COPP

EPOCH
WELL LOGGING, INC.

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Geothermal Presentation

☒ *Formation Log*
☐ *Drilling Dynamics Log*
☐

LOG INTERVAL

DEPTHS:	908′	**TO**	9200′
DATES:	9/17/95	**TO**	11/9/95
SCALE:	1" = 50′		

MUD TYPES

Gel/Water-Low Solids	**TO**	9200′
	TO	
	TO	
	TO	

CASING DATA

30"	**AT**	110′
20"	**AT**	905′
13 3/8"	**AT**	4199′
9 5/8" SL	**AT**	9185′

HOLE SIZE

36"	**TO**	110′
26"	**TO**	908′
17.5"	**TO**	4203′
12.25"	**TO**	9200′

COMPANY:	**C E C I**
WELL:	**Newberry #86-21**
FIELD:	**Newberry KGRA**
REGION	**Cascade Range**
COORDINATES:	1000′N & 200′W of SE corner SEC 21,T21S,R12E
ELEVATION:	6262′ GL 6295′ KB
County/State:	Deschutes, Oregon
API Index:	
Spud Date:	8-25-95
Contractor:	Nabors
Co. Rep.:	S. Hopkins/R. Lemon
Rig/Type:	Rig #58/triple
Logging Unit:	29

ABBREVIATIONS

NB	*NEWBIT*	**MW**	*MUD WEIGHT*	**PR**	*POOR RETURNS*
RRB	*RERUN BIT*	**VIS**	*FUNNEL VISCOSITY*	**LC**	*LOST CIRC.*
CB	*CORE BIT*	**PV**	*PLASTIC VISCOSITY*	**CO**	*CIRCULATE OUT*
TG	*TRIP GAS*	**YP**	*YIELD POINT*		

SG	*SURVEY GAS*	**FL**	*FLUID LOSS*
WG	*WIPER GAS*	**CL**	*PPM CHLORIDE ION*
CG	*CONNECTION GAS*	**Rm**	*MUD RESISTIVITY*
WOB	*WEIGHT ON BIT*	**Rmf**	*FILTRATE RESISTIVITY*
RPM	*ROTARY REV/MIN*	**LAT**	*LOGGED AFTER TRIP*
PP	*PUMP PRESSURE*	**LAS**	*LOGGED AFTER SURVEY*
SPM	*STROKES/MIN*	**NR**	*NO RETURNS*

Geologists: Dave Serr, Bruce Vesterby
Anthony DiCenso

MINERAL PERCENTAGE

< 1%	1-3%	4-6%	7-9%	> 10%
┆	┆	│	│	┃

- ▦ BASALT
- ▤ VESICULAR BASALT
- # ANDESITE
- ▨ DACITE
- ▨ RHYDACITE
- ▨ RHYOLITE
- ◪ OBSIDIAN
- ▢ PUMICE
- △ SCORIA
- 🟥 ASH
- ▢ TUFF
- ☒ ASH-FLOW TUFF
- ▢ WELDED TUFF
- ▢ LAPILLI TUFF
- ▯ FELSITE
- ▨ ALTERED ZONE
- ▩ HORNFELS
- 🟥 DEBRIS FLOW
- ☒ TUFFACEOUS SEDS
- ⊞ GRANITE RX
- ▩ CLAY

ALTERATION - TYPE

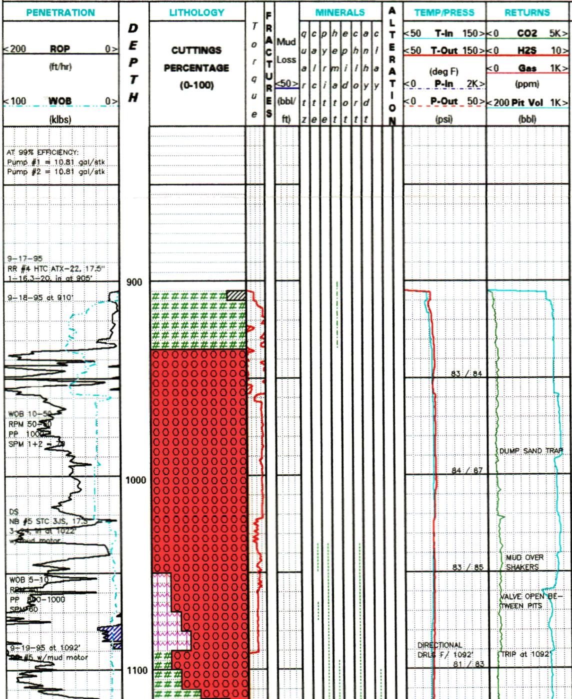
- SA SILICIC
- S SERICITIC
- K ARGILLIC
- ADVAN. ARGILLIC
- PROPYLITIC
- C CHLORITIC

ALTERATION - INTENSITY

WEAK	MODERATE	STRONG
┆	│	┃

EPOCH WELL LOGGING, INC.

