Digital and Physical Preservation and Storage of Well Cutting Samples of the New York State Geological Survey

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ABSTRACT

The New York State Geological Survey's Reservoir Characterization Group is preserving and repackaging its collection of well cutting samples (about 380,000 samples from 1,934 wells) using commercially available storage kits and sample folders. The samples are now in traditional brown paper 5x3 inch paper envelopes, with about 50 envelopes stored tightly packed in 18x3x5 inch cardboard boxes. The boxes and envelopes containing well cuttings are more than 80 years old and are deteriorating and will not be able to effectively store and preserve the samples into the next century. Further, storage boxes take up space on shelving units, limiting storeroom capacity. Transferring the samples to transparent, archival-quality vials ensures preservation of the material and allows direct viewing of as many as 50 samples at one time in their storage trays. Otherwise, the user has to open multiple paper envelopes and extract the contents of each for examination. In addition, present "box and envelope" storage is cumbersome for digital photography. Since photographs of the well cuttings are intended for publication on the Empire State Oil and Gas Information System and the New York State Geological Survey's web site, ease of photographic access is significant. Once the samples are housed in transparent vials, many samples can be viewed in the same image. Finally, it is both expensive and cumbersome to transport samples of well cuttings to professional meetings for viewing by other professionals. Digital images available via internet will reduce the need for transport of the physical samples.

THE PROBLEM

Storage boxes and envelopes have been the traditional way to store well cuttings (Fig. 1) in the gas and oil industry for years. Samples from almost 2000 wells were stored in this fashion, making a total of about 380,000 paper envelopes containing drill cuttings.

Figure 1 Typical box with label (notice on this box only the top box is labeled.)

However, the boxes and envelopes are showing signs of deteriorating and will not effectively store the well cuttings into the next century. (Figures 2-4) Glue on both the sample envelopes and the box labels has failed. Decades-old acidic paper and cardboard is crumbling. In some cases, samples are stored in non standard boxes. Unfortunately, some of the worst deterioration is in the newest sample envelopes. The individual sample envelopes are leaking (Fig. 3) when handled and also leak while stored (Fig. 4). This sample material cannot be recovered and is permanently lost from the collection.

Figure 2 Examples of boxes breaking apart, labels pealing off, without covers, and covers that do not fit. Note the Heinz Junior Foods box

Figure 3 Envelopes showing where cuttings are leaking from (failed glue).

Figure 4 Typical example of the amount of cuttings lost due to broken and leaking envelopes.

In addition, traditional boxes take up space on shelving units, limiting storeroom capacity (Fig. 5). Furthermore, multiple paper envelopes are cumbersome for direct examination and digital photography (Fig. 6). Each envelope must be individually handled, opened and the contents extracted for examination.

It is both expensive and cumbersome to transport samples of well cuttings to professional meetings for viewing by other professionals. A single well can have up to 30 boxes of envelopes. A more secure and compact method was needed.

Finally, "box and envelope" storage is cumbersome for digital photography. Since photographs of the well cuttings are intended for publication on the Empire State Oil and Gas Information system (esogis.nysm.nysed.gov), ease of photographic access is desirable and significant for efficiency.

Figure 5 Showing Reservoir and Characterization Group's deep well cuttings room.

Figure 6 Typical box with envelopes.

THE SOLUTION

The New York State Geological Survey's Reservoir Characterization Group is preserving and repackaging its collection of well cutting samples to transparent archival-quality vials ensuring preservation of the material. It allows direct viewing and digital photography of as many as 50 samples at one time in the storage trays (Fig. 7). Additionally, using vial trays saves storage space (Fig. 8), For example one shelf that holds 18 boxes holds only 4,770 ft of well cuttings whereas the same shelf can hold 27 vial trays and hold 12,900 ft of well cuttings.

Figure 7 Example of transparent vials in their trays.

Figure 8 Example of shelving with just vial trays.

CONCLUSION

Vial Trays are better suited than traditional boxes and envelopes in terms of

- -Preservation
  - -Less likely to break and deterioriorate
- -Direct viewing by professionals
  - -Easier to move and view more at one time
- -Digital photography of individual samples
  - -Easier to photograph more at one time
- -Storage
  - -Allowing more space for increased amount of storage
- -Transport
  - -Less expensive to view on the web site rather than to transport bulky heavy traditional boxes

NYS M NEW YORK State Museum

NEW YORK STATE GEOLOGICAL SURVEY Est. 1836 NEW YORK STATE MUSEUM

Reservoir Characterization Group at the New York State Museum