

measures to the ultimately more accurate moment measures. Graphic measures assessed were the graphic mean, graphic and inclusive graphic standard deviations, graphic and inclusive graphic skewnesses, and graphic kurtosis. We found that except for the mean grain size, for which there can be close approximation (although graphic means can underestimate moment measure means by up to about 0.6  $\phi$ ), graphic measures do not result in accurate outcomes forthcoming from moment measure determinations.

Moreover, what we need to understand is that during the last century computing power did not become available in the work place or to the public-at-large until the 1980's and 1990's, respectively, and that the assessment of moment measures require significant computing power. Hence, during the early and middle part of the century, simplified graphic measures were devised so that statistics could be approximated. Today, however, moment measures can be calculated with ease, and the use of graphic measures should be discontinued.

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*APPENDIX I*

*GRANULOMETRY OF SAMPLES USED IN THE STUDY*



## S1A1GS10A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

## ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.116                | 0.116                 | 0.1548                   | 0.1548                    |
| -1.75            | -1.875          | 0.038                | 0.154                 | 0.0507                   | 0.2056                    |
| -1.50            | -1.625          | 0.080                | 0.234                 | 0.1068                   | 0.3124                    |
| -1.25            | -1.375          | 0.111                | 0.345                 | 0.1482                   | 0.4605                    |
| -1.00            | -1.125          | 0.153                | 0.498                 | 0.2042                   | 0.6648                    |
| -0.75            | -0.875          | 0.204                | 0.702                 | 0.2723                   | 0.9371                    |
| -0.50            | -0.625          | 0.357                | 1.059                 | 0.4766                   | 1.4137                    |
| -0.25            | -0.375          | 0.720                | 1.779                 | 0.9611                   | 2.3748                    |
| 0.00             | -0.125          | 0.907                | 2.686                 | 1.2108                   | 3.5855                    |
| 0.25             | 0.125           | 1.624                | 4.310                 | 2.1679                   | 5.7534                    |
| 0.50             | 0.375           | 2.236                | 6.546                 | 2.9848                   | 8.7383                    |
| 0.75             | 0.625           | 3.416                | 9.962                 | 4.5600                   | 13.2983                   |
| 1.00             | 0.875           | 6.394                | 16.356                | 8.5353                   | 21.8336                   |
| 1.25             | 1.125           | 12.896               | 29.252                | 17.2149                  | 39.0485                   |
| 1.50             | 1.375           | 12.240               | 41.492                | 16.3392                  | 55.3877                   |
| 1.75             | 1.625           | 14.371               | 55.863                | 19.1838                  | 74.5715                   |
| 2.00             | 1.875           | 8.904                | 64.767                | 11.8859                  | 86.4574                   |
| 2.25             | 2.125           | 5.599                | 70.366                | 7.4741                   | 93.9315                   |
| 2.50             | 2.375           | 1.852                | 72.218                | 2.4722                   | 96.4038                   |
| 2.75             | 2.625           | 0.414                | 72.632                | 0.5526                   | 96.9564                   |
| 3.00             | 2.875           | 0.162                | 72.794                | 0.2163                   | 97.1727                   |
| 3.25             | 3.125           | 0.074                | 72.868                | 0.0988                   | 97.2715                   |
| 3.50             | 3.375           | 0.070                | 72.938                | 0.0934                   | 97.3649                   |
| 3.75             | 3.625           | 0.091                | 73.029                | 0.1215                   | 97.4864                   |
| 4.00             | 3.875           | 0.083                | 73.112                | 0.1108                   | 97.5972                   |
| 8.00             | 6.000           | 0.150                | 73.262                | 0.2002                   | 97.7974                   |
| PAN              |                 | 1.650                | 74.912                | 2.2026                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

## MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 1.344        | 1.513           | 1.524                         | 1.535            | 1.557            |
| Std Dev:      | 0.685        | 1.318           | 1.380                         | 1.445            | 1.577            |
| Rel Dis:      | 0.510        | 0.872           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -0.211       | 3.956           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 9.539        | 23.936          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 17.170       | 132.027         | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 272.891      | 753.593         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 1147.178     | 4258.418        | = std dev/mean                |                  |                  |
| 8th MM:       | 10722.384    | 24189.419       | MM = moment measure           |                  |                  |
| Median:       | 1.276        | 1.293           |                               |                  |                  |

## S1A1GS11A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

## ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.981                | 0.981                 | 1.4113                   | 1.4113                    |
| -1.75            | -1.875          | 0.078                | 1.059                 | 0.1122                   | 1.5236                    |
| -1.50            | -1.625          | 0.023                | 1.082                 | 0.0331                   | 1.5567                    |
| -1.25            | -1.375          | 0.049                | 1.131                 | 0.0705                   | 1.6272                    |
| -1.00            | -1.125          | 0.075                | 1.206                 | 0.1079                   | 1.7351                    |
| -0.75            | -0.875          | 0.083                | 1.289                 | 0.1194                   | 1.8545                    |
| -0.50            | -0.625          | 0.121                | 1.410                 | 0.1741                   | 2.0285                    |
| -0.25            | -0.375          | 0.133                | 1.543                 | 0.1913                   | 2.2199                    |
| 0.00             | -0.125          | 0.118                | 1.661                 | 0.1698                   | 2.3897                    |
| 0.25             | 0.125           | 0.150                | 1.811                 | 0.2158                   | 2.6055                    |
| 0.50             | 0.375           | 0.162                | 1.973                 | 0.2331                   | 2.8385                    |
| 0.75             | 0.625           | 0.239                | 2.212                 | 0.3438                   | 3.1824                    |
| 1.00             | 0.875           | 0.447                | 2.659                 | 0.6431                   | 3.8255                    |
| 1.25             | 1.125           | 0.892                | 3.551                 | 1.2833                   | 5.1088                    |
| 1.50             | 1.375           | 1.085                | 4.636                 | 1.5610                   | 6.6697                    |
| 1.75             | 1.625           | 3.439                | 8.075                 | 4.9476                   | 11.6174                   |
| 2.00             | 1.875           | 6.247                | 14.322                | 8.9875                   | 20.6048                   |
| 2.25             | 2.125           | 9.346                | 23.668                | 13.4459                  | 34.0508                   |
| 2.50             | 2.375           | 7.968                | 31.636                | 11.4634                  | 45.5142                   |
| 2.75             | 2.625           | 4.140                | 35.776                | 5.9561                   | 51.4703                   |
| 3.00             | 2.875           | 3.760                | 39.536                | 5.4094                   | 56.8798                   |
| 3.25             | 3.125           | 3.433                | 42.969                | 4.9390                   | 61.8188                   |
| 3.50             | 3.375           | 3.836                | 46.805                | 5.5188                   | 67.3376                   |
| 3.75             | 3.625           | 5.698                | 52.503                | 8.1976                   | 75.5352                   |
| 4.00             | 3.875           | 4.505                | 57.008                | 6.4813                   | 82.0165                   |
| 8.00             | 6.000           | 4.200                | 61.208                | 6.0425                   | 88.0589                   |
| PAN              |                 | 8.300                | 69.508                | 11.9411                  | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 10.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

## MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 10.00 Phi | Pan at 10.50 Phi              | Pan at 11.00 Phi | Pan at 12.00 Phi |
|---------------|--------------|------------------|-------------------------------|------------------|------------------|
| Mean:         | 2.700        | 3.571            | 3.631                         | 3.691            | 3.810            |
| Std Dev:      | 1.360        | 2.704            | 2.843                         | 2.989            | 3.287            |
| Rel Dis:      | 0.504        | 0.757            | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -0.018       | 1.381            | CALCULATED USING              |                  |                  |
| Kurtosis:     | 5.826        | 4.349            | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | -5.115       | 8.448            | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 51.848       | 23.441           | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | -95.255      | 48.934           | = std dev/mean                |                  |                  |
| 8th MM:       | 535.728      | 129.992          | MM = moment measure           |                  |                  |
| Median:       | 2.343        | 2.563            |                               |                  |                  |

SIAlGS12A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.309                | 0.309                 | 0.4402                   | 0.4402                    |
| -1.75            | -1.875          | 0.098                | 0.407                 | 0.1396                   | 0.5798                    |
| -1.50            | -1.625          | 0.066                | 0.473                 | 0.0940                   | 0.6739                    |
| -1.25            | -1.375          | 0.085                | 0.558                 | 0.1211                   | 0.7950                    |
| -1.00            | -1.125          | 0.260                | 0.818                 | 0.3704                   | 1.1654                    |
| -0.75            | -0.875          | 0.339                | 1.157                 | 0.4830                   | 1.6483                    |
| -0.50            | -0.625          | 0.502                | 1.659                 | 0.7152                   | 2.3635                    |
| -0.25            | -0.375          | 0.745                | 2.404                 | 1.0614                   | 3.4248                    |
| 0.00             | -0.125          | 0.863                | 3.267                 | 1.2295                   | 4.6543                    |
| 0.25             | 0.125           | 1.346                | 4.613                 | 1.9176                   | 6.5719                    |
| 0.50             | 0.375           | 1.599                | 6.212                 | 2.2780                   | 8.8499                    |
| 0.75             | 0.625           | 2.385                | 8.597                 | 3.3978                   | 12.2477                   |
| 1.00             | 0.875           | 4.657                | 13.254                | 6.6346                   | 18.8822                   |
| 1.25             | 1.125           | 11.621               | 24.875                | 16.5558                  | 35.4380                   |
| 1.50             | 1.375           | 12.027               | 36.902                | 17.1342                  | 52.5722                   |
| 1.75             | 1.625           | 16.334               | 53.236                | 23.2701                  | 75.8423                   |
| 2.00             | 1.875           | 9.399                | 62.635                | 13.3902                  | 89.2325                   |
| 2.25             | 2.125           | 4.478                | 67.113                | 6.3796                   | 95.6121                   |
| 2.50             | 2.375           | 1.084                | 68.197                | 1.5443                   | 97.1564                   |
| 2.75             | 2.625           | 0.141                | 68.338                | 0.2009                   | 97.3573                   |
| 3.00             | 2.875           | 0.050                | 68.388                | 0.0712                   | 97.4285                   |
| 3.25             | 3.125           | 0.030                | 68.418                | 0.0427                   | 97.4713                   |
| 3.50             | 3.375           | 0.024                | 68.442                | 0.0342                   | 97.5054                   |
| 3.75             | 3.625           | 0.018                | 68.460                | 0.0256                   | 97.5311                   |
| 4.00             | 3.875           | 0.033                | 68.493                | 0.0470                   | 97.5781                   |
| 8.00             | 6.000           | 0.100                | 68.593                | 0.1425                   | 97.7206                   |
| PAN              |                 | 1.600                | 70.193                | 2.2794                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 1.331        | 1.506           | 1.518                         | 1.529            | 1.552            |
| Std Dev:      | 0.692        | 1.340           | 1.403                         | 1.468            | 1.603            |
| Rel Dis:      | 0.520        | 0.890           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -1.114       | 3.787           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 10.255       | 23.409          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | -5.402       | 125.623         | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 258.953      | 711.316         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 420.173      | 3947.686        | = std dev/mean                |                  |                  |
| 8th MM:       | 8836.710     | 22115.276       | MM = moment measure           |                  |                  |
| Median:       | 1.321        | 1.337           |                               |                  |                  |

SIAlGS13A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.75            | -1.875          | 0.065                | 0.065                 | 0.0854                   | 0.0854                    |
| -1.50            | -1.625          | 0.109                | 0.174                 | 0.1431                   | 0.2285                    |
| -1.25            | -1.375          | 0.162                | 0.336                 | 0.2128                   | 0.4413                    |
| -1.00            | -1.125          | 0.202                | 0.538                 | 0.2653                   | 0.7065                    |
| -0.75            | -0.875          | 0.325                | 0.863                 | 0.4268                   | 1.1334                    |
| -0.50            | -0.625          | 0.617                | 1.480                 | 0.8103                   | 1.9437                    |
| -0.25            | -0.375          | 0.815                | 2.295                 | 1.0703                   | 3.0140                    |
| 0.00             | -0.125          | 1.171                | 3.466                 | 1.5379                   | 4.5518                    |
| 0.25             | 0.125           | 1.864                | 5.330                 | 2.4480                   | 6.9998                    |
| 0.50             | 0.375           | 2.229                | 7.559                 | 2.9273                   | 9.9271                    |
| 0.75             | 0.625           | 3.334                | 10.893                | 4.3785                   | 14.3056                   |
| 1.00             | 0.875           | 5.597                | 16.490                | 7.3504                   | 21.6561                   |
| 1.25             | 1.125           | 9.434                | 25.924                | 12.3895                  | 34.0456                   |
| 1.50             | 1.375           | 8.765                | 34.689                | 11.5109                  | 45.5565                   |
| 1.75             | 1.625           | 15.887               | 50.576                | 20.8641                  | 66.4206                   |
| 2.00             | 1.875           | 13.927               | 64.503                | 18.2901                  | 84.7107                   |
| 2.25             | 2.125           | 7.870                | 72.373                | 10.3355                  | 95.0463                   |
| 2.50             | 2.375           | 1.670                | 74.043                | 2.1932                   | 97.2395                   |
| 2.75             | 2.625           | 0.169                | 74.212                | 0.2219                   | 97.4614                   |
| 3.00             | 2.875           | 0.051                | 74.263                | 0.0670                   | 97.5284                   |
| 3.25             | 3.125           | 0.025                | 74.288                | 0.0328                   | 97.5612                   |
| 3.50             | 3.375           | 0.018                | 74.306                | 0.0236                   | 97.5849                   |
| 3.75             | 3.625           | 0.016                | 74.322                | 0.0210                   | 97.6059                   |
| 4.00             | 3.875           | 0.023                | 74.345                | 0.0302                   | 97.6361                   |
| 8.00             | 6.000           | 0.050                | 74.395                | 0.0657                   | 97.7018                   |
| PAN              |                 | 1.750                | 76.145                | 2.2982                   | 100.0000                  |

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MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 1.380        | 1.555           | 1.566                         | 1.578            | 1.601            |
| Std Dev:      | 0.689        | 1.336           | 1.399                         | 1.465            | 1.600            |
| Rel Dis:      | 0.499        | 0.859           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -1.003       | 3.794           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 6.313        | 23.008          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | -4.619       | 124.789         | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 116.191      | 700.576         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 224.829      | 3891.596        | = std dev/mean                |                  |                  |
| 8th MM:       | 3594.532     | 21706.334       | MM = moment measure           |                  |                  |
| Median:       | 1.414        | 1.428           |                               |                  |                  |

| S1A1GS1A                         |                 | ENTIRE SAMPLE ANALYSIS |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|-----------------|------------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                 |                        |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g)   | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 0.808                  | 0.808                 | 1.2752                   | 1.2752                    |
| -1.75                            | -1.875          | 0.030                  | 0.838                 | 0.0473                   | 1.3225                    |
| -1.50                            | -1.625          | 0.138                  | 0.976                 | 0.2178                   | 1.5403                    |
| -1.25                            | -1.375          | 0.182                  | 1.158                 | 0.2872                   | 1.8275                    |
| -1.00                            | -1.125          | 0.284                  | 1.442                 | 0.4482                   | 2.2757                    |
| -0.75                            | -0.875          | 0.328                  | 1.770                 | 0.5176                   | 2.7933                    |
| -0.50                            | -0.625          | 0.661                  | 2.431                 | 1.0432                   | 3.8365                    |
| -0.25                            | -0.375          | 0.910                  | 3.341                 | 1.4361                   | 5.2726                    |
| 0.00                             | -0.125          | 1.252                  | 4.593                 | 1.9759                   | 7.2485                    |
| 0.25                             | 0.125           | 2.134                  | 6.727                 | 3.3678                   | 10.6163                   |
| 0.50                             | 0.375           | 2.964                  | 9.691                 | 4.6777                   | 15.2939                   |
| 0.75                             | 0.625           | 5.221                  | 14.912                | 8.2396                   | 23.5335                   |
| 1.00                             | 0.875           | 10.524                 | 25.436                | 16.6085                  | 40.1420                   |
| 1.25                             | 1.125           | 17.022                 | 42.458                | 26.8634                  | 67.0054                   |
| 1.50                             | 1.375           | 10.102                 | 52.560                | 15.9426                  | 82.9480                   |
| 1.75                             | 1.625           | 7.143                  | 59.703                | 11.2728                  | 94.2208                   |
| 2.00                             | 1.875           | 1.616                  | 61.319                | 2.5503                   | 96.7711                   |
| 2.25                             | 2.125           | 0.386                  | 61.705                | 0.6092                   | 97.3803                   |
| 2.50                             | 2.375           | 0.242                  | 61.947                | 0.3819                   | 97.7622                   |
| 2.75                             | 2.625           | 0.081                  | 62.028                | 0.1278                   | 97.8900                   |
| 3.00                             | 2.875           | 0.040                  | 62.068                | 0.0631                   | 97.9531                   |
| 3.25                             | 3.125           | 0.018                  | 62.086                | 0.0284                   | 97.9815                   |
| 3.50                             | 3.375           | 0.013                  | 62.099                | 0.0205                   | 98.0021                   |
| 3.75                             | 3.625           | 0.011                  | 62.110                | 0.0174                   | 98.0194                   |
| 4.00                             | 3.875           | 0.005                  | 62.115                | 0.0079                   | 98.0273                   |
| 8.00                             | 6.000           | 0.000                  | 62.115                | 0.0000                   | 98.0273                   |
| PAN                              |                 | 1.250                  | 63.365                | 1.9727                   | 100.0000                  |

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| MOMENT MEASURES |              |                 |                               |                  |                  |
|-----------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:           | 0.960        | 1.119           | 1.129                         | 1.139            | 1.158            |
| Std Dev:        | 0.683        | 1.314           | 1.371                         | 1.432            | 1.557            |
| Rel Dis:        | 0.711        | 1.174           | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | -1.820       | 3.977           | CALCULATED USING              |                  |                  |
| Kurtosis:       | 8.552        | 26.691          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | -30.971      | 154.002         | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 138.591      | 936.648         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | -574.595     | 5587.489        | = std dev/mean                |                  |                  |
| 8th MM:         | 2592.551     | 33582.764       | MM = moment measure           |                  |                  |
| Median:         | 0.958        | 0.967           |                               |                  |                  |

| S1A1GS2A                         |                 | ENTIRE SAMPLE ANALYSIS |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|-----------------|------------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                 |                        |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g)   | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 0.000                  | 0.000                 | 0.0000                   | 0.0000                    |
| -1.75                            | -1.875          | 0.000                  | 0.000                 | 0.0000                   | 0.0000                    |
| -1.50                            | -1.625          | 0.000                  | 0.000                 | 0.0000                   | 0.0000                    |
| -1.25                            | -1.375          | 0.011                  | 0.011                 | 0.0172                   | 0.0172                    |
| -1.00                            | -1.125          | 0.006                  | 0.017                 | 0.0094                   | 0.0265                    |
| -0.75                            | -0.875          | 0.029                  | 0.046                 | 0.0452                   | 0.0717                    |
| -0.50                            | -0.625          | 0.050                  | 0.096                 | 0.0780                   | 0.1497                    |
| -0.25                            | -0.375          | 0.041                  | 0.137                 | 0.0639                   | 0.2137                    |
| 0.00                             | -0.125          | 0.063                  | 0.200                 | 0.0982                   | 0.3119                    |
| 0.25                             | 0.125           | 0.116                  | 0.316                 | 0.1809                   | 0.4928                    |
| 0.50                             | 0.375           | 0.197                  | 0.513                 | 0.3072                   | 0.8000                    |
| 0.75                             | 0.625           | 0.301                  | 0.814                 | 0.4694                   | 1.2694                    |
| 1.00                             | 0.875           | 0.737                  | 1.551                 | 1.1494                   | 2.4188                    |
| 1.25                             | 1.125           | 2.072                  | 3.623                 | 3.2313                   | 5.6501                    |
| 1.50                             | 1.375           | 2.914                  | 6.537                 | 4.5444                   | 10.1945                   |
| 1.75                             | 1.625           | 9.046                  | 15.583                | 14.1073                  | 24.3017                   |
| 2.00                             | 1.875           | 14.595                 | 30.178                | 22.7609                  | 47.0627                   |
| 2.25                             | 2.125           | 18.097                 | 48.275                | 28.2223                  | 75.2850                   |
| 2.50                             | 2.375           | 9.161                  | 57.436                | 14.2866                  | 89.5716                   |
| 2.75                             | 2.625           | 1.739                  | 59.175                | 2.7120                   | 92.2836                   |
| 3.00                             | 2.875           | 0.893                  | 60.068                | 1.3926                   | 93.6762                   |
| 3.25                             | 3.125           | 0.755                  | 60.823                | 1.1774                   | 94.8536                   |
| 3.50                             | 3.375           | 0.710                  | 61.533                | 1.1072                   | 95.9609                   |
| 3.75                             | 3.625           | 0.716                  | 62.249                | 1.1166                   | 97.0775                   |
| 4.00                             | 3.875           | 0.274                  | 62.523                | 0.4273                   | 97.5048                   |
| 8.00                             | 6.000           | 0.200                  | 62.723                | 0.3119                   | 97.8167                   |
| PAN                              |                 | 1.400                  | 64.123                | 2.1833                   | 100.0000                  |

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| MOMENT MEASURES |              |                 |                               |                  |                  |
|-----------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:           | 2.012        | 2.164           | 2.175                         | 2.186            | 2.208            |
| Std Dev:        | 0.558        | 1.168           | 1.230                         | 1.296            | 1.430            |
| Rel Dis:        | 0.277        | 0.540           | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | 1.125        | 4.478           | CALCULATED USING              |                  |                  |
| Kurtosis:       | 13.301       | 26.670          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | 55.911       | 153.304         | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 493.396      | 896.688         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | 2925.815     | 5231.590        | = std dev/mean                |                  |                  |
| 8th MM:         | 23275.951    | 30601.826       | MM = moment measure           |                  |                  |
| Median:         | 1.891        | 1.901           |                               |                  |                  |



S1A1GS3A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.75            | -1.875          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.50            | -1.625          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.25            | -1.375          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.00            | -1.125          | 0.015                | 0.015                 | 0.0208                   | 0.0208                    |
| -0.75            | -0.875          | 0.012                | 0.027                 | 0.0167                   | 0.0375                    |
| -0.50            | -0.625          | 0.036                | 0.063                 | 0.0500                   | 0.0875                    |
| -0.25            | -0.375          | 0.067                | 0.130                 | 0.0931                   | 0.1807                    |
| 0.00             | -0.125          | 0.101                | 0.231                 | 0.1404                   | 0.3210                    |
| 0.25             | 0.125           | 0.193                | 0.424                 | 0.2682                   | 0.5892                    |
| 0.50             | 0.375           | 0.336                | 0.760                 | 0.4669                   | 1.0561                    |
| 0.75             | 0.625           | 0.618                | 1.378                 | 0.8588                   | 1.9150                    |
| 1.00             | 0.875           | 1.429                | 2.807                 | 1.9858                   | 3.9008                    |
| 1.25             | 1.125           | 4.153                | 6.960                 | 5.7713                   | 9.6720                    |
| 1.50             | 1.375           | 6.591                | 13.551                | 9.1593                   | 18.8313                   |
| 1.75             | 1.625           | 21.285               | 34.836                | 29.5789                  | 48.4102                   |
| 2.00             | 1.875           | 22.369               | 57.205                | 31.0853                  | 79.4956                   |
| 2.25             | 2.125           | 10.312               | 67.517                | 14.3302                  | 93.8257                   |
| 2.50             | 2.375           | 2.178                | 69.695                | 3.0267                   | 96.8524                   |
| 2.75             | 2.625           | 0.332                | 70.027                | 0.4614                   | 97.3138                   |
| 3.00             | 2.875           | 0.106                | 70.133                | 0.1473                   | 97.4611                   |
| 3.25             | 3.125           | 0.051                | 70.184                | 0.0709                   | 97.5320                   |
| 3.50             | 3.375           | 0.041                | 70.225                | 0.0570                   | 97.5889                   |
| 3.75             | 3.625           | 0.057                | 70.282                | 0.0792                   | 97.6681                   |
| 4.00             | 3.875           | 0.028                | 70.310                | 0.0389                   | 97.7071                   |
| 8.00             | 6.000           | 0.050                | 70.360                | 0.0695                   | 97.7765                   |
| PAN              |                 | 1.600                | 71.960                | 2.2235                   | 100.0000                  |

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MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 1.722        | 1.884           | 1.895                         | 1.906            | 1.928            |
| Std Dev:      | 0.405        | 1.153           | 1.220                         | 1.290            | 1.432            |
| Rel Dis:      | 0.235        | 0.612           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -0.012       | 5.254           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 15.726       | 33.024          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 77.691       | 202.606         | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 1135.003     | 1251.347        | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 10052.952    | 7719.893        | = std dev/mean                |                  |                  |
| 8th MM:       | 115369.231   | 47658.625       | MM = moment measure           |                  |                  |
| Median:       | 1.629        | 1.638           |                               |                  |                  |

S1A1GS4A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.074                | 0.074                 | 0.1393                   | 0.1393                    |
| -1.75            | -1.875          | 0.030                | 0.104                 | 0.0565                   | 0.1958                    |
| -1.50            | -1.625          | 0.053                | 0.157                 | 0.0998                   | 0.2956                    |
| -1.25            | -1.375          | 0.089                | 0.246                 | 0.1676                   | 0.4632                    |
| -1.00            | -1.125          | 0.132                | 0.378                 | 0.2486                   | 0.7118                    |
| -0.75            | -0.875          | 0.083                | 0.461                 | 0.1563                   | 0.8681                    |
| -0.50            | -0.625          | 0.027                | 0.488                 | 0.0508                   | 0.9189                    |
| -0.25            | -0.375          | 0.015                | 0.503                 | 0.0282                   | 0.9471                    |
| 0.00             | -0.125          | 0.018                | 0.521                 | 0.0339                   | 0.9810                    |
| 0.25             | 0.125           | 0.023                | 0.544                 | 0.0433                   | 1.0243                    |
| 0.50             | 0.375           | 0.039                | 0.583                 | 0.0734                   | 1.0978                    |
| 0.75             | 0.625           | 0.061                | 0.644                 | 0.1149                   | 1.2126                    |
| 1.00             | 0.875           | 0.081                | 0.725                 | 0.1525                   | 1.3652                    |
| 1.25             | 1.125           | 0.104                | 0.829                 | 0.1958                   | 1.5610                    |
| 1.50             | 1.375           | 0.111                | 0.940                 | 0.2090                   | 1.7700                    |
| 1.75             | 1.625           | 0.292                | 1.232                 | 0.5498                   | 2.3198                    |
| 2.00             | 1.875           | 0.563                | 1.795                 | 1.0601                   | 3.3800                    |
| 2.25             | 2.125           | 0.924                | 2.719                 | 1.7399                   | 5.1199                    |
| 2.50             | 2.375           | 1.127                | 3.846                 | 2.1221                   | 7.2420                    |
| 2.75             | 2.625           | 1.305                | 5.151                 | 2.4573                   | 9.6993                    |
| 3.00             | 2.875           | 2.392                | 7.543                 | 4.5041                   | 14.2034                   |
| 3.25             | 3.125           | 3.883                | 11.426                | 7.3117                   | 21.5151                   |
| 3.50             | 3.375           | 7.465                | 18.891                | 14.0565                  | 35.5716                   |
| 3.75             | 3.625           | 12.979               | 31.870                | 24.4393                  | 60.0109                   |
| 4.00             | 3.875           | 7.637                | 39.507                | 14.3804                  | 74.3913                   |
| 8.00             | 6.000           | 4.750                | 44.257                | 8.9442                   | 83.3355                   |
| PAN              |                 | 8.850                | 53.107                | 16.6645                  | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 10.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 10.00 Phi | Pan at 10.50 Phi              | Pan at 11.00 Phi | Pan at 12.00 Phi |
|---------------|--------------|------------------|-------------------------------|------------------|------------------|
| Mean:         | 3.585        | 4.654            | 4.738                         | 4.821            | 4.988            |
| Std Dev:      | 1.115        | 2.618            | 2.780                         | 2.955            | 3.310            |
| Rel Dis:      | 0.311        | 0.563            | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -0.259       | 1.187            | CALCULATED USING              |                  |                  |
| Kurtosis:     | 7.689        | 3.362            | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | -17.235      | 5.256            | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 111.644      | 13.956           | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | -434.065     | 21.364           | = std dev/mean                |                  |                  |
| 8th MM:       | 2181.911     | 59.987           | MM = moment measure           |                  |                  |
| Median:       | 3.437        | 3.523            |                               |                  |                  |

SIAlGS5A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.75            | -1.875          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.50            | -1.625          | 0.016                | 0.016                 | 0.0214                   | 0.0214                    |
| -1.25            | -1.375          | 0.028                | 0.044                 | 0.0374                   | 0.0588                    |
| -1.00            | -1.125          | 0.051                | 0.095                 | 0.0681                   | 0.1269                    |
| -0.75            | -0.875          | 0.216                | 0.311                 | 0.2885                   | 0.4154                    |
| -0.50            | -0.625          | 0.482                | 0.793                 | 0.6437                   | 1.0591                    |
| -0.25            | -0.375          | 0.616                | 1.409                 | 0.8227                   | 1.8818                    |
| 0.00             | -0.125          | 0.968                | 2.377                 | 1.2928                   | 3.1746                    |
| 0.25             | 0.125           | 1.576                | 3.953                 | 2.1048                   | 5.2794                    |
| 0.50             | 0.375           | 2.254                | 6.207                 | 3.0103                   | 8.2897                    |
| 0.75             | 0.625           | 3.509                | 9.716                 | 4.6864                   | 12.9761                   |
| 1.00             | 0.875           | 6.793                | 16.509                | 9.0723                   | 22.0485                   |
| 1.25             | 1.125           | 12.296               | 28.805                | 16.4218                  | 38.4703                   |
| 1.50             | 1.375           | 10.606               | 39.411                | 14.1648                  | 52.6350                   |
| 1.75             | 1.625           | 15.328               | 54.739                | 20.4712                  | 73.1062                   |
| 2.00             | 1.875           | 11.057               | 65.796                | 14.7671                  | 87.8733                   |
| 2.25             | 2.125           | 5.562                | 71.358                | 7.4283                   | 95.3016                   |
| 2.50             | 2.375           | 1.386                | 72.744                | 1.8511                   | 97.1526                   |
| 2.75             | 2.625           | 0.254                | 72.998                | 0.3392                   | 97.4919                   |
| 3.00             | 2.875           | 0.094                | 73.092                | 0.1255                   | 97.6174                   |
| 3.25             | 3.125           | 0.030                | 73.122                | 0.0401                   | 97.6575                   |
| 3.50             | 3.375           | 0.020                | 73.142                | 0.0267                   | 97.6842                   |
| 3.75             | 3.625           | 0.024                | 73.166                | 0.0321                   | 97.7162                   |
| 4.00             | 3.875           | 0.010                | 73.176                | 0.0134                   | 97.7296                   |
| 8.00             | 6.000           | 0.150                | 73.326                | 0.2003                   | 97.9299                   |
| PAN              |                 | 1.550                | 74.876                | 2.0701                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 1.357        | 1.515           | 1.526                         | 1.536            | 1.557            |
| Std Dev:      | 0.637        | 1.264           | 1.324                         | 1.387            | 1.516            |
| Rel Dis:      | 0.469        | 0.834           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 0.042        | 4.270           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 9.411        | 26.436          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 35.566       | 153.694         | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 341.276      | 910.607         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 2199.593     | 5378.621        | = std dev/mean                |                  |                  |
| 8th MM:       | 16948.736    | 31832.077       | MM = moment measure           |                  |                  |
| Median:       | 1.310        | 1.328           |                               |                  |                  |

SIAlGS6A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.076                | 0.076                 | 0.1039                   | 0.1039                    |
| -1.75            | -1.875          | 0.041                | 0.117                 | 0.0560                   | 0.1599                    |
| -1.50            | -1.625          | 0.033                | 0.150                 | 0.0451                   | 0.2050                    |
| -1.25            | -1.375          | 0.043                | 0.193                 | 0.0588                   | 0.2637                    |
| -1.00            | -1.125          | 0.092                | 0.285                 | 0.1257                   | 0.3895                    |
| -0.75            | -0.875          | 0.212                | 0.497                 | 0.2897                   | 0.6791                    |
| -0.50            | -0.625          | 0.303                | 0.800                 | 0.4140                   | 1.0932                    |
| -0.25            | -0.375          | 0.435                | 1.235                 | 0.5944                   | 1.6876                    |
| 0.00             | -0.125          | 0.608                | 1.843                 | 0.8308                   | 2.5184                    |
| 0.25             | 0.125           | 0.951                | 2.794                 | 1.2995                   | 3.8180                    |
| 0.50             | 0.375           | 1.508                | 4.302                 | 2.0607                   | 5.8787                    |
| 0.75             | 0.625           | 2.554                | 6.856                 | 3.4900                   | 9.3687                    |
| 1.00             | 0.875           | 5.785                | 12.641                | 7.9052                   | 17.2738                   |
| 1.25             | 1.125           | 11.971               | 24.612                | 16.3583                  | 33.6321                   |
| 1.50             | 1.375           | 12.269               | 36.881                | 16.7655                  | 50.3976                   |
| 1.75             | 1.625           | 19.038               | 55.919                | 26.0153                  | 76.4130                   |
| 2.00             | 1.875           | 11.233               | 67.152                | 15.3498                  | 91.7628                   |
| 2.25             | 2.125           | 3.564                | 70.716                | 4.8702                   | 96.6330                   |
| 2.50             | 2.375           | 0.664                | 71.380                | 0.9074                   | 97.5403                   |
| 2.75             | 2.625           | 0.151                | 71.531                | 0.2063                   | 97.7467                   |
| 3.00             | 2.875           | 0.057                | 71.588                | 0.0779                   | 97.8245                   |
| 3.25             | 3.125           | 0.022                | 71.610                | 0.0301                   | 97.8546                   |
| 3.50             | 3.375           | 0.015                | 71.625                | 0.0205                   | 97.8751                   |
| 3.75             | 3.625           | 0.016                | 71.641                | 0.0219                   | 97.8970                   |
| 4.00             | 3.875           | 0.039                | 71.680                | 0.0533                   | 97.9503                   |
| 8.00             | 6.000           | 0.100                | 71.780                | 0.1366                   | 98.0869                   |
| PAN              |                 | 1.400                | 73.180                | 1.9131                   | 100.0000                  |

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MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 1.383        | 1.528           | 1.538                         | 1.548            | 1.567            |
| Std Dev:      | 0.580        | 1.197           | 1.256                         | 1.318            | 1.443            |
| Rel Dis:      | 0.419        | 0.783           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -0.561       | 4.566           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 12.354       | 30.133          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 21.300       | 183.706         | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 489.358      | 1151.483        | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 2262.710     | 7157.495        | = std dev/mean                |                  |                  |
| 8th MM:       | 26341.417    | 44678.884       | MM = moment measure           |                  |                  |
| Median:       | 1.355        | 1.369           |                               |                  |                  |

S1A1GS9A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

| ANALYTICAL GRANULOMETRIC RESULTS |                 |                      |                       |                          |                           |
|----------------------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 1.125                | 1.125                 | 1.9611                   | 1.9611                    |
| -1.75                            | -1.875          | 0.119                | 1.244                 | 0.2074                   | 2.1685                    |
| -1.50                            | -1.625          | 0.063                | 1.307                 | 0.1098                   | 2.2783                    |
| -1.25                            | -1.375          | 0.097                | 1.404                 | 0.1691                   | 2.4474                    |
| -1.00                            | -1.125          | 0.061                | 1.465                 | 0.1063                   | 2.5537                    |
| -0.75                            | -0.875          | 0.055                | 1.520                 | 0.0959                   | 2.6496                    |
| -0.50                            | -0.625          | 0.102                | 1.622                 | 0.1778                   | 2.8274                    |
| -0.25                            | -0.375          | 0.076                | 1.698                 | 0.1325                   | 2.9599                    |
| 0.00                             | -0.125          | 0.072                | 1.770                 | 0.1255                   | 3.0854                    |
| 0.25                             | 0.125           | 0.064                | 1.834                 | 0.1116                   | 3.1970                    |
| 0.50                             | 0.375           | 0.067                | 1.901                 | 0.1168                   | 3.3138                    |
| 0.75                             | 0.625           | 0.060                | 1.961                 | 0.1046                   | 3.4183                    |
| 1.00                             | 0.875           | 0.102                | 2.063                 | 0.1778                   | 3.5961                    |
| 1.25                             | 1.125           | 0.140                | 2.203                 | 0.2440                   | 3.8402                    |
| 1.50                             | 1.375           | 0.137                | 2.340                 | 0.2388                   | 4.0790                    |
| 1.75                             | 1.625           | 0.173                | 2.513                 | 0.3016                   | 4.3806                    |
| 2.00                             | 1.875           | 0.218                | 2.731                 | 0.3800                   | 4.7606                    |
| 2.25                             | 2.125           | 0.441                | 3.172                 | 0.7687                   | 5.5293                    |
| 2.50                             | 2.375           | 0.913                | 4.085                 | 1.5915                   | 7.1208                    |
| 2.75                             | 2.625           | 1.060                | 5.145                 | 1.8478                   | 8.9686                    |
| 3.00                             | 2.875           | 1.778                | 6.923                 | 3.0993                   | 12.0679                   |
| 3.25                             | 3.125           | 3.064                | 9.987                 | 5.3410                   | 17.4090                   |
| 3.50                             | 3.375           | 7.332                | 17.319                | 12.7809                  | 30.1898                   |
| 3.75                             | 3.625           | 14.982               | 32.301                | 26.1161                  | 56.3059                   |
| 4.00                             | 3.875           | 8.966                | 41.267                | 15.6292                  | 71.9351                   |
| 8.00                             | 6.000           | 6.050                | 47.317                | 10.5461                  | 82.4812                   |
| PAN                              |                 | 10.050               | 57.367                | 17.5188                  | 100.0000                  |

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| MOMENT MEASURES |              |                  |                               |                  |                  |
|-----------------|--------------|------------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 10.00 Phi | Pan at 10.50 Phi              | Pan at 11.00 Phi | Pan at 12.00 Phi |
| Mean:           | 3.567        | 4.694            | 4.782                         | 4.870            | 5.045            |
| Std Dev:        | 1.451        | 2.795            | 2.955                         | 3.127            | 3.478            |
| Rel Dis:        | 0.407        | 0.595            | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | -1.454       | 0.729            | CALCULATED USING              |                  |                  |
| Kurtosis:       | 8.573        | 3.332            | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | -26.552      | 2.115            | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 110.446      | 13.650           | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | -407.208     | 3.243            | = std dev/mean                |                  |                  |
| 8th MM:         | 1594.947     | 60.012           | MM = moment measure           |                  |                  |
| Median:         | 3.481        | 3.565            |                               |                  |                  |

S1A2GS10A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

| ANALYTICAL GRANULOMETRIC RESULTS |                 |                      |                       |                          |                           |
|----------------------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 0.072                | 0.072                 | 0.1214                   | 0.1214                    |
| -1.75                            | -1.875          | 0.063                | 0.135                 | 0.1062                   | 0.2276                    |
| -1.50                            | -1.625          | 0.062                | 0.197                 | 0.1045                   | 0.3321                    |
| -1.25                            | -1.375          | 0.198                | 0.395                 | 0.3338                   | 0.6659                    |
| -1.00                            | -1.125          | 0.119                | 0.514                 | 0.2006                   | 0.8665                    |
| -0.75                            | -0.875          | 0.214                | 0.728                 | 0.3608                   | 1.2273                    |
| -0.50                            | -0.625          | 0.258                | 0.986                 | 0.4349                   | 1.6622                    |
| -0.25                            | -0.375          | 0.275                | 1.261                 | 0.4636                   | 2.1258                    |
| 0.00                             | -0.125          | 0.203                | 1.464                 | 0.3422                   | 2.4681                    |
| 0.25                             | 0.125           | 0.250                | 1.714                 | 0.4215                   | 2.8895                    |
| 0.50                             | 0.375           | 0.265                | 1.979                 | 0.4467                   | 3.3363                    |
| 0.75                             | 0.625           | 0.367                | 2.346                 | 0.6187                   | 3.9550                    |
| 1.00                             | 0.875           | 0.716                | 3.062                 | 1.2071                   | 5.1620                    |
| 1.25                             | 1.125           | 1.524                | 4.586                 | 2.5692                   | 7.7312                    |
| 1.50                             | 1.375           | 1.669                | 6.255                 | 2.8136                   | 10.5449                   |
| 1.75                             | 1.625           | 3.326                | 9.581                 | 5.6071                   | 16.1519                   |
| 2.00                             | 1.875           | 3.245                | 12.826                | 5.4705                   | 21.6224                   |
| 2.25                             | 2.125           | 2.681                | 15.507                | 4.5197                   | 26.1421                   |
| 2.50                             | 2.375           | 1.727                | 17.234                | 2.9114                   | 29.0536                   |
| 2.75                             | 2.625           | 0.910                | 18.144                | 1.5341                   | 30.5877                   |
| 3.00                             | 2.875           | 0.886                | 19.030                | 1.4936                   | 32.0813                   |
| 3.25                             | 3.125           | 1.566                | 20.596                | 2.6400                   | 34.7213                   |
| 3.50                             | 3.375           | 4.507                | 25.103                | 7.5980                   | 42.3194                   |
| 3.75                             | 3.625           | 8.540                | 33.643                | 14.3970                  | 56.7163                   |
| 4.00                             | 3.875           | 9.175                | 42.818                | 15.4675                  | 72.1838                   |
| 8.00                             | 6.000           | 9.400                | 52.218                | 15.8468                  | 88.0306                   |
| PAN                              |                 | 7.100                | 59.318                | 11.9694                  | 100.0000                  |

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| MOMENT MEASURES |              |                  |                               |                  |                  |
|-----------------|--------------|------------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 10.00 Phi | Pan at 10.50 Phi              | Pan at 11.00 Phi | Pan at 12.00 Phi |
| Mean:           | 3.313        | 4.113            | 4.173                         | 4.233            | 4.352            |
| Std Dev:        | 1.682        | 2.698            | 2.823                         | 2.959            | 3.241            |
| Rel Dis:        | 0.508        | 0.656            | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | -0.083       | 0.920            | CALCULATED USING              |                  |                  |
| Kurtosis:       | 2.879        | 3.350            | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | -1.954       | 5.186            | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 12.714       | 14.638           | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | -20.671      | 25.969           | = std dev/mean                |                  |                  |
| 8th MM:         | 77.709       | 67.768           | MM = moment measure           |                  |                  |
| Median:         | 3.404        | 3.508            |                               |                  |                  |

S1A2GS11A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

| ANALYTICAL GRANULOMETRIC RESULTS |                 |                      |                       |                          |                           |
|----------------------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.75                            | -1.875          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.50                            | -1.625          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.25                            | -1.375          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.00                            | -1.125          | 0.023                | 0.023                 | 0.0350                   | 0.0350                    |
| -0.75                            | -0.875          | 0.029                | 0.052                 | 0.0442                   | 0.0792                    |
| -0.50                            | -0.625          | 0.071                | 0.123                 | 0.1081                   | 0.1873                    |
| -0.25                            | -0.375          | 0.129                | 0.252                 | 0.1965                   | 0.3838                    |
| 0.00                             | -0.125          | 0.151                | 0.403                 | 0.2300                   | 0.6138                    |
| 0.25                             | 0.125           | 0.311                | 0.714                 | 0.4737                   | 1.0875                    |
| 0.50                             | 0.375           | 0.675                | 1.389                 | 1.0281                   | 2.1156                    |
| 0.75                             | 0.625           | 1.420                | 2.809                 | 2.1628                   | 4.2784                    |
| 1.00                             | 0.875           | 3.443                | 6.252                 | 5.2441                   | 9.5225                    |
| 1.25                             | 1.125           | 7.537                | 13.789                | 11.4797                  | 21.0022                   |
| 1.50                             | 1.375           | 7.455                | 21.244                | 11.3548                  | 32.3570                   |
| 1.75                             | 1.625           | 13.266               | 34.510                | 20.2056                  | 52.5626                   |
| 2.00                             | 1.875           | 12.819               | 47.329                | 19.5248                  | 72.0874                   |
| 2.25                             | 2.125           | 10.552               | 57.881                | 16.0719                  | 88.1593                   |
| 2.50                             | 2.375           | 4.384                | 62.265                | 6.6773                   | 94.8366                   |
| 2.75                             | 2.625           | 0.665                | 62.930                | 1.0129                   | 95.8495                   |
| 3.00                             | 2.875           | 0.149                | 63.079                | 0.2269                   | 96.0765                   |
| 3.25                             | 3.125           | 0.097                | 63.176                | 0.1477                   | 96.2242                   |
| 3.50                             | 3.375           | 0.137                | 63.313                | 0.2087                   | 96.4329                   |
| 3.75                             | 3.625           | 0.165                | 63.478                | 0.2513                   | 96.6842                   |
| 4.00                             | 3.875           | 0.127                | 63.605                | 0.1934                   | 96.8776                   |
| 8.00                             | 6.000           | 0.550                | 64.155                | 0.8377                   | 97.7153                   |
| PAN                              |                 | 1.500                | 65.655                | 2.2847                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES |              |                 |                               |                  |                  |
|-----------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:           | 1.691        | 1.858           | 1.870                         | 1.881            | 1.904            |
| Std Dev:        | 0.668        | 1.283           | 1.345                         | 1.411            | 1.545            |
| Rel Dis:        | 0.395        | 0.690           | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | 2.060        | 4.179           | CALCULATED USING              |                  |                  |
| Kurtosis:       | 17.164       | 23.378          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | 95.840       | 126.766         | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 644.914      | 699.959         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | 4045.052     | 3870.937        | = std dev/mean                |                  |                  |
| 8th MM:         | 26388.701    | 21477.511       | MM = moment measure           |                  |                  |
| Median:         | 1.579        | 1.593           |                               |                  |                  |

S1A2GS12A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

| ANALYTICAL GRANULOMETRIC RESULTS |                 |                      |                       |                          |                           |
|----------------------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 0.056                | 0.056                 | 0.1094                   | 0.1094                    |
| -1.75                            | -1.875          | 0.104                | 0.160                 | 0.2032                   | 0.3126                    |
| -1.50                            | -1.625          | 0.086                | 0.246                 | 0.1680                   | 0.4806                    |
| -1.25                            | -1.375          | 0.051                | 0.297                 | 0.0996                   | 0.5802                    |
| -1.00                            | -1.125          | 0.033                | 0.330                 | 0.0645                   | 0.6446                    |
| -0.75                            | -0.875          | 0.064                | 0.394                 | 0.1250                   | 0.7697                    |
| -0.50                            | -0.625          | 0.075                | 0.469                 | 0.1465                   | 0.9162                    |
| -0.25                            | -0.375          | 0.079                | 0.548                 | 0.1543                   | 1.0705                    |
| 0.00                             | -0.125          | 0.067                | 0.615                 | 0.1309                   | 1.2014                    |
| 0.25                             | 0.125           | 0.072                | 0.687                 | 0.1406                   | 1.3420                    |
| 0.50                             | 0.375           | 0.100                | 0.787                 | 0.1953                   | 1.5374                    |
| 0.75                             | 0.625           | 0.164                | 0.951                 | 0.3204                   | 1.8577                    |
| 1.00                             | 0.875           | 0.275                | 1.226                 | 0.5372                   | 2.3950                    |
| 1.25                             | 1.125           | 0.370                | 1.596                 | 0.7228                   | 3.1177                    |
| 1.50                             | 1.375           | 0.350                | 1.946                 | 0.6837                   | 3.8014                    |
| 1.75                             | 1.625           | 0.684                | 2.630                 | 1.3362                   | 5.1376                    |
| 2.00                             | 1.875           | 1.075                | 3.705                 | 2.1000                   | 7.2376                    |
| 2.25                             | 2.125           | 1.366                | 5.071                 | 2.6684                   | 9.9060                    |
| 2.50                             | 2.375           | 0.969                | 6.040                 | 1.8929                   | 11.7989                   |
| 2.75                             | 2.625           | 0.561                | 6.601                 | 1.0959                   | 12.8948                   |
| 3.00                             | 2.875           | 0.808                | 7.409                 | 1.5784                   | 14.4732                   |
| 3.25                             | 3.125           | 1.957                | 9.366                 | 3.8229                   | 18.2962                   |
| 3.50                             | 3.375           | 5.888                | 15.254                | 11.5020                  | 29.7982                   |
| 3.75                             | 3.625           | 10.031               | 25.285                | 19.5952                  | 49.3934                   |
| 4.00                             | 3.875           | 9.606                | 34.891                | 18.7650                  | 68.1585                   |
| 8.00                             | 6.000           | 9.100                | 43.991                | 17.7766                  | 85.9350                   |
| PAN                              |                 | 7.200                | 51.191                | 14.0650                  | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 10.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES |              |                  |                               |                  |                  |
|-----------------|--------------|------------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 10.00 Phi | Pan at 10.50 Phi              | Pan at 11.00 Phi | Pan at 12.00 Phi |
| Mean:           | 3.794        | 4.667            | 4.737                         | 4.807            | 4.948            |
| Std Dev:        | 1.422        | 2.546            | 2.685                         | 2.838            | 3.153            |
| Rel Dis:        | 0.375        | 0.546            | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | -0.308       | 0.963            | CALCULATED USING              |                  |                  |
| Kurtosis:       | 4.321        | 3.387            | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | -8.085       | 4.627            | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 37.738       | 14.615           | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | -122.192     | 19.773           | = std dev/mean                |                  |                  |
| 8th MM:         | 481.648      | 66.475           | MM = moment measure           |                  |                  |
| Median:         | 3.543        | 3.633            |                               |                  |                  |



S1A2GS13A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

## ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.75            | -1.875          | 0.018                | 0.018                 | 0.0379                   | 0.0379                    |
| -1.50            | -1.625          | 0.030                | 0.048                 | 0.0632                   | 0.1011                    |
| -1.25            | -1.375          | 0.049                | 0.097                 | 0.1032                   | 0.2043                    |
| -1.00            | -1.125          | 0.005                | 0.102                 | 0.0105                   | 0.2148                    |
| -0.75            | -0.875          | 0.010                | 0.112                 | 0.0211                   | 0.2359                    |
| -0.50            | -0.625          | 0.042                | 0.154                 | 0.0885                   | 0.3244                    |
| -0.25            | -0.375          | 0.031                | 0.185                 | 0.0653                   | 0.3897                    |
| 0.00             | -0.125          | 0.023                | 0.208                 | 0.0484                   | 0.4381                    |
| 0.25             | 0.125           | 0.039                | 0.247                 | 0.0821                   | 0.5203                    |
| 0.50             | 0.375           | 0.036                | 0.283                 | 0.0758                   | 0.5961                    |
| 0.75             | 0.625           | 0.042                | 0.325                 | 0.0885                   | 0.6846                    |
| 1.00             | 0.875           | 0.063                | 0.388                 | 0.1327                   | 0.8173                    |
| 1.25             | 1.125           | 0.095                | 0.483                 | 0.2001                   | 1.0174                    |
| 1.50             | 1.375           | 0.100                | 0.583                 | 0.2106                   | 1.2280                    |
| 1.75             | 1.625           | 0.191                | 0.774                 | 0.4023                   | 1.6303                    |
| 2.00             | 1.875           | 0.217                | 0.991                 | 0.4571                   | 2.0874                    |
| 2.25             | 2.125           | 0.240                | 1.231                 | 0.5055                   | 2.5929                    |
| 2.50             | 2.375           | 0.316                | 1.547                 | 0.6656                   | 3.2585                    |
| 2.75             | 2.625           | 0.460                | 2.007                 | 0.9689                   | 4.2274                    |
| 3.00             | 2.875           | 1.170                | 3.177                 | 2.4644                   | 6.6918                    |
| 3.25             | 3.125           | 2.870                | 6.047                 | 6.0452                   | 12.7370                   |
| 3.50             | 3.375           | 7.270                | 13.317                | 15.3130                  | 28.0500                   |
| 3.75             | 3.625           | 9.454                | 22.771                | 19.9132                  | 47.9632                   |
| 4.00             | 3.875           | 7.455                | 30.226                | 15.7027                  | 63.6659                   |
| 8.00             | 6.000           | 7.200                | 37.426                | 15.1656                  | 78.8314                   |
| PAN              |                 | 10.050               | 47.476                | 21.1686                  | 100.0000                  |

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## MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 10.00 Phi | Pan at 10.50 Phi              | Pan at 11.00 Phi | Pan at 12.00 Phi |
|---------------|--------------|------------------|-------------------------------|------------------|------------------|
| Mean:         | 3.916        | 5.204            | 5.310                         | 5.415            | 5.627            |
| Std Dev:      | 1.171        | 2.718            | 2.893                         | 3.086            | 3.476            |
| Rel Dis:      | 0.299        | 0.522            | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 0.294        | 0.915            | CALCULATED USING              |                  |                  |
| Kurtosis:     | 4.631        | 2.425            | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | -6.568       | 3.197            | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 47.835       | 7.495            | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | -167.317     | 9.502            | = std dev/mean                |                  |                  |
| 8th MM:       | 806.819      | 24.914           | MM = moment measure           |                  |                  |
| Median:       | 3.518        | 3.657            |                               |                  |                  |

S1A2GS14A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

## ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.243                | 0.243                 | 0.4603                   | 0.4603                    |
| -1.75            | -1.875          | 0.038                | 0.281                 | 0.0720                   | 0.5323                    |
| -1.50            | -1.625          | 0.161                | 0.442                 | 0.3050                   | 0.8372                    |
| -1.25            | -1.375          | 0.059                | 0.501                 | 0.1118                   | 0.9490                    |
| -1.00            | -1.125          | 0.091                | 0.592                 | 0.1724                   | 1.1214                    |
| -0.75            | -0.875          | 0.090                | 0.682                 | 0.1705                   | 1.2919                    |
| -0.50            | -0.625          | 0.147                | 0.829                 | 0.2785                   | 1.5703                    |
| -0.25            | -0.375          | 0.140                | 0.969                 | 0.2652                   | 1.8355                    |
| 0.00             | -0.125          | 0.097                | 1.066                 | 0.1837                   | 2.0192                    |
| 0.25             | 0.125           | 0.096                | 1.162                 | 0.1818                   | 2.2011                    |
| 0.50             | 0.375           | 0.089                | 1.251                 | 0.1686                   | 2.3697                    |
| 0.75             | 0.625           | 0.090                | 1.341                 | 0.1705                   | 2.5402                    |
| 1.00             | 0.875           | 0.145                | 1.486                 | 0.2747                   | 2.8148                    |
| 1.25             | 1.125           | 0.274                | 1.760                 | 0.5190                   | 3.3338                    |
| 1.50             | 1.375           | 0.290                | 2.050                 | 0.5493                   | 3.8832                    |
| 1.75             | 1.625           | 0.583                | 2.633                 | 1.1043                   | 4.9875                    |
| 2.00             | 1.875           | 0.657                | 3.290                 | 1.2445                   | 6.2320                    |
| 2.25             | 2.125           | 0.744                | 4.034                 | 1.4093                   | 7.6413                    |
| 2.50             | 2.375           | 0.856                | 4.890                 | 1.6215                   | 9.2628                    |
| 2.75             | 2.625           | 1.073                | 5.963                 | 2.0325                   | 11.2953                   |
| 3.00             | 2.875           | 2.311                | 8.274                 | 4.3776                   | 15.6728                   |
| 3.25             | 3.125           | 4.427                | 12.701                | 8.3857                   | 24.0586                   |
| 3.50             | 3.375           | 8.284                | 20.985                | 15.6918                  | 39.7503                   |
| 3.75             | 3.625           | 9.734                | 30.719                | 18.4384                  | 58.1887                   |
| 4.00             | 3.875           | 8.123                | 38.842                | 15.3868                  | 73.5755                   |
| 8.00             | 6.000           | 7.000                | 45.842                | 13.2596                  | 86.8351                   |
| PAN              |                 | 6.950                | 52.792                | 13.1649                  | 100.0000                  |

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 Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 10.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

## MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 10.00 Phi | Pan at 10.50 Phi              | Pan at 11.00 Phi | Pan at 12.00 Phi |
|---------------|--------------|------------------|-------------------------------|------------------|------------------|
| Mean:         | 3.610        | 4.451            | 4.517                         | 4.583            | 4.714            |
| Std Dev:      | 1.367        | 2.525            | 2.662                         | 2.812            | 3.120            |
| Rel Dis:      | 0.379        | 0.567            | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -0.560       | 1.061            | CALCULATED USING              |                  |                  |
| Kurtosis:     | 6.045        | 3.861            | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | -13.836      | 5.390            | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 65.660       | 18.511           | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | -226.655     | 25.276           | = std dev/mean                |                  |                  |
| 8th MM:       | 927.570      | 92.051           | MM = moment measure           |                  |                  |
| Median:       | 3.425        | 3.514            |                               |                  |                  |

S1A2GS13A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

## ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.75            | -1.875          | 0.018                | 0.018                 | 0.0379                   | 0.0379                    |
| -1.50            | -1.625          | 0.030                | 0.048                 | 0.0632                   | 0.1011                    |
| -1.25            | -1.375          | 0.049                | 0.097                 | 0.1032                   | 0.2043                    |
| -1.00            | -1.125          | 0.005                | 0.102                 | 0.0105                   | 0.2148                    |
| -0.75            | -0.875          | 0.010                | 0.112                 | 0.0211                   | 0.2359                    |
| -0.50            | -0.625          | 0.042                | 0.154                 | 0.0885                   | 0.3244                    |
| -0.25            | -0.375          | 0.031                | 0.185                 | 0.0653                   | 0.3897                    |
| 0.00             | -0.125          | 0.023                | 0.208                 | 0.0484                   | 0.4381                    |
| 0.25             | 0.125           | 0.039                | 0.247                 | 0.0821                   | 0.5203                    |
| 0.50             | 0.375           | 0.036                | 0.283                 | 0.0758                   | 0.5961                    |
| 0.75             | 0.625           | 0.042                | 0.325                 | 0.0885                   | 0.6846                    |
| 1.00             | 0.875           | 0.063                | 0.388                 | 0.1327                   | 0.8173                    |
| 1.25             | 1.125           | 0.095                | 0.483                 | 0.2001                   | 1.0174                    |
| 1.50             | 1.375           | 0.100                | 0.583                 | 0.2106                   | 1.2280                    |
| 1.75             | 1.625           | 0.191                | 0.774                 | 0.4023                   | 1.6303                    |
| 2.00             | 1.875           | 0.217                | 0.991                 | 0.4571                   | 2.0874                    |
| 2.25             | 2.125           | 0.240                | 1.231                 | 0.5055                   | 2.5929                    |
| 2.50             | 2.375           | 0.316                | 1.547                 | 0.6656                   | 3.2585                    |
| 2.75             | 2.625           | 0.460                | 2.007                 | 0.9689                   | 4.2274                    |
| 3.00             | 2.875           | 1.170                | 3.177                 | 2.4644                   | 6.6918                    |
| 3.25             | 3.125           | 2.870                | 6.047                 | 6.0452                   | 12.7370                   |
| 3.50             | 3.375           | 7.270                | 13.317                | 15.3130                  | 28.0500                   |
| 3.75             | 3.625           | 9.454                | 22.771                | 19.9132                  | 47.9632                   |
| 4.00             | 3.875           | 7.455                | 30.226                | 15.7027                  | 63.6659                   |
| 8.00             | 6.000           | 7.200                | 37.426                | 15.1656                  | 78.8314                   |
| PAN              |                 | 10.050               | 47.476                | 21.1686                  | 100.0000                  |

