Rec'd
11-5-07
MLRR

CC 22-3-65

0.1.139

Oil & Gas
MD Mudlog

1:600 Scale

36-009-00368OGM

HORIZON

711 Saint Andrews Way
Lompoc, California 93436
Phone 805-733-0972 Fax 805-733-0992
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Anchorage, Alaska 99515
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Abbreviations

CO	Circulate Out
LAT	Logged After Trip
CG	Connection Gas
WG	Wiper Gas
TG	Trip Gas
SG	Survey Gas
NR	No Returns
NB	New Bit
WR	Wiper Run
WOB	Weight On Bit
PP	Pump Pressure
SPM	Strokes Per Minute
POOH	Pull Out Of Hole
LC	Lost Circulation

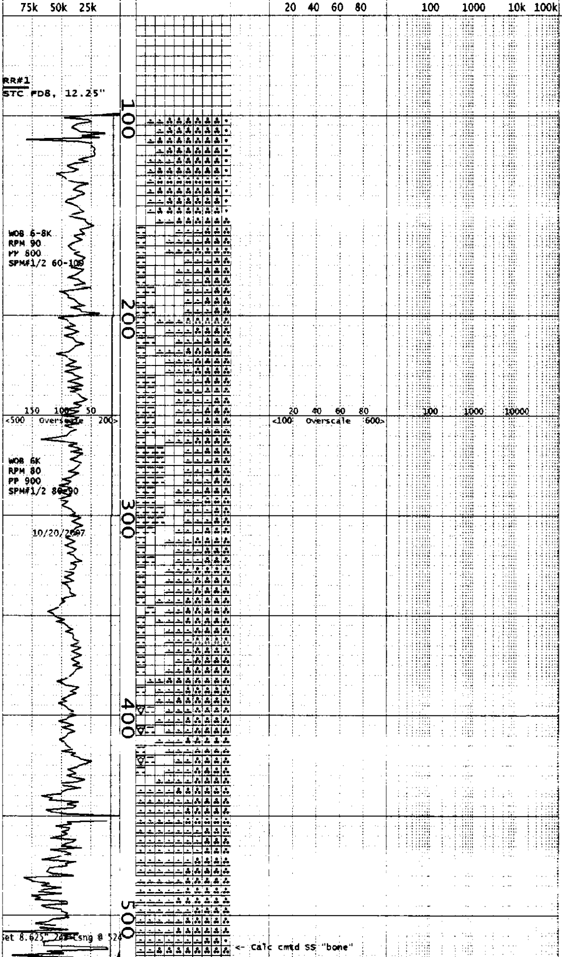
Symbols

- ■ OBSIDIAN
- TUFF-ASH
- RHYOLITE
- BASALT
- ARGILLIC ALT
- VOLCANICS
- QUARTZ LATITE
- ▨ ANDESITE
- DACITE
- ▨ FELSIC/SIL DIKE
- TRACHYTE
- PYROCLASTICS
- TUFF-CRYSTAL
- TUFF-LITHIC
- MONZONITE
- QUARTZ DIORITE
- GRANODIORITE
- ⋈ DIORITE
- GABBRO
- VOLCANICLASTIC
- PHYLLITE
- SCHIST
- SERPENTINE
- MARBLE
- METAMORPHICS
- SLATE
- GNEISS
- QUARTZITE
- CHERT
- GLASSY CHERT
- ARGIL CHERT
- PORCEL CHERT
- LIMESTONE
- ▨ DOLOSTONE
- CARBONATES
- MARL
- COAL
- PORCELANITE
- DIATOMITE
- SHALE
- SALT
- ANHYDRITE
- PORCEL CLAYST
- CLAYSTONE
- CLAY
- SILTSTONE
- ▨ CEMENT
- SANDSTONE
- SAND
- SHELL FRAGS
- COQUINA
- BRECCIA
- CONGLOMERATE
- GRANITE WASH

COMPANY	Enerfin Resources
WELL	CC 22-3-65
LOCATION	Sec. 3, T6N, R5W MDB&M X=1290595 Y=874598
ELEVATION	GL 1088' KB 1102'
FIELD	Mist
COUNTY	Columbia, OR
API No.	36-009-00368
SPUD DATE	10/19/2007
LOGGING DATES	10/19/2007 9:04:29 PM-10/26/20
LOGGING DEPTHS	100-3838'
CO. GEOLOGIST	Dave Huggins
COMPANY MAN	Robert Vickery
CONTRACTOR	TD Well Sevices
RIG	#101
MUD COMPANY	GEO Drilling Fluids
TYPE	Gel/Cypan
LOGGING GEOLOGISTS	Jim Eastes Brett Rose
BIT SIZE	12.25" to 524' 7.825" tp 3838'
CASING	8.625" set @ 524'

CALIBRATION: 2% METHANE EQUIVALENCE = 100 UNITS

Drill Rate	Lithology	Shows	Gases	Chromatograph	Descriptions
Drill Rate Drill Rate Overscale — Weight On Bit —			Total Gas Overscale Cuttings Gas —	Methane —— Butane ---- Ethane —— Pentane Propane	
150 100 50					



NOTE: GAS EQUIPMENT CALIB TO SPWLA STANDARDS; COLORS REFERENCED TO THE GSA ROCK COLOR CHART; SAMPLES DESCRIBED WET; ALL DEPTHS BASED ON DRILLERS PIPE TALLY; KB=0

NOTE: LOGGING COMMENCED @ 100' 2000 HRS 10/19/2007

SANDSTONE: MDK GRY-GRNGRY-BRNGRY, CLR, GRYBLK; U VFN-L FN; SBANG-SBRND; SLI TO MOD WELL CONSOL; N-VSL CALC; FREQ SLTY BCMG SDY SLTST; PRED VOLCIC GRS; OCC FELDS; TR GLAUC; TR DK CARB MATL.

SILTSTONE: MED-MDK GRY-BRNGRY; SLI-MOD FRM; FRIA; N-VSLI CALC; INCR ARG GRDG TO SLTY CLYSTN; SDY IP; TR DK CARB MATL; TR MICA; VRR DISEMM PYR.

CLAYSTONE/CLAY: MED-MED DK GRY TO GRYBRN; SLI-MOD FRM; IRREG; RTHY-DULL; MW HYDRATED; N-VSLI CALC; SLTY GRDG TO ARG SLTST; SDY IP; TR DK CARB MATL; TR GLAUC; MICAEOUS IP; VRR DISEMM PYR.

SANDSTONE: MED-MED DK GRNGRY-GRY-BRNGRY, GRYBLK; U VFN-L FN; SBANG-SBRND; SLI TO MOD WELL CONSOL, MOD FRIA; N-VSLI CALC; ARG; SLTY GRDG TO SDY SLTST; MICA; TR DK CARB MATL; VRR DISEMM PYR.

SILTSTONE: MED-MDK GRY-BRNGRY; SLI-MOD FRM; FRIA; N-VSLI CALC; ARG BCMG SLTY CLYSTN; FREQ SDY; TR DK CARB MATL; TR MICA; VRR DISEMM PYR.

SANDSTONE: MED-MED DK GRNGRY-GRY-BRNGRY, TRNSL, GRYBLK; U VFN-L FN; SBANG-SBRND; SLI TO MOD WELL CONSOL, MOD FRIA; N-V SLI CALC; FREQ ARG BCMG SDY CLYSTN; SLTY GRDG TO SDY SLTST; MICACEOUS IP; TR DK CARB MATL; VRR DISEMM PYR; TR ASH TUFF; SCAT FNT LINEA.

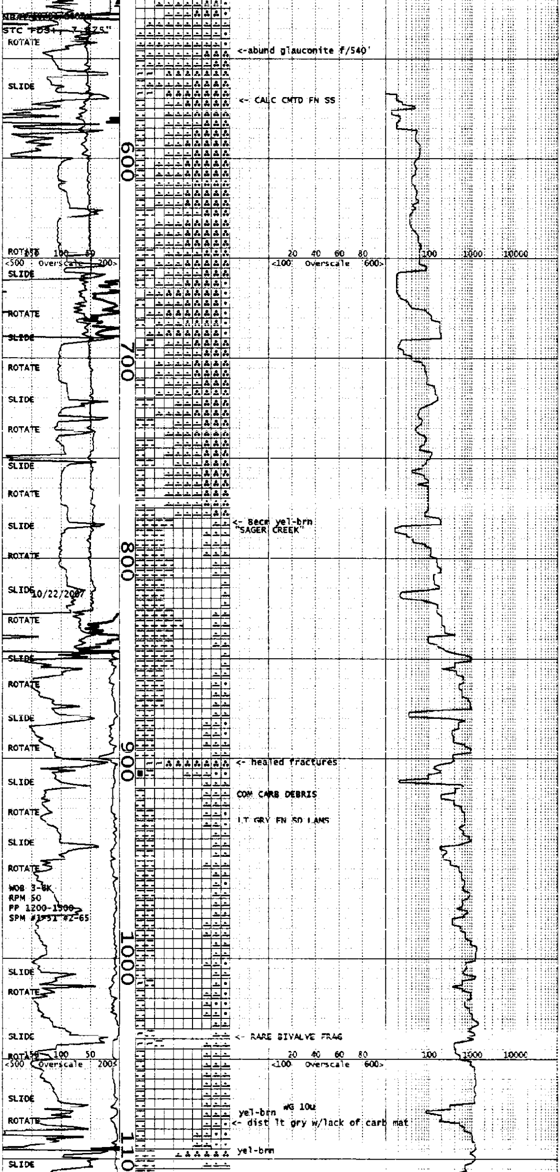
SANDSTONE: MED GRNGRY-BRNGRY-GRY, TRNSL, LT TO MED YELBRN-BRN; U VFN-L FN; SBANG-SBRND; SFT TO MOD WELL CONSOL, MOD FRIA; N-V SLI CALC; ARG BCMG SDY CLYSTN; FREQ SLTY; OCC MICACEOUS; TR DK CARB MATL; VRR DISEMM PYR; RR ASH TUFF.

SILTSTONE: LT TO MED BRNGRY-YELBRN; SFT-MOD FRM; FRIA; N-VSLI CALC; ARG GRDG TO SLTY CLYSTN; FREQ SDY; TR DK CARB MATL; TR MICA; VRR DISEMM PYR, TR LITHIC TUFF.

SANDSTONE: MED-DK GRNH GRY; VFN-MEDL, PRED FN; COMLY MATRIX SUPPORTED IN SILTY/ARGIL MATRIX NONCALC; V COM WL RND BLU-GRN "GRAINS", ORG VOLC, TR CARB MAT

SANDSTONE: DK GRNSH GRY, LOC OLV HUED; VFN - FNU; WL SRTD; FRIABLE, CRUMBLY; COMLY MATRIX SUPPORTED; NONCALC; 30%+ PL TO DK GRN "PELLET-LIKE" CLASTS, SOME DISTINCTLY GLAUC; SPTY ORG TUFF CLASTS W/TR CARB MAT, PYR; SPTTY SHELL DEBRIS F/450'; OVERALL SPL TUFFACEOUS W/LT GRY TO BUFF COLORED TUFF MIXED IN MATRIX.

SURVEY @506': .24° AZI 252.6°
TVD 506' S 0.34 E 0.26



8.625" CSG SET @ 524'

SANDSTONE: LTR GRY; WELL INDUR W/CALC CMT @516'. SLOW ROP; SPLS BCM SOFTER BELOW "BONE" W/ INCR SFT SOLUBLE CLAY; INCR SHELL DEBRIS; ABNT GLAUC.

SILTSTONE: LT-MED GRY-BRNGRY; SFT-MOD FRM, FRIA; N-V SLI CALC; FREQ BCMG SS; ARG; ABNT GLAUC; TR MICA; RR FOS FRAG (SHELL); TR DK CARB MATL/LAM; VRR DISSEM PYR.

SURVEY @614' 5.7X 72.4AZI
TVD 613.8, 1.2N, 5.2E

SANDSTONE: MED-DK GRNGRY TO BRNGRY; U VFN-L FN; ANG-SBRND; FRIA, SLI- MOD W CONSOL,CRUMBLY IP; N-V SLI CALC; SLI-MOD ARG, COMLY MATRIX SUPPORTED; FREQ SLTY; DECR GLAUC; TR TUFF; TR MICA; TR CARB MATL; VRR DISEMM PYR; SLI INCR FOS FRAG(SHELL DEBRIS).

SANDSTONE/SAND: CLR, TRNSL, LT-MED GRY, MED-DK GRNGRY-BRNGRY; UVFN-UFN; ANG-SBRND; FRIA, SLI-MOD W CONSOL N-V SLI CALC; SLI ARG, COMLY MATRIX SUPPORTD; SLTY IP; OCC HD YELBRN LS; OCC GLAUC CLASTS; TR TUFF; TR MICA; TR DK CARB MATL/LAM; RR FOS FRAG(SHELL DEBRIS).

SURVEY @ 740', 14.2X, 61.8AZI
TVD 737.7, 9.4N, 25.9E

SILTSTONE: MED-MED DK BRNGRY-BRN; SFT-MOD FRM, FRIA; N-V SLI CALC; FREQ GRDG TO SLTY CLYSTN; SDY BCMG SLTY SS; TR GLAUC; TR MICA; RR FOS FRAG(SHELL); VRR DISSEM PYR.

CLAYSTONE: MED-MED DK BRNGRY-YELBRN-GRNBRN, MOTTLED, OCC OLV; SLI TO MOD FRM; LACKS STRUCTURE; PASTY-MUSHY TEXT; P TO MOD HYDRATED; GOOD ADHESION/ COHESION; MOD CALC; SLI TO MOD SLTY IP; SLI VFN SDY; TR MICA; VRR DISEMM PYR; RR DK CARB MATL.

SURVEY @804' 15.2X, 49.7AZI
TVD 799.6, 18.6N, 39.3E

MUDSTONE: YEL-BRN; FIRM PLASTIC NODULES; PRLY SOLUBLE; SILTY IN PART; CARB RICH GIVES BRN HUE; WKLY CALC; NO VIS BED LINEATION

MUDSTONE: YEL-BRN; FIRM PLASTIC NODULES; PR SOLUBILITY; INCR SILTY W/THIN LT GRY VFN-FN SD LAMS; INCR "FLOATING" BRN CARB/ ORGANIC DEBRIS; WKLY CALC; TR BED LINEATION W/SD LAMS.

SANDSTONE: LT GRY; VFN-MEDL, PRED FN; ARKOSIC W/TRPL GRN CLASTS; WL INDUR W/CALC CMT; SME BRN CALC MDST ASSOC W/SS, TR HEALED FRACTURES. TR TUFF @915'

SURVEY @931', 16°, 24.8 AZI
TVD 922, 45.7N, 60E

MUDSTONE; MOD YEL-BRN; V FIRM, PLASTIC NODULES; SILTY, GRDG TO SILTSTONE; DECR SD LAMS; V COM FNLY DISSEM CARB DEBRIS; WKLY CALC; ASSOC "CLAY" IS PRLY SOLU W/GD ADHESION (STICKY).

CLAY: YEL-BRN; DERIVED FROM CRUSHED MUDSTONE AS ABOVE; SILTY/SANDY; PR SOLUBILITY; STICKY BINDING TO SHAKERS.

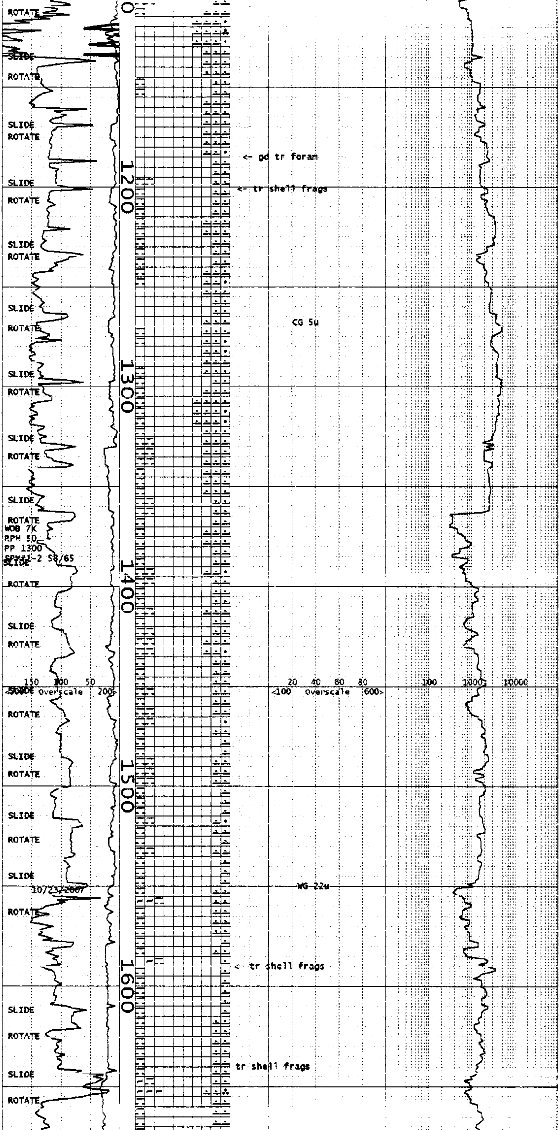
SURVEY @995', 17°, 21.2 AZI
TVD 983, 62.8N, 67E

SAND: LT GRY, CLR TO CLDY; VFN TO FN; APPRS ARKOSIC W/V MINOR LITHICS; MICACEOUS; AS THIN LAMS IN CARB RICH MUDSTONE.

SILTSTONE: MOD YEL-BRN; FIRM, NODULAR CTGS; SAME BASIC PROPERTIES AS MUDSTONE BUT INCR COARSNESS, COMLY SANDY; SCAT "FLOATING" CARB MAT; WKLY CALC; LOC DK YEL-ORG TUFFACEOUS MARLS

WIPE HOLE @1072', REPAIR PUMP

SAND: LT GRY; VFN-FN, TR MED; WL SRTD; LOOSE/FRIABLE; NO ASSOC FN CARB MAT TO GIVE BRN HUE



SURVEY @1122', 22.3°, 16.8AZI
TVD 1103', 103N, 81.5E

SILTSTONE: PL YEL BRN, OCC LT GRY STREAKS; FIRM, NODULAR CTS; CLY-RICH; TR THIN SD LAMS; COM FNLY DISSEM CARB MAT; SCAT VIS MICA; TR FNT BED LINEATION.

BULK SPL APPRS SLI DKR HUED, PROB INCR FNLY DISSEM CARB MAT; INCR SILTY W/PERSISTENT TR LT GRY VFN SD LAMS; DIST INCR FORAM IN SPLS BY 1185';

SURVEY @1186', 24.5° 17.5AZI
TVD 1161', 127'N, 89E

SILTSTONE: LT TO MOD YEL-BRN; SFT TO FIRM NODULAR CTGS; SPLS APPRS MORE HYDRATED, INCR SOLU CLAY; LOC SANDY; NON TO MODLY CALC, LOC VARIABLE; COM FNLY DISSEM CARB MAT; TR SMALL TUFF FRAGS.

MW 8.7 VIS 35

CLAY: MOD YEL-BRN; FIRM, PLASTIC NODULES; PR SOLUBILITY; MOD ADHESION; SILTY, OCC SANDY; DERIVED F/AGRIL SILTSTONE; CARB RICH.

SURVEY @1282', 26.2°, 20AZI
TVD 1248, 165.7N, 102E

SILTSTONE: MOD YEL-BRN' SFT TO FIRM; COM LRG RNDD CTGS OVER SHAKER; CRS SILTY, LOC THIN VFN-FN SAND INTERBEDS; VARIABLE AMTS FN CARB MATERIAL; OCC TR FN SHELL DEBRIS; BULK SPL WKLY CALC.

WIPE HOLE 1363'TOPDRIVE REPAIR

CLAY: MED YELBRN-GRYYELBRN; SLI-MOD FIRM, PASTY-PLASTIC NODULES; PR SOLUBILITY; MOD ADHESION/COHESION; CALC; OCC SILTY; SLI SANDY IP; RR MICA; SME DK CARB MATL.

SURVEY @1376', 30.6°, 18.2AZI
TVD 1331', 208'N, 116.5'E

SILTSTONE: MED YELBRN-GRYYELBRN; SFT, SLI-MOD FIRM; COM RND CTGS; CALC; ARG, PRED SLTY CLYSTN; OCC THIN CLR VFN TO FN SDY INTBD; SCAT DK CARB MATL; RR SHELL FRAG.

CLAY: MED LT-MED YELBRN-GRYYELBRN; SFT, SLI MOD FIRM, PASTY-PLASTIC NODULES; PR SOLUB; MOD ADHESION/COHESION; CALC; BCMG ARG SLTST IP; OCC SLI VFN-FN SDY; TR DK CARB MATL.

SURVEY @1471', 34.3°, 18.8AZI
TVD 1411', 256'N, 132.9'E

SILTSTONE: MED YELBRN-GRYBRN-GRYYELBRN; SFT, SLI-MOD FIRM; LRG RND CTGS; CALC; PRED SLTY CLYSTN; SME BCMG VFN-FN SDY; RR DK CARB MATL.

CLAY: MED LT-MED YELBRN-GRYBRN-GRYYELBRN; SFT, SLI-MOD FIRM, PASTY RND NODULES; PR SOLUB; MOD ADHESION/COHESION; CALC; BCMG CLYSTN IP; SLTY; SLI INCR SLI VFN-FN SDY; RR DK CARB MATL.

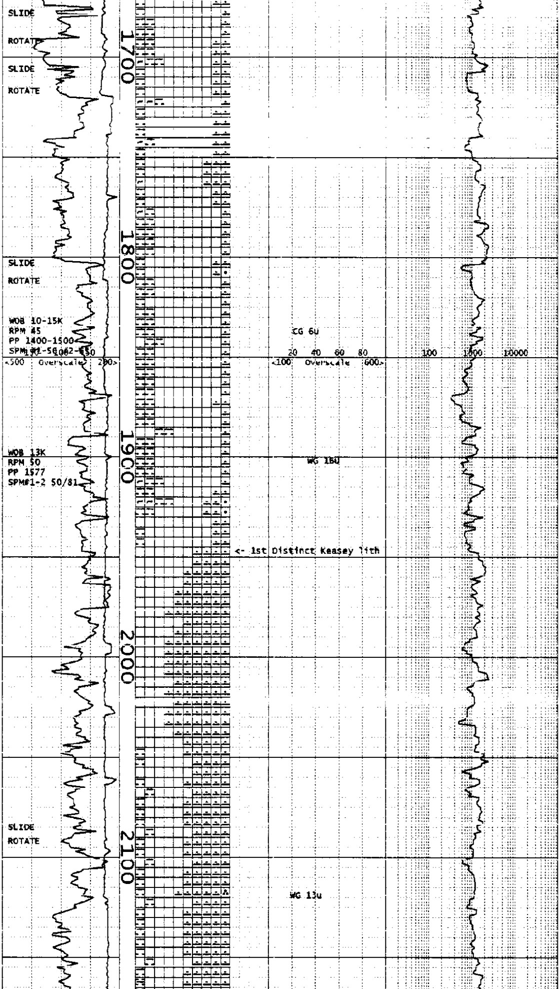
WIPER TRIP @ 1549'

SURVEY @1566', 39.2° 16.3AZI
TVD 1488', 310'N, 149.8E

TUFFACEOUS MARL: PL YEL-ORG; V FIRM - HD; MOTTLED APPEARANCE W/SILTY TEX; V SLOW, ALMOST DOLOMITIC RX W/HCL; PL BRN ASHY INCLUSIONS IN MATRIX.

SILTSTONE: MOD YEL-BRN; SFT, CRUMBLY TO FIRM; CONT'D LRG RNDD NODULES; FN GRITTY TEX W/INCR VIS MICA; V COM FN CARB MAT; SCAT BRKN BIVALVE SHELL; SCAT PL YEL-ORG MARL; BULK SPL WKLY CALC; CONT'D STICKY ON SHKR

MARL: PL BRNSH GRY; APPRS ALMOST APHANITIC; SUBTLE SPARKLING LSTR; TR SANDY FRAGMENTS.



SURVEY @ 1693', 44.9° 18.4AZI
TVD 1582, 390'N, 175.8'E

MUDSTONE: MOD YEL-BRN; SFT, PLASTIC NODULES; SILTY GRDG TO ARGIL SLTST; V COM FNLY DISSEM CARB MAT, VFN MICA; WKLY CALC; RR SANDY LAMS.

MARL: PRED MOD YEL-ORG; V FIRM - HD; GEN BLOCKY CTGS; ROUGH GRITTY TEX, SILTY IN PART. APPRS MOTTLED W/TUFFCS MATERIAL; VARIABLY CALC, GEN SLOW RX w/HCL.

SURVEY @ 1757', 46.5°, 17AZI
TVD 1627', 434'N, 189.6'E

MUDSTONE: MOD YEL-BRN; SFT, CRUMBLY TO PASTY; CRS SILTY TEXTURE W/TR VFN SD; COM FNLY DISSEM CARB MAT; WKLY CALC; INCR THIN MARL LENSES, SME TFFCS

MW 8.5 VIS 38 PV 10 YP 6 FL 5.8
PH 8.9 SD .25 CL 450 GEL 1/2

MUDSTONE: MOD YEL-BRN; SFT CRUMBLY-PASTY/PULVERANT; DECR SILTY COMPONENT; ASSOC CLAY PRLY SOLUBLE & STICKY; CONT'D CARB RICH W/FLECKS & FRAGS VIS IN MICRO; WK TR PL YEL-ORG MARL; LT GRY ASH @ 1840-45'.

SURVEY @ 1852', 47°, 17.5AZI
TVD 1692', 501'N, 210'E

MUDSTONE: MOD YEL-BRN, SLI DKR HUED; SFT PASTY CTGS; SLI INCR SILT COMPONENT; WKLY CALC; TR FN SHELL DEBRIS; CONT'D CARBON RICH ; TR DK GRN CLYST CLASTS, POSS KEASEY RIP-UPS? (F/1880').

WIPE HOLE @1900'; SWEEP HOLE W/NUT SHELL - PR SPL QUALITY F/1900-1950'

MUDSTONE: MOD YEL-BRN; SFT, CRUMBLY TO PASTY; SLI INCR SILT COMPONENT W/GD TR LT GRY, VFN SD LAMS; LOC PL GRY TUFF INTRBDS.

SILTSTONE: F/1948'; OLV GRY, SME BRNSH GRY; FIRM, BCMNG DIST HARDER THAN SLTST ABV; CTGS BCM TAB W/DISTINCT EDGES; DL, SLI WAXY LSTR; MORE TFFCS CTGS APPR TRNSL ON THIN EDGES; SPTY GRN & GRY, RNDD; WAXY INCLUSIONS; NON TO WKLY CALC

SURVEY @ 2011': 46.8° 18.2AZI
TVD 1800.3', 612'N, 244.4'E

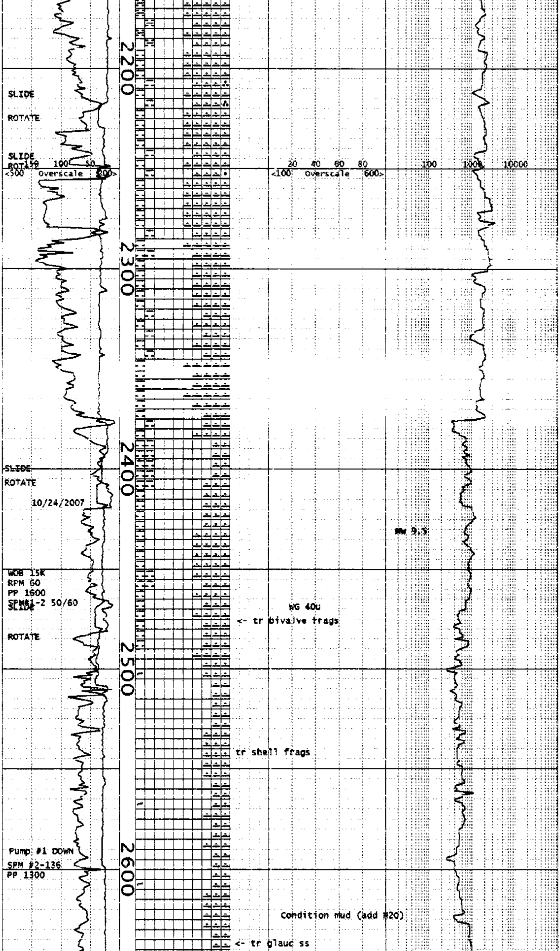
TUFF: VLT-LT GRNGRY-YELBRN-GRYBRN; M-MDK BRNGRN; MOD FRM-HD; IRREG- SBPLTY; VFN GRAN; SLI CALC; OCC PLAG LATHS; SCAT CLR GLASSY FRAGS; OCC DK GRN WXY GRNS; OCC BEDDED; CUTTINGS APPEAR TRNSL ON EDGES.

SILTSTONE: OLV GRY, LT-MED BRNGRY; MOD-V FIRM; IRREG-TAB; DULL-RTHY; SLI CALC; ARG W/ SME BCMG CLYSTN; TUFFACEOUS/WAXY STRINGERS IP; SCAT M-MDK GRN-GRY, RND, WAXY INCL; VRR DISEMM PYR.

MUDSTONE: MOD YELBRN-GRYBRN; SFT-SLI FRM, PLASTIC NODULES; SLI CALC, TR CALC FRAC FIL; SLTY GRDG TO ARG SLTST; RR SDY LAMS; VRR DISEMM PYR .

REPAIR PUMP-WIPER TRIP @ 2121'

SILTSTONE: OLV GRY, BRNGRY; MOD-V FIRM; IRREG-TAB; DULL-RTHY; SLI CALC, TR CALC FRAC FIL; ARG GRDG TO CLYSTN; SME SDY; TUFFACEOUS, BEDDED IP; RR MICA; VRR DISEMM PYR.



SURVEY @2200', 46.4', 18AZI
TVD 1931' 742'N, 286'E VS 794'

TUFF: LT-MED GRNGRY-YELBRN-GRYBRN; M-MDK BRNGRN; MOD FRM-HD; IRREG-TAB; VFN GRAN; SLI CALC, SME CALC STRIA; OCC PLAG GR; RR GRN YELGRN WXY GRNS; OCC FNLY BEDDED.

SILTSTONE: OLV GRY, BRNGRY, YELBRN; MOD-V FIRM; IRREG-TAB; DULL- RTHY; SLI CALC; ARG GRDG TO CLYSTN; SME SDY STRINGERS; TUFFACEOUS, BEDDED IP; RR GRN WXY GRS; TR GLASSY FRAGS.

MUDSTONE:YELBRN, GRYBRN, OLVBRN SFT-SLI FRM, PLASTIC NODULES; SLI CALC, TR CALC FRAC FIL; SLTY BCMG ARG SLTST IP; RR SDY STRINGERS; TR GLASSY FRAGS.

SURVEY @2296', 46.9' 19.5AZI
TVD 1997', 808'N, 308'E

CLAY/CLAYSTONE:YELBRN, GRYBRN, OLVBRN; SFT-SLI FRM, IRREG, PASTY- PLASTIC NODULES; PR HYDRATED; SBWXY; G ADHESION/COHESION; SLI CALC; SLTY BCMG ARG SLTST IP; SLI SDY IP; RR MICA.

SILTSTONE:LT-MED OLVGRY-BRNGRY-YELBRN; MOD-V FIRM; IRREG-TAB; DULL; WK-SLI CALC; ARG BCMG CLYSTN IP; SLI SDY IP; OCC TUFFACEOUS, BEDDED IP; RR GRN WXY GRS; TR LT YELGRN WXY STRINGERS.

SURVEY @ 2391', 46.2' 19.4AZI
TVD 2062', 873N, 331E

CLAY: GRYSH BRN, SLI OLV HUE; THICK PASTY CONSISTENCY; MODLY SOLUBLE; MOD ADHESION; INCR COM WALL CAKE IN CTGS.

SILTSTONE: VARIABLE COLORS IN SPL, LT - MOD OLV GRY & GRYSH BRN; TAB, OCC PLATY CTGS; FIRM, SLI BRTL; DL LSTR, WAXY ON FRESH SURF; TFFCS; TR PYR & CARB

WIPE HOLE @2467', 15 JOINTS

CLAY: MOD OLV GRY; SFT, PASTY CONSISTENCY; EASLIY SOLU W/MILD AGITATION; MOD ADHESION.

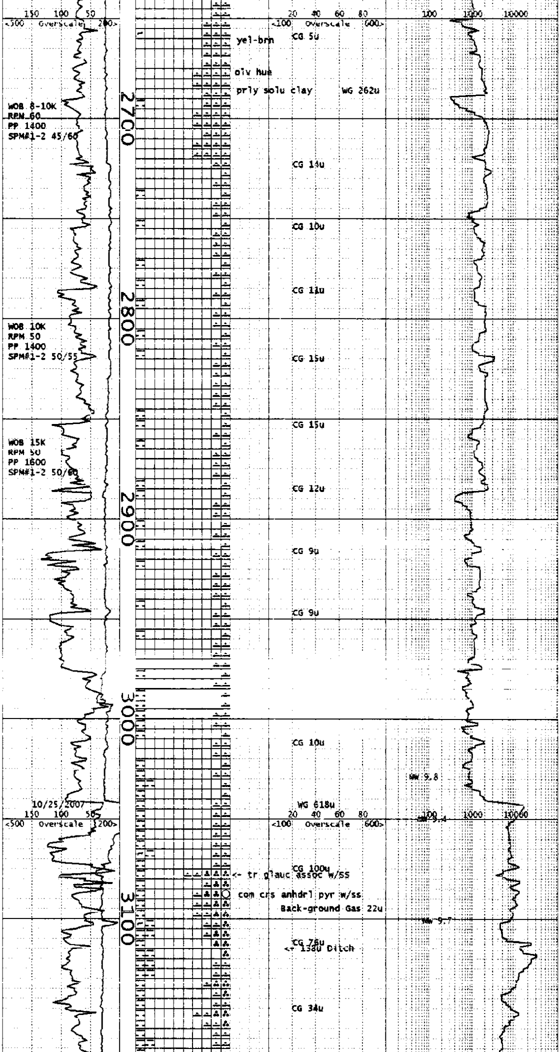
SILTSTONE: PRED GRYSH BRN, SME YELSH BRN, SCAT GRNSH HUES; FIRM TO LOC V FIRM; TAB; VARI WAXY LSTR; INCR SILTY; SPECKLED W/GRN & ORG VOLC FRAGS, SME CARB MAT, TR FRAMBOID PYR; TR PL BRN MARLS.

SURVEY @2518', 48°, 18.3AZI
TVD 2149', 961N, 361E VS 1026

SILTSTONE: PRED LT BRN, SME OLV HUED; SFT TO FIRM, CRUMBLY TO LOC BRTL; CONT'D TAB TO PLATY; SLI WAXY LSTR; COM "FLECKS" OF MICRO-SIZED ASH & VOLC MAT IN MATRIX; SME BED LINEATION; NON TO MODLY CALC; GD TR PL YEL-ORG CALC TUFF (TFFCS MARL7)

MW 9.8 VIS 48 PV 18 YP 18 FL 4.4
PH 8.5 SD .5 CL 700 GEL 3/4

SILTSTONE: PL YELSH BRN TO OCC MOD OLV GRN; SFT - V FRM; CRUMBLY TO MOD BRTL; PRED BRNSH CTG EXHBT GRITTY TEX W/SPECKLED MICRO VOLC FRAGS, TR CARB & PYR GRNSH CTGS MORE TFFCS W/WAXY LSTR, TRNSL ON THIN EDGES: COM PL YEL-ORG CALC TUFF(7) FRAGS



SURVEY @ 2613', 47.5' 18.5AZI
TVD 2212' 1028N, 384W VS 1097

SILTSTONE: DOM YELSH BRN F/2660 TAB CTGS; MID INDUR, CRUMBLY TO SLI BRTL; DL LSTR; APPRS GRITTY BCMS DON OLV BRN F/2670 W/DIST GRN & ORG VOLC DEBRIS IN MATRIX ASSOC CLY BCMS PRLY SOLU BY 2685

WIPER TRIP @ 2689'

SURVEY @2709': 47.3' 18.8'AZI
TVD 2277.4' 1095'N 406'E

CLAY: LT-MOD OLVGRY-YELBRN; SFT, PASTY CONSISTENCY; G SOLUB; G ADHESION/COHESION; WK CALC; SLI SLTY IP; TR DK CARB/ VOLCIC GRS; RR MASS PYR.

CLAY: LT-MED OLVGRY-YELBRN-GRYBRN; SFT-PASTY; W HYDRATED; G SOLUB; G ADHESION/COHESION; N-SLI CALC, RR CALC FRAC FIL; OCC BCMG CLYSTN; SLI SLTY IP; TR DK CARB/ VOLCIC GRS; RR MASS PYR.

SURVEY @2804': 47' 19'AZI
TVD 2342' 1160'N 429'E

CLAY: LT-MED OLVGRY-YELBRN-GRYBRN; SFT-PASTY; W HYDRATED; G SOLUB; G ADHESION/COHESION; N-SLI CALC, RR CALC FRAC FIL; OCC BCMG CLYSTN; SLI SLTY IP; TR DK CARB/VOLCIC GRS; OCC MASS PYR.

CLAY: LT-MED OLVGRY-YELBRN-GRYBRN; SFT, PASTY-PLASTIC NODULES; W HYDRATED; G SOLUB; G ADHESION/COHESION; N-SLI CALC; OCC BCMG CLYSTN; SLI SLTY IP W/ SCAT OLVGRY, FRM SLTST FRAGS; TR DK CARB GRS; OCC FRAMB PYR.

SURVEY @2899': 46' 19.6'AZI
TVD 2407.5' 1226'N 452'E

CLAY/CLAYSTONE: LT-MED OLVGRY-YELBRN-GRYBRN; SFT-SLI FRM, PASTY- PLASTIC NODULES; W HYDRATED; G SOLUB; G ADHESION/ COHESION; N-SLI CALC; OCC BCMG CLYSTN; SLI SLTY IP; OCC SLTST/ TUFFACEOUS FRAGS; TR DK CARB GRS; OCC FRAMB PYR.

CLAY/CLAYSTONE: LT-MED OLVGRY-YELBRN-GRYBRN; SFT-SLI FRM, PASTY-PLASTIC NOD; W HYDRATED; G SOLUB; G ADHESION/COHESION; N-SLI CALC, TR CALC XTL; TR VFN SS; OCC SLTST/TUFFACEOUS FRAGS; TR DK CARB GRS; OCC FRAMB PYR; VRR FOS (FORAMS).

SURVEY @2995'; 47.1' 18'AZI
TVD 2473.5' 1292'N 474'E

CLAY/CLAYSTONE: LT-MED OLVGRY-YELBRN-GRYBRN; SFT-SLI FRM, PASTY-PLASTIC NOD; W HYDRATED; G SOLUB; G ADHESION/COHESION; N-SLI CALC, SLI INCR CALC XTL/ FRAC FIL; SLI SLTY IP; TR VFN SS; OCC SLTST/TUFFACEOUS FRAGS; TR DK CARB GRS; OCC FRAMB PYR; VRR FOS FRAG(SHELL).

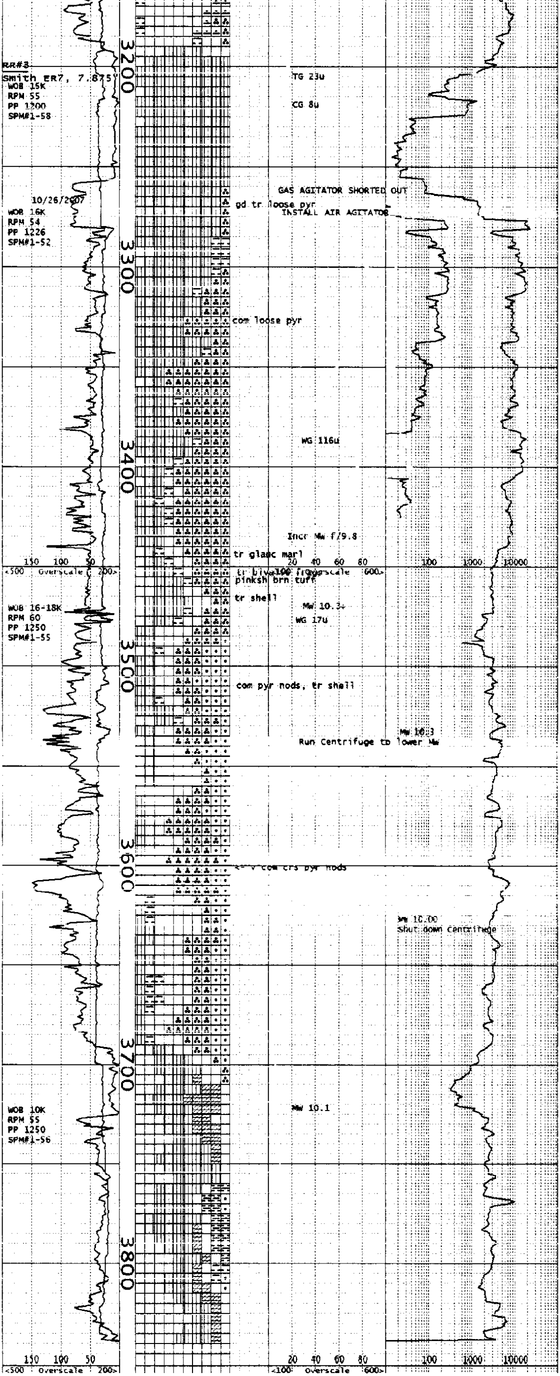
MW CUT BACK TO 9.4, ADD BAR.

SANDSTONE: LT GRY -WHT; VFN-MED W/TR LOOSE VCRSU; SBANG; PRED FN-MED QTZ/FSPR W/LOOSE CRS-VCRS VOLC LITHICS; CALC; APPRS TIGHT; GD TR GLAUC F/3080'

CLAY: LT OLV GRY, PL BRNSH GRY; THICK, PASTY CONSISTENCY; MODLY SOLU; GD ADHESION; SILTY I/P; SCAT LOOSE ANHDRL PYR;

SURVEY @3090', 46.8' 17.3 AZI
TVD 2538, 1358N, 495E VS 1445

SANDSTONE: PERSISTENT IN SPLS; WHT-LT GRY; PRED VFN-FNU W/SME LOOSE MED TO VCRSU; SBANG; TIGHT W/CALC CMT; SPTY VOLC LITHICS



CLAYSTONE: LT OLV GRY; SFT, PASTY CTGS; SILTY I/P; WKLY CALC; TR VFN CARB DEBRIS; RR FORAM.

BIT TRIP @ 3203'

BASALT: BLUISH-GRY ASH W/COM MICRO, SBHDRL PYR & CALCITE OVERLIES GRYBLACK-BRNBLK APHANITIC BASALT; HD-DNS; IRREG -SBBLKY; UNWEATHERED; COM CALC XTL W/ DISEMM PYR FRAC FIL; TR PLAG LATH; OCC TUFF/RHYOLITE FRAGS.

NOTE: ELEC GAS TRAP SHORTED

BASALT: CRS FRAGS OF BLUISH-BLK BASALT COMPRISE 99% OF SPL THRU DRILL BREAK F/3257 - 3281'; GD INCR LOOSE ANHEDRAL PYR, RR SS.

MUDSTONE: YEL-BRN, TR OLV; FIRM, WAXY TUFFACEOUS; TR LOOSE PYR.

SANDSTONE: YELSH WHT; VFN-FNU; SBANG; LO-MOD SPHER; WL SRTD; MOD INDUR W/CALC CMT; APPRS ARKOSIC W/TR PL GRN LITHICS; MINOR RDSH-BRN BIOT MICA

BASALT: GRYSH BLK, SME BLUISH; HD, TOUGH; SME SPARKLE F/MICRO-LATHS; COM CALCITE VEIN/FRAC FILL; BASALT PROB SLOUGHIN OVER SS; NO LOOSE SAND, ONLY SS.

SANDSTONE: YELSH WHT, CLOUDY; VFN - MEDU, PRED FN; SBANG; LO SPHER; MODLY INDUR, V CALC; ARKOSIC W/COM BIOT, CHLOR, TR MUSCO; TR PYR NODS; NOTE- INCR AMNTS STICKY CLAY ON SHKR, BCMNG % OF BULK SPL.

MW 9.7 - 9.9 VIS 43

SANDSTONE: WHT, CLOUDY, OPAQUE; VFN-MED W/TR CRS, CRSN DOWN? SBANG; LO SPHER; MODLY SRTD; MOD INDUR, V CALC; ARKOSIC W/ SPTY MICAS; FN-MED ANHDRL PYR NODS.

TUFF: V PL BRN, SLI PNKSH HUE; FIRM, BLOCLY CTGS; MATT LSTR; OCC CTGS EXHBT MICRO XTLS

SANDSTONE: CLOUDY WHT; VFN-MED, INCR LOOSE MED GRAINS; SBANG; LO SPHER; MODLY SRTD; MODLY INDUR; CALC CMTD; APPRS SLI INCR PORS; ARKOSIC W/SPTY MICAS, PRED MUSCO & BIOT; COM ANHDRL PYR NODS; CONT'D BASALT SLOUGH; TR PL BRN TUFF.

TUFF: PL BRN, SUBTLE PINKSH HUE EARTHY-MATTE LSTR; APPRS SILTY IN MICRO; COM AS RNDD OR BLOCKY CTGS; SPTY CLR FSPR XTLS, OCC APPRS VESICULAR AS XTLS ARE ABSENT; OCC WKLY CALC; PERSISTENT BASALT FRAGS IN BULK SPL; INCR PASTY SOLU CLAY.

SANDSTONE: CLOUDY WHT; VFN TO MEDU; ANG TO TR SBRND, PRED SBANG W/LO SPHER; MODLY INDUR, V CALC; ARKOSIC W/SPTY MICA; COM LOOSE FN-CRS ANHDRL PYR NODS; OCC GRN & GRY LITH CLASTS

NOTE: PERSISTENT HEAVY BASALT SLOUGHING IN BULK SPL; % UNDER-LOGGED.

CLAY: OLV GRY, YELSH BRN WHEN WASHED; THICK PASTRY CONSISTENCEY; MODLY SOLU; TR YEL-BRN MDST ASSOC W/INCR PASTY CLY.

SANDSTONE: CLOUDY WHT, TRNSL, VLT GRY; VFN TO MEDU; ANG TO TR SBRND, PRED SBANG W/ LO SPHER; MOD CONSOL; V SLI-MOD CALC; OCC OVRGRWTH; ARKOSIC W/SPTY MICA; COM LOOSE FN-CRS ANHDRL PYR NODS; OCC GRN-GRY LITH CLASTS; TR CHLOR.

BASALT: GRYBLACK-GRNBLK; HD-DNS; IRREG-SBBLKY; APHANIC; UNWEATHERED; COM CALC XTL/FRAC FIL; OCC PLAG LATH; SCAT ANHDRL PYR; OCC VLT GRYWHT-BLUWHT ASH TUFF W/ CHLOR FILLED AMYG; VRR EPIDOTE; BCMG ANDESITE IP.

ASH TUFF:WHT, BLUWHT, GRYWHT, YELBRN-BRN; SFT-FRM; APHANIC-VFNXLN; IRREG; SLI CALC W/ SCAT CALC XL/FRAC FIL-LAM; FREQ PLAG GRS; TR FRAMB PYR; TR CHLOR NOD/ FILLED AMYG; SME WELDED VOLCIC SANDS.

SHALE: MDK-DK BRN-YELBRN; M-V FRM; IRREG-SBPLTY; SBPHYLLICRTHY; N-V SLI CALC; SLI SLTY IP; BEDDED; COM DISEMM PYR.

BASALT: GRYBLACK-GRNBLK, DK BLUGRY-BLUBLK; HD-DNS; IRREG; SPARKLING-APHANIC; UNWEATHERED; COM CALC XTL/FRAC FIL; OCC PLAG LATH; SCAT ANHDRL PYR; OCC VLT GRYWHT-BLUWHT ASH TUFF W/ CHLOR FILLED AMYG; OCC ANDESITE IP.