Company : CECI   Well : NB #86-21   Location : Newberry, OR   Date : 11-9-95   Page No.: 1



REMARKS

Lithology Descriptions
Mud Reports
Survey Data
Other Information

ALL DEPTHS ARE MEASURED FROM K.B. AND ARE BASED ON DRILLER'S PIPE TALLY. ALL LITHOLOGY, TEMP OUT AND GAS SAMPLES ARE LAGGED TO THE PROPER DEPTH, LITHOLOGY COLORS ARE REFERENCED TO THE G.S.A. ROCK COLOR CHART.

ALL GAS DETECTION EQUIPMENT IS CALIBRATED TO S.P.W.L.A. STANDARDS. TRIP, WIPER AND CARBIDE GASES ARE REPORTED AS PEAK READINGS, CO2 INSTRAMENT IS CALIBRATED AT AMBIENT BASELINE = 300ppm

BEGIN LOGGING FROM 20" CASING SHOE SET AT 905' ON 9-17-95, DRILL OUT SHOE TO 910', RUN LEAK OFF TEST, NO GOOD, PUMP CMT PLUG AND SQUEEZE, WOC, DRL OUT TO 915', CHECK FOR FLUID LOSS, DRILL AHEAD

ANDESITE = MED TO DK GRY; RR REDISH/BRN CTTNGS; SHARP ANG CTTNGS; APHANITIC/CRYPTOXLN MASS TEX; TR-RR SUB-EUHED MICRO FLDSPR, NON ORIENTED.

DEBRIS FLOW = MULTI CLRD F/935' TO 960'; MNR LT YELISH GRY NON SOL CLAY AND RED SOL CLAY IN MTX; UNCONSL; POORLY SORTED; ANG TO SBRND LAPILLI OCC TO 1"; PRED ANDESITE/BASALT, COMLY VES; LESSER AMTS RHYODACITE + TUFF; COM FE OXDTN IN UPPER 25'; VIS DECR LAPILLI SIZE BELOW 960'.

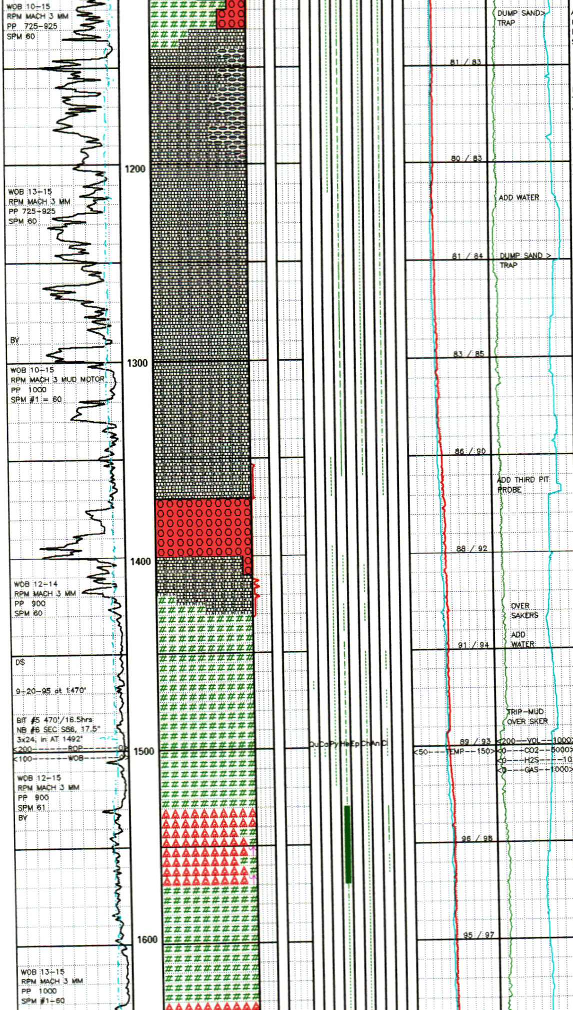
DEBRIS FLOW = PRED MED TO DK GRY W/MNR TO TR REDS, YELISH GRY, WHT + SBTRNSL GRS; UNCONSL; PRLY SRTD; ASH TO 1/2" LAPILLI; PRED ANDESITE/BASALT + BASALTIC SCORIA; ANG TO SBRND; LESSER AMTS LT CLR RHYODACITE + TUFF; OCC TR FE OXDTN ON SM SURFACES.

SURVEY: 997', 2.25 DEG, N76W, TVD 996
POOH FOR DIRECTION TOOLS AT 1022'.

MW 9.0 VIS 49 PV 10 YP 40
GELS 20/30 FIL 28 CT 2/32 SOL 4.8
SD 1.5% pH 12.0 Cl 300 Ca TR

DEBRIS FLOW = LT GRY-MED DK GRY, W/PALE GRN & TAN; UNCONSL; PRLY SRTD; RNDD-ANG CTTNGS; MIXED APHAN BSLT, ANDESITE & DACITE FRAGS, 10-20% BLK ANG BSLT LPLI; INCR AMTS SFT-FRM LT GRY-GRNISH GRY TUFF F/1050; SCAT RD FeOx SCORIA; SIGN INCR ASH/CLAY MTX F/1080-90; TR CHLOR + PYR ASSOC W/ TUFF; LOC WK CALC.

TRIP TO CHECK MONEL @ 1092', NOT ROTATING DRILL STRING WHERE TORQUE DROPS OFF



ANDESITE = MED DK GRY, OCC RDISH BRN; HD; ANG CTTNGS; APHAN; DENSE; RR FSPR PHENOS; TR CLAY FILLED AMYGS; TR TRANSU SMECTITE; FeOx ON SM SURFACES (BLOCKS?).

SURVEY: 1078', 2.75 DEG, N73W, TVD 1077
SURVEY: 1110', 2.50 DEG, N73W, TVD 1109

BASALT = MED DK GRY-DK GRY, SLI BRNISH TINT; HD, BRTTL; ANG IRREG NON TRNSLT CTTNGS; GEN APHAN, CRYPTOXLN; MNR CLR FSPR PHENOS & FN MICROLITES; VESICULAR & BRTTL GRDG TO DENSE NON-VESC @ 1210; 10% ANDESITE PORPH @ 1160'; 10-20% TUFF @ 1170-90; COM BLU CLAY/PUMPELLYITE LINED VESC W/ OXIDIZED RIMS TO 1170'; COM TRANSLU SMECTITE FILLED AMYGS 1170-1210; TR PYR & PALE BRASS SULFIDES; NON CALC.

SURVEY: 1141', 1.75 DEG, N70W, TVD 1140
SURVEY: 1171', 1.00 DEG, N62W, TVD 1170

BASALT = MED DK GRY-DK GRY, SLI BRNISH TINT; HD, BRTTL; ANG IRREG, NON TRNSLT CTTNGS; GEN APHAN, CRYPTOXLN GRNDMASS; MNR CLR FSPR PHENOS & MICROLITES; 20-40% VESC TEX; 10% ANDESITE PROPH; COM CHLOR & SMECTITE FILLED AMYGS; OCC SFT BLU CLY LINED VESC; COM LOC HEMA ALTRN, ABNT WHERE VESC AT 1250-90; LOC KAOLTZN; TR PYR; NON CALC.

SURVEY: 1203', 0.75 DEG, N03W, TVD 1202
SURVEY: 1232', 1.00 DEG, N40E, TVD 1231
SURVEY: 1262', 1.00 DEG, N60E, TVD 1261
SURVEY: 1294', 1.25 DEG, S70E, TVD 1293

BASALT = MED-DK GRY, SLI GRNSH TINT, OCC REDISH BRN; HD, BRTTL; ANG IRRG 1-16mm CTTGS @ SHAKER; NON TRNSLT EDGES; MASS; PRED APHAN, CRYPTOXLN GRNDMASS; MNR CLR FLDSPR PHENOS; 10-20% SPHER VESC TEX; 10% ANDESITE PORPH; COM SMECTITE + CHLOR FILLED AMYGS; TR SFT BLU CLAY FILLED VESC; TR CHLOR PSMORPHS AFTER PX; MNR LOC HEMA ALTRN OF GRNDMASS.

SURVEY: 1325', 2.00 DEG, S60E, TVD 1324
SURVEY: 1356', 2.75 DEG, S57E, TVD 1355
SURVEY: 1387', 3.50 DEG, S53E, TVD 1387

DEBRIS FLOW = PRED MED GRY W/MNR REDS, TR GRNS + TAN; UNCONSL; PRLY SRTD; ANG-SBRND CTTNGS; MIXED APHANITIC + VESCULAR BASALT, LESSER ANDESITE, RHYODACITE + WELL CONSOL TUFF; COM WTHRD SURFCES W/ HEMA, LOC CHLOR ALTRN ASSOC W/ TUFF.

MW 9.1 VIS 60 PV 10 YP 38
GELS 30/40 FIL 28 CT 2/32 SOL 5.6%
SD .75% pH 11.5 Cl 250 Ca –

BASALT = MED GRY DRY; V HD; ANG IRREG CTTNGS 1-15mm; DULL; APHAN CRYPTOXLN GRNDMASS; TR CLR FLDSPR PHENOS; V FRESH APPR; RR MICRO DISEM + VNG PYRITE.

SURVEY: 1447', 5.00 DEG, S56E
POOH AT 1492' AND CHANGE BIT.

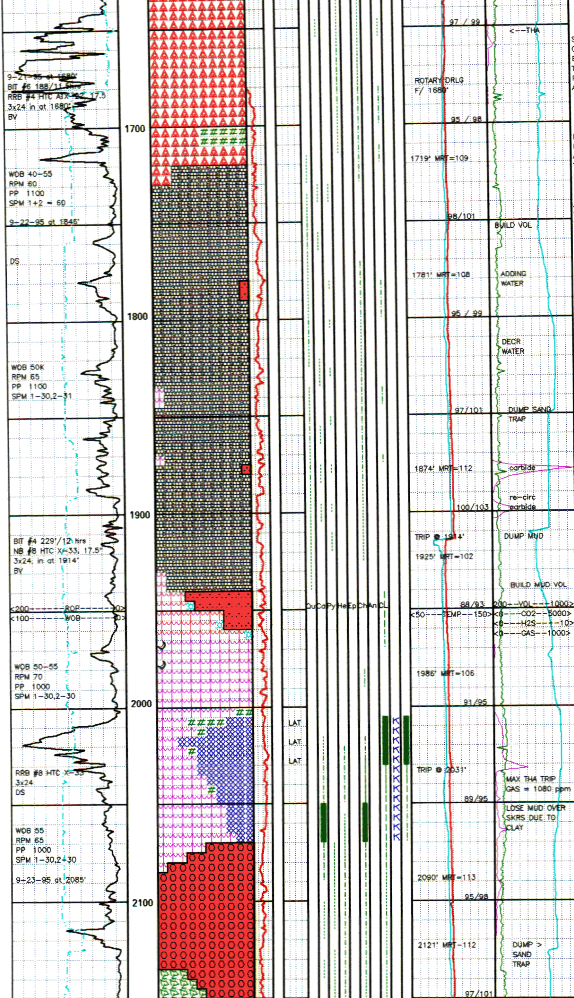
ANDESITE = DK BRNISH GRY; V HD; ANG CTTNGS; APHAN, CRYPTOXLN GRNDMASS; DENSE TR VESC & AMYGS; LOC 5% 1mm CLR FSPR PHENOS, TR GRN PX; TR EXTRM FN BLK OPQ MNRL (MAG); TR LOC ARGILLIC ALTRN; COM KAOLZN F/1450-80 W/30% DULL CHALKY APPR; OCC CHLORTZD FSPR PHENOS & BLOTCHY CHLOR ALTRN OF GRNDMASS; < 1% CHLOR+CLY AMYGS; TR LOC TO STRNG HEMA ALTRN @ 1480-90'; TR PYR+OPAL ALONG FRAC SURF.

SCORIA = REDISH BRN; SLI TO MOD HD; PRED ANG IRREG CTGS W/OCC SBRND LAPILLI FRAGS APHAN CRYPTOXLN; DEVIT GLSSY MTX ALTD TO SOL RED CLAY AT TOP; MNR EUHED FELDSPAR PHENOS; MOD VESCULAR W/BLU CLY FILL; TR CLR, ORTHO, TABULAR MNRL (PREHNITE?) ON ON LAPILLI SRFC; TR GRN/BLU-GRN OPAL.

SURVEY: 1479', 5.75 DEG, S61E, TVD 1478
SURVEY: 1509', 6.50 DEG, S63E, TVD 1508
SURVEY: 1541', 6.75 DEG, S72E, TVD 1539

ANDESITE = MED GRY W/COM BRN + GRN TINT; HD-V HD; IRREG ANG CTTGS; APHAN, EQUIGRN GRNDMASS W/OCC EUHED FLDSPR PHENOS; TR HD WHT MNRL ON CTTG SRFC; RR HEMA OXDTN; SLI LOC CHLRTZN; NON VESC; FRESH APPR OVERALL.

MW 9.2 VIS 49 PV 15 YP 14
GELS 5/34 FIL 23.2 CT 2/32 SOL 6.3%
SD .75% pH 10.5 Cl 225 Ca 40



SURVEY: 1604', 8.00 DEG, S79E, TVD 1602
SURVEY: 1635', 8.75 DEG, S80E, TVD 1632

SCORIA = DK GRNISH GRY TO DK GRY, BLK W/ OCC BRN TINT; FRI, BRITTL; 85% VESC BASALT SCORIA, 10% NON-VESC ANDESITE, 5% TUFF FRAGS + SOL GRY CLAY; BASALT SCORIA FRESH APPR; ANDESITE LOC HEMA + CHLOR ALTRN OF PX; TR WHT CLY LINING VESC.

NOTE = POOH @ 1781', LAY DOWN MUD MOTOR AND REAM DIRECTIONAL RUN + DRILL AHEAD.

BASALT = MED DK GRY W/10-20% MED GRY; V HD; ANG IRREG CTTNGS W/NON TRNSLT EDGES; APHAN, PRED CRYPTOXLN GROUNDMASS (97%); TR CLR SB-EUHEDRAL FLDSPR PHENOS; VERY FRESH APPR OVERALL; LOC CHLR FILLED BLEBS; RR V FN SBHED PYR; BASALT LOCLY INTRBD W/LT GRY ASH; NOTE DRILL RATES; ASH GEN < 10% OF SMPLE WHEN PRESENT; SFT V FN GR W/CLY MTX TO MOD HD SLI SILIC; VIS CLY ALTRN.

SURVEY: 1719', 9.50 DEG, S73E, TVD 1715
SURVEY: 1781', 9.75 DEG, S79E, TVD 1776

MW 9.1 VIS 46 PV 14 YP 20
GELS 4/15 FIL 19.8 CT 2/32 SOL 5.6%
SD 1/4% pH 11.0 Cl 275 Ca 40

BASALT = DK GRY-GRHISH BLK; HD; IRRG ANG CTTNGS; APHAN. CRYPTOXLN GRNDMASS; DENSE NON-VESC; 1-5% 0.5mm CLR SUBHED-EUHED PLAG PHENOS; TR V FN ANHED MAFIC PHENOS (Px/OLVN?); OVERALL FRESH UNALT APPR; LOC WAVY INTERNAL FEATURES INCLUDING DK BANDS & VIT STREAKS (FLOW BNDG?); OCC FRAGMENTAL APPR; 5-10% SILIC+CALC VUG FILL LOC CHLORTZD; TR SILIC MICROVNG; TR EXTRM FN SULFIDES ASSOC W/ VNG; TR OPEN VUGS W/OPAL; 0-10% LT GRY ANDESITE TUFF W/ARGILLIC ALTRN; 0-5% LITHIFIED WHT ASH; SILIC VUG FILL COMLY BOTRY APPR W/ ORG DISCOLORATION.

CARBIDE LAG @ 1879', 37.8 min/2310 stks
500cc, 1-30, 2-31, 12m DUR, 102% THEOR

SURVEY: 1874' 9.25 DEG, S78E, TVD 1868
SURVEY: 1925' 10.00 DEG, S75E, TVD 1919

NOTE = POOH @ 1914' FOR NEW BHA + BIT.

TUFF = LT-MED GRY W/SLI GRN + BRN HUE; SLI TO MOD HD; IRREG ANG CTTNGS; PRED V FN GR ASH W/10-20% CLAY MTX AT TOP GRDNG TO XL LITHIC TUFF W/DEPTH; 4-8% FLDSPR PHENOS + 6-12% BLK + BRN MAFIC PHENOS W/80-90% GLASSY MTX; ABNT TO 50% DK GRY ANG BASALT CTTNGS IN SMPL AS LITHICS, OCC IN CONTACT W/TUFF; 0-15% BLK SLI RND OBSIDIAN LITHICS; COM ABNT PUMICE SHARDS COMLY ALTRD TO CLAY; OCCLY W/V LT GRN TINT, WKLY CHLRTZD; TR LOC ALTN OF FLDSPR TO KAO; SLI WELD/FLOW FABRIC @ 1910' W/DECRS CTTNG SIZE.

SURVEY: 1986' 11.50 DEG, S76E, TVD 1979

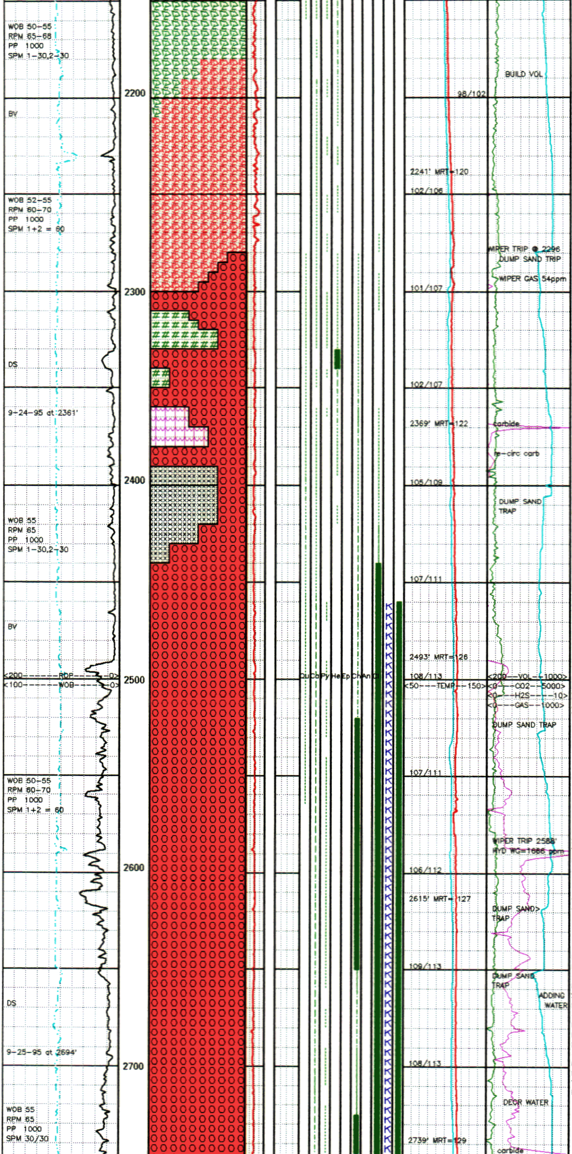
MW 9.2 VIS 62 PV 30 YP 9
GELS 3/22 FIL 17 CT 2/32 SOL 6.3%
SD 0.75% pH 10.5 Cl 175 Ca –

POOH @ 2031' AND CHANGE BHA. 30' OF SAMPLE LEFT IN HOLE, LOG AFTER TRIP.

ARGILLIC ALTERED TUFF = MED BRNISH GRY OVERALL, INDIVD CTTGS BLK, DK BRN, PALE GRN, LT GRY; SFT FRI TUFF & DK BRN WELDED TUFF; 40-60% LT BRN/LT GRY GRITTY CLAY COMPONENT, EASILY HYDRATED; HIGHLY KAOLZD F/2005-2030' BECOMING FIRMER AT 2030' W/INCR CHLORTZN; STRNG CLORTZN OF ASHY MTRX MATRL F/2050-70'; COM LOOSE WHT CALC VN FRAGS, ABNT @ 2050-70.

SURVEY: 2090', NO GOOD.

DEBRIS FLOW: MED BRNISH GRY W/ SLI LAVNR HUE OVERALL; MULTI-COL FRAGS UNDERSCOPE, BLK, GRY, PALE GR, DK GRN, RD, BRN, TAN WHT; SHARP ANG CTTNGS, CTTNG SZ 1-6mm; HD, WELL INDURATED W/SFTR ASH/CLAY FRAGS ASSORTMENT OF VOLCANICLASTIC MATERIAL PRED ANDESITE & INCLUDING BSLT, GRN CHLORTZD TUFF, SFT WHT ASH, WELDED TUFF, HILY HEMA ALTERED ANDS, DACITE, PUMICE & WHT & GRY MICROXLN SILIC FRAGS; WK-MOD CHLORTZN OF TUFF FRAGS; VAR DEG ARGILLIC ALTRN ASSOC W/WHT ASH; HEMA APPR PRE-DEPOSITIONAL, VAR DEG HEMA ALTR BETWEEN



CTTNGS; COM FN LOOSE CALC FRAGS F/2070-90', TR FN DISM PYR; TR BLU CLY.

SURVEY: 2121' 11.75 DEG, S73E, TVD=2111

RHYOLITE = WHT-MED GRY, LOC RDISH TINT; COL MOTLG + BNDG; HD; V SHARP ANG CTTGS; APHAN, CRYPTOXLN GRNDMASS; LOC 5% CLR AN-EUHED FSPR PHENOS, OVERALL <5% FSPR; V SILIC, OCC SLI SBTRNSL GRNDMASS; OCC <1% IRREG SHAPED OPEN VESC; TR CLR LOOSE CALC FRAGS; OCC SPOTTY HEMA; TR DISM PYR

SURVEY: 2241' 11.25 DEG, S71E, TVD 2228

RHYODACITE = V LT-MED GRY CTTNGS, COMLY MTTLD; V HD; V SHARP ANG CTTNGS; APHAN W/<1% FLDSPR PHENOS; GLASSY-DEVIT GRNDMASS; NON VESC; MNR LOC HEMA; TR LOOSE CLR V FN-FN XLN CALC; RR PYRITE.

MW 9.2 VIS 55 PV 22 YP 6
GELS 3/10 FIL 14.3 CT 2/32 SOL 6.3
SD 1/3% pH 10.0 Cl 200 Ca TR

NOTE = WIPER TRIP @ 2296'

DEBRIS FLOW = PRED LT MED TO MED GRY W/ MNR GRNS, RED + BLK; HD-V HD; SHARP ANG IRREG CTTNGS; PRED LITHIC 70% RHYODACITE 20% DACITE; 10% ANDESITE + BASALT; LITH FRAGS OCCLY COATED W/HEMA &/OR CHLOR; TR CONSOL GRNY MTX MTRL; RR CALC VNG + DISSEM PYR.

ANDESITE = MED GRY; SHARP ANG CTTNGS; V HD; APHAN, CRYPTOXLN GRNDMASS; 3% FN SUBHED FSPR PHENOS; SLI CHLOR FN MAFIC PHENOS; NON-VESC; NO INTRNL FLOW FEATURES; TR CALC VN FILL; TR SPOTTY CHLOR.

CARBIDE LAG @ 2370' 41.4 min/ 2650 stks
500cc, #1-32, #2-32, 13m DUR, 99% THEOR

SURVEY: 2369' 11.50 DEG, S69E, TVD=2354

DEBRIS FLOW = DK BRNISH GRY W/ LOC GRN & RD; HD-V HD, WELL SEALED; PRED COMPSD OF BASLT + ANDS; 40-60% WELDED TUFF F/2360-(VOLCANIC BRECCIA); MNR SILICA + SMEC + CALC VN & VUG FILL; MNR CHLOR ASSOC W/ TUFF; MNR LOC HEMA STAINING; BASALT UNIT APPR TO BE FLOW; NON COATED FRAGS.

DEBRIS FLOW = LT-MED GRNISH GRY COMLY MOTLD; SLI HD, BRTTL; IRREG ANG-SUBRNDD CTTNGS; VAGUE FN GRAINY TEX W/ SCAT LGR DK LAPLI FRAGS; COMLY INDIST TUFF GR BNDRS; REXLN ASH/TUFF MATRL; COM SILICA + CLY FILLED VUGS OCC OPEN; MNR CLAC VUG FILL; THIN CLR QTZ VNG; SUB TRANSLU ON THIN EDGES; PROB SMEC CLY RICH.

SURVEY: 2493' 11.00 DEG, S70W, TVD 2475

DEBRIS FLOW = LT-MED LT GRNISH GRY TO 2520', BECMNG LT-MED GRYISH GRN; SFT-SLI FRM; PRED CLAY 50-80%, LITHICS/ TUFF 45% LAVA <5%; DECRS CLY SOL NOTEABLE @ 2520' & 2540'; MOD STKY @ 2540'; TUFF LITHICS MOD CONSOL TO WELDED; LOC QTZ + CLY FILL VUGS; FLOW LITHICS NON VESC; COM CHLOR ALTRN OF CLAY MTX MTRL; COM LOOSE CLR V FN TO FN GR CALC; RR MASS MICRO PYRITE ON TUFF FRAGS; NO FLOW LITHICS @ 2490'; POSS ALTRD TUFF/ASH BED; NOTE GAS + DRL BREAK.

MW 9.1 VIS 53 PV 22 YP 8
GELS 3/5 FIL 14.0 CT 2/32 SOL 5.5%
SD Tr pH 10.0 Cl 150 Ca Tr

NOTE = WIPER TRIP TO SHOE @ 2588'.

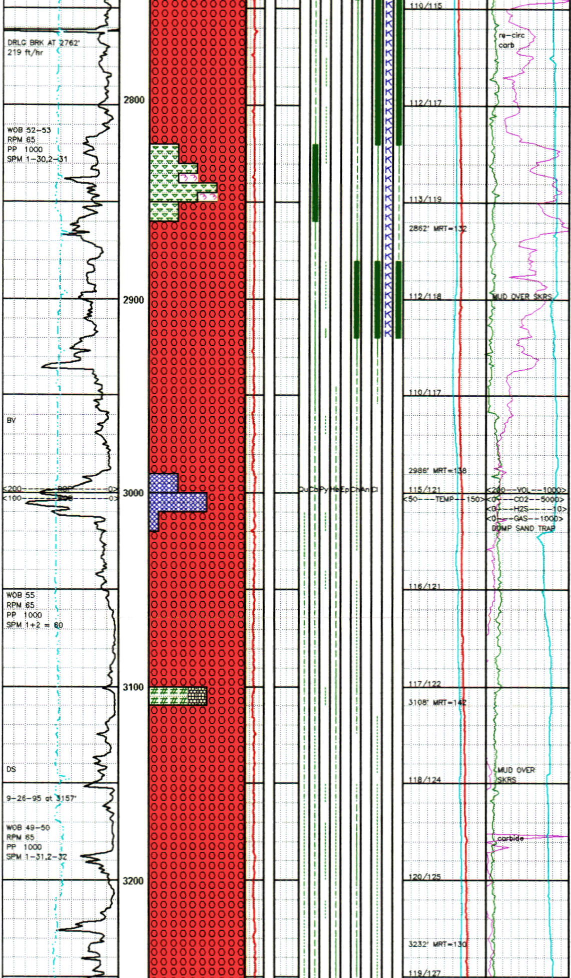
DEBRIS FLOW = PRED LT MED GRNISH GRY W/ MNR LT-MED GRY, TR DK GRN, RR RED; SFT-SLI FRM; PRED CHLRTZD CLAY >50%; DOM TUFF & CONSL ASH, V FN GR TO 3mm, ANG-SL RND; COM SPHER & ELONGGATED LSE CLR-MLKY upper CRS QTZ GRS, NO INCLUSION; RR ANG F GR QTZ W/WHT INCLUSIONS; FLOW LITHICS <5% LT-MED GRY ANDESITE, BASALT & RYOLTE COM LOOSE CLR F-MED GR CALC; STRNG CHLTZ OF CLAY & GRNDMASS OF TUFF/ASH; LOC RR MASS PYRITE COATING LITIC FRAGS.

SURVEY: 2615' 11.5 DEG, S69E, TVD=2595

DEBRIS FLOW = PRED LT MED GRNISH GRY W/ MNR LT MED GRY; SFT-FRM; GEN RNDD ABRAIDED CTTNGS; FN ASH/CLY TO PEB+ SZ GRS; PR SRTD; VAR AMTS OF ASSORT LITHIC MTRL SUSPENDED IN ASHY MTX; ABNT DEVIT TUFF; LITHICS INCLUDE BSLT, ANDS, RHYO, HD SILIC TUFF, ARGIL, WELDD TUFF, XTL TUFF & PUMICE; LITHICS GEN < 10-15% OF TOTAL MASS; PERV CHLOR ALTRN OF ASHY MTX; VAR DEG KAOLTZN OF MTX, ABNT TAN KAOL F/2660-2700 & SFTR; 20-30% SOL CLY RESULTING F/ BIT ACTION; TR WHT CALC VN FRAGS; LOC RNDD SMEC FILLED VESC IN ASH MTX; 7mm PUMICE CLAST @ 2720'; RR PYR ON LITHIC SURF & IN ASH MTX.

CARBIDE LAG @ 2743' 47.2 min/ 2880 stks
500cc, #1-30, #2-31, 16m DUR, 94% THEOR

SURVEY: 2739' 11.00 DEG, S68E, TVD=2717



DEBRIS FLOW = PRED LT MED GRNISH GRY W/ MNR LT MED GRY; SFT–FRM; GEN RNDD ABRAIDED CTTNGS; FN ASH/CLY TO PEB+ SZ GRS; SLI LESS DEVIT F/ABOVE; GEN DIST GR BNDR PR SRTD; FN–CRS ANG TUFF; VAR AMTS OF ASSORTD LITHICS 2–7mm SUSPENDED IN MTX; LITHICS INCLUDE BSLT, ANDS, RHYO, HD SILIC TUFF, ARGIL, WELDD TUFF, XTL TUFF & PUMICE; LITHICS GEN 5–10% OF TOTAL MASS; PERV CHLOR ALTRN OF ASHY MTX; VAR DEG KAOLTZN OF MTX, SFTR WHERE HIGHLY KAOLNZD; 20–30% SOL CLY RESULTING F/ BIT ACTION; TR WHT CALC VN FRAGS, BECOMING INCR CALCAREOUS F/2800' W/ CALC VN FRAGS LOC RNDD SMEC FILLED VESC IN ASH MTX; RR PYR IN ASH MTX.

SURVEY: 2862' 10.75 DEG, S68E, TVD=2838

CALCAREOUