

8-05/10-06

# LEVEL BOOK

#101526

MOBILE DRILL

Log # 19

~~7-04~~

SEE ST JOE #4

RADAR HILL

R+C HUNT

NATURAL Wells



BEN MEADOWS COMPANY

[www.benmeadows.com](http://www.benmeadows.com) • 1-800-241-6401

When

the  
Outdoors

is Your

Office™

18628 ST JOE #4 127 OAKS HILL 18744 R+C HUNT NATURAL



Roadway of any Width. Side Slopes  $1\frac{1}{2}$  to 1.

| Gal<br>per<br>Lin<br>Dia | Ft<br>Hole<br>(in.) | 2    | 4    | 6    | 8    | 10   | 12   | 14   | 16   | 20   | 24   | 30   |
|--------------------------|---------------------|------|------|------|------|------|------|------|------|------|------|------|
| 0.16                     | 2                   |      |      |      |      |      |      |      |      |      |      |      |
| 0.65                     | 4                   | 0.07 |      |      |      |      |      |      |      |      |      |      |
| 1.02                     | 5                   | 0.11 | 0.05 |      |      |      |      |      |      |      |      |      |
| 2.00                     | 7                   | 0.23 | 0.16 | 0.07 |      |      |      |      |      |      |      |      |
| 2.61                     | 8                   | 0.35 | 0.28 | 0.15 | 0.00 |      |      |      |      |      |      |      |
| 3.30                     | 9                   | 0.42 | 0.35 | 0.25 | 0.09 |      |      |      |      |      |      |      |
| 4.08                     | 10                  | 0.52 | 0.46 | 0.35 | 0.24 | 0.00 |      |      |      |      |      |      |
| 5.87                     | 12                  | 0.76 | 0.70 | 0.59 | 0.40 | 0.24 | 0.00 |      |      |      |      |      |
| 8.00                     | 14                  | 1.05 | 0.98 | 0.87 | 0.72 | 0.52 | 0.28 | 0.00 |      |      |      |      |
| 10.44                    | 16                  | 1.37 | 1.31 | 1.20 | 1.05 | 0.85 | 0.61 | 0.33 | 0.00 |      |      |      |
| 12.22                    | 18                  | 1.75 | 1.68 | 1.57 | 1.42 | 1.22 | 0.98 | 0.70 | 0.37 |      |      |      |
| 16.32                    | 20                  | 2.16 | 2.09 | 1.99 | 1.83 | 1.64 | 1.40 | 1.11 | 0.79 | 0.00 |      |      |
| 23.49                    | 24                  | 3.12 | 3.05 | 2.95 | 2.79 | 2.60 | 2.36 | 2.07 | 1.75 | 0.96 | 0.00 |      |
| 36.73                    | 30                  | 4.89 | 4.82 | 4.71 | 4.56 | 4.36 | 4.12 | 3.84 | 3.51 | 2.73 | 1.77 | 0.00 |
| 52.86                    | 36                  | 7.05 | 6.98 | 6.87 | 6.72 | 6.52 | 6.28 | 6.00 | 5.67 | 4.89 | 3.93 | 2.16 |

1 gal of water = 8.34 lbs  
1 cu/sec = 2,834.65 ft/day  
1 ft = 7.48 gal  
1 barrel = 42 gal  
1 kg = 2.2 lbs  
1 Psi = 2.31 ft of  
1 bar = 14.5 Psi  
1 gal = 0.83 imp

## CONVERSIONS

[illegible]<sup>1)</sup> Includes Volclay Grout and Volclay Granular Grout.

Note: All application rates assuming true borehole size. Adjustments should be made for irregular borings and formation loss.

|    |      |      |      |      |      |      |      |      |      |      |      |
|----|------|------|------|------|------|------|------|------|------|------|------|
| 37 | 55.5 | 55.7 | 55.8 | 56.0 | 56.1 | 56.2 | 56.3 | 56.4 | 56.5 | 56.6 | 56.7 |
| 38 | 57.0 | 57.2 | 57.3 | 57.5 | 57.6 | 57.8 | 57.9 | 58.1 | 58.2 | 58.4 | 38   |
| 39 | 58.5 | 58.7 | 58.8 | 59.0 | 59.1 | 59.3 | 59.4 | 59.6 | 59.7 | 59.9 | 39   |
| 40 | 60.0 | 60.2 | 60.3 | 60.5 | 60.6 | 60.8 | 60.9 | 61.1 | 61.2 | 61.4 | 40   |

The paper in this book is made of 50% high grade rag stock with a WATER RESISTING surface sizing.

18628 STIDE #4  
CONTINUED

137 RADAR Hill

8144 K+C Hunt  
745 NATURE 2



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| PAGE NO. | REFERENCE                                           | DATE |
|----------|-----------------------------------------------------|------|
|          | <del>800-421-1476</del>                             |      |
|          | SWFWMD <del>800-296-1066</del>                      |      |
|          | Gloria Hancock SRWMD 800-226-1066                   |      |
|          | SVRWMD 407-897-4349                                 |      |
|          | NWFWMD 850 339-5999                                 |      |
|          | <del>SWW</del> SRWMD 407-686-8800                   |      |
|          | Bill Martin (site inv) 245-8927                     |      |
|          | John Merrill 891-1218                               |      |
|          | cell 443-0072                                       |      |
|          | KAREN Taylor 891-1216                               |      |
|          | BOBET Langyear <sup>800-241 9468</sup> 770-469-2720 |      |
|          | Butch Babcock                                       |      |
|          | Jeff Fortune                                        |      |
|          |                                                     |      |
|          |                                                     |      |
|          |                                                     |      |
|          |                                                     |      |
|          |                                                     |      |
|          |                                                     |      |
|          |                                                     |      |
|          |                                                     |      |

LEO FLORES UF (813) 784-8490  
 Kathleen Werner - D.P.F.  
 Withlacoochee State Forest  
 (352)-754-6777 D.L.  
 (352) 238-5764 CELL  
  
 Tony Gilboy 800 423-1476  
 X 4305  
 Jeremy Williams 800 423-1476  
 EX 4561  
 Jon Martin (UF) 352-392-6219  
 Chris Tomlinson - TPA -  
 800 836-0797 X 2114  
 CELL 813-267-4430  
 Atlantic Dred - Riv Beh 800-535-7384  
 Largo 800-752-9416  
 Foremost Mobile 800-766-3745  
 Env. Mfg. - Bonjor 800-624-0005  
 Holley Inc 576-2131  
 Tallahassee Weld 576-9596  
 Baroid - Jim Mabry 407-421-0723  
 Gorman Co 850-575-8117  
 Am. Pump 575-9618  
 Toney Drilling - Mia 800-432-6193  
 DALE X 209

18628 STJOE #4

37 RADAR HILL

18744 R+C HUNT 245 JAPANESE

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SE Springfield/St. Joe #4 cont.

8.2.05 KC, EH

- (6) tag top of grout at 158.5'  
pump 3 bags portland/5% bent  
grout surface still at  
~158'

treming 8 bags sand to bridge  
- tag top of sand at 155'

- (9) pump 3 bags portland/5% bentonite

Rig hours 2035

8.3.05 EH, BC

GOT LOAD OF WATER IN TRUCK  
GROUT UP TO 153'

~~PUMPED 3 bags wash in.~~

- (12) PUMPED 3 bags cement  
grout up to 152'

wash in sand to bridge 10 bags  
- dd top at 151.5'

add 5 bags - top @ 150.5'

Added another 5 bags of  
sand, top @ 149.9'

Stopped due to thunderstorm

18628 ST JOE #4  
CONTINUED

37 RADAR HILL

18744 R+C HUNT  
445 ALTHAM



moving over head.  
 450 arrive @ WH  
 rig hours 2036

8-4-05 KCL, EH

wash in 8 bags sand to bridge  
 cavity - top of sand at 127.25

(15) pump 3 bags portland/5% bentonite  
 to top of gravel @ 120' bgs

(20) pump 5 bags portland/5% bentonite  
 to top @ ~ 115.5 - 116'

- need to bridge cavity at  
 this level - 3 bags sand + gravel  
 bring level to 111  
 1 1/2 bags hole plug to ~~106.5~~ '106.5'  
 (past cavity + vertical fracture)

(23) pump 3 bags portland to 91.5'  
 wash 1 bag sand + 1 bag hole plug  
 top at 85'



total cement used

⑥ bags

Sand ②

Hole plug ②

Need for:

8-5-05

~ cement

~ hole plug

\* trash bags in the 550!!

8-4-05 BC, SR

arrive @ 6:15 to site  
for night shift.

tag bottom @ 83.8'

26) mix 3 bags of Cement  
and pump it down the  
hole. added 1 Bg sand, 1 Bg of hole plug  
Tagged bottom @ ~~81.8~~ 74.3'

29) - ran another 3 bags of  
cement, 1 bag of sand,  
1 bag of hole plug.

tagged bottom at 68.4'.

- Storm moved in and sat  
in truck ~ Heavy  
thunderstorm so we  
quit for the night.  
rig hours 2037.

8-5-05 KC, EH

32) pump 3 bags portland / 5% bent.

tag top @ 58'

37) pump addl. 5 bags - top at ~ 46'  
pour gravel to bridge cavity  
at 44.5' - 1 bag briar level  
to 40.5'







T 215, R 19E, Sec 4dbd  
premining grid elev ~ 150'

Samples in custody of  
Les Flores (USF)

11-15-05 KC, BC HAM lease 5  
TR for Radar Hill Qy (Ci Co)  
met w forestry reps.  
Cohen + Vinoc  
select site, setup rig

Radar Hill Core 1.3"  
LAT 28° 41.122' EPE 17'  
Lon 82° 24.228' DOP 1.2  
rig mileage 12643 / has 2052  
11-16-05 KC, BC TAM stand-  
ford water, gas tr pumps.  
to site

0-0.5' ls rubble  
0.5-2' hard ls, fig. poor rec  
2-5' some hard ls, mostly soft.  
washed  
5-7' ls, granular, poor-mad in  
poor recovery  
7-10' soft granular fine sand  
10-12 SAME  
12-14.5' SAME  
14.5-19.5' SAME in upper 1/2  
same fine hard zone in 5m.  
SET ~ 8' 3" Lsg

18737 Radar Hill

18744 RVC Hunt 445 Alameda



- 19.5 - 24.5' poor to med ind ls exc  
 last foot - med rex ls.  
 24.5 - 29.5' even ls, med well ind  
 rex, mldc (~2") shensoft  
 wave stained ls before bk  
 to poorly ind  
 29.5 - 34.5' med/well ind, fossil  
 mldc ls. VAR REX L  
 34.5 - 39.5' same  
 39.5 - 44.5' ls. soft crinoiditic  
 44.5 - 49.5' same

END CORING for day  
 Rig hours 2059  
 End day 6:30 p

11-17-05 KC, BC, 6:45 AM start  
 load water, fuel etc

- 49.5 - 54.5' upper part same as  
 above sl. better ind at base  
 54.5 - 59.5' same  
 59.5 - 64.5' same  
 64.5 - 69.5' ls, even, granular med  
 ind.



69.5 - 74.5' same as ~~base~~ base  
of above int.

74.5 - 79.5' muddier than above

79.5 - 84.5' ls as above

84.5 - 89.5' ls, even grainer  
poor-mod ind some orange  
clasts

89.5 - 94.5' poor-mod ind  
some harder zones

94.5 - 99.5' white mod ind ls -  
some very fossil moldic - some  
iron staining

99.5 - 104.5' white crm ls. - slight  
orange cast nober moldic

104.5 - 109.5' crm ls - var ind

109.5 - 114.5' mod ind ls. no  
or moldic or above

109.5 - 114.5' same

114.5 - 119.3 same

119.5 - 124

124 - 127

127 - 131.6

last rods on hand - lost  
of water - still ocaca  
pull 28' NR  
pu ~ 15' NR  
Rig hours 2064



8  
RETN TO hotel - cleaning -  
~~and~~ decide to Retn till early  
AMR 11:30 pm

11-29-05 10:00 AM start. Such  
drive to Brooksville - per BRIE  
Then - Arr site 3:15 pm

SWL 77.4 '6LS

131.6 - 134.8' soft OCAI as above  
134.5 - 139.8' SAME -

END coring for day  
Ry house 2066  
to publix - water + get trade  
arr hotel 6:55 pm

11-30-05 KC, BC 7AM start (Drie)  
6:30 (KC)  
wash hole / mic mud  
Chris Tomlinson + Jerry Mallon  
SWFWD canopy - talk  
Selman  
LEE + Limaris Soto  
keep

18744 R+C Hunt 145 1/2 mm



139.8 - 144.8 - fc drill WD

inner 661 - fish core +

have to pull NR / back NR

144.8 - 149.8' wht ls. var  
muddy var ind - v por - mod.

149.8 - 153.8' - mod ind ls,

brittle - corbbbl blocky

153.8 - 154.8' ls, hard

154.8 - 159.8' SAME - some fossil mddie

159.8 - 164.8 cm, granular ls.

some v soft

164.8 - 169.8 ls, cm foss. mddie. <sup>mod</sup> ind

169.8 - 174.8 - SAME

174.8 - 179.8' SAME

179.8 - 184.8 SAME - some harder

184.8 - 189.8' ls. crm, lt gy + lt orange

stained - var ind - crumbly +

mod ind

189.8 - 194.8 Wht, lt crm foss mddie

ls. mod - well ind

194.8 - 199.8 ls crm - iron stained  
on fractures + some mddie.

some well ind - lots of chatter  
btwn 3' less porous, mod - well  
ind.

still OOL (?)



① ~~Rinker Materials~~ ~~352.~~  
 19002 YONTZ Rd 796-2224

② ~~84 Lumber~~ 352-544-8084  
 2281 Broad St.

CEMEX 20E Summit rd.  
 796-0013

End coring for day  
 Rig hours 2073  
 END Day 6:30pm

12-1-05 KC, BC 7AM start  
 Attp. for portland in Bkville.  
 NO GO - Aug 19 S of water  
 to site

199.8 - 204.8' cm gran ls, val. calcit  
 ite - muddiest at base  
 204.8 - 209.8' more granular - poor to  
 mod ind. least ft well ind.  
 rsl., somewhat mottled  
 209.8 - ~~212~~ 212.8' cm gran ls and  
 to coarse fossiliferous ls. orange.  
 & poor  
 212.8 - 216.9 - same somewhat finer  
 out of rods. SW dist  
 well log name

run for portland - watch water

18744 RVC Hunt 145 1/2 1/2 1/2 1/2



Chris Tomlinson Surfward  
went out of his way  
to bring us 60' NQ  
+ loan of trash pail.

Top Aypk,  
231.6

TD 242.6'

216.9 - 221.9' gray + lt orange  
muddy to coarsely ss.  
mod-well ind -

221.9 - 226.4' same as above  
mod crm f. gr ls. poor to  
mod ind.

226.4 - 231.4' crm - lt gr  
gray ls. mostly mod ind.  
fossil mallee

End coring for day  
Rig down 2077  
End day 6:40 PM

12-2-05 KC, BC KC 630 start 66 700

231.4 - ~~237.9~~ 237.9' lt. bn ls. ~ 2"

then vexl dolo - prob top Aypk  
pass thin org lam(?) crm ss mallee  
dolo to ~ 235 - some orange stained

~ 235 - 237.9' lt. bn ss mallee dolo.

237.9 - hard dolo - ls mallee at top  
dense to ~ 239.5

~ 239.5 - 242.6' bn dolo

Some mallee organic  
laminae in btm 1'

minor org stain + lam in rest



7 bags  
Quikrete  
+ 1 at site

12-12-05 BC, SR

pack up and leave  
whse @ 10 am.

arrive @ site, unload, get  
water and prepare to grout.

end day @ 7 pm.

12-13-05 BC, SR

Started day @ 6:45 am  
pumped 4 bags of grout.  
lost 120' of trimmy down  
the whole. OOPS!!

recovered the trimmy, cleaned  
it out.

pumped 3 more bags of  
grout.

felt top @ ~ 68'. Pumped 2  
bags of cement w/ 57. bentonite  
rig hours 2084.

End day @ 6:45 pm.



10 bags put hand  
+ 5 to bottom

12-14-05 BC, SR

7 am start.

~ get gas for trash pump +  
grouter.

~ load water

tag top of cement from  
previous night @ possibly 111'.

pumped 4 bags of cement w/  
5% bentonite.

~ pumped 2 more bags. Pulled  
trimmy.

pulled 3". Pumped 2 more.  
bottom dropped out. Back  
down to 72'.

pumped 2 bags brought  
up to 60'. 3 remaining  
bags brought us to  
~ 3.5' bls.

Finished hole, packed up  
and went home.

Return to whse @ 10:20 pm



Tony Callan NATURAL Well <sup>14</sup>  
519-1523

---

SE quadrant Pownline Row  
+ Nat Wells rd  
large under. private tract

  
30° 17.714  
84-14.197

City wells

#1 30° 14' 01"  
84° 14' 50.1"

# 30° 18' 59.1"  
84 14' 21.7"

SE 1/4 A  
next to  
water tower

Register Farm Rd  
Register Farm 3807

---

18744 RYC Hunt 445 NATURAL



SEF ST 206 9+10 general gps loc

30° 19.179 (10.74")

84° 13.307 (18.42")

NEAR END of clearing - NOT  
Actual hole locations

poss E side  
Rst. Hunt

30° 17.391

84° 10.106

23.46" 15  
6.36"

Hydrants

~~Barnville hwy + NAT. Brg rd - light~~

~~NAT Brg + Barnville - light~~

2253 NAT Brg rd - S side

30° 18.773

84° 14.363

good

~~in front of 9534 NAT Brg.~~

~~N side Trd - slope~~

~~30° 18.516 N~~

~~84° 13.724 W~~

~~N side rd.~~

~~30° 18.765~~

~~84° 14.140~~

~~NARROW~~

18744 R+C Hunt 45 Natural



No bypass on core

Hydrants closer to NAT wells

### Things to remember:

4x4's for jacks & tabs  
2" hose

push spec setup

2 18" AL Rigid

hook jaws 48

2 5m 2" ch. w d. Npt

Buckets

NQ slips - M62 DOL

2" VALVE

2" NPT

1 2" MALE CAMLOCK

permanone

5-25-06 KC, BC 8am start  
load up - mob to Robert Hunt  
property, 6070 Natural Brs Rd  
Woodville

W#

18744

R + C HUNT CORE

LAT 30°17.423'

Long 84°10.135'

S19 T25 R 2E ACC

Elev 18' top

25.38"

8.1"

415  
AVG  
EST ACC  
20"

0-3.5' part hole diggers - sand

3.5-7.0' push NQ spec w ext.

slow sand slow ch lost  
foot recovered

7.0-12' qn over + br ch mottled  
orange w depth, some ls frags

mix lim. 6" ls at base

12-~14' ls w clay

set 9' HW csg w knacker  
slow setup receive.

- 14-15.5' ls, sandy

15.5-17.5' cavity

Thunderstorm

packing - return where

500pm KC end day 5:30

18744 R+C Hunt 745 Natural Brs Rd



5-26-06

KL, BL BAM start - load up  
to Holey on rock etc  
to site

Drill in HW Lsg to ~ 19'

17.5 - ~~20.5~~ 20.5 NO SN - upper part  
(washed while running casing)  
20.5 - 22' rubbly ls w clay lost 1.5'

22 - 24.5 ± crm ls, rubbly

24.5 - 27 lost - softer than above

27 - 32' crm crumbly ls. lost 1.5'  
harder, finer

32 - 37' - poor recovery - some  
hard, lots of chatter;  
prob lost some portion

37 - 39.5' crm fossil moldic ls  
mod ind

39.5 - 42' crm ls, fossil moldic

42 - 44.5' crm fossil moldic ls

44.5 - 47, as above

47 - 49.5 white granular ls

49.5 - 52 white granular ls

some molds, burrows etc



1 1/4" gne hose  
300' tape  
100' tape

52  
2'  

---

31

18  
pull 20' NQ, start pumping  
hole for water sample  
- pumping w moyno wide open

Rig hour 2108

5-30-06 KC, SP - ~8:30 start

- SW2 10.4' bus

start pumping benchark 9:40 AM

- thru moyno ~15 gpm ~30 min.

Steve (Mcglynn lab's) collects  
water samples

pull ~~20'~~ 10' NQ + replace w  
10' joints

52-57' ~ 3.5' recovery - most loss

prob botm 1/2 - white fossilif ls

57-59.5' white soft muddy ls

59.5-62' v soft - poor recovery

WATER RUN benchark  
mix mud

62-64.5' - v soft - lost spec - washed?

64.5-67' v soft - lost - washed?

67-72' 69.5' cream granular ls, poor  
ind.



69.5-72' As above

72-77' cm granular ls

77-82 same.

82-87 cm/lft bn granular med ind

87-92 ~ 3' recovery, v soft

squeezed k - cm granular  
carbonate

92-97' v calcareous soft.

paste

97-102 some poorly ind gran ls.

some paste - poor recovery

102-104' cm + bn ls (~ 2")

then ~ 8-10" bn carbonate

sand + mud - unconsolidated

End coring for day - top piece

NO only hard bit - will

adv csq in am

Rig hours 2113

B-31-06 KC, SP. loading

after admin stuff. - top 5%

water then to site

set add 30' HW csq

prep bk to clean prep for

water sampling



Hydraulic Fluid

Quik gel

Desander

spare tire for trailer

104  
4.0  
64

got partial  
circulation  
back

4" csg to 49.75'

btm of drill pipe 64'

btm of core hole 104'

Mc glynns labs to be here at  
12:30 for water sampling.  
no slurry 2:00 pm. to IGA for  
water bottles. collect 1 gal sp  
at 2:15 pm

run back in w NQ

104-107 soft pasty ls + mud

107-112' lt grey + br var moldic  
ls mod ind

112-117' lt grey br ls mod-well  
ind. var moldic

117-122' br granular + moldic ls

122-127' lt br + grey br ls, mod-well  
ind.

End coring for day  
Rig hours 2120

retu sp 6:00 pm



22

6-1-06 KC, SP, 8:30 start  
offload NQ pipe

SWZ ~~62.5~~ 13.0'

127-132 v soft br gran ls - ~50%  
recovery

132-134.5' lost circulation.

soft crumbly ls at top - harder  
below

134.5-137 cm, vlt br ls, poor  
to mud incl ~1.5' recovered  
1 clast dk br dolomite (?)

at top of run

137-139.5' poor recovery - fractured  
rock lots of chatter

139.5-142' worse than above  
hd br dolomite <6' recovered

142. chatter too bad to core  
cotton wash hole - no good

pull 95' NQ  
will need to run 3" csg



S.O. Mts from Woodville Hwy  
Down NATL BLVD R.R.

Hydrant - 1/4-1/2 mile from  
Woodville Hwy.

Just under Power Lines

NQ BRL 7'

6-5-06

CS, CR

22

Run by CS site : Get  
NW SPS. to start site, pull  
NQ.

Run in NW to 120'

CLEAN UP.

Rig Hrs 2127

6-6-06

CS, CR

CONTINUE RUNNING IN 3' NW  
CSB. TO 140.' MIX M.S.R.  
Run in NQ

1415-1445 NO REC.

1445-1455 SANDLOCKED pull NQ WORK  
ON GETTING UNSANDLOCKED

Rig Hrs 2133



6-7-06 KC, GR to site 23  
pull leaking rotary return hose  
- to T&A Hys for new hose -  
replace + clean up

pull 3" CSG to 107' - pump  
thru CSG for WATER sample

hole depth 143.5'  
CSG depth 107'  
pump depth 107'

RUN CASING back to ~139'  
Retn ofc 5:10 pm

6-8-06 CB, GR.

Run 3" to 144'

145-147 BEN DULMATE. 100% RSC.  
147.149.5 DE BEN DULMATE 147-148  
148-149.5 GAV. 79

SANDUCKER



6-8th C-L

Pull NG. UNSANDLOCK  
INNER SEL. Run in 3"  
THL 5064 CAGG TO RX.  
TO 147.5'

\* NSED TO Run 2" and IN CAGG  
~~TO~~ TO 142.5' OR  
BOTTOM OF CAGG.

BIG HAS 2139

6-9-06 KC, GR. ~900 feet  
Whee - load water / mix mud  
run 3" CSG to ~149.5'  
run in W/NQ - wash barrel  
into section attp get seal at  
btm of CSG

INNER bbl. latches in but  
CANT pump thru bit



SOOM ASD  
prc 4"X6" slip adapter  
Hyd. fluid

25

shorten inner bbl  $\frac{1}{8}$ " - prgs  
core

~ 149.5 - 152' hd bn dolomite  
soft zone last 2" - last. remainder  
in 1 stick

152 - 154.5' soft bn / gy dol? ls?  
rubby at top - mod ind below

154.5 - 157' AS above first 6"  
fne mod-dk bn dolomite - mod.  
to v well ind

157 - 159.5' SAME

159.5 - END coring for day  
per 15' NQ

Rig hour 2144

6-14-06 KC, BC load up  
to Criter - hyd fluid to site  
top off hyd. fl. next morn

159.5 - 162' hd bn dolomite  
cavity or soft zone ~ 1' fr btm  
fne back to core

162 - 164.5' hard dolomite - fractured



quick set  
7/32 wireline

26  
164.5 - 167' hot d/s into - some  
fractures w soft beds/lenses in it  
167 - 169.5 hard dk br dolomite  
w some soft at top.  
169.5 - 172' SAME  
172 - 174.5' - soft burrowed dolomite  
at top. btm 1/2 harder  
174.5 - 179.5' br dolomite - v hard  
to soft some burrowing or nothing  
179.5 - 184.5 SAME  
184.5 - 189.5 lt to med br dolomite  
some burrowing, some organic remains  
189.5 - 199.5' lt br dolomite or  
chert

END CORING for day  
run 30' NW  
NEED COLLECT WATER SPL  
Rig hour 2150

6-15-06 KC, BC  
Admin stuff load cement blocks  
etc + wireline

WATER sample  
CORE hole to 199.5'  
CSG to 149.5'  
pumping level 170'



use 1/2" spool winch in derrick  
hoist (only reached 194.5'  
respool 320' 7/32 and attach  
hook

199.5 - 204.5' ~ 6" dolo on shore  
then gy, br + am ls in some  
thin lam.

204.5 - 209.5' cum lam ls

209.5 - 214.5' cum - ult gy ls +  
clay

214.5 - 219.5' lt gy br ls + dolo(?)  
w dk gy blebs, lenses etc

219.5 - 224.5' lam ls/dolo on shore  
till last 4" - br dolomite

224.5 - 229.5' br dolomite (also gy)

then cum ls br + blk dolomite

End coring for day

Rig hour 2155

6-16-06 BC GR

11am arrive @ Site and  
Start Coring.

Problem w/ wireline. Laid down  
mast to fix.

try to core again.

18745 JMTW42



6-16-06 (Cont)

28

229.5-234.5

poor recovery, moved  
into a shell hash.

plugged off  
234.5-239.5 poorly indurated  
fossil hash, poor rec.  
plugged up again.

239.5-244.5 (grainstone) fossil  
hash. Sped up and  
had great recovery.

244.5-249.5 SAA

TD

Couldn't get a hold of  
Sean McGlenn, tripped up  
30', cleaned up site and  
left.

Take H<sub>2</sub>O Sample on Mon.  
Left Sean a message.

Sean called and he can  
only do H<sub>2</sub>O Sample on Mon.  
rig hours 2159

18745 Natural  
11/11/11



Need: (6-19-06)

Diesel for rig  
diginox  
reamers  
NWJ

CALL Tom Missioner  
RE Dayton proj  
239-810-3009

lower.  
casing to top of Floridan  
open hole for rem.

suggest csg 6 or 8" to  
~100' - cont in

core to zone of Floridan.

near + cut 4" in place  
N800-900' - core remainder  
for open hole compl.

29

6-19-06 KC, BC

SWC 11'0" 6LS

collect water sample

hole TD 250'

well csg 149.5

pumping level 220'

collect water sample  
trip out NQ + load on rig  
Rig house 2161

6-20-06

KC BC - ~ 9:30 start - to  
LEE Jakes get trailer broken looked  
at. then to site

drill in 22.5' of 6 3/8" HSA  
in surf. csg.

pull NW csg + HW csg string  
Rig house 2166  
end day 5:30 pm

18745 NHTW22



condenser drill  
auger per track  
auger faster plate  
hole plug

6-21-06 KC BC to site

30

-reame bird from woodville dog

SWC 11.2' bcs

loading 3" + 4" csq

off load reamer + MHR

ream to ~ 45' - ctyr coming  
back - will need to run mud  
or air

REAMER 6' 7 1/2" w 5 1/8"  
tricone + sub to MHR

rig house 2167

6-22-06 KC, BC, GR

load up - to craigo site w  
parts

to site - pull TSA's atbp  
run 6" pvc - won't fit in  
reamed hole

- run 6 1/4" bit to 27'

- set 6" csq - to ~ 21.5'

pour 3 bags bentonite chips  
pour 1 add bag to 15'



TEAM W 5 7/8 fucine to 106'<sup>31</sup>  
(BIG CAN'T COUNT)  
Rig hours 2172

6-23-06 KC, GR 8:30 start  
to site - continue reaming  
to ~ 138'  
interval to ~ 130 - orange water  
airlift cutting, gelatinous  
clay blebs etc

notice now (?) small sink  
~ 40' to rig along path  
that airlift water is flowing

suspend reaming - pull 35'  
NW

to where per 12 bags portland  
8 bags pea gravel

ret + put into sink  
(when MR Hunt arr home he told  
us it was already done +  
didn't think we had overlaid  
it)



well guard  
100' HW CS9

32

leave site ~ 5:00 pm when

end day 5:45 pm

6-26-06 KC, GR etc wk to  
start - loading 3 7/8" reamer  
dr. craigs site

cut in sink basically where  
we left it

Ream 5 7/8 to ~ 142 - per - hole  
collapse get back to ~ 140  
on dolomite - friable will  
not penetrate

~~with~~ pull drill string  
chg out bit for button bit

trip in 5 7/8 button bit on  
10' stab.

drill down to ~ 148'  
debris from cavity above traps  
falling in whenever a clearing  
pass was made

rig hours 2172

18745 NATURAL  
WELLS



40' - 10'5

255  
6.25

261.25

205  
12  
217

70

147

96  
166.25

50  
100  
6'5"  
+5

161.25  
- 3

158

- ~ 15 1/2' suckup

50' MHR  
190 NWT 10'  
15 NWT 5'

3 7/8" REAMER in MHR  
sub 5'9"

MHR x NWT sub = 6"

15' - 5'5

33

6-27-06

pull 5 7/8" bit + reamer  
back open to 141.25'

run back to camera to bit  
then start down 4" CSG  
t.s. run when 400pm

KC, BC  
6-28-06 trip - HW CSG (145')  
brk dr lunch - TS ~~start~~  
start to team - TS move in  
seriously close - shut down  
netn ofc 200pm

6-29-06 KC, BC 8:15 start  
water run, reconf'g rig for mud  
mix mud  
drill in HW CSG to ~ 150'

clean up site prior to running  
3 7/8" reamer  
TS! ream to ~ 163' (?)  
per 20' dr bottom  
TS - shut down



6-30-06 KC, BC ~ 700 AM  
start. continue reaming.

- mud rotary.

lose circulation at ~185'  
chg to air - ream to ~206'

- pull drill string

Rig down 2190

with JC 400 pm

7-3-06 CB, LB, BC to site  
bad gun trailer - bring to where

7-5-06 KC, EH to site  
run borehole camera + tape  
verify csg + casing depths etc  
prep for well instl.

4" casing to 150.7'

4" hole to 205.4'

corehole open to 235 ±

poss water since 156.3'

bed washed out.

Major water inflow at 161'



$$\begin{array}{r}
 1.3 \\
 325 \\
 \hline
 6.5 \text{ ft}^3 \\
 7.5 \\
 \hline
 325 \\
 433 \\
 \hline
 48.55
 \end{array}$$

1.15 gal/ft

2

$$\begin{array}{r}
 113 \\
 30 \\
 \hline
 83
 \end{array}$$

$$\begin{array}{r}
 150 \\
 437 \\
 \hline
 113
 \end{array}$$

7

7-6-06 KC, EH

35

SET 154' 9" well array  
w dm. packers at 153' + 154'

wash in fine per gravel to  
load packer - gravel to 152' bws  
fine sand to 151.8' - gravel  
on top to 150.6'

pump 2 bags portland: pull  
37' HW Csg

leave well + casing suspended  
in place w winch + Csg  
clamp.

Rig home 2192

End day 600 pm

7-7-06 KC, GR

tag top of gravel at 139' bws  
core hole open to 233'  
4" Csg to 113'

pump 5 bags portland / 5% bent.  
pull add 30' of Csg



7-11-06 KC, GR

tag top of gravel @ 131' bLS  
bore of 4" csq to 83pour 5 bags portland + 5% bentonitepull 20' tw csq + pu  
addl 5 rig hours 2193

7-13-06 KC, GR

tag top of gravel @ 131' bLS

pour 21 bags fine pea gravel  
bring top to 129.25' bLSpour 5 bags portland + 5% bentonite

rig hours 2194

RETN of 2:00 pm

7-14-06 KC, GR

unload drill pipe + csq  
load cont. pu pallet of  
gravel, water fln to site  
tag top of gravel at 130.15'  
bLS

12

134  
83  
—  
48

21 bags gravel

17

18745 NHTWENAL



16 bags  
gravel

22

27

21 bags gravel  
36 bags portland

36

41

37  
pour 15 bags gravel + 1 sand  
brings level in annulus  
to: 115.1' bws  
pump 5 bags portland +  
~~5% bentonite~~

7-17-06 KC, GR  
tag top of gravel @ 85.7' bws  
pump 5 bags portland + 5%  
bentonite  
thunderstorms -  
pull 30' HW CSG. per.  
add 110'  
VETN WISE

7-18-06 KC, GR  
tag top of gravel @ 61.9' bws  
pump 9 bags portland +  
5% bentonite  
pull 20' HW CSG  
Rig hours 2195

7-19-06 KC, GR  
tag gravel at 25.7' bws  
pump 5 bags portland  
+ 5% bentonite to surface



pull remaining HW CS9,  
 pull 6" PVC CS9  
 well open to 235' 6" TOC  
 ~ 233' bws

pis hwy 2197

KC, BC

8-1-06 RECON new drill site  
 to Hunter - run conductor pipe  
 + airline in well - start airlift.  
 - top of CS9 too low - need to  
 add slaking to keep water  
 from flowing into well

8-2-06 KC BC - back to Hunter  
 - airlift develops well  
 set manhole cover + pad  
 need to plug well back to  
 200' + finish development.

8-2/8-8 wait on HAD DAVIS to  
 get back fr. vacation - see if  
 he wants to sample btm  
 20 ft of tube (NO)



- Centrifugal pump - shop
- 1 1/4" hose - on trailer
- 2 x 1 1/4" adaptor - shop.
- tub on trailer
- infl. trk
- hole plug. Dually
- 300' tape
- gas can for pump.
- gravel
- wrenches - manhole cover
- pipe

8-17 KC, JH - btm of hole <sup>39</sup>  
at 227'

pour 1 bag five gravel - bring  
surface to 218.5'  
Mix + tremmie 1 bag portland

8-18 dd grant at ~ 194'  
start development of well - pump  
+ surge thru 1 1/4" eductor  
work up sew. pump ~ 12 gpm

8-21 Cont deep. thru 1 1/4" eductor  
will pump 20 gpm  
pull all eductor except 30' -  
pump 30 gpm - clear water  
C/G 154.75  
TD 194.1' btoC  
SWL 10.25' btoC  
TOC 0.4' below flange of  
manhole @ ~ +1.2' above  
ground  
∴ TOC ~ 0.2' below LS



grab another 5' NWJ

- center pump
- mud tub
- NWJ push spr
- 4" CSQ shoe
- longyear core overdrift
- longyear inner bbls
- outer bbl
- messenger
- ~~3 1/4~~ mbl drill splr core catcher

CME  
International → load Mud tub  
Use rod on international  
for longyear.

- need messenger
- pull out inner barrels
- Quick Gel

Generalized lat lon  
30° 17.897 53.82"  
84° 14.234 14.04"

41  
8-7-06 KC, JH - 12N  
load up - mob DRL + water  
to Natural Wells site

W# 18745

NATURAL Wells CORE  
LN. CO

S 21da T 25 R 16

Lat N 30° 17.897

Lon 84° 14.234

Elev 44' Topo

53.82"  
14.04"

Mobile Drill

Set up rig - push spr in CME

Rig hours 2197

miles 13025

8-8-06 BC, JH ~

Load up, Head to drill site.

off load needed parts + product  
started push sampling.

0-2.5 Sand

2.5-5.0 Sand, white, fine

5.0-7.5 Clayey Sand

7.5-9.5 yellow Sandy clay.

~~9.5-13.5~~ 9.5-13.5 ~ over stuffed  
push sampler.

18745 Natural  
wells



Buckets

extended shoe } Longyear  
shoe

~~Soda Ash~~

NWJ 10' in 5' sticks

2" Ball Valve

Big dividers

\* green Suction hose for  
mobile missing

42

ran tape measure tagged  
bottom @ 13.5'.

oops. "

Sample is a clayey Sugar  
sand.

13.5-16.0 Fine white sugar sand.

~~Had~~ stopped. Almost to H<sub>2</sub>O  
table. Set up for Coring  
w/ NQ longyear.

Cleaned up site. Loaded up.  
right hours: 5000

ended day @ 5pm

8-9-06 BC, KC, JH

Loaded up augers and needed  
items. Dropped Int'l off  
at shop for pm.  
Headed out to site.

mix mud, etc. compl. chg over  
to NQ west shore  
hole open to 15.5' - dry

16.25-20.25' sand, ~ 2' recovered  
no circulation



for thursday:

- ① Staples
- hand cleaner
- portland cement
- hydr hose for core pump out

took HAMMER  
to get NG free

43

~16-20.25' wht, grey + bn sds

clayey last 6"

20.25-25.25 clay at top, ls. blue  
clay. + rubble ~2' section

25.25-30.25 ls + dol (?)  
rip up clasts, algal laminations  
etc

30.25-31.75' ls w blue clay thin  
ls w laminations etc

drill in 25' 4" csg - out of  
WATER

Rig hours 2204

8-10-06 KC, BC, JH

Load up, get H<sub>2</sub>O, etc.

SNL 23.5'

pulled NG out of hole. Locked,  
but able to break it free.

~ Augered down to 26.5' (648  
RSA)

SET 6" PVC Csg

rig hours 2207



Tomorrow / (Friday)

- ① 3" casing w/ casing shoe  
on 10' stick.
- ② run 4" first back to 26' or a little past
- ③ run 3" to 30'
- ④ run 4" (start coring)

First ~ pull 4"  
~ put 1' of hole plug  
thing ~ inside 6" casing  
Friday ~ cement outside of 6"  
morning ~ Jake Needs to leave  
at 12 noon.

Done for day!

\* Do NOT RUN 4" or 3"  
down hole. Let cement  
set up.

44

8-11-06

SWC

depth to bottom inside 4" csq ~ 26.7  
depth to " outside 6" 24.7  
depth betw 4+6 24.7 ±

bail mud out of bottom of hole  
pump 3 1/2 bags Portland cement  
(inside + outside csq)

allow cement to set  
pump 5 1/2 bags outside  
6" csq

8-14-06 BC, LB, JH  
Load 3", H<sub>2</sub>O head  
for site.

Cement is 22' inside 6"  
24' outside 6"

Made ~~max~~ mud, recirc. Sys.  
~~max~~ 4"

recirc. system didn't work.  
pumped 5 bags of cement  
packed up, cleaned up.



8-15-06

BC, JH

45

Loaded up ice, headed for Site. Got H<sub>2</sub>O

put together return circ. system.

grout outside 6" to 12.8'

Drilled 4" down to 26.5'

slow Drilling!

ran 3" to 26' ~ storm moved in. packed up secured site.

rig hours 2213.

returned to whse @ 5:45pm

8-16-06

BC, GR

Loaded H<sub>2</sub>O headed to site @ 8:00am

Set 3" down, Ran NQ and cored a 1/2'. 4" started to rise. ~~to~~ tripped out NQ + 3"

ran 4" back down to 26.5'

advanced 3" down to 29.7'

~ put NQ back in hole and cored to 32'. Still have a leak in between 3" & 4"



2224

2.5' of  
stick up
$$\begin{array}{r} 28.5 \\ - 2.5 \\ \hline 36.0 \end{array}$$

8-17-06 Need to:

- make mud
- add 5' to HQ
- put in inner barrel

46

8-16-06 cont

31.75 - 32' hard creamy LS  
pumped mud tub and  
prepared to make mud.  
Storm moved in. Secured  
site, left trailer.  
Reg hours: 2218  
Returned to whse @ 4:30pm

8-17-06 BC, GR Sam start  
Dropped off CME @ shop  
and headed to site.  
Mixed mud and prepared  
to core.

32-36' Hard LS with  
inner bedded green clay

36-41.5 Creamy tan LS w/ fossil  
molds, followed by a  
micritic LS last 1.5'

41.5 - 46.5 Creamy tan hard LS

46.5 - 51.5 Clastic LS Fossils

51.5 - 56.5 modeled LS w/  
inner bedded clay. Fossil molds

56.5 - 61.5 LS rubbery

61.5 - 66.5 fossil molds LS  
w/ clasts



For Friday 8/18

① Big Blocks

② Big trays

③ Desander  
w/ stand.

④ Ben seal & Bags

⑤ hole plug

⑥ paper towels

⑦ liners!!

⑧ cover tops & bottoms

8/17/06 (cont)

47

66.5-71.5 Hard LS w/ clay  
modules.

Cleaned up. Took off 5'  
of NG hung 15' in the air.  
packed up.

big hours: 2224  
headed to WH and returned  
@ 5:45pm

8-18-06 BC, GR

Loaded up, left for site.

71.5-76.5 Hard LS w/  
dense clay laminates

76.5-81.5 moldic LS

81.5-86.5 LS, slightly clayey.

86.5-91.5 Green dense clay

1st 1.5' hard LS

91.5-96.5 poor recovery

rubby LS.

Losing H<sub>2</sub>O!

96.5-101.5 Creamy LS.  
friable.

↑ Hung took 15' off NG  
and hung it in the air



Monday

- ① get pump back
- ② call Sean
- ③ extra  $1\frac{1}{2}$  hose for  
mayne

8-18-06 Cont

48

Cleaned up site,  
packed up + left.  
I returned to wh @ 5:25 pm.  
Rig hours 2227

8/21/06 BC, 62

Loaded up, headed to site.  
Started cleaning out well for  
sampling. Couldn't pump  
much H<sub>2</sub>O.

SWL @ 10:55 am 16.5

SWL @ 11:12 am 15.9

SWL @ 11:32 17.8

SWL @ 12:05 ~~20.0~~ 20'

SWL @ 12:33 21'

Cleaned ~~out~~ up, headed to  
whse.

Rig hours 2228

took off 15' of NQ and  
hung it for the nite.



Ken —

I took 20' off  
NQ and hung the  
rest.

Need to add the  
20' back and add 5'  
to start coring again.

49

8/23/06 BC, GR 8am start  
Stopped by auto parts store  
for spark plug for Mud Lite.  
Headed to site.

SWL 54.5'

put Submersible pumps  
together and prepared for  
water sampling.

~ purged drilling fluids  
out of well. SLOW!!

pumping 1 gpm

\* Called Sean McGlen \*

Guy worked on Cent. pump  
for mudlite.

finally got H<sub>2</sub>O sample.

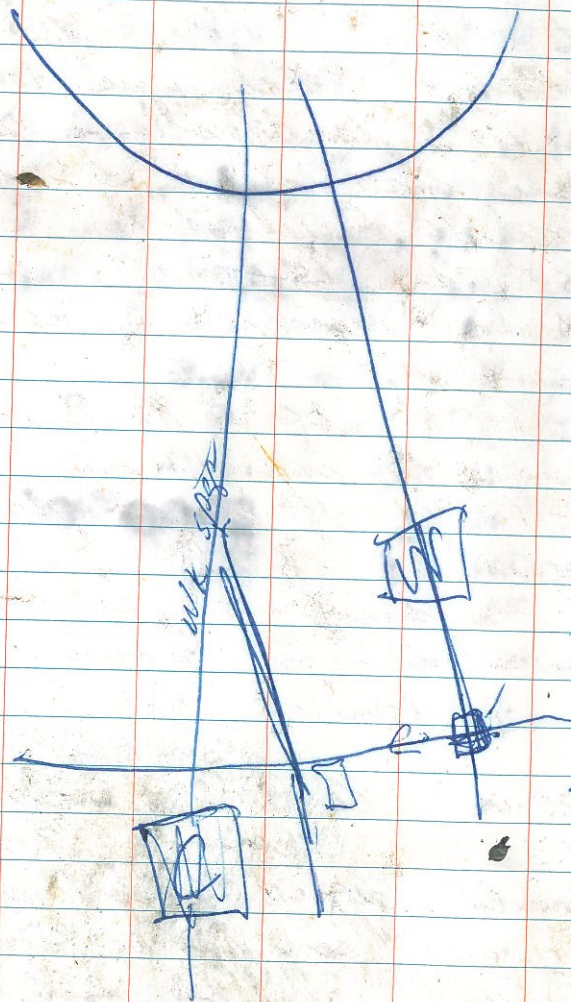
Prepared to core.

101.5 - 106.5 top of Run (5")  
hard LS, Moved into  
tight blue/green clay.  
last 8" Rabbit LS w/  
same clay.

Major Storm moved in. Packed

up.  
Reg hours 2230  
Return to whse @ 4:15 pm





8-24-06 KC, JH <sup>50</sup> mix mud, run  
desander -

106.5 - 108 - clayey ls, blue  
gn clay last 2"

108 - 111.5' blue gn clay first  
1.25' thin clay w v abd (x)  
ls clasts. v slow drilling (v.v.)

111.5 - 116.5' ls + clay upper foot.  
thin ls w laminates, some clay  
lenses, last is var indurated  
+ variably fossil moldic

116.5 - 121.5' ls, con, 1bgy top + btm  
moldic - remainder looks barren  
+ indurated

121.5' - 126.5' L.C. at btm of run  
top as above btm con granular ls

126.5 - 131.5' soft con ls - poor rec.  
washed -

thunder storm - pu NQ 15'  
leave mixer bbl hanging  
rig hour 2233

8-25-06 KC, JH. 8:30 start

131.5 - 136.5' con gn - pk + fine,  
granular - sl moldic poor-med ind

136.5 - 141.5' poor recovery - soft  
stuff washed/didn't stand



NQ airlift head  
NWJ X NWJ sub

110' NWCSG in 5's  
65

CSG at 102  
hole bottom  
at 151.5  
pump level at  
~ 125'

141.5' - 144' soft crm granular ls <sup>51</sup>  
~ 2' rec  
144 - 146.5' soft ls - lost spr & barrel  
146.5' - 149' soft granular ls  
& calcite, ~ 1.25' rec  
149 - 151.5 plugged off bit, no  
recovery in top. -  
drilled down last 2' to rec  
3 chunks of rock

↑ +  
pull NQ to chk core bit  
+ to adv NW. CSG

recovered ~ 1' of core fr. outer  
66'

drilled in add'l 65' NWCSG  
∴ 95' len stickup

Rig hours 2239

E-28-06 KC, LB

drill in add'l 78' CSG (~102')  
hole plugged off at base of CSG.  
wash NQ in to bottom

pu 25'  
airlift thru NQ - 1 pm ~ 3 pm  
still cloudy



NEED to  
REDO AIR VALVE / GAGE  
M62 for compression for

174  
- 8  
166

KC short circuit capacitor 52  
+ air filter - compression out  
and no remote starter

Rig hour ~~2244~~ 2244

8-29-06 KC, LB - to site  
trouble shoot wiring - 50 fuse on  
Firewall (25A) blown -

151.5 - 156.5' crm & ylt. calcilutite  
+ granular ls, poor-med ind  
156.5 - 161.5' soft chunky granular  
+ calcilutite ls. poor recovery  
161.5 - 166.5' - soft rubble + calcilutite  
ls. v poor recovery - some  
washed - some lost tripping bbl.  
166.5 - 171.5 - in 500 box on  
trailer - T.S.

Rig hour 2245  
( crm ls, poor-med ind, VAR  
calcilutite )

8-30-06 KC 13C  
\* Depth adjusted to change in working  
height. New working  
is 3'.



## Thursday list

- 1.) \* Core box Supplies!  
Tops, bottoms, dividers  
snik gel

5 wk  
after lunch  
30.5' b2s

53

170.5-175.5 white, grainy  
LS, poorly indurated.  
175.5-180.5 - grainstone, tan  
color

180.5-181.5 SAA

181.5-185.5 (possibly hit a)  
cavity or very soft mudstone.  
UNKNOWN. NO RECOVERY.

✓ 185.5-190.5 1.5" of recovery  
either washed out or too  
soft to catch.

190.5-195.5 first 3" grainy LS  
191-195.5 hard dolostone  
Shoe stuck

H<sub>2</sub>O run

KC Bolted Bladder pump to deck.

Mix mud.

195.5-200.5 Dolomite (Hard)

200.5-201.5' Dolomite

cap NQ - sit on btm to run 3" CSG  
RUN 3" CSG to ~104'

Rig home 2250



8-31-06 KL, L13

54

run 3" csq to 129' - hard,  
slow - rig htd overheating  
have circulation while running  
run 3" csq to 149'  
pull 30' NQ - run airlift  
setup starting at 3 pm  
collect water spec - looking  
must start at cap circ /  
woodville by to pm spec  
Rig hrs 2255

9-1-06 BC, EH

Load H<sub>2</sub>O, trip NQ (30')  
back into hole.  
\* Had to clean out hole. plugged  
off.  
201.5-205.5 Hard dolomite.  
Slow drilling. Used an  
entire tank of H<sub>2</sub>O.  
Made H<sub>2</sub>O run  
205.5-210.5 Dolomite  
210.5-215.5 Dolomite  
Went to take 5' stick  
off and got NQ stuck



Tuesday  
9/5/06

We need:

- 1.) 3" - ~~20'~~ 10'
- 2.) Sharpie Markers

Mobile Needs:  
Bolt cutters

55

possible soft fractured  
zone @ 213' fell in.  
wrenched off 5' piece of NQ  
off and got out inner barrel  
out.

Got out hammer. Moved NQ  
6" and wireline broke.

Gave up for the day.  
Ultra frustrating.  
Will hammer more on Tuesday.

P.S. Check Gear box, possible  
damage. ;)

Rig hours 2258

Returned to whse @ 6:20pm

9/5/06 BC, LB

Got H<sub>2</sub>O went to site.

Pipe (NQ) still stuck (SURPRISE!!)

Pumped mud tried to free  
up pipe. Moved 4".

Started hammering. Had to  
fix wireline 3x.

Hammering proved futile.  
took Mobile off hole, prepared



Wednesday 9/6/06

- ① Quick Gel
- ② 3" pipe 20'
- ③ Extra longyear shoe off mobil.

New Site:

Chris Lewis ~ you can find him at gulf coast lumber on woodville Hwy.

56

for arrival of CME.

H2O run. KC arrived with CME, set up, and KC left w/ mobil. Had enough for the day. Cleaned up site and headed in. arrived @ whse 5:30pm

9/6/06 BE, LB

ran down 10' of 3" w/ mud. Switched over to air, compressor low on oil. Ran to store. Set up and began to run 3" w/ air.

Frustrating day. Battery on CME DEAD!!

Haven't reached bottom on NQ yet. Casing depth off.

9-7-06 BE, LB

Loaded up supplies and headed to site. Dropped LB off and met Chris Lewis to locate next site. arrived back at site and started running 3".



★ 9-7-06

LB put new interstate battery on CME deck engine.

TO GET KELLY OUT:

- ① take swivel off
- ② round plate and pins
- ③ pressurized bolts at bottom

Remember to take keys off top.

Tomorrow:

- ① traction mat
- ② 550
- ③ welding helmet
- ④ welding rods
- ⑤ Bag of sand
- ⑥

★ SPRAY LUB ON BATTERY ★

9-7-06 (Cont)

57

3" down to ~198 approx.  
Kelly threads split apart and ~~the~~ hung the threads completely off.  
Add. We weren't drilling with hardly any down pressure, high air, and we were throttled low.  
Storm moved in, sat in truck.  
Went back to whse @ 3:08 pm

9-8-06 Bc, KC

Loaded up skid plate headed to site. Prepared to weld (KC). - NO SUCCESS  
packed up CME and took it to TLT weld. - NO SUCCESS!  
Pulled Kelly off.



209.5  
- 3.0  
-----  
206.5

9-11-06 BC, KC  
GPS'd new site,



SB  
R

Picked up Kelly from TLH WELD.  
Put it back together.  
Headed out to site and began  
drilling 3" down. Got NQ free!  
took off 30' and hung in hole  
for night.

9-12-06 BC, GR

Headed to site. Started tripping  
NQ.

\* Can't get 5' piece apart from  
core barrel. Called KC to  
bring torch.

So far BC has ruined 70' of pipe.

!!

[3" casing depth is 206.5']

Bottom of hole @ 209.5'  
ran back in NQ

Dropped in inner barrel. Clean  
to the bottom. hung pipe  
@ 188'.



Tomorrow: (Wed 13 Sept)

- ① Releaser
- ② drive sub for NQ.
- ③ prep for reaming.

59

Cleaned up site.  
Mig hours ~~2405~~ <sup>WRONG HR meter</sup>

9-13-06 BC, GR  
Headed to site in bad weather. Sat in truck for 20 minutes waiting for storm to ease up.

Cleaned out hole, mixed mud, and cored.

~~215.5-220.5~~ <sup>BC</sup> NO SAMPLE! "  
possible soft sed

215-218 NO sample.

\* Soft sed

on the next run I picked up sand (white, fine)

218.5-223.5 Dolomite (fractured)

223- Started run ~ hard dolomite drilled ~ .8' and ran out of water.

Water run.

Hung NQ at 206' inside casing.



Thursday:  
① Soda ash

Friday  
① quick gel

60

Need to finish coring to  
228'.  
packed up due to  
bad weather.

Rig hours: ~~2404~~ ~1355

Returned to base @ 5:30pm

9-14-06 BC, GR

Loaded up, headed to site.

223.5 - 228.5' Hard rxl dolomite

228.5 - 233.5 - Hard dolomite

possible cavity @ ~231

plugged off. didn't recover  
hardly any sample from

231 ~ 233.5' rubbly ~~irregular~~ <sup>vascular</sup>  
dolomite, with LS fossils.

233.5 - 238.5' First 2' dolomite  
graded into LS. 50% recovery

238.5 - 243.5' LS first 1'

then 1.5' of dolomite

then back into grainstone

cleaned up, packed up, removed  
30' of NQ from well, rig hours  
gauge not registering correctly  
~~2405~~



rig hours  
1360 oops!!

61  
9-15-06 BC, GR  
Loaded H<sub>2</sub>O, headed  
to site.  
cored  
243.5-248.5 grainstone  
Limestone  
248.5-253.5 grainstone  
last 2" in shoe dolomite.  
took off NQ, to 126' and  
prepared for airlifting for  
H<sub>2</sub>O sample.  
Hung NQ inside casing  
for night. packed up.  
returned to whse @ 4:30pm  
rig hours 1360

9-18-06 BC, GR  
unloaded trailer, Headed to  
site. Tripped out NQ  
thunderstorm  
loaded NQ  
Thunderstorm  
packed up and ended day @  
3pm



Need a 4 <sup>1/2</sup> wrench  
to fit ☐

Wed.  
Gas cans

Thursday:  
Gas for CMT  
Diesel for Ingersoll  
Small quick clamp

(1)

(2)

(3)

(4)

(5)

(6)

PVC  
trash pump  
hoses!!

1411

62

9-19-06 BC, GR

Loaded up, headed to site  
tripped out 3", hung 4".  
Heavy storm. Headed back  
to whse.

9-20-06 BC, GR

Headed to site, tripped out  
4". Loaded up and took pipe  
to Lewis I. (KC's site)  
cleaned up pipe and prepared  
to ream.

Having difficulty getting  
past 36'.

Stopped to try and adjust  
overload clutch. Aggravating!!  
Otherwise, slow, unproductive  
day.

Rig hours: 1411

ended day and returned  
to whse @ 4:30 pm.



9-21-06 BC, GR

BC paperwork, Load up  
supplies head to site.

trip Reamer to check bit,  
run down and continue  
to beam.

11/20 run  
reamed to 60+55' packed  
up headed to whse.

Ended day at 4:45 pm  
rig hours 1446

9-22-06 BC, GR

BC running late, slow start.

Got gas for CME and continued  
reaming.

\* Hydraulic hose for Hydr. chuck  
blew. Took off old hose and  
went to t/h Hydraulics to get  
a new hose.

put it on, and continued  
reamed down to 75' and  
ran out of time.

packed up  
Rig hours: 1486



## Wednesday

- Cement
- Truck mount Quick Gel
- Well casing Cover
- Quick Cure
- 1" hose

- \* get someone to come and get the mud light.
- Adapter for 1/2 trimmy.

3 bags cement

64

9-25-06 BC, LB

- Load up, head to site.
- reamed to 108" - 6" hole
- ran back to whs to get well casing and trimmy.

- tripped out NWT ran trimmy. Hole clear to 208'.

Set well w/ formation packer and centralizers.  
ended day!

9-26-06 BC, LB

Buy cement @ Lowes 6 bags.  
Head to site, pump mix (3 bags) pump small amount to plug bottom of well, and remainder around formation packer to set the well. cleaned up. Headed back to whse.



8 bags

11 bags

65

9-27-06 BC, CB

Left for site, checked plug.  
bottom inside well @ 195'.  
outside well @ 95'. Mixed grout  
and pumped. (5 bags)  
1" pressure hose blew up.  
Cleaned up, headed to holly's  
to get new hose.

9-28-06 BC, GR

Headed to site and prepared  
for afternoon visitors.

~ loaded pipe, cleaned up.  
pulled rig forward.  
~ grout up to 48'.

pumped 3 more bags.

Cleaned up, Moved Mudlite  
back to whse. Moved CME  
and trailer. (visitors rescheduled  
for the 29th)

Returned to whse @ 5pm.  
unloaded trash, etc.



total used for hole:

4 bags Quickcrete

11 bags portland

Well completion info:

Casing @ ~108.5'  
bottom of hole 195'  
8' cement plug at bottom  
cement & casing from  
108.9 to ground surface.  
H<sub>2</sub>O level 30'

66

9-29-06 BC, GR

Loaded up, headed to site.

Called Sean McGlynn.  
grout level @ 14'. Grouted,  
made pad.

~ Spoke to Mr. Lewis.  
Returned to whse @ 3pm

\* Remember:

MOBIL DRILL

rights: 2285

Mileage: 13067

Miles, hours on  
both Rigs!

~~\* measure distance from  
trailer to well.~~

~~- Develop~~

~~- Call Sean~~



10-4-06 BC, LB, GR

Headed to site to develop.  
developed, cleaned up. GR  
brought pallet of centipede  
out from Juniper Creek  
Nursery. Dredged, cleaned  
up, left.

After developing:

SWL 29'.4 to top of flange  
29' top of 2" casing



| Angle                                    | Sin.  | Tan.  | Sec.   | Cosec. | Cotg. | Cosin. | Angle                                    | Sin.  | Tan.  | Sec.   | Cosec. | Cotg. | Cosin. |
|------------------------------------------|-------|-------|--------|--------|-------|--------|------------------------------------------|-------|-------|--------|--------|-------|--------|
| 32                                       | .5299 | .6249 | 1.1792 | 1.887  | 1.600 | .84805 | 58                                       | .6293 | .8098 | 1.2868 | 1.589  | 1.235 | .77715 |
| 10                                       | .5324 | .6289 | 1.1813 | 1.878  | 1.590 | .84650 | 50                                       | .6316 | .8146 | 1.2898 | 1.583  | 1.228 | .77531 |
| 20                                       | .5348 | .6330 | 1.1835 | 1.870  | 1.580 | .84495 | 40                                       | .6338 | .8195 | 1.2929 | 1.578  | 1.220 | .77347 |
| 30                                       | .5373 | .6371 | 1.1857 | 1.861  | 1.570 | .84339 | 30                                       | .6361 | .8243 | 1.2959 | 1.572  | 1.213 | .77162 |
| 40                                       | .5398 | .6412 | 1.1879 | 1.853  | 1.560 | .84182 | 20                                       | .6383 | .8292 | 1.2991 | 1.567  | 1.206 | .76977 |
| 50                                       | .5422 | .6453 | 1.1901 | 1.844  | 1.550 | .84025 | 10                                       | .6406 | .8342 | 1.3022 | 1.561  | 1.199 | .76791 |
| 33                                       | .5446 | .6494 | 1.1924 | 1.836  | 1.540 | .83867 | 57                                       | .6428 | .8391 | 1.3054 | 1.556  | 1.192 | .76604 |
| 10                                       | .5471 | .6536 | 1.1946 | 1.828  | 1.530 | .83708 | 50                                       | .6450 | .8441 | 1.3086 | 1.550  | 1.185 | .76417 |
| 20                                       | .5495 | .6577 | 1.1969 | 1.820  | 1.520 | .83549 | 40                                       | .6472 | .8491 | 1.3118 | 1.545  | 1.178 | .76229 |
| 30                                       | .5519 | .6619 | 1.1992 | 1.812  | 1.511 | .83389 | 30                                       | .6494 | .8541 | 1.3151 | 1.540  | 1.171 | .76041 |
| 40                                       | .5544 | .6661 | 1.2015 | 1.804  | 1.501 | .83228 | 20                                       | .6517 | .8591 | 1.3184 | 1.535  | 1.164 | .75851 |
| 50                                       | .5568 | .6703 | 1.2039 | 1.796  | 1.492 | .83066 | 10                                       | .6539 | .8642 | 1.3217 | 1.529  | 1.157 | .75661 |
| 34                                       | .5592 | .6745 | 1.2062 | 1.788  | 1.483 | .82904 | 56                                       | .6561 | .8693 | 1.3251 | 1.524  | 1.150 | .75471 |
| 10                                       | .5616 | .6787 | 1.2086 | 1.781  | 1.473 | .82741 | 50                                       | .6583 | .8744 | 1.3284 | 1.519  | 1.144 | .75280 |
| 20                                       | .5640 | .6830 | 1.2110 | 1.773  | 1.464 | .82577 | 40                                       | .6604 | .8796 | 1.3318 | 1.514  | 1.137 | .75088 |
| 30                                       | .5664 | .6873 | 1.2134 | 1.766  | 1.455 | .82413 | 30                                       | .6626 | .8847 | 1.3352 | 1.509  | 1.130 | .74896 |
| 40                                       | .5688 | .6916 | 1.2158 | 1.758  | 1.446 | .82248 | 20                                       | .6648 | .8899 | 1.3386 | 1.504  | 1.124 | .74703 |
| 50                                       | .5712 | .6959 | 1.2183 | 1.751  | 1.437 | .82082 | 10                                       | .6670 | .8952 | 1.3421 | 1.499  | 1.117 | .74509 |
| 35                                       | .5736 | .7002 | 1.2208 | 1.743  | 1.428 | .81915 | 55                                       | .6691 | .9004 | 1.3456 | 1.494  | 1.111 | .74314 |
| 10                                       | .5760 | .7046 | 1.2233 | 1.736  | 1.419 | .81748 | 50                                       | .6713 | .9057 | 1.3492 | 1.490  | 1.104 | .74120 |
| 20                                       | .5783 | .7089 | 1.2258 | 1.729  | 1.411 | .81580 | 40                                       | .6734 | .9110 | 1.3527 | 1.485  | 1.098 | .73924 |
| 30                                       | .5807 | .7133 | 1.2283 | 1.722  | 1.402 | .81412 | 30                                       | .6756 | .9163 | 1.3563 | 1.480  | 1.091 | .73728 |
| 40                                       | .5831 | .7177 | 1.2309 | 1.715  | 1.393 | .81242 | 20                                       | .6777 | .9217 | 1.3600 | 1.476  | 1.085 | .73531 |
| 50                                       | .5854 | .7221 | 1.2335 | 1.708  | 1.385 | .81072 | 10                                       | .6799 | .9271 | 1.3636 | 1.471  | 1.079 | .73333 |
| 36                                       | .5878 | .7265 | 1.2361 | 1.701  | 1.376 | .80902 | 54                                       | .6820 | .9325 | 1.3673 | 1.466  | 1.072 | .73135 |
| 10                                       | .5901 | .7310 | 1.2387 | 1.695  | 1.368 | .80730 | 50                                       | .6841 | .9380 | 1.3711 | 1.462  | 1.066 | .72937 |
| 20                                       | .5925 | .7355 | 1.2413 | 1.688  | 1.360 | .80558 | 40                                       | .6862 | .9435 | 1.3748 | 1.457  | 1.060 | .72737 |
| 30                                       | .5948 | .7400 | 1.2440 | 1.681  | 1.351 | .80386 | 30                                       | .6884 | .9490 | 1.3786 | 1.453  | 1.054 | .72537 |
| 40                                       | .5972 | .7445 | 1.2466 | 1.675  | 1.343 | .80212 | 20                                       | .6905 | .9545 | 1.3824 | 1.448  | 1.048 | .72337 |
| 50                                       | .5995 | .7490 | 1.2494 | 1.668  | 1.335 | .80038 | 10                                       | .6926 | .9601 | 1.3863 | 1.444  | 1.042 | .72136 |
| 37                                       | .6018 | .7536 | 1.2521 | 1.662  | 1.327 | .79864 | 53                                       | .6947 | .9657 | 1.3902 | 1.440  | 1.036 | .71934 |
| 10                                       | .6041 | .7581 | 1.2549 | 1.655  | 1.319 | .79688 | 50                                       | .6967 | .9713 | 1.3941 | 1.435  | 1.030 | .71732 |
| 20                                       | .6065 | .7627 | 1.2577 | 1.649  | 1.311 | .79512 | 40                                       | .6988 | .9770 | 1.3980 | 1.431  | 1.024 | .71529 |
| 30                                       | .6088 | .7673 | 1.2605 | 1.643  | 1.303 | .79335 | 30                                       | .7009 | .9827 | 1.4020 | 1.427  | 1.018 | .71325 |
| 40                                       | .6111 | .7720 | 1.2633 | 1.636  | 1.295 | .79158 | 20                                       | .7030 | .9884 | 1.4061 | 1.422  | 1.012 | .71121 |
| 50                                       | .6134 | .7766 | 1.2661 | 1.630  | 1.288 | .78980 | 10                                       | .7050 | .9942 | 1.4101 | 1.418  | 1.006 | .70916 |
| 38                                       | .6157 | .7813 | 1.2690 | 1.624  | 1.280 | .78801 | 52                                       | .7071 | 1.    | 1.414  | 1.414  | 1.    | .70711 |
| 10                                       | .6180 | .7860 | 1.2719 | 1.618  | 1.272 | .78622 | 50                                       |       |       |        |        |       |        |
| 20                                       | .6202 | .7907 | 1.2748 | 1.612  | 1.265 | .78442 | 40                                       |       |       |        |        |       |        |
| 30                                       | .6225 | .7954 | 1.2778 | 1.606  | 1.257 | .78261 | 30                                       |       |       |        |        |       |        |
| 40                                       | .6248 | .8002 | 1.2808 | 1.601  | 1.250 | .78079 | 20                                       |       |       |        |        |       |        |
| 50                                       | .6271 | .8050 | 1.2838 | 1.595  | 1.242 | .77897 | 10                                       |       |       |        |        |       |        |
| Cosin. Cotg. Cosec. Sec. Tan. Sin. Angle |       |       |        |        |       |        | Cosin. Cotg. Cosec. Sec. Tan. Sin. Angle |       |       |        |        |       |        |

13.5  
2.5  
16.0

TE

562-0125

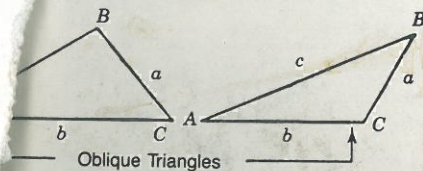
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## RIC FORMULÆ



## of Right Triangles

$$\sin A = \frac{a}{c}, \cot A = \frac{b}{a}, \sec A = \frac{c}{b}, \operatorname{cosec} A = \frac{c}{a}$$

$$\frac{a}{b} = \cot B, c = \sqrt{a^2 + b^2} = a \sqrt{1 + \frac{b^2}{a^2}}$$

$$\frac{a}{c} = \cos B, b = \sqrt{(c+a)(c-a)} = c \sqrt{1 - \frac{a^2}{c^2}}$$

$$A, b = a \cot A, c = \frac{a}{\sin A}$$

$$A, a = b \tan A, c = \frac{b}{\cos A}$$

$$a = c \sin A, b = c \cos A$$

## ue Triangles



| Angle | Sin.  | Tan.  | Sec.   | Cosec. | Cotg. | Cosin. | Angle |
|-------|-------|-------|--------|--------|-------|--------|-------|
| 32    | .5299 | .6249 | 1.1792 | 1.887  | 1.600 | .84805 | 58    |
| 10    | .5324 | .6289 | 1.1813 | 1.878  | 1.590 | .84650 | 50    |
| 20    | .5348 | .6330 | 1.1835 | 1.870  | 1.580 | .84495 | 40    |
| 30    | .5373 | .6371 | 1.1857 | 1.861  | 1.570 | .84339 | 30    |
| 40    | .5398 | .6412 | 1.1879 | 1.853  | 1.560 | .84182 | 20    |
| 50    | .5422 | .6453 | 1.1901 | 1.844  | 1.550 | .84025 | 10    |
| 33    | .5446 | .6494 | 1.1924 | 1.836  | 1.540 | .83867 | 57    |
| 10    | .5471 | .6536 | 1.1946 | 1.828  | 1.530 | .83708 | 50    |
| 20    | .5495 | .6577 | 1.1969 | 1.820  | 1.520 | .83549 | 40    |
| 30    | .5519 | .6619 | 1.1992 | 1.812  | 1.511 | .83389 | 30    |
| 40    | .5544 | .6661 | 1.2015 | 1.804  | 1.501 | .83228 | 20    |
| 50    | .5568 | .6703 | 1.2039 | 1.796  | 1.492 | .83066 | 10    |
| 34    | .5592 | .6745 | 1.2062 | 1.788  | 1.483 | .82904 | 56    |
| 10    | .5616 | .6787 | 1.2086 | 1.781  | 1.473 | .82741 | 50    |
| 20    | .5640 | .6830 | 1.2110 | 1.773  | 1.464 | .82577 | 40    |
| 30    | .5664 | .6873 | 1.2134 | 1.766  | 1.455 | .82413 | 30    |
| 40    | .5688 | .6916 | 1.2158 | 1.758  | 1.446 | .82248 | 20    |
| 50    | .5712 | .6959 | 1.2183 | 1.751  | 1.437 | .82082 | 10    |
| 35    | .5736 | .7002 | 1.2208 | 1.743  | 1.428 | .81915 | 55    |
| 10    | .5760 | .7046 | 1.2233 | 1.736  | 1.419 | .81748 | 50    |
| 20    | .5783 | .7089 | 1.2258 | 1.729  | 1.411 | .81580 | 40    |
| 30    | .5807 | .7133 | 1.2283 | 1.722  | 1.402 | .81412 | 30    |
| 40    | .5831 | .7177 | 1.2309 | 1.715  | 1.393 | .81242 | 20    |
| 50    | .5854 | .7221 | 1.2335 | 1.708  | 1.385 | .81071 | 10    |
| 36    | .5878 | .7265 | 1.2361 | 1.701  | 1.377 | .80900 | 54    |

$$\begin{array}{r} 27.0 \\ - 2.5 \\ \hline 24.5 \end{array}$$

$$\begin{array}{r} 210 \\ 149 \\ \hline 61 \end{array}$$

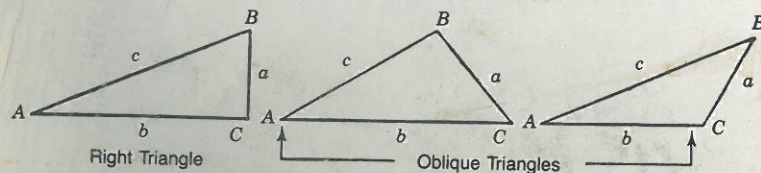
$$\begin{array}{r} 235 \\ 234 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 2940 \\ 2205 \\ \hline 5880 \\ 6129.90 \end{array}$$

$$216 \text{ Cos}$$

$$149$$

## TRIGONOMETRIC FORMULÆ



## Solution of Right Triangles

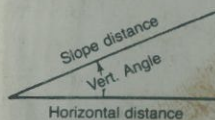
For Angle A.  $\sin = \frac{a}{c}$ ,  $\cos = \frac{b}{c}$ ,  $\tan = \frac{a}{b}$ ,  $\cot = \frac{b}{a}$ ,  $\sec = \frac{c}{b}$ ,  $\text{cosec} = \frac{c}{a}$

|                 |                       |                                                                                          |
|-----------------|-----------------------|------------------------------------------------------------------------------------------|
| Given<br>$a, b$ | Required<br>$A, B, c$ | $\tan A = \frac{a}{b} = \cot B$ , $c = \sqrt{a^2 + b^2} = a \sqrt{1 + \frac{b^2}{a^2}}$  |
| $a, c$          | $A, B, b$             | $\sin A = \frac{a}{c} = \cos B$ , $b = \sqrt{(c+a)(c-a)} = c \sqrt{1 - \frac{a^2}{c^2}}$ |
| $A, a$          | $B, b, c$             | $B = 90^\circ - A$ , $b = a \cot A$ , $c = \frac{a}{\sin A}$                             |
| $A, b$          | $B, a, c$             | $B = 90^\circ - A$ , $a = b \tan A$ , $c = \frac{b}{\cos A}$                             |
| $A, c$          | $B, a, b$             | $B = 90^\circ - A$ , $a = c \sin A$ , $b = c \cos A$                                     |

## Solution of Oblique Triangles

|                    |                       |                                                                                                                                                                                                             |
|--------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Given<br>$A, B, a$ | Required<br>$b, c, C$ | $b = \frac{a \sin B}{\sin A}$ , $C = 180^\circ - (A + B)$ , $c = \frac{a \sin C}{\sin A}$                                                                                                                   |
| $A, a, b$          | $B, c, C$             | $\sin B = \frac{b \sin A}{a}$ , $C = 180^\circ - (A + B)$ , $c = \frac{a \sin C}{\sin A}$                                                                                                                   |
| $a, b, C$          | $A, B, c$             | $A + B = 180^\circ - C$ , $\tan \frac{1}{2}(A - B) = \frac{(a - b) \tan \frac{1}{2}(A + B)}{a + b}$                                                                                                         |
| $a, b, c$          | $A, B, C$             | $c = \frac{a \sin C}{\sin A}$<br>$s = \frac{a + b + c}{2}$ , $\sin \frac{1}{2} A = \sqrt{\frac{(s - b)(s - c)}{bc}}$<br>$\sin \frac{1}{2} B = \sqrt{\frac{(s - a)(s - c)}{ac}}$ , $C = 180^\circ - (A + B)$ |
| $a, b, c$          | Area                  | $s = \frac{a + b + c}{2}$ , $\text{area} = \sqrt{s(s - a)(s - b)(s - c)}$                                                                                                                                   |
| $A, b, c$          | Area                  | $\text{area} = \frac{bc \sin A}{2}$                                                                                                                                                                         |
| $A, B, C, a$       | Area                  | $\text{area} = \frac{a^2 \sin B \sin C}{2 \sin A}$                                                                                                                                                          |

## REDUCTION TO HORIZONTAL



Horizontal distance = Slope distance multiplied by the cosine of the vertical angle. Thus: slope distance = 319.4 ft. Vert. angle =  $5^\circ 10'$ . From Table, Page IX,  $\cos 5^\circ 10' = .9959$ . Horizontal distance =  $319.4 \times .9959 = 318.09$  ft.  
Horizontal distance also = Slope distance minus slope distance times  $(1 - \cos \text{ of vertical angle})$ . With the same figures as in the preceding example, the following result is obtained.  $\cos 5^\circ 10' = .9959$ .  $1 - .9959 = .0041$ .  $319.4 \times .0041 = 1.31$ .  $319.4 - 1.31 = 318.09$  ft.

When the rise is known, the horizontal distance is approximately: - the slope distance less the square of the rise divided by twice the slope distance. Thus: rise = 14 ft., slope distance = 302.6 ft. Horizontal distance =  $302.6 - \frac{14 \times 14}{2 \times 302.6} = 302.6 - 0.32 = 302.28$  ft.