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 Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 10.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

## MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 10.00 Phi | Pan at 10.50 Phi              | Pan at 11.00 Phi | Pan at 12.00 Phi |
|---------------|--------------|------------------|-------------------------------|------------------|------------------|
| Mean:         | 3.916        | 5.204            | 5.310                         | 5.415            | 5.627            |
| Std Dev:      | 1.171        | 2.718            | 2.893                         | 3.086            | 3.476            |
| Rel Dis:      | 0.299        | 0.522            | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 0.294        | 0.915            | CALCULATED USING              |                  |                  |
| Kurtosis:     | 4.631        | 2.425            | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | -6.568       | 3.197            | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 47.835       | 7.495            | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | -167.317     | 9.502            | = std dev/mean                |                  |                  |
| 8th MM:       | 806.819      | 24.914           | MM = moment measure           |                  |                  |
| Median:       | 3.518        | 3.657            |                               |                  |                  |

S1A2GS14A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

## ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.243                | 0.243                 | 0.4603                   | 0.4603                    |
| -1.75            | -1.875          | 0.038                | 0.281                 | 0.0720                   | 0.5323                    |
| -1.50            | -1.625          | 0.161                | 0.442                 | 0.3050                   | 0.8372                    |
| -1.25            | -1.375          | 0.059                | 0.501                 | 0.1118                   | 0.9490                    |
| -1.00            | -1.125          | 0.091                | 0.592                 | 0.1724                   | 1.1214                    |
| -0.75            | -0.875          | 0.090                | 0.682                 | 0.1705                   | 1.2919                    |
| -0.50            | -0.625          | 0.147                | 0.829                 | 0.2785                   | 1.5703                    |
| -0.25            | -0.375          | 0.140                | 0.969                 | 0.2652                   | 1.8355                    |
| 0.00             | -0.125          | 0.097                | 1.066                 | 0.1837                   | 2.0192                    |
| 0.25             | 0.125           | 0.096                | 1.162                 | 0.1818                   | 2.2011                    |
| 0.50             | 0.375           | 0.089                | 1.251                 | 0.1686                   | 2.3697                    |
| 0.75             | 0.625           | 0.090                | 1.341                 | 0.1705                   | 2.5402                    |
| 1.00             | 0.875           | 0.145                | 1.486                 | 0.2747                   | 2.8148                    |
| 1.25             | 1.125           | 0.274                | 1.760                 | 0.5190                   | 3.3338                    |
| 1.50             | 1.375           | 0.290                | 2.050                 | 0.5493                   | 3.8832                    |
| 1.75             | 1.625           | 0.583                | 2.633                 | 1.1043                   | 4.9875                    |
| 2.00             | 1.875           | 0.657                | 3.290                 | 1.2445                   | 6.2320                    |
| 2.25             | 2.125           | 0.744                | 4.034                 | 1.4093                   | 7.6413                    |
| 2.50             | 2.375           | 0.856                | 4.890                 | 1.6215                   | 9.2628                    |
| 2.75             | 2.625           | 1.073                | 5.963                 | 2.0325                   | 11.2953                   |
| 3.00             | 2.875           | 2.311                | 8.274                 | 4.3776                   | 15.6728                   |
| 3.25             | 3.125           | 4.427                | 12.701                | 8.3857                   | 24.0586                   |
| 3.50             | 3.375           | 8.284                | 20.985                | 15.6918                  | 39.7503                   |
| 3.75             | 3.625           | 9.734                | 30.719                | 18.4384                  | 58.1887                   |
| 4.00             | 3.875           | 8.123                | 38.842                | 15.3868                  | 73.5755                   |
| 8.00             | 6.000           | 7.000                | 45.842                | 13.2596                  | 86.8351                   |
| PAN              |                 | 6.950                | 52.792                | 13.1649                  | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
 Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 10.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

## MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 10.00 Phi | Pan at 10.50 Phi              | Pan at 11.00 Phi | Pan at 12.00 Phi |
|---------------|--------------|------------------|-------------------------------|------------------|------------------|
| Mean:         | 3.610        | 4.451            | 4.517                         | 4.583            | 4.714            |
| Std Dev:      | 1.367        | 2.525            | 2.662                         | 2.812            | 3.120            |
| Rel Dis:      | 0.379        | 0.567            | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -0.560       | 1.061            | CALCULATED USING              |                  |                  |
| Kurtosis:     | 6.045        | 3.861            | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | -13.836      | 5.390            | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 65.660       | 18.511           | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | -226.655     | 25.276           | = std dev/mean                |                  |                  |
| 8th MM:       | 927.570      | 92.051           | MM = moment measure           |                  |                  |
| Median:       | 3.425        | 3.514            |                               |                  |                  |



| S1A2GS15A                        |                 | ENTIRE SAMPLE ANALYSIS |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|-----------------|------------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                 |                        |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g)   | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 0.159                  | 0.159                 | 0.2760                   | 0.2760                    |
| -1.75                            | -1.875          | 0.022                  | 0.181                 | 0.0382                   | 0.3142                    |
| -1.50                            | -1.625          | 0.036                  | 0.217                 | 0.0625                   | 0.3767                    |
| -1.25                            | -1.375          | 0.031                  | 0.248                 | 0.0538                   | 0.4305                    |
| -1.00                            | -1.125          | 0.085                  | 0.333                 | 0.1476                   | 0.5781                    |
| -0.75                            | -0.875          | 0.101                  | 0.434                 | 0.1753                   | 0.7534                    |
| -0.50                            | -0.625          | 0.175                  | 0.609                 | 0.3038                   | 1.0572                    |
| -0.25                            | -0.375          | 0.094                  | 0.703                 | 0.1632                   | 1.2204                    |
| 0.00                             | -0.125          | 0.082                  | 0.785                 | 0.1424                   | 1.3628                    |
| 0.25                             | 0.125           | 0.069                  | 0.854                 | 0.1198                   | 1.4826                    |
| 0.50                             | 0.375           | 0.061                  | 0.915                 | 0.1059                   | 1.5885                    |
| 0.75                             | 0.625           | 0.075                  | 0.990                 | 0.1302                   | 1.7187                    |
| 1.00                             | 0.875           | 0.158                  | 1.148                 | 0.2743                   | 1.9930                    |
| 1.25                             | 1.125           | 0.315                  | 1.463                 | 0.5468                   | 2.5398                    |
| 1.50                             | 1.375           | 0.461                  | 1.924                 | 0.8003                   | 3.3401                    |
| 1.75                             | 1.625           | 1.203                  | 3.127                 | 2.0884                   | 5.4285                    |
| 2.00                             | 1.875           | 1.207                  | 4.334                 | 2.0954                   | 7.5239                    |
| 2.25                             | 2.125           | 1.041                  | 5.375                 | 1.8072                   | 9.3311                    |
| 2.50                             | 2.375           | 0.985                  | 6.360                 | 1.7100                   | 11.0411                   |
| 2.75                             | 2.625           | 1.427                  | 7.787                 | 2.4773                   | 13.5184                   |
| 3.00                             | 2.875           | 2.986                  | 10.773                | 5.1838                   | 18.7022                   |
| 3.25                             | 3.125           | 4.457                  | 15.230                | 7.7374                   | 26.4396                   |
| 3.50                             | 3.375           | 7.205                  | 22.435                | 12.5080                  | 38.9476                   |
| 3.75                             | 3.625           | 10.643                 | 33.078                | 18.4765                  | 57.4241                   |
| 4.00                             | 3.875           | 11.625                 | 44.703                | 20.1812                  | 77.6053                   |
| 8.00                             | 6.000           | 6.700                  | 51.403                | 11.6313                  | 89.2367                   |
| PAN                              |                 | 6.200                  | 57.603                | 10.7633                  | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
 Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 10.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES |              |                  |                               |                  |                  |
|-----------------|--------------|------------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 10.00 Phi | Pan at 10.50 Phi              | Pan at 11.00 Phi | Pan at 12.00 Phi |
| Mean:           | 3.571        | 4.263            | 4.317                         | 4.371            | 4.478            |
| Std Dev:        | 1.264        | 2.337            | 2.464                         | 2.601            | 2.882            |
| Rel Dis:        | 0.354        | 0.548            | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | -0.270       | 1.327            | CALCULATED USING              |                  |                  |
| Kurtosis:       | 5.637        | 4.594            | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | -10.253      | 8.596            | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 59.616       | 26.646           | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | -199.660     | 52.432           | = std dev/mean                |                  |                  |
| 8th MM:         | 900.282      | 159.982          | MM = moment measure           |                  |                  |
| Median:         | 3.452        | 3.525            |                               |                  |                  |

| S1A2GS1A                         |                 | ENTIRE SAMPLE ANALYSIS |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|-----------------|------------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                 |                        |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g)   | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 0.000                  | 0.000                 | 0.0000                   | 0.0000                    |
| -1.75                            | -1.875          | 0.000                  | 0.000                 | 0.0000                   | 0.0000                    |
| -1.50                            | -1.625          | 0.000                  | 0.000                 | 0.0000                   | 0.0000                    |
| -1.25                            | -1.375          | 0.018                  | 0.018                 | 0.0261                   | 0.0261                    |
| -1.00                            | -1.125          | 0.013                  | 0.031                 | 0.0189                   | 0.0450                    |
| -0.75                            | -0.875          | 0.000                  | 0.031                 | 0.0000                   | 0.0450                    |
| -0.50                            | -0.625          | 0.022                  | 0.053                 | 0.0320                   | 0.0770                    |
| -0.25                            | -0.375          | 0.041                  | 0.094                 | 0.0595                   | 0.1365                    |
| 0.00                             | -0.125          | 0.033                  | 0.127                 | 0.0479                   | 0.1845                    |
| 0.25                             | 0.125           | 0.058                  | 0.185                 | 0.0842                   | 0.2687                    |
| 0.50                             | 0.375           | 0.172                  | 0.357                 | 0.2498                   | 0.5185                    |
| 0.75                             | 0.625           | 0.452                  | 0.809                 | 0.6565                   | 1.1750                    |
| 1.00                             | 0.875           | 1.376                  | 2.185                 | 1.9985                   | 3.1735                    |
| 1.25                             | 1.125           | 4.197                  | 6.382                 | 6.0957                   | 9.2692                    |
| 1.50                             | 1.375           | 5.455                  | 11.837                | 7.9228                   | 17.1919                   |
| 1.75                             | 1.625           | 11.668                 | 23.505                | 16.9465                  | 34.1384                   |
| 2.00                             | 1.875           | 13.009                 | 36.514                | 18.8941                  | 53.0326                   |
| 2.25                             | 2.125           | 12.034                 | 48.548                | 17.4781                  | 70.5107                   |
| 2.50                             | 2.375           | 5.915                  | 54.463                | 8.5909                   | 79.1016                   |
| 2.75                             | 2.625           | 1.699                  | 56.162                | 2.4676                   | 81.5692                   |
| 3.00                             | 2.875           | 1.273                  | 57.435                | 1.8489                   | 83.4181                   |
| 3.25                             | 3.125           | 2.022                  | 59.457                | 2.9367                   | 86.3548                   |
| 3.50                             | 3.375           | 3.052                  | 62.509                | 4.4327                   | 90.7875                   |
| 3.75                             | 3.625           | 2.532                  | 65.041                | 3.6775                   | 94.4649                   |
| 4.00                             | 3.875           | 1.311                  | 66.352                | 1.9041                   | 96.3690                   |
| 8.00                             | 6.000           | 0.900                  | 67.252                | 1.3072                   | 97.6762                   |
| PAN                              |                 | 1.600                  | 68.852                | 2.3238                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
 Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES |              |                 |                               |                  |                  |
|-----------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:           | 2.098        | 2.258           | 2.270                         | 2.281            | 2.305            |
| Std Dev:        | 0.845        | 1.340           | 1.397                         | 1.458            | 1.585            |
| Rel Dis:        | 0.403        | 0.593           | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | 1.604        | 3.256           | CALCULATED USING              |                  |                  |
| Kurtosis:       | 7.908        | 16.187          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | 29.124       | 78.235          | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 138.845      | 389.564         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | 601.677      | 1943.244        | = std dev/mean                |                  |                  |
| 8th MM:         | 2855.519     | 9743.549        | MM = moment measure           |                  |                  |
| Median:         | 1.819        | 1.835           |                               |                  |                  |

| S1A2GS2A                         |                 | ENTIRE SAMPLE ANALYSIS |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|-----------------|------------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                 |                        |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g)   | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 0.000                  | 0.000                 | 0.0000                   | 0.0000                    |
| -1.75                            | -1.875          | 0.000                  | 0.000                 | 0.0000                   | 0.0000                    |
| -1.50                            | -1.625          | 0.019                  | 0.019                 | 0.0286                   | 0.0286                    |
| -1.25                            | -1.375          | 0.041                  | 0.060                 | 0.0618                   | 0.0904                    |
| -1.00                            | -1.125          | 0.021                  | 0.081                 | 0.0316                   | 0.1221                    |
| -0.75                            | -0.875          | 0.021                  | 0.102                 | 0.0316                   | 0.1537                    |
| -0.50                            | -0.625          | 0.030                  | 0.132                 | 0.0452                   | 0.1989                    |
| -0.25                            | -0.375          | 0.024                  | 0.156                 | 0.0362                   | 0.2351                    |
| 0.00                             | -0.125          | 0.035                  | 0.191                 | 0.0527                   | 0.2878                    |
| 0.25                             | 0.125           | 0.096                  | 0.287                 | 0.1447                   | 0.4325                    |
| 0.50                             | 0.375           | 0.220                  | 0.507                 | 0.3315                   | 0.7640                    |
| 0.75                             | 0.625           | 0.619                  | 1.126                 | 0.9327                   | 1.6967                    |
| 1.00                             | 0.875           | 1.949                  | 3.075                 | 2.9368                   | 4.6335                    |
| 1.25                             | 1.125           | 5.517                  | 8.592                 | 8.3132                   | 12.9468                   |
| 1.50                             | 1.375           | 6.136                  | 14.728                | 9.2460                   | 22.1928                   |
| 1.75                             | 1.625           | 11.685                 | 26.413                | 17.6074                  | 39.8002                   |
| 2.00                             | 1.875           | 11.793                 | 38.206                | 17.7702                  | 57.5704                   |
| 2.25                             | 2.125           | 11.847                 | 50.053                | 17.8515                  | 75.4219                   |
| 2.50                             | 2.375           | 8.825                  | 58.878                | 13.2979                  | 88.7198                   |
| 2.75                             | 2.625           | 3.531                  | 62.409                | 5.3207                   | 94.0404                   |
| 3.00                             | 2.875           | 1.000                  | 63.409                | 1.5068                   | 95.5473                   |
| 3.25                             | 3.125           | 0.388                  | 63.797                | 0.5847                   | 96.1319                   |
| 3.50                             | 3.375           | 0.361                  | 64.158                | 0.5440                   | 96.6759                   |
| 3.75                             | 3.625           | 0.270                  | 64.428                | 0.4068                   | 97.0828                   |
| 4.00                             | 3.875           | 0.186                  | 64.614                | 0.2803                   | 97.3630                   |
| 8.00                             | 6.000           | 0.350                  | 64.964                | 0.5274                   | 97.8904                   |
| PAN                              |                 | 1.400                  | 66.364                | 2.1096                   | 100.0000                  |

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| MOMENT MEASURES |              |                 |                               |                  |                  |
|-----------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:           | 1.882        | 2.032           | 2.043                         | 2.053            | 2.075            |
| Std Dev:        | 0.630        | 1.205           | 1.264                         | 1.327            | 1.456            |
| Rel Dis:        | 0.335        | 0.593           | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | 1.297        | 4.225           | CALCULATED USING              |                  |                  |
| Kurtosis:       | 13.082       | 24.872          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | 60.103       | 140.428         | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 465.247      | 810.102         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | 2639.349     | 4660.865        | = std dev/mean                |                  |                  |
| 8th MM:         | 19003.366    | 26923.501       | MM = moment measure           |                  |                  |
| Median:         | 1.754        | 1.768           |                               |                  |                  |

| S1A2GS3A                         |                 | ENTIRE SAMPLE ANALYSIS |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|-----------------|------------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                 |                        |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g)   | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 0.000                  | 0.000                 | 0.0000                   | 0.0000                    |
| -1.75                            | -1.875          | 0.026                  | 0.026                 | 0.0374                   | 0.0374                    |
| -1.50                            | -1.625          | 0.017                  | 0.043                 | 0.0244                   | 0.0618                    |
| -1.25                            | -1.375          | 0.000                  | 0.043                 | 0.0000                   | 0.0618                    |
| -1.00                            | -1.125          | 0.042                  | 0.085                 | 0.0603                   | 0.1221                    |
| -0.75                            | -0.875          | 0.034                  | 0.119                 | 0.0489                   | 0.1710                    |
| -0.50                            | -0.625          | 0.034                  | 0.153                 | 0.0489                   | 0.2198                    |
| -0.25                            | -0.375          | 0.044                  | 0.197                 | 0.0632                   | 0.2831                    |
| 0.00                             | -0.125          | 0.054                  | 0.251                 | 0.0776                   | 0.3606                    |
| 0.25                             | 0.125           | 0.125                  | 0.376                 | 0.1796                   | 0.5403                    |
| 0.50                             | 0.375           | 0.225                  | 0.601                 | 0.3233                   | 0.8635                    |
| 0.75                             | 0.625           | 0.430                  | 1.031                 | 0.6178                   | 1.4814                    |
| 1.00                             | 0.875           | 1.029                  | 2.060                 | 1.4785                   | 2.9599                    |
| 1.25                             | 1.125           | 2.315                  | 4.375                 | 3.3263                   | 6.2862                    |
| 1.50                             | 1.375           | 2.616                  | 6.991                 | 3.7588                   | 10.0450                   |
| 1.75                             | 1.625           | 7.081                  | 14.072                | 10.1743                  | 20.2193                   |
| 2.00                             | 1.875           | 11.261                 | 25.333                | 16.1803                  | 36.3996                   |
| 2.25                             | 2.125           | 17.399                 | 42.732                | 24.9996                  | 61.3992                   |
| 2.50                             | 2.375           | 13.224                 | 55.956                | 19.0008                  | 80.4000                   |
| 2.75                             | 2.625           | 3.641                  | 59.597                | 5.2315                   | 85.6316                   |
| 3.00                             | 2.875           | 1.139                  | 60.736                | 1.6366                   | 87.2681                   |
| 3.25                             | 3.125           | 1.224                  | 61.960                | 1.7587                   | 89.0268                   |
| 3.50                             | 3.375           | 2.044                  | 64.004                | 2.9369                   | 91.9637                   |
| 3.75                             | 3.625           | 1.869                  | 65.873                | 2.6855                   | 94.6492                   |
| 4.00                             | 3.875           | 1.074                  | 66.947                | 1.5432                   | 96.1924                   |
| 8.00                             | 6.000           | 0.850                  | 67.797                | 1.2213                   | 97.4137                   |
| PAN                              |                 | 1.800                  | 69.597                | 2.5863                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
 Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES |              |                 |                               |                  |                  |
|-----------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:           | 2.181        | 2.357           | 2.370                         | 2.383            | 2.409            |
| Std Dev:        | 0.765        | 1.326           | 1.389                         | 1.457            | 1.596            |
| Rel Dis:        | 0.351        | 0.562           | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | 1.480        | 3.444           | CALCULATED USING              |                  |                  |
| Kurtosis:       | 10.601       | 17.557          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | 35.477       | 84.279          | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 224.787      | 421.350         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | 886.201      | 2089.325        | = std dev/mean                |                  |                  |
| 8th MM:         | 5424.847     | 10457.776       | MM = moment measure           |                  |                  |
| Median:         | 1.998        | 2.011           |                               |                  |                  |

S1A2GS4A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

## ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mld-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 1.789                | 1.789                 | 3.8967                   | 3.8967                    |
| -1.75            | -1.875          | 0.000                | 1.789                 | 0.0000                   | 3.8967                    |
| -1.50            | -1.625          | 0.033                | 1.822                 | 0.0719                   | 3.9685                    |
| -1.25            | -1.375          | 0.086                | 1.908                 | 0.1873                   | 4.1559                    |
| -1.00            | -1.125          | 0.040                | 1.948                 | 0.0871                   | 4.2430                    |
| -0.75            | -0.875          | 0.106                | 2.054                 | 0.2309                   | 4.4739                    |
| -0.50            | -0.625          | 0.106                | 2.160                 | 0.2309                   | 4.7048                    |
| -0.25            | -0.375          | 0.103                | 2.263                 | 0.2243                   | 4.9291                    |
| 0.00             | -0.125          | 0.067                | 2.330                 | 0.1459                   | 5.0750                    |
| 0.25             | 0.125           | 0.095                | 2.425                 | 0.2069                   | 5.2820                    |
| 0.50             | 0.375           | 0.083                | 2.508                 | 0.1808                   | 5.4627                    |
| 0.75             | 0.625           | 0.129                | 2.637                 | 0.2810                   | 5.7437                    |
| 1.00             | 0.875           | 0.268                | 2.905                 | 0.5837                   | 6.3275                    |
| 1.25             | 1.125           | 0.419                | 3.324                 | 0.9126                   | 7.2401                    |
| 1.50             | 1.375           | 0.419                | 3.743                 | 0.9126                   | 8.1527                    |
| 1.75             | 1.625           | 0.703                | 4.446                 | 1.5312                   | 9.6840                    |
| 2.00             | 1.875           | 0.733                | 5.179                 | 1.5966                   | 11.2805                   |
| 2.25             | 2.125           | 0.810                | 5.989                 | 1.7643                   | 13.0448                   |
| 2.50             | 2.375           | 0.729                | 6.718                 | 1.5879                   | 14.6327                   |
| 2.75             | 2.625           | 0.437                | 7.155                 | 0.9518                   | 15.5845                   |
| 3.00             | 2.875           | 0.543                | 7.698                 | 1.1827                   | 16.7672                   |
| 3.25             | 3.125           | 1.178                | 8.876                 | 2.5658                   | 19.3331                   |
| 3.50             | 3.375           | 3.650                | 12.526                | 7.9502                   | 27.2832                   |
| 3.75             | 3.625           | 6.215                | 18.741                | 13.5371                  | 40.8203                   |
| 4.00             | 3.875           | 5.670                | 24.411                | 12.3500                  | 53.1703                   |
| 8.00             | 6.000           | 8.050                | 32.461                | 17.5339                  | 70.7042                   |
| PAN              |                 | 13.450               | 45.911                | 29.2958                  | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 10.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

## MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 10.00 Phi | Pan at 10.50 Phi              | Pan at 11.00 Phi | Pan at 12.00 Phi |
|---------------|--------------|------------------|-------------------------------|------------------|------------------|
| Mean:         | 3.532        | 5.427            | 5.573                         | 5.720            | 6.013            |
| Std Dev:      | 2.068        | 3.443            | 3.622                         | 3.825            | 4.238            |
| Rel Dis:      | 0.585        | 0.634            | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -1.022       | 0.009            | CALCULATED USING              |                  |                  |
| Kurtosis:     | 4.204        | 2.183            | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | -9.040       | -1.238           | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 26.496       | 6.776            | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | -68.401      | -8.681           | = std dev/mean                |                  |                  |
| 8th MM:       | 188.356      | 26.188           | MM = moment measure           |                  |                  |
| Median:       | 3.524        | 3.811            |                               |                  |                  |

S1A2GS5A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

## ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mld-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.75            | -1.875          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.50            | -1.625          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.25            | -1.375          | 0.010                | 0.010                 | 0.0183                   | 0.0183                    |
| -1.00            | -1.125          | 0.021                | 0.031                 | 0.0384                   | 0.0566                    |
| -0.75            | -0.875          | 0.022                | 0.053                 | 0.0402                   | 0.0968                    |
| -0.50            | -0.625          | 0.014                | 0.067                 | 0.0256                   | 0.1224                    |
| -0.25            | -0.375          | 0.028                | 0.095                 | 0.0512                   | 0.1736                    |
| 0.00             | -0.125          | 0.019                | 0.114                 | 0.0347                   | 0.2083                    |
| 0.25             | 0.125           | 0.050                | 0.164                 | 0.0914                   | 0.2997                    |
| 0.50             | 0.375           | 0.082                | 0.246                 | 0.1498                   | 0.4495                    |
| 0.75             | 0.625           | 0.140                | 0.386                 | 0.2558                   | 0.7053                    |
| 1.00             | 0.875           | 0.330                | 0.716                 | 0.6030                   | 1.3083                    |
| 1.25             | 1.125           | 0.845                | 1.561                 | 1.5441                   | 2.8524                    |
| 1.50             | 1.375           | 1.119                | 2.680                 | 2.0447                   | 4.8971                    |
| 1.75             | 1.625           | 2.947                | 5.627                 | 5.3850                   | 10.2821                   |
| 2.00             | 1.875           | 4.126                | 9.753                 | 7.5394                   | 17.8215                   |
| 2.25             | 2.125           | 4.694                | 14.447                | 8.5773                   | 26.3988                   |
| 2.50             | 2.375           | 2.801                | 17.248                | 5.1182                   | 31.5170                   |
| 2.75             | 2.625           | 0.746                | 17.994                | 1.3632                   | 32.8802                   |
| 3.00             | 2.875           | 0.469                | 18.463                | 0.8570                   | 33.7372                   |
| 3.25             | 3.125           | 0.953                | 19.416                | 1.7414                   | 35.4786                   |
| 3.50             | 3.375           | 2.839                | 22.255                | 5.1877                   | 40.6662                   |
| 3.75             | 3.625           | 5.353                | 27.608                | 9.7815                   | 50.4477                   |
| 4.00             | 3.875           | 5.768                | 33.376                | 10.5398                  | 60.9875                   |
| 8.00             | 6.000           | 9.400                | 42.776                | 17.1765                  | 78.1639                   |
| PAN              |                 | 11.950               | 54.726                | 21.8361                  | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 10.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

## MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 10.00 Phi | Pan at 10.50 Phi              | Pan at 11.00 Phi | Pan at 12.00 Phi |
|---------------|--------------|------------------|-------------------------------|------------------|------------------|
| Mean:         | 3.413        | 4.851            | 4.961                         | 5.070            | 5.288            |
| Std Dev:      | 1.627        | 3.099            | 3.271                         | 3.459            | 3.841            |
| Rel Dis:      | 0.477        | 0.639            | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 0.432        | 0.691            | CALCULATED USING              |                  |                  |
| Kurtosis:     | 2.059        | 2.041            | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 1.352        | 2.450            | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 5.291        | 5.104            | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 2.430        | 7.261            | = std dev/mean                |                  |                  |
| 8th MM:       | 16.759       | 13.606           | MM = moment measure           |                  |                  |
| Median:       | 3.299        | 3.614            |                               |                  |                  |

| S1A2GS6A                         |                 | ENTIRE SAMPLE ANALYSIS |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|-----------------|------------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                 |                        |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g)   | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 0.000                  | 0.000                 | 0.0000                   | 0.0000                    |
| -1.75                            | -1.875          | 0.000                  | 0.000                 | 0.0000                   | 0.0000                    |
| -1.50                            | -1.625          | 0.009                  | 0.009                 | 0.0152                   | 0.0152                    |
| -1.25                            | -1.375          | 0.016                  | 0.025                 | 0.0270                   | 0.0422                    |
| -1.00                            | -1.125          | 0.021                  | 0.046                 | 0.0354                   | 0.0776                    |
| -0.75                            | -0.875          | 0.055                  | 0.101                 | 0.0928                   | 0.1704                    |
| -0.50                            | -0.625          | 0.040                  | 0.141                 | 0.0675                   | 0.2379                    |
| -0.25                            | -0.375          | 0.019                  | 0.160                 | 0.0321                   | 0.2700                    |
| 0.00                             | -0.125          | 0.020                  | 0.180                 | 0.0337                   | 0.3037                    |
| 0.25                             | 0.125           | 0.023                  | 0.203                 | 0.0388                   | 0.3425                    |
| 0.50                             | 0.375           | 0.015                  | 0.218                 | 0.0253                   | 0.3679                    |
| 0.75                             | 0.625           | 0.019                  | 0.237                 | 0.0321                   | 0.3999                    |
| 1.00                             | 0.875           | 0.036                  | 0.273                 | 0.0607                   | 0.4607                    |
| 1.25                             | 1.125           | 0.089                  | 0.362                 | 0.1502                   | 0.6108                    |
| 1.50                             | 1.375           | 0.157                  | 0.519                 | 0.2649                   | 0.8758                    |
| 1.75                             | 1.625           | 0.431                  | 0.950                 | 0.7273                   | 1.6030                    |
| 2.00                             | 1.875           | 0.628                  | 1.578                 | 1.0597                   | 2.6627                    |
| 2.25                             | 2.125           | 0.894                  | 2.472                 | 1.5085                   | 4.1712                    |
| 2.50                             | 2.375           | 0.875                  | 3.347                 | 1.4765                   | 5.6477                    |
| 2.75                             | 2.625           | 0.643                  | 3.990                 | 1.0850                   | 6.7327                    |
| 3.00                             | 2.875           | 1.291                  | 5.281                 | 2.1784                   | 8.9111                    |
| 3.25                             | 3.125           | 3.432                  | 8.713                 | 5.7911                   | 14.7023                   |
| 3.50                             | 3.375           | 9.344                  | 18.057                | 15.7670                  | 30.4693                   |
| 3.75                             | 3.625           | 13.330                 | 31.387                | 22.4930                  | 52.9622                   |
| 4.00                             | 3.875           | 10.526                 | 41.913                | 17.7615                  | 70.7237                   |
| 8.00                             | 6.000           | 10.400                 | 52.313                | 17.5489                  | 88.2726                   |
| PAN                              |                 | 6.950                  | 59.263                | 11.7274                  | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
 Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 10.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES |              |                  |                               |                  |                  |
|-----------------|--------------|------------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 10.00 Phi | Pan at 10.50 Phi              | Pan at 11.00 Phi | Pan at 12.00 Phi |
| Mean:           | 3.924        | 4.636            | 4.695                         | 4.753            | 4.871            |
| Std Dev:        | 1.170        | 2.257            | 2.392                         | 2.537            | 2.832            |
| Rel Dis:        | 0.298        | 0.487            | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | 0.487        | 1.408            | CALCULATED USING              |                  |                  |
| Kurtosis:       | 3.679        | 4.114            | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | -1.822       | 8.595            | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 26.009       | 22.399           | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | -65.802      | 49.127           | = std dev/mean                |                  |                  |
| 8th MM:         | 333.036      | 125.893          | MM = moment measure           |                  |                  |
| Median:         | 3.527        | 3.592            |                               |                  |                  |

| S1A2GS7A                         |                 | ENTIRE SAMPLE ANALYSIS |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|-----------------|------------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                 |                        |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g)   | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 0.000                  | 0.000                 | 0.0000                   | 0.0000                    |
| -1.75                            | -1.875          | 0.028                  | 0.028                 | 0.0478                   | 0.0478                    |
| -1.50                            | -1.625          | 0.062                  | 0.090                 | 0.1057                   | 0.1535                    |
| -1.25                            | -1.375          | 0.044                  | 0.134                 | 0.0750                   | 0.2286                    |
| -1.00                            | -1.125          | 0.045                  | 0.179                 | 0.0768                   | 0.3053                    |
| -0.75                            | -0.875          | 0.032                  | 0.211                 | 0.0546                   | 0.3599                    |
| -0.50                            | -0.625          | 0.053                  | 0.264                 | 0.0904                   | 0.4503                    |
| -0.25                            | -0.375          | 0.075                  | 0.339                 | 0.1279                   | 0.5782                    |
| 0.00                             | -0.125          | 0.058                  | 0.397                 | 0.0989                   | 0.6771                    |
| 0.25                             | 0.125           | 0.054                  | 0.451                 | 0.0921                   | 0.7692                    |
| 0.50                             | 0.375           | 0.056                  | 0.507                 | 0.0955                   | 0.8648                    |
| 0.75                             | 0.625           | 0.075                  | 0.582                 | 0.1279                   | 0.9927                    |
| 1.00                             | 0.875           | 0.096                  | 0.678                 | 0.1637                   | 1.1564                    |
| 1.25                             | 1.125           | 0.143                  | 0.821                 | 0.2439                   | 1.4003                    |
| 1.50                             | 1.375           | 0.194                  | 1.015                 | 0.3309                   | 1.7312                    |
| 1.75                             | 1.625           | 0.452                  | 1.467                 | 0.7709                   | 2.5022                    |
| 2.00                             | 1.875           | 0.543                  | 2.010                 | 0.9262                   | 3.4283                    |
| 2.25                             | 2.125           | 0.640                  | 2.650                 | 1.0916                   | 4.5199                    |
| 2.50                             | 2.375           | 0.701                  | 3.351                 | 1.1957                   | 5.7156                    |
| 2.75                             | 2.625           | 0.629                  | 3.980                 | 1.0728                   | 6.7884                    |
| 3.00                             | 2.875           | 1.317                  | 5.297                 | 2.2463                   | 9.0348                    |
| 3.25                             | 3.125           | 3.427                  | 8.724                 | 5.8452                   | 14.8800                   |
| 3.50                             | 3.375           | 9.723                  | 18.447                | 16.5839                  | 31.4640                   |
| 3.75                             | 3.625           | 13.006                 | 31.453                | 22.1836                  | 53.6475                   |
| 4.00                             | 3.875           | 10.676                 | 42.129                | 18.2094                  | 71.8569                   |
| 8.00                             | 6.000           | 8.500                  | 50.629                | 14.4979                  | 86.3549                   |
| PAN                              |                 | 8.000                  | 58.629                | 13.6451                  | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
 Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 10.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES |              |                  |                               |                  |                  |
|-----------------|--------------|------------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 10.00 Phi | Pan at 10.50 Phi              | Pan at 11.00 Phi | Pan at 12.00 Phi |
| Mean:           | 3.822        | 4.665            | 4.733                         | 4.801            | 4.938            |
| Std Dev:        | 1.173        | 2.400            | 2.547                         | 2.704            | 3.023            |
| Rel Dis:        | 0.307        | 0.515            | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | 0.125        | 1.282            | CALCULATED USING              |                  |                  |
| Kurtosis:       | 5.167        | 3.791            | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | -7.882       | 6.818            | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 53.818       | 18.281           | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | -183.013     | 33.717           | = std dev/mean                |                  |                  |
| 8th MM:         | 867.623      | 91.028           | MM = moment measure           |                  |                  |
| Median:         | 3.507        | 3.584            |                               |                  |                  |



S1A2GS8A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.150                | 0.150                 | 0.1960                   | 0.1960                    |
| -1.75            | -1.875          | 0.000                | 0.150                 | 0.0000                   | 0.1960                    |
| -1.50            | -1.625          | 0.000                | 0.150                 | 0.0000                   | 0.1960                    |
| -1.25            | -1.375          | 0.017                | 0.167                 | 0.0222                   | 0.2182                    |
| -1.00            | -1.125          | 0.029                | 0.196                 | 0.0379                   | 0.2561                    |
| -0.75            | -0.875          | 0.031                | 0.227                 | 0.0405                   | 0.2966                    |
| -0.50            | -0.625          | 0.074                | 0.301                 | 0.0967                   | 0.3933                    |
| -0.25            | -0.375          | 0.068                | 0.369                 | 0.0889                   | 0.4822                    |
| 0.00             | -0.125          | 0.097                | 0.466                 | 0.1267                   | 0.6089                    |
| 0.25             | 0.125           | 0.142                | 0.608                 | 0.1855                   | 0.7944                    |
| 0.50             | 0.375           | 0.247                | 0.855                 | 0.3227                   | 1.1172                    |
| 0.75             | 0.625           | 0.505                | 1.360                 | 0.6599                   | 1.7771                    |
| 1.00             | 0.875           | 1.187                | 2.547                 | 1.5510                   | 3.3281                    |
| 1.25             | 1.125           | 2.893                | 5.440                 | 3.7802                   | 7.1082                    |
| 1.50             | 1.375           | 3.389                | 8.829                 | 4.4283                   | 11.5365                   |
| 1.75             | 1.625           | 7.678                | 16.507                | 10.0325                  | 21.5690                   |
| 2.00             | 1.875           | 10.895               | 27.402                | 14.2361                  | 35.8051                   |
| 2.25             | 2.125           | 17.047               | 44.449                | 22.2746                  | 58.0797                   |
| 2.50             | 2.375           | 16.045               | 60.494                | 20.9654                  | 79.0451                   |
| 2.75             | 2.625           | 5.470                | 65.964                | 7.1474                   | 86.1925                   |
| 3.00             | 2.875           | 1.524                | 67.488                | 1.9913                   | 88.1839                   |
| 3.25             | 3.125           | 1.165                | 68.653                | 1.5223                   | 89.7061                   |
| 3.50             | 3.375           | 1.793                | 70.446                | 2.3428                   | 92.0490                   |
| 3.75             | 3.625           | 1.824                | 72.270                | 2.3833                   | 94.4323                   |
| 4.00             | 3.875           | 0.961                | 73.231                | 1.2557                   | 95.6880                   |
| 8.00             | 6.000           | 0.950                | 74.181                | 1.2413                   | 96.9293                   |
| PAN              |                 | 2.350                | 76.531                | 3.0707                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 2.165        | 2.375           | 2.390                         | 2.406            | 2.436            |
| Std Dev:      | 0.785        | 1.416           | 1.487                         | 1.562            | 1.715            |
| Rel Dis:      | 0.363        | 0.596           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 1.066        | 3.225           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 11.291       | 15.867          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 24.073       | 70.183          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 245.673      | 332.193         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 529.344      | 1526.784        | = std dev/mean                |                  |                  |
| 8th MM:       | 6013.991     | 7181.235        | MM = moment measure           |                  |                  |
| Median:       | 2.017        | 2.034           |                               |                  |                  |

S1A2GS9A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.75            | -1.875          | 0.005                | 0.005                 | 0.0067                   | 0.0067                    |
| -1.50            | -1.625          | 0.000                | 0.005                 | 0.0000                   | 0.0067                    |
| -1.25            | -1.375          | 0.051                | 0.056                 | 0.0680                   | 0.0746                    |
| -1.00            | -1.125          | 0.037                | 0.093                 | 0.0493                   | 0.1239                    |
| -0.75            | -0.875          | 0.055                | 0.148                 | 0.0733                   | 0.1972                    |
| -0.50            | -0.625          | 0.094                | 0.242                 | 0.1253                   | 0.3225                    |
| -0.25            | -0.375          | 0.093                | 0.335                 | 0.1239                   | 0.4465                    |
| 0.00             | -0.125          | 0.124                | 0.459                 | 0.1653                   | 0.6117                    |
| 0.25             | 0.125           | 0.216                | 0.675                 | 0.2879                   | 0.8996                    |
| 0.50             | 0.375           | 0.513                | 1.188                 | 0.6837                   | 1.5833                    |
| 0.75             | 0.625           | 1.085                | 2.273                 | 1.4460                   | 3.0293                    |
| 1.00             | 0.875           | 2.300                | 4.573                 | 3.0653                   | 6.0947                    |
| 1.25             | 1.125           | 4.435                | 9.008                 | 5.9107                   | 12.0054                   |
| 1.50             | 1.375           | 4.775                | 13.783                | 6.3639                   | 18.3693                   |
| 1.75             | 1.625           | 8.751                | 22.534                | 11.6629                  | 30.0321                   |
| 2.00             | 1.875           | 9.910                | 32.444                | 13.2075                  | 43.2396                   |
| 2.25             | 2.125           | 12.970               | 45.414                | 17.2857                  | 60.5254                   |
| 2.50             | 2.375           | 13.408               | 58.822                | 17.8695                  | 78.3948                   |
| 2.75             | 2.625           | 6.061                | 64.883                | 8.0778                   | 86.4726                   |
| 3.00             | 2.875           | 2.074                | 66.957                | 2.7641                   | 89.2367                   |
| 3.25             | 3.125           | 1.425                | 68.382                | 1.8992                   | 91.1359                   |
| 3.50             | 3.375           | 1.796                | 70.178                | 2.3936                   | 93.5295                   |
| 3.75             | 3.625           | 1.396                | 71.574                | 1.8605                   | 95.3900                   |
| 4.00             | 3.875           | 0.709                | 72.283                | 0.9449                   | 96.3349                   |
| 8.00             | 6.000           | 0.650                | 72.933                | 0.8663                   | 97.2012                   |
| PAN              |                 | 2.100                | 75.033                | 2.7988                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 2.063        | 2.258           | 2.272                         | 2.286            | 2.314            |
| Std Dev:      | 0.786        | 1.388           | 1.455                         | 1.526            | 1.671            |
| Rel Dis:      | 0.381        | 0.615           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 0.885        | 3.273           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 8.349        | 16.569          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 25.057       | 77.523          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 162.863      | 376.632         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 658.059      | 1815.887        | = std dev/mean                |                  |                  |
| 8th MM:       | 3828.364     | 8812.657        | MM = moment measure           |                  |                  |
| Median:       | 1.953        | 1.973           |                               |                  |                  |



| S1A2R2GSA                        |                 | ENTIRE SAMPLE ANALYSIS |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|-----------------|------------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                 |                        |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g)   | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 0.044                  | 0.044                 | 0.0905                   | 0.0905                    |
| -1.75                            | -1.875          | 0.052                  | 0.096                 | 0.1070                   | 0.1975                    |
| -1.50                            | -1.625          | 0.008                  | 0.104                 | 0.0165                   | 0.2139                    |
| -1.25                            | -1.375          | 0.069                  | 0.173                 | 0.1419                   | 0.3559                    |
| -1.00                            | -1.125          | 0.046                  | 0.219                 | 0.0946                   | 0.4505                    |
| -0.75                            | -0.875          | 0.012                  | 0.231                 | 0.0247                   | 0.4752                    |
| -0.50                            | -0.625          | 0.033                  | 0.264                 | 0.0679                   | 0.5431                    |
| -0.25                            | -0.375          | 0.021                  | 0.285                 | 0.0432                   | 0.5863                    |
| 0.00                             | -0.125          | 0.024                  | 0.309                 | 0.0494                   | 0.6356                    |
| 0.25                             | 0.125           | 0.043                  | 0.352                 | 0.0885                   | 0.7241                    |
| 0.50                             | 0.375           | 0.052                  | 0.404                 | 0.1070                   | 0.8310                    |
| 0.75                             | 0.625           | 0.044                  | 0.448                 | 0.0905                   | 0.9215                    |
| 1.00                             | 0.875           | 0.080                  | 0.528                 | 0.1646                   | 1.0861                    |
| 1.25                             | 1.125           | 0.149                  | 0.677                 | 0.3065                   | 1.3926                    |
| 1.50                             | 1.375           | 0.195                  | 0.872                 | 0.4011                   | 1.7937                    |
| 1.75                             | 1.625           | 0.438                  | 1.310                 | 0.9010                   | 2.6947                    |
| 2.00                             | 1.875           | 0.688                  | 1.998                 | 1.4152                   | 4.1099                    |
| 2.25                             | 2.125           | 1.003                  | 3.001                 | 2.0632                   | 6.1731                    |
| 2.50                             | 2.375           | 1.215                  | 4.216                 | 2.4993                   | 8.6724                    |
| 2.75                             | 2.625           | 1.128                  | 5.344                 | 2.3203                   | 10.9927                   |
| 3.00                             | 2.875           | 1.719                  | 7.063                 | 3.5360                   | 14.5287                   |
| 3.25                             | 3.125           | 3.819                  | 10.882                | 7.8558                   | 22.3845                   |
| 3.50                             | 3.375           | 8.559                  | 19.441                | 17.6060                  | 39.9905                   |
| 3.75                             | 3.625           | 8.709                  | 28.150                | 17.9146                  | 57.9051                   |
| 4.00                             | 3.875           | 4.464                  | 32.614                | 9.1825                   | 67.0877                   |
| 8.00                             | 6.000           | 6.000                  | 38.614                | 12.3421                  | 79.4298                   |
| PAN                              |                 | 10.000                 | 48.614                | 20.5702                  | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
 Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 10.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES |              |                  |                               |                  |                  |
|-----------------|--------------|------------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 10.00 Phi | Pan at 10.50 Phi              | Pan at 11.00 Phi | Pan at 12.00 Phi |
| Mean:           | 3.646        | 4.953            | 5.056                         | 5.159            | 5.364            |
| Std Dev:        | 1.233        | 2.817            | 2.990                         | 3.180            | 3.565            |
| Rel Dis:        | 0.338        | 0.569            | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | 0.177        | 0.927            | CALCULATED USING              |                  |                  |
| Kurtosis:       | 5.037        | 2.521            | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | -6.753       | 3.307            | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 50.954       | 8.027            | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | -165.615     | 10.161           | = std dev/mean                |                  |                  |
| 8th MM:         | 797.357      | 27.319           | MM = moment measure           |                  |                  |
| Median:         | 3.371        | 3.515            |                               |                  |                  |

| S1A3GS1A                         |                 | ENTIRE SAMPLE ANALYSIS |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|-----------------|------------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                 |                        |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g)   | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 3.982                  | 3.982                 | 5.9360                   | 5.9360                    |
| -1.75                            | -1.875          | 0.970                  | 4.952                 | 1.4460                   | 7.3820                    |
| -1.50                            | -1.625          | 1.180                  | 6.132                 | 1.7590                   | 9.1411                    |
| -1.25                            | -1.375          | 1.353                  | 7.485                 | 2.0169                   | 11.1580                   |
| -1.00                            | -1.125          | 1.686                  | 9.171                 | 2.5133                   | 13.6713                   |
| -0.75                            | -0.875          | 2.224                  | 11.395                | 3.3153                   | 16.9867                   |
| -0.50                            | -0.625          | 2.854                  | 14.249                | 4.2545                   | 21.2412                   |
| -0.25                            | -0.375          | 3.201                  | 17.450                | 4.7718                   | 26.0129                   |
| 0.00                             | -0.125          | 2.719                  | 20.169                | 4.0532                   | 30.0662                   |
| 0.25                             | 0.125           | 2.987                  | 23.156                | 4.4528                   | 34.5189                   |
| 0.50                             | 0.375           | 2.324                  | 25.480                | 3.4644                   | 37.9834                   |
| 0.75                             | 0.625           | 2.291                  | 27.771                | 3.4152                   | 41.3986                   |
| 1.00                             | 0.875           | 3.978                  | 31.749                | 5.9301                   | 47.3286                   |
| 1.25                             | 1.125           | 8.004                  | 39.753                | 11.9317                  | 59.2603                   |
| 1.50                             | 1.375           | 6.881                  | 46.634                | 10.2576                  | 69.5179                   |
| 1.75                             | 1.625           | 8.890                  | 55.524                | 13.2524                  | 82.7703                   |
| 2.00                             | 1.875           | 4.401                  | 59.925                | 6.5606                   | 89.3310                   |
| 2.25                             | 2.125           | 2.470                  | 62.395                | 3.6821                   | 93.0130                   |
| 2.50                             | 2.375           | 1.622                  | 64.017                | 2.4179                   | 95.4310                   |
| 2.75                             | 2.625           | 0.681                  | 64.698                | 1.0152                   | 96.4461                   |
| 3.00                             | 2.875           | 0.234                  | 64.932                | 0.3488                   | 96.7950                   |
| 3.25                             | 3.125           | 0.135                  | 65.067                | 0.2012                   | 96.9962                   |
| 3.50                             | 3.375           | 0.201                  | 65.268                | 0.2996                   | 97.2958                   |
| 3.75                             | 3.625           | 0.183                  | 65.451                | 0.2728                   | 97.5686                   |
| 4.00                             | 3.875           | 0.081                  | 65.532                | 0.1207                   | 97.6894                   |
| 8.00                             | 6.000           | 0.200                  | 65.732                | 0.2981                   | 97.9875                   |
| PAN                              |                 | 1.350                  | 67.082                | 2.0125                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
 Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES |              |                 |                               |                  |                  |
|-----------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:           | 0.623        | 0.791           | 0.801                         | 0.811            | 0.832            |
| Std Dev:        | 1.332        | 1.772           | 1.816                         | 1.865            | 1.968            |
| Rel Dis:        | 2.138        | 2.240           | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | -0.371       | 1.717           | CALCULATED USING              |                  |                  |
| Kurtosis:       | 3.095        | 10.452          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | 0.879        | 43.249          | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 21.166       | 205.297         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | 44.535       | 936.842         | = std dev/mean                |                  |                  |
| 8th MM:         | 248.845      | 4344.015        | MM = moment measure           |                  |                  |
| Median:         | 0.910        | 0.931           |                               |                  |                  |

S1A3GS2A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.408                | 0.408                 | 0.6774                   | 0.6774                    |
| -1.75            | -1.875          | 0.166                | 0.574                 | 0.2756                   | 0.9530                    |
| -1.50            | -1.625          | 0.159                | 0.733                 | 0.2640                   | 1.2170                    |
| -1.25            | -1.375          | 0.232                | 0.965                 | 0.3852                   | 1.6022                    |
| -1.00            | -1.125          | 0.273                | 1.238                 | 0.4533                   | 2.0555                    |
| -0.75            | -0.875          | 0.381                | 1.619                 | 0.6326                   | 2.6881                    |
| -0.50            | -0.625          | 0.590                | 2.209                 | 0.9796                   | 3.6677                    |
| -0.25            | -0.375          | 0.696                | 2.905                 | 1.1556                   | 4.8233                    |
| 0.00             | -0.125          | 0.627                | 3.532                 | 1.0410                   | 5.8643                    |
| 0.25             | 0.125           | 0.743                | 4.275                 | 1.2336                   | 7.0979                    |
| 0.50             | 0.375           | 0.688                | 4.963                 | 1.1423                   | 8.2402                    |
| 0.75             | 0.625           | 0.686                | 5.649                 | 1.1390                   | 9.3792                    |
| 1.00             | 0.875           | 0.811                | 6.460                 | 1.3465                   | 10.7257                   |
| 1.25             | 1.125           | 1.405                | 7.865                 | 2.3328                   | 13.0585                   |
| 1.50             | 1.375           | 1.908                | 9.773                 | 3.1679                   | 16.2264                   |
| 1.75             | 1.625           | 5.545                | 15.318                | 9.2065                   | 25.4329                   |
| 2.00             | 1.875           | 7.359                | 22.677                | 12.2184                  | 37.6513                   |
| 2.25             | 2.125           | 10.786               | 33.463                | 17.9083                  | 55.5596                   |
| 2.50             | 2.375           | 13.908               | 47.371                | 23.0919                  | 78.6515                   |
| 2.75             | 2.625           | 7.792                | 55.163                | 12.9373                  | 91.5888                   |
| 3.00             | 2.875           | 2.177                | 57.340                | 3.6145                   | 95.2033                   |
| 3.25             | 3.125           | 0.676                | 58.016                | 1.1224                   | 96.3257                   |
| 3.50             | 3.375           | 0.554                | 58.570                | 0.9198                   | 97.2455                   |
| 3.75             | 3.625           | 0.292                | 58.862                | 0.4848                   | 97.7303                   |
| 4.00             | 3.875           | 0.067                | 58.929                | 0.1112                   | 97.8416                   |
| 8.00             | 6.000           | 0.250                | 59.179                | 0.4151                   | 98.2567                   |
| PAN              |                 | 1.050                | 60.229                | 1.7433                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 1.941        | 2.064           | 2.073                         | 2.081            | 2.099            |
| Std Dev:      | 0.962        | 1.333           | 1.375                         | 1.423            | 1.524            |
| Rel Dis:      | 0.495        | 0.646           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -1.487       | 1.807           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 8.046        | 15.372          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | -16.419      | 63.458          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 106.701      | 368.877         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | -206.770     | 1801.175        | = std dev/mean                |                  |                  |
| 8th MM:       | 1634.810     | 9670.644        | MM = moment measure           |                  |                  |
| Median:       | 2.035        | 2.047           |                               |                  |                  |

S1A3GS3A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.173                | 0.173                 | 0.2755                   | 0.2755                    |
| -1.75            | -1.875          | 0.070                | 0.243                 | 0.1115                   | 0.3869                    |
| -1.50            | -1.625          | 0.099                | 0.342                 | 0.1576                   | 0.5446                    |
| -1.25            | -1.375          | 0.245                | 0.587                 | 0.3901                   | 0.9347                    |
| -1.00            | -1.125          | 0.316                | 0.903                 | 0.5032                   | 1.4379                    |
| -0.75            | -0.875          | 0.335                | 1.238                 | 0.5334                   | 1.9713                    |
| -0.50            | -0.625          | 0.452                | 1.690                 | 0.7197                   | 2.6910                    |
| -0.25            | -0.375          | 0.507                | 2.197                 | 0.8073                   | 3.4984                    |
| 0.00             | -0.125          | 0.455                | 2.652                 | 0.7245                   | 4.2229                    |
| 0.25             | 0.125           | 0.534                | 3.186                 | 0.8503                   | 5.0732                    |
| 0.50             | 0.375           | 0.443                | 3.629                 | 0.7054                   | 5.7786                    |
| 0.75             | 0.625           | 0.429                | 4.058                 | 0.6831                   | 6.4617                    |
| 1.00             | 0.875           | 0.487                | 4.545                 | 0.7755                   | 7.2371                    |
| 1.25             | 1.125           | 0.817                | 5.362                 | 1.3009                   | 8.5381                    |
| 1.50             | 1.375           | 1.088                | 6.450                 | 1.7325                   | 10.2705                   |
| 1.75             | 1.625           | 3.262                | 9.712                 | 5.1942                   | 15.4647                   |
| 2.00             | 1.875           | 4.573                | 14.285                | 7.2817                   | 22.7465                   |
| 2.25             | 2.125           | 7.446                | 21.731                | 11.8565                  | 34.6030                   |
| 2.50             | 2.375           | 12.414               | 34.145                | 19.7672                  | 54.3702                   |
| 2.75             | 2.625           | 11.662               | 45.807                | 18.5698                  | 72.9399                   |
| 3.00             | 2.875           | 6.882                | 52.689                | 10.9584                  | 83.8983                   |
| 3.25             | 3.125           | 3.032                | 55.721                | 4.8279                   | 88.7263                   |
| 3.50             | 3.375           | 2.768                | 58.489                | 4.4076                   | 93.1339                   |
| 3.75             | 3.625           | 2.056                | 60.545                | 3.2738                   | 96.4077                   |
| 4.00             | 3.875           | 0.406                | 60.951                | 0.6465                   | 97.0542                   |
| 8.00             | 6.000           | 0.300                | 61.251                | 0.4777                   | 97.5319                   |
| PAN              |                 | 1.550                | 62.801                | 2.4681                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 2.292        | 2.458           | 2.470                         | 2.482            | 2.507            |
| Std Dev:      | 0.957        | 1.412           | 1.467                         | 1.527            | 1.653            |
| Rel Dis:      | 0.418        | 0.575           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -1.420       | 1.904           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 7.971        | 13.436          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | -18.733      | 49.892          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 105.547      | 260.210         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | -278.422     | 1122.215        | = std dev/mean                |                  |                  |
| 8th MM:       | 1636.230     | 5415.872        | MM = moment measure           |                  |                  |
| Median:       | 2.304        | 2.320           |                               |                  |                  |

| S1B1GS10A                        |                 | ENTIRE SAMPLE ANALYSIS |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|-----------------|------------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                 |                        |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g)   | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 0.455                  | 0.455                 | 0.6926                   | 0.6926                    |
| -1.75                            | -1.875          | 0.135                  | 0.590                 | 0.2055                   | 0.8981                    |
| -1.50                            | -1.625          | 0.273                  | 0.863                 | 0.4156                   | 1.3137                    |
| -1.25                            | -1.375          | 0.213                  | 1.076                 | 0.3242                   | 1.6379                    |
| -1.00                            | -1.125          | 0.455                  | 1.531                 | 0.6926                   | 2.3306                    |
| -0.75                            | -0.875          | 0.717                  | 2.248                 | 1.0915                   | 3.4220                    |
| -0.50                            | -0.625          | 1.254                  | 3.502                 | 1.9089                   | 5.3309                    |
| -0.25                            | -0.375          | 2.209                  | 5.711                 | 3.3627                   | 8.6936                    |
| 0.00                             | -0.125          | 2.931                  | 8.642                 | 4.4617                   | 13.1553                   |
| 0.25                             | 0.125           | 4.043                  | 12.685                | 6.1545                   | 19.3098                   |
| 0.50                             | 0.375           | 4.324                  | 17.009                | 6.5822                   | 25.8920                   |
| 0.75                             | 0.625           | 5.298                  | 22.307                | 8.0649                   | 33.9570                   |
| 1.00                             | 0.875           | 6.383                  | 28.690                | 9.7166                   | 43.6735                   |
| 1.25                             | 1.125           | 7.373                  | 36.063                | 11.2236                  | 54.8971                   |
| 1.50                             | 1.375           | 4.990                  | 41.053                | 7.5961                   | 62.4931                   |
| 1.75                             | 1.625           | 8.503                  | 49.556                | 12.9437                  | 75.4369                   |
| 2.00                             | 1.875           | 7.310                  | 56.866                | 11.1277                  | 86.5646                   |
| 2.25                             | 2.125           | 4.376                  | 61.242                | 6.6614                   | 93.2260                   |
| 2.50                             | 2.375           | 1.574                  | 62.816                | 2.3960                   | 95.6220                   |
| 2.75                             | 2.625           | 0.475                  | 63.291                | 0.7231                   | 96.3451                   |
| 3.00                             | 2.875           | 0.180                  | 63.471                | 0.2740                   | 96.6191                   |
| 3.25                             | 3.125           | 0.066                  | 63.537                | 0.1005                   | 96.7195                   |
| 3.50                             | 3.375           | 0.079                  | 63.616                | 0.1203                   | 96.8398                   |
| 3.75                             | 3.625           | 0.107                  | 63.723                | 0.1629                   | 97.0027                   |
| 4.00                             | 3.875           | 0.069                  | 63.792                | 0.1050                   | 97.1077                   |
| 8.00                             | 6.000           | 0.200                  | 63.992                | 0.3045                   | 97.4122                   |
| PAN                              |                 | 1.700                  | 65.692                | 2.5878                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
 Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES |              |                 |                               |                  |                  |
|-----------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:           | 1.028        | 1.234           | 1.247                         | 1.260            | 1.286            |
| Std Dev:        | 0.953        | 1.585           | 1.645                         | 1.711            | 1.847            |
| Rel Dis:        | 0.927        | 1.284           | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | -0.129       | 2.927           | CALCULATED USING              |                  |                  |
| Kurtosis:       | 5.355        | 15.893          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | 7.496        | 74.423          | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 83.638       | 367.750         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | 291.382      | 1789.521        | = std dev/mean                |                  |                  |
| 8th MM:         | 1914.708     | 8772.615        | MM = moment measure           |                  |                  |
| Median:         | 0.987        | 1.016           |                               |                  |                  |

| S1B1GS11A                        |                 | ENTIRE SAMPLE ANALYSIS |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|-----------------|------------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                 |                        |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g)   | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 10.334                 | 10.334                | 12.9065                  | 12.9065                   |
| -1.75                            | -1.875          | 1.820                  | 12.154                | 2.2731                   | 15.1796                   |
| -1.50                            | -1.625          | 1.572                  | 13.726                | 1.9633                   | 17.1429                   |
| -1.25                            | -1.375          | 1.835                  | 15.561                | 2.2918                   | 19.4347                   |
| -1.00                            | -1.125          | 1.928                  | 17.489                | 2.4080                   | 21.8427                   |
| -0.75                            | -0.875          | 2.396                  | 19.885                | 2.9925                   | 24.8351                   |
| -0.50                            | -0.625          | 2.687                  | 22.572                | 3.3559                   | 28.1910                   |
| -0.25                            | -0.375          | 2.655                  | 25.227                | 3.3159                   | 31.5070                   |
| 0.00                             | -0.125          | 2.574                  | 27.801                | 3.2148                   | 34.7217                   |
| 0.25                             | 0.125           | 3.353                  | 31.154                | 4.1877                   | 38.9094                   |
| 0.50                             | 0.375           | 3.658                  | 34.812                | 4.5686                   | 43.4780                   |
| 0.75                             | 0.625           | 4.507                  | 39.319                | 5.6290                   | 49.1070                   |
| 1.00                             | 0.875           | 5.969                  | 45.288                | 7.4549                   | 56.5619                   |
| 1.25                             | 1.125           | 8.148                  | 53.436                | 10.1764                  | 66.7383                   |
| 1.50                             | 1.375           | 5.993                  | 59.429                | 7.4849                   | 74.2232                   |
| 1.75                             | 1.625           | 8.539                  | 67.968                | 10.6647                  | 84.8878                   |
| 2.00                             | 1.875           | 5.053                  | 73.021                | 6.3109                   | 91.1987                   |
| 2.25                             | 2.125           | 2.682                  | 75.703                | 3.3497                   | 94.5484                   |
| 2.50                             | 2.375           | 1.151                  | 76.854                | 1.4375                   | 95.9859                   |
| 2.75                             | 2.625           | 0.427                  | 77.281                | 0.5333                   | 96.5192                   |
| 3.00                             | 2.875           | 0.185                  | 77.466                | 0.2311                   | 96.7503                   |
| 3.25                             | 3.125           | 0.062                  | 77.528                | 0.0774                   | 96.8277                   |
| 3.50                             | 3.375           | 0.050                  | 77.578                | 0.0624                   | 96.8901                   |
| 3.75                             | 3.625           | 0.056                  | 77.634                | 0.0699                   | 96.9601                   |
| 4.00                             | 3.875           | 0.034                  | 77.668                | 0.0425                   | 97.0025                   |
| 8.00                             | 6.000           | 0.350                  | 78.018                | 0.4371                   | 97.4397                   |
| PAN                              |                 | 2.050                  | 80.068                | 2.5603                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
 Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES |              |                 |                               |                  |                  |
|-----------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:           | 0.330        | 0.552           | 0.565                         | 0.578            | 0.603            |
| Std Dev:        | 1.463        | 1.996           | 2.049                         | 2.106            | 2.225            |
| Rel Dis:        | 4.431        | 3.615           | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | -0.225       | 1.704           | CALCULATED USING              |                  |                  |
| Kurtosis:       | 2.796        | 9.183           | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | 2.382        | 35.247          | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 19.690       | 151.822         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | 55.256       | 634.624         | = std dev/mean                |                  |                  |
| 8th MM:         | 242.860      | 2684.764        | MM = moment measure           |                  |                  |
| Median:         | 0.608        | 0.655           |                               |                  |                  |

| S1B1GS12A                        |                 | ENTIRE SAMPLE ANALYSIS |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|-----------------|------------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                 |                        |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g)   | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 0.023                  | 0.023                 | 0.0318                   | 0.0318                    |
| -1.75                            | -1.875          | 0.046                  | 0.069                 | 0.0637                   | 0.0955                    |
| -1.50                            | -1.625          | 0.043                  | 0.112                 | 0.0595                   | 0.1551                    |
| -1.25                            | -1.375          | 0.095                  | 0.207                 | 0.1315                   | 0.2866                    |
| -1.00                            | -1.125          | 0.068                  | 0.275                 | 0.0942                   | 0.3808                    |
| -0.75                            | -0.875          | 0.094                  | 0.369                 | 0.1301                   | 0.5109                    |
| -0.50                            | -0.625          | 0.159                  | 0.528                 | 0.2201                   | 0.7310                    |
| -0.25                            | -0.375          | 0.604                  | 1.132                 | 0.8363                   | 1.5673                    |
| 0.00                             | -0.125          | 1.311                  | 2.443                 | 1.8152                   | 3.3825                    |
| 0.25                             | 0.125           | 3.146                  | 5.589                 | 4.3558                   | 7.7383                    |
| 0.50                             | 0.375           | 4.925                  | 10.514                | 6.8190                   | 14.5573                   |
| 0.75                             | 0.625           | 6.840                  | 17.354                | 9.4704                   | 24.0277                   |
| 1.00                             | 0.875           | 8.520                  | 25.874                | 11.7965                  | 35.8242                   |
| 1.25                             | 1.125           | 11.773                 | 37.647                | 16.3004                  | 52.1246                   |
| 1.50                             | 1.375           | 9.101                  | 46.748                | 12.6009                  | 64.7255                   |
| 1.75                             | 1.625           | 12.073                 | 58.821                | 16.7158                  | 81.4413                   |
| 2.00                             | 1.875           | 6.439                  | 65.260                | 8.9152                   | 90.3565                   |
| 2.25                             | 2.125           | 2.917                  | 68.177                | 4.0388                   | 94.3953                   |
| 2.50                             | 2.375           | 1.215                  | 69.392                | 1.6822                   | 96.0775                   |
| 2.75                             | 2.625           | 0.426                  | 69.818                | 0.5898                   | 96.6674                   |
| 3.00                             | 2.875           | 0.155                  | 69.973                | 0.2146                   | 96.8820                   |
| 3.25                             | 3.125           | 0.071                  | 70.044                | 0.0983                   | 96.9803                   |
| 3.50                             | 3.375           | 0.090                  | 70.134                | 0.1246                   | 97.1049                   |
| 3.75                             | 3.625           | 0.106                  | 70.240                | 0.1468                   | 97.2516                   |
| 4.00                             | 3.875           | 0.085                  | 70.325                | 0.1177                   | 97.3693                   |
| 8.00                             | 6.000           | 0.250                  | 70.575                | 0.3461                   | 97.7155                   |
| PAN                              |                 | 1.650                  | 72.225                | 2.2845                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
 Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES |              |                 |                               |                  |                  |
|-----------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:           | 1.188        | 1.366           | 1.378                         | 1.389            | 1.412            |
| Std Dev:        | 0.714        | 1.371           | 1.433                         | 1.499            | 1.633            |
| Rel Dis:        | 0.602        | 1.004           | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | 0.852        | 4.009           | CALCULATED USING              |                  |                  |
| Kurtosis:       | 10.388       | 22.968          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | 47.528       | 125.203         | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 361.741      | 695.603         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | 2223.917     | 3856.717        | = std dev/mean                |                  |                  |
| 8th MM:         | 15565.089    | 21439.927       | MM = moment measure           |                  |                  |
| Median:         | 1.075        | 1.092           |                               |                  |                  |

| S1B1GS13A                        |                 | ENTIRE SAMPLE ANALYSIS |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|-----------------|------------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                 |                        |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g)   | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 4.736                  | 4.736                 | 6.1104                   | 6.1104                    |
| -1.75                            | -1.875          | 1.436                  | 6.172                 | 1.8527                   | 7.9632                    |
| -1.50                            | -1.625          | 1.477                  | 7.649                 | 1.9056                   | 9.8688                    |
| -1.25                            | -1.375          | 1.539                  | 9.188                 | 1.9856                   | 11.8544                   |
| -1.00                            | -1.125          | 1.947                  | 11.135                | 2.5120                   | 14.3664                   |
| -0.75                            | -0.875          | 2.412                  | 13.547                | 3.1120                   | 17.4784                   |
| -0.50                            | -0.625          | 2.548                  | 16.095                | 3.2874                   | 20.7659                   |
| -0.25                            | -0.375          | 3.080                  | 19.175                | 3.9738                   | 24.7397                   |
| 0.00                             | -0.125          | 3.179                  | 22.354                | 4.1016                   | 28.8413                   |
| 0.25                             | 0.125           | 4.104                  | 26.458                | 5.2950                   | 34.1363                   |
| 0.50                             | 0.375           | 4.381                  | 30.839                | 5.6524                   | 39.7887                   |
| 0.75                             | 0.625           | 5.261                  | 36.100                | 6.7878                   | 46.5764                   |
| 1.00                             | 0.875           | 6.886                  | 42.986                | 8.8844                   | 55.4608                   |
| 1.25                             | 1.125           | 8.809                  | 51.795                | 11.3654                  | 66.8262                   |
| 1.50                             | 1.375           | 6.260                  | 58.055                | 8.0767                   | 74.9029                   |
| 1.75                             | 1.625           | 8.360                  | 66.415                | 10.7861                  | 85.6890                   |
| 2.00                             | 1.875           | 5.382                  | 71.797                | 6.9439                   | 92.6329                   |
| 2.25                             | 2.125           | 2.688                  | 74.485                | 3.4681                   | 96.1010                   |
| 2.50                             | 2.375           | 0.856                  | 75.341                | 1.1044                   | 97.2054                   |
| 2.75                             | 2.625           | 0.192                  | 75.533                | 0.2477                   | 97.4531                   |
| 3.00                             | 2.875           | 0.073                  | 75.606                | 0.0942                   | 97.5473                   |
| 3.25                             | 3.125           | 0.038                  | 75.644                | 0.0490                   | 97.5963                   |
| 3.50                             | 3.375           | 0.041                  | 75.685                | 0.0529                   | 97.6492                   |
| 3.75                             | 3.625           | 0.048                  | 75.733                | 0.0619                   | 97.7112                   |
| 4.00                             | 3.875           | 0.024                  | 75.757                | 0.0310                   | 97.7421                   |
| 8.00                             | 6.000           | 0.250                  | 76.007                | 0.3226                   | 98.0647                   |
| PAN                              |                 | 1.500                  | 77.507                | 1.9353                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
 Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES |              |                 |                               |                  |                  |
|-----------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:           | 0.519        | 0.683           | 0.693                         | 0.702            | 0.722            |
| Std Dev:        | 1.266        | 1.719           | 1.765                         | 1.814            | 1.917            |
| Rel Dis:        | 2.441        | 2.517           | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | -0.388       | 1.915           | CALCULATED USING              |                  |                  |
| Kurtosis:       | 3.457        | 11.827          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | 2.065        | 51.914          | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 29.797       | 255.993         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | 82.480       | 1222.920        | = std dev/mean                |                  |                  |
| 8th MM:         | 441.663      | 5916.822        | MM = moment measure           |                  |                  |
| Median:         | 0.694        | 0.721           |                               |                  |                  |



| S1B1GS14A                        |                 | ENTIRE SAMPLE ANALYSIS |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|-----------------|------------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                 |                        |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g)   | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 17.077                 | 17.077                | 21.5168                  | 21.5168                   |
| -1.75                            | -1.875          | 4.404                  | 21.481                | 5.5490                   | 27.0657                   |
| -1.50                            | -1.625          | 4.215                  | 25.696                | 5.3108                   | 32.3766                   |
| -1.25                            | -1.375          | 4.195                  | 29.891                | 5.2856                   | 37.6622                   |
| -1.00                            | -1.125          | 4.347                  | 34.238                | 5.4772                   | 43.1394                   |
| -0.75                            | -0.875          | 4.229                  | 38.467                | 5.3285                   | 48.4679                   |
| -0.50                            | -0.625          | 4.476                  | 42.943                | 5.6397                   | 54.1076                   |
| -0.25                            | -0.375          | 4.509                  | 47.452                | 5.6813                   | 59.7888                   |
| 0.00                             | -0.125          | 3.991                  | 51.443                | 5.0286                   | 64.8174                   |
| 0.25                             | 0.125           | 4.576                  | 56.019                | 5.7657                   | 70.5831                   |
| 0.50                             | 0.375           | 3.953                  | 59.972                | 4.9807                   | 75.5638                   |
| 0.75                             | 0.625           | 3.742                  | 63.714                | 4.7149                   | 80.2787                   |
| 1.00                             | 0.875           | 3.427                  | 67.141                | 4.3180                   | 84.5967                   |
| 1.25                             | 1.125           | 3.390                  | 70.531                | 4.2714                   | 88.8680                   |
| 1.50                             | 1.375           | 1.623                  | 72.154                | 2.0450                   | 90.9130                   |
| 1.75                             | 1.625           | 1.935                  | 74.089                | 2.4381                   | 93.3511                   |
| 2.00                             | 1.875           | 1.077                  | 75.166                | 1.3570                   | 94.7081                   |
| 2.25                             | 2.125           | 0.571                  | 75.737                | 0.7195                   | 95.4275                   |
| 2.50                             | 2.375           | 0.265                  | 76.002                | 0.3339                   | 95.7614                   |
| 2.75                             | 2.625           | 0.095                  | 76.097                | 0.1197                   | 95.8811                   |
| 3.00                             | 2.875           | 0.051                  | 76.148                | 0.0643                   | 95.9454                   |
| 3.25                             | 3.125           | 0.041                  | 76.189                | 0.0517                   | 95.9970                   |
| 3.50                             | 3.375           | 0.079                  | 76.268                | 0.0995                   | 96.0966                   |
| 3.75                             | 3.625           | 0.130                  | 76.398                | 0.1638                   | 96.2604                   |
| 4.00                             | 3.875           | 0.068                  | 76.466                | 0.0857                   | 96.3460                   |
| 8.00                             | 6.000           | 0.650                  | 77.116                | 0.8190                   | 97.1650                   |
| PAN                              |                 | 2.250                  | 79.366                | 2.8350                   | 100.0000                  |

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| MOMENT MEASURES |              |                 |                               |                  |                  |
|-----------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:           | -0.582       | -0.310          | -0.296                        | -0.282           | -0.254           |
| Std Dev:        | 1.405        | 2.116           | 2.177                         | 2.242            | 2.376            |
| Rel Dis:        | -2.415       | -6.822          | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | 1.136        | 2.600           | CALCULATED USING              |                  |                  |
| Kurtosis:       | 5.611        | 11.689          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | 21.068       | 49.310          | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 95.672       | 214.281         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | 434.542      | 933.178         | = std dev/mean                |                  |                  |
| 8th MM:         | 2012.928     | 4079.952        | MM = moment measure           |                  |                  |
| Median:         | -0.870       | -0.807          |                               |                  |                  |

| S1B1GS15A                        |                 | ENTIRE SAMPLE ANALYSIS |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|-----------------|------------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                 |                        |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g)   | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 14.833                 | 14.833                | 18.8411                  | 18.8411                   |
| -1.75                            | -1.875          | 6.634                  | 21.467                | 8.4266                   | 27.2676                   |
| -1.50                            | -1.625          | 6.771                  | 28.238                | 8.6006                   | 35.8683                   |
| -1.25                            | -1.375          | 7.548                  | 35.786                | 9.5876                   | 45.4558                   |
| -1.00                            | -1.125          | 7.033                  | 42.819                | 8.9334                   | 54.3892                   |
| -0.75                            | -0.875          | 6.265                  | 49.084                | 7.9579                   | 62.3471                   |
| -0.50                            | -0.625          | 5.004                  | 54.088                | 6.3561                   | 68.7032                   |
| -0.25                            | -0.375          | 3.850                  | 57.938                | 4.8903                   | 73.5936                   |
| 0.00                             | -0.125          | 2.861                  | 60.799                | 3.6341                   | 77.2276                   |
| 0.25                             | 0.125           | 3.057                  | 63.856                | 3.8830                   | 81.1107                   |
| 0.50                             | 0.375           | 2.302                  | 66.158                | 2.9240                   | 84.0347                   |
| 0.75                             | 0.625           | 2.136                  | 68.294                | 2.7132                   | 86.7479                   |
| 1.00                             | 0.875           | 2.054                  | 70.348                | 2.6090                   | 89.3569                   |
| 1.25                             | 1.125           | 1.725                  | 72.073                | 2.1911                   | 91.5480                   |
| 1.50                             | 1.375           | 0.836                  | 72.909                | 1.0619                   | 92.6099                   |
| 1.75                             | 1.625           | 0.949                  | 73.858                | 1.2054                   | 93.8153                   |
| 2.00                             | 1.875           | 0.461                  | 74.319                | 0.5856                   | 94.4009                   |
| 2.25                             | 2.125           | 0.251                  | 74.570                | 0.3188                   | 94.7197                   |
| 2.50                             | 2.375           | 0.147                  | 74.717                | 0.1867                   | 94.9064                   |
| 2.75                             | 2.625           | 0.081                  | 74.798                | 0.1029                   | 95.0093                   |
| 3.00                             | 2.875           | 0.057                  | 74.855                | 0.0724                   | 95.0817                   |
| 3.25                             | 3.125           | 0.040                  | 74.895                | 0.0508                   | 95.1325                   |
| 3.50                             | 3.375           | 0.062                  | 74.957                | 0.0788                   | 95.2113                   |
| 3.75                             | 3.625           | 0.100                  | 75.057                | 0.1270                   | 95.3383                   |
| 4.00                             | 3.875           | 0.070                  | 75.127                | 0.0889                   | 95.4272                   |
| 8.00                             | 6.000           | 0.500                  | 75.627                | 0.6351                   | 96.0623                   |
| PAN                              |                 | 3.100                  | 78.727                | 3.9377                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
 Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES |              |                 |                               |                  |                  |
|-----------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:           | -0.907       | -0.516          | -0.497                        | -0.477           | -0.438           |
| Std Dev:        | 1.223        | 2.280           | 2.360                         | 2.445            | 2.617            |
| Rel Dis:        | -1.349       | -4.414          | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | 1.838        | 3.028           | CALCULATED USING              |                  |                  |
| Kurtosis:       | 9.058        | 12.697          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | 43.413       | 51.872          | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 232.406      | 214.823         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | 1273.236     | 891.596         | = std dev/mean                |                  |                  |
| 8th MM:         | 7080.883     | 3708.279        | MM = moment measure           |                  |                  |
| Median:         | -1.303       | -1.248          |                               |                  |                  |



S1B1GS16A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

## ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 4.792                | 4.792                 | 5.8145                   | 5.8145                    |
| -1.75            | -1.875          | 1.617                | 6.409                 | 1.9620                   | 7.7765                    |
| -1.50            | -1.625          | 1.456                | 7.865                 | 1.7667                   | 9.5432                    |
| -1.25            | -1.375          | 1.609                | 9.474                 | 1.9523                   | 11.4955                   |
| -1.00            | -1.125          | 1.593                | 11.067                | 1.9329                   | 13.4284                   |
| -0.75            | -0.875          | 1.811                | 12.878                | 2.1974                   | 15.6258                   |
| -0.50            | -0.625          | 2.152                | 15.030                | 2.6112                   | 18.2370                   |
| -0.25            | -0.375          | 2.153                | 17.183                | 2.6124                   | 20.8494                   |
| 0.00             | -0.125          | 2.163                | 19.346                | 2.6245                   | 23.4739                   |
| 0.25             | 0.125           | 3.046                | 22.392                | 3.6959                   | 27.1698                   |
| 0.50             | 0.375           | 3.454                | 25.846                | 4.1910                   | 31.3608                   |
| 0.75             | 0.625           | 4.509                | 30.355                | 5.4711                   | 36.8319                   |
| 1.00             | 0.875           | 6.393                | 36.748                | 7.7571                   | 44.5890                   |
| 1.25             | 1.125           | 9.014                | 45.762                | 10.9373                  | 55.5263                   |
| 1.50             | 1.375           | 7.266                | 53.028                | 8.8164                   | 64.3427                   |
| 1.75             | 1.625           | 10.387               | 63.415                | 12.6033                  | 76.9459                   |
| 2.00             | 1.875           | 7.693                | 71.108                | 9.3345                   | 86.2804                   |
| 2.25             | 2.125           | 5.323                | 76.431                | 6.4588                   | 92.7392                   |
| 2.50             | 2.375           | 2.391                | 78.822                | 2.9012                   | 95.6404                   |
| 2.75             | 2.625           | 0.507                | 79.329                | 0.6152                   | 96.2555                   |
| 3.00             | 2.875           | 0.134                | 79.463                | 0.1626                   | 96.4181                   |
| 3.25             | 3.125           | 0.068                | 79.531                | 0.0825                   | 96.5006                   |
| 3.50             | 3.375           | 0.092                | 79.623                | 0.1116                   | 96.6123                   |
| 3.75             | 3.625           | 0.132                | 79.755                | 0.1602                   | 96.7724                   |
| 4.00             | 3.875           | 0.060                | 79.815                | 0.0728                   | 96.8452                   |
| 8.00             | 6.000           | 0.350                | 80.165                | 0.4247                   | 97.2699                   |
| PAN              |                 | 2.250                | 82.415                | 2.7301                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

## MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 0.748        | 0.973           | 0.987                         | 1.001            | 1.028            |
| Std Dev:      | 1.329        | 1.884           | 1.941                         | 2.002            | 2.129            |
| Rel Dis:      | 1.776        | 1.935           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -0.535       | 1.780           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 3.561        | 10.101          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 0.487        | 38.374          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 26.156       | 168.783         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 50.083       | 706.910         | = std dev/mean                |                  |                  |
| 8th MM:       | 302.229      | 3020.974        | MM = moment measure           |                  |                  |
| Median:       | 0.967        | 0.999           |                               |                  |                  |

S1B1GS17A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

## ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 12.487               | 12.487                | 14.0661                  | 14.0661                   |
| -1.75            | -1.875          | 5.663                | 18.150                | 6.3791                   | 20.4452                   |
| -1.50            | -1.625          | 5.505                | 23.655                | 6.2011                   | 26.6463                   |
| -1.25            | -1.375          | 5.884                | 29.539                | 6.6281                   | 33.2744                   |
| -1.00            | -1.125          | 5.906                | 35.445                | 6.6528                   | 39.9272                   |
| -0.75            | -0.875          | 5.664                | 41.109                | 6.3802                   | 46.3075                   |
| -0.50            | -0.625          | 7.617                | 48.726                | 8.5802                   | 54.8877                   |
| -0.25            | -0.375          | 7.323                | 56.049                | 8.2490                   | 63.1367                   |
| 0.00             | -0.125          | 5.179                | 61.228                | 5.8339                   | 68.9706                   |
| 0.25             | 0.125           | 5.077                | 66.305                | 5.7190                   | 74.6897                   |
| 0.50             | 0.375           | 3.845                | 70.150                | 4.3312                   | 79.0209                   |
| 0.75             | 0.625           | 3.621                | 73.771                | 4.0789                   | 83.0998                   |
| 1.00             | 0.875           | 3.349                | 77.120                | 3.7725                   | 86.8723                   |
| 1.25             | 1.125           | 3.108                | 80.228                | 3.5010                   | 90.3733                   |
| 1.50             | 1.375           | 1.389                | 81.617                | 1.5646                   | 91.9380                   |
| 1.75             | 1.625           | 1.551                | 83.168                | 1.7471                   | 93.6851                   |
| 2.00             | 1.875           | 0.799                | 83.967                | 0.9000                   | 94.5851                   |
| 2.25             | 2.125           | 0.506                | 84.473                | 0.5700                   | 95.1551                   |
| 2.50             | 2.375           | 0.284                | 84.757                | 0.3199                   | 95.4750                   |
| 2.75             | 2.625           | 0.136                | 84.893                | 0.1532                   | 95.6282                   |
| 3.00             | 2.875           | 0.072                | 84.965                | 0.0811                   | 95.7093                   |
| 3.25             | 3.125           | 0.046                | 85.011                | 0.0518                   | 95.7611                   |
| 3.50             | 3.375           | 0.063                | 85.074                | 0.0710                   | 95.8321                   |
| 3.75             | 3.625           | 0.111                | 85.185                | 0.1250                   | 95.9571                   |
| 4.00             | 3.875           | 0.089                | 85.274                | 0.1003                   | 96.0574                   |
| 8.00             | 6.000           | 0.450                | 85.724                | 0.5069                   | 96.5643                   |
| PAN              |                 | 3.050                | 88.774                | 3.4357                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

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## MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | -0.596       | -0.267          | -0.250                        | -0.232           | -0.198           |
| Std Dev:      | 1.243        | 2.141           | 2.215                         | 2.292            | 2.449            |
| Rel Dis:      | -2.085       | -8.025          | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 1.165        | 2.885           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 6.217        | 12.796          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 25.409       | 53.956          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 128.473      | 232.146         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 654.413      | 999.481         | = std dev/mean                |                  |                  |
| 8th MM:       | 3415.035     | 4312.910        | MM = moment measure           |                  |                  |
| Median:       | -0.817       | -0.767          |                               |                  |                  |

S1B1GS18A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 16.178               | 16.178                | 18.4868                  | 18.4868                   |
| -1.75            | -1.875          | 3.025                | 19.203                | 3.4567                   | 21.9435                   |
| -1.50            | -1.625          | 2.745                | 21.948                | 3.1367                   | 25.0803                   |
| -1.25            | -1.375          | 3.004                | 24.952                | 3.4327                   | 28.5130                   |
| -1.00            | -1.125          | 3.343                | 28.295                | 3.8201                   | 32.3331                   |
| -0.75            | -0.875          | 3.682                | 31.977                | 4.2075                   | 36.5405                   |
| -0.50            | -0.625          | 4.076                | 36.053                | 4.6577                   | 41.1982                   |
| -0.25            | -0.375          | 4.146                | 40.199                | 4.7377                   | 45.9359                   |
| 0.00             | -0.125          | 4.078                | 44.277                | 4.6600                   | 50.5959                   |
| 0.25             | 0.125           | 5.084                | 49.361                | 5.8096                   | 56.4055                   |
| 0.50             | 0.375           | 4.791                | 54.152                | 5.4747                   | 61.8802                   |
| 0.75             | 0.625           | 5.117                | 59.269                | 5.8473                   | 67.7275                   |
| 1.00             | 0.875           | 5.483                | 64.752                | 6.2655                   | 73.9930                   |
| 1.25             | 1.125           | 5.909                | 70.661                | 6.7523                   | 80.7453                   |
| 1.50             | 1.375           | 3.766                | 74.427                | 4.3035                   | 85.0487                   |
| 1.75             | 1.625           | 4.671                | 79.098                | 5.3376                   | 90.3864                   |
| 2.00             | 1.875           | 2.735                | 81.833                | 3.1253                   | 93.5117                   |
| 2.25             | 2.125           | 1.445                | 83.278                | 1.6512                   | 95.1629                   |
| 2.50             | 2.375           | 0.669                | 83.947                | 0.7645                   | 95.9274                   |
| 2.75             | 2.625           | 0.239                | 84.186                | 0.2731                   | 96.2005                   |
| 3.00             | 2.875           | 0.108                | 84.294                | 0.1234                   | 96.3239                   |
| 3.25             | 3.125           | 0.062                | 84.356                | 0.0708                   | 96.3947                   |
| 3.50             | 3.375           | 0.078                | 84.434                | 0.0891                   | 96.4839                   |
| 3.75             | 3.625           | 0.174                | 84.608                | 0.1988                   | 96.6827                   |
| 4.00             | 3.875           | 0.103                | 84.711                | 0.1177                   | 96.8004                   |
| 8.00             | 6.000           | 0.350                | 85.061                | 0.3999                   | 97.2004                   |
| PAN              |                 | 2.450                | 87.511                | 2.7996                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | -0.189       | 0.068           | 0.082                         | 0.096            | 0.124            |
| Std Dev:      | 1.452        | 2.091           | 2.151                         | 2.213            | 2.342            |
| Rel Dis:      | -7.679       | 30.646          | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 0.326        | 2.139           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 2.991        | 10.096          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 6.456        | 40.887          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 29.195       | 174.660         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 111.400      | 741.040         | = std dev/mean                |                  |                  |
| 8th MM:       | 471.363      | 3157.780        | MM = moment measure           |                  |                  |
| Median:       | -0.232       | -0.157          |                               |                  |                  |

S1B1GS19A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 14.760               | 14.760                | 17.9941                  | 17.9941                   |
| -1.75            | -1.875          | 5.315                | 20.075                | 6.4796                   | 24.4736                   |
| -1.50            | -1.625          | 5.192                | 25.267                | 6.3296                   | 30.8033                   |
| -1.25            | -1.375          | 6.250                | 31.517                | 7.6194                   | 38.4227                   |
| -1.00            | -1.125          | 5.597                | 37.114                | 6.8234                   | 45.2461                   |
| -0.75            | -0.875          | 6.148                | 43.262                | 7.4951                   | 52.7412                   |
| -0.50            | -0.625          | 6.122                | 49.384                | 7.4634                   | 60.2046                   |
| -0.25            | -0.375          | 5.296                | 54.680                | 6.4564                   | 66.6610                   |
| 0.00             | -0.125          | 4.018                | 58.698                | 4.8984                   | 71.5594                   |
| 0.25             | 0.125           | 3.948                | 62.646                | 4.8130                   | 76.3724                   |
| 0.50             | 0.375           | 3.256                | 65.902                | 3.9694                   | 80.3418                   |
| 0.75             | 0.625           | 2.892                | 68.794                | 3.5257                   | 83.8675                   |
| 1.00             | 0.875           | 2.720                | 71.514                | 3.3160                   | 87.1835                   |
| 1.25             | 1.125           | 2.468                | 73.982                | 3.0088                   | 90.1923                   |
| 1.50             | 1.375           | 1.397                | 75.379                | 1.7031                   | 91.8954                   |
| 1.75             | 1.625           | 1.458                | 76.837                | 1.7775                   | 93.6728                   |
| 2.00             | 1.875           | 0.743                | 77.580                | 0.9058                   | 94.5786                   |
| 2.25             | 2.125           | 0.445                | 78.025                | 0.5425                   | 95.1211                   |
| 2.50             | 2.375           | 0.224                | 78.249                | 0.2731                   | 95.3942                   |
| 2.75             | 2.625           | 0.071                | 78.320                | 0.0866                   | 95.4808                   |
| 3.00             | 2.875           | 0.044                | 78.364                | 0.0536                   | 95.5344                   |
| 3.25             | 3.125           | 0.035                | 78.399                | 0.0427                   | 95.5771                   |
| 3.50             | 3.375           | 0.058                | 78.457                | 0.0707                   | 95.6478                   |
| 3.75             | 3.625           | 0.104                | 78.561                | 0.1268                   | 95.7746                   |
| 4.00             | 3.875           | 0.066                | 78.627                | 0.0805                   | 95.8550                   |
| 8.00             | 6.000           | 0.550                | 79.177                | 0.6705                   | 96.5255                   |
| PAN              |                 | 2.850                | 82.027                | 3.4745                   | 100.0000                  |

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MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | -0.707       | -0.370          | -0.352                        | -0.335           | -0.300           |
| Std Dev:      | 1.287        | 2.190           | 2.264                         | 2.341            | 2.498            |
| Rel Dis:      | -1.821       | -5.927          | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 1.410        | 2.872           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 7.010        | 12.461          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 29.982       | 51.835          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 149.585      | 219.827         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 756.373      | 933.928         | = std dev/mean                |                  |                  |
| 8th MM:       | 3890.681     | 3978.116        | MM = moment measure           |                  |                  |
| Median:       | -1.024       | -0.966          |                               |                  |                  |

S1B1GS1A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 5.503                | 5.503                 | 11.4334                  | 11.4334                   |
| -1.75            | -1.875          | 1.147                | 6.650                 | 2.3831                   | 13.8165                   |
| -1.50            | -1.625          | 1.281                | 7.931                 | 2.6615                   | 16.4779                   |
| -1.25            | -1.375          | 1.665                | 9.596                 | 3.4593                   | 19.9373                   |
| -1.00            | -1.125          | 1.732                | 11.328                | 3.5985                   | 23.5358                   |
| -0.75            | -0.875          | 1.950                | 13.278                | 4.0514                   | 27.5872                   |
| -0.50            | -0.625          | 2.262                | 15.540                | 4.6997                   | 32.2869                   |
| -0.25            | -0.375          | 2.428                | 17.968                | 5.0446                   | 37.3314                   |
| 0.00             | -0.125          | 2.471                | 20.439                | 5.1339                   | 42.4654                   |
| 0.25             | 0.125           | 3.169                | 23.608                | 6.5841                   | 49.0495                   |
| 0.50             | 0.375           | 3.344                | 26.952                | 6.9477                   | 55.9972                   |
| 0.75             | 0.625           | 3.653                | 30.605                | 7.5897                   | 63.5869                   |
| 1.00             | 0.875           | 4.303                | 34.908                | 8.9402                   | 72.5271                   |
| 1.25             | 1.125           | 4.577                | 39.485                | 9.5095                   | 82.0365                   |
| 1.50             | 1.375           | 2.278                | 41.763                | 4.7329                   | 86.7694                   |
| 1.75             | 1.625           | 2.542                | 44.305                | 5.2814                   | 92.0509                   |
| 2.00             | 1.875           | 1.068                | 45.373                | 2.2189                   | 94.2698                   |
| 2.25             | 2.125           | 0.523                | 45.896                | 1.0866                   | 95.3564                   |
| 2.50             | 2.375           | 0.237                | 46.133                | 0.4924                   | 95.8488                   |
| 2.75             | 2.625           | 0.086                | 46.219                | 0.1787                   | 96.0275                   |
| 3.00             | 2.875           | 0.037                | 46.256                | 0.0769                   | 96.1044                   |
| 3.25             | 3.125           | 0.029                | 46.285                | 0.0603                   | 96.1646                   |
| 3.50             | 3.375           | 0.035                | 46.320                | 0.0727                   | 96.2374                   |
| 3.75             | 3.625           | 0.037                | 46.357                | 0.0769                   | 96.3142                   |
| 4.00             | 3.875           | 0.024                | 46.381                | 0.0499                   | 96.3641                   |
| 8.00             | 6.000           | 0.200                | 46.581                | 0.4155                   | 96.7796                   |
| PAN              |                 | 1.550                | 48.131                | 3.2204                   | 100.0000                  |

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Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 0.027        | 0.316           | 0.332                         | 0.348            | 0.380            |
| Std Dev:      | 1.320        | 2.061           | 2.120                         | 2.191            | 2.336            |
| Rel Dis:      | 49.128       | 6.526           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 0.119        | 2.320           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 3.585        | 10.976          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 7.646        | 44.039          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 42.238       | 186.248         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 170.084      | 779.674         | = std dev/mean                |                  |                  |
| 8th MM:       | 786.113      | 3279.530        | MM = moment measure           |                  |                  |
| Median:       | 0.100        | 0.159           |                               |                  |                  |

S1B1GS20A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 8.850                | 8.850                 | 10.7520                  | 10.7520                   |
| -1.75            | -1.875          | 2.862                | 11.712                | 3.4771                   | 14.2291                   |
| -1.50            | -1.625          | 3.061                | 14.773                | 3.7189                   | 17.9480                   |
| -1.25            | -1.375          | 4.271                | 19.044                | 5.1889                   | 23.1369                   |
| -1.00            | -1.125          | 4.670                | 23.714                | 5.6737                   | 28.8106                   |
| -0.75            | -0.875          | 4.982                | 28.696                | 6.0527                   | 34.8633                   |
| -0.50            | -0.625          | 5.845                | 34.541                | 7.1012                   | 41.9645                   |
| -0.25            | -0.375          | 6.231                | 40.772                | 7.5702                   | 49.5347                   |
| 0.00             | -0.125          | 5.727                | 46.499                | 6.9578                   | 56.4925                   |
| 0.25             | 0.125           | 6.731                | 53.230                | 8.1776                   | 64.6701                   |
| 0.50             | 0.375           | 5.673                | 58.903                | 6.8922                   | 71.5624                   |
| 0.75             | 0.625           | 5.386                | 64.289                | 6.5436                   | 78.1059                   |
| 1.00             | 0.875           | 5.099                | 69.388                | 6.1949                   | 84.3008                   |
| 1.25             | 1.125           | 4.603                | 73.991                | 5.5923                   | 89.8931                   |
| 1.50             | 1.375           | 2.166                | 76.157                | 2.6315                   | 92.5246                   |
| 1.75             | 1.625           | 2.118                | 78.275                | 2.5732                   | 95.0978                   |
| 2.00             | 1.875           | 0.917                | 79.192                | 1.1141                   | 96.2119                   |
| 2.25             | 2.125           | 0.384                | 79.576                | 0.4665                   | 96.6784                   |
| 2.50             | 2.375           | 0.160                | 79.736                | 0.1944                   | 96.8728                   |
| 2.75             | 2.625           | 0.060                | 79.796                | 0.0729                   | 96.9457                   |
| 3.00             | 2.875           | 0.032                | 79.828                | 0.0389                   | 96.9846                   |
| 3.25             | 3.125           | 0.018                | 79.846                | 0.0219                   | 97.0064                   |
| 3.50             | 3.375           | 0.021                | 79.867                | 0.0255                   | 97.0320                   |
| 3.75             | 3.625           | 0.026                | 79.893                | 0.0316                   | 97.0635                   |
| 4.00             | 3.875           | 0.017                | 79.910                | 0.0207                   | 97.0842                   |
| 8.00             | 6.000           | 0.050                | 79.960                | 0.0607                   | 97.1449                   |
| PAN              |                 | 2.350                | 82.310                | 2.8551                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | -0.315       | -0.049          | -0.035                        | -0.021           | 0.008            |
| Std Dev:      | 1.142        | 1.924           | 1.991                         | 2.060            | 2.202            |
| Rel Dis:      | -3.625       | -39.198         | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 0.123        | 2.886           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 2.685        | 14.483          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 3.998        | 66.523          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 24.865       | 313.468         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 108.057      | 1471.600        | = std dev/mean                |                  |                  |
| 8th MM:       | 588.780      | 6918.207        | MM = moment measure           |                  |                  |
| Median:       | -0.407       | -0.358          |                               |                  |                  |

| S1B1GS21A                        |                    | ENTIRE SAMPLE ANALYSIS  |                          | MO-DA-YR: 2-7-2001          |                              |
|----------------------------------|--------------------|-------------------------|--------------------------|-----------------------------|------------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                    |                         |                          |                             |                              |
| Sieve Size<br>(Phi)              | Mid-Point<br>(Phi) | Frequency Weight<br>(g) | Cumulative Weight<br>(g) | Frequency Weight<br>Percent | Cumulative Weight<br>Percent |
| -2.00                            | -2.125             | 10.219                  | 10.219                   | 11.6340                     | 11.6340                      |
| -1.75                            | -1.875             | 1.794                   | 12.013                   | 2.0424                      | 13.6765                      |
| -1.50                            | -1.625             | 1.604                   | 13.617                   | 1.8261                      | 15.5026                      |
| -1.25                            | -1.375             | 2.092                   | 15.709                   | 2.3817                      | 17.8843                      |
| -1.00                            | -1.125             | 2.101                   | 17.810                   | 2.3919                      | 20.2762                      |
| -0.75                            | -0.875             | 2.880                   | 20.690                   | 3.2788                      | 23.5550                      |
| -0.50                            | -0.625             | 3.415                   | 24.105                   | 3.8879                      | 27.4429                      |
| -0.25                            | -0.375             | 3.974                   | 28.079                   | 4.5243                      | 31.9672                      |
| 0.00                             | -0.125             | 4.334                   | 32.413                   | 4.9341                      | 36.9013                      |
| 0.25                             | 0.125              | 5.552                   | 37.965                   | 6.3208                      | 43.2221                      |
| 0.50                             | 0.375              | 5.510                   | 43.475                   | 6.2730                      | 49.4951                      |
| 0.75                             | 0.625              | 6.052                   | 49.527                   | 6.8900                      | 56.3851                      |
| 1.00                             | 0.875              | 7.131                   | 56.658                   | 8.1184                      | 64.5036                      |
| 1.25                             | 1.125              | 8.676                   | 65.334                   | 9.8774                      | 74.3810                      |
| 1.50                             | 1.375              | 5.812                   | 71.146                   | 6.6168                      | 80.9978                      |
| 1.75                             | 1.625              | 7.087                   | 78.233                   | 8.0684                      | 89.0661                      |
| 2.00                             | 1.875              | 3.875                   | 82.108                   | 4.4116                      | 93.4777                      |
| 2.25                             | 2.125              | 1.883                   | 83.991                   | 2.1437                      | 95.6214                      |
| 2.50                             | 2.375              | 0.750                   | 84.741                   | 0.8539                      | 96.4753                      |
| 2.75                             | 2.625              | 0.217                   | 84.958                   | 0.2470                      | 96.7223                      |
| 3.00                             | 2.875              | 0.085                   | 85.043                   | 0.0968                      | 96.8191                      |
| 3.25                             | 3.125              | 0.047                   | 85.090                   | 0.0535                      | 96.8726                      |
| 3.50                             | 3.375              | 0.069                   | 85.159                   | 0.0786                      | 96.9512                      |
| 3.75                             | 3.625              | 0.120                   | 85.279                   | 0.1366                      | 97.0878                      |
| 4.00                             | 3.875              | 0.058                   | 85.337                   | 0.0660                      | 97.1538                      |
| 8.00                             | 6.000              | 0.400                   | 85.737                   | 0.4554                      | 97.6092                      |
| PAN                              |                    | 2.100                   | 87.837                   | 2.3908                      | 100.0000                     |

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| MOMENT MEASURES |              |                 |                               |                  |                  |
|-----------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:           | 0.230        | 0.440           | 0.452                         | 0.464            | 0.488            |
| Std Dev:        | 1.370        | 1.909           | 1.963                         | 2.019            | 2.136            |
| Rel Dis:        | 5.948        | 4.340           | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | -0.071       | 1.987           | CALCULATED USING              |                  |                  |
| Kurtosis:       | 3.353        | 10.683          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | 4.900        | 44.220          | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 31.422       | 200.085         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | 107.900      | 887.533         | = std dev/mean                |                  |                  |
| 8th MM:         | 484.574      | 3971.847        | MM = moment measure           |                  |                  |
| Median:         | 0.347        | 0.393           |                               |                  |                  |

| S1B1GS22A                        |                 | ENTIRE SAMPLE ANALYSIS |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|-----------------|------------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                 |                        |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g)   | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 9.351                  | 9.351                 | 10.9926                  | 10.9926                   |
| -1.75                            | -1.875          | 2.655                  | 12.006                | 3.1211                   | 14.1137                   |
| -1.50                            | -1.625          | 4.169                  | 16.175                | 4.9009                   | 19.0146                   |
| -1.25                            | -1.375          | 4.696                  | 20.871                | 5.5204                   | 24.5351                   |
| -1.00                            | -1.125          | 4.890                  | 25.761                | 5.7485                   | 30.2835                   |
| -0.75                            | -0.875          | 5.805                  | 31.566                | 6.8241                   | 37.1077                   |
| -0.50                            | -0.625          | 7.604                  | 39.170                | 8.9389                   | 46.0466                   |
| -0.25                            | -0.375          | 9.035                  | 48.205                | 10.6212                  | 56.6678                   |
| 0.00                             | -0.125          | 8.168                  | 56.373                | 9.6020                   | 66.2697                   |
| 0.25                             | 0.125           | 7.817                  | 64.190                | 9.1893                   | 75.4591                   |
| 0.50                             | 0.375           | 5.123                  | 69.313                | 6.0224                   | 81.4814                   |
| 0.75                             | 0.625           | 4.069                  | 73.382                | 4.7833                   | 86.2648                   |
| 1.00                             | 0.875           | 3.214                  | 76.596                | 3.7782                   | 90.0430                   |
| 1.25                             | 1.125           | 2.619                  | 79.215                | 3.0788                   | 93.1218                   |
| 1.50                             | 1.375           | 1.226                  | 80.441                | 1.4412                   | 94.5630                   |
| 1.75                             | 1.625           | 1.217                  | 81.658                | 1.4307                   | 95.9937                   |
| 2.00                             | 1.875           | 0.528                  | 82.186                | 0.6207                   | 96.6144                   |
| 2.25                             | 2.125           | 0.242                  | 82.428                | 0.2845                   | 96.8989                   |
| 2.50                             | 2.375           | 0.132                  | 82.560                | 0.1552                   | 97.0541                   |
| 2.75                             | 2.625           | 0.061                  | 82.621                | 0.0717                   | 97.1258                   |
| 3.00                             | 2.875           | 0.040                  | 82.661                | 0.0470                   | 97.1728                   |
| 3.25                             | 3.125           | 0.030                  | 82.691                | 0.0353                   | 97.2081                   |
| 3.50                             | 3.375           | 0.036                  | 82.727                | 0.0423                   | 97.2504                   |
| 3.75                             | 3.625           | 0.052                  | 82.779                | 0.0611                   | 97.3115                   |
| 4.00                             | 3.875           | 0.037                  | 82.816                | 0.0435                   | 97.3550                   |
| 8.00                             | 6.000           | 0.400                  | 83.216                | 0.4702                   | 97.8252                   |
| PAN                              |                 | 1.850                  | 85.066                | 2.1748                   | 100.0000                  |

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| MOMENT MEASURES |              |                 |                               |                  |                  |
|-----------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:           | -0.456       | -0.250          | -0.239                        | -0.228           | -0.207           |
| Std Dev:        | 1.123        | 1.777           | 1.833                         | 1.892            | 2.013            |
| Rel Dis:        | -2.465       | -7.108          | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | 1.010        | 3.215           | CALCULATED USING              |                  |                  |
| Kurtosis:       | 7.247        | 17.198          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | 32.271       | 86.623          | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 184.271      | 447.062         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | 1028.530     | 2309.566        | = std dev/mean                |                  |                  |
| 8th MM:         | 5872.073     | 11967.127       | MM = moment measure           |                  |                  |
| Median:         | -0.558       | -0.532          |                               |                  |                  |



S1B1GS23A      ENTIRE SAMPLE ANALYSIS      MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 5.908                | 5.908                 | 7.2421                   | 7.2421                    |
| -1.75            | -1.875          | 1.439                | 7.347                 | 1.7639                   | 9.0060                    |
| -1.50            | -1.625          | 1.784                | 9.131                 | 2.1868                   | 11.1928                   |
| -1.25            | -1.375          | 2.090                | 11.221                | 2.5619                   | 13.7548                   |
| -1.00            | -1.125          | 2.122                | 13.343                | 2.6012                   | 16.3559                   |
| -0.75            | -0.875          | 2.459                | 15.802                | 3.0143                   | 19.3702                   |
| -0.50            | -0.625          | 3.104                | 18.906                | 3.8049                   | 23.1751                   |
| -0.25            | -0.375          | 3.215                | 22.121                | 3.9410                   | 27.1160                   |
| 0.00             | -0.125          | 3.308                | 25.429                | 4.0550                   | 31.1710                   |
| 0.25             | 0.125           | 4.500                | 29.929                | 5.5161                   | 36.6871                   |
| 0.50             | 0.375           | 4.754                | 34.683                | 5.8275                   | 42.5146                   |
| 0.75             | 0.625           | 5.837                | 40.520                | 7.1550                   | 49.6696                   |
| 1.00             | 0.875           | 7.434                | 47.954                | 9.1126                   | 58.7823                   |
| 1.25             | 1.125           | 9.237                | 57.191                | 11.3228                  | 70.1051                   |
| 1.50             | 1.375           | 6.190                | 63.381                | 7.5877                   | 77.6928                   |
| 1.75             | 1.625           | 6.881                | 70.262                | 8.4348                   | 86.1276                   |
| 2.00             | 1.875           | 4.152                | 74.414                | 5.0895                   | 91.2171                   |
| 2.25             | 2.125           | 2.846                | 77.260                | 3.4886                   | 94.7057                   |
| 2.50             | 2.375           | 1.369                | 78.629                | 1.6781                   | 96.3839                   |
| 2.75             | 2.625           | 0.314                | 78.943                | 0.3849                   | 96.7688                   |
| 3.00             | 2.875           | 0.088                | 79.031                | 0.1079                   | 96.8766                   |
| 3.25             | 3.125           | 0.042                | 79.073                | 0.0515                   | 96.9281                   |
| 3.50             | 3.375           | 0.045                | 79.118                | 0.0552                   | 96.9833                   |
| 3.75             | 3.625           | 0.069                | 79.187                | 0.0846                   | 97.0679                   |
| 4.00             | 3.875           | 0.042                | 79.229                | 0.0515                   | 97.1194                   |
| 8.00             | 6.000           | 0.200                | 79.429                | 0.2452                   | 97.3645                   |
| PAN              |                 | 2.150                | 81.579                | 2.6355                   | 100.0000                  |

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MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-----------------|------------------|------------------|
| Mean:         | 0.422        | 0.648           | 0.661           | 0.674            | 0.701            |
| Std Dev:      | 1.290        | 1.879           | 1.937           | 1.999            | 2.125            |
| Rel Dis:      | 3.057        | 2.900           |                 |                  |                  |
| Skewness:     | -0.344       | 2.067           |                 |                  |                  |
| Kurtosis:     | 3.101        | 11.172          |                 |                  |                  |
| 5th MM:       | 1.546        | 46.066          |                 |                  |                  |
| 6th MM:       | 23.655       | 208.005         |                 |                  |                  |
| 7th MM:       | 63.550       | 916.238         |                 |                  |                  |
| 8th MM:       | 336.927      | 4074.053        |                 |                  |                  |
| Median:       | 0.591        | 0.634           |                 |                  |                  |

STATISTICAL MEASURES

CALCULATED USING

METHOD OF MOMENTS

Std Dev = standard deviation  
Rel Dis = relative dispersion  
= std dev/mean  
MM = moment measure

S1B1GS24A      ENTIRE SAMPLE ANALYSIS      MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 1.406                | 1.406                 | 1.6040                   | 1.6040                    |
| -1.75            | -1.875          | 0.634                | 2.040                 | 0.7233                   | 2.3273                    |
| -1.50            | -1.625          | 0.702                | 2.742                 | 0.8009                   | 3.1282                    |
| -1.25            | -1.375          | 0.932                | 3.674                 | 1.0633                   | 4.1914                    |
| -1.00            | -1.125          | 1.064                | 4.738                 | 1.2138                   | 5.4053                    |
| -0.75            | -0.875          | 1.569                | 6.307                 | 1.7900                   | 7.1953                    |
| -0.50            | -0.625          | 2.270                | 8.577                 | 2.5897                   | 9.7850                    |
| -0.25            | -0.375          | 5.575                | 14.152                | 6.3602                   | 16.1451                   |
| 0.00             | -0.125          | 10.367               | 24.519                | 11.8270                  | 27.9722                   |
| 0.25             | 0.125           | 13.157               | 37.676                | 15.0100                  | 42.9821                   |
| 0.50             | 0.375           | 9.560                | 47.236                | 10.9064                  | 53.8885                   |
| 0.75             | 0.625           | 8.398                | 55.634                | 9.5807                   | 63.4693                   |
| 1.00             | 0.875           | 7.743                | 63.377                | 8.8335                   | 72.3028                   |
| 1.25             | 1.125           | 7.353                | 70.730                | 8.3886                   | 80.6913                   |
| 1.50             | 1.375           | 4.086                | 74.816                | 4.6615                   | 85.3528                   |
| 1.75             | 1.625           | 4.450                | 79.266                | 5.0767                   | 90.4295                   |
| 2.00             | 1.875           | 2.391                | 81.657                | 2.7277                   | 93.1573                   |
| 2.25             | 2.125           | 1.342                | 82.999                | 1.5310                   | 94.6883                   |
| 2.50             | 2.375           | 0.724                | 83.723                | 0.8260                   | 95.5142                   |
| 2.75             | 2.625           | 0.345                | 84.068                | 0.3936                   | 95.9078                   |
| 3.00             | 2.875           | 0.169                | 84.237                | 0.1928                   | 96.1006                   |
| 3.25             | 3.125           | 0.085                | 84.322                | 0.0970                   | 96.1976                   |
| 3.50             | 3.375           | 0.132                | 84.454                | 0.1506                   | 96.3482                   |
| 3.75             | 3.625           | 0.245                | 84.699                | 0.2795                   | 96.6277                   |
| 4.00             | 3.875           | 0.156                | 84.855                | 0.1780                   | 96.8057                   |
| 8.00             | 6.000           | 0.350                | 85.205                | 0.3993                   | 97.2050                   |
| PAN              |                 | 2.450                | 87.655                | 2.7950                   | 100.0000                  |

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Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-----------------|------------------|------------------|
| Mean:         | 0.459        | 0.698           | 0.712           | 0.726            | 0.754            |
| Std Dev:      | 0.980        | 1.714           | 1.782           | 1.852            | 1.995            |
| Rel Dis:      | 2.134        | 2.455           |                 |                  |                  |
| Skewness:     | 0.683        | 3.200           |                 |                  |                  |
| Kurtosis:     | 7.319        | 16.280          |                 |                  |                  |
| 5th MM:       | 24.030       | 76.223          |                 |                  |                  |
| 6th MM:       | 154.329      | 368.972         |                 |                  |                  |
| 7th MM:       | 774.559      | 1776.624        |                 |                  |                  |
| 8th MM:       | 4471.010     | 8588.731        |                 |                  |                  |
| Median:       | 0.254        | 0.286           |                 |                  |                  |

STATISTICAL MEASURES

CALCULATED USING

METHOD OF MOMENTS

Std Dev = standard deviation  
Rel Dis = relative dispersion  
= std dev/mean  
MM = moment measure



S1B1GS25A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

## ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.285                | 0.285                 | 0.3618                   | 0.3618                    |
| -1.75            | -1.875          | 0.109                | 0.394                 | 0.1384                   | 0.5001                    |
| -1.50            | -1.625          | 0.325                | 0.719                 | 0.4125                   | 0.9127                    |
| -1.25            | -1.375          | 0.365                | 1.084                 | 0.4633                   | 1.3760                    |
| -1.00            | -1.125          | 0.919                | 2.003                 | 1.1666                   | 2.5426                    |
| -0.75            | -0.875          | 2.551                | 4.554                 | 3.2382                   | 5.7807                    |
| -0.50            | -0.625          | 6.448                | 11.002                | 8.1849                   | 13.9657                   |
| -0.25            | -0.375          | 10.795               | 21.797                | 13.7029                  | 27.6685                   |
| 0.00             | -0.125          | 12.117               | 33.914                | 15.3810                  | 43.0495                   |
| 0.25             | 0.125           | 13.676               | 47.590                | 17.3600                  | 60.4095                   |
| 0.50             | 0.375           | 9.481                | 57.071                | 12.0349                  | 72.4444                   |
| 0.75             | 0.625           | 7.170                | 64.241                | 9.1014                   | 81.5458                   |
| 1.00             | 0.875           | 5.066                | 69.307                | 6.4306                   | 87.9765                   |
| 1.25             | 1.125           | 3.510                | 72.817                | 4.4555                   | 92.4320                   |
| 1.50             | 1.375           | 1.384                | 74.201                | 1.7568                   | 94.1888                   |
| 1.75             | 1.625           | 1.496                | 75.697                | 1.8990                   | 96.0878                   |
| 2.00             | 1.875           | 0.655                | 76.352                | 0.8314                   | 96.9192                   |
| 2.25             | 2.125           | 0.273                | 76.625                | 0.3465                   | 97.2658                   |
| 2.50             | 2.375           | 0.119                | 76.744                | 0.1511                   | 97.4168                   |
| 2.75             | 2.625           | 0.052                | 76.796                | 0.0660                   | 97.4828                   |
| 3.00             | 2.875           | 0.035                | 76.831                | 0.0444                   | 97.5273                   |
| 3.25             | 3.125           | 0.023                | 76.854                | 0.0292                   | 97.5565                   |
| 3.50             | 3.375           | 0.024                | 76.878                | 0.0305                   | 97.5869                   |
| 3.75             | 3.625           | 0.029                | 76.907                | 0.0368                   | 97.6237                   |
| 4.00             | 3.875           | 0.022                | 76.929                | 0.0279                   | 97.6517                   |
| 8.00             | 6.000           | 0.150                | 77.079                | 0.1904                   | 97.8421                   |
| PAN              |                 | 1.700                | 78.779                | 2.1579                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

## MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 0.147        | 0.338           | 0.349                         | 0.360            | 0.381            |
| Std Dev:      | 0.721        | 1.478           | 1.541                         | 1.606            | 1.738            |
| Rel Dis:      | 4.906        | 4.372           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 1.365        | 4.460           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 11.843       | 26.369          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 73.380       | 152.582         | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 592.387      | 891.256         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 4638.975     | 5208.228        | = std dev/mean                |                  |                  |
| 8th MM:       | 37475.425    | 30471.623       | MM = moment measure           |                  |                  |
| Median:       | -0.040       | -0.025          |                               |                  |                  |

S1B1GS26A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

## ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 2.754                | 2.754                 | 3.1465                   | 3.1465                    |
| -1.75            | -1.875          | 0.131                | 2.885                 | 0.1497                   | 3.2962                    |
| -1.50            | -1.625          | 0.253                | 3.138                 | 0.2891                   | 3.5852                    |
| -1.25            | -1.375          | 0.391                | 3.529                 | 0.4467                   | 4.0319                    |
| -1.00            | -1.125          | 0.231                | 3.760                 | 0.2639                   | 4.2959                    |
| -0.75            | -0.875          | 0.639                | 4.399                 | 0.7301                   | 5.0259                    |
| -0.50            | -0.625          | 1.675                | 6.074                 | 1.9137                   | 6.9397                    |
| -0.25            | -0.375          | 6.231                | 12.305                | 7.1190                   | 14.0587                   |
| 0.00             | -0.125          | 10.297               | 22.602                | 11.7645                  | 25.8232                   |
| 0.25             | 0.125           | 10.754               | 33.356                | 12.2866                  | 38.1098                   |
| 0.50             | 0.375           | 7.229                | 40.585                | 8.2593                   | 46.3691                   |
| 0.75             | 0.625           | 6.335                | 46.920                | 7.2378                   | 53.6069                   |
| 1.00             | 0.875           | 6.608                | 53.528                | 7.5498                   | 61.1567                   |
| 1.25             | 1.125           | 8.700                | 62.228                | 9.9399                   | 71.0966                   |
| 1.50             | 1.375           | 7.043                | 69.271                | 8.0468                   | 79.1433                   |
| 1.75             | 1.625           | 8.767                | 78.038                | 10.0165                  | 89.1598                   |
| 2.00             | 1.875           | 4.354                | 82.392                | 4.9745                   | 94.1343                   |
| 2.25             | 2.125           | 1.862                | 84.254                | 2.1274                   | 96.2617                   |
| 2.50             | 2.375           | 0.866                | 85.120                | 0.9894                   | 97.2511                   |
| 2.75             | 2.625           | 0.322                | 85.442                | 0.3679                   | 97.6190                   |
| 3.00             | 2.875           | 0.116                | 85.558                | 0.1325                   | 97.7515                   |
| 3.25             | 3.125           | 0.044                | 85.602                | 0.0503                   | 97.8018                   |
| 3.50             | 3.375           | 0.040                | 85.642                | 0.0457                   | 97.8475                   |
| 3.75             | 3.625           | 0.055                | 85.697                | 0.0628                   | 97.9103                   |
| 4.00             | 3.875           | 0.029                | 85.726                | 0.0331                   | 97.9435                   |
| 8.00             | 6.000           | 0.200                | 85.926                | 0.2285                   | 98.1720                   |
| PAN              |                 | 1.600                | 87.526                | 1.8280                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

## MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 0.607        | 0.760           | 0.769                         | 0.778            | 0.797            |
| Std Dev:      | 0.985        | 1.494           | 1.544                         | 1.597            | 1.706            |
| Rel Dis:      | 1.624        | 1.965           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -0.101       | 2.944           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 5.265        | 18.143          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 6.913        | 94.821          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 82.578       | 527.536         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 310.617      | 2887.393        | = std dev/mean                |                  |                  |
| 8th MM:       | 2041.913     | 15923.223       | MM = moment measure           |                  |                  |
| Median:       | 0.469        | 0.500           |                               |                  |                  |

S1B1GS27A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

| ANALYTICAL GRANULOMETRIC RESULTS |                 |                      |                       |                          |                           |
|----------------------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 12.493               | 12.493                | 16.3542                  | 16.3542                   |
| -1.75                            | -1.875          | 5.150                | 17.643                | 6.7417                   | 23.0960                   |
| -1.50                            | -1.625          | 6.391                | 24.034                | 8.3663                   | 31.4622                   |
| -1.25                            | -1.375          | 6.148                | 30.182                | 8.0482                   | 39.5104                   |
| -1.00                            | -1.125          | 5.988                | 36.170                | 7.8387                   | 47.3491                   |
| -0.75                            | -0.875          | 5.621                | 41.791                | 7.3583                   | 54.7074                   |
| -0.50                            | -0.625          | 5.412                | 47.203                | 7.0847                   | 61.7921                   |
| -0.25                            | -0.375          | 5.058                | 52.261                | 6.6213                   | 68.4134                   |
| 0.00                             | -0.125          | 4.163                | 56.424                | 5.4497                   | 73.8631                   |
| 0.25                             | 0.125           | 3.981                | 60.405                | 5.2114                   | 79.0745                   |
| 0.50                             | 0.375           | 2.877                | 63.282                | 3.7662                   | 82.8407                   |
| 0.75                             | 0.625           | 2.302                | 65.584                | 3.0135                   | 85.8542                   |
| 1.00                             | 0.875           | 1.818                | 67.402                | 2.3799                   | 88.2341                   |
| 1.25                             | 1.125           | 1.248                | 68.650                | 1.6337                   | 89.8678                   |
| 1.50                             | 1.375           | 0.574                | 69.224                | 0.7514                   | 90.6192                   |
| 1.75                             | 1.625           | 0.767                | 69.991                | 1.0041                   | 91.6232                   |
| 2.00                             | 1.875           | 0.925                | 70.916                | 1.2109                   | 92.8341                   |
| 2.25                             | 2.125           | 0.733                | 71.649                | 0.9595                   | 93.7937                   |
| 2.50                             | 2.375           | 0.229                | 71.878                | 0.2998                   | 94.0935                   |
| 2.75                             | 2.625           | 0.068                | 71.946                | 0.0890                   | 94.1825                   |
| 3.00                             | 2.875           | 0.062                | 72.008                | 0.0812                   | 94.2636                   |
| 3.25                             | 3.125           | 0.051                | 72.059                | 0.0668                   | 94.3304                   |
| 3.50                             | 3.375           | 0.055                | 72.114                | 0.0720                   | 94.4024                   |
| 3.75                             | 3.625           | 0.068                | 72.182                | 0.0890                   | 94.4914                   |
| 4.00                             | 3.875           | 0.058                | 72.240                | 0.0759                   | 94.5674                   |
| 8.00                             | 6.000           | 0.750                | 72.990                | 0.9818                   | 95.5492                   |
| PAN                              |                 | 3.400                | 76.390                | 4.4508                   | 100.0000                  |

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| MOMENT MEASURES |              |                 |                               |                  |                  |
|-----------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:           | -0.753       | -0.319          | -0.296                        | -0.274           | -0.230           |
| Std Dev:        | 1.305        | 2.393           | 2.477                         | 2.567            | 2.749            |
| Rel Dis:        | -1.734       | -7.509          | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | 1.854        | 2.791           | CALCULATED USING              |                  |                  |
| Kurtosis:       | 9.158        | 10.999          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | 41.653       | 41.706          | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 208.607      | 160.893         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | 1057.452     | 621.975         | = std dev/mean                |                  |                  |
| 8th MM:         | 5421.408     | 2411.007        | MM = moment measure           |                  |                  |
| Median:         | -1.111       | -1.035          |                               |                  |                  |

S1B1GS28A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

| ANALYTICAL GRANULOMETRIC RESULTS |                 |                      |                       |                          |                           |
|----------------------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 0.441                | 0.441                 | 0.6230                   | 0.6230                    |
| -1.75                            | -1.875          | 0.289                | 0.730                 | 0.4083                   | 1.0312                    |
| -1.50                            | -1.625          | 0.467                | 1.197                 | 0.6597                   | 1.6909                    |
| -1.25                            | -1.375          | 0.313                | 1.510                 | 0.4422                   | 2.1331                    |
| -1.00                            | -1.125          | 0.420                | 1.930                 | 0.5933                   | 2.7264                    |
| -0.75                            | -0.875          | 0.683                | 2.613                 | 0.9648                   | 3.6913                    |
| -0.50                            | -0.625          | 1.816                | 4.429                 | 2.5654                   | 6.2566                    |
| -0.25                            | -0.375          | 4.870                | 9.299                 | 6.8796                   | 13.1362                   |
| 0.00                             | -0.125          | 8.375                | 17.674                | 11.8309                  | 24.9672                   |
| 0.25                             | 0.125           | 9.231                | 26.905                | 13.0402                  | 38.0073                   |
| 0.50                             | 0.375           | 6.508                | 33.413                | 9.1935                   | 47.2008                   |
| 0.75                             | 0.625           | 5.770                | 39.183                | 8.1510                   | 55.3518                   |
| 1.00                             | 0.875           | 5.808                | 44.991                | 8.2047                   | 63.5565                   |
| 1.25                             | 1.125           | 7.132                | 52.123                | 10.0750                  | 73.6315                   |
| 1.50                             | 1.375           | 5.349                | 57.472                | 7.5563                   | 81.1878                   |
| 1.75                             | 1.625           | 6.640                | 64.112                | 9.3800                   | 90.5677                   |
| 2.00                             | 1.875           | 3.135                | 67.247                | 4.4287                   | 94.9964                   |
| 2.25                             | 2.125           | 1.303                | 68.550                | 1.8407                   | 96.8371                   |
| 2.50                             | 2.375           | 0.583                | 69.133                | 0.8236                   | 97.6607                   |
| 2.75                             | 2.625           | 0.199                | 69.332                | 0.2811                   | 97.9418                   |
| 3.00                             | 2.875           | 0.068                | 69.400                | 0.0961                   | 98.0378                   |
| 3.25                             | 3.125           | 0.025                | 69.425                | 0.0353                   | 98.0731                   |
| 3.50                             | 3.375           | 0.026                | 69.451                | 0.0367                   | 98.1099                   |
| 3.75                             | 3.625           | 0.022                | 69.473                | 0.0311                   | 98.1410                   |
| 4.00                             | 3.875           | 0.016                | 69.489                | 0.0226                   | 98.1636                   |
| 8.00                             | 6.000           | 0.000                | 69.489                | 0.0000                   | 98.1636                   |
| PAN                              |                 | 1.300                | 70.789                | 1.8364                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES |              |                 |                               |                  |                  |
|-----------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:           | 0.601        | 0.755           | 0.764                         | 0.774            | 0.792            |
| Std Dev:        | 0.854        | 1.416           | 1.468                         | 1.524            | 1.638            |
| Rel Dis:        | 1.421        | 1.875           | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | -0.181       | 3.519           | CALCULATED USING              |                  |                  |
| Kurtosis:       | 3.075        | 21.841          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | -2.594       | 124.154         | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 18.361       | 726.374         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | -24.999      | 4221.159        | = std dev/mean                |                  |                  |
| 8th MM:         | 149.598      | 24586.804       | MM = moment measure           |                  |                  |
| Median:         | 0.433        | 0.461           |                               |                  |                  |

S1B1GS2A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

## ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 16.434               | 16.434                | 21.0199                  | 21.0199                   |
| -1.75            | -1.875          | 4.925                | 21.359                | 6.2993                   | 27.3192                   |
| -1.50            | -1.625          | 4.537                | 25.896                | 5.8031                   | 33.1223                   |
| -1.25            | -1.375          | 5.070                | 30.966                | 6.4848                   | 39.6071                   |
| -1.00            | -1.125          | 4.771                | 35.737                | 6.1023                   | 45.7094                   |
| -0.75            | -0.875          | 4.671                | 40.408                | 5.9744                   | 51.6839                   |
| -0.50            | -0.625          | 4.068                | 44.476                | 5.2032                   | 56.8870                   |
| -0.25            | -0.375          | 3.931                | 48.407                | 5.0279                   | 61.9150                   |
| 0.00             | -0.125          | 3.463                | 51.870                | 4.4294                   | 66.3443                   |
| 0.25             | 0.125           | 3.911                | 55.781                | 5.0024                   | 71.3467                   |
| 0.50             | 0.375           | 3.392                | 59.173                | 4.3385                   | 75.6853                   |
| 0.75             | 0.625           | 3.400                | 62.573                | 4.3488                   | 80.0340                   |
| 1.00             | 0.875           | 3.530                | 66.103                | 4.5150                   | 84.5491                   |
| 1.25             | 1.125           | 3.498                | 69.601                | 4.4741                   | 89.0232                   |
| 1.50             | 1.375           | 1.700                | 71.301                | 2.1744                   | 91.1976                   |
| 1.75             | 1.625           | 1.975                | 73.276                | 2.5261                   | 93.7237                   |
| 2.00             | 1.875           | 1.065                | 74.341                | 1.3622                   | 95.0859                   |
| 2.25             | 2.125           | 0.546                | 74.887                | 0.6984                   | 95.7842                   |
| 2.50             | 2.375           | 0.252                | 75.139                | 0.3223                   | 96.1066                   |
| 2.75             | 2.625           | 0.094                | 75.233                | 0.1202                   | 96.2268                   |
| 3.00             | 2.875           | 0.050                | 75.283                | 0.0640                   | 96.2908                   |
| 3.25             | 3.125           | 0.032                | 75.315                | 0.0409                   | 96.3317                   |
| 3.50             | 3.375           | 0.036                | 75.351                | 0.0460                   | 96.3777                   |
| 3.75             | 3.625           | 0.048                | 75.399                | 0.0614                   | 96.4391                   |
| 4.00             | 3.875           | 0.034                | 75.433                | 0.0435                   | 96.4826                   |
| 8.00             | 6.000           | 0.250                | 75.683                | 0.3198                   | 96.8024                   |
| PAN              |                 | 2.500                | 78.183                | 3.1976                   | 100.0000                  |

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## MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | -0.658       | -0.349          | -0.333                        | -0.317           | -0.285           |
| Std Dev:      | 1.315        | 2.144           | 2.212                         | 2.285            | 2.433            |
| Rel Dis:      | -2.000       | -6.147          | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 0.841        | 2.712           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 4.026        | 12.193          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 13.480       | 51.796          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 62.967       | 224.929         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 299.651      | 976.742         | = std dev/mean                |                  |                  |
| 8th MM:       | 1484.196     | 4249.231        | MM = moment measure           |                  |                  |
| Median:       | -1.012       | -0.945          |                               |                  |                  |

S1B1GS3A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

## ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 13.676               | 13.676                | 20.1663                  | 20.1663                   |
| -1.75            | -1.875          | 3.132                | 16.808                | 4.6184                   | 24.7847                   |
| -1.50            | -1.625          | 4.391                | 21.199                | 6.4749                   | 31.2596                   |
| -1.25            | -1.375          | 4.049                | 25.248                | 5.9706                   | 37.2302                   |
| -1.00            | -1.125          | 3.384                | 28.632                | 4.9900                   | 42.2201                   |
| -0.75            | -0.875          | 3.378                | 32.010                | 4.9811                   | 47.2013                   |
| -0.50            | -0.625          | 3.433                | 35.443                | 5.0622                   | 52.2635                   |
| -0.25            | -0.375          | 3.256                | 38.699                | 4.8012                   | 57.0647                   |
| 0.00             | -0.125          | 2.701                | 41.400                | 3.9828                   | 61.0475                   |
| 0.25             | 0.125           | 2.937                | 44.337                | 4.3308                   | 65.3784                   |
| 0.50             | 0.375           | 2.384                | 46.721                | 3.5154                   | 68.8938                   |
| 0.75             | 0.625           | 2.367                | 49.088                | 3.4903                   | 72.3841                   |
| 1.00             | 0.875           | 2.556                | 51.644                | 3.7690                   | 76.1531                   |
| 1.25             | 1.125           | 2.736                | 54.380                | 4.0344                   | 80.1876                   |
| 1.50             | 1.375           | 1.640                | 56.020                | 2.4183                   | 82.6059                   |
| 1.75             | 1.625           | 2.668                | 58.688                | 3.9342                   | 86.5400                   |
| 2.00             | 1.875           | 2.307                | 60.995                | 3.4019                   | 89.9419                   |
| 2.25             | 2.125           | 1.784                | 62.779                | 2.6306                   | 92.5725                   |
| 2.50             | 2.375           | 1.094                | 63.873                | 1.6132                   | 94.1857                   |
| 2.75             | 2.625           | 0.401                | 64.274                | 0.5913                   | 94.7770                   |
| 3.00             | 2.875           | 0.147                | 64.421                | 0.2168                   | 94.9938                   |
| 3.25             | 3.125           | 0.067                | 64.488                | 0.0988                   | 95.0926                   |
| 3.50             | 3.375           | 0.095                | 64.583                | 0.1401                   | 95.2327                   |
| 3.75             | 3.625           | 0.122                | 64.705                | 0.1799                   | 95.4126                   |
| 4.00             | 3.875           | 0.061                | 64.766                | 0.0899                   | 95.5025                   |
| 8.00             | 6.000           | 0.300                | 65.066                | 0.4424                   | 95.9449                   |
| PAN              |                 | 2.750                | 67.816                | 4.0551                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

## MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | -0.434       | -0.052          | -0.031                        | -0.011           | 0.029            |
| Std Dev:      | 1.513        | 2.390           | 2.462                         | 2.542            | 2.706            |
| Rel Dis:      | -3.484       | -46.176         | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 0.751        | 2.231           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 3.257        | 8.918           | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 8.460        | 32.553          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 32.820       | 123.002         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 126.924      | 463.625         | = std dev/mean                |                  |                  |
| 8th MM:       | 522.557      | 1752.436        | MM = moment measure           |                  |                  |
| Median:       | -0.837       | -0.737          |                               |                  |                  |

S1B1GS4A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 14.154               | 14.154                | 21.3012                  | 21.3012                   |
| -1.75            | -1.875          | 2.340                | 16.494                | 3.5216                   | 24.8228                   |
| -1.50            | -1.625          | 3.371                | 19.865                | 5.0732                   | 29.8960                   |
| -1.25            | -1.375          | 4.346                | 24.211                | 6.5406                   | 36.4366                   |
| -1.00            | -1.125          | 3.753                | 27.964                | 5.6481                   | 42.0847                   |
| -0.75            | -0.875          | 4.226                | 32.190                | 6.3600                   | 48.4446                   |
| -0.50            | -0.625          | 4.451                | 36.641                | 6.6986                   | 55.1432                   |
| -0.25            | -0.375          | 3.999                | 40.640                | 6.0183                   | 61.1615                   |
| 0.00             | -0.125          | 3.517                | 44.157                | 5.2929                   | 66.4545                   |
| 0.25             | 0.125           | 3.778                | 47.935                | 5.6857                   | 72.1402                   |
| 0.50             | 0.375           | 3.069                | 51.004                | 4.6187                   | 76.7589                   |
| 0.75             | 0.625           | 2.876                | 53.880                | 4.3283                   | 81.0872                   |
| 1.00             | 0.875           | 2.755                | 56.635                | 4.1462                   | 85.2333                   |
| 1.25             | 1.125           | 2.312                | 58.947                | 3.4795                   | 88.7128                   |
| 1.50             | 1.375           | 1.225                | 60.172                | 1.8436                   | 90.5564                   |
| 1.75             | 1.625           | 1.348                | 61.520                | 2.0287                   | 92.5851                   |
| 2.00             | 1.875           | 0.871                | 62.391                | 1.3108                   | 93.8959                   |
| 2.25             | 2.125           | 0.636                | 63.027                | 0.9572                   | 94.8530                   |
| 2.50             | 2.375           | 0.451                | 63.478                | 0.6787                   | 95.5318                   |
| 2.75             | 2.625           | 0.213                | 63.691                | 0.3206                   | 95.8523                   |
| 3.00             | 2.875           | 0.101                | 63.792                | 0.1520                   | 96.0043                   |
| 3.25             | 3.125           | 0.055                | 63.847                | 0.0828                   | 96.0871                   |
| 3.50             | 3.375           | 0.077                | 63.924                | 0.1159                   | 96.2030                   |
| 3.75             | 3.625           | 0.141                | 64.065                | 0.2122                   | 96.4152                   |
| 4.00             | 3.875           | 0.082                | 64.147                | 0.1234                   | 96.5386                   |
| 8.00             | 6.000           | 0.450                | 64.597                | 0.6772                   | 97.2158                   |
| PAN              |                 | 1.850                | 66.447                | 2.7842                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | -0.579       | -0.312          | -0.298                        | -0.284           | -0.256           |
| Std Dev:      | 1.385        | 2.094           | 2.152                         | 2.217            | 2.349            |
| Rel Dis:      | -2.393       | -6.710          | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 1.126        | 2.638           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 5.429        | 11.944          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 19.777       | 50.989          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 89.175       | 224.232         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 404.799      | 988.189         | = std dev/mean                |                  |                  |
| 8th MM:       | 1887.307     | 4370.988        | MM = moment measure           |                  |                  |
| Median:       | -0.869       | -0.817          |                               |                  |                  |

S1B1GS5A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 4.212                | 4.212                 | 5.5011                   | 5.5011                    |
| -1.75            | -1.875          | 1.710                | 5.922                 | 2.2334                   | 7.7345                    |
| -1.50            | -1.625          | 2.283                | 8.205                 | 2.9817                   | 10.7162                   |
| -1.25            | -1.375          | 2.612                | 10.817                | 3.4114                   | 14.1277                   |
| -1.00            | -1.125          | 3.267                | 14.084                | 4.2669                   | 18.3946                   |
| -0.75            | -0.875          | 3.699                | 17.783                | 4.8311                   | 23.2257                   |
| -0.50            | -0.625          | 4.524                | 22.307                | 5.9086                   | 29.1343                   |
| -0.25            | -0.375          | 5.279                | 27.586                | 6.8947                   | 36.0290                   |
| 0.00             | -0.125          | 5.776                | 33.362                | 7.5438                   | 43.5729                   |
| 0.25             | 0.125           | 7.064                | 40.426                | 9.2260                   | 52.7989                   |
| 0.50             | 0.375           | 6.253                | 46.679                | 8.1668                   | 60.9657                   |
| 0.75             | 0.625           | 5.700                | 52.379                | 7.4446                   | 68.4103                   |
| 1.00             | 0.875           | 5.502                | 57.881                | 7.1860                   | 75.5962                   |
| 1.25             | 1.125           | 5.567                | 63.448                | 7.2709                   | 82.8671                   |
| 1.50             | 1.375           | 3.206                | 66.654                | 4.1872                   | 87.0543                   |
| 1.75             | 1.625           | 4.279                | 70.933                | 5.5886                   | 92.6429                   |
| 2.00             | 1.875           | 2.228                | 73.161                | 2.9099                   | 95.5529                   |
| 2.25             | 2.125           | 0.967                | 74.128                | 1.2630                   | 96.8158                   |
| 2.50             | 2.375           | 0.303                | 74.431                | 0.3957                   | 97.2116                   |
| 2.75             | 2.625           | 0.109                | 74.540                | 0.1424                   | 97.3539                   |
| 3.00             | 2.875           | 0.062                | 74.602                | 0.0810                   | 97.4349                   |
| 3.25             | 3.125           | 0.063                | 74.665                | 0.0823                   | 97.5172                   |
| 3.50             | 3.375           | 0.003                | 74.668                | 0.0039                   | 97.5211                   |
| 3.75             | 3.625           | 0.033                | 74.701                | 0.0431                   | 97.5642                   |
| 4.00             | 3.875           | 0.065                | 74.766                | 0.0849                   | 97.6491                   |
| 8.00             | 6.000           | 0.100                | 74.866                | 0.1306                   | 97.7797                   |
| PAN              |                 | 1.700                | 76.566                | 2.2203                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 0.079        | 0.277           | 0.288                         | 0.299            | 0.322            |
| Std Dev:      | 1.150        | 1.745           | 1.799                         | 1.857            | 1.976            |
| Rel Dis:      | 14.537       | 6.294           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 0.004        | 2.666           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 3.198        | 14.676          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 4.445        | 70.454          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 32.855       | 353.608         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 131.501      | 1760.851        | = std dev/mean                |                  |                  |
| 8th MM:       | 703.652      | 8797.286        | MM = moment measure           |                  |                  |
| Median:       | 0.019        | 0.049           |                               |                  |                  |



S1B1GS6A      ENTIRE SAMPLE ANALYSIS      MO-DA-YR: 2-7-2001

## ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mld-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 11.373               | 11.373                | 16.0624                  | 16.0624                   |
| -1.75            | -1.875          | 4.041                | 15.414                | 5.7072                   | 21.7696                   |
| -1.50            | -1.625          | 5.376                | 20.790                | 7.5927                   | 29.3623                   |
| -1.25            | -1.375          | 5.588                | 26.378                | 7.8921                   | 37.2544                   |
| -1.00            | -1.125          | 5.622                | 32.000                | 7.9401                   | 45.1945                   |
| -0.75            | -0.875          | 5.567                | 37.567                | 7.8624                   | 53.0570                   |
| -0.50            | -0.625          | 5.495                | 43.062                | 7.7608                   | 60.8177                   |
| -0.25            | -0.375          | 4.471                | 47.533                | 6.3145                   | 67.1323                   |
| 0.00             | -0.125          | 3.644                | 51.177                | 5.1465                   | 72.2788                   |
| 0.25             | 0.125           | 3.495                | 54.672                | 4.9361                   | 77.2149                   |
| 0.50             | 0.375           | 2.662                | 57.334                | 3.7596                   | 80.9745                   |
| 0.75             | 0.625           | 2.429                | 59.763                | 3.4305                   | 84.4051                   |
| 1.00             | 0.875           | 2.288                | 62.051                | 3.2314                   | 87.6365                   |
| 1.25             | 1.125           | 1.824                | 63.875                | 2.5761                   | 90.2126                   |
| 1.50             | 1.375           | 0.818                | 64.693                | 1.1553                   | 91.3678                   |
| 1.75             | 1.625           | 1.029                | 65.722                | 1.4533                   | 92.8211                   |
| 2.00             | 1.875           | 0.660                | 66.382                | 0.9321                   | 93.7533                   |
| 2.25             | 2.125           | 0.473                | 66.855                | 0.6680                   | 94.4213                   |
| 2.50             | 2.375           | 0.365                | 67.220                | 0.5155                   | 94.9368                   |
| 2.75             | 2.625           | 0.176                | 67.396                | 0.2486                   | 95.1854                   |
| 3.00             | 2.875           | 0.110                | 67.506                | 0.1554                   | 95.3407                   |
| 3.25             | 3.125           | 0.069                | 67.575                | 0.0975                   | 95.4382                   |
| 3.50             | 3.375           | 0.094                | 67.669                | 0.1328                   | 95.5709                   |
| 3.75             | 3.625           | 0.154                | 67.823                | 0.2175                   | 95.7884                   |
| 4.00             | 3.875           | 0.082                | 67.905                | 0.1158                   | 95.9042                   |
| 8.00             | 6.000           | 0.500                | 68.405                | 0.7062                   | 96.6104                   |
| PAN              |                 | 2.400                | 70.805                | 3.3896                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

## MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | -0.685       | -0.356          | -0.339                        | -0.322           | -0.288           |
| Std Dev:      | 1.299        | 2.178           | 2.248                         | 2.324            | 2.478            |
| Rel Dis:      | -1.898       | -6.115          | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 1.527        | 2.878           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 7.325        | 12.452          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 30.800       | 51.871          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 149.709      | 220.540         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 740.842      | 940.027         | = std dev/mean                |                  |                  |
| 8th MM:       | 3740.365     | 4018.496        | MM = moment measure           |                  |                  |
| Median:       | -1.026       | -0.972          |                               |                  |                  |

S1B1GS7A      ENTIRE SAMPLE ANALYSIS      MO-DA-YR: 2-7-2001

## ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mld-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 6.893                | 6.893                 | 9.9387                   | 9.9387                    |
| -1.75            | -1.875          | 1.749                | 8.642                 | 2.5218                   | 12.4605                   |
| -1.50            | -1.625          | 1.813                | 10.455                | 2.6141                   | 15.0746                   |
| -1.25            | -1.375          | 1.773                | 12.228                | 2.5564                   | 17.6310                   |
| -1.00            | -1.125          | 1.860                | 14.088                | 2.6819                   | 20.3129                   |
| -0.75            | -0.875          | 2.049                | 16.137                | 2.9544                   | 23.2672                   |
| -0.50            | -0.625          | 2.466                | 18.603                | 3.5556                   | 26.8229                   |
| -0.25            | -0.375          | 2.719                | 21.322                | 3.9204                   | 30.7433                   |
| 0.00             | -0.125          | 2.821                | 24.143                | 4.0675                   | 34.8108                   |
| 0.25             | 0.125           | 3.537                | 27.680                | 5.0998                   | 39.9106                   |
| 0.50             | 0.375           | 3.592                | 31.272                | 5.1792                   | 45.0898                   |
| 0.75             | 0.625           | 4.381                | 35.653                | 6.3168                   | 51.4065                   |
| 1.00             | 0.875           | 5.730                | 41.383                | 8.2618                   | 59.6684                   |
| 1.25             | 1.125           | 7.286                | 48.669                | 10.5054                  | 70.1737                   |
| 1.50             | 1.375           | 5.198                | 53.867                | 7.4948                   | 77.6685                   |
| 1.75             | 1.625           | 5.142                | 59.009                | 7.4140                   | 85.0825                   |
| 2.00             | 1.875           | 4.373                | 63.382                | 6.3052                   | 91.3878                   |
| 2.25             | 2.125           | 2.511                | 65.893                | 3.6205                   | 95.0083                   |
| 2.50             | 2.375           | 1.201                | 67.094                | 1.7317                   | 96.7400                   |
| 2.75             | 2.625           | 0.301                | 67.395                | 0.4340                   | 97.1740                   |
| 3.00             | 2.875           | 0.091                | 67.486                | 0.1312                   | 97.3052                   |
| 3.25             | 3.125           | 0.047                | 67.533                | 0.0678                   | 97.3729                   |
| 3.50             | 3.375           | 0.054                | 67.587                | 0.0779                   | 97.4508                   |
| 3.75             | 3.625           | 0.108                | 67.695                | 0.1557                   | 97.6065                   |
| 4.00             | 3.875           | 0.060                | 67.755                | 0.0865                   | 97.6930                   |
| 8.00             | 6.000           | 0.150                | 67.905                | 0.2163                   | 97.9093                   |
| PAN              |                 | 1.450                | 69.355                | 2.0907                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

## MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 0.330        | 0.511           | 0.522                         | 0.532            | 0.553            |
| Std Dev:      | 1.382        | 1.852           | 1.897                         | 1.948            | 2.053            |
| Rel Dis:      | 4.184        | 3.621           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -0.292       | 1.763           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 2.632        | 10.240          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 1.063        | 42.754          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 16.160       | 199.439         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 39.644       | 904.916         | = std dev/mean                |                  |                  |
| 8th MM:       | 197.682      | 4148.815        | MM = moment measure           |                  |                  |
| Median:       | 0.528        | 0.569           |                               |                  |                  |



S1B1GS8A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

## ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mld-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 4.939                | 4.939                 | 7.0998                   | 7.0998                    |
| -1.75            | -1.875          | 2.591                | 7.530                 | 3.7246                   | 10.8244                   |
| -1.50            | -1.625          | 2.860                | 10.390                | 4.1113                   | 14.9357                   |
| -1.25            | -1.375          | 3.340                | 13.730                | 4.8013                   | 19.7369                   |
| -1.00            | -1.125          | 3.781                | 17.511                | 5.4352                   | 25.1721                   |
| -0.75            | -0.875          | 4.568                | 22.079                | 6.5665                   | 31.7387                   |
| -0.50            | -0.625          | 5.327                | 27.406                | 7.6576                   | 39.3962                   |
| -0.25            | -0.375          | 5.748                | 33.154                | 8.2628                   | 47.6590                   |
| 0.00             | -0.125          | 5.020                | 38.174                | 7.2163                   | 54.8753                   |
| 0.25             | 0.125           | 5.422                | 43.596                | 7.7941                   | 62.6694                   |
| 0.50             | 0.375           | 4.668                | 48.264                | 6.7103                   | 69.3797                   |
| 0.75             | 0.625           | 4.243                | 52.507                | 6.0993                   | 75.4790                   |
| 1.00             | 0.875           | 4.175                | 56.682                | 6.0016                   | 81.4806                   |
| 1.25             | 1.125           | 4.015                | 60.697                | 5.7716                   | 87.2522                   |
| 1.50             | 1.375           | 2.198                | 62.895                | 3.1596                   | 90.4118                   |
| 1.75             | 1.625           | 2.351                | 65.246                | 3.3796                   | 93.7914                   |
| 2.00             | 1.875           | 0.886                | 66.132                | 1.2736                   | 95.0650                   |
| 2.25             | 2.125           | 0.365                | 66.497                | 0.5247                   | 95.5897                   |
| 2.50             | 2.375           | 0.155                | 66.652                | 0.2228                   | 95.8125                   |
| 2.75             | 2.625           | 0.074                | 66.726                | 0.1064                   | 95.9189                   |
| 3.00             | 2.875           | 0.054                | 66.780                | 0.0776                   | 95.9965                   |
| 3.25             | 3.125           | 0.035                | 66.815                | 0.0503                   | 96.0469                   |
| 3.50             | 3.375           | 0.047                | 66.862                | 0.0676                   | 96.1144                   |
| 3.75             | 3.625           | 0.090                | 66.952                | 0.1294                   | 96.2438                   |
| 4.00             | 3.875           | 0.063                | 67.015                | 0.0906                   | 96.3344                   |
| 8.00             | 6.000           | 0.250                | 67.265                | 0.3594                   | 96.6937                   |
| PAN              |                 | 2.300                | 69.565                | 3.3063                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

## MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | -0.199       | 0.105           | 0.122                         | 0.138            | 0.171            |
| Std Dev:      | 1.188        | 2.027           | 2.097                         | 2.172            | 2.325            |
| Rel Dis:      | -5.976       | 19.239          | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 0.588        | 2.796           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 4.786        | 12.961          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 15.809       | 55.246          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 84.035       | 242.049         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 411.076      | 1057.529        | = std dev/mean                |                  |                  |
| 8th MM:       | 2126.779     | 4631.704        | MM = moment measure           |                  |                  |
| Median:       | -0.351       | -0.294          |                               |                  |                  |

S1B1GS9A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

## ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mld-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 5.550                | 5.550                 | 8.6940                   | 8.6940                    |
| -1.75            | -1.875          | 1.384                | 6.934                 | 2.1680                   | 10.8620                   |
| -1.50            | -1.625          | 1.814                | 8.748                 | 2.8416                   | 13.7037                   |
| -1.25            | -1.375          | 1.952                | 10.700                | 3.0578                   | 16.7614                   |
| -1.00            | -1.125          | 2.058                | 12.758                | 3.2238                   | 19.9853                   |
| -0.75            | -0.875          | 2.174                | 14.932                | 3.4055                   | 23.3908                   |
| -0.50            | -0.625          | 2.618                | 17.550                | 4.1011                   | 27.4919                   |
| -0.25            | -0.375          | 2.746                | 20.296                | 4.3016                   | 31.7935                   |
| 0.00             | -0.125          | 2.775                | 23.071                | 4.3470                   | 36.1405                   |
| 0.25             | 0.125           | 3.608                | 26.679                | 5.6519                   | 41.7924                   |
| 0.50             | 0.375           | 3.711                | 30.390                | 5.8132                   | 47.6056                   |
| 0.75             | 0.625           | 4.194                | 34.584                | 6.5699                   | 54.1755                   |
| 1.00             | 0.875           | 4.923                | 39.507                | 7.7118                   | 61.8873                   |
| 1.25             | 1.125           | 5.648                | 45.155                | 8.8475                   | 70.7348                   |
| 1.50             | 1.375           | 3.481                | 48.636                | 5.4530                   | 76.1878                   |
| 1.75             | 1.625           | 4.539                | 53.175                | 7.1103                   | 83.2981                   |
| 2.00             | 1.875           | 3.565                | 56.740                | 5.5845                   | 88.8826                   |
| 2.25             | 2.125           | 2.838                | 59.578                | 4.4457                   | 93.3283                   |
| 2.50             | 2.375           | 1.422                | 61.000                | 2.2275                   | 95.5559                   |
| 2.75             | 2.625           | 0.367                | 61.367                | 0.5749                   | 96.1308                   |
| 3.00             | 2.875           | 0.119                | 61.486                | 0.1864                   | 96.3172                   |
| 3.25             | 3.125           | 0.060                | 61.546                | 0.0940                   | 96.4112                   |
| 3.50             | 3.375           | 0.078                | 61.624                | 0.1222                   | 96.5334                   |
| 3.75             | 3.625           | 0.111                | 61.735                | 0.1739                   | 96.7072                   |
| 4.00             | 3.875           | 0.052                | 61.787                | 0.0815                   | 96.7887                   |
| 8.00             | 6.000           | 0.350                | 62.137                | 0.5483                   | 97.3370                   |
| PAN              |                 | 1.700                | 63.837                | 2.6630                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

## MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 0.331        | 0.562           | 0.576                         | 0.589            | 0.615            |
| Std Dev:      | 1.414        | 1.981           | 2.033                         | 2.093            | 2.217            |
| Rel Dis:      | 4.267        | 3.523           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 0.029        | 1.926           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 3.263        | 9.768           | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 4.848        | 38.333          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 28.397       | 164.849         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 92.651       | 694.272         | = std dev/mean                |                  |                  |
| 8th MM:       | 396.429      | 2952.392        | MM = moment measure           |                  |                  |
| Median:       | 0.415        | 0.466           |                               |                  |                  |

S1B2GS1A      ENTIRE SAMPLE ANALYSIS      MO-DA-YR: 2-7-2001

## ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.297                | 0.297                 | 0.4226                   | 0.4226                    |
| -1.75            | -1.875          | 0.092                | 0.389                 | 0.1309                   | 0.5535                    |
| -1.50            | -1.625          | 0.083                | 0.472                 | 0.1181                   | 0.6716                    |
| -1.25            | -1.375          | 0.142                | 0.614                 | 0.2021                   | 0.8737                    |
| -1.00            | -1.125          | 0.322                | 0.936                 | 0.4582                   | 1.3319                    |
| -0.75            | -0.875          | 0.328                | 1.264                 | 0.4667                   | 1.7986                    |
| -0.50            | -0.625          | 0.673                | 1.937                 | 0.9577                   | 2.7563                    |
| -0.25            | -0.375          | 1.041                | 2.978                 | 1.4813                   | 4.2376                    |
| 0.00             | -0.125          | 1.467                | 4.445                 | 2.0875                   | 6.3252                    |
| 0.25             | 0.125           | 2.711                | 7.156                 | 3.8577                   | 10.1829                   |
| 0.50             | 0.375           | 3.705                | 10.861                | 5.2721                   | 15.4550                   |
| 0.75             | 0.625           | 5.285                | 16.146                | 7.5205                   | 22.9755                   |
| 1.00             | 0.875           | 8.201                | 24.347                | 11.6699                  | 34.6453                   |
| 1.25             | 1.125           | 12.902               | 37.249                | 18.3593                  | 53.0046                   |
| 1.50             | 1.375           | 11.383               | 48.632                | 16.1978                  | 69.2024                   |
| 1.75             | 1.625           | 12.084               | 60.716                | 17.1953                  | 86.3977                   |
| 2.00             | 1.875           | 4.783                | 65.499                | 6.8061                   | 93.2038                   |
| 2.25             | 2.125           | 1.893                | 67.392                | 2.6937                   | 95.8975                   |
| 2.50             | 2.375           | 0.821                | 68.213                | 1.1683                   | 97.0658                   |
| 2.75             | 2.625           | 0.292                | 68.505                | 0.4155                   | 97.4813                   |
| 3.00             | 2.875           | 0.124                | 68.629                | 0.1764                   | 97.6578                   |
| 3.25             | 3.125           | 0.053                | 68.682                | 0.0754                   | 97.7332                   |
| 3.50             | 3.375           | 0.037                | 68.719                | 0.0527                   | 97.7858                   |
| 3.75             | 3.625           | 0.037                | 68.756                | 0.0527                   | 97.8385                   |
| 4.00             | 3.875           | 0.019                | 68.775                | 0.0270                   | 97.8655                   |
| 8.00             | 6.000           | 0.100                | 68.875                | 0.1423                   | 98.0078                   |
| PAN              |                 | 1.400                | 70.275                | 1.9922                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

## MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 1.109        | 1.266           | 1.276                         | 1.286            | 1.306            |
| Std Dev:      | 0.723        | 1.321           | 1.378                         | 1.439            | 1.562            |
| Rel Dis:      | 0.652        | 1.043           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -0.546       | 3.858           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 8.207        | 24.504          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 7.054        | 138.693         | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 203.595      | 817.663         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 728.055      | 4760.836        | = std dev/mean                |                  |                  |
| 8th MM:       | 7448.519     | 27879.776       | MM = moment measure           |                  |                  |
| Median:       | 1.071        | 1.084           |                               |                  |                  |

S1B2GS2A      ENTIRE SAMPLE ANALYSIS      MO-DA-YR: 2-7-2001

## ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 14.926               | 14.926                | 20.1907                  | 20.1907                   |
| -1.75            | -1.875          | 0.882                | 15.808                | 1.1931                   | 21.3838                   |
| -1.50            | -1.625          | 1.291                | 17.099                | 1.7464                   | 23.1302                   |
| -1.25            | -1.375          | 1.601                | 18.700                | 2.1657                   | 25.2959                   |
| -1.00            | -1.125          | 1.470                | 20.170                | 1.9885                   | 27.2844                   |
| -0.75            | -0.875          | 1.417                | 21.587                | 1.9168                   | 29.2012                   |
| -0.50            | -0.625          | 1.956                | 23.543                | 2.6459                   | 31.8471                   |
| -0.25            | -0.375          | 2.276                | 25.819                | 3.0788                   | 34.9259                   |
| 0.00             | -0.125          | 2.719                | 28.538                | 3.6781                   | 38.6040                   |
| 0.25             | 0.125           | 3.731                | 32.269                | 5.0470                   | 43.6510                   |
| 0.50             | 0.375           | 3.894                | 36.163                | 5.2675                   | 48.9185                   |
| 0.75             | 0.625           | 4.522                | 40.685                | 6.1170                   | 55.0355                   |
| 1.00             | 0.875           | 5.782                | 46.467                | 7.8214                   | 62.8569                   |
| 1.25             | 1.125           | 6.753                | 53.220                | 9.1349                   | 71.9919                   |
| 1.50             | 1.375           | 4.496                | 57.716                | 6.0818                   | 78.0737                   |
| 1.75             | 1.625           | 6.007                | 63.723                | 8.1258                   | 86.1995                   |
| 2.00             | 1.875           | 4.305                | 68.028                | 5.8235                   | 92.0230                   |
| 2.25             | 2.125           | 2.714                | 70.742                | 3.6713                   | 95.6943                   |
| 2.50             | 2.375           | 1.275                | 72.017                | 1.7247                   | 97.4190                   |
| 2.75             | 2.625           | 0.312                | 72.329                | 0.4220                   | 97.8411                   |
| 3.00             | 2.875           | 0.079                | 72.408                | 0.1069                   | 97.9479                   |
| 3.25             | 3.125           | 0.022                | 72.430                | 0.0298                   | 97.9777                   |
| 3.50             | 3.375           | 0.017                | 72.447                | 0.0230                   | 98.0007                   |
| 3.75             | 3.625           | 0.019                | 72.466                | 0.0257                   | 98.0264                   |
| 4.00             | 3.875           | 0.009                | 72.475                | 0.0122                   | 98.0386                   |
| 8.00             | 6.000           | 0.100                | 72.575                | 0.1353                   | 98.1738                   |
| PAN              |                 | 1.350                | 73.925                | 1.8262                   | 100.0000                  |

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## MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 0.126        | 0.288           | 0.297                         | 0.306            | 0.324            |
| Std Dev:      | 1.501        | 1.909           | 1.948                         | 1.993            | 2.085            |
| Rel Dis:      | 11.954       | 6.636           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -0.279       | 1.471           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 2.017        | 8.862           | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 0.254        | 36.403          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 8.451        | 169.343         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 17.252       | 765.704         | = std dev/mean                |                  |                  |
| 8th MM:       | 84.391       | 3496.088        | MM = moment measure           |                  |                  |
| Median:       | 0.382        | 0.419           |                               |                  |                  |

| S1B2GS3A                         |                 | ENTIRE SAMPLE ANALYSIS |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|-----------------|------------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                 |                        |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g)   | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 4.647                  | 4.647                 | 6.1043                   | 6.1043                    |
| -1.75                            | -1.875          | 1.519                  | 6.166                 | 1.9953                   | 8.0996                    |
| -1.50                            | -1.625          | 1.589                  | 7.755                 | 2.0873                   | 10.1869                   |
| -1.25                            | -1.375          | 1.537                  | 9.292                 | 2.0190                   | 12.2059                   |
| -1.00                            | -1.125          | 2.260                  | 11.552                | 2.9687                   | 15.1746                   |
| -0.75                            | -0.875          | 2.891                  | 14.443                | 3.7976                   | 18.9722                   |
| -0.50                            | -0.625          | 3.761                  | 18.204                | 4.9404                   | 23.9127                   |
| -0.25                            | -0.375          | 3.917                  | 22.121                | 5.1453                   | 29.0580                   |
| 0.00                             | -0.125          | 4.064                  | 26.185                | 5.3384                   | 34.3965                   |
| 0.25                             | 0.125           | 5.470                  | 31.655                | 7.1854                   | 41.5818                   |
| 0.50                             | 0.375           | 5.120                  | 36.775                | 6.7256                   | 48.3074                   |
| 0.75                             | 0.625           | 5.516                  | 42.291                | 7.2458                   | 55.5532                   |
| 1.00                             | 0.875           | 6.152                  | 48.443                | 8.0812                   | 63.6345                   |
| 1.25                             | 1.125           | 6.614                  | 55.057                | 8.6881                   | 72.3226                   |
| 1.50                             | 1.375           | 4.363                  | 59.420                | 5.7312                   | 78.0538                   |
| 1.75                             | 1.625           | 6.361                  | 65.781                | 8.3558                   | 86.4096                   |
| 2.00                             | 1.875           | 4.547                  | 70.328                | 5.9729                   | 92.3825                   |
| 2.25                             | 2.125           | 2.677                  | 73.005                | 3.5165                   | 95.8990                   |
| 2.50                             | 2.375           | 1.078                  | 74.083                | 1.4161                   | 97.3150                   |
| 2.75                             | 2.625           | 0.270                  | 74.353                | 0.3547                   | 97.6697                   |
| 3.00                             | 2.875           | 0.082                  | 74.435                | 0.1077                   | 97.7774                   |
| 3.25                             | 3.125           | 0.035                  | 74.470                | 0.0460                   | 97.8234                   |
| 3.50                             | 3.375           | 0.034                  | 74.504                | 0.0447                   | 97.8680                   |
| 3.75                             | 3.625           | 0.043                  | 74.547                | 0.0565                   | 97.9245                   |
| 4.00                             | 3.875           | 0.030                  | 74.577                | 0.0394                   | 97.9639                   |
| 8.00                             | 6.000           | 0.050                  | 74.627                | 0.0657                   | 98.0296                   |
| PAN                              |                 | 1.500                  | 76.127                | 1.9704                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
 Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES |              |                 |                               |                  |                  |
|-----------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:           | 0.361        | 0.531           | 0.541                         | 0.550            | 0.570            |
| Std Dev:        | 1.234        | 1.719           | 1.766                         | 1.817            | 1.923            |
| Rel Dis:        | 3.424        | 3.238           | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | -0.353       | 2.109           | CALCULATED USING              |                  |                  |
| Kurtosis:       | 2.591        | 12.525          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | -0.604       | 57.520          | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 13.502       | 287.692         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | 20.629       | 1408.428        | = std dev/mean                |                  |                  |
| 8th MM:         | 156.343      | 6946.061        | MM = moment measure           |                  |                  |
| Median:         | 0.399        | 0.433           |                               |                  |                  |

| S1B2GS4A                         |                    | ENTIRE SAMPLE ANALYSIS  |                          | MO-DA-YR: 2-7-2001          |                              |
|----------------------------------|--------------------|-------------------------|--------------------------|-----------------------------|------------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                    |                         |                          |                             |                              |
| Sieve Size<br>(Phi)              | Mid-Point<br>(Phi) | Frequency Weight<br>(g) | Cumulative Weight<br>(g) | Frequency Weight<br>Percent | Cumulative Weight<br>Percent |
| -2.00                            | -2.125             | 16.194                  | 16.194                   | 17.2073                     | 17.2073                      |
| -1.75                            | -1.875             | 1.513                   | 17.707                   | 1.6077                      | 18.8150                      |
| -1.50                            | -1.625             | 1.061                   | 18.768                   | 1.1274                      | 19.9424                      |
| -1.25                            | -1.375             | 0.952                   | 19.720                   | 1.0116                      | 20.9540                      |
| -1.00                            | -1.125             | 1.259                   | 20.979                   | 1.3378                      | 22.2918                      |
| -0.75                            | -0.875             | 1.448                   | 22.427                   | 1.5386                      | 23.8304                      |
| -0.50                            | -0.625             | 1.918                   | 24.345                   | 2.0380                      | 25.8684                      |
| -0.25                            | -0.375             | 2.429                   | 26.774                   | 2.5810                      | 28.4494                      |
| 0.00                             | -0.125             | 2.522                   | 29.296                   | 2.6798                      | 31.1292                      |
| 0.25                             | 0.125              | 3.654                   | 32.950                   | 3.8826                      | 35.0118                      |
| 0.50                             | 0.375              | 3.966                   | 36.916                   | 4.2142                      | 39.2260                      |
| 0.75                             | 0.625              | 5.103                   | 42.019                   | 5.4223                      | 44.6483                      |
| 1.00                             | 0.875              | 7.084                   | 49.103                   | 7.5273                      | 52.1756                      |
| 1.25                             | 1.125              | 9.932                   | 59.035                   | 10.5535                     | 62.7291                      |
| 1.50                             | 1.375              | 8.483                   | 67.518                   | 9.0138                      | 71.7429                      |
| 1.75                             | 1.625              | 12.640                  | 80.158                   | 13.4309                     | 85.1739                      |
| 2.00                             | 1.875              | 7.171                   | 87.329                   | 7.6197                      | 92.7936                      |
| 2.25                             | 2.125              | 3.277                   | 90.606                   | 3.4821                      | 96.2757                      |
| 2.50                             | 2.375              | 1.161                   | 91.767                   | 1.2336                      | 97.5093                      |
| 2.75                             | 2.625              | 0.332                   | 92.099                   | 0.3528                      | 97.8621                      |
| 3.00                             | 2.875              | 0.114                   | 92.213                   | 0.1211                      | 97.9832                      |
| 3.25                             | 3.125              | 0.036                   | 92.249                   | 0.0383                      | 98.0215                      |
| 3.50                             | 3.375              | 0.024                   | 92.273                   | 0.0255                      | 98.0470                      |
| 3.75                             | 3.625              | 0.022                   | 92.295                   | 0.0234                      | 98.0704                      |
| 4.00                             | 3.875              | 0.016                   | 92.311                   | 0.0170                      | 98.0874                      |
| 8.00                             | 6.000              | 0.050                   | 92.361                   | 0.0531                      | 98.1405                      |
| PAN                              |                    | 1.750                   | 94.111                   | 1.8595                      | 100.0000                     |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
 Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES |              |                 |                               |                  |                  |
|-----------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:           | 0.372        | 0.532           | 0.541                         | 0.551            | 0.569            |
| Std Dev:        | 1.468        | 1.868           | 1.910                         | 1.955            | 2.048            |
| Rel Dis:        | 3.951        | 3.510           | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | -0.642       | 1.289           | CALCULATED USING              |                  |                  |
| Kurtosis:       | 2.140        | 8.878           | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | -1.902       | 35.091          | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 6.884        | 165.307         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | -0.391       | 739.454         | = std dev/mean                |                  |                  |
| 8th MM:         | 39.764       | 3364.105        | MM = moment measure           |                  |                  |
| Median:         | 0.772        | 0.803           |                               |                  |                  |

S1B2GS5A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

## ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.952                | 0.952                 | 1.0554                   | 1.0554                    |
| -1.75            | -1.875          | 0.262                | 1.214                 | 0.2905                   | 1.3458                    |
| -1.50            | -1.625          | 0.303                | 1.517                 | 0.3359                   | 1.6817                    |
| -1.25            | -1.375          | 0.585                | 2.102                 | 0.6485                   | 2.3303                    |
| -1.00            | -1.125          | 0.676                | 2.778                 | 0.7494                   | 3.0797                    |
| -0.75            | -0.875          | 0.973                | 3.751                 | 1.0787                   | 4.1584                    |
| -0.50            | -0.625          | 1.561                | 5.312                 | 1.7305                   | 5.8889                    |
| -0.25            | -0.375          | 2.238                | 7.550                 | 2.4810                   | 8.3699                    |
| 0.00             | -0.125          | 2.907                | 10.457                | 3.2227                   | 11.5926                   |
| 0.25             | 0.125           | 4.934                | 15.391                | 5.4698                   | 17.0624                   |
| 0.50             | 0.375           | 5.506                | 20.897                | 6.1039                   | 23.1664                   |
| 0.75             | 0.625           | 6.991                | 27.888                | 7.7502                   | 30.9166                   |
| 1.00             | 0.875           | 9.435                | 37.323                | 10.4596                  | 41.3762                   |
| 1.25             | 1.125           | 13.569               | 50.892                | 15.0426                  | 56.4188                   |
| 1.50             | 1.375           | 11.559               | 62.451                | 12.8143                  | 69.2331                   |
| 1.75             | 1.625           | 14.590               | 77.041                | 16.1744                  | 85.4075                   |
| 2.00             | 1.875           | 6.865                | 83.906                | 7.6105                   | 93.0180                   |
| 2.25             | 2.125           | 2.753                | 86.659                | 3.0520                   | 96.0700                   |
| 2.50             | 2.375           | 1.050                | 87.709                | 1.1640                   | 97.2340                   |
| 2.75             | 2.625           | 0.378                | 88.087                | 0.4191                   | 97.6531                   |
| 3.00             | 2.875           | 0.155                | 88.242                | 0.1718                   | 97.8249                   |
| 3.25             | 3.125           | 0.073                | 88.315                | 0.0809                   | 97.9059                   |
| 3.50             | 3.375           | 0.072                | 88.387                | 0.0798                   | 97.9857                   |
| 3.75             | 3.625           | 0.084                | 88.471                | 0.0931                   | 98.0788                   |
| 4.00             | 3.875           | 0.033                | 88.504                | 0.0366                   | 98.1154                   |
| 8.00             | 6.000           | 0.100                | 88.604                | 0.1109                   | 98.2262                   |
| PAN              |                 | 1.600                | 90.204                | 1.7738                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

## MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-----------------|------------------|------------------|
| Mean:         | 0.979        | 1.121           | 1.130           | 1.139            | 1.157            |
| Std Dev:      | 0.870        | 1.370           | 1.421           | 1.475            | 1.584            |
| Rel Dis:      | 0.889        | 1.222           |                 |                  |                  |
| Skewness:     | -0.771       | 3.095           |                 |                  |                  |
| Kurtosis:     | 5.640        | 20.637          |                 |                  |                  |
| 5th MM:       | -2.635       | 112.151         |                 |                  |                  |
| 6th MM:       | 80.110       | 654.903         |                 |                  |                  |
| 7th MM:       | 135.959      | 3737.073        |                 |                  |                  |
| 8th MM:       | 1812.710     | 21528.838       |                 |                  |                  |
| Median:       | 1.004        | 1.018           |                 |                  |                  |

STATISTICAL MEASURES  
CALCULATED USING  
METHOD OF MOMENTS

Std Dev = standard deviation  
Rel Dis = relative dispersion  
= std dev/mean  
MM = moment measure

S1B2GS6A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

## ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 6.158                | 6.158                 | 7.1358                   | 7.1358                    |
| -1.75            | -1.875          | 1.205                | 7.363                 | 1.3963                   | 8.5322                    |
| -1.50            | -1.625          | 1.814                | 9.177                 | 2.1020                   | 10.6342                   |
| -1.25            | -1.375          | 2.151                | 11.328                | 2.4926                   | 13.1268                   |
| -1.00            | -1.125          | 2.692                | 14.020                | 3.1195                   | 16.2462                   |
| -0.75            | -0.875          | 2.866                | 16.886                | 3.3211                   | 19.5673                   |
| -0.50            | -0.625          | 3.317                | 20.203                | 3.8437                   | 23.4110                   |
| -0.25            | -0.375          | 4.055                | 24.258                | 4.6989                   | 28.1099                   |
| 0.00             | -0.125          | 3.908                | 28.166                | 4.5285                   | 32.6384                   |
| 0.25             | 0.125           | 4.996                | 33.162                | 5.7893                   | 38.4278                   |
| 0.50             | 0.375           | 5.098                | 38.260                | 5.9075                   | 44.3353                   |
| 0.75             | 0.625           | 6.076                | 44.336                | 7.0408                   | 51.3761                   |
| 1.00             | 0.875           | 7.606                | 51.942                | 8.8137                   | 60.1898                   |
| 1.25             | 1.125           | 9.480                | 61.422                | 10.9853                  | 71.1751                   |
| 1.50             | 1.375           | 6.390                | 67.812                | 7.4047                   | 78.5798                   |
| 1.75             | 1.625           | 8.128                | 75.940                | 9.4186                   | 87.9984                   |
| 2.00             | 1.875           | 4.731                | 80.671                | 5.4822                   | 93.4807                   |
| 2.25             | 2.125           | 2.303                | 82.974                | 2.6687                   | 96.1493                   |
| 2.50             | 2.375           | 0.935                | 83.909                | 1.0835                   | 97.2328                   |
| 2.75             | 2.625           | 0.241                | 84.150                | 0.2793                   | 97.5121                   |
| 3.00             | 2.875           | 0.066                | 84.216                | 0.0765                   | 97.5886                   |
| 3.25             | 3.125           | 0.023                | 84.239                | 0.0267                   | 97.6152                   |
| 3.50             | 3.375           | 0.021                | 84.260                | 0.0243                   | 97.6395                   |
| 3.75             | 3.625           | 0.022                | 84.282                | 0.0255                   | 97.6650                   |
| 4.00             | 3.875           | 0.015                | 84.297                | 0.0174                   | 97.6824                   |
| 8.00             | 6.000           | 0.050                | 84.347                | 0.0579                   | 97.7404                   |
| PAN              |                 | 1.950                | 86.297                | 2.2596                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

## MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-----------------|------------------|------------------|
| Mean:         | 0.381        | 0.576           | 0.587           | 0.599            | 0.621            |
| Std Dev:      | 1.239        | 1.778           | 1.831           | 1.887            | 2.003            |
| Rel Dis:      | 3.249        | 3.086           |                 |                  |                  |
| Skewness:     | -0.508       | 2.107           |                 |                  |                  |
| Kurtosis:     | 2.569        | 12.227          |                 |                  |                  |
| 5th MM:       | -1.437       | 54.039          |                 |                  |                  |
| 6th MM:       | 12.676       | 260.512         |                 |                  |                  |
| 7th MM:       | 13.242       | 1226.342        |                 |                  |                  |
| 8th MM:       | 134.847      | 5818.775        |                 |                  |                  |
| Median:       | 0.536        | 0.576           |                 |                  |                  |

STATISTICAL MEASURES  
CALCULATED USING  
METHOD OF MOMENTS

Std Dev = standard deviation  
Rel Dis = relative dispersion  
= std dev/mean  
MM = moment measure



S1B2GS7A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 3.435                | 3.435                 | 3.9314                   | 3.9314                    |
| -1.75            | -1.875          | 0.445                | 3.880                 | 0.5093                   | 4.4407                    |
| -1.50            | -1.625          | 1.189                | 5.069                 | 1.3608                   | 5.8016                    |
| -1.25            | -1.375          | 1.278                | 6.347                 | 1.4627                   | 7.2643                    |
| -1.00            | -1.125          | 1.184                | 7.531                 | 1.3551                   | 8.6194                    |
| -0.75            | -0.875          | 1.895                | 9.426                 | 2.1689                   | 10.7882                   |
| -0.50            | -0.625          | 2.321                | 11.747                | 2.6564                   | 13.4447                   |
| -0.25            | -0.375          | 2.723                | 14.470                | 3.1165                   | 16.5612                   |
| 0.00             | -0.125          | 3.075                | 17.545                | 3.5194                   | 20.0806                   |
| 0.25             | 0.125           | 4.277                | 21.822                | 4.8951                   | 24.9757                   |
| 0.50             | 0.375           | 4.455                | 26.277                | 5.0988                   | 30.0745                   |
| 0.75             | 0.625           | 5.628                | 31.905                | 6.4413                   | 36.5159                   |
| 1.00             | 0.875           | 7.533                | 39.438                | 8.6217                   | 45.1375                   |
| 1.25             | 1.125           | 10.106               | 49.544                | 11.5665                  | 56.7040                   |
| 1.50             | 1.375           | 8.750                | 58.294                | 10.0145                  | 66.7186                   |
| 1.75             | 1.625           | 13.238               | 71.532                | 15.1511                  | 81.8697                   |
| 2.00             | 1.875           | 8.544                | 80.076                | 9.7788                   | 91.6484                   |
| 2.25             | 2.125           | 3.921                | 83.997                | 4.4877                   | 96.1361                   |
| 2.50             | 2.375           | 1.135                | 85.132                | 1.2990                   | 97.4351                   |
| 2.75             | 2.625           | 0.248                | 85.380                | 0.2838                   | 97.7190                   |
| 3.00             | 2.875           | 0.074                | 85.454                | 0.0847                   | 97.8037                   |
| 3.25             | 3.125           | 0.024                | 85.478                | 0.0275                   | 97.8311                   |
| 3.50             | 3.375           | 0.017                | 85.495                | 0.0195                   | 97.8506                   |
| 3.75             | 3.625           | 0.017                | 85.512                | 0.0195                   | 97.8701                   |
| 4.00             | 3.875           | 0.011                | 85.523                | 0.0126                   | 97.8826                   |
| 8.00             | 6.000           | 0.100                | 85.623                | 0.1145                   | 97.9971                   |
| PAN              |                 | 1.750                | 87.373                | 2.0029                   | 100.0000                  |

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MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-----------------|------------------|------------------|
| Mean:         | 0.798        | 0.962           | 0.972           | 0.982            | 1.002            |
| Std Dev:      | 1.121        | 1.602           | 1.652           | 1.705            | 1.814            |
| Rel Dis:      | 1.405        | 1.665           |                 |                  |                  |
| Skewness:     | -0.885       | 2.115           |                 |                  |                  |
| Kurtosis:     | 3.827        | 13.894          |                 |                  |                  |
| 5th MM:       | -3.937       | 63.308          |                 |                  |                  |
| 6th MM:       | 29.183       | 327.302         |                 |                  |                  |
| 7th MM:       | 14.389       | 1621.360        |                 |                  |                  |
| 8th MM:       | 360.754      | 8163.198        |                 |                  |                  |
| Median:       | 0.958        | 0.980           |                 |                  |                  |

STATISTICAL MEASURES

CALCULATED USING

METHOD OF MOMENTS

Std Dev = standard deviation

Rel Dis = relative dispersion

= std dev/mean

MM = moment measure

S1C1GS10A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 1.067                | 1.067                 | 1.3688                   | 1.3688                    |
| -1.75            | -1.875          | 0.180                | 1.247                 | 0.2309                   | 1.5998                    |
| -1.50            | -1.625          | 0.625                | 1.872                 | 0.8018                   | 2.4016                    |
| -1.25            | -1.375          | 0.899                | 2.771                 | 1.1533                   | 3.5549                    |
| -1.00            | -1.125          | 1.012                | 3.783                 | 1.2983                   | 4.8532                    |
| -0.75            | -0.875          | 1.607                | 5.390                 | 2.0616                   | 6.9148                    |
| -0.50            | -0.625          | 2.661                | 8.051                 | 3.4138                   | 10.3285                   |
| -0.25            | -0.375          | 3.516                | 11.567                | 4.5106                   | 14.8392                   |
| 0.00             | -0.125          | 4.002                | 15.569                | 5.1341                   | 19.9733                   |
| 0.25             | 0.125           | 5.347                | 20.916                | 6.8596                   | 26.8329                   |
| 0.50             | 0.375           | 5.525                | 26.441                | 7.0880                   | 33.9209                   |
| 0.75             | 0.625           | 6.583                | 33.024                | 8.4453                   | 42.3662                   |
| 1.00             | 0.875           | 8.120                | 41.144                | 10.4171                  | 52.7832                   |
| 1.25             | 1.125           | 9.695                | 50.839                | 12.4376                  | 65.2208                   |
| 1.50             | 1.375           | 5.924                | 56.763                | 7.5998                   | 72.8207                   |
| 1.75             | 1.625           | 6.733                | 63.496                | 8.6377                   | 81.4584                   |
| 2.00             | 1.875           | 4.003                | 67.499                | 5.1354                   | 86.5938                   |
| 2.25             | 2.125           | 2.621                | 70.120                | 3.3625                   | 89.9563                   |
| 2.50             | 2.375           | 1.954                | 72.074                | 2.5068                   | 92.4630                   |
| 2.75             | 2.625           | 1.542                | 73.616                | 1.9782                   | 94.4412                   |
| 3.00             | 2.875           | 1.340                | 74.956                | 1.7191                   | 96.1603                   |
| 3.25             | 3.125           | 0.621                | 75.577                | 0.7967                   | 96.9570                   |
| 3.50             | 3.375           | 0.292                | 75.869                | 0.3746                   | 97.3316                   |
| 3.75             | 3.625           | 0.235                | 76.104                | 0.3015                   | 97.6331                   |
| 4.00             | 3.875           | 0.095                | 76.199                | 0.1219                   | 97.7549                   |
| 8.00             | 6.000           | 0.050                | 76.249                | 0.0641                   | 97.8191                   |
| PAN              |                 | 1.700                | 77.949                | 2.1809                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

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MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-----------------|------------------|------------------|
| Mean:         | 0.828        | 1.006           | 1.017           | 1.028            | 1.050            |
| Std Dev:      | 1.068        | 1.600           | 1.653           | 1.710            | 1.828            |
| Rel Dis:      | 1.290        | 1.590           |                 |                  |                  |
| Skewness:     | -0.172       | 2.559           |                 |                  |                  |
| Kurtosis:     | 3.481        | 14.506          |                 |                  |                  |
| 5th MM:       | -0.162       | 68.418          |                 |                  |                  |
| 6th MM:       | 23.830       | 346.140         |                 |                  |                  |
| 7th MM:       | 26.790       | 1718.506        |                 |                  |                  |
| 8th MM:       | 291.958      | 8598.400        |                 |                  |                  |
| Median:       | 0.782        | 0.808           |                 |                  |                  |

STATISTICAL MEASURES

CALCULATED USING

METHOD OF MOMENTS

Std Dev = standard deviation

Rel Dis = relative dispersion

= std dev/mean

MM = moment measure



S1C1GS11A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

## ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.334                | 0.334                 | 0.4796                   | 0.4796                    |
| -1.75            | -1.875          | 0.233                | 0.567                 | 0.3346                   | 0.8142                    |
| -1.50            | -1.625          | 0.160                | 0.727                 | 0.2297                   | 1.0439                    |
| -1.25            | -1.375          | 0.337                | 1.064                 | 0.4839                   | 1.5278                    |
| -1.00            | -1.125          | 0.511                | 1.575                 | 0.7338                   | 2.2616                    |
| -0.75            | -0.875          | 0.635                | 2.210                 | 0.9118                   | 3.1734                    |
| -0.50            | -0.625          | 1.330                | 3.540                 | 1.9098                   | 5.0832                    |
| -0.25            | -0.375          | 1.725                | 5.265                 | 2.4770                   | 7.5602                    |
| 0.00             | -0.125          | 2.171                | 7.436                 | 3.1174                   | 10.6776                   |
| 0.25             | 0.125           | 3.484                | 10.920                | 5.0028                   | 15.6804                   |
| 0.50             | 0.375           | 4.193                | 15.113                | 6.0209                   | 21.7013                   |
| 0.75             | 0.625           | 5.699                | 20.812                | 8.1834                   | 29.8847                   |
| 1.00             | 0.875           | 7.649                | 28.461                | 10.9835                  | 40.8682                   |
| 1.25             | 1.125           | 9.329                | 37.790                | 13.3958                  | 54.2640                   |
| 1.50             | 1.375           | 6.487                | 44.277                | 9.3149                   | 63.5789                   |
| 1.75             | 1.625           | 8.748                | 53.025                | 12.5616                  | 76.1405                   |
| 2.00             | 1.875           | 6.408                | 59.433                | 9.2015                   | 85.3420                   |
| 2.25             | 2.125           | 4.497                | 63.930                | 6.4574                   | 91.7994                   |
| 2.50             | 2.375           | 2.566                | 66.496                | 3.6846                   | 95.4840                   |
| 2.75             | 2.625           | 1.099                | 67.595                | 1.5781                   | 97.0621                   |
| 3.00             | 2.875           | 0.411                | 68.006                | 0.5902                   | 97.6522                   |
| 3.25             | 3.125           | 0.113                | 68.119                | 0.1623                   | 97.8145                   |
| 3.50             | 3.375           | 0.037                | 68.156                | 0.0531                   | 97.8676                   |
| 3.75             | 3.625           | 0.021                | 68.177                | 0.0302                   | 97.8978                   |
| 4.00             | 3.875           | 0.014                | 68.191                | 0.0201                   | 97.9179                   |
| 8.00             | 6.000           | 0.100                | 68.291                | 0.1436                   | 98.0615                   |
| PAN              |                 | 1.350                | 69.641                | 1.9385                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

## MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 1.085        | 1.238           | 1.248                         | 1.258            | 1.277            |
| Std Dev:      | 0.902        | 1.416           | 1.468                         | 1.523            | 1.638            |
| Rel Dis:      | 0.831        | 1.144           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -0.427       | 2.999           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 4.787        | 18.590          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 0.646        | 96.875          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 63.468       | 537.197         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 146.198      | 2923.776        | = std dev/mean                |                  |                  |
| 8th MM:       | 1389.826     | 16040.783       | MM = moment measure           |                  |                  |
| Median:       | 1.027        | 1.045           |                               |                  |                  |

S1C1GS12A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

## ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.546                | 0.546                 | 0.6602                   | 0.6602                    |
| -1.75            | -1.875          | 0.122                | 0.668                 | 0.1475                   | 0.8077                    |
| -1.50            | -1.625          | 0.098                | 0.766                 | 0.1185                   | 0.9262                    |
| -1.25            | -1.375          | 0.286                | 1.052                 | 0.3458                   | 1.2720                    |
| -1.00            | -1.125          | 0.415                | 1.467                 | 0.5018                   | 1.7737                    |
| -0.75            | -0.875          | 0.552                | 2.019                 | 0.6674                   | 2.4411                    |
| -0.50            | -0.625          | 0.888                | 2.907                 | 1.0737                   | 3.5148                    |
| -0.25            | -0.375          | 1.306                | 4.213                 | 1.5791                   | 5.0939                    |
| 0.00             | -0.125          | 1.790                | 6.003                 | 2.1643                   | 7.2582                    |
| 0.25             | 0.125           | 3.230                | 9.233                 | 3.9054                   | 11.1635                   |
| 0.50             | 0.375           | 4.230                | 13.463                | 5.1144                   | 16.2779                   |
| 0.75             | 0.625           | 6.212                | 19.675                | 7.5109                   | 23.7888                   |
| 1.00             | 0.875           | 9.487                | 29.162                | 11.4706                  | 35.2594                   |
| 1.25             | 1.125           | 12.730               | 41.892                | 15.3917                  | 50.6511                   |
| 1.50             | 1.375           | 9.634                | 51.526                | 11.6483                  | 62.2994                   |
| 1.75             | 1.625           | 11.975               | 63.501                | 14.4788                  | 76.7783                   |
| 2.00             | 1.875           | 7.356                | 70.857                | 8.8940                   | 85.6723                   |
| 2.25             | 2.125           | 4.744                | 75.601                | 5.7359                   | 91.4082                   |
| 2.50             | 2.375           | 2.858                | 78.459                | 3.4556                   | 94.8638                   |
| 2.75             | 2.625           | 1.371                | 79.830                | 1.6577                   | 96.5215                   |
| 3.00             | 2.875           | 0.637                | 80.467                | 0.7702                   | 97.2916                   |
| 3.25             | 3.125           | 0.238                | 80.705                | 0.2878                   | 97.5794                   |
| 3.50             | 3.375           | 0.123                | 80.828                | 0.1487                   | 97.7281                   |
| 3.75             | 3.625           | 0.058                | 80.886                | 0.0701                   | 97.7983                   |
| 4.00             | 3.875           | 0.021                | 80.907                | 0.0254                   | 97.8236                   |
| 8.00             | 6.000           | 0.100                | 81.007                | 0.1209                   | 97.9446                   |
| PAN              |                 | 1.700                | 82.707                | 2.0554                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

## MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 1.175        | 1.336           | 1.346                         | 1.356            | 1.377            |
| Std Dev:      | 0.838        | 1.391           | 1.448                         | 1.507            | 1.628            |
| Rel Dis:      | 0.713        | 1.041           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -0.539       | 3.239           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 5.840        | 20.005          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | -2.073       | 105.000         | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 88.343       | 586.288         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 128.186      | 3206.088        | = std dev/mean                |                  |                  |
| 8th MM:       | 2051.237     | 17695.823       | MM = moment measure           |                  |                  |
| Median:       | 1.098        | 1.114           |                               |                  |                  |

S1C1GS13A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.158                | 0.158                 | 0.2834                   | 0.2834                    |
| -1.75            | -1.875          | 0.101                | 0.259                 | 0.1811                   | 0.4645                    |
| -1.50            | -1.625          | 0.090                | 0.349                 | 0.1614                   | 0.6259                    |
| -1.25            | -1.375          | 0.143                | 0.492                 | 0.2565                   | 0.8824                    |
| -1.00            | -1.125          | 0.187                | 0.679                 | 0.3354                   | 1.2178                    |
| -0.75            | -0.875          | 0.155                | 0.834                 | 0.2780                   | 1.4957                    |
| -0.50            | -0.625          | 0.226                | 1.060                 | 0.4053                   | 1.9011                    |
| -0.25            | -0.375          | 0.242                | 1.302                 | 0.4340                   | 2.3351                    |
| 0.00             | -0.125          | 0.229                | 1.531                 | 0.4107                   | 2.7458                    |
| 0.25             | 0.125           | 0.271                | 1.802                 | 0.4860                   | 3.2318                    |
| 0.50             | 0.375           | 0.278                | 2.080                 | 0.4986                   | 3.7304                    |
| 0.75             | 0.625           | 0.271                | 2.351                 | 0.4860                   | 4.2164                    |
| 1.00             | 0.875           | 0.319                | 2.670                 | 0.5721                   | 4.7886                    |
| 1.25             | 1.125           | 0.338                | 3.008                 | 0.6062                   | 5.3947                    |
| 1.50             | 1.375           | 0.254                | 3.262                 | 0.4555                   | 5.8503                    |
| 1.75             | 1.625           | 0.357                | 3.619                 | 0.6403                   | 6.4905                    |
| 2.00             | 1.875           | 0.398                | 4.017                 | 0.7138                   | 7.2043                    |
| 2.25             | 2.125           | 0.524                | 4.541                 | 0.9398                   | 8.1441                    |
| 2.50             | 2.375           | 0.906                | 5.447                 | 1.6249                   | 9.7690                    |
| 2.75             | 2.625           | 1.579                | 7.026                 | 2.8319                   | 12.6009                   |
| 3.00             | 2.875           | 2.679                | 9.705                 | 4.8047                   | 17.4056                   |
| 3.25             | 3.125           | 3.546                | 13.251                | 6.3596                   | 23.7652                   |
| 3.50             | 3.375           | 6.601                | 19.852                | 11.8387                  | 35.6039                   |
| 3.75             | 3.625           | 12.826               | 32.678                | 23.0030                  | 58.6068                   |
| 4.00             | 3.875           | 9.880                | 42.558                | 17.7194                  | 76.3263                   |
| 8.00             | 6.000           | 9.100                | 51.658                | 16.3205                  | 92.6468                   |
| PAN              |                 | 4.100                | 55.758                | 7.3532                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 10.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 10.00 Phi | Pan at 10.50 Phi | Pan at 11.00 Phi | Pan at 12.00 Phi |
|---------------|--------------|------------------|------------------|------------------|------------------|
| Mean:         | 3.659        | 4.125            | 4.162            | 4.199            | 4.272            |
| Std Dev:      | 1.466        | 2.186            | 2.279            | 2.383            | 2.600            |
| Rel Dis:      | 0.401        | 0.530            |                  |                  |                  |
| Skewness:     | -0.632       | 1.002            |                  |                  |                  |
| Kurtosis:     | 5.186        | 5.144            |                  |                  |                  |
| 5th MM:       | -10.865      | 7.979            |                  |                  |                  |
| 6th MM:       | 45.155       | 34.483           |                  |                  |                  |
| 7th MM:       | -139.477     | 60.641           |                  |                  |                  |
| 8th MM:       | 512.594      | 242.478          |                  |                  |                  |
| Median:       | 3.492        | 3.531            |                  |                  |                  |

STATISTICAL MEASURES

CALCULATED USING

METHOD OF MOMENTS

Std Dev = standard deviation

Rel Dis = relative dispersion

= std dev/mean

MM = moment measure

S1C1GS14A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 1.029                | 1.029                 | 1.3836                   | 1.3836                    |
| -1.75            | -1.875          | 0.307                | 1.336                 | 0.4128                   | 1.7964                    |
| -1.50            | -1.625          | 0.582                | 1.918                 | 0.7826                   | 2.5790                    |
| -1.25            | -1.375          | 1.127                | 3.045                 | 1.5154                   | 4.0944                    |
| -1.00            | -1.125          | 1.405                | 4.450                 | 1.8892                   | 5.9837                    |
| -0.75            | -0.875          | 2.553                | 7.003                 | 3.4329                   | 9.4166                    |
| -0.50            | -0.625          | 3.579                | 10.582                | 4.8125                   | 14.2290                   |
| -0.25            | -0.375          | 4.705                | 15.287                | 6.3266                   | 20.5556                   |
| 0.00             | -0.125          | 4.701                | 19.988                | 6.3212                   | 26.8768                   |
| 0.25             | 0.125           | 5.842                | 25.830                | 7.8554                   | 34.7322                   |
| 0.50             | 0.375           | 5.862                | 31.692                | 7.8823                   | 42.6145                   |
| 0.75             | 0.625           | 7.066                | 38.758                | 9.5013                   | 52.1158                   |
| 1.00             | 0.875           | 7.711                | 46.469                | 10.3686                  | 62.4844                   |
| 1.25             | 1.125           | 8.491                | 54.960                | 11.4174                  | 73.9018                   |
| 1.50             | 1.375           | 4.975                | 59.935                | 6.6896                   | 80.5914                   |
| 1.75             | 1.625           | 5.881                | 65.816                | 7.9079                   | 88.4992                   |
| 2.00             | 1.875           | 3.396                | 69.212                | 4.5664                   | 93.0657                   |
| 2.25             | 2.125           | 1.737                | 70.949                | 2.3357                   | 95.4013                   |
| 2.50             | 2.375           | 0.818                | 71.767                | 1.0999                   | 96.5012                   |
| 2.75             | 2.625           | 0.328                | 72.095                | 0.4410                   | 96.9423                   |
| 3.00             | 2.875           | 0.178                | 72.273                | 0.2393                   | 97.1816                   |
| 3.25             | 3.125           | 0.077                | 72.350                | 0.1035                   | 97.2852                   |
| 3.50             | 3.375           | 0.049                | 72.399                | 0.0659                   | 97.3510                   |
| 3.75             | 3.625           | 0.052                | 72.451                | 0.0699                   | 97.4210                   |
| 4.00             | 3.875           | 0.068                | 72.519                | 0.0914                   | 97.5124                   |
| 8.00             | 6.000           | 0.200                | 72.719                | 0.2689                   | 97.7813                   |
| PAN              |                 | 1.650                | 74.369                | 2.2187                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-----------------|------------------|------------------|
| Mean:         | 0.575        | 0.762           | 0.773           | 0.784            | 0.806            |
| Std Dev:      | 1.021        | 1.606           | 1.662           | 1.721            | 1.843            |
| Rel Dis:      | 1.776        | 2.108           |                 |                  |                  |
| Skewness:     | 0.084        | 2.915           |                 |                  |                  |
| Kurtosis:     | 4.772        | 16.338          |                 |                  |                  |
| 5th MM:       | 9.872        | 80.313          |                 |                  |                  |
| 6th MM:       | 74.497       | 413.273         |                 |                  |                  |
| 7th MM:       | 322.340      | 2107.005        |                 |                  |                  |
| 8th MM:       | 1838.220     | 10793.410       |                 |                  |                  |
| Median:       | 0.540        | 0.569           |                 |                  |                  |

STATISTICAL MEASURES

CALCULATED USING

METHOD OF MOMENTS

Std Dev = standard deviation

Rel Dis = relative dispersion

= std dev/mean

MM = moment measure

S1C1GS15A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.110                | 0.110                 | 0.1684                   | 0.1684                    |
| -1.75            | -1.875          | 0.045                | 0.155                 | 0.0689                   | 0.2373                    |
| -1.50            | -1.625          | 0.006                | 0.161                 | 0.0092                   | 0.2465                    |
| -1.25            | -1.375          | 0.072                | 0.233                 | 0.1102                   | 0.3568                    |
| -1.00            | -1.125          | 0.133                | 0.366                 | 0.2036                   | 0.5604                    |
| -0.75            | -0.875          | 0.155                | 0.521                 | 0.2373                   | 0.7977                    |
| -0.50            | -0.625          | 0.233                | 0.754                 | 0.3568                   | 1.1545                    |
| -0.25            | -0.375          | 0.392                | 1.146                 | 0.6002                   | 1.7547                    |
| 0.00             | -0.125          | 0.549                | 1.695                 | 0.8406                   | 2.5953                    |
| 0.25             | 0.125           | 1.065                | 2.760                 | 1.6307                   | 4.2259                    |
| 0.50             | 0.375           | 1.521                | 4.281                 | 2.3289                   | 6.5548                    |
| 0.75             | 0.625           | 2.393                | 6.674                 | 3.6640                   | 10.2188                   |
| 1.00             | 0.875           | 4.108                | 10.782                | 6.2899                   | 16.5087                   |
| 1.25             | 1.125           | 6.433                | 17.215                | 9.8498                   | 26.3585                   |
| 1.50             | 1.375           | 5.839                | 23.054                | 8.9403                   | 35.2988                   |
| 1.75             | 1.625           | 10.639               | 33.693                | 16.2898                  | 51.5886                   |
| 2.00             | 1.875           | 10.249               | 43.942                | 15.6926                  | 67.2812                   |
| 2.25             | 2.125           | 9.251                | 53.193                | 14.1645                  | 81.4457                   |
| 2.50             | 2.375           | 6.203                | 59.396                | 9.4976                   | 90.9433                   |
| 2.75             | 2.625           | 2.157                | 61.553                | 3.3027                   | 94.2460                   |
| 3.00             | 2.875           | 0.641                | 62.194                | 0.9815                   | 95.2275                   |
| 3.25             | 3.125           | 0.291                | 62.485                | 0.4456                   | 95.6730                   |
| 3.50             | 3.375           | 0.225                | 62.710                | 0.3445                   | 96.0175                   |
| 3.75             | 3.625           | 0.262                | 62.972                | 0.4012                   | 96.4187                   |
| 4.00             | 3.875           | 0.189                | 63.161                | 0.2894                   | 96.7081                   |
| 8.00             | 6.000           | 0.650                | 63.811                | 0.9952                   | 97.7033                   |
| PAN              |                 | 1.500                | 65.311                | 2.2967                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 1.655        | 1.824           | 1.836                         | 1.847            | 1.870            |
| Std Dev:      | 0.856        | 1.394           | 1.451                         | 1.513            | 1.640            |
| Rel Dis:      | 0.517        | 0.764           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 0.727        | 3.207           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 9.875        | 17.678          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 28.095       | 85.753          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 206.709      | 442.513         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 800.994      | 2246.268        | = std dev/mean                |                  |                  |
| 8th MM:       | 4988.303     | 11548.502       | MM = moment measure           |                  |                  |
| Median:       | 1.583        | 1.601           |                               |                  |                  |

S1C1GS16A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 11.802               | 11.802                | 14.9221                  | 14.9221                   |
| -1.75            | -1.875          | 1.131                | 12.933                | 1.4300                   | 16.3521                   |
| -1.50            | -1.625          | 1.292                | 14.225                | 1.6336                   | 17.9856                   |
| -1.25            | -1.375          | 2.151                | 16.376                | 2.7197                   | 20.7053                   |
| -1.00            | -1.125          | 2.614                | 18.990                | 3.3051                   | 24.0103                   |
| -0.75            | -0.875          | 3.525                | 22.515                | 4.4569                   | 28.4672                   |
| -0.50            | -0.625          | 4.564                | 27.079                | 5.7706                   | 34.2378                   |
| -0.25            | -0.375          | 4.360                | 31.439                | 5.5126                   | 39.7504                   |
| 0.00             | -0.125          | 4.121                | 35.560                | 5.2105                   | 44.9609                   |
| 0.25             | 0.125           | 4.972                | 40.532                | 6.2864                   | 51.2473                   |
| 0.50             | 0.375           | 4.598                | 45.130                | 5.8136                   | 57.0609                   |
| 0.75             | 0.625           | 5.009                | 50.139                | 6.3332                   | 63.3941                   |
| 1.00             | 0.875           | 5.835                | 55.974                | 7.3776                   | 70.7716                   |
| 1.25             | 1.125           | 7.310                | 63.284                | 9.2425                   | 80.0142                   |
| 1.50             | 1.375           | 4.408                | 67.692                | 5.5733                   | 85.5875                   |
| 1.75             | 1.625           | 5.066                | 72.758                | 6.4053                   | 91.9928                   |
| 2.00             | 1.875           | 2.313                | 75.071                | 2.9245                   | 94.9172                   |
| 2.25             | 2.125           | 0.958                | 76.029                | 1.2113                   | 96.1285                   |
| 2.50             | 2.375           | 0.437                | 76.466                | 0.5525                   | 96.6810                   |
| 2.75             | 2.625           | 0.169                | 76.635                | 0.2137                   | 96.8947                   |
| 3.00             | 2.875           | 0.106                | 76.741                | 0.1340                   | 97.0287                   |
| 3.25             | 3.125           | 0.051                | 76.792                | 0.0645                   | 97.0932                   |
| 3.50             | 3.375           | 0.036                | 76.828                | 0.0455                   | 97.1387                   |
| 3.75             | 3.625           | 0.036                | 76.864                | 0.0455                   | 97.1843                   |
| 4.00             | 3.875           | 0.027                | 76.891                | 0.0341                   | 97.2184                   |
| 8.00             | 6.000           | 0.250                | 77.141                | 0.3161                   | 97.5345                   |
| PAN              |                 | 1.950                | 79.091                | 2.4655                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 0.000        | 0.222           | 0.234                         | 0.246            | 0.271            |
| Std Dev:      | 1.352        | 1.937           | 1.992                         | 2.051            | 2.171            |
| Rel Dis:      | -9586.804    | 8.737           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 0.031        | 2.168           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 3.025        | 11.254          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 5.003        | 48.075          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 29.404       | 218.895         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 110.984      | 984.915         | = std dev/mean                |                  |                  |
| 8th MM:       | 508.612      | 4455.172        | MM = moment measure           |                  |                  |
| Median:       | 0.026        | 0.075           |                               |                  |                  |

S1C1GS17A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.217                | 0.217                 | 0.3149                   | 0.3149                    |
| -1.75            | -1.875          | 0.076                | 0.293                 | 0.1103                   | 0.4252                    |
| -1.50            | -1.625          | 0.218                | 0.511                 | 0.3164                   | 0.7416                    |
| -1.25            | -1.375          | 0.351                | 0.862                 | 0.5094                   | 1.2510                    |
| -1.00            | -1.125          | 0.592                | 1.454                 | 0.8591                   | 2.1101                    |
| -0.75            | -0.875          | 0.621                | 2.075                 | 0.9012                   | 3.0113                    |
| -0.50            | -0.625          | 1.038                | 3.113                 | 1.5064                   | 4.5177                    |
| -0.25            | -0.375          | 1.423                | 4.536                 | 2.0651                   | 6.5828                    |
| 0.00             | -0.125          | 1.761                | 6.297                 | 2.5556                   | 9.1384                    |
| 0.25             | 0.125           | 2.877                | 9.174                 | 4.1752                   | 13.3136                   |
| 0.50             | 0.375           | 3.460                | 12.634                | 5.0213                   | 18.3349                   |
| 0.75             | 0.625           | 4.865                | 17.499                | 7.0602                   | 25.3951                   |
| 1.00             | 0.875           | 6.897                | 24.396                | 10.0091                  | 35.4042                   |
| 1.25             | 1.125           | 8.847                | 33.243                | 12.8390                  | 48.2433                   |
| 1.50             | 1.375           | 6.329                | 39.572                | 9.1848                   | 57.4281                   |
| 1.75             | 1.625           | 9.533                | 49.105                | 13.8346                  | 71.2627                   |
| 2.00             | 1.875           | 7.149                | 56.254                | 10.3749                  | 81.6376                   |
| 2.25             | 2.125           | 4.798                | 61.052                | 6.9630                   | 88.6006                   |
| 2.50             | 2.375           | 2.829                | 63.881                | 4.1055                   | 92.7061                   |
| 2.75             | 2.625           | 1.531                | 65.412                | 2.2218                   | 94.9279                   |
| 3.00             | 2.875           | 0.835                | 66.247                | 1.2118                   | 96.1397                   |
| 3.25             | 3.125           | 0.265                | 66.512                | 0.3846                   | 96.5243                   |
| 3.50             | 3.375           | 0.122                | 66.634                | 0.1771                   | 96.7014                   |
| 3.75             | 3.625           | 0.100                | 66.734                | 0.1451                   | 96.8465                   |
| 4.00             | 3.875           | 0.073                | 66.807                | 0.1059                   | 96.9524                   |
| 8.00             | 6.000           | 0.350                | 67.157                | 0.5079                   | 97.4603                   |
| PAN              |                 | 1.750                | 68.907                | 2.5397                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 1.214        | 1.412           | 1.425                         | 1.437            | 1.463            |
| Std Dev:      | 0.957        | 1.554           | 1.614                         | 1.679            | 1.812            |
| Rel Dis:      | 0.788        | 1.100           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 0.087        | 2.878           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 6.238        | 15.557          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 11.862       | 72.042          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 101.104      | 354.360         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 372.278      | 1714.756        | = std dev/mean                |                  |                  |
| 8th MM:       | 2225.446     | 8371.308        | MM = moment measure           |                  |                  |
| Median:       | 1.138        | 1.173           |                               |                  |                  |

S1C1GS18A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 5.380                | 5.380                 | 9.9032                   | 9.9032                    |
| -1.75            | -1.875          | 0.405                | 5.785                 | 0.7455                   | 10.6487                   |
| -1.50            | -1.625          | 0.785                | 6.570                 | 1.4450                   | 12.0937                   |
| -1.25            | -1.375          | 1.130                | 7.700                 | 2.0800                   | 14.1737                   |
| -1.00            | -1.125          | 1.370                | 9.070                 | 2.5218                   | 16.6955                   |
| -0.75            | -0.875          | 1.840                | 10.910                | 3.3870                   | 20.0825                   |
| -0.50            | -0.625          | 2.426                | 13.336                | 4.4656                   | 24.5481                   |
| -0.25            | -0.375          | 2.657                | 15.993                | 4.8908                   | 29.4389                   |
| 0.00             | -0.125          | 2.637                | 18.630                | 4.8540                   | 34.2930                   |
| 0.25             | 0.125           | 3.661                | 22.291                | 6.7389                   | 41.0319                   |
| 0.50             | 0.375           | 3.512                | 25.803                | 6.4647                   | 47.4966                   |
| 0.75             | 0.625           | 4.052                | 29.855                | 7.4587                   | 54.9553                   |
| 1.00             | 0.875           | 5.428                | 35.283                | 9.9915                   | 64.9468                   |
| 1.25             | 1.125           | 6.876                | 42.159                | 12.6569                  | 77.6037                   |
| 1.50             | 1.375           | 3.919                | 46.078                | 7.2139                   | 84.8176                   |
| 1.75             | 1.625           | 3.967                | 50.045                | 7.3022                   | 92.1198                   |
| 2.00             | 1.875           | 1.543                | 51.588                | 2.8403                   | 94.9601                   |
| 2.25             | 2.125           | 0.496                | 52.084                | 0.9130                   | 95.8731                   |
| 2.50             | 2.375           | 0.182                | 52.266                | 0.3350                   | 96.2081                   |
| 2.75             | 2.625           | 0.124                | 52.390                | 0.2283                   | 96.4363                   |
| 3.00             | 2.875           | 0.114                | 52.504                | 0.2098                   | 96.6462                   |
| 3.25             | 3.125           | 0.061                | 52.565                | 0.1123                   | 96.7585                   |
| 3.50             | 3.375           | 0.044                | 52.609                | 0.0810                   | 96.8395                   |
| 3.75             | 3.625           | 0.039                | 52.648                | 0.0718                   | 96.9112                   |
| 4.00             | 3.875           | 0.028                | 52.676                | 0.0515                   | 96.9628                   |
| 8.00             | 6.000           | 0.150                | 52.826                | 0.2761                   | 97.2389                   |
| PAN              |                 | 1.500                | 54.326                | 2.7611                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 0.268        | 0.509           | 0.522                         | 0.536            | 0.564            |
| Std Dev:      | 1.254        | 1.901           | 1.956                         | 2.021            | 2.154            |
| Rel Dis:      | 4.685        | 3.737           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -0.268       | 2.270           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 3.485        | 11.922          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 3.664        | 50.060          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 33.759       | 226.074         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 114.294      | 1002.397        | = std dev/mean                |                  |                  |
| 8th MM:       | 581.455      | 4476.537        | MM = moment measure           |                  |                  |
| Median:       | 0.413        | 0.459           |                               |                  |                  |



S1C1GS19A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.756                | 0.756                 | 1.1933                   | 1.1933                    |
| -1.75            | -1.875          | 0.060                | 0.816                 | 0.0947                   | 1.2880                    |
| -1.50            | -1.625          | 0.196                | 1.012                 | 0.3094                   | 1.5973                    |
| -1.25            | -1.375          | 0.121                | 1.133                 | 0.1910                   | 1.7883                    |
| -1.00            | -1.125          | 0.310                | 1.443                 | 0.4893                   | 2.2776                    |
| -0.75            | -0.875          | 0.464                | 1.907                 | 0.7324                   | 3.0100                    |
| -0.50            | -0.625          | 0.837                | 2.744                 | 1.3211                   | 4.3311                    |
| -0.25            | -0.375          | 1.422                | 4.166                 | 2.2445                   | 6.5755                    |
| 0.00             | -0.125          | 1.823                | 5.989                 | 2.8774                   | 9.4529                    |
| 0.25             | 0.125           | 3.124                | 9.113                 | 4.9309                   | 14.3838                   |
| 0.50             | 0.375           | 3.946                | 13.059                | 6.2283                   | 20.6121                   |
| 0.75             | 0.625           | 5.566                | 18.625                | 8.7853                   | 29.3974                   |
| 1.00             | 0.875           | 8.028                | 26.653                | 12.6713                  | 42.0686                   |
| 1.25             | 1.125           | 10.345               | 36.998                | 16.3284                  | 58.3970                   |
| 1.50             | 1.375           | 6.884                | 43.882                | 10.8656                  | 69.2626                   |
| 1.75             | 1.625           | 7.937                | 51.819                | 12.5276                  | 81.7902                   |
| 2.00             | 1.875           | 4.583                | 56.402                | 7.2337                   | 89.0239                   |
| 2.25             | 2.125           | 2.934                | 59.336                | 4.6310                   | 93.6549                   |
| 2.50             | 2.375           | 1.565                | 60.901                | 2.4702                   | 96.1251                   |
| 2.75             | 2.625           | 0.587                | 61.488                | 0.9265                   | 97.0516                   |
| 3.00             | 2.875           | 0.239                | 61.727                | 0.3772                   | 97.4288                   |
| 3.25             | 3.125           | 0.079                | 61.806                | 0.1247                   | 97.5535                   |
| 3.50             | 3.375           | 0.050                | 61.856                | 0.0789                   | 97.6324                   |
| 3.75             | 3.625           | 0.032                | 61.888                | 0.0505                   | 97.6829                   |
| 4.00             | 3.875           | 0.018                | 61.906                | 0.0284                   | 97.7113                   |
| 8.00             | 6.000           | 0.100                | 62.006                | 0.1578                   | 97.8692                   |
| PAN              |                 | 1.350                | 63.356                | 2.1308                   | 100.0000                  |

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MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 1.034        | 1.204           | 1.214                         | 1.225            | 1.246            |
| Std Dev:      | 0.861        | 1.439           | 1.494                         | 1.554            | 1.677            |
| Rel Dis:      | 0.833        | 1.195           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -0.536       | 3.207           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 6.267        | 19.538          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 0.123        | 100.689         | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 102.102      | 552.959         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 219.783      | 2972.780        | = std dev/mean                |                  |                  |
| 8th MM:       | 2497.245     | 16134.493       | MM = moment measure           |                  |                  |
| Median:       | 0.980        | 0.996           |                               |                  |                  |

S1C1GS1A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.545                | 0.545                 | 0.6929                   | 0.6929                    |
| -1.75            | -1.875          | 0.194                | 0.739                 | 0.2466                   | 0.9395                    |
| -1.50            | -1.625          | 0.392                | 1.131                 | 0.4984                   | 1.4379                    |
| -1.25            | -1.375          | 0.435                | 1.566                 | 0.5530                   | 1.9909                    |
| -1.00            | -1.125          | 1.025                | 2.591                 | 1.3031                   | 3.2940                    |
| -0.75            | -0.875          | 1.684                | 4.275                 | 2.1409                   | 5.4349                    |
| -0.50            | -0.625          | 2.872                | 7.147                 | 3.6512                   | 9.0862                    |
| -0.25            | -0.375          | 3.914                | 11.061                | 4.9760                   | 14.0621                   |
| 0.00             | -0.125          | 4.225                | 15.286                | 5.3714                   | 19.4335                   |
| 0.25             | 0.125           | 5.611                | 20.897                | 7.1334                   | 26.5669                   |
| 0.50             | 0.375           | 5.760                | 26.657                | 7.3228                   | 33.8898                   |
| 0.75             | 0.625           | 6.644                | 33.301                | 8.4467                   | 42.3364                   |
| 1.00             | 0.875           | 7.496                | 40.797                | 9.5299                   | 51.8663                   |
| 1.25             | 1.125           | 8.751                | 49.548                | 11.1254                  | 62.9917                   |
| 1.50             | 1.375           | 5.474                | 55.022                | 6.9592                   | 69.9509                   |
| 1.75             | 1.625           | 7.744                | 62.766                | 9.8452                   | 79.7961                   |
| 2.00             | 1.875           | 5.667                | 68.433                | 7.2046                   | 87.0007                   |
| 2.25             | 2.125           | 3.912                | 72.345                | 4.9734                   | 91.9741                   |
| 2.50             | 2.375           | 2.296                | 74.641                | 2.9190                   | 94.8931                   |
| 2.75             | 2.625           | 1.090                | 75.731                | 1.3857                   | 96.2788                   |
| 3.00             | 2.875           | 0.541                | 76.272                | 0.6878                   | 96.9666                   |
| 3.25             | 3.125           | 0.207                | 76.479                | 0.2632                   | 97.2298                   |
| 3.50             | 3.375           | 0.121                | 76.600                | 0.1538                   | 97.3836                   |
| 3.75             | 3.625           | 0.148                | 76.748                | 0.1882                   | 97.5718                   |
| 4.00             | 3.875           | 0.060                | 76.808                | 0.0763                   | 97.6480                   |
| 8.00             | 6.000           | 0.200                | 77.008                | 0.2543                   | 97.9023                   |
| PAN              |                 | 1.650                | 78.658                | 2.0977                   | 100.0000                  |

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MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 0.859        | 1.030           | 1.041                         | 1.051            | 1.072            |
| Std Dev:      | 1.023        | 1.550           | 1.603                         | 1.660            | 1.776            |
| Rel Dis:      | 1.190        | 1.504           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 0.038        | 2.757           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 4.260        | 15.670          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 6.374        | 76.713          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 54.610       | 396.743         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 198.203      | 2026.578        | = std dev/mean                |                  |                  |
| 8th MM:       | 1147.735     | 10415.396       | MM = moment measure           |                  |                  |
| Median:       | 0.799        | 0.826           |                               |                  |                  |



S1C1GS20A      ENTIRE SAMPLE ANALYSIS      MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 2.359                | 2.359                 | 3.2007                   | 3.2007                    |
| -1.75            | -1.875          | 1.147                | 3.506                 | 1.5563                   | 4.7570                    |
| -1.50            | -1.625          | 1.207                | 4.713                 | 1.6377                   | 6.3947                    |
| -1.25            | -1.375          | 1.940                | 6.653                 | 2.6322                   | 9.0269                    |
| -1.00            | -1.125          | 2.313                | 8.966                 | 3.1383                   | 12.1652                   |
| -0.75            | -0.875          | 3.090                | 12.056                | 4.1926                   | 16.3578                   |
| -0.50            | -0.625          | 3.743                | 15.799                | 5.0786                   | 21.4363                   |
| -0.25            | -0.375          | 4.493                | 20.292                | 6.0962                   | 27.5325                   |
| 0.00             | -0.125          | 4.823                | 25.115                | 6.5439                   | 34.0764                   |
| 0.25             | 0.125           | 6.297                | 31.412                | 8.5439                   | 42.6203                   |
| 0.50             | 0.375           | 6.038                | 37.450                | 8.1925                   | 50.8127                   |
| 0.75             | 0.625           | 6.419                | 43.869                | 8.7094                   | 59.5221                   |
| 1.00             | 0.875           | 7.136                | 51.005                | 9.6822                   | 69.2044                   |
| 1.25             | 1.125           | 7.220                | 58.225                | 9.7962                   | 79.0006                   |
| 1.50             | 1.375           | 4.008                | 62.233                | 5.4381                   | 84.4387                   |
| 1.75             | 1.625           | 4.574                | 66.807                | 6.2061                   | 90.6448                   |
| 2.00             | 1.875           | 2.540                | 69.347                | 3.4463                   | 94.0911                   |
| 2.25             | 2.125           | 1.437                | 70.784                | 1.9497                   | 96.0408                   |
| 2.50             | 2.375           | 0.748                | 71.532                | 1.0149                   | 97.0557                   |
| 2.75             | 2.625           | 0.316                | 71.848                | 0.4288                   | 97.4845                   |
| 3.00             | 2.875           | 0.155                | 72.003                | 0.2103                   | 97.6948                   |
| 3.25             | 3.125           | 0.042                | 72.045                | 0.0570                   | 97.7518                   |
| 3.50             | 3.375           | 0.027                | 72.072                | 0.0366                   | 97.7884                   |
| 3.75             | 3.625           | 0.017                | 72.089                | 0.0231                   | 97.8115                   |
| 4.00             | 3.875           | 0.013                | 72.102                | 0.0176                   | 97.8291                   |
| 8.00             | 6.000           | 0.100                | 72.202                | 0.1357                   | 97.9648                   |
| PAN              |                 | 1.500                | 73.702                | 2.0352                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 0.339        | 0.515           | 0.525                         | 0.535            | 0.556            |
| Std Dev:      | 1.101        | 1.644           | 1.695                         | 1.750            | 1.863            |
| Rel Dis:      | 3.250        | 3.193           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -0.157       | 2.648           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 3.443        | 15.367          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 3.269        | 75.610          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 35.097       | 392.874         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 125.812      | 2017.680        | = std dev/mean                |                  |                  |
| 8th MM:       | 728.389      | 10410.091       | MM = moment measure           |                  |                  |
| Median:       | 0.319        | 0.350           |                               |                  |                  |

S1C1GS21A      ENTIRE SAMPLE ANALYSIS      MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.287                | 0.287                 | 0.4314                   | 0.4314                    |
| -1.75            | -1.875          | 0.061                | 0.348                 | 0.0917                   | 0.5230                    |
| -1.50            | -1.625          | 0.085                | 0.433                 | 0.1278                   | 0.6508                    |
| -1.25            | -1.375          | 0.195                | 0.628                 | 0.2931                   | 0.9439                    |
| -1.00            | -1.125          | 0.205                | 0.833                 | 0.3081                   | 1.2520                    |
| -0.75            | -0.875          | 0.303                | 1.136                 | 0.4554                   | 1.7074                    |
| -0.50            | -0.625          | 0.513                | 1.649                 | 0.7710                   | 2.4785                    |
| -0.25            | -0.375          | 1.081                | 2.730                 | 1.6248                   | 4.1032                    |
| 0.00             | -0.125          | 1.399                | 4.129                 | 2.1027                   | 6.2059                    |
| 0.25             | 0.125           | 2.843                | 6.972                 | 4.2731                   | 10.4790                   |
| 0.50             | 0.375           | 4.130                | 11.102                | 6.2074                   | 16.6865                   |
| 0.75             | 0.625           | 6.371                | 17.473                | 9.5757                   | 26.2622                   |
| 1.00             | 0.875           | 9.988                | 27.461                | 15.0121                  | 41.2743                   |
| 1.25             | 1.125           | 13.450               | 40.911                | 20.2155                  | 61.4898                   |
| 1.50             | 1.375           | 9.410                | 50.321                | 14.1434                  | 75.6331                   |
| 1.75             | 1.625           | 9.257                | 59.578                | 13.9134                  | 89.5465                   |
| 2.00             | 1.875           | 3.434                | 63.012                | 5.1613                   | 94.7079                   |
| 2.25             | 2.125           | 1.139                | 64.151                | 1.7119                   | 96.4198                   |
| 2.50             | 2.375           | 0.599                | 64.750                | 0.9003                   | 97.3201                   |
| 2.75             | 2.625           | 0.236                | 64.986                | 0.3547                   | 97.6748                   |
| 3.00             | 2.875           | 0.135                | 65.121                | 0.2029                   | 97.8777                   |
| 3.25             | 3.125           | 0.047                | 65.168                | 0.0706                   | 97.9484                   |
| 3.50             | 3.375           | 0.031                | 65.199                | 0.0466                   | 97.9950                   |
| 3.75             | 3.625           | 0.022                | 65.221                | 0.0331                   | 98.0280                   |
| 4.00             | 3.875           | 0.012                | 65.233                | 0.0180                   | 98.0461                   |
| 8.00             | 6.000           | 0.200                | 65.433                | 0.3006                   | 98.3467                   |
| PAN              |                 | 1.100                | 66.533                | 1.6533                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 1.040        | 1.172           | 1.180                         | 1.189            | 1.205            |
| Std Dev:      | 0.726        | 1.251           | 1.300                         | 1.354            | 1.465            |
| Rel Dis:      | 0.698        | 1.067           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 0.162        | 4.041           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 11.193       | 27.016          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 34.826       | 162.804         | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 367.360      | 1021.547        | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 1972.382     | 6348.064        | = std dev/mean                |                  |                  |
| 8th MM:       | 15507.191    | 39686.597       | MM = moment measure           |                  |                  |
| Median:       | 0.973        | 0.983           |                               |                  |                  |

S1C1GS22A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 3.736                | 3.736                 | 5.4109                   | 5.4109                    |
| -1.75            | -1.875          | 0.519                | 4.255                 | 0.7517                   | 6.1626                    |
| -1.50            | -1.625          | 0.453                | 4.708                 | 0.6561                   | 6.8186                    |
| -1.25            | -1.375          | 0.663                | 5.371                 | 0.9602                   | 7.7789                    |
| -1.00            | -1.125          | 0.827                | 6.198                 | 1.1978                   | 8.9766                    |
| -0.75            | -0.875          | 1.208                | 7.406                 | 1.7496                   | 10.7262                   |
| -0.50            | -0.625          | 1.902                | 9.308                 | 2.7547                   | 13.4809                   |
| -0.25            | -0.375          | 2.286                | 11.594                | 3.3108                   | 16.7917                   |
| 0.00             | -0.125          | 2.553                | 14.147                | 3.6975                   | 20.4892                   |
| 0.25             | 0.125           | 4.077                | 18.224                | 5.9048                   | 26.3940                   |
| 0.50             | 0.375           | 4.683                | 22.907                | 6.7824                   | 33.1764                   |
| 0.75             | 0.625           | 6.098                | 29.005                | 8.8318                   | 42.0082                   |
| 1.00             | 0.875           | 7.887                | 36.892                | 11.4228                  | 53.4310                   |
| 1.25             | 1.125           | 8.846                | 45.738                | 12.8117                  | 66.2428                   |
| 1.50             | 1.375           | 5.527                | 51.265                | 8.0048                   | 74.2476                   |
| 1.75             | 1.625           | 6.211                | 57.476                | 8.9955                   | 83.2431                   |
| 2.00             | 1.875           | 3.860                | 61.336                | 5.5905                   | 88.8335                   |
| 2.25             | 2.125           | 2.724                | 64.060                | 3.9452                   | 92.7787                   |
| 2.50             | 2.375           | 1.854                | 65.914                | 2.6852                   | 95.4639                   |
| 2.75             | 2.625           | 0.904                | 66.818                | 1.3093                   | 96.7732                   |
| 3.00             | 2.875           | 0.386                | 67.204                | 0.5590                   | 97.3322                   |
| 3.25             | 3.125           | 0.119                | 67.323                | 0.1723                   | 97.5046                   |
| 3.50             | 3.375           | 0.060                | 67.383                | 0.0869                   | 97.5915                   |
| 3.75             | 3.625           | 0.041                | 67.424                | 0.0594                   | 97.6508                   |
| 4.00             | 3.875           | 0.022                | 67.446                | 0.0319                   | 97.6827                   |
| 8.00             | 6.000           | 0.350                | 67.796                | 0.5069                   | 98.1896                   |
| PAN              |                 | 1.250                | 69.046                | 1.8104                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 0.731        | 0.880           | 0.889                         | 0.898            | 0.916            |
| Std Dev:      | 1.201        | 1.627           | 1.670                         | 1.718            | 1.817            |
| Rel Dis:      | 1.643        | 1.849           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -0.308       | 2.012           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 4.799        | 12.851          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 3.991        | 56.996          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 50.602       | 291.092         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 138.871      | 1425.028        | = std dev/mean                |                  |                  |
| 8th MM:       | 789.546      | 7112.149        | MM = moment measure           |                  |                  |
| Median:       | 0.780        | 0.800           |                               |                  |                  |

S1C1GS23A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 4.704                | 4.704                 | 6.0643                   | 6.0643                    |
| -1.75            | -1.875          | 1.214                | 5.918                 | 1.5651                   | 7.6293                    |
| -1.50            | -1.625          | 1.537                | 7.455                 | 1.9815                   | 9.6108                    |
| -1.25            | -1.375          | 1.689                | 9.144                 | 2.1774                   | 11.7882                   |
| -1.00            | -1.125          | 2.501                | 11.645                | 3.2242                   | 15.0124                   |
| -0.75            | -0.875          | 3.433                | 15.078                | 4.4257                   | 19.4382                   |
| -0.50            | -0.625          | 4.295                | 19.373                | 5.5370                   | 24.9752                   |
| -0.25            | -0.375          | 5.514                | 24.887                | 7.1085                   | 32.0837                   |
| 0.00             | -0.125          | 5.934                | 30.821                | 7.6500                   | 39.7337                   |
| 0.25             | 0.125           | 8.417                | 39.238                | 10.8510                  | 50.5846                   |
| 0.50             | 0.375           | 8.510                | 47.748                | 10.9709                  | 61.5555                   |
| 0.75             | 0.625           | 9.144                | 56.892                | 11.7882                  | 73.3437                   |
| 1.00             | 0.875           | 7.871                | 64.763                | 10.1471                  | 83.4908                   |
| 1.25             | 1.125           | 5.543                | 70.306                | 7.1459                   | 90.6367                   |
| 1.50             | 1.375           | 1.810                | 72.116                | 2.3334                   | 92.9701                   |
| 1.75             | 1.625           | 1.206                | 73.322                | 1.5547                   | 94.5249                   |
| 2.00             | 1.875           | 0.478                | 73.800                | 0.6162                   | 95.1411                   |
| 2.25             | 2.125           | 0.275                | 74.075                | 0.3545                   | 95.4956                   |
| 2.50             | 2.375           | 0.210                | 74.285                | 0.2707                   | 95.7663                   |
| 2.75             | 2.625           | 0.164                | 74.449                | 0.2114                   | 95.9778                   |
| 3.00             | 2.875           | 0.142                | 74.591                | 0.1831                   | 96.1608                   |
| 3.25             | 3.125           | 0.109                | 74.700                | 0.1405                   | 96.3014                   |
| 3.50             | 3.375           | 0.126                | 74.826                | 0.1624                   | 96.4638                   |
| 3.75             | 3.625           | 0.149                | 74.975                | 0.1921                   | 96.6559                   |
| 4.00             | 3.875           | 0.094                | 75.069                | 0.1212                   | 96.7771                   |
| 8.00             | 6.000           | 0.550                | 75.619                | 0.7090                   | 97.4861                   |
| PAN              |                 | 1.950                | 77.569                | 2.5139                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

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MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 0.091        | 0.315           | 0.328                         | 0.341            | 0.366            |
| Std Dev:      | 1.141        | 1.800           | 1.859                         | 1.922            | 2.052            |
| Rel Dis:      | 12.475       | 5.706           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 0.742        | 2.899           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 7.532        | 14.944          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 27.459       | 68.687          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 152.750      | 329.604         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 747.092      | 1574.957        | = std dev/mean                |                  |                  |
| 8th MM:       | 3886.121     | 7565.685        | MM = moment measure           |                  |                  |
| Median:       | 0.083        | 0.112           |                               |                  |                  |

S1C1GS24A      ENTIRE SAMPLE ANALYSIS      MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.037                | 0.037                 | 0.0508                   | 0.0508                    |
| -1.75            | -1.875          | 0.071                | 0.108                 | 0.0975                   | 0.1483                    |
| -1.50            | -1.625          | 0.091                | 0.199                 | 0.1250                   | 0.2733                    |
| -1.25            | -1.375          | 0.180                | 0.379                 | 0.2472                   | 0.5206                    |
| -1.00            | -1.125          | 0.352                | 0.731                 | 0.4835                   | 1.0041                    |
| -0.75            | -0.875          | 0.584                | 1.315                 | 0.8021                   | 1.8062                    |
| -0.50            | -0.625          | 1.013                | 2.328                 | 1.3914                   | 3.1976                    |
| -0.25            | -0.375          | 1.818                | 4.146                 | 2.4971                   | 5.6947                    |
| 0.00             | -0.125          | 2.669                | 6.815                 | 3.6660                   | 9.3606                    |
| 0.25             | 0.125           | 4.811                | 11.626                | 6.6081                   | 15.9687                   |
| 0.50             | 0.375           | 5.988                | 17.614                | 8.2247                   | 24.1934                   |
| 0.75             | 0.625           | 7.927                | 25.541                | 10.8880                  | 35.0814                   |
| 1.00             | 0.875           | 10.942               | 36.483                | 15.0292                  | 50.1106                   |
| 1.25             | 1.125           | 13.377               | 49.860                | 18.3737                  | 68.4843                   |
| 1.50             | 1.375           | 8.489                | 58.349                | 11.6599                  | 80.1442                   |
| 1.75             | 1.625           | 8.382                | 66.731                | 11.5129                  | 91.6572                   |
| 2.00             | 1.875           | 3.239                | 69.970                | 4.4489                   | 96.1060                   |
| 2.25             | 2.125           | 0.963                | 70.933                | 1.3227                   | 97.4287                   |
| 2.50             | 2.375           | 0.237                | 71.170                | 0.3255                   | 97.7543                   |
| 2.75             | 2.625           | 0.076                | 71.246                | 0.1044                   | 97.8587                   |
| 3.00             | 2.875           | 0.049                | 71.295                | 0.0673                   | 97.9260                   |
| 3.25             | 3.125           | 0.025                | 71.320                | 0.0343                   | 97.9603                   |
| 3.50             | 3.375           | 0.016                | 71.336                | 0.0220                   | 97.9823                   |
| 3.75             | 3.625           | 0.011                | 71.347                | 0.0151                   | 97.9974                   |
| 4.00             | 3.875           | 0.008                | 71.355                | 0.0110                   | 98.0084                   |
| 8.00             | 6.000           | 0.050                | 71.405                | 0.0687                   | 98.0771                   |
| PAN              |                 | 1.400                | 72.805                | 1.9229                   | 100.0000                  |

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MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 0.897        | 1.053           | 1.063                         | 1.072            | 1.092            |
| Std Dev:      | 0.685        | 1.310           | 1.367                         | 1.427            | 1.550            |
| Rel Dis:      | 0.764        | 1.244           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -0.328       | 4.209           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 5.769        | 26.875          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 10.236       | 160.321         | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 149.315      | 974.597         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 832.682      | 5901.596        | = std dev/mean                |                  |                  |
| 8th MM:       | 7034.129     | 35794.575       | MM = moment measure           |                  |                  |
| Median:       | 0.857        | 0.873           |                               |                  |                  |

S1C1GS2A      ENTIRE SAMPLE ANALYSIS      MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.612                | 0.612                 | 0.7414                   | 0.7414                    |
| -1.75            | -1.875          | 0.116                | 0.728                 | 0.1405                   | 0.8820                    |
| -1.50            | -1.625          | 0.329                | 1.057                 | 0.3986                   | 1.2806                    |
| -1.25            | -1.375          | 0.487                | 1.544                 | 0.5900                   | 1.8706                    |
| -1.00            | -1.125          | 0.774                | 2.318                 | 0.9377                   | 2.8083                    |
| -0.75            | -0.875          | 1.458                | 3.776                 | 1.7664                   | 4.5746                    |
| -0.50            | -0.625          | 2.222                | 5.998                 | 2.6920                   | 7.2666                    |
| -0.25            | -0.375          | 3.172                | 9.170                 | 3.8429                   | 11.1095                   |
| 0.00             | -0.125          | 3.570                | 12.740                | 4.3251                   | 15.4346                   |
| 0.25             | 0.125           | 5.096                | 17.836                | 6.1738                   | 21.6084                   |
| 0.50             | 0.375           | 5.452                | 23.288                | 6.6051                   | 28.2135                   |
| 0.75             | 0.625           | 6.298                | 29.586                | 7.6301                   | 35.8436                   |
| 1.00             | 0.875           | 8.173                | 37.759                | 9.9016                   | 45.7452                   |
| 1.25             | 1.125           | 9.557                | 47.316                | 11.5783                  | 57.3235                   |
| 1.50             | 1.375           | 6.022                | 53.338                | 7.2957                   | 64.6192                   |
| 1.75             | 1.625           | 7.577                | 60.915                | 9.1796                   | 73.7988                   |
| 2.00             | 1.875           | 5.178                | 66.093                | 6.2732                   | 80.0720                   |
| 2.25             | 2.125           | 3.875                | 69.968                | 4.6946                   | 84.7665                   |
| 2.50             | 2.375           | 3.046                | 73.014                | 3.6902                   | 88.4568                   |
| 2.75             | 2.625           | 2.404                | 75.418                | 2.9125                   | 91.3692                   |
| 3.00             | 2.875           | 2.124                | 77.542                | 2.5732                   | 93.9425                   |
| 3.25             | 3.125           | 1.103                | 78.645                | 1.3363                   | 95.2788                   |
| 3.50             | 3.375           | 0.616                | 79.261                | 0.7463                   | 96.0251                   |
| 3.75             | 3.625           | 0.625                | 79.886                | 0.7572                   | 96.7822                   |
| 4.00             | 3.875           | 0.306                | 80.192                | 0.3707                   | 97.1530                   |
| 8.00             | 6.000           | 0.550                | 80.742                | 0.6663                   | 97.8193                   |
| PAN              |                 | 1.800                | 82.542                | 2.1807                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 1.079        | 1.251           | 1.262                         | 1.273            | 1.295            |
| Std Dev:      | 1.147        | 1.625           | 1.677                         | 1.732            | 1.845            |
| Rel Dis:      | 1.064        | 1.299           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 0.381        | 2.366           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 4.708        | 12.522          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 8.795        | 55.263          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 53.211       | 264.789         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 174.666      | 1245.753        | = std dev/mean                |                  |                  |
| 8th MM:       | 847.481      | 5929.447        | MM = moment measure           |                  |                  |
| Median:       | 0.943        | 0.967           |                               |                  |                  |

| S1C1GS3A                         |                 | ENTIRE SAMPLE ANALYSIS |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|-----------------|------------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                 |                        |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g)   | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 0.347                  | 0.347                 | 0.4799                   | 0.4799                    |
| -1.75                            | -1.875          | 0.237                  | 0.584                 | 0.3278                   | 0.8076                    |
| -1.50                            | -1.625          | 0.224                  | 0.808                 | 0.3098                   | 1.1174                    |
| -1.25                            | -1.375          | 0.364                  | 1.172                 | 0.5034                   | 1.6208                    |
| -1.00                            | -1.125          | 0.615                  | 1.787                 | 0.8505                   | 2.4713                    |
| -0.75                            | -0.875          | 1.090                  | 2.877                 | 1.5074                   | 3.9788                    |
| -0.50                            | -0.625          | 1.576                  | 4.453                 | 2.1795                   | 6.1583                    |
| -0.25                            | -0.375          | 2.518                  | 6.971                 | 3.4823                   | 9.6406                    |
| 0.00                             | -0.125          | 3.062                  | 10.033                | 4.2346                   | 13.8752                   |
| 0.25                             | 0.125           | 4.775                  | 14.808                | 6.6036                   | 20.4788                   |
| 0.50                             | 0.375           | 5.186                  | 19.994                | 7.1720                   | 27.6508                   |
| 0.75                             | 0.625           | 6.657                  | 26.651                | 9.2063                   | 36.8571                   |
| 1.00                             | 0.875           | 9.448                  | 36.099                | 13.0661                  | 49.9232                   |
| 1.25                             | 1.125           | 11.030                 | 47.129                | 15.2540                  | 65.1772                   |
| 1.50                             | 1.375           | 7.193                  | 54.322                | 9.9476                   | 75.1248                   |
| 1.75                             | 1.625           | 7.632                  | 61.954                | 10.5547                  | 85.6795                   |
| 2.00                             | 1.875           | 4.324                  | 66.278                | 5.9799                   | 91.6594                   |
| 2.25                             | 2.125           | 2.305                  | 68.583                | 3.1877                   | 94.8471                   |
| 2.50                             | 2.375           | 1.192                  | 69.775                | 1.6485                   | 96.4956                   |
| 2.75                             | 2.625           | 0.462                  | 70.237                | 0.6389                   | 97.1345                   |
| 3.00                             | 2.875           | 0.221                  | 70.458                | 0.3056                   | 97.4402                   |
| 3.25                             | 3.125           | 0.085                  | 70.543                | 0.1176                   | 97.5577                   |
| 3.50                             | 3.375           | 0.050                  | 70.593                | 0.0691                   | 97.6269                   |
| 3.75                             | 3.625           | 0.044                  | 70.637                | 0.0608                   | 97.6877                   |
| 4.00                             | 3.875           | 0.022                  | 70.659                | 0.0304                   | 97.7181                   |
| 8.00                             | 6.000           | 0.000                  | 70.659                | 0.0000                   | 97.7181                   |
| PAN                              |                 | 1.650                  | 72.309                | 2.2819                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
 Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES |              |                 |                               |                  |                  |
|-----------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:           | 0.878        | 1.063           | 1.075                         | 1.086            | 1.109            |
| Std Dev:        | 0.846        | 1.480           | 1.540                         | 1.603            | 1.733            |
| Rel Dis:        | 0.964        | 1.392           | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | -0.582       | 3.340           | CALCULATED USING              |                  |                  |
| Kurtosis:       | 3.764        | 19.606          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | -5.592       | 101.979         | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 26.483       | 551.315         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | -56.903      | 2947.539        | = std dev/mean                |                  |                  |
| 8th MM:         | 248.372      | 15820.626       | MM = moment measure           |                  |                  |
| Median:         | 0.855        | 0.876           |                               |                  |                  |

| S1C1GS4A                         |                 | ENTIRE SAMPLE ANALYSIS |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|-----------------|------------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                 |                        |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g)   | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 0.928                  | 0.928                 | 0.9441                   | 0.9441                    |
| -1.75                            | -1.875          | 0.010                  | 0.938                 | 0.0102                   | 0.9542                    |
| -1.50                            | -1.625          | 0.287                  | 1.225                 | 0.2920                   | 1.2462                    |
| -1.25                            | -1.375          | 0.357                  | 1.582                 | 0.3632                   | 1.6094                    |
| -1.00                            | -1.125          | 0.573                  | 2.155                 | 0.5829                   | 2.1923                    |
| -0.75                            | -0.875          | 0.645                  | 2.800                 | 0.6562                   | 2.8485                    |
| -0.50                            | -0.625          | 1.311                  | 4.111                 | 1.3337                   | 4.1822                    |
| -0.25                            | -0.375          | 2.025                  | 6.136                 | 2.0601                   | 6.2422                    |
| 0.00                             | -0.125          | 2.593                  | 8.729                 | 2.6379                   | 8.8801                    |
| 0.25                             | 0.125           | 4.092                  | 12.821                | 4.1629                   | 13.0430                   |
| 0.50                             | 0.375           | 4.991                  | 17.812                | 5.0774                   | 18.1204                   |
| 0.75                             | 0.625           | 6.799                  | 24.611                | 6.9167                   | 25.0371                   |
| 1.00                             | 0.875           | 10.321                 | 34.932                | 10.4997                  | 35.5368                   |
| 1.25                             | 1.125           | 14.058                 | 48.990                | 14.3014                  | 49.8382                   |
| 1.50                             | 1.375           | 9.393                  | 58.383                | 9.5556                   | 59.3939                   |
| 1.75                             | 1.625           | 11.674                 | 70.057                | 11.8761                  | 71.2700                   |
| 2.00                             | 1.875           | 8.146                  | 78.203                | 8.2870                   | 79.5571                   |
| 2.25                             | 2.125           | 6.065                  | 84.268                | 6.1700                   | 85.7271                   |
| 2.50                             | 2.375           | 4.459                  | 88.727                | 4.5362                   | 90.2633                   |
| 2.75                             | 2.625           | 3.263                  | 91.990                | 3.3195                   | 93.5828                   |
| 3.00                             | 2.875           | 2.368                  | 94.358                | 2.4090                   | 95.9918                   |
| 3.25                             | 3.125           | 0.929                  | 95.287                | 0.9451                   | 96.9369                   |
| 3.50                             | 3.375           | 0.432                  | 95.719                | 0.4395                   | 97.3763                   |
| 3.75                             | 3.625           | 0.303                  | 96.022                | 0.3082                   | 97.6846                   |
| 4.00                             | 3.875           | 0.126                  | 96.148                | 0.1282                   | 97.8128                   |
| 8.00                             | 6.000           | 0.050                  | 96.198                | 0.0509                   | 97.8636                   |
| PAN                              |                 | 2.100                  | 98.298                | 2.1364                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
 Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES |              |                 |                               |                  |                  |
|-----------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:           | 1.223        | 1.389           | 1.400                         | 1.411            | 1.432            |
| Std Dev:        | 0.952        | 1.471           | 1.528                         | 1.586            | 1.705            |
| Rel Dis:        | 0.779        | 1.059           | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | -0.462       | 2.724           | CALCULATED USING              |                  |                  |
| Kurtosis:       | 4.300        | 16.273          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | -4.801       | 78.927          | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 38.149       | 416.520         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | -33.260      | 2133.648        | = std dev/mean                |                  |                  |
| 8th MM:         | 504.855      | 11073.761       | MM = moment measure           |                  |                  |
| Median:         | 1.109        | 1.129           |                               |                  |                  |



S1C1GS5A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.049                | 0.049                 | 0.0649                   | 0.0649                    |
| -1.75            | -1.875          | 0.007                | 0.056                 | 0.0093                   | 0.0742                    |
| -1.50            | -1.625          | 0.038                | 0.094                 | 0.0503                   | 0.1245                    |
| -1.25            | -1.375          | 0.057                | 0.151                 | 0.0755                   | 0.2000                    |
| -1.00            | -1.125          | 0.067                | 0.218                 | 0.0887                   | 0.2887                    |
| -0.75            | -0.875          | 0.088                | 0.306                 | 0.1165                   | 0.4052                    |
| -0.50            | -0.625          | 0.118                | 0.424                 | 0.1563                   | 0.5615                    |
| -0.25            | -0.375          | 0.161                | 0.585                 | 0.2132                   | 0.7747                    |
| 0.00             | -0.125          | 0.201                | 0.786                 | 0.2662                   | 1.0409                    |
| 0.25             | 0.125           | 0.290                | 1.076                 | 0.3841                   | 1.4250                    |
| 0.50             | 0.375           | 0.345                | 1.421                 | 0.4569                   | 1.8819                    |
| 0.75             | 0.625           | 0.512                | 1.933                 | 0.6781                   | 2.5600                    |
| 1.00             | 0.875           | 0.848                | 2.781                 | 1.1230                   | 3.6830                    |
| 1.25             | 1.125           | 1.285                | 4.066                 | 1.7018                   | 5.3848                    |
| 1.50             | 1.375           | 1.012                | 5.078                 | 1.3402                   | 6.7250                    |
| 1.75             | 1.625           | 2.017                | 7.095                 | 2.6712                   | 9.3962                    |
| 2.00             | 1.875           | 2.565                | 9.660                 | 3.3969                   | 12.7932                   |
| 2.25             | 2.125           | 4.140                | 13.800                | 5.4828                   | 18.2760                   |
| 2.50             | 2.375           | 7.181                | 20.981                | 9.5101                   | 27.7861                   |
| 2.75             | 2.625           | 11.165               | 32.146                | 14.7863                  | 42.5724                   |
| 3.00             | 2.875           | 14.707               | 46.853                | 19.4771                  | 62.0496                   |
| 3.25             | 3.125           | 9.771                | 56.624                | 12.9402                  | 74.9897                   |
| 3.50             | 3.375           | 5.712                | 62.336                | 7.5647                   | 82.5544                   |
| 3.75             | 3.625           | 4.307                | 66.643                | 5.7040                   | 88.2584                   |
| 4.00             | 3.875           | 2.166                | 68.809                | 2.8685                   | 91.1269                   |
| 8.00             | 6.000           | 3.650                | 72.459                | 4.8339                   | 95.9607                   |
| PAN              |                 | 3.050                | 75.509                | 4.0393                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 2.826        | 3.075           | 3.095                         | 3.115            | 3.156            |
| Std Dev:      | 1.056        | 1.602           | 1.676                         | 1.755            | 1.919            |
| Rel Dis:      | 0.374        | 0.521           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 0.532        | 2.019           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 6.737        | 8.849           | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 4.705        | 27.965          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 65.449       | 109.845         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 10.004       | 382.639         | = std dev/mean                |                  |                  |
| 8th MM:       | 749.581      | 1461.905        | MM = moment measure           |                  |                  |
| Median:       | 2.694        | 2.720           |                               |                  |                  |

S1C1GS6A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.694                | 0.694                 | 0.9047                   | 0.9047                    |
| -1.75            | -1.875          | 0.481                | 1.175                 | 0.6271                   | 1.5318                    |
| -1.50            | -1.625          | 0.488                | 1.663                 | 0.6362                   | 2.1680                    |
| -1.25            | -1.375          | 0.900                | 2.563                 | 1.1733                   | 3.3412                    |
| -1.00            | -1.125          | 1.448                | 4.011                 | 1.8877                   | 5.2289                    |
| -0.75            | -0.875          | 2.157                | 6.168                 | 2.8120                   | 8.0409                    |
| -0.50            | -0.625          | 3.300                | 9.468                 | 4.3020                   | 12.3429                   |
| -0.25            | -0.375          | 4.870                | 14.338                | 6.3488                   | 18.6917                   |
| 0.00             | -0.125          | 4.860                | 19.198                | 6.3357                   | 25.0274                   |
| 0.25             | 0.125           | 6.680                | 25.878                | 8.7083                   | 33.7357                   |
| 0.50             | 0.375           | 6.581                | 32.459                | 8.5793                   | 42.3150                   |
| 0.75             | 0.625           | 7.726                | 40.185                | 10.0720                  | 52.3870                   |
| 1.00             | 0.875           | 8.541                | 48.726                | 11.1344                  | 63.5214                   |
| 1.25             | 1.125           | 7.629                | 56.355                | 9.9455                   | 73.4669                   |
| 1.50             | 1.375           | 4.144                | 60.499                | 5.4023                   | 78.8692                   |
| 1.75             | 1.625           | 5.303                | 65.802                | 6.9132                   | 85.7824                   |
| 2.00             | 1.875           | 3.830                | 69.632                | 4.9930                   | 90.7754                   |
| 2.25             | 2.125           | 2.549                | 72.181                | 3.3230                   | 94.0984                   |
| 2.50             | 2.375           | 1.516                | 73.697                | 1.9763                   | 96.0747                   |
| 2.75             | 2.625           | 0.730                | 74.427                | 0.9517                   | 97.0264                   |
| 3.00             | 2.875           | 0.374                | 74.801                | 0.4876                   | 97.5139                   |
| 3.25             | 3.125           | 0.130                | 74.931                | 0.1695                   | 97.6834                   |
| 3.50             | 3.375           | 0.063                | 74.994                | 0.0821                   | 97.7656                   |
| 3.75             | 3.625           | 0.032                | 75.026                | 0.0417                   | 97.8073                   |
| 4.00             | 3.875           | 0.032                | 75.058                | 0.0417                   | 97.8490                   |
| 8.00             | 6.000           | 0.050                | 75.108                | 0.0652                   | 97.9142                   |
| PAN              |                 | 1.600                | 76.708                | 2.0858                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

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MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 0.618        | 0.793           | 0.803                         | 0.814            | 0.835            |
| Std Dev:      | 0.993        | 1.555           | 1.609                         | 1.667            | 1.785            |
| Rel Dis:      | 1.606        | 1.961           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -0.097       | 2.945           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 3.416        | 16.984          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 1.573        | 86.316          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 30.162       | 458.313         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 81.809       | 2409.857        | = std dev/mean                |                  |                  |
| 8th MM:       | 579.641      | 12719.846       | MM = moment measure           |                  |                  |
| Median:       | 0.540        | 0.566           |                               |                  |                  |



S1C1GS7A      ENTIRE SAMPLE ANALYSIS      MO-DA-YR: 2-7-2001

| ANALYTICAL GRANULOMETRIC RESULTS |                 |                      |                       |                          |                           |
|----------------------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| Sieve Size (Phi)                 | Mld-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.75                            | -1.875          | 0.025                | 0.025                 | 0.0347                   | 0.0347                    |
| -1.50                            | -1.625          | 0.028                | 0.053                 | 0.0389                   | 0.0736                    |
| -1.25                            | -1.375          | 0.057                | 0.110                 | 0.0792                   | 0.1527                    |
| -1.00                            | -1.125          | 0.074                | 0.184                 | 0.1028                   | 0.2555                    |
| -0.75                            | -0.875          | 0.133                | 0.317                 | 0.1847                   | 0.4402                    |
| -0.50                            | -0.625          | 0.203                | 0.520                 | 0.2819                   | 0.7221                    |
| -0.25                            | -0.375          | 0.265                | 0.785                 | 0.3680                   | 1.0901                    |
| 0.00                             | -0.125          | 0.376                | 1.161                 | 0.5221                   | 1.6122                    |
| 0.25                             | 0.125           | 0.574                | 1.735                 | 0.7971                   | 2.4093                    |
| 0.50                             | 0.375           | 0.758                | 2.493                 | 1.0526                   | 3.4618                    |
| 0.75                             | 0.625           | 1.054                | 3.547                 | 1.4636                   | 4.9254                    |
| 1.00                             | 0.875           | 1.816                | 5.363                 | 2.5217                   | 7.4472                    |
| 1.25                             | 1.125           | 3.063                | 8.426                 | 4.2533                   | 11.7005                   |
| 1.50                             | 1.375           | 2.983                | 11.409                | 4.1423                   | 15.8428                   |
| 1.75                             | 1.625           | 7.719                | 19.128                | 10.7187                  | 26.5615                   |
| 2.00                             | 1.875           | 12.187               | 31.315                | 16.9231                  | 43.4846                   |
| 2.25                             | 2.125           | 17.213               | 48.528                | 23.9023                  | 67.3869                   |
| 2.50                             | 2.375           | 13.840               | 62.368                | 19.2185                  | 86.6054                   |
| 2.75                             | 2.625           | 5.478                | 67.846                | 7.6069                   | 94.2122                   |
| 3.00                             | 2.875           | 1.669                | 69.515                | 2.3176                   | 96.5298                   |
| 3.25                             | 3.125           | 0.431                | 69.946                | 0.5985                   | 97.1283                   |
| 3.50                             | 3.375           | 0.201                | 70.147                | 0.2791                   | 97.4074                   |
| 3.75                             | 3.625           | 0.113                | 70.260                | 0.1569                   | 97.5644                   |
| 4.00                             | 3.875           | 0.054                | 70.314                | 0.0750                   | 97.6393                   |
| 8.00                             | 6.000           | 0.050                | 70.364                | 0.0694                   | 97.7088                   |
| PAN                              |                 | 1.650                | 72.014                | 2.2912                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

#### MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 1.940        | 2.101           | 2.113                         | 2.124            | 2.147            |
| Std Dev:      | 0.641        | 1.238           | 1.301                         | 1.367            | 1.502            |
| Rel Dis:      | 0.330        | 0.589           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -1.272       | 3.742           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 7.923        | 23.068          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | -16.058      | 123.804         | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 153.925      | 698.794         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | -183.520     | 3869.434        | = std dev/mean                |                  |                  |
| 8th MM:       | 4217.983     | 21610.844       | MM = moment measure           |                  |                  |
| Median:       | 1.931        | 1.943           |                               |                  |                  |

S1C1GS8A      ENTIRE SAMPLE ANALYSIS      MO-DA-YR: 2-7-2001

| ANALYTICAL GRANULOMETRIC RESULTS |                 |                      |                       |                          |                           |
|----------------------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| Sieve Size (Phi)                 | Mld-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 1.510                | 1.510                 | 1.8810                   | 1.8810                    |
| -1.75                            | -1.875          | 0.568                | 2.078                 | 0.7075                   | 2.5885                    |
| -1.50                            | -1.625          | 0.727                | 2.805                 | 0.9056                   | 3.4941                    |
| -1.25                            | -1.375          | 1.123                | 3.928                 | 1.3989                   | 4.8930                    |
| -1.00                            | -1.125          | 1.827                | 5.755                 | 2.2758                   | 7.1688                    |
| -0.75                            | -0.875          | 2.393                | 8.148                 | 2.9809                   | 10.1497                   |
| -0.50                            | -0.625          | 3.253                | 11.401                | 4.0522                   | 14.2019                   |
| -0.25                            | -0.375          | 4.051                | 15.452                | 5.0462                   | 19.2481                   |
| 0.00                             | -0.125          | 4.603                | 20.055                | 5.7338                   | 24.9819                   |
| 0.25                             | 0.125           | 6.482                | 26.537                | 8.0744                   | 33.0564                   |
| 0.50                             | 0.375           | 6.960                | 33.497                | 8.6699                   | 41.7263                   |
| 0.75                             | 0.625           | 8.917                | 42.414                | 11.1077                  | 52.8339                   |
| 1.00                             | 0.875           | 11.158               | 53.572                | 13.8992                  | 66.7331                   |
| 1.25                             | 1.125           | 9.769                | 63.341                | 12.1690                  | 78.9021                   |
| 1.50                             | 1.375           | 4.674                | 68.015                | 5.8223                   | 84.7243                   |
| 1.75                             | 1.625           | 4.042                | 72.057                | 5.0350                   | 89.7593                   |
| 2.00                             | 1.875           | 2.308                | 74.365                | 2.8750                   | 92.6343                   |
| 2.25                             | 2.125           | 1.701                | 76.066                | 2.1189                   | 94.7532                   |
| 2.50                             | 2.375           | 1.238                | 77.304                | 1.5421                   | 96.2954                   |
| 2.75                             | 2.625           | 0.743                | 78.047                | 0.9255                   | 97.2209                   |
| 3.00                             | 2.875           | 0.396                | 78.443                | 0.4933                   | 97.7142                   |
| 3.25                             | 3.125           | 0.150                | 78.593                | 0.1869                   | 97.9010                   |
| 3.50                             | 3.375           | 0.071                | 78.664                | 0.0884                   | 97.9895                   |
| 3.75                             | 3.625           | 0.041                | 78.705                | 0.0511                   | 98.0406                   |
| 4.00                             | 3.875           | 0.023                | 78.728                | 0.0287                   | 98.0692                   |
| 8.00                             | 6.000           | 0.100                | 78.828                | 0.1246                   | 98.1938                   |
| PAN                              |                 | 1.450                | 80.278                | 1.8062                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

#### MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 0.545        | 0.698           | 0.707                         | 0.716            | 0.734            |
| Std Dev:      | 1.004        | 1.508           | 1.557                         | 1.609            | 1.716            |
| Rel Dis:      | 1.841        | 2.160           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -0.177       | 2.870           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 4.233        | 17.687          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 3.602        | 92.689          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 48.581       | 514.234         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 164.221      | 2816.409        | = std dev/mean                |                  |                  |
| 8th MM:       | 1071.334     | 15508.904       | MM = moment measure           |                  |                  |
| Median:       | 0.541        | 0.561           |                               |                  |                  |

S1C1GS9A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 1.962                | 1.962                 | 2.8061                   | 2.8061                    |
| -1.75            | -1.875          | 0.152                | 2.114                 | 0.2174                   | 3.0235                    |
| -1.50            | -1.625          | 0.523                | 2.637                 | 0.7480                   | 3.7715                    |
| -1.25            | -1.375          | 0.473                | 3.110                 | 0.6765                   | 4.4480                    |
| -1.00            | -1.125          | 1.093                | 4.203                 | 1.5632                   | 6.0112                    |
| -0.75            | -0.875          | 1.644                | 5.847                 | 2.3513                   | 8.3625                    |
| -0.50            | -0.625          | 2.729                | 8.576                 | 3.9031                   | 12.2656                   |
| -0.25            | -0.375          | 3.995                | 12.571                | 5.7138                   | 17.9794                   |
| 0.00             | -0.125          | 4.743                | 17.314                | 6.7836                   | 24.7629                   |
| 0.25             | 0.125           | 6.718                | 24.032                | 9.6083                   | 34.3712                   |
| 0.50             | 0.375           | 6.981                | 31.013                | 9.9844                   | 44.3556                   |
| 0.75             | 0.625           | 7.830                | 38.843                | 11.1987                  | 55.5543                   |
| 1.00             | 0.875           | 8.122                | 46.965                | 11.6163                  | 67.1706                   |
| 1.25             | 1.125           | 7.465                | 54.430                | 10.6766                  | 77.8472                   |
| 1.50             | 1.375           | 3.284                | 57.714                | 4.6969                   | 82.5441                   |
| 1.75             | 1.625           | 3.269                | 60.983                | 4.6754                   | 87.2195                   |
| 2.00             | 1.875           | 2.007                | 62.990                | 2.8705                   | 90.0900                   |
| 2.25             | 2.125           | 1.407                | 64.397                | 2.0123                   | 92.1023                   |
| 2.50             | 2.375           | 1.200                | 65.597                | 1.7163                   | 93.8186                   |
| 2.75             | 2.625           | 0.884                | 66.481                | 1.2643                   | 95.0829                   |
| 3.00             | 2.875           | 0.585                | 67.066                | 0.8367                   | 95.9196                   |
| 3.25             | 3.125           | 0.237                | 67.303                | 0.3390                   | 96.2585                   |
| 3.50             | 3.375           | 0.113                | 67.416                | 0.1616                   | 96.4201                   |
| 3.75             | 3.625           | 0.096                | 67.512                | 0.1373                   | 96.5574                   |
| 4.00             | 3.875           | 0.057                | 67.569                | 0.0815                   | 96.6390                   |
| 8.00             | 6.000           | 0.450                | 68.019                | 0.6436                   | 97.2826                   |
| PAN              |                 | 1.900                | 69.919                | 2.7174                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

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MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 0.577        | 0.806           | 0.820                         | 0.833            | 0.860            |
| Std Dev:      | 1.100        | 1.755           | 1.816                         | 1.882            | 2.018            |
| Rel Dis:      | 1.905        | 2.177           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 0.562        | 2.791           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 6.548        | 14.065          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 18.066       | 62.317          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 108.704      | 291.345         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 467.547      | 1347.721        | = std dev/mean                |                  |                  |
| 8th MM:       | 2416.758     | 6279.042        | MM = moment measure           |                  |                  |
| Median:       | 0.471        | 0.501           |                               |                  |                  |

S1C2GS1A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.344                | 0.344                 | 0.4491                   | 0.4491                    |
| -1.75            | -1.875          | 0.133                | 0.477                 | 0.1736                   | 0.6227                    |
| -1.50            | -1.625          | 0.338                | 0.815                 | 0.4413                   | 1.0640                    |
| -1.25            | -1.375          | 0.660                | 1.475                 | 0.8616                   | 1.9256                    |
| -1.00            | -1.125          | 1.016                | 2.491                 | 1.3264                   | 3.2520                    |
| -0.75            | -0.875          | 1.507                | 3.998                 | 1.9674                   | 5.2195                    |
| -0.50            | -0.625          | 2.226                | 6.224                 | 2.9061                   | 8.1255                    |
| -0.25            | -0.375          | 2.879                | 9.103                 | 3.7586                   | 11.8841                   |
| 0.00             | -0.125          | 3.187                | 12.290                | 4.1607                   | 16.0448                   |
| 0.25             | 0.125           | 4.206                | 16.496                | 5.4910                   | 21.5358                   |
| 0.50             | 0.375           | 4.052                | 20.548                | 5.2900                   | 26.8258                   |
| 0.75             | 0.625           | 4.556                | 25.104                | 5.9479                   | 32.7737                   |
| 1.00             | 0.875           | 6.178                | 31.282                | 8.0655                   | 40.8392                   |
| 1.25             | 1.125           | 8.560                | 39.842                | 11.1752                  | 52.0144                   |
| 1.50             | 1.375           | 6.863                | 46.705                | 8.9598                   | 60.9742                   |
| 1.75             | 1.625           | 10.479               | 57.184                | 13.6805                  | 74.6547                   |
| 2.00             | 1.875           | 7.645                | 64.829                | 9.9807                   | 84.6354                   |
| 2.25             | 2.125           | 4.863                | 69.692                | 6.3487                   | 90.9841                   |
| 2.50             | 2.375           | 2.069                | 71.761                | 2.7011                   | 93.6852                   |
| 2.75             | 2.625           | 0.456                | 72.217                | 0.5953                   | 94.2805                   |
| 3.00             | 2.875           | 0.248                | 72.465                | 0.3238                   | 94.6043                   |
| 3.25             | 3.125           | 0.139                | 72.604                | 0.1815                   | 94.7858                   |
| 3.50             | 3.375           | 0.504                | 73.108                | 0.6580                   | 95.4437                   |
| 3.75             | 3.625           | 1.075                | 74.183                | 1.4034                   | 96.8472                   |
| 4.00             | 3.875           | 0.315                | 74.498                | 0.4112                   | 97.2584                   |
| 8.00             | 6.000           | 0.200                | 74.698                | 0.2611                   | 97.5195                   |
| PAN              |                 | 1.900                | 76.598                | 2.4805                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

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MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 1.052        | 1.249           | 1.261                         | 1.274            | 1.299            |
| Std Dev:      | 1.060        | 1.626           | 1.684                         | 1.746            | 1.873            |
| Rel Dis:      | 1.007        | 1.302           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -0.032       | 2.562           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 4.258        | 13.776          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 4.568        | 61.970          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 43.134       | 298.171         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 122.027      | 1410.539        | = std dev/mean                |                  |                  |
| 8th MM:       | 705.955      | 6727.022        | MM = moment measure           |                  |                  |
| Median:       | 1.052        | 1.080           |                               |                  |                  |

S1C2GS2A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

## ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.75            | -1.875          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.50            | -1.625          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.25            | -1.375          | 0.012                | 0.012                 | 0.0177                   | 0.0177                    |
| -1.00            | -1.125          | 0.016                | 0.028                 | 0.0236                   | 0.0413                    |
| -0.75            | -0.875          | 0.013                | 0.041                 | 0.0192                   | 0.0605                    |
| -0.50            | -0.625          | 0.015                | 0.056                 | 0.0221                   | 0.0827                    |
| -0.25            | -0.375          | 0.050                | 0.106                 | 0.0738                   | 0.1565                    |
| 0.00             | -0.125          | 0.040                | 0.146                 | 0.0590                   | 0.2155                    |
| 0.25             | 0.125           | 0.045                | 0.191                 | 0.0664                   | 0.2820                    |
| 0.50             | 0.375           | 0.042                | 0.233                 | 0.0620                   | 0.3440                    |
| 0.75             | 0.625           | 0.053                | 0.286                 | 0.0782                   | 0.4222                    |
| 1.00             | 0.875           | 0.075                | 0.361                 | 0.1107                   | 0.5329                    |
| 1.25             | 1.125           | 0.095                | 0.456                 | 0.1402                   | 0.6731                    |
| 1.50             | 1.375           | 0.091                | 0.547                 | 0.1343                   | 0.8075                    |
| 1.75             | 1.625           | 0.159                | 0.706                 | 0.2347                   | 1.0422                    |
| 2.00             | 1.875           | 0.189                | 0.895                 | 0.2790                   | 1.3212                    |
| 2.25             | 2.125           | 0.211                | 1.106                 | 0.3115                   | 1.6327                    |
| 2.50             | 2.375           | 0.275                | 1.381                 | 0.4060                   | 2.0386                    |
| 2.75             | 2.625           | 0.493                | 1.874                 | 0.7278                   | 2.7664                    |
| 3.00             | 2.875           | 1.696                | 3.570                 | 2.5036                   | 5.2700                    |
| 3.25             | 3.125           | 5.028                | 8.598                 | 7.4223                   | 12.6923                   |
| 3.50             | 3.375           | 22.786               | 31.384                | 33.6364                  | 46.3287                   |
| 3.75             | 3.625           | 23.971               | 55.355                | 35.3857                  | 81.7144                   |
| 4.00             | 3.875           | 7.837                | 63.192                | 11.5689                  | 93.2833                   |
| 8.00             | 6.000           | 2.400                | 65.592                | 3.5429                   | 96.8262                   |
| PAN              |                 | 2.150                | 67.742                | 3.1738                   | 100.0000                  |

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## MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 3.544        | 3.717           | 3.733                         | 3.749            | 3.780            |
| Std Dev:      | 0.628        | 1.145           | 1.217                         | 1.294            | 1.451            |
| Rel Dis:      | 0.177        | 0.308           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 0.815        | 3.161           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 15.879       | 15.967          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | -7.279       | 66.047          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 386.450      | 322.198         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | -1113.627    | 1408.843        | = std dev/mean                |                  |                  |
| 8th MM:       | 12885.829    | 6756.479        | MM = moment measure           |                  |                  |
| Median:       | 3.390        | 3.401           |                               |                  |                  |

S1C2GS3A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

## ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 1.484                | 1.484                 | 2.2261                   | 2.2261                    |
| -1.75            | -1.875          | 0.559                | 2.043                 | 0.8385                   | 3.0647                    |
| -1.50            | -1.625          | 0.468                | 2.511                 | 0.7020                   | 3.7667                    |
| -1.25            | -1.375          | 0.857                | 3.368                 | 1.2856                   | 5.0523                    |
| -1.00            | -1.125          | 1.124                | 4.492                 | 1.6861                   | 6.7384                    |
| -0.75            | -0.875          | 1.890                | 6.382                 | 2.8352                   | 9.5735                    |
| -0.50            | -0.625          | 2.509                | 8.891                 | 3.7637                   | 13.3372                   |
| -0.25            | -0.375          | 3.020                | 11.911                | 4.5302                   | 17.8675                   |
| 0.00             | -0.125          | 3.003                | 14.914                | 4.5047                   | 22.3722                   |
| 0.25             | 0.125           | 4.001                | 18.915                | 6.0018                   | 28.3741                   |
| 0.50             | 0.375           | 3.730                | 22.645                | 5.5953                   | 33.9694                   |
| 0.75             | 0.625           | 4.350                | 26.995                | 6.5254                   | 40.4947                   |
| 1.00             | 0.875           | 6.742                | 33.737                | 10.1136                  | 50.6083                   |
| 1.25             | 1.125           | 10.430               | 44.167                | 15.6459                  | 66.2541                   |
| 1.50             | 1.375           | 6.917                | 51.084                | 10.3761                  | 76.6302                   |
| 1.75             | 1.625           | 8.057                | 59.141                | 12.0862                  | 88.7164                   |
| 2.00             | 1.875           | 2.754                | 61.895                | 4.1312                   | 92.8476                   |
| 2.25             | 2.125           | 0.737                | 62.632                | 1.1056                   | 93.9532                   |
| 2.50             | 2.375           | 0.296                | 62.928                | 0.4440                   | 94.3972                   |
| 2.75             | 2.625           | 0.147                | 63.075                | 0.2205                   | 94.6177                   |
| 3.00             | 2.875           | 0.156                | 63.231                | 0.2340                   | 94.8517                   |
| 3.25             | 3.125           | 0.155                | 63.386                | 0.2325                   | 95.0842                   |
| 3.50             | 3.375           | 0.254                | 63.640                | 0.3810                   | 95.4653                   |
| 3.75             | 3.625           | 0.652                | 64.292                | 0.9781                   | 96.4433                   |
| 4.00             | 3.875           | 0.371                | 64.663                | 0.5565                   | 96.9998                   |
| 8.00             | 6.000           | 0.450                | 65.113                | 0.6750                   | 97.6749                   |
| PAN              |                 | 1.550                | 66.663                | 2.3251                   | 100.0000                  |

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## MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 0.750        | 0.942           | 0.953                         | 0.965            | 0.988            |
| Std Dev:      | 1.158        | 1.697           | 1.749                         | 1.807            | 1.927            |
| Rel Dis:      | 1.544        | 1.802           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 0.266        | 2.456           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 5.749        | 13.230          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 12.015       | 58.116          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 74.959       | 277.487         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 271.284      | 1300.177        | = std dev/mean                |                  |                  |
| 8th MM:       | 1334.101     | 6161.922        | MM = moment measure           |                  |                  |
| Median:       | 0.831        | 0.860           |                               |                  |                  |

S1C2GS4A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.061                | 0.061                 | 0.0825                   | 0.0825                    |
| -1.75            | -1.875          | 0.013                | 0.074                 | 0.0176                   | 0.1001                    |
| -1.50            | -1.625          | 0.028                | 0.102                 | 0.0379                   | 0.1380                    |
| -1.25            | -1.375          | 0.045                | 0.147                 | 0.0609                   | 0.1989                    |
| -1.00            | -1.125          | 0.040                | 0.187                 | 0.0541                   | 0.2531                    |
| -0.75            | -0.875          | 0.037                | 0.224                 | 0.0501                   | 0.3031                    |
| -0.50            | -0.625          | 0.055                | 0.279                 | 0.0744                   | 0.3776                    |
| -0.25            | -0.375          | 0.074                | 0.353                 | 0.1001                   | 0.4777                    |
| 0.00             | -0.125          | 0.083                | 0.436                 | 0.1123                   | 0.5900                    |
| 0.25             | 0.125           | 0.085                | 0.521                 | 0.1150                   | 0.7051                    |
| 0.50             | 0.375           | 0.086                | 0.607                 | 0.1164                   | 0.8214                    |
| 0.75             | 0.625           | 0.097                | 0.704                 | 0.1313                   | 0.9527                    |
| 1.00             | 0.875           | 0.137                | 0.841                 | 0.1854                   | 1.1381                    |
| 1.25             | 1.125           | 0.204                | 1.045                 | 0.2761                   | 1.4142                    |
| 1.50             | 1.375           | 0.230                | 1.275                 | 0.3113                   | 1.7254                    |
| 1.75             | 1.625           | 0.413                | 1.688                 | 0.5589                   | 2.2843                    |
| 2.00             | 1.875           | 0.506                | 2.194                 | 0.6848                   | 2.9691                    |
| 2.25             | 2.125           | 0.481                | 2.675                 | 0.6509                   | 3.6200                    |
| 2.50             | 2.375           | 0.528                | 3.203                 | 0.7145                   | 4.3345                    |
| 2.75             | 2.625           | 0.715                | 3.918                 | 0.9676                   | 5.3021                    |
| 3.00             | 2.875           | 2.133                | 6.051                 | 2.8865                   | 8.1886                    |
| 3.25             | 3.125           | 6.925                | 12.976                | 9.3714                   | 17.5601                   |
| 3.50             | 3.375           | 25.881               | 38.857                | 35.0240                  | 52.5841                   |
| 3.75             | 3.625           | 23.102               | 61.959                | 31.2633                  | 83.8474                   |
| 4.00             | 3.875           | 7.786                | 69.745                | 10.5366                  | 94.3839                   |
| 4.00             | 6.000           | 1.850                | 71.595                | 2.5036                   | 96.8875                   |
| PAN              |                 | 2.300                | 73.895                | 3.1125                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 3.440        | 3.613           | 3.628                         | 3.644            | 3.675            |
| Std Dev:      | 0.698        | 1.191           | 1.261                         | 1.335            | 1.487            |
| Rel Dis:      | 0.203        | 0.330           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -1.220       | 2.536           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 18.790       | 15.562          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | -69.679      | 53.525          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 640.821      | 300.842         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | -3763.523    | 1109.934        | = std dev/mean                |                  |                  |
| 8th MM:       | 29347.266    | 6059.119        | MM = moment measure           |                  |                  |
| Median:       | 3.345        | 3.357           |                               |                  |                  |

S1C2GS5A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.241                | 0.241                 | 0.3077                   | 0.3077                    |
| -1.75            | -1.875          | 0.094                | 0.335                 | 0.1200                   | 0.4278                    |
| -1.50            | -1.625          | 0.178                | 0.513                 | 0.2273                   | 0.6551                    |
| -1.25            | -1.375          | 0.261                | 0.774                 | 0.3333                   | 0.9884                    |
| -1.00            | -1.125          | 0.438                | 1.212                 | 0.5593                   | 1.5477                    |
| -0.75            | -0.875          | 0.756                | 1.968                 | 0.9654                   | 2.5130                    |
| -0.50            | -0.625          | 1.305                | 3.273                 | 1.6664                   | 4.1794                    |
| -0.25            | -0.375          | 1.561                | 4.834                 | 1.9933                   | 6.1727                    |
| 0.00             | -0.125          | 2.051                | 6.885                 | 2.6190                   | 8.7918                    |
| 0.25             | 0.125           | 2.864                | 9.749                 | 3.6572                   | 12.4489                   |
| 0.50             | 0.375           | 3.249                | 12.998                | 4.1488                   | 16.5977                   |
| 0.75             | 0.625           | 3.948                | 16.946                | 5.0414                   | 21.6391                   |
| 1.00             | 0.875           | 6.285                | 23.231                | 8.0256                   | 29.6647                   |
| 1.25             | 1.125           | 11.000               | 34.231                | 14.0464                  | 43.7111                   |
| 1.50             | 1.375           | 9.716                | 43.947                | 12.4068                  | 56.1178                   |
| 1.75             | 1.625           | 14.097               | 58.044                | 18.0011                  | 74.1189                   |
| 2.00             | 1.875           | 9.033                | 67.077                | 11.5346                  | 85.6535                   |
| 2.25             | 2.125           | 5.157                | 72.234                | 6.5852                   | 92.2387                   |
| 2.50             | 2.375           | 2.603                | 74.837                | 3.3239                   | 95.5626                   |
| 2.75             | 2.625           | 0.940                | 75.777                | 1.2003                   | 96.7629                   |
| 3.00             | 2.875           | 0.379                | 76.156                | 0.4840                   | 97.2469                   |
| 3.25             | 3.125           | 0.161                | 76.317                | 0.2056                   | 97.4525                   |
| 3.50             | 3.375           | 0.133                | 76.450                | 0.1698                   | 97.6223                   |
| 3.75             | 3.625           | 0.206                | 76.656                | 0.2631                   | 97.8854                   |
| 4.00             | 3.875           | 0.106                | 76.762                | 0.1354                   | 98.0207                   |
| 4.00             | 6.000           | 0.150                | 76.912                | 0.1915                   | 98.2123                   |
| PAN              |                 | 1.400                | 78.312                | 1.7877                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 1.231        | 1.370           | 1.379                         | 1.388            | 1.406            |
| Std Dev:      | 0.861        | 1.342           | 1.392                         | 1.445            | 1.555            |
| Rel Dis:      | 0.699        | 0.979           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -0.453       | 3.086           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 5.800        | 19.970          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 3.043        | 107.460         | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 88.595       | 618.146         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 237.056      | 3486.819        | = std dev/mean                |                  |                  |
| 8th MM:       | 2092.437     | 19844.687       | MM = moment measure           |                  |                  |
| Median:       | 1.234        | 1.252           |                               |                  |                  |



| S1D1GS1A                         | ENTIRE SAMPLE ANALYSIS |                      |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|------------------------|----------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                        |                      |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi)        | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125                 | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.75                            | -1.875                 | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.50                            | -1.625                 | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.25                            | -1.375                 | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.00                            | -1.125                 | 0.023                | 0.023                 | 0.0334                   | 0.0334                    |
| -0.75                            | -0.875                 | 0.011                | 0.034                 | 0.0160                   | 0.0494                    |
| -0.50                            | -0.625                 | 0.023                | 0.057                 | 0.0334                   | 0.0828                    |
| -0.25                            | -0.375                 | 0.061                | 0.118                 | 0.0886                   | 0.1714                    |
| 0.00                             | -0.125                 | 0.052                | 0.170                 | 0.0755                   | 0.2470                    |
| 0.25                             | 0.125                  | 0.073                | 0.243                 | 0.1060                   | 0.3530                    |
| 0.50                             | 0.375                  | 0.096                | 0.339                 | 0.1395                   | 0.4925                    |
| 0.75                             | 0.625                  | 0.102                | 0.441                 | 0.1482                   | 0.6407                    |
| 1.00                             | 0.875                  | 0.180                | 0.621                 | 0.2615                   | 0.9021                    |
| 1.25                             | 1.125                  | 0.245                | 0.866                 | 0.3559                   | 1.2581                    |
| 1.50                             | 1.375                  | 0.271                | 1.137                 | 0.3937                   | 1.6518                    |
| 1.75                             | 1.625                  | 0.627                | 1.764                 | 0.9109                   | 2.5626                    |
| 2.00                             | 1.875                  | 0.743                | 2.507                 | 1.0794                   | 3.6420                    |
| 2.25                             | 2.125                  | 0.687                | 3.194                 | 0.9980                   | 4.6400                    |
| 2.50                             | 2.375                  | 0.583                | 3.777                 | 0.8469                   | 5.4870                    |
| 2.75                             | 2.625                  | 0.687                | 4.464                 | 0.9980                   | 6.4850                    |
| 3.00                             | 2.875                  | 2.771                | 7.235                 | 4.0255                   | 10.5105                   |
| 3.25                             | 3.125                  | 8.115                | 15.350                | 11.7889                  | 22.2994                   |
| 3.50                             | 3.375                  | 22.214               | 37.564                | 32.2709                  | 54.5703                   |
| 3.75                             | 3.625                  | 21.463               | 59.027                | 31.1799                  | 85.7502                   |
| 4.00                             | 3.875                  | 6.359                | 65.386                | 9.2379                   | 94.9881                   |
| 8.00                             | 6.000                  | 1.250                | 66.636                | 1.8159                   | 96.8040                   |
| PAN                              |                        | 2.200                | 68.836                | 3.1960                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES |              |                 |                               |                  |                  |
|-----------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:           | 3.394        | 3.573           | 3.589                         | 3.605            | 3.637            |
| Std Dev:        | 0.638        | 1.175           | 1.248                         | 1.325            | 1.483            |
| Rel Dis:        | 0.188        | 0.329           | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | -0.654       | 2.959           | CALCULATED USING              |                  |                  |
| Kurtosis:       | 13.872       | 16.024          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | -19.691      | 66.314          | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 306.890      | 323.551         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | -868.741     | 1432.887        | = std dev/mean                |                  |                  |
| 8th MM:         | 8700.874     | 6795.225        | MM = moment measure           |                  |                  |
| Median:         | 3.327        | 3.340           |                               |                  |                  |

| S1D1GS2A                         | ENTIRE SAMPLE ANALYSIS |                      |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|------------------------|----------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                        |                      |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi)        | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125                 | 0.048                | 0.048                 | 0.0870                   | 0.0870                    |
| -1.75                            | -1.875                 | 0.186                | 0.234                 | 0.3370                   | 0.4239                    |
| -1.50                            | -1.625                 | 0.126                | 0.360                 | 0.2283                   | 0.6522                    |
| -1.25                            | -1.375                 | 0.148                | 0.508                 | 0.2681                   | 0.9203                    |
| -1.00                            | -1.125                 | 0.213                | 0.721                 | 0.3859                   | 1.3062                    |
| -0.75                            | -0.875                 | 0.281                | 1.002                 | 0.5091                   | 1.8152                    |
| -0.50                            | -0.625                 | 0.308                | 1.310                 | 0.5580                   | 2.3732                    |
| -0.25                            | -0.375                 | 0.300                | 1.610                 | 0.5435                   | 2.9167                    |
| 0.00                             | -0.125                 | 0.323                | 1.933                 | 0.5851                   | 3.5018                    |
| 0.25                             | 0.125                  | 0.376                | 2.309                 | 0.6812                   | 4.1830                    |
| 0.50                             | 0.375                  | 0.453                | 2.762                 | 0.8207                   | 5.0036                    |
| 0.75                             | 0.625                  | 0.496                | 3.258                 | 0.8986                   | 5.9022                    |
| 1.00                             | 0.875                  | 0.668                | 3.926                 | 1.2101                   | 7.1123                    |
| 1.25                             | 1.125                  | 0.767                | 4.693                 | 1.3895                   | 8.5018                    |
| 1.50                             | 1.375                  | 0.544                | 5.237                 | 0.9855                   | 9.4873                    |
| 1.75                             | 1.625                  | 0.724                | 5.961                 | 1.3116                   | 10.7989                   |
| 2.00                             | 1.875                  | 0.611                | 6.572                 | 1.1069                   | 11.9058                   |
| 2.25                             | 2.125                  | 0.579                | 7.151                 | 1.0489                   | 12.9547                   |
| 2.50                             | 2.375                  | 0.926                | 8.077                 | 1.6775                   | 14.6322                   |
| 2.75                             | 2.625                  | 1.983                | 10.060                | 3.5924                   | 18.2246                   |
| 3.00                             | 2.875                  | 4.518                | 14.578                | 8.1848                   | 26.4094                   |
| 3.25                             | 3.125                  | 4.529                | 19.107                | 8.2047                   | 34.6141                   |
| 3.50                             | 3.375                  | 5.872                | 24.979                | 10.6377                  | 45.2518                   |
| 3.75                             | 3.625                  | 8.753                | 33.732                | 15.8569                  | 61.1087                   |
| 4.00                             | 3.875                  | 5.018                | 38.750                | 9.0906                   | 70.1993                   |
| 8.00                             | 6.000                  | 7.200                | 45.950                | 13.0435                  | 83.2428                   |
| PAN                              |                        | 9.250                | 55.200                | 16.7572                  | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 10.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES |              |                  |                               |                  |                  |
|-----------------|--------------|------------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 10.00 Phi | Pan at 10.50 Phi              | Pan at 11.00 Phi | Pan at 12.00 Phi |
| Mean:           | 3.337        | 4.453            | 4.537                         | 4.621            | 4.788            |
| Std Dev:        | 1.613        | 2.909            | 3.061                         | 3.227            | 3.566            |
| Rel Dis:        | 0.483        | 0.653            | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | -0.429       | 0.781            | CALCULATED USING              |                  |                  |
| Kurtosis:       | 3.975        | 2.903            | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | -5.236       | 3.234            | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 22.851       | 10.110           | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | -49.890      | 12.073           | = std dev/mean                |                  |                  |
| 8th MM:         | 168.846      | 36.588           | MM = moment measure           |                  |                  |
| Median:         | 3.290        | 3.450            |                               |                  |                  |



| SIDIGS3A                         |                 | ENTIRE SAMPLE ANALYSIS |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|-----------------|------------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                 |                        |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g)   | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 0.000                  | 0.000                 | 0.0000                   | 0.0000                    |
| -1.75                            | -1.875          | 0.000                  | 0.000                 | 0.0000                   | 0.0000                    |
| -1.50                            | -1.625          | 0.000                  | 0.000                 | 0.0000                   | 0.0000                    |
| -1.25                            | -1.375          | 0.000                  | 0.000                 | 0.0000                   | 0.0000                    |
| -1.00                            | -1.125          | 0.030                  | 0.030                 | 0.0451                   | 0.0451                    |
| -0.75                            | -0.875          | 0.095                  | 0.125                 | 0.1429                   | 0.1880                    |
| -0.50                            | -0.625          | 0.083                  | 0.208                 | 0.1248                   | 0.3128                    |
| -0.25                            | -0.375          | 0.091                  | 0.299                 | 0.1368                   | 0.4496                    |
| 0.00                             | -0.125          | 0.105                  | 0.404                 | 0.1579                   | 0.6075                    |
| 0.25                             | 0.125           | 0.156                  | 0.560                 | 0.2346                   | 0.8421                    |
| 0.50                             | 0.375           | 0.209                  | 0.769                 | 0.3143                   | 1.1564                    |
| 0.75                             | 0.625           | 0.271                  | 1.040                 | 0.4075                   | 1.5640                    |
| 1.00                             | 0.875           | 0.460                  | 1.500                 | 0.6918                   | 2.2557                    |
| 1.25                             | 1.125           | 0.624                  | 2.124                 | 0.9384                   | 3.1941                    |
| 1.50                             | 1.375           | 0.579                  | 2.703                 | 0.8707                   | 4.0648                    |
| 1.75                             | 1.625           | 1.061                  | 3.764                 | 1.5955                   | 5.6603                    |
| 2.00                             | 1.875           | 1.519                  | 5.283                 | 2.2843                   | 7.9446                    |
| 2.25                             | 2.125           | 3.241                  | 8.524                 | 4.8738                   | 12.8184                   |
| 2.50                             | 2.375           | 10.266                 | 18.790                | 15.4381                  | 28.2565                   |
| 2.75                             | 2.625           | 19.692                 | 38.482                | 29.6129                  | 57.8694                   |
| 3.00                             | 2.875           | 15.517                 | 53.999                | 23.3345                  | 81.2039                   |
| 3.25                             | 3.125           | 4.669                  | 58.668                | 7.0213                   | 88.2252                   |
| 3.50                             | 3.375           | 2.270                  | 60.938                | 3.4136                   | 91.6388                   |
| 3.75                             | 3.625           | 2.377                  | 63.315                | 3.5745                   | 95.2134                   |
| 4.00                             | 3.875           | 0.983                  | 64.298                | 1.4782                   | 96.6916                   |
| 8.00                             | 6.000           | 0.450                  | 64.748                | 0.6767                   | 97.3683                   |
| PAN                              |                 | 1.750                  | 66.498                | 2.6317                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
 Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES |              |                 |                               |                  |                  |
|-----------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:           | 2.648        | 2.815           | 2.829                         | 2.842            | 2.868            |
| Std Dev:        | 0.647        | 1.207           | 1.273                         | 1.343            | 1.487            |
| Rel Dis:        | 0.244        | 0.429           | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | -0.381       | 3.417           | CALCULATED USING              |                  |                  |
| Kurtosis:       | 11.991       | 19.438          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | -0.675       | 93.605          | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 266.040      | 489.692         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | 83.866       | 2470.818        | = std dev/mean                |                  |                  |
| 8th MM:         | 6789.875     | 12731.989       | MM = moment measure           |                  |                  |
| Median:         | 2.547        | 2.559           |                               |                  |                  |

| S1D1GS4A                         |                 | ENTIRE SAMPLE ANALYSIS |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|-----------------|------------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                 |                        |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g)   | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 0.000                  | 0.000                 | 0.0000                   | 0.0000                    |
| -1.75                            | -1.875          | 0.000                  | 0.000                 | 0.0000                   | 0.0000                    |
| -1.50                            | -1.625          | 0.000                  | 0.000                 | 0.0000                   | 0.0000                    |
| -1.25                            | -1.375          | 0.000                  | 0.000                 | 0.0000                   | 0.0000                    |
| -1.00                            | -1.125          | 0.021                  | 0.021                 | 0.0274                   | 0.0274                    |
| -0.75                            | -0.875          | 0.018                  | 0.039                 | 0.0235                   | 0.0509                    |
| -0.50                            | -0.625          | 0.048                  | 0.087                 | 0.0626                   | 0.1135                    |
| -0.25                            | -0.375          | 0.129                  | 0.216                 | 0.1683                   | 0.2817                    |
| 0.00                             | -0.125          | 0.098                  | 0.314                 | 0.1278                   | 0.4096                    |
| 0.25                             | 0.125           | 0.155                  | 0.469                 | 0.2022                   | 0.6117                    |
| 0.50                             | 0.375           | 0.165                  | 0.634                 | 0.2152                   | 0.8270                    |
| 0.75                             | 0.625           | 0.223                  | 0.857                 | 0.2909                   | 1.1178                    |
| 1.00                             | 0.875           | 0.321                  | 1.178                 | 0.4187                   | 1.5365                    |
| 1.25                             | 1.125           | 0.363                  | 1.541                 | 0.4735                   | 2.0100                    |
| 1.50                             | 1.375           | 0.251                  | 1.792                 | 0.3274                   | 2.3374                    |
| 1.75                             | 1.625           | 0.313                  | 2.105                 | 0.4083                   | 2.7456                    |
| 2.00                             | 1.875           | 0.250                  | 2.355                 | 0.3261                   | 3.0717                    |
| 2.25                             | 2.125           | 0.223                  | 2.578                 | 0.2909                   | 3.3626                    |
| 2.50                             | 2.375           | 0.369                  | 2.947                 | 0.4813                   | 3.8439                    |
| 2.75                             | 2.625           | 1.123                  | 4.070                 | 1.4648                   | 5.3087                    |
| 3.00                             | 2.875           | 5.065                  | 9.135                 | 6.6065                   | 11.9152                   |
| 3.25                             | 3.125           | 12.192                 | 21.327                | 15.9025                  | 27.8177                   |
| 3.50                             | 3.375           | 25.448                 | 46.775                | 33.1929                  | 61.0106                   |
| 3.75                             | 3.625           | 21.132                 | 67.907                | 27.5634                  | 88.5740                   |
| 4.00                             | 3.875           | 5.810                  | 73.717                | 7.5782                   | 96.1522                   |
| 8.00                             | 6.000           | 0.800                  | 74.517                | 1.0435                   | 97.1957                   |
| PAN                              |                 | 2.150                  | 76.667                | 2.8043                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
 Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES |              |                 |                               |                  |                  |
|-----------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:           | 3.340        | 3.498           | 3.512                         | 3.527            | 3.555            |
| Std Dev:        | 0.609        | 1.116           | 1.185                         | 1.257            | 1.405            |
| Rel Dis:        | 0.182        | 0.319           | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | -1.754       | 3.001           | CALCULATED USING              |                  |                  |
| Kurtosis:       | 17.406       | 18.478          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | -53.323      | 79.097          | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 468.269      | 422.555         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | -1941.413    | 1970.461        | = std dev/mean                |                  |                  |
| 8th MM:         | 14993.642    | 10066.669       | MM = moment measure           |                  |                  |
| Median:         | 3.282        | 3.292           |                               |                  |                  |

| S1D1GS5A                         |                 | ENTIRE SAMPLE ANALYSIS |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|-----------------|------------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                 |                        |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g)   | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 0.083                  | 0.083                 | 0.1242                   | 0.1242                    |
| -1.75                            | -1.875          | 0.034                  | 0.117                 | 0.0509                   | 0.1751                    |
| -1.50                            | -1.625          | 0.035                  | 0.152                 | 0.0524                   | 0.2275                    |
| -1.25                            | -1.375          | 0.011                  | 0.163                 | 0.0165                   | 0.2439                    |
| -1.00                            | -1.125          | 0.093                  | 0.256                 | 0.1392                   | 0.3831                    |
| -0.75                            | -0.875          | 0.160                  | 0.416                 | 0.2394                   | 0.6225                    |
| -0.50                            | -0.625          | 0.207                  | 0.623                 | 0.3098                   | 0.9323                    |
| -0.25                            | -0.375          | 0.227                  | 0.850                 | 0.3397                   | 1.2720                    |
| 0.00                             | -0.125          | 0.244                  | 1.094                 | 0.3651                   | 1.6371                    |
| 0.25                             | 0.125           | 0.351                  | 1.445                 | 0.5253                   | 2.1624                    |
| 0.50                             | 0.375           | 0.341                  | 1.786                 | 0.5103                   | 2.6727                    |
| 0.75                             | 0.625           | 0.422                  | 2.208                 | 0.6315                   | 3.3042                    |
| 1.00                             | 0.875           | 0.509                  | 2.717                 | 0.7617                   | 4.0658                    |
| 1.25                             | 1.125           | 0.608                  | 3.325                 | 0.9098                   | 4.9757                    |
| 1.50                             | 1.375           | 0.507                  | 3.832                 | 0.7587                   | 5.7344                    |
| 1.75                             | 1.625           | 1.011                  | 4.843                 | 1.5129                   | 7.2473                    |
| 2.00                             | 1.875           | 1.103                  | 5.946                 | 1.6506                   | 8.8979                    |
| 2.25                             | 2.125           | 1.121                  | 7.067                 | 1.6775                   | 10.5754                   |
| 2.50                             | 2.375           | 1.548                  | 8.615                 | 2.3165                   | 12.8919                   |
| 2.75                             | 2.625           | 4.435                  | 13.050                | 6.6367                   | 19.5286                   |
| 3.00                             | 2.875           | 17.443                 | 30.493                | 26.1025                  | 45.6311                   |
| 3.25                             | 3.125           | 16.065                 | 46.558                | 24.0404                  | 69.6715                   |
| 3.50                             | 3.375           | 9.192                  | 55.750                | 13.7553                  | 83.4269                   |
| 3.75                             | 3.625           | 6.983                  | 62.733                | 10.4497                  | 93.8765                   |
| 4.00                             | 3.875           | 1.992                  | 64.725                | 2.9809                   | 96.8575                   |
| 8.00                             | 6.000           | 0.400                  | 65.125                | 0.5986                   | 97.4560                   |
| PAN                              |                 | 1.700                  | 66.825                | 2.5440                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES |              |                 |                               |                  |                  |
|-----------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:           | 2.913        | 3.067           | 3.080                         | 3.093            | 3.118            |
| Std Dev:        | 0.824        | 1.263           | 1.321                         | 1.385            | 1.516            |
| Rel Dis:        | 0.283        | 0.412           | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | -2.013       | 1.977           | CALCULATED USING              |                  |                  |
| Kurtosis:       | 11.368       | 14.894          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | -39.789      | 53.158          | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 230.000      | 298.732         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | -1007.345    | 1237.614        | = std dev/mean                |                  |                  |
| 8th MM:         | 5868.435     | 6369.366        | MM = moment measure           |                  |                  |
| Median:         | 2.907        | 2.920           |                               |                  |                  |

| S1D2GS1A                         |                 | ENTIRE SAMPLE ANALYSIS |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|-----------------|------------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                 |                        |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g)   | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 0.000                  | 0.000                 | 0.0000                   | 0.0000                    |
| -1.75                            | -1.875          | 0.000                  | 0.000                 | 0.0000                   | 0.0000                    |
| -1.50                            | -1.625          | 0.030                  | 0.030                 | 0.0389                   | 0.0389                    |
| -1.25                            | -1.375          | 0.045                  | 0.075                 | 0.0584                   | 0.0973                    |
| -1.00                            | -1.125          | 0.008                  | 0.083                 | 0.0104                   | 0.1077                    |
| -0.75                            | -0.875          | 0.032                  | 0.115                 | 0.0415                   | 0.1493                    |
| -0.50                            | -0.625          | 0.121                  | 0.236                 | 0.1571                   | 0.3063                    |
| -0.25                            | -0.375          | 0.242                  | 0.478                 | 0.3141                   | 0.6204                    |
| 0.00                             | -0.125          | 0.565                  | 1.043                 | 0.7334                   | 1.3538                    |
| 0.25                             | 0.125           | 1.378                  | 2.421                 | 1.7886                   | 3.1424                    |
| 0.50                             | 0.375           | 2.310                  | 4.731                 | 2.9984                   | 6.1408                    |
| 0.75                             | 0.625           | 3.689                  | 8.420                 | 4.7883                   | 10.9291                   |
| 1.00                             | 0.875           | 6.222                  | 14.642                | 8.0761                   | 19.0052                   |
| 1.25                             | 1.125           | 10.365                 | 25.007                | 13.4537                  | 32.4589                   |
| 1.50                             | 1.375           | 9.447                  | 34.454                | 12.2621                  | 44.7211                   |
| 1.75                             | 1.625           | 16.118                 | 50.572                | 20.9211                  | 65.6421                   |
| 2.00                             | 1.875           | 12.219                 | 62.791                | 15.8602                  | 81.5023                   |
| 2.25                             | 2.125           | 7.943                  | 70.734                | 10.3100                  | 91.8123                   |
| 2.50                             | 2.375           | 3.540                  | 74.274                | 4.5949                   | 96.4072                   |
| 2.75                             | 2.625           | 0.876                  | 75.150                | 1.1370                   | 97.5442                   |
| 3.00                             | 2.875           | 0.281                  | 75.431                | 0.3647                   | 97.9089                   |
| 3.25                             | 3.125           | 0.100                  | 75.531                | 0.1298                   | 98.0387                   |
| 3.50                             | 3.375           | 0.063                  | 75.594                | 0.0818                   | 98.1205                   |
| 3.75                             | 3.625           | 0.058                  | 75.652                | 0.0753                   | 98.1958                   |
| 4.00                             | 3.875           | 0.040                  | 75.692                | 0.0519                   | 98.2477                   |
| 8.00                             | 6.000           | 0.000                  | 75.692                | 0.0000                   | 98.2477                   |
| PAN                              |                 | 1.350                  | 77.042                | 1.7523                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES |              |                 |                               |                  |                  |
|-----------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Stat. Measure   | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:           | 1.472        | 1.604           | 1.613                         | 1.622            | 1.639            |
| Std Dev:        | 0.596        | 1.156           | 1.212                         | 1.270            | 1.388            |
| Rel Dis:        | 0.405        | 0.721           | STATISTICAL MEASURES          |                  |                  |
| Skewness:       | -0.510       | 4.486           | CALCULATED USING              |                  |                  |
| Kurtosis:       | 3.987        | 30.037          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:         | -5.870       | 189.639         | Std Dev = standard deviation  |                  |                  |
| 6th MM:         | 37.936       | 1216.242        | Rel Dis = relative dispersion |                  |                  |
| 7th MM:         | -96.903      | 7771.700        | = std dev/mean                |                  |                  |
| 8th MM:         | 601.633      | 49721.131       | MM = moment measure           |                  |                  |
| Median:         | 1.428        | 1.438           |                               |                  |                  |

S1D2GS2A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

| ANALYTICAL GRANULOMETRIC RESULTS |                 |                      |                       |                          |                           |
|----------------------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.75                            | -1.875          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.50                            | -1.625          | 0.048                | 0.048                 | 0.0670                   | 0.0670                    |
| -1.25                            | -1.375          | 0.047                | 0.095                 | 0.0656                   | 0.1326                    |
| -1.00                            | -1.125          | 0.187                | 0.282                 | 0.2609                   | 0.3935                    |
| -0.75                            | -0.875          | 0.391                | 0.673                 | 0.5456                   | 0.9391                    |
| -0.50                            | -0.625          | 0.839                | 1.512                 | 1.1708                   | 2.1099                    |
| -0.25                            | -0.375          | 1.296                | 2.808                 | 1.8085                   | 3.9184                    |
| 0.00                             | 0.125           | 1.674                | 4.482                 | 2.3360                   | 6.2544                    |
| 0.25                             | 0.125           | 2.940                | 7.422                 | 4.1026                   | 10.3570                   |
| 0.50                             | 0.375           | 3.422                | 10.844                | 4.7752                   | 15.1321                   |
| 0.75                             | 0.625           | 4.455                | 15.299                | 6.2167                   | 21.3488                   |
| 1.00                             | 0.875           | 6.331                | 21.630                | 8.8345                   | 30.1834                   |
| 1.25                             | 1.125           | 8.957                | 30.587                | 12.4990                  | 42.6823                   |
| 1.50                             | 1.375           | 6.833                | 37.420                | 9.5350                   | 52.2174                   |
| 1.75                             | 1.625           | 11.135               | 48.555                | 15.5382                  | 67.7556                   |
| 2.00                             | 1.875           | 9.467                | 58.022                | 13.2106                  | 80.9662                   |
| 2.25                             | 2.125           | 6.575                | 64.597                | 9.1750                   | 90.1412                   |
| 2.50                             | 2.375           | 3.494                | 68.091                | 4.8757                   | 95.0169                   |
| 2.75                             | 2.625           | 1.157                | 69.248                | 1.6145                   | 96.6314                   |
| 3.00                             | 2.875           | 0.484                | 69.732                | 0.6754                   | 97.3068                   |
| 3.25                             | 3.125           | 0.208                | 69.940                | 0.2903                   | 97.5971                   |
| 3.50                             | 3.375           | 0.119                | 70.059                | 0.1661                   | 97.7631                   |
| 3.75                             | 3.625           | 0.098                | 70.157                | 0.1368                   | 97.8999                   |
| 4.00                             | 3.875           | 0.055                | 70.212                | 0.0767                   | 97.9766                   |
| 8.00                             | 6.000           | 0.250                | 70.462                | 0.3489                   | 98.3255                   |
| PAN                              |                 | 1.200                | 71.662                | 1.6745                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

#### MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 1.323        | 1.451           | 1.460                         | 1.468            | 1.485            |
| Std Dev:      | 0.831        | 1.289           | 1.337                         | 1.389            | 1.494            |
| Rel Dis:      | 0.628        | 0.889           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | 0.173        | 3.330           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 6.206        | 21.003          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 17.423       | 118.137         | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 127.819      | 691.521         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 624.618      | 4023.729        | = std dev/mean                |                  |                  |
| 8th MM:       | 3722.085     | 23512.638       | MM = moment measure           |                  |                  |
| Median:       | 1.295        | 1.317           |                               |                  |                  |

S1D2GS3A ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

| ANALYTICAL GRANULOMETRIC RESULTS |                 |                      |                       |                          |                           |
|----------------------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 0.996                | 0.996                 | 1.5305                   | 1.5305                    |
| -1.75                            | -1.875          | 0.207                | 1.203                 | 0.3181                   | 1.8486                    |
| -1.50                            | -1.625          | 0.291                | 1.494                 | 0.4472                   | 2.2957                    |
| -1.25                            | -1.375          | 0.274                | 1.768                 | 0.4210                   | 2.7168                    |
| -1.00                            | -1.125          | 0.280                | 2.048                 | 0.4303                   | 3.1470                    |
| -0.75                            | -0.875          | 0.388                | 2.436                 | 0.5962                   | 3.7433                    |
| -0.50                            | -0.625          | 0.357                | 2.793                 | 0.5486                   | 4.2918                    |
| -0.25                            | -0.375          | 0.514                | 3.307                 | 0.7898                   | 5.0817                    |
| 0.00                             | 0.125           | 0.531                | 3.838                 | 0.8160                   | 5.8976                    |
| 0.25                             | 0.125           | 0.664                | 4.502                 | 1.0203                   | 6.9180                    |
| 0.50                             | 0.375           | 0.708                | 5.210                 | 1.0879                   | 8.0059                    |
| 0.75                             | 0.625           | 0.878                | 6.088                 | 1.3492                   | 9.3551                    |
| 1.00                             | 0.875           | 1.369                | 7.457                 | 2.1037                   | 11.4587                   |
| 1.25                             | 1.125           | 2.226                | 9.683                 | 3.4206                   | 14.8793                   |
| 1.50                             | 1.375           | 2.161                | 11.844                | 3.3207                   | 18.2000                   |
| 1.75                             | 1.625           | 4.977                | 16.821                | 7.6479                   | 25.8478                   |
| 2.00                             | 1.875           | 6.582                | 23.403                | 10.1142                  | 35.9620                   |
| 2.25                             | 2.125           | 9.982                | 33.385                | 15.3388                  | 51.3008                   |
| 2.50                             | 2.375           | 13.752               | 47.137                | 21.1319                  | 72.4327                   |
| 2.75                             | 2.625           | 8.558                | 55.695                | 13.1506                  | 85.5832                   |
| 3.00                             | 2.875           | 3.464                | 59.159                | 5.3229                   | 90.9062                   |
| 3.25                             | 3.125           | 1.034                | 60.193                | 1.5889                   | 92.4950                   |
| 3.50                             | 3.375           | 0.822                | 61.015                | 1.2631                   | 93.7582                   |
| 3.75                             | 3.625           | 1.168                | 62.183                | 1.7948                   | 95.5530                   |
| 4.00                             | 3.875           | 0.544                | 62.727                | 0.8359                   | 96.3889                   |
| 8.00                             | 6.000           | 0.650                | 63.377                | 0.9988                   | 97.3877                   |
| PAN                              |                 | 1.700                | 65.077                | 2.6123                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

#### MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 1.989        | 2.172           | 2.185                         | 2.198            | 2.224            |
| Std Dev:      | 1.118        | 1.577           | 1.631                         | 1.691            | 1.816            |
| Rel Dis:      | 0.562        | 0.726           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -1.089       | 1.603           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 7.422        | 11.363          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | -11.282      | 37.275          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 82.836       | 186.743         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | -127.326     | 736.429         | = std dev/mean                |                  |                  |
| 8th MM:       | 1014.164     | 3353.122        | MM = moment measure           |                  |                  |
| Median:       | 2.083        | 2.104           |                               |                  |                  |

S1D2GS4A      ENTIRE SAMPLE ANALYSIS      MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.75            | -1.875          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.50            | -1.625          | 0.011                | 0.011                 | 0.0166                   | 0.0166                    |
| -1.25            | -1.375          | 0.027                | 0.038                 | 0.0407                   | 0.0573                    |
| -1.00            | -1.125          | 0.106                | 0.144                 | 0.1599                   | 0.2173                    |
| -0.75            | -0.875          | 0.199                | 0.343                 | 0.3003                   | 0.5175                    |
| -0.50            | -0.625          | 0.414                | 0.757                 | 0.6247                   | 1.1422                    |
| -0.25            | -0.375          | 0.676                | 1.433                 | 1.0200                   | 2.1622                    |
| 0.00             | -0.125          | 0.782                | 2.215                 | 1.1799                   | 3.3421                    |
| 0.25             | 0.125           | 1.202                | 3.417                 | 1.8137                   | 5.1558                    |
| 0.50             | 0.375           | 1.343                | 4.760                 | 2.0264                   | 7.1822                    |
| 0.75             | 0.625           | 1.778                | 6.538                 | 2.6828                   | 9.8650                    |
| 1.00             | 0.875           | 2.854                | 9.392                 | 4.3063                   | 14.1713                   |
| 1.25             | 1.125           | 4.843                | 14.235                | 7.3074                   | 21.4787                   |
| 1.50             | 1.375           | 4.872                | 19.107                | 7.3512                   | 28.8299                   |
| 1.75             | 1.625           | 10.750               | 29.857                | 16.2203                  | 45.0502                   |
| 2.00             | 1.875           | 11.822               | 41.679                | 17.8378                  | 62.8880                   |
| 2.25             | 2.125           | 11.735               | 53.414                | 17.7065                  | 80.5945                   |
| 2.50             | 2.375           | 8.128                | 61.542                | 12.2641                  | 92.8585                   |
| 2.75             | 2.625           | 2.511                | 64.053                | 3.7888                   | 96.6473                   |
| 3.00             | 2.875           | 0.765                | 64.818                | 1.1543                   | 97.8016                   |
| 3.25             | 3.125           | 0.265                | 65.083                | 0.3998                   | 98.2014                   |
| 3.50             | 3.375           | 0.147                | 65.230                | 0.2218                   | 98.4232                   |
| 3.75             | 3.625           | 0.101                | 65.331                | 0.1524                   | 98.5756                   |
| 4.00             | 3.875           | 0.044                | 65.375                | 0.0664                   | 98.6420                   |
| 8.00             | 6.000           | 0.050                | 65.425                | 0.0754                   | 98.7175                   |
| PAN              |                 | 0.850                | 66.275                | 1.2825                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-----------------|------------------|------------------|
| Mean:         | 1.686        | 1.779           | 1.786           | 1.792            | 1.805            |
| Std Dev:      | 0.723        | 1.097           | 1.137           | 1.182            | 1.274            |
| Rel Dis:      | 0.429        | 0.616           |                 |                  |                  |
| Skewness:     | -0.861       | 3.361           |                 |                  |                  |
| Kurtosis:     | 5.363        | 25.553          |                 |                  |                  |
| 5th MM:       | -4.032       | 160.035         |                 |                  |                  |
| 6th MM:       | 71.761       | 1065.844        |                 |                  |                  |
| 7th MM:       | 102.357      | 6977.698        |                 |                  |                  |
| 8th MM:       | 1652.658     | 45976.537       |                 |                  |                  |
| Median:       | 1.685        | 1.694           |                 |                  |                  |

Std Dev = standard deviation  
Rel Dis = relative dispersion  
= std dev/mean  
MM = moment measure

S1R1GSA      ENTIRE SAMPLE ANALYSIS      MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 8.179                | 8.179                 | 9.1329                   | 9.1329                    |
| -1.75            | -1.875          | 1.525                | 9.704                 | 1.7029                   | 10.8358                   |
| -1.50            | -1.625          | 1.666                | 11.370                | 1.8603                   | 12.6961                   |
| -1.25            | -1.375          | 2.102                | 13.472                | 2.3472                   | 15.0433                   |
| -1.00            | -1.125          | 2.301                | 15.773                | 2.5694                   | 17.6126                   |
| -0.75            | -0.875          | 2.602                | 18.375                | 2.9055                   | 20.5181                   |
| -0.50            | -0.625          | 2.848                | 21.223                | 3.1802                   | 23.6983                   |
| -0.25            | -0.375          | 2.796                | 24.019                | 3.1221                   | 26.8204                   |
| 0.00             | -0.125          | 2.626                | 26.645                | 2.9323                   | 29.7527                   |
| 0.25             | 0.125           | 3.242                | 29.887                | 3.6201                   | 33.3728                   |
| 0.50             | 0.375           | 3.286                | 33.173                | 3.6693                   | 37.0420                   |
| 0.75             | 0.625           | 4.146                | 37.319                | 4.6296                   | 41.6716                   |
| 1.00             | 0.875           | 5.729                | 43.048                | 6.3972                   | 48.0688                   |
| 1.25             | 1.125           | 8.457                | 51.505                | 9.4434                   | 57.5121                   |
| 1.50             | 1.375           | 7.015                | 58.520                | 7.8332                   | 65.3453                   |
| 1.75             | 1.625           | 11.459               | 69.979                | 12.7955                  | 78.1408                   |
| 2.00             | 1.875           | 8.541                | 78.520                | 9.5372                   | 87.6780                   |
| 2.25             | 2.125           | 5.445                | 83.965                | 6.0801                   | 93.7580                   |
| 2.50             | 2.375           | 2.340                | 86.305                | 2.6129                   | 96.3709                   |
| 2.75             | 2.625           | 0.464                | 86.769                | 0.5181                   | 96.8891                   |
| 3.00             | 2.875           | 0.272                | 87.041                | 0.3037                   | 97.1928                   |
| 3.25             | 3.125           | 0.104                | 87.145                | 0.1161                   | 97.3089                   |
| 3.50             | 3.375           | 0.060                | 87.205                | 0.0670                   | 97.3759                   |
| 3.75             | 3.625           | 0.083                | 87.288                | 0.0927                   | 97.4686                   |
| 4.00             | 3.875           | 0.067                | 87.355                | 0.0748                   | 97.5434                   |
| 8.00             | 6.000           | 0.400                | 87.755                | 0.4467                   | 97.9901                   |
| PAN              |                 | 1.800                | 89.555                | 2.0099                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-----------------|------------------|------------------|
| Mean:         | 0.590        | 0.759           | 0.769           | 0.779            | 0.799            |
| Std Dev:      | 1.435        | 1.851           | 1.896           | 1.944            | 2.043            |
| Rel Dis:      | 2.432        | 2.438           |                 |                  |                  |
| Skewness:     | -0.400       | 1.448           |                 |                  |                  |
| Kurtosis:     | 2.955        | 9.123           |                 |                  |                  |
| 5th MM:       | 1.004        | 35.305          |                 |                  |                  |
| 6th MM:       | 19.158       | 162.205         |                 |                  |                  |
| 7th MM:       | 41.092       | 708.158         |                 |                  |                  |
| 8th MM:       | 207.280      | 3156.151        |                 |                  |                  |
| Median:       | 0.900        | 0.926           |                 |                  |                  |

Std Dev = standard deviation  
Rel Dis = relative dispersion  
= std dev/mean  
MM = moment measure



| S1R3GSA                          |                 | ENTIRE SAMPLE ANALYSIS |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|-----------------|------------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                 |                        |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g)   | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 14.771                 | 14.771                | 20.0693                  | 20.0693                   |
| -1.75                            | -1.875          | 5.098                  | 19.869                | 6.9266                   | 26.9959                   |
| -1.50                            | -1.625          | 5.050                  | 24.919                | 6.8614                   | 33.8573                   |
| -1.25                            | -1.375          | 5.130                  | 30.049                | 6.9701                   | 40.8274                   |
| -1.00                            | -1.125          | 4.745                  | 34.794                | 6.4470                   | 47.2745                   |
| -0.75                            | -0.875          | 4.481                  | 39.275                | 6.0883                   | 53.3628                   |
| -0.50                            | -0.625          | 4.375                  | 43.650                | 5.9443                   | 59.3071                   |
| -0.25                            | -0.375          | 4.140                  | 47.790                | 5.6250                   | 64.9321                   |
| 0.00                             | -0.125          | 3.447                  | 51.237                | 4.6834                   | 69.6155                   |
| 0.25                             | 0.125           | 3.804                  | 55.041                | 5.1685                   | 74.7840                   |
| 0.50                             | 0.375           | 3.219                  | 58.260                | 4.3736                   | 79.1576                   |
| 0.75                             | 0.625           | 3.039                  | 61.299                | 4.1291                   | 83.2867                   |
| 1.00                             | 0.875           | 2.964                  | 64.263                | 4.0272                   | 87.3139                   |
| 1.25                             | 1.125           | 2.472                  | 66.735                | 3.3587                   | 90.6726                   |
| 1.50                             | 1.375           | 1.220                  | 67.955                | 1.6576                   | 92.3302                   |
| 1.75                             | 1.625           | 1.246                  | 69.201                | 1.6929                   | 94.0231                   |
| 2.00                             | 1.875           | 0.611                  | 69.812                | 0.8302                   | 94.8533                   |
| 2.25                             | 2.125           | 0.285                  | 70.097                | 0.3872                   | 95.2405                   |
| 2.50                             | 2.375           | 0.140                  | 70.237                | 0.1902                   | 95.4307                   |
| 2.75                             | 2.625           | 0.064                  | 70.301                | 0.0870                   | 95.5177                   |
| 3.00                             | 2.875           | 0.066                  | 70.367                | 0.0897                   | 95.6073                   |
| 3.25                             | 3.125           | 0.077                  | 70.444                | 0.1046                   | 95.7120                   |
| 3.50                             | 3.375           | 0.150                  | 70.594                | 0.2038                   | 95.9158                   |
| 3.75                             | 3.625           | 0.233                  | 70.827                | 0.3166                   | 96.2323                   |
| 4.00                             | 3.875           | 0.123                  | 70.950                | 0.1671                   | 96.3995                   |
| 8.00                             | 6.000           | 0.500                  | 71.450                | 0.6793                   | 97.0788                   |
| PAN                              |                 | 2.150                  | 73.600                | 2.9212                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
 Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES               |              |                 |                 |                  |                  |
|-------------------------------|--------------|-----------------|-----------------|------------------|------------------|
| Stat. Measure                 | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:                         | -0.700       | -0.417          | -0.402          | -0.387           | -0.358           |
| Std Dev:                      | 1.346        | 2.113           | 2.176           | 2.243            | 2.382            |
| Rel Dis:                      | -1.923       | -5.071          |                 |                  |                  |
| Skewness:                     | 1.349        | 2.800           |                 |                  |                  |
| Kurtosis:                     | 6.364        | 12.565          |                 |                  |                  |
| 5th MM:                       | 25.450       | 54.044          |                 |                  |                  |
| 6th MM:                       | 119.331      | 238.044         |                 |                  |                  |
| 7th MM:                       | 568.684      | 1051.699        |                 |                  |                  |
| 8th MM:                       | 2768.716     | 4662.201        |                 |                  |                  |
| Median:                       | -1.073       | -1.013          |                 |                  |                  |
| STATISTICAL MEASURES          |              |                 |                 |                  |                  |
| CALCULATED USING              |              |                 |                 |                  |                  |
| METHOD OF MOMENTS             |              |                 |                 |                  |                  |
| Std Dev = standard deviation  |              |                 |                 |                  |                  |
| Rel Dis = relative dispersion |              |                 |                 |                  |                  |
| = std dev/mean                |              |                 |                 |                  |                  |
| MM = moment measure           |              |                 |                 |                  |                  |

| S1R4GSA                          |                 | ENTIRE SAMPLE ANALYSIS |                       | MO-DA-YR: 2-7-2001       |                           |
|----------------------------------|-----------------|------------------------|-----------------------|--------------------------|---------------------------|
| ANALYTICAL GRANULOMETRIC RESULTS |                 |                        |                       |                          |                           |
| Sieve Size (Phi)                 | Mid-Point (Phi) | Frequency Weight (g)   | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
| -2.00                            | -2.125          | 8.270                  | 8.270                 | 11.2500                  | 11.2500                   |
| -1.75                            | -1.875          | 0.816                  | 9.086                 | 1.1100                   | 12.3601                   |
| -1.50                            | -1.625          | 0.815                  | 9.901                 | 1.1087                   | 13.4687                   |
| -1.25                            | -1.375          | 1.060                  | 10.961                | 1.4420                   | 14.9107                   |
| -1.00                            | -1.125          | 1.223                  | 12.184                | 1.6637                   | 16.5744                   |
| -0.75                            | -0.875          | 1.634                  | 13.818                | 2.2228                   | 18.7972                   |
| -0.50                            | -0.625          | 2.031                  | 15.849                | 2.7629                   | 21.5600                   |
| -0.25                            | -0.375          | 2.727                  | 18.576                | 3.7096                   | 25.2697                   |
| 0.00                             | -0.125          | 2.827                  | 21.403                | 3.8457                   | 29.1154                   |
| 0.25                             | 0.125           | 4.123                  | 25.526                | 5.6087                   | 34.7241                   |
| 0.50                             | 0.375           | 4.352                  | 29.878                | 5.9202                   | 40.6443                   |
| 0.75                             | 0.625           | 5.197                  | 35.075                | 7.0697                   | 47.7139                   |
| 1.00                             | 0.875           | 6.444                  | 41.519                | 8.7660                   | 56.4800                   |
| 1.25                             | 1.125           | 7.762                  | 49.281                | 10.5590                  | 67.0389                   |
| 1.50                             | 1.375           | 5.387                  | 54.668                | 7.3282                   | 74.3671                   |
| 1.75                             | 1.625           | 7.637                  | 62.305                | 10.3889                  | 84.7560                   |
| 2.00                             | 1.875           | 5.183                  | 67.488                | 7.0506                   | 91.8067                   |
| 2.25                             | 2.125           | 2.978                  | 70.466                | 4.0511                   | 95.8578                   |
| 2.50                             | 2.375           | 1.277                  | 71.743                | 1.7372                   | 97.5949                   |
| 2.75                             | 2.625           | 0.319                  | 72.062                | 0.4339                   | 98.0289                   |
| 3.00                             | 2.875           | 0.084                  | 72.146                | 0.1143                   | 98.1431                   |
| 3.25                             | 3.125           | 0.029                  | 72.175                | 0.0394                   | 98.1826                   |
| 3.50                             | 3.375           | 0.029                  | 72.204                | 0.0394                   | 98.2220                   |
| 3.75                             | 3.625           | 0.036                  | 72.240                | 0.0490                   | 98.2710                   |
| 4.00                             | 3.875           | 0.021                  | 72.261                | 0.0286                   | 98.2996                   |
| 8.00                             | 6.000           | 0.150                  | 72.411                | 0.2041                   | 98.5036                   |
| PAN                              |                 | 1.100                  | 73.511                | 1.4964                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT  
 Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

| MOMENT MEASURES               |              |                 |                 |                  |                  |
|-------------------------------|--------------|-----------------|-----------------|------------------|------------------|
| Stat. Measure                 | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi | Pan at 10.00 Phi | Pan at 11.00 Phi |
| Mean:                         | 0.465        | 0.593           | 0.601           | 0.608            | 0.623            |
| Std Dev:                      | 1.344        | 1.694           | 1.729           | 1.768            | 1.851            |
| Rel Dis:                      | 2.888        | 2.855           |                 |                  |                  |
| Skewness:                     | -0.538       | 1.449           |                 |                  |                  |
| Kurtosis:                     | 2.923        | 10.452          |                 |                  |                  |
| 5th MM:                       | -0.479       | 45.109          |                 |                  |                  |
| 6th MM:                       | 17.592       | 231.369         |                 |                  |                  |
| 7th MM:                       | 30.900       | 1129.796        |                 |                  |                  |
| 8th MM:                       | 199.087      | 5617.351        |                 |                  |                  |
| Median:                       | 0.669        | 0.690           |                 |                  |                  |
| STATISTICAL MEASURES          |              |                 |                 |                  |                  |
| CALCULATED USING              |              |                 |                 |                  |                  |
| METHOD OF MOMENTS             |              |                 |                 |                  |                  |
| Std Dev = standard deviation  |              |                 |                 |                  |                  |
| Rel Dis = relative dispersion |              |                 |                 |                  |                  |
| = std dev/mean                |              |                 |                 |                  |                  |
| MM = moment measure           |              |                 |                 |                  |                  |



S1R5A      ENTIRE SAMPLE ANALYSIS      MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 8.365                | 8.365                 | 11.6556                  | 11.6556                   |
| -1.75            | -1.875          | 0.949                | 9.314                 | 1.3223                   | 12.9779                   |
| -1.50            | -1.625          | 0.815                | 10.129                | 1.1356                   | 14.1135                   |
| -1.25            | -1.375          | 1.190                | 11.319                | 1.6581                   | 15.7717                   |
| -1.00            | -1.125          | 1.328                | 12.647                | 1.8504                   | 17.6221                   |
| -0.75            | -0.875          | 1.480                | 14.127                | 2.0622                   | 19.6843                   |
| -0.50            | -0.625          | 2.038                | 16.165                | 2.8397                   | 22.5240                   |
| -0.25            | -0.375          | 2.307                | 18.472                | 3.2145                   | 25.7385                   |
| 0.00             | -0.125          | 2.466                | 20.938                | 3.4361                   | 29.1746                   |
| 0.25             | 0.125           | 3.634                | 24.572                | 5.0635                   | 34.2381                   |
| 0.50             | 0.375           | 3.896                | 28.468                | 5.4286                   | 39.6667                   |
| 0.75             | 0.625           | 4.744                | 33.212                | 6.6102                   | 46.2769                   |
| 1.00             | 0.875           | 5.959                | 39.171                | 8.3031                   | 54.5800                   |
| 1.25             | 1.125           | 6.900                | 46.071                | 9.6143                   | 64.1943                   |
| 1.50             | 1.375           | 4.505                | 50.576                | 6.2772                   | 70.4715                   |
| 1.75             | 1.625           | 6.350                | 56.926                | 8.8480                   | 79.3195                   |
| 2.00             | 1.875           | 4.734                | 61.660                | 6.5963                   | 85.9157                   |
| 2.25             | 2.125           | 3.476                | 65.136                | 4.8434                   | 90.7591                   |
| 2.50             | 2.375           | 2.371                | 67.507                | 3.3037                   | 94.0628                   |
| 2.75             | 2.625           | 1.306                | 68.813                | 1.8198                   | 95.8826                   |
| 3.00             | 2.875           | 0.582                | 69.395                | 0.8109                   | 96.6935                   |
| 3.25             | 3.125           | 0.205                | 69.600                | 0.2856                   | 96.9792                   |
| 3.50             | 3.375           | 0.116                | 69.716                | 0.1616                   | 97.1408                   |
| 3.75             | 3.625           | 0.095                | 69.811                | 0.1324                   | 97.2732                   |
| 4.00             | 3.875           | 0.057                | 69.868                | 0.0794                   | 97.3526                   |
| 8.00             | 6.000           | 0.400                | 70.268                | 0.5574                   | 97.9099                   |
| PAN              |                 | 1.500                | 71.768                | 2.0901                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 0.535        | 0.712           | 0.723                         | 0.733            | 0.754            |
| Std Dev:      | 1.470        | 1.898           | 1.941                         | 1.990            | 2.091            |
| Rel Dis:      | 2.747        | 2.665           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -0.250       | 1.486           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 3.135        | 8.881           | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 2.027        | 33.660          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 20.960       | 151.136         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 49.698       | 646.582         | = std dev/mean                |                  |                  |
| 8th MM:       | 228.059      | 2823.866        | MM = moment measure           |                  |                  |
| Median:       | 0.706        | 0.737           |                               |                  |                  |

S1R6GSA      ENTIRE SAMPLE ANALYSIS      MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.75            | -1.875          | 0.000                | 0.000                 | 0.0000                   | 0.0000                    |
| -1.50            | -1.625          | 0.013                | 0.013                 | 0.0246                   | 0.0246                    |
| -1.25            | -1.375          | 0.024                | 0.037                 | 0.0455                   | 0.0701                    |
| -1.00            | -1.125          | 0.003                | 0.040                 | 0.0057                   | 0.0758                    |
| -0.75            | -0.875          | 0.019                | 0.059                 | 0.0360                   | 0.1118                    |
| -0.50            | -0.625          | 0.030                | 0.089                 | 0.0569                   | 0.1687                    |
| -0.25            | -0.375          | 0.041                | 0.130                 | 0.0777                   | 0.2464                    |
| 0.00             | -0.125          | 0.049                | 0.179                 | 0.0929                   | 0.3393                    |
| 0.25             | 0.125           | 0.057                | 0.236                 | 0.1080                   | 0.4473                    |
| 0.50             | 0.375           | 0.062                | 0.298                 | 0.1175                   | 0.5648                    |
| 0.75             | 0.625           | 0.066                | 0.364                 | 0.1251                   | 0.6899                    |
| 1.00             | 0.875           | 0.096                | 0.460                 | 0.1820                   | 0.8719                    |
| 1.25             | 1.125           | 0.132                | 0.592                 | 0.2502                   | 1.1221                    |
| 1.50             | 1.375           | 0.146                | 0.738                 | 0.2767                   | 1.3988                    |
| 1.75             | 1.625           | 0.300                | 1.038                 | 0.5686                   | 1.9675                    |
| 2.00             | 1.875           | 0.338                | 1.376                 | 0.6407                   | 2.6081                    |
| 2.25             | 2.125           | 0.275                | 1.651                 | 0.5212                   | 3.1294                    |
| 2.50             | 2.375           | 0.219                | 1.870                 | 0.4151                   | 3.5445                    |
| 2.75             | 2.625           | 0.176                | 2.046                 | 0.3336                   | 3.8781                    |
| 3.00             | 2.875           | 0.416                | 2.462                 | 0.7885                   | 4.6666                    |
| 3.25             | 3.125           | 2.284                | 4.746                 | 4.3292                   | 8.9958                    |
| 3.50             | 3.375           | 15.739               | 20.485                | 29.8324                  | 38.8282                   |
| 3.75             | 3.625           | 21.615               | 42.100                | 40.9701                  | 79.7983                   |
| 4.00             | 3.875           | 7.458                | 49.558                | 14.1362                  | 93.9346                   |
| 8.00             | 6.000           | 1.550                | 51.108                | 2.9379                   | 96.8725                   |
| PAN              |                 | 1.650                | 52.758                | 3.1275                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 3.543        | 3.714           | 3.729                         | 3.745            | 3.776            |
| Std Dev:      | 0.656        | 1.156           | 1.224                         | 1.299            | 1.454            |
| Rel Dis:      | 0.185        | 0.311           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -0.479       | 2.823           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 16.817       | 15.722          | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | -37.897      | 60.325          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 456.159      | 308.802         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | -2069.173    | 1279.003        | = std dev/mean                |                  |                  |
| 8th MM:       | 17188.239    | 6331.061        | MM = moment measure           |                  |                  |
| Median:       | 3.434        | 3.443           |                               |                  |                  |

SIR7GSA ENTIRE SAMPLE ANALYSIS MO-DA-YR: 2-7-2001

ANALYTICAL GRANULOMETRIC RESULTS

| Sieve Size (Phi) | Mid-Point (Phi) | Frequency Weight (g) | Cumulative Weight (g) | Frequency Weight Percent | Cumulative Weight Percent |
|------------------|-----------------|----------------------|-----------------------|--------------------------|---------------------------|
| -2.00            | -2.125          | 5.201                | 5.201                 | 7.7753                   | 7.7753                    |
| -1.75            | -1.875          | 1.038                | 6.239                 | 1.5518                   | 9.3271                    |
| -1.50            | -1.625          | 1.393                | 7.632                 | 2.0825                   | 11.4096                   |
| -1.25            | -1.375          | 1.582                | 9.214                 | 2.3650                   | 13.7746                   |
| -1.00            | -1.125          | 1.826                | 11.040                | 2.7298                   | 16.5045                   |
| -0.75            | -0.875          | 2.504                | 13.544                | 3.7434                   | 20.2479                   |
| -0.50            | -0.625          | 3.386                | 16.930                | 5.0620                   | 25.3098                   |
| -0.25            | -0.375          | 4.256                | 21.186                | 6.3626                   | 31.6724                   |
| 0.00             | -0.125          | 4.186                | 25.372                | 6.2579                   | 37.9304                   |
| 0.25             | 0.125           | 4.346                | 29.718                | 6.4971                   | 44.4275                   |
| 0.50             | 0.375           | 3.332                | 33.050                | 4.9812                   | 49.4087                   |
| 0.75             | 0.625           | 3.229                | 36.279                | 4.8273                   | 54.2360                   |
| 1.00             | 0.875           | 3.999                | 40.278                | 5.9784                   | 60.2144                   |
| 1.25             | 1.125           | 5.134                | 45.412                | 7.6752                   | 67.8896                   |
| 1.50             | 1.375           | 3.656                | 49.068                | 5.4656                   | 73.3552                   |
| 1.75             | 1.625           | 5.352                | 54.420                | 8.0011                   | 81.3562                   |
| 2.00             | 1.875           | 3.690                | 58.110                | 5.5164                   | 86.8727                   |
| 2.25             | 2.125           | 2.787                | 60.897                | 4.1665                   | 91.0392                   |
| 2.50             | 2.375           | 2.112                | 63.009                | 3.1574                   | 94.1965                   |
| 2.75             | 2.625           | 0.957                | 63.966                | 1.4307                   | 95.6272                   |
| 3.00             | 2.875           | 0.406                | 64.372                | 0.6070                   | 96.2342                   |
| 3.25             | 3.125           | 0.237                | 64.609                | 0.3543                   | 96.5885                   |
| 3.50             | 3.375           | 0.268                | 64.877                | 0.4007                   | 96.9891                   |
| 3.75             | 3.625           | 0.295                | 65.172                | 0.4410                   | 97.4301                   |
| 4.00             | 3.875           | 0.169                | 65.341                | 0.2526                   | 97.6828                   |
| 8.00             | 6.000           | 0.200                | 65.541                | 0.2990                   | 97.9818                   |
| PAN              |                 | 1.350                | 66.891                | 2.0182                   | 100.0000                  |

THIS NOTE APPLIES ONLY IF A PAN FRACTION IS PRESENT

Statistical results can vary greatly depending on how (IF PRESENT) the pan fraction is treated. The pan mid-point for this sample is set at 9.00 phi. Results for various pan mid-points are listed below. If the pan fraction mid-point is large and the means significantly increase in value for increasing pan mid-points the pan fraction needs further analysis (e.g., settling tube) at 1/4-phi intervals, and moment measures recalculated.

MOMENT MEASURES

| Stat. Measure | Pan Excluded | Pan at 9.00 Phi | Pan at 9.50 Phi               | Pan at 10.00 Phi | Pan at 11.00 Phi |
|---------------|--------------|-----------------|-------------------------------|------------------|------------------|
| Mean:         | 0.412        | 0.585           | 0.595                         | 0.605            | 0.626            |
| Std Dev:      | 1.407        | 1.849           | 1.892                         | 1.940            | 2.041            |
| Rel Dis:      | 3.415        | 3.159           | STATISTICAL MEASURES          |                  |                  |
| Skewness:     | -0.001       | 1.771           | CALCULATED USING              |                  |                  |
| Kurtosis:     | 2.840        | 9.751           | METHOD OF MOMENTS             |                  |                  |
| 5th MM:       | 2.490        | 40.180          | Std Dev = standard deviation  |                  |                  |
| 6th MM:       | 18.322       | 185.294         | Rel Dis = relative dispersion |                  |                  |
| 7th MM:       | 47.743       | 833.178         | = std dev/mean                |                  |                  |
| 8th MM:       | 213.845      | 3789.586        | MM = moment measure           |                  |                  |
| Median:       | 0.354        | 0.406           |                               |                  |                  |

**APPENDIX II**

**LIST OF MOMENT AND GRAPHIC MEASURES**  
**FOR**  
**SAND + SILT + CLAY SAMPLES**



| SAND + SILT + CLAY |                 |                                |          |          |                  |                                        |                                                  |                       |                  |                            |                  |
|--------------------|-----------------|--------------------------------|----------|----------|------------------|----------------------------------------|--------------------------------------------------|-----------------------|------------------|----------------------------|------------------|
| Sample I.D.        | Moment Measures |                                |          |          | Graphic Mean (φ) | Graphic Standard Deviation (phi-units) | Inclusive Graphic Standard Deviation (phi-units) | Phi Quartile Skewness | Graphic Skewness | Inclusive Graphic Skewness | Graphic Kurtosis |
|                    | Mean (φ)        | Standard Deviation (phi-units) | Skewness | Kurtosis |                  |                                        |                                                  |                       |                  |                            |                  |
| S1A1GS10A          | 1.5127          | 1.3185                         | 3.9559   | 23.9361  | 1.2733           | 0.5596                                 | 0.6124                                           | -0.0151               | -0.0515          | -0.0973                    | 1.2616           |
| S1A1GS11A          | 3.5713          | 2.7041                         | 1.3809   | 4.3489   | 2.9609           | 1.4128                                 | 1.9767                                           | 0.2194                | 0.4222           | 0.5370                     | 2.0800           |
| S1A1GS12A          | 1.5062          | 1.3404                         | 3.7872   | 23.4091  | 1.2937           | 0.5055                                 | 0.5832                                           | -0.0458               | -0.1298          | -0.2148                    | 1.3782           |
| S1A1GS13A          | 1.5548          | 1.3358                         | 3.7939   | 23.0077  | 1.3254           | 0.5913                                 | 0.6295                                           | -0.0859               | -0.2609          | -0.3147                    | 1.1289           |
| S1A1GS1A           | 1.1188          | 1.3140                         | 3.9769   | 26.6910  | 0.9205           | 0.5010                                 | 0.5723                                           | -0.0180               | -0.1385          | -0.2233                    | 1.4428           |
| S1A1GS2A           | 2.1643          | 1.1679                         | 4.4778   | 26.6701  | 1.8855           | 0.3998                                 | 0.5156                                           | -0.0234               | -0.0583          | 0.0742                     | 1.7432           |
| S1A1GS3A           | 1.8835          | 1.1525                         | 5.2538   | 33.0240  | 1.6297           | 0.3279                                 | 0.3608                                           | -0.0048               | -0.0370          | -0.0689                    | 1.2935           |
| S1A1GS4A           | 4.6542          | 2.6184                         | 1.1866   | 3.3618   | 4.2328           | 1.6514                                 | 2.0518                                           | 0.0807                | 0.6451           | 0.6477                     | 3.9830           |
| S1A1GS5A           | 1.5153          | 1.2637                         | 4.2696   | 26.4356  | 1.2821           | 0.5506                                 | 0.5818                                           | -0.0400               | -0.1264          | -0.1745                    | 1.1248           |
| S1A1GS6A           | 1.5284          | 1.1973                         | 4.5655   | 30.1328  | 1.3175           | 0.4569                                 | 0.4971                                           | -0.0668               | -0.1695          | -0.2056                    | 1.1750           |
| S1A1GS7A           | 4.0996          | 1.8856                         | 2.4358   | 7.9005   | 3.4433           | 0.3939                                 | 1.0504                                           | -0.0123               | -0.0257          | 0.3352                     | 4.7773           |
| S1A1GS8A           | 1.4903          | 1.2149                         | 5.2007   | 32.6375  | 1.2272           | 0.3424                                 | 0.3710                                           | -0.0057               | -0.0276          | -0.0568                    | 1.0768           |
| S1A1GS9A           | 4.6944          | 2.7954                         | 0.7294   | 3.3318   | 4.3813           | 1.7306                                 | 2.1281                                           | 0.3184                | 0.7078           | 0.6605                     | 2.8020           |
| S1A2GS10A          | 4.1131          | 2.6980                         | 0.9198   | 3.3503   | 3.5287           | 1.9206                                 | 2.2713                                           | -0.3511               | 0.0159           | 0.1997                     | 1.6186           |
| S1A2GS11A          | 1.8585          | 1.2830                         | 4.1788   | 23.3775  | 1.5566           | 0.5221                                 | 0.5271                                           | -0.0266               | -0.1056          | -0.0846                    | 1.0175           |
| S1A2GS12A          | 4.6666          | 2.5459                         | 0.9625   | 3.3874   | 4.1255           | 1.3969                                 | 1.9512                                           | 0.3487                | 0.5288           | 0.5184                     | 2.3827           |
| S1A2GS13A          | 5.2037          | 2.7176                         | 0.9145   | 2.4251   | 4.7669           | 2.1434                                 | 2.2655                                           | 0.7367                | 0.7764           | 0.7671                     | 1.5105           |
| S1A2GS14A          | 4.4510          | 2.5250                         | 1.0611   | 3.8614   | 3.9815           | 1.3304                                 | 1.8915                                           | 0.1077                | 0.5271           | 0.5305                     | 3.4435           |
| S1A2GS15A          | 4.2629          | 2.3374                         | 1.3267   | 4.5941   | 3.7708           | 1.1493                                 | 1.7321                                           | -0.0639               | 0.3214           | 0.4053                     | 4.0966           |
| S1A2GS1A           | 2.2582          | 1.3398                         | 3.2565   | 16.1873  | 2.0323           | 0.7936                                 | 0.8127                                           | 0.0380                | 0.3731           | 0.3642                     | 1.4699           |
| S1A2GS2A           | 2.0324          | 1.2046                         | 4.2249   | 24.8720  | 1.7541           | 0.5394                                 | 0.5573                                           | -0.0015               | -0.0400          | 0.0151                     | 1.1047           |
| S1A2GS3A           | 2.3574          | 1.3260                         | 3.4439   | 17.5570  | 2.0265           | 0.5129                                 | 0.6585                                           | -0.0096               | 0.0452           | 0.1523                     | 1.7973           |
| S1A2GS4A           | 5.4270          | 3.4427                         | 0.0090   | 2.1825   | 5.0822           | 3.0051                                 | 3.2040                                           | 1.2807                | 0.6346           | 0.4554                     | 1.2868           |
| S1A2GS5A           | 4.8514          | 3.0986                         | 0.6909   | 2.0410   | 4.3439           | 2.8945                                 | 2.8482                                           | 0.2328                | 0.3785           | 0.4477                     | 1.0752           |
| S1A2GS6A           | 4.6361          | 2.2570                         | 1.4083   | 4.1144   | 4.0734           | 1.1685                                 | 1.6716                                           | 0.2485                | 0.6179           | 0.6241                     | 2.6628           |
| S1A2GS7A           | 4.6646          | 2.4003                         | 1.2823   | 3.7906   | 4.1269           | 1.2565                                 | 1.7761                                           | 0.2227                | 0.6482           | 0.6448                     | 2.9344           |
| S1A2GS8A           | 2.3748          | 1.4162                         | 3.2253   | 15.8669  | 2.0230           | 0.5310                                 | 0.6826                                           | -0.0283               | -0.0321          | 0.1029                     | 1.7584           |
| S1A2GS9A           | 2.2575          | 1.3882                         | 3.2727   | 16.5688  | 1.9344           | 0.6333                                 | 0.7389                                           | -0.0505               | -0.0909          | 0.0286                     | 1.4094           |
| S1A2R2GSA          | 4.9528          | 2.8174                         | 0.9275   | 2.5207   | 4.5899           | 2.2056                                 | 2.3996                                           | 0.6850                | 0.7312           | 0.6866                     | 1.6903           |
| S1A3GS1A           | 0.7913          | 1.7725                         | 1.7166   | 10.4517  | 0.5511           | 1.3106                                 | 999.9999                                         | -0.4058               | -0.4347          | 999.9999                   | 999.9999         |
| S1A3GS2A           | 2.0640          | 1.3329                         | 1.8072   | 15.3716  | 1.9610           | 0.5606                                 | 0.7642                                           | -0.0730               | -0.2313          | -0.3609                    | 1.8122           |
| S1A3GS3A           | 2.4576          | 1.4121                         | 1.9036   | 13.4360  | 2.2811           | 0.6184                                 | 0.8265                                           | -0.0225               | -0.0936          | -0.1960                    | 1.8669           |
| S1B1GS10A          | 1.2339          | 1.5846                         | 2.9266   | 15.8932  | 0.9413           | 0.9134                                 | 0.9080                                           | -0.0371               | -0.1226          | -0.1268                    | 0.9571           |
| S1B1GS11A          | 0.5521          | 1.9960                         | 1.7035   | 9.1829   | 0.1629           | 1.6874                                 | 999.9999                                         | -0.3897               | -0.4374          | 999.9999                   | 999.9999         |
| S1B1GS12A          | 1.3662          | 1.3712                         | 4.0092   | 22.9679  | 1.0674           | 0.6418                                 | 0.6614                                           | -0.0053               | -0.0584          | -0.0297                    | 1.0429           |
| S1B1GS13A          | 0.6829          | 1.7191                         | 1.9151   | 11.8272  | 0.4378           | 1.2898                                 | 999.9999                                         | -0.2123               | -0.3297          | 999.9999                   | 999.9999         |
| S1B1GS14A          | -0.3102         | 2.1164                         | 2.6005   | 11.6889  | 999.9999         | 999.9999                               | 999.9999                                         | -0.0036               | 999.9999         | 999.9999                   | 999.9999         |
| S1B1GS15A          | -0.5165         | 2.2796                         | 3.0275   | 12.6971  | 999.9999         | 999.9999                               | 999.9999                                         | 0.1376                | 999.9999         | 999.9999                   | 999.9999         |
| S1B1GS16A          | 0.9734          | 1.8835                         | 1.7805   | 10.1015  | 0.6578           | 1.3265                                 | 999.9999                                         | -0.2164               | -0.3854          | 999.9999                   | 999.9999         |
| S1B1GS17A          | -0.2668         | 2.1407                         | 2.8850   | 12.7962  | -0.7107          | 1.3669                                 | 999.9999                                         | -0.0068               | 0.0623           | 999.9999                   | 999.9999         |
| S1B1GS18A          | 0.0682          | 2.0909                         | 2.1388   | 10.0960  | 999.9999         | 999.9999                               | 999.9999                                         | -0.2026               | 999.9999         | 999.9999                   | 999.9999         |
| S1B1GS19A          | -0.3695         | 2.1904                         | 2.8716   | 12.4612  | 999.9999         | 999.9999                               | 999.9999                                         | 0.0662                | 999.9999         | 999.9999                   | 999.9999         |
| S1B1GS1A           | 0.3158          | 2.0612                         | 2.3201   | 10.9756  | -0.0940          | 1.4493                                 | 999.9999                                         | -0.2065               | -0.2621          | 999.9999                   | 999.9999         |
| S1B1GS20A          | -0.0491         | 1.9243                         | 2.8861   | 14.4831  | -0.4171          | 1.3094                                 | 999.9999                                         | -0.0350               | -0.0674          | 999.9999                   | 999.9999         |
| S1B1GS21A          | 0.4399          | 1.9094                         | 1.9869   | 10.6828  | 0.0962           | 1.5204                                 | 999.9999                                         | -0.2102               | -0.2931          | 999.9999                   | 999.9999         |
| S1B1GS22A          | -0.2500         | 1.7772                         | 3.2153   | 17.1981  | -0.6014          | 1.1427                                 | 999.9999                                         | -0.0892               | -0.0911          | 999.9999                   | 999.9999         |
| S1B1GS23A          | 0.6480          | 1.8792                         | 2.0667   | 11.1723  | 0.3456           | 1.3606                                 | 999.9999                                         | -0.2455               | -0.3180          | 999.9999                   | 999.9999         |
| S1B1GS24A          | 0.6982          | 1.7143                         | 3.1998   | 16.2799  | 0.4025           | 0.8416                                 | 0.9402                                           | 0.0979                | 0.2080           | 0.1680                     | 1.2289           |
| S1B1GS25A          | 0.3381          | 1.4782                         | 4.4603   | 26.3694  | 0.0359           | 0.6541                                 | 0.6933                                           | 0.0357                | 0.1394           | 0.1930                     | 1.1401           |
| S1B1GS26A          | 0.7600          | 1.4937                         | 2.9437   | 18.1428  | 0.5543           | 0.9150                                 | 0.8909                                           | 0.0515                | 0.0883           | 0.0602                     | 0.8442           |
| S1B1GS27A          | -0.3187         | 2.3927                         | 2.7910   | 10.9987  | 999.9999         | 999.9999                               | 999.9999                                         | 0.0907                | 999.9999         | 999.9999                   | 999.9999         |
| S1B1GS28A          | 0.7552          | 1.4162                         | 3.5189   | 21.8407  | 0.5321           | 0.8822                                 | 0.8385                                           | 0.0621                | 0.1211           | 0.0999                     | 0.8303           |
| S1B1GS2A           | -0.3489         | 2.1442                         | 2.7121   | 12.1935  | 999.9999         | 999.9999                               | 999.9999                                         | 0.1297                | 999.9999         | 999.9999                   | 999.9999         |
| S1B1GS3A           | -0.0518         | 2.3896                         | 2.2312   | 8.9183   | 999.9999         | 999.9999                               | 999.9999                                         | 0.2027                | 999.9999         | 999.9999                   | 999.9999         |
| S1B1GS4A           | -0.3121         | 2.0940                         | 2.6380   | 11.9438  | 999.9999         | 999.9999                               | 999.9999                                         | 0.0237                | 999.9999         | 999.9999                   | 999.9999         |
| S1B1GS5A           | 0.2772          | 1.7448                         | 2.6659   | 14.6761  | -0.0078          | 1.2290                                 | 999.9999                                         | -0.0220               | -0.0696          | 999.9999                   | 999.9999         |
| S1B1GS6A           | -0.3563         | 2.1785                         | 2.8779   | 12.4519  | 999.9999         | 999.9999                               | 999.9999                                         | 0.0943                | 999.9999         | 999.9999                   | 999.9999         |
| S1B1GS7A           | 0.5115          | 1.8519                         | 1.7632   | 10.2400  | 0.2078           | 1.5615                                 | 999.9999                                         | -0.3029               | -0.3473          | 999.9999                   | 999.9999         |



| SAND + SILT + CLAY |                    |                                      |          |          |                               |                                      |                                      |                      |                     |                                  |                     |
|--------------------|--------------------|--------------------------------------|----------|----------|-------------------------------|--------------------------------------|--------------------------------------|----------------------|---------------------|----------------------------------|---------------------|
| Sample I.D.        | Moment Measures    |                                      |          |          | Graphic                       |                                      | Inclusive                            | Phi                  | Graphic             |                                  |                     |
|                    | Mean<br>( $\phi$ ) | Standard<br>Deviation<br>(phi-units) | Skewness | Kurtosis | Graphic<br>Mean<br>( $\phi$ ) | Standard<br>Deviation<br>(phi-units) | Standard<br>Deviation<br>(phi-units) | Quartile<br>Skewness | Graphic<br>Skewness | Inclusive<br>Graphic<br>Skewness | Graphic<br>Kurtosis |
| S1B1GS8A           | 0.1054             | 2.0269                               | 2.7962   | 12.9613  | -0.2931                       | 1.2769                               | 999.9999                             | 0.0301               | 0.0009              | 999.9999                         | 999.9999            |
| S1B1GS9A           | 0.5622             | 1.9808                               | 1.9264   | 9.7676   | 0.2284                        | 1.5468                               | 999.9999                             | -0.1943              | -0.2305             | 999.9999                         | 999.9999            |
| S1B2GS1A           | 1.2664             | 1.3213                               | 3.8577   | 24.5041  | 1.0224                        | 0.5985                               | 0.6516                               | -0.0203              | -0.1545             | -0.1654                          | 1.2050              |
| S1B2GS2A           | 0.2877             | 1.9089                               | 1.4713   | 8.8623   | 999.9999                      | 999.9999                             | 999.9999                             | -0.4995              | 999.9999            | 999.9999                         | 999.9999            |
| S1B2GS3A           | 0.5308             | 1.7189                               | 2.1091   | 12.5245  | 0.3052                        | 1.3118                               | 999.9999                             | -0.0986              | -0.1466             | 999.9999                         | 999.9999            |
| S1B2GS4A           | 0.5320             | 1.8676                               | 1.2892   | 8.8780   | 999.9999                      | 999.9999                             | 999.9999                             | -0.4507              | 999.9999            | 999.9999                         | 999.9999            |
| S1B2GS5A           | 1.1211             | 1.3698                               | 3.0948   | 20.6369  | 0.8993                        | 0.7634                               | 0.8045                               | -0.0692              | -0.2338             | -0.2518                          | 1.1105              |
| S1B2GS6A           | 0.5761             | 1.7777                               | 2.1072   | 12.2274  | 0.3168                        | 1.3318                               | 999.9999                             | -0.2193              | -0.2921             | 999.9999                         | 999.9999            |
| S1B2GS7A           | 0.9620             | 1.6019                               | 2.1145   | 13.8945  | 0.7465                        | 1.0497                               | 1.1058                               | -0.1612              | -0.3338             | -0.3848                          | 1.1341              |
| S1C1GS10A          | 1.0062             | 1.5997                               | 2.5593   | 14.5060  | 0.7462                        | 1.0336                               | 1.0946                               | -0.0601              | -0.0901             | -0.0473                          | 1.1326              |
| S1C1GS11A          | 1.2383             | 1.4162                               | 2.9990   | 18.5904  | 1.0074                        | 0.8501                               | 0.8763                               | -0.0064              | -0.0671             | -0.0981                          | 1.0834              |
| S1C1GS12A          | 1.3358             | 1.3911                               | 3.2394   | 20.0046  | 1.1013                        | 0.7333                               | 0.7887                               | 0.0084               | -0.0269             | -0.0535                          | 1.2107              |
| S1C1GS13A          | 4.1253             | 2.1858                               | 1.0016   | 5.1443   | 3.7358                        | 1.0361                               | 1.5723                               | -0.0278              | 0.2959              | 0.2787                           | 4.0436              |
| S1C1GS14A          | 0.7619             | 1.6064                               | 2.9146   | 16.3376  | 0.4990                        | 1.0189                               | 1.0151                               | -0.0859              | -0.1035             | -0.0985                          | 1.0018              |
| S1C1GS15A          | 1.8242             | 1.3944                               | 3.2074   | 17.6780  | 1.5492                        | 0.6687                               | 0.7297                               | -0.0497              | -0.1153             | -0.0914                          | 1.1613              |
| S1C1GS16A          | 0.2218             | 1.9375                               | 2.1683   | 11.2539  | -0.1858                       | 1.6202                               | 999.9999                             | -0.1155              | -0.2418             | 999.9999                         | 999.9999            |
| S1C1GS17A          | 1.4121             | 1.5538                               | 2.8781   | 15.5570  | 1.1305                        | 0.8505                               | 0.9111                               | -0.0098              | -0.0747             | -0.0798                          | 1.1903              |
| S1C1GS18A          | 0.5087             | 1.9008                               | 2.2701   | 11.9220  | 0.2039                        | 1.2703                               | 999.9999                             | -0.2231              | -0.3011             | 999.9999                         | 999.9999            |
| S1C1GS19A          | 1.2036             | 1.4387                               | 3.2070   | 19.5378  | 0.9626                        | 0.7557                               | 0.8039                               | -0.0018              | -0.0672             | -0.0838                          | 1.1644              |
| S1C1GS1A           | 1.0302             | 1.5500                               | 2.7570   | 15.6699  | 0.7707                        | 1.0278                               | 1.0170                               | -0.0394              | -0.0808             | -0.0680                          | 0.9495              |
| S1C1GS20A          | 0.5149             | 1.6440                               | 2.6477   | 15.3668  | 0.2696                        | 1.1256                               | 1.1430                               | -0.0782              | -0.1075             | -0.1251                          | 1.0451              |
| S1C1GS21A          | 1.1720             | 1.2507                               | 4.0406   | 27.0159  | 0.9519                        | 0.5890                               | 0.6257                               | -0.0050              | -0.0791             | -0.1119                          | 1.1609              |
| S1C1GS22A          | 0.8803             | 1.6274                               | 2.0119   | 12.8511  | 0.6747                        | 1.0468                               | 999.9999                             | -0.0690              | -0.1795             | 999.9999                         | 999.9999            |
| S1C1GS23A          | 0.3154             | 1.7996                               | 2.8985   | 14.9438  | -0.0216                       | 0.9810                               | 999.9999                             | -0.0907              | -0.2036             | 999.9999                         | 999.9999            |
| S1C1GS24A          | 1.0532             | 1.3100                               | 4.2094   | 26.8748  | 0.8193                        | 0.6664                               | 0.6752                               | -0.0440              | -0.1213             | -0.1444                          | 1.0620              |
| S1C1GS2A           | 1.2514             | 1.6254                               | 2.3662   | 12.5217  | 0.9830                        | 1.0931                               | 1.1387                               | -0.0037              | 0.0221              | 0.0499                           | 1.1284              |
| S1C1GS3A           | 1.0632             | 1.4801                               | 3.3396   | 19.6063  | 0.8056                        | 0.8149                               | 0.8478                               | -0.0490              | -0.1300             | -0.1273                          | 1.0934              |
| S1C1GS4A           | 1.3894             | 1.4714                               | 2.7236   | 16.2732  | 1.1516                        | 0.8922                               | 0.9458                               | 0.0514               | 0.0376              | 0.0170                           | 1.2134              |
| S1C1GS5A           | 3.0751             | 1.6019                               | 2.0190   | 8.8490   | 2.7266                        | 0.7086                               | 1.0375                               | -0.0068              | 0.0133              | 0.1403                           | 2.2439              |
| S1C1GS6A           | 0.7930             | 1.5553                               | 2.9447   | 16.9841  | 0.5484                        | 1.0208                               | 1.0247                               | -0.0308              | -0.0254             | -0.0198                          | 1.0523              |
| S1C1GS7A           | 2.1013             | 1.2381                               | 3.7423   | 23.0682  | 1.8876                        | 0.4812                               | 0.5554                               | -0.0368              | -0.1730             | -0.2174                          | 1.3399              |
| S1C1GS8A           | 0.6980             | 1.5075                               | 2.8705   | 17.6875  | 0.4564                        | 0.9399                               | 1.0045                               | -0.1010              | -0.1673             | -0.1291                          | 1.2367              |
| S1C1GS9A           | 0.8061             | 1.7545                               | 2.7909   | 14.0654  | 0.4974                        | 0.9572                               | 1.0688                               | -0.0313              | -0.0056             | 0.0382                           | 1.3562              |
| S1C2GS1A           | 1.2490             | 1.6258                               | 2.5624   | 13.7756  | 0.9371                        | 0.9934                               | 1.1193                               | -0.1188              | -0.2157             | -0.0904                          | 1.2522              |
| S1C2GS2A           | 3.7168             | 1.1448                               | 3.1609   | 15.9670  | 3.4083                        | 0.2624                               | 0.4428                               | -0.0039              | 0.0421              | 0.2522                           | 2.3343              |
| S1C2GS3A           | 0.9417             | 1.6966                               | 2.4562   | 13.2296  | 0.6364                        | 1.0027                               | 1.1710                               | -0.1999              | -0.3344             | -0.1752                          | 1.3405              |
| S1C2GS4A           | 3.6128             | 1.1906                               | 2.5359   | 15.5617  | 3.3562                        | 0.2726                               | 0.4168                               | 0.0096               | -0.0020             | 0.0616                           | 2.0168              |
| S1C2GS5A           | 1.3699             | 1.3418                               | 3.0855   | 19.9697  | 1.1433                        | 0.7501                               | 0.8076                               | -0.0648              | -0.2168             | -0.2298                          | 1.2795              |
| S1D1GS1A           | 3.5728             | 1.1751                               | 2.9592   | 16.0241  | 3.3140                        | 0.3098                               | 0.4061                               | 0.0028               | -0.1240             | -0.2306                          | 1.7292              |
| S1D1GS2A           | 4.4533             | 2.9093                               | 0.7807   | 2.9026   | 4.0637                        | 1.9005                               | 2.4405                               | 0.2947               | 0.4845              | 0.4295                           | 2.2086              |
| S1D1GS3A           | 2.8155             | 1.2071                               | 3.4172   | 19.4378  | 2.5699                        | 0.3990                               | 0.5160                               | 0.0068               | 0.0425              | 0.0247                           | 1.7603              |
| S1D1GS4A           | 3.4985             | 1.1160                               | 3.0008   | 18.4782  | 3.2716                        | 0.3221                               | 0.3527                               | -0.0008              | -0.0953             | -0.1168                          | 1.2306              |
| S1D1GS5A           | 3.0674             | 1.2629                               | 1.9769   | 14.8935  | 2.9337                        | 0.4483                               | 0.6160                               | 0.0292               | 0.0445              | -0.1689                          | 1.9468              |
| S1D2GS1A           | 1.6042             | 1.1563                               | 4.4858   | 30.0372  | 1.3852                        | 0.5768                               | 0.5942                               | -0.0586              | -0.1375             | -0.1425                          | 1.0524              |
| S1D2GS2A           | 1.4512             | 1.2895                               | 3.3295   | 21.0026  | 1.2281                        | 0.7739                               | 0.7859                               | -0.0717              | -0.1720             | -0.1845                          | 1.0440              |
| S1D2GS3A           | 2.1721             | 1.5770                               | 1.6034   | 11.3632  | 1.9694                        | 0.6928                               | 0.9447                               | -0.0933              | -0.2911             | -0.2798                          | 1.9581              |
| S1D2GS4A           | 1.7794             | 1.0969                               | 3.3611   | 25.5528  | 1.6088                        | 0.6284                               | 0.6798                               | -0.0490              | -0.2043             | -0.2615                          | 1.2341              |
| S1R1GSA            | 0.7592             | 1.8513                               | 1.4482   | 9.1234   | 0.4743                        | 1.5302                               | 999.9999                             | -0.4047              | -0.4429             | 999.9999                         | 999.9999            |
| S1R3GSA            | -0.4167            | 2.1128                               | 2.7997   | 12.5646  | 999.9999                      | 999.9999                             | 999.9999                             | 0.1082               | 999.9999            | 999.9999                         | 999.9999            |
| S1R4GSA            | 0.5932             | 1.6937                               | 1.4492   | 10.4524  | 0.3619                        | 1.4091                               | 999.9999                             | -0.1917              | -0.3495             | 999.9999                         | 999.9999            |
| S1R5A              | 0.7122             | 1.8981                               | 1.4858   | 8.8813   | 0.3984                        | 1.5733                               | 999.9999                             | -0.2018              | -0.3229             | 999.9999                         | 999.9999            |
| S1R6GSA            | 3.7138             | 1.1559                               | 2.8228   | 15.7223  | 3.4421                        | 0.2578                               | 0.3943                               | -0.0158              | -0.0065             | 0.1833                           | 2.1324              |
| S1R7GSA            | 0.5852             | 1.8490                               | 1.7705   | 9.7512   | 0.3264                        | 1.4580                               | 999.9999                             | -0.0126              | -0.0815             | 999.9999                         | 999.9999            |

NOTE: 999.9999 denotes that graphic measures could not be evaluated because the sample did not have  $\phi_5$ ,  $\phi_{16}$ , or  $\phi_{25}$  percentile data.

***APPENDIX III***  
***LIST OF MOMENT AND GRAPHIC MEASURES***  
***FOR***  
***SAND + SILT SAMPLES***



| SAND + SILT |                 |                                |          |          |                  |                                        |                                                  |              |                  |                            |                  |
|-------------|-----------------|--------------------------------|----------|----------|------------------|----------------------------------------|--------------------------------------------------|--------------|------------------|----------------------------|------------------|
| Sample I.D. | Moment Measures |                                |          |          |                  |                                        |                                                  |              |                  |                            |                  |
|             | Mean (φ)        | Standard Deviation (phi-units) | Skewness | Kurtosis | Graphic Mean (φ) | Graphic Standard Deviation (phi-units) | Inclusive Graphic Standard Deviation (phi-units) | Phi Skewness | Graphic Skewness | Inclusive Graphic Skewness | Graphic Kurtosis |
| S1A1GS10A   | 1.3440          | 0.6850                         | -0.2109  | 9.5393   | 1.2733           | 0.5596                                 | 0.6124                                           | -0.0151      | -0.0515          | -0.0973                    | 1.2616           |
| S1A1GS11A   | 2.6995          | 1.3603                         | -0.0179  | 5.8261   | 2.9609           | 1.4128                                 | 1.9767                                           | 0.2194       | 0.4222           | 0.5370                     | 2.0800           |
| S1A1GS12A   | 1.3314          | 0.6920                         | -1.1144  | 10.2554  | 1.2937           | 0.5055                                 | 0.5832                                           | -0.0458      | -0.1298          | -0.2148                    | 1.3782           |
| S1A1GS13A   | 1.3797          | 0.6885                         | -1.0025  | 6.3131   | 1.3254           | 0.5913                                 | 0.6295                                           | -0.0859      | -0.2609          | -0.3147                    | 1.1289           |
| S1A1GS1A    | 0.9602          | 0.6827                         | -1.8196  | 8.5516   | 0.9205           | 0.5010                                 | 0.5723                                           | -0.0180      | -0.1385          | -0.2233                    | 1.4428           |
| S1A1GS2A    | 2.0117          | 0.5580                         | 1.1252   | 13.3006  | 1.8855           | 0.3998                                 | 0.5156                                           | -0.0234      | -0.0583          | 0.0742                     | 1.7432           |
| S1A1GS3A    | 1.7217          | 0.4052                         | -0.0118  | 15.7258  | 1.6297           | 0.3279                                 | 0.3608                                           | -0.0048      | -0.0370          | -0.0689                    | 1.2935           |
| S1A1GS4A    | 3.5852          | 1.1149                         | -0.2588  | 7.6888   | 4.2328           | 1.6514                                 | 2.0518                                           | 0.0807       | 0.6451           | 0.6477                     | 3.9830           |
| S1A1GS5A    | 1.3570          | 0.6365                         | 0.0422   | 9.4110   | 1.2821           | 0.5506                                 | 0.5818                                           | -0.0400      | -0.1264          | -0.1745                    | 1.1248           |
| S1A1GS6A    | 1.3827          | 0.5797                         | -0.5607  | 12.3539  | 1.3175           | 0.4569                                 | 0.4971                                           | -0.0668      | -0.1695          | -0.2056                    | 1.1750           |
| S1A1GS7A    | 3.5900          | 0.7364                         | 1.6680   | 8.5704   | 3.4433           | 0.3939                                 | 1.0504                                           | -0.0123      | -0.0257          | 0.3352                     | 4.7773           |
| S1A1GS8A    | 1.3237          | 0.4620                         | 1.2925   | 27.6184  | 1.2272           | 0.3424                                 | 0.3710                                           | -0.0057      | -0.0276          | -0.0568                    | 1.0768           |
| S1A1GS9A    | 3.5675          | 1.4507                         | -1.4538  | 8.5729   | 4.3813           | 1.7306                                 | 2.1281                                           | 0.3184       | 0.7078           | 0.6605                     | 2.8020           |
| S1A2GS10A   | 3.3127          | 1.6825                         | -0.0826  | 2.8791   | 3.5287           | 1.9206                                 | 2.2713                                           | -0.3511      | 0.0159           | 0.1997                     | 1.6186           |
| S1A2GS11A   | 1.6915          | 0.6675                         | 2.0600   | 17.1640  | 1.5566           | 0.5221                                 | 0.5271                                           | -0.0266      | -0.1056          | -0.0846                    | 1.0175           |
| S1A2GS12A   | 3.7936          | 1.4225                         | -0.3075  | 4.3211   | 4.1255           | 1.3969                                 | 1.9512                                           | 0.3487       | 0.5288           | 0.5184                     | 2.3827           |
| S1A2GS13A   | 3.9158          | 1.1712                         | 0.2941   | 4.6313   | 4.7669           | 2.1434                                 | 2.2655                                           | 0.7367       | 0.7764           | 0.7671                     | 1.5105           |
| S1A2GS14A   | 3.6097          | 1.3668                         | -0.5595  | 6.0454   | 3.9815           | 1.3304                                 | 1.8915                                           | 0.1077       | 0.5271           | 0.5305                     | 3.4435           |
| S1A2GS15A   | 3.5710          | 1.2643                         | -0.2698  | 5.6373   | 3.7708           | 1.1493                                 | 1.7321                                           | -0.0639      | 0.3214           | 0.4053                     | 4.0966           |
| S1A2GS1A    | 2.0978          | 0.8454                         | 1.6036   | 7.9081   | 2.0323           | 0.7936                                 | 0.8127                                           | 0.0380       | 0.3731           | 0.3642                     | 1.4699           |
| S1A2GS2A    | 1.8822          | 0.6303                         | 1.2965   | 13.0819  | 1.7541           | 0.5394                                 | 0.5573                                           | -0.0015      | -0.0400          | 0.0151                     | 1.1047           |
| S1A2GS3A    | 2.1810          | 0.7648                         | 1.4798   | 10.6011  | 2.0265           | 0.5129                                 | 0.6585                                           | -0.0096      | 0.0452           | 0.1523                     | 1.7973           |
| S1A2GS4A    | 3.5322          | 2.0676                         | -1.0224  | 4.2041   | 5.0822           | 3.0051                                 | 3.2040                                           | 1.2807       | 0.6346           | 0.4554                     | 1.2868           |
| S1A2GS5A    | 3.4131          | 1.6269                         | 0.4318   | 2.0589   | 4.3439           | 2.8945                                 | 2.8482                                           | 0.2328       | 0.3785           | 0.4477                     | 1.0752           |
| S1A2GS6A    | 3.9235          | 1.1703                         | 0.4866   | 3.6792   | 4.0734           | 1.1685                                 | 1.6716                                           | 0.2485       | 0.6179           | 0.6241                     | 2.6628           |
| S1A2GS7A    | 3.8215          | 1.1733                         | 0.1254   | 5.1669   | 4.1269           | 1.2565                                 | 1.7761                                           | 0.2227       | 0.6482           | 0.6448                     | 2.9344           |
| S1A2GS8A    | 2.1649          | 0.7849                         | 1.0655   | 11.2907  | 2.0230           | 0.5310                                 | 0.6826                                           | -0.0283      | -0.0321          | 0.1029                     | 1.7584           |
| S1A2GS9A    | 2.0634          | 0.7861                         | 0.8850   | 8.3493   | 1.9344           | 0.6333                                 | 0.7389                                           | -0.0505      | -0.0909          | 0.0286                     | 1.4094           |
| S1A2R2GSA   | 3.6457          | 1.2334                         | 0.1768   | 5.0369   | 4.5899           | 2.2056                                 | 2.3996                                           | 0.6850       | 0.7312           | 0.6866                     | 1.6903           |
| S1A3GS1A    | 0.6228          | 1.3316                         | -0.3708  | 3.0947   | 0.5511           | 1.3106                                 | 999.9999                                         | -0.4058      | -0.4347          | 999.9999                   | 999.9999         |
| S1A3GS2A    | 1.9409          | 0.9617                         | -1.4865  | 8.0459   | 1.9610           | 0.5606                                 | 0.7642                                           | -0.0730      | -0.2313          | -0.3609                    | 1.8122           |
| S1A3GS3A    | 2.2921          | 0.9573                         | -1.4204  | 7.9710   | 2.2811           | 0.6184                                 | 0.8265                                           | -0.0225      | -0.0936          | -0.1960                    | 1.8669           |
| S1B1GS10A   | 1.0276          | 0.9528                         | -0.1285  | 5.3553   | 0.9413           | 0.9134                                 | 0.9080                                           | -0.0371      | -0.1226          | -0.1268                    | 0.9571           |
| S1B1GS11A   | 0.3302          | 1.4631                         | -0.2246  | 2.7960   | 0.1629           | 1.6874                                 | 999.9999                                         | -0.3897      | -0.4374          | 999.9999                   | 999.9999         |
| S1B1GS12A   | 1.1877          | 0.7145                         | 0.8515   | 10.3880  | 1.0674           | 0.6418                                 | 0.6614                                           | -0.0053      | -0.0584          | -0.0297                    | 1.0429           |
| S1B1GS13A   | 0.5187          | 1.2664                         | -0.3876  | 3.4571   | 0.4378           | 1.2898                                 | 999.9999                                         | -0.2123      | -0.3297          | 999.9999                   | 999.9999         |
| S1B1GS14A   | -0.5819         | 1.4051                         | 1.1364   | 5.6108   | 999.9999         | 999.9999                               | 999.9999                                         | -0.0036      | 999.9999         | 999.9999                   | 999.9999         |
| S1B1GS15A   | -0.9066         | 1.2232                         | 1.8381   | 9.0577   | 999.9999         | 999.9999                               | 999.9999                                         | 0.1376       | 999.9999         | 999.9999                   | 999.9999         |
| S1B1GS16A   | 0.7481          | 1.3289                         | -0.5355  | 3.5615   | 0.6578           | 1.3265                                 | 999.9999                                         | -0.2164      | -0.3854          | 999.9999                   | 999.9999         |
| S1B1GS17A   | -0.5965         | 1.2435                         | 1.1645   | 6.2165   | -0.7107          | 1.3669                                 | 999.9999                                         | -0.0068      | 0.0623           | 999.9999                   | 999.9999         |
| S1B1GS18A   | -0.1890         | 1.4516                         | 0.3258   | 2.9911   | 999.9999         | 999.9999                               | 999.9999                                         | -0.2026      | 999.9999         | 999.9999                   | 999.9999         |
| S1B1GS19A   | -0.7068         | 1.2873                         | 1.4097   | 7.0103   | 999.9999         | 999.9999                               | 999.9999                                         | 0.0662       | 999.9999         | 999.9999                   | 999.9999         |
| S1B1GS1A    | 0.0269          | 1.3203                         | 0.1192   | 3.5847   | -0.0940          | 1.4493                                 | 999.9999                                         | -0.2065      | -0.2621          | 999.9999                   | 999.9999         |
| S1B1GS20A   | -0.3150         | 1.1421                         | 0.1231   | 2.6845   | -0.4171          | 1.3094                                 | 999.9999                                         | -0.0350      | -0.0674          | 999.9999                   | 999.9999         |
| S1B1GS21A   | 0.2302          | 1.3695                         | -0.0707  | 3.3526   | 0.0962           | 1.5204                                 | 999.9999                                         | -0.2102      | -0.2931          | 999.9999                   | 999.9999         |
| S1B1GS22A   | -0.4557         | 1.1231                         | 1.0100   | 7.2466   | -0.6014          | 1.1427                                 | 999.9999                                         | -0.0892      | -0.0911          | 999.9999                   | 999.9999         |
| S1B1GS23A   | 0.4220          | 1.2901                         | -0.3439  | 3.1014   | 0.3456           | 1.3606                                 | 999.9999                                         | -0.2455      | -0.3180          | 999.9999                   | 999.9999         |
| S1B1GS24A   | 0.4595          | 0.9805                         | 0.6827   | 7.3193   | 0.4025           | 0.8416                                 | 0.9402                                           | 0.0979       | 0.2080           | 0.1680                     | 1.2289           |
| S1B1GS25A   | 0.1470          | 0.7214                         | 1.3648   | 11.8431  | 0.0359           | 0.6541                                 | 0.6933                                           | 0.0357       | 0.1394           | 0.1930                     | 1.1401           |
| S1B1GS26A   | 0.6066          | 0.9849                         | -0.1005  | 5.2654   | 0.5543           | 0.9150                                 | 0.8909                                           | 0.0515       | 0.0883           | 0.0602                     | 0.8442           |
| S1B1GS27A   | -0.7527         | 1.3050                         | 1.8535   | 9.1581   | 999.9999         | 999.9999                               | 999.9999                                         | 0.0907       | 999.9999         | 999.9999                   | 999.9999         |
| S1B1GS28A   | 0.6010          | 0.8539                         | -0.1807  | 3.0753   | 0.5321           | 0.8822                                 | 0.8385                                           | 0.0621       | 0.1211           | 0.0999                     | 0.8303           |
| S1B1GS2A    | -0.6577         | 1.3150                         | 0.8409   | 4.0261   | 999.9999         | 999.9999                               | 999.9999                                         | 0.1297       | 999.9999         | 999.9999                   | 999.9999         |
| S1B1GS3A    | -0.4343         | 1.5132                         | 0.7512   | 3.2565   | 999.9999         | 999.9999                               | 999.9999                                         | 0.2027       | 999.9999         | 999.9999                   | 999.9999         |
| S1B1GS4A    | -0.5788         | 1.3848                         | 1.1264   | 5.4289   | 999.9999         | 999.9999                               | 999.9999                                         | 0.0237       | 999.9999         | 999.9999                   | 999.9999         |
| S1B1GS5A    | 0.0791          | 1.1504                         | 0.0041   | 3.1977   | -0.0078          | 1.2290                                 | 999.9999                                         | -0.0220      | -0.0696          | 999.9999                   | 999.9999         |
| S1B1GS6A    | -0.6845         | 1.2994                         | 1.5268   | 7.3246   | 999.9999         | 999.9999                               | 999.9999                                         | 0.0943       | 999.9999         | 999.9999                   | 999.9999         |
| S1B1GS7A    | 0.3302          | 1.3816                         | -0.2923  | 2.6324   | 0.2078           | 1.5615                                 | 999.9999                                         | -0.3029      | -0.3473          | 999.9999                   | 999.9999         |

| SAND + SILT |                 |                                |          |          |                  |                                        |                                                  |                       |                  |                            |                  |
|-------------|-----------------|--------------------------------|----------|----------|------------------|----------------------------------------|--------------------------------------------------|-----------------------|------------------|----------------------------|------------------|
| Sample I.D. | Moment Measures |                                |          |          |                  |                                        |                                                  |                       |                  |                            |                  |
|             | Mean (φ)        | Standard Deviation (phi-units) | Skewness | Kurtosis | Graphic Mean (φ) | Graphic Standard Deviation (phi-units) | Inclusive Graphic Standard Deviation (phi-units) | Phi Quartile Skewness | Graphic Skewness | Inclusive Graphic Skewness | Graphic Kurtosis |
| S1B1GS8A    | -0.1988         | 1.1879                         | 0.5877   | 4.7855   | -0.2931          | 1.2769                                 | 999.9999                                         | 0.0301                | 0.0009           | 999.9999                   | 999.9999         |
| S1B1GS9A    | 0.3314          | 1.4138                         | 0.0285   | 3.2626   | 0.2284           | 1.5468                                 | 999.9999                                         | -0.1943               | -0.2305          | 999.9999                   | 999.9999         |
| S1B2GS1A    | 1.1092          | 0.7234                         | -0.5458  | 8.2067   | 1.0224           | 0.5985                                 | 0.6516                                           | -0.0203               | -0.1545          | -0.1654                    | 1.2050           |
| S1B2GS2A    | 0.1256          | 1.5014                         | -0.2794  | 2.0171   | 999.9999         | 999.9999                               | 999.9999                                         | -0.4995               | 999.9999         | 999.9999                   | 999.9999         |
| S1B2GS3A    | 0.3606          | 1.2345                         | -0.3528  | 2.5913   | 0.3052           | 1.3118                                 | 999.9999                                         | -0.0986               | -0.1466          | 999.9999                   | 999.9999         |
| S1B2GS4A    | 0.3716          | 1.4680                         | -0.6420  | 2.1398   | 999.9999         | 999.9999                               | 999.9999                                         | -0.4507               | 999.9999         | 999.9999                   | 999.9999         |
| S1B2GS5A    | 0.9788          | 0.8697                         | -0.7708  | 5.6395   | 0.8993           | 0.7634                                 | 0.8045                                           | -0.0692               | -0.2338          | -0.2518                    | 1.1105           |
| S1B2GS6A    | 0.3814          | 1.2392                         | -0.5075  | 2.5691   | 0.3168           | 1.3318                                 | 999.9999                                         | -0.2193               | -0.2921          | 999.9999                   | 999.9999         |
| S1B2GS7A    | 0.7977          | 1.1206                         | -0.8846  | 3.8271   | 0.7465           | 1.0497                                 | 1.1058                                           | -0.1612               | -0.3338          | -0.3848                    | 1.1341           |
| S1C1GS10A   | 0.8280          | 1.0683                         | -0.1721  | 3.4812   | 0.7462           | 1.0336                                 | 1.0946                                           | -0.0601               | -0.0901          | -0.0473                    | 1.1326           |
| S1C1GS11A   | 1.0848          | 0.9019                         | -0.4268  | 4.7867   | 1.0074           | 0.8501                                 | 0.8763                                           | -0.0064               | -0.0671          | -0.0981                    | 1.0834           |
| S1C1GS12A   | 1.1750          | 0.8378                         | -0.5392  | 5.8401   | 1.1013           | 0.7333                                 | 0.7887                                           | 0.0084                | -0.0269          | -0.0535                    | 1.2107           |
| S1C1GS13A   | 3.6590          | 1.4661                         | -0.6324  | 5.1859   | 3.7358           | 1.0361                                 | 1.5723                                           | -0.0278               | 0.2959           | 0.2787                     | 4.0436           |
| S1C1GS14A   | 0.5750          | 1.0214                         | 0.0845   | 4.7721   | 0.4990           | 1.0189                                 | 1.0151                                           | -0.0859               | -0.1035          | -0.0985                    | 1.0018           |
| S1C1GS15A   | 1.6555          | 0.8557                         | 0.7271   | 9.8751   | 1.5492           | 0.6687                                 | 0.7297                                           | -0.0497               | -0.1153          | -0.0914                    | 1.1613           |
| S1C1GS16A   | -0.0001         | 1.3515                         | 0.0312   | 3.0255   | -0.1858          | 1.6202                                 | 999.9999                                         | -0.1155               | -0.2418          | 999.9999                   | 999.9999         |
| S1C1GS17A   | 1.2143          | 0.9568                         | 0.0871   | 6.2376   | 1.1305           | 0.8505                                 | 0.9111                                           | -0.0098               | -0.0747          | -0.0798                    | 1.1903           |
| S1C1GS18A   | 0.2676          | 1.2536                         | -0.2677  | 3.4853   | 0.2039           | 1.2703                                 | 999.9999                                         | -0.2231               | -0.3011          | 999.9999                   | 999.9999         |
| S1C1GS19A   | 1.0339          | 0.8610                         | -0.5361  | 6.2669   | 0.9626           | 0.7557                                 | 0.8039                                           | -0.0018               | -0.0672          | -0.0838                    | 1.1644           |
| S1C1GS1A    | 0.8595          | 1.0228                         | 0.0379   | 4.2599   | 0.7707           | 1.0278                                 | 1.0170                                           | -0.0394               | -0.0808          | -0.0680                    | 0.9495           |
| S1C1GS20A   | 0.3386          | 1.1007                         | -0.1574  | 3.4431   | 0.2696           | 1.1256                                 | 1.1430                                           | -0.0782               | -0.1075          | -0.1251                    | 1.0451           |
| S1C1GS21A   | 1.0404          | 0.7262                         | 0.1619   | 11.1933  | 0.9519           | 0.5890                                 | 0.6257                                           | -0.0050               | -0.0791          | -0.1119                    | 1.1609           |
| S1C1GS22A   | 0.7306          | 1.2006                         | -0.3082  | 4.7993   | 0.6747           | 1.0468                                 | 999.9999                                         | -0.0690               | -0.1795          | 999.9999                   | 999.9999         |
| S1C1GS23A   | 0.0914          | 1.1407                         | 0.7421   | 7.5318   | -0.0216          | 0.9810                                 | 999.9999                                         | -0.0907               | -0.2036          | 999.9999                   | 999.9999         |
| S1C1GS24A   | 0.8974          | 0.6854                         | -0.3276  | 5.7690   | 0.8193           | 0.6664                                 | 0.6752                                           | -0.0440               | -0.1213          | -0.1444                    | 1.0620           |
| S1C1GS2A    | 1.0786          | 1.1472                         | 0.3810   | 4.7085   | 0.9830           | 1.0931                                 | 1.1387                                           | -0.0037               | 0.0221           | 0.0499                     | 1.1284           |
| S1C1GS3A    | 0.8779          | 0.8460                         | -0.5823  | 3.7643   | 0.8056           | 0.8149                                 | 0.8478                                           | -0.0490               | -0.1300          | -0.1273                    | 1.0934           |
| S1C1GS4A    | 1.2233          | 0.9525                         | -0.4623  | 4.3000   | 1.1516           | 0.8922                                 | 0.9458                                           | 0.0514                | 0.0376           | 0.0170                     | 1.2134           |
| S1C1GS5A    | 2.8257          | 1.0556                         | 0.5320   | 6.7372   | 2.7266           | 0.7086                                 | 1.0375                                           | -0.0068               | 0.0133           | 0.1403                     | 2.2439           |
| S1C1GS6A    | 0.6182          | 0.9929                         | -0.0971  | 3.4156   | 0.5484           | 1.0208                                 | 1.0247                                           | -0.0308               | -0.0254          | -0.0198                    | 1.0523           |
| S1C1GS7A    | 1.9395          | 0.6409                         | -1.2715  | 7.9226   | 1.8876           | 0.4812                                 | 0.5554                                           | -0.0368               | -0.1730          | -0.2174                    | 1.3399           |
| S1C1GS8A    | 0.5453          | 1.0036                         | -0.1766  | 4.2331   | 0.4564           | 0.9399                                 | 1.0045                                           | -0.1010               | -0.1673          | -0.1291                    | 1.2367           |
| S1C1GS9A    | 0.5772          | 1.0996                         | 0.5618   | 6.5476   | 0.4974           | 0.9572                                 | 1.0688                                           | -0.0313               | -0.0056          | 0.0382                     | 1.3562           |
| S1C2GS1A    | 1.0518          | 1.0597                         | -0.0324  | 4.2579   | 0.9371           | 0.9934                                 | 1.1193                                           | -0.1188               | -0.2157          | -0.0904                    | 1.2522           |
| S1C2GS2A    | 3.5437          | 0.6282                         | 0.8155   | 15.8794  | 3.4083           | 0.2624                                 | 0.4428                                           | -0.0039               | 0.0421           | 0.2522                     | 2.3343           |
| S1C2GS3A    | 0.7499          | 1.1579                         | 0.2657   | 5.7490   | 0.6364           | 1.0027                                 | 1.1710                                           | -0.1999               | -0.3344          | -0.1752                    | 1.3405           |
| S1C2GS4A    | 3.4397          | 0.6984                         | -1.2205  | 18.7905  | 3.3562           | 0.2726                                 | 0.4168                                           | 0.0096                | -0.0020          | 0.0616                     | 2.0168           |
| S1C2GS5A    | 1.2310          | 0.8605                         | -0.4532  | 5.7996   | 1.1433           | 0.7501                                 | 0.8076                                           | -0.0648               | -0.2168          | -0.2298                    | 1.2795           |
| S1D1GS1A    | 3.3936          | 0.6383                         | -0.6539  | 13.8719  | 3.3140           | 0.3098                                 | 0.4061                                           | 0.0028                | -0.1240          | -0.2306                    | 1.7292           |
| S1D1GS2A    | 3.3368          | 1.6126                         | -0.4293  | 3.9754   | 4.0637           | 1.9005                                 | 2.4405                                           | 0.2947                | 0.4845           | 0.4295                     | 2.2086           |
| S1D1GS3A    | 2.6483          | 0.6471                         | -0.3814  | 11.9912  | 2.5699           | 0.3990                                 | 0.5160                                           | 0.0068                | 0.0425           | 0.0247                     | 1.7603           |
| S1D1GS4A    | 3.3397          | 0.6092                         | -1.7541  | 17.4056  | 3.2716           | 0.3221                                 | 0.3527                                           | -0.0008               | -0.0953          | -0.1168                    | 1.2306           |
| S1D1GS5A    | 2.9125          | 0.8245                         | -2.0131  | 11.3679  | 2.9337           | 0.4483                                 | 0.6160                                           | 0.0292                | 0.0445           | -0.1689                    | 1.9468           |
| S1D2GS1A    | 1.4723          | 0.5958                         | -0.5101  | 3.9870   | 1.3852           | 0.5768                                 | 0.5942                                           | -0.0586               | -0.1375          | -0.1425                    | 1.0524           |
| S1D2GS2A    | 1.3226          | 0.8309                         | 0.1733   | 6.2065   | 1.2281           | 0.7739                                 | 0.7859                                           | -0.0717               | -0.1720          | -0.1845                    | 1.0440           |
| S1D2GS3A    | 1.9889          | 1.1181                         | -1.0888  | 7.4220   | 1.9694           | 0.6928                                 | 0.9447                                           | -0.0933               | -0.2911          | -0.2798                    | 1.9581           |
| S1D2GS4A    | 1.6856          | 0.7226                         | -0.8615  | 5.3635   | 1.6088           | 0.6284                                 | 0.6798                                           | -0.0490               | -0.2043          | -0.2615                    | 1.2341           |
| S1R1GSA     | 0.5902          | 1.4354                         | -0.3998  | 2.9547   | 0.4743           | 1.5302                                 | 999.9999                                         | -0.4047               | -0.4429          | 999.9999                   | 999.9999         |
| S1R3GSA     | -0.7000         | 1.3463                         | 1.3492   | 6.3636   | 999.9999         | 999.9999                               | 999.9999                                         | 0.1082                | 999.9999         | 999.9999                   | 999.9999         |
| S1R4GSA     | 0.4655          | 1.3445                         | -0.5383  | 2.9229   | 0.3619           | 1.4091                                 | 999.9999                                         | -0.1917               | -0.3495          | 999.9999                   | 999.9999         |
| S1R5A       | 0.5353          | 1.4703                         | -0.2496  | 3.1346   | 0.3984           | 1.5733                                 | 999.9999                                         | -0.2018               | -0.3229          | 999.9999                   | 999.9999         |
| S1R6GSA     | 3.5432          | 0.6560                         | -0.4786  | 16.8169  | 3.4421           | 0.2578                                 | 0.3943                                           | -0.0158               | -0.0065          | 0.1833                     | 2.1324           |
| S1R7GSA     | 0.4119          | 1.4066                         | -0.0011  | 2.8401   | 0.3264           | 1.4580                                 | 999.9999                                         | -0.0126               | -0.0815          | 999.9999                   | 999.9999         |

NOTE: 999.9999 denotes that graphic measures could not be evaluated because the sample did not have φ5, φ16, or φ25 percentile data.



***APPENDIX IV***  
***LIST OF MOMENT AND GRAPHIC MEASURES***  
***FOR***  
***SAND ONLY SAMPLES***



| Sample<br>I.D. | Moment Measures    |                                      |          |          | SAND ONLY                     |                                                 |                                                              |                             |                     |                                  |                     |  |
|----------------|--------------------|--------------------------------------|----------|----------|-------------------------------|-------------------------------------------------|--------------------------------------------------------------|-----------------------------|---------------------|----------------------------------|---------------------|--|
|                | Mean<br>( $\phi$ ) | Standard<br>Deviation<br>(phi-units) | Skewness | Kurtosis | Graphic<br>Mean<br>( $\phi$ ) | Graphic<br>Standard<br>Deviation<br>(phi-units) | Inclusive<br>Graphic<br>Standard<br>Deviation<br>(phi-units) | Phi<br>Quartile<br>Skewness | Graphic<br>Skewness | Inclusive<br>Graphic<br>Skewness | Graphic<br>Kurtosis |  |
|                |                    |                                      |          |          |                               |                                                 |                                                              |                             |                     |                                  |                     |  |
| S1A1GS10A      | 1.3345             | 0.6519                               | -0.9590  | 6.1818   | 1.2493                        | 0.5440                                          | 0.5841                                                       | -0.0145                     | -0.0686             | -0.1410                          | 1.2151              |  |
| S1A1GS11A      | 2.4564             | 1.0546                               | -1.6358  | 8.3134   | 2.4554                        | 0.8778                                          | 0.8613                                                       | 0.2141                      | 0.3052              | 0.1691                           | 0.9235              |  |
| S1A1GS12A      | 1.3246             | 0.6687                               | -1.7101  | 8.1849   | 1.2703                        | 0.4938                                          | 0.5661                                                       | -0.0425                     | -0.1504             | -0.2471                          | 1.3528              |  |
| S1A1GS13A      | 1.3766             | 0.6781                               | -1.2520  | 5.2225   | 1.3073                        | 0.5842                                          | 0.6195                                                       | -0.0898                     | -0.2741             | -0.3337                          | 1.1246              |  |
| S1A1GS1A       | 0.9602             | 0.6827                               | -1.8196  | 8.5516   | 0.9033                        | 0.4893                                          | 0.5538                                                       | -0.0242                     | -0.1663             | -0.2679                          | 1.4233              |  |
| S1A1GS2A       | 1.9990             | 0.5104                               | -0.0012  | 6.9362   | 1.8672                        | 0.3850                                          | 0.4383                                                       | -0.0241                     | -0.0887             | -0.0529                          | 1.3847              |  |
| S1A1GS3A       | 1.7187             | 0.3887                               | -0.9518  | 7.9647   | 1.6121                        | 0.3161                                          | 0.3383                                                       | -0.0049                     | -0.0782             | -0.1366                          | 1.2109              |  |
| S1A1GS4A       | 3.2949             | 0.7685                               | -3.5264  | 20.0323  | 3.2690                        | 0.4604                                          | 0.5160                                                       | -0.0881                     | -0.3995             | -0.4778                          | 1.3891              |  |
| S1A1GS5A       | 1.3475             | 0.6009                               | -0.8608  | 4.4094   | 1.2613                        | 0.5394                                          | 0.5673                                                       | -0.0387                     | -0.1311             | -0.1919                          | 1.1227              |  |
| S1A1GS6A       | 1.3762             | 0.5535                               | -1.4315  | 7.9705   | 1.2996                        | 0.4481                                          | 0.4794                                                       | -0.0628                     | -0.1816             | -0.2422                          | 1.1297              |  |
| S1A1GS7A       | 3.4322             | 0.4068                               | -2.0995  | 11.7731  | 3.3391                        | 0.3267                                          | 0.3574                                                       | -0.0327                     | -0.2590             | -0.3132                          | 1.2762              |  |
| S1A1GS8A       | 1.3145             | 0.4127                               | -1.0065  | 10.6190  | 1.2156                        | 0.3347                                          | 0.3542                                                       | -0.0058                     | -0.0283             | -0.0930                          | 1.0295              |  |
| S1A1GS9A       | 3.2108             | 1.1838                               | -3.4491  | 14.8512  | 3.3171                        | 0.4305                                          | 0.6610                                                       | -0.0610                     | -0.3946             | -0.5657                          | 2.5861              |  |
| S1A2GS10A      | 2.7227             | 1.2196                               | -1.1034  | 3.8783   | 2.7594                        | 1.1343                                          | 1.0719                                                       | -0.5242                     | -0.5431             | -0.5775                          | 0.7306              |  |
| S1A2GS11A      | 1.6542             | 0.5339                               | -0.3457  | 4.9293   | 1.5329                        | 0.5072                                          | 0.4987                                                       | -0.0341                     | -0.1215             | -0.1306                          | 0.9638              |  |
| S1A2GS12A      | 3.2182             | 0.9585                               | -2.5261  | 10.6870  | 3.1388                        | 0.7364                                          | 0.7619                                                       | -0.0842                     | -0.5925             | -0.6423                          | 1.7598              |  |
| S1A2GS13A      | 3.4193             | 0.6202                               | -3.9490  | 25.0813  | 3.3849                        | 0.3466                                          | 0.3972                                                       | -0.0229                     | -0.1625             | -0.3093                          | 1.3596              |  |
| S1A2GS14A      | 3.1789             | 0.9830                               | -3.0406  | 13.7864  | 3.2213                        | 0.5158                                          | 0.6417                                                       | -0.0576                     | -0.3099             | -0.4625                          | 1.6529              |  |
| S1A2GS15A      | 3.2069             | 0.8963                               | -2.6379  | 12.1660  | 3.2024                        | 0.6037                                          | 0.6635                                                       | -0.1060                     | -0.4217             | -0.5203                          | 1.3274              |  |
| S1A2GS1A       | 2.0448             | 0.7155                               | 0.6695   | 3.6034   | 1.8974                        | 0.6216                                          | 0.6872                                                       | 0.0157                      | 0.2088              | 0.2549                           | 1.4554              |  |
| S1A2GS2A       | 1.8599             | 0.5528                               | -0.2206  | 5.2422   | 1.7302                        | 0.5242                                          | 0.5152                                                       | -0.0015                     | -0.0564             | -0.0478                          | 0.9981              |  |
| S1A2GS3A       | 2.1325             | 0.6342                               | 0.0444   | 5.7466   | 1.9642                        | 0.4439                                          | 0.5722                                                       | -0.0167                     | -0.0939             | 0.0300                           | 1.6271              |  |
| S1A2GS4A       | 2.7184             | 1.7206                               | -1.8697  | 5.3948   | 2.8296                        | 1.1350                                          | 999.9999                                                     | -0.4672                     | -0.6918             | 999.9999                         | 999.9999            |  |
| S1A2GS5A       | 2.6845             | 0.9617                               | -0.2324  | 2.0667   | 2.5231                        | 1.0214                                          | 0.9128                                                       | 0.3221                      | 0.2909              | 0.2023                           | 0.6341              |  |
| S1A2GS6A       | 3.4083             | 0.5913                               | -2.9864  | 16.5853  | 3.3746                        | 0.3685                                          | 0.4578                                                       | -0.0302                     | -0.2229             | -0.3922                          | 1.6302              |  |
| S1A2GS7A       | 3.3820             | 0.6946                               | -3.4889  | 19.3665  | 3.3743                        | 0.3684                                          | 0.4741                                                       | -0.0254                     | -0.2079             | -0.3946                          | 1.7161              |  |
| S1A2GS8A       | 2.1152             | 0.6544                               | -0.5563  | 7.9559   | 1.9669                        | 0.4763                                          | 0.5838                                                       | -0.0329                     | -0.1360             | -0.0233                          | 1.5035              |  |
| S1A2GS9A       | 2.0280             | 0.6936                               | -0.2136  | 4.3834   | 1.8861                        | 0.5972                                          | 0.6613                                                       | -0.0530                     | -0.1511             | -0.0665                          | 1.2396              |  |
| S1A2R2GSA      | 3.2126             | 0.7514                               | -2.9797  | 16.2413  | 3.1613                        | 0.5031                                          | 0.5610                                                       | -0.0507                     | -0.3642             | -0.4371                          | 1.4614              |  |
| S1A3GS1A       | 0.6063             | 1.2995                               | -0.5819  | 2.4834   | 0.5137                        | 1.2944                                          | 999.9999                                                     | -0.4131                     | -0.4555             | 999.9999                         | 999.9999            |  |
| S1A3GS2A       | 1.9237             | 0.9260                               | -1.9801  | 7.6585   | 1.9352                        | 0.5567                                          | 0.7447                                                       | -0.0741                     | -0.2618             | -0.4077                          | 1.7534              |  |
| S1A3GS3A       | 2.2738             | 0.9230                               | -1.8579  | 7.8181   | 2.2497                        | 0.5968                                          | 0.7927                                                       | -0.0361                     | -0.1291             | -0.2516                          | 1.8671              |  |
| S1B1GS10A      | 1.0120             | 0.9120                               | -0.6120  | 3.5419   | 0.9061                        | 0.8955                                          | 0.8683                                                       | -0.0395                     | -0.1300             | -0.1670                          | 0.9021              |  |
| S1B1GS11A      | 0.3046             | 1.4153                               | -0.4886  | 1.9949   | 0.1039                        | 1.6884                                          | 999.9999                                                     | -0.3971                     | -0.4391             | 999.9999                         | 999.9999            |  |
| S1B1GS12A      | 1.1706             | 0.6546                               | -0.2432  | 4.2330   | 1.0363                        | 0.6164                                          | 0.6184                                                       | -0.0068                     | -0.0874             | -0.0868                          | 0.9673              |  |
| S1B1GS13A      | 0.5006             | 1.2281                               | -0.6795  | 2.5533   | 0.4029                        | 1.2823                                          | 999.9999                                                     | -0.2238                     | -0.3353             | 999.9999                         | 999.9999            |  |
| S1B1GS14A      | -0.6378            | 1.2708                               | 0.4847   | 2.3336   | 999.9999                      | 999.9999                                        | 999.9999                                                     | -0.0112                     | 999.9999            | 999.9999                         | 999.9999            |  |
| S1B1GS15A      | -0.9525            | 1.0874                               | 1.0327   | 3.7873   | 999.9999                      | 999.9999                                        | 999.9999                                                     | 0.0845                      | 999.9999            | 999.9999                         | 999.9999            |  |
| S1B1GS16A      | 0.7251             | 1.2849                               | -0.8446  | 2.7917   | 0.6052                        | 1.3164                                          | 999.9999                                                     | -0.2305                     | -0.4072             | 999.9999                         | 999.9999            |  |
| S1B1GS17A      | -0.6313            | 1.1493                               | 0.5640   | 2.8318   | -0.8072                       | 1.2756                                          | 999.9999                                                     | -0.0361                     | 0.0208              | 999.9999                         | 999.9999            |  |
| S1B1GS18A      | -0.2146            | 1.3983                               | 0.0583   | 1.8862   | 999.9999                      | 999.9999                                        | 999.9999                                                     | -0.1951                     | 999.9999            | 999.9999                         | 999.9999            |  |
| S1B1GS19A      | -0.7537            | 1.1610                               | 0.6906   | 2.8816   | 999.9999                      | 999.9999                                        | 999.9999                                                     | 0.0343                      | 999.9999            | 999.9999                         | 999.9999            |  |
| S1B1GS1A       | 0.0011             | 1.2622                               | -0.2688  | 2.0766   | -0.1787                       | 1.4104                                          | 999.9999                                                     | -0.2035                     | -0.2880             | 999.9999                         | 999.9999            |  |
| S1B1GS20A      | -0.3190            | 1.1313                               | 0.0270   | 2.1750   | -0.4770                       | 1.2757                                          | 999.9999                                                     | -0.0433                     | -0.0814             | 999.9999                         | 999.9999            |  |
| S1B1GS21A      | 0.2032             | 1.3137                               | -0.4205  | 2.1766   | 0.0373                        | 1.5073                                          | 999.9999                                                     | -0.2090                     | -0.2997             | 999.9999                         | 999.9999            |  |
| S1B1GS22A      | -0.4869            | 1.0309                               | 0.2024   | 2.7574   | -0.6576                       | 1.0954                                          | 999.9999                                                     | -0.0996                     | -0.1295             | 999.9999                         | 999.9999            |  |
| S1B1GS23A      | 0.4079             | 1.2605                               | -0.5577  | 2.4058   | 0.2910                        | 1.3469                                          | 999.9999                                                     | -0.2561                     | -0.3288             | 999.9999                         | 999.9999            |  |
| S1B1GS24A      | 0.4366             | 0.9147                               | -0.0084  | 4.0793   | 0.3357                        | 0.7797                                          | 0.8455                                                       | 0.0904                      | 0.1662              | 0.0874                           | 1.1320              |  |
| S1B1GS25A      | 0.1356             | 0.6735                               | 0.4348   | 4.3796   | 0.0024                        | 0.6192                                          | 0.6304                                                       | 0.0230                      | 0.1071              | 0.1273                           | 1.0440              |  |
| S1B1GS26A      | 0.5940             | 0.9505                               | -0.5036  | 3.6092   | 0.5258                        | 0.8969                                          | 0.8635                                                       | 0.0576                      | 0.1018              | 0.0457                           | 0.8305              |  |
| S1B1GS27A      | -0.8229            | 1.1117                               | 0.8599   | 3.4347   | 999.9999                      | 999.9999                                        | 999.9999                                                     | 0.0679                      | 999.9999            | 999.9999                         | 999.9999            |  |
| S1B1GS28A      | 0.6010             | 0.8539                               | -0.1807  | 3.0753   | 0.5069                        | 0.8648                                          | 0.8162                                                       | 0.0627                      | 0.1288              | 0.0950                           | 0.8247              |  |
| S1B1GS2A       | -0.6797            | 1.2592                               | 0.5170   | 2.2142   | 999.9999                      | 999.9999                                        | 999.9999                                                     | 0.1098                      | 999.9999            | 999.9999                         | 999.9999            |  |
| S1B1GS3A       | -0.4641            | 1.4508                               | 0.5075   | 2.0910   | 999.9999                      | 999.9999                                        | 999.9999                                                     | 0.1711                      | 999.9999            | 999.9999                         | 999.9999            |  |
| S1B1GS4A       | -0.6249            | 1.2731                               | 0.5855   | 2.6504   | 999.9999                      | 999.9999                                        | 999.9999                                                     | -0.0104                     | 999.9999            | 999.9999                         | 999.9999            |  |
| S1B1GS5A       | 0.0712             | 1.1304                               | -0.1695  | 2.4101   | -0.0580                       | 1.1917                                          | 999.9999                                                     | -0.0332                     | -0.0948             | 999.9999                         | 999.9999            |  |
| S1B1GS6A       | -0.7338            | 1.1682                               | 0.8433   | 3.4168   | 999.9999                      | 999.9999                                        | 999.9999                                                     | 0.0651                      | 999.9999            | 999.9999                         | 999.9999            |  |
| S1B1GS7A       | 0.3177             | 1.3568                               | -0.4456  | 2.1349   | 0.1587                        | 1.5469                                          | 999.9999                                                     | -0.3064                     | -0.3539             | 999.9999                         | 999.9999            |  |

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| Sample I.D. | Moment Measures |                                |          |          |                         |                                        |                                                  |                       |                  |                            |                  |
|-------------|-----------------|--------------------------------|----------|----------|-------------------------|----------------------------------------|--------------------------------------------------|-----------------------|------------------|----------------------------|------------------|
|             | Mean ( $\phi$ ) | Standard Deviation (phi-units) | Skewness | Kurtosis | Graphic Mean ( $\phi$ ) | Graphic Standard Deviation (phi-units) | Inclusive Graphic Standard Deviation (phi-units) | Phi Quartile Skewness | Graphic Skewness | Inclusive Graphic Skewness | Graphic Kurtosis |
| S1B1GS8A    | -0.2219         | 1.1271                         | 0.1223   | 2.4699   | -0.3686                 | 1.2259                                 | 999.9999                                         | 0.0162                | -0.0137          | 999.9999                   | 999.9999         |
| S1B1GS9A    | 0.2992          | 1.3507                         | -0.3214  | 2.1190   | 0.1602                  | 1.5170                                 | 999.9999                                         | -0.2129               | -0.2421          | 999.9999                   | 999.9999         |
| S1B2GS1A    | 1.1021          | 0.6991                         | -1.0804  | 5.8431   | 1.0051                  | 0.5912                                 | 0.6233                                           | -0.0231               | -0.1635          | -0.2133                    | 1.1378           |
| S1B2GS2A    | 0.1175          | 1.4863                         | -0.3584  | 1.7541   | 999.9999                | 999.9999                               | 999.9999                                         | -0.5179               | 999.9999         | 999.9999                   | 999.9999         |
| S1B2GS3A    | 0.3568          | 1.2261                         | -0.4172  | 2.3553   | 0.2693                  | 1.2969                                 | 999.9999                                         | -0.1091               | -0.1492          | 999.9999                   | 999.9999         |
| S1B2GS4A    | 0.3685          | 1.4625                         | -0.6746  | 2.0477   | 999.9999                | 999.9999                               | 999.9999                                         | -0.4616               | 999.9999         | 999.9999                   | 999.9999         |
| S1B2GS5A    | 0.9732          | 0.8535                         | -1.0293  | 4.6915   | 0.8814                  | 0.7581                                 | 0.7817                                           | -0.0720               | -0.2400          | -0.2859                    | 1.0644           |
| S1B2GS6A    | 0.3780          | 1.2319                         | -0.5657  | 2.3662   | 0.2759                  | 1.3208                                 | 999.9999                                         | -0.2229               | -0.2942          | 999.9999                   | 999.9999         |
| S1B2GS7A    | 0.7917          | 1.1069                         | -1.0253  | 3.4252   | 0.7147                  | 1.0406                                 | 1.0872                                           | -0.1649               | -0.3496          | -0.4096                    | 1.1061           |
| S1C1GS10A   | 0.8246          | 1.0602                         | -0.2438  | 3.2102   | 0.7007                  | 0.9964                                 | 1.0356                                           | -0.0677               | -0.1212          | -0.0969                    | 1.0755           |
| S1C1GS11A   | 1.0776          | 0.8824                         | -0.6892  | 3.7762   | 0.9804                  | 0.8333                                 | 0.8496                                           | -0.0104               | -0.0820          | -0.1274                    | 1.0538           |
| S1C1GS12A   | 1.1690          | 0.8208                         | -0.8067  | 4.8305   | 1.0726                  | 0.7161                                 | 0.7584                                           | 0.0061                | -0.0506          | -0.0944                    | 1.1688           |
| S1C1GS13A   | 3.1585          | 1.0787                         | -2.6791  | 10.4029  | 3.2321                  | 0.5560                                 | 0.7935                                           | -0.1273               | -0.4606          | -0.6074                    | 2.0831           |
| S1C1GS14A   | 0.5600          | 0.9817                         | -0.3308  | 2.9789   | 0.4609                  | 0.9937                                 | 0.9701                                           | -0.0944               | -0.1143          | -0.1361                    | 0.9609           |
| S1C1GS15A   | 1.6108          | 0.7352                         | -0.8166  | 5.3419   | 1.5102                  | 0.6437                                 | 0.6635                                           | -0.0567               | -0.1519          | -0.1901                    | 1.0291           |
| S1C1GS16A   | -0.0196         | 1.3090                         | -0.2380  | 1.9793   | -0.2651                 | 1.6067                                 | 999.9999                                         | -0.1079               | -0.2662          | 999.9999                   | 999.9999         |
| S1C1GS17A   | 1.1893          | 0.8932                         | -0.6262  | 3.7974   | 1.0787                  | 0.8179                                 | 0.8519                                           | -0.0093               | -0.0966          | -0.1354                    | 1.1136           |
| S1C1GS18A   | 0.2512          | 1.2167                         | -0.5569  | 2.4777   | 0.1414                  | 1.2502                                 | 999.9999                                         | -0.2148               | -0.3199          | 999.9999                   | 999.9999         |
| S1C1GS19A   | 1.0258          | 0.8379                         | -0.8959  | 4.9393   | 0.9297                  | 0.7299                                 | 0.7655                                           | -0.0095               | -0.1012          | -0.1340                    | 1.1150           |
| S1C1GS1A    | 0.8461          | 0.9894                         | -0.2875  | 2.9381   | 0.7317                  | 1.0023                                 | 0.9758                                           | -0.0412               | -0.0950          | -0.1013                    | 0.9111           |
| S1C1GS20A   | 0.3308          | 1.0808                         | -0.3468  | 2.6400   | 0.2237                  | 1.0940                                 | 1.0994                                           | -0.0770               | -0.1281          | -0.1597                    | 1.0079           |
| S1C1GS21A   | 1.0252          | 0.6724                         | -0.9770  | 5.9654   | 0.9338                  | 0.5805                                 | 0.6053                                           | -0.0122               | -0.0956          | -0.1494                    | 1.1233           |
| S1C1GS22A   | 0.7032          | 1.1411                         | -0.8077  | 3.4369   | 0.6346                  | 1.0274                                 | 999.9999                                         | -0.0817               | -0.2044          | 999.9999                   | 999.9999         |
| S1C1GS23A   | 0.0482          | 1.0246                         | -0.2655  | 3.3905   | -0.0677                 | 0.9596                                 | 999.9999                                         | -0.1001               | -0.2221          | 999.9999                   | 999.9999         |
| S1C1GS24A   | 0.8939          | 0.6720                         | -0.6430  | 3.8709   | 0.7977                  | 0.6541                                 | 0.6545                                           | -0.0492               | -0.1350          | -0.1742                    | 1.0412           |
| S1C1GS2A    | 1.0449          | 1.0751                         | -0.1059  | 3.0777   | 0.9241                  | 1.0387                                 | 1.0593                                           | -0.0231               | -0.0173          | -0.0095                    | 1.0636           |
| S1C1GS3A    | 0.8779          | 0.8460                         | -0.5823  | 3.7643   | 0.7787                  | 0.7991                                 | 0.8144                                           | -0.0589               | -0.1426          | -0.1650                    | 1.0525           |
| S1C1GS4A    | 1.2208          | 0.9464                         | -0.5312  | 4.0670   | 1.1142                  | 0.8636                                 | 0.9037                                           | 0.0373                | 0.0096           | -0.0243                    | 1.1773           |
| S1C1GS5A    | 2.6573          | 0.7766                         | -1.6072  | 7.5319   | 2.5988                  | 0.6100                                 | 0.6910                                           | -0.0434               | -0.1589          | -0.2310                    | 1.3863           |
| S1C1GS6A    | 0.6146          | 0.9833                         | -0.1998  | 2.9441   | 0.5132                  | 0.9949                                 | 0.9836                                           | -0.0512               | -0.0389          | -0.0520                    | 1.0352           |
| S1C1GS7A    | 1.9366          | 0.6318                         | -1.5061  | 7.1376   | 1.8693                  | 0.4768                                 | 0.5353                                           | -0.0429               | -0.1936          | -0.2669                    | 1.2826           |
| S1C1GS8A    | 0.5383          | 0.9850                         | -0.3845  | 3.3470   | 0.4208                  | 0.9127                                 | 0.9581                                           | -0.1046               | -0.1950          | -0.1753                    | 1.1696           |
| S1C1GS9A    | 0.5411          | 1.0085                         | -0.2104  | 3.6258   | 0.4269                  | 0.8937                                 | 0.9623                                           | -0.0375               | -0.0615          | -0.0531                    | 1.2160           |
| S1C2GS1A    | 1.0386          | 1.0292                         | -0.2992  | 3.3284   | 0.8989                  | 0.9777                                 | 0.9701                                           | -0.1242               | -0.2307          | -0.2355                    | 0.9732           |
| S1C2GS2A    | 3.4504          | 0.4101                         | -4.5520  | 36.6811  | 3.3734                  | 0.2298                                 | 0.2603                                           | -0.0042               | -0.0251          | -0.0989                    | 1.1638           |
| S1C2GS3A    | 0.7134          | 1.0742                         | -0.3880  | 3.7222   | 0.5979                  | 0.9899                                 | 0.9870                                           | -0.2055               | -0.3409          | -0.3595                    | 1.0019           |
| S1C2GS4A    | 3.3718          | 0.5656                         | -4.4949  | 31.3325  | 3.3281                  | 0.2645                                 | 0.3275                                           | 0.0078                | -0.0475          | -0.1928                    | 1.4983           |
| S1C2GS5A    | 1.2217          | 0.8348                         | -0.8331  | 4.4152   | 1.1183                  | 0.7416                                 | 0.7838                                           | -0.0663               | -0.2296          | -0.2628                    | 1.2380           |
| S1D1GS1A    | 3.3438          | 0.5300                         | -3.1904  | 17.1377  | 3.2906                  | 0.3014                                 | 0.3915                                           | 0.0023                | -0.1472          | -0.3054                    | 1.7487           |
| S1D1GS2A    | 2.8419          | 1.2216                         | -1.8687  | 6.0255   | 2.8168                  | 0.9342                                 | 1.0581                                           | -0.1016               | -0.5131          | -0.5920                    | 1.7497           |
| S1D1GS3A    | 2.6249          | 0.5842                         | -1.7440  | 10.1873  | 2.5294                  | 0.3538                                 | 0.4640                                           | 0.0008                | -0.0645          | -0.0859                    | 1.6414           |
| S1D1GS4A    | 3.3109          | 0.5445                         | -3.6074  | 20.5192  | 3.2538                  | 0.3123                                 | 0.3345                                           | -0.0069               | -0.1143          | -0.1843                    | 1.1761           |
| S1D1GS5A    | 2.8935          | 0.7898                         | -2.6067  | 11.8617  | 2.9049                  | 0.4322                                 | 0.5936                                           | 0.0204                | 0.0028           | -0.2272                    | 2.0060           |
| S1D2GS1A    | 1.4723          | 0.5958                         | -0.5101  | 3.9870   | 1.3669                  | 0.5633                                 | 0.5749                                           | -0.0626               | -0.1616          | -0.1776                    | 1.0254           |
| S1D2GS2A    | 1.3060          | 0.7833                         | -0.4978  | 3.2479   | 1.1995                  | 0.7572                                 | 0.7643                                           | -0.0666               | -0.1799          | -0.2029                    | 1.0235           |
| S1D2GS3A    | 1.9474          | 1.0451                         | -1.8235  | 7.2427   | 1.9258                  | 0.6857                                 | 0.8637                                           | -0.1038               | -0.3250          | -0.3992                    | 1.7488           |
| S1D2GS4A    | 1.6823          | 0.7128                         | -1.0565  | 4.6069   | 1.5954                  | 0.6205                                 | 0.6644                                           | -0.0524               | -0.2163          | -0.2888                    | 1.1996           |
| S1R1GSA     | 0.5654          | 1.3906                         | -0.6611  | 2.2599   | 0.4327                  | 1.5223                                 | 999.9999                                         | -0.4148               | -0.4542          | 999.9999                   | 999.9999         |
| S1R3GSA     | -0.7472         | 1.2258                         | 0.7489   | 3.0543   | 999.9999                | 999.9999                               | 999.9999                                         | 0.0997                | 999.9999         | 999.9999                   | 999.9999         |
| S1R4GSA     | 0.4540          | 1.3217                         | -0.6964  | 2.4646   | 0.3287                  | 1.4123                                 | 999.9999                                         | -0.2003               | -0.3582          | 999.9999                   | 999.9999         |
| S1R5A       | 0.5040          | 1.4142                         | -0.5510  | 2.3370   | 0.3370                  | 1.5613                                 | 999.9999                                         | -0.2158               | -0.3461          | 999.9999                   | 999.9999         |
| S1R6GSA     | 3.4663          | 0.4953                         | -4.5726  | 31.0789  | 3.4066                  | 0.2220                                 | 0.2497                                           | -0.0175               | -0.1221          | -0.1598                    | 1.1665           |
| S1R7GSA     | 0.3948          | 1.3738                         | -0.1730  | 2.2705   | 0.2660                  | 1.4309                                 | 999.9999                                         | 0.0044                | -0.0844          | 999.9999                   | 999.9999         |

NOTE: 999.9999 denotes that graphic measures could not be evaluated because the sample did not have  $\phi_5$ ,  $\phi_{16}$ , or  $\phi_{25}$  percentile data.

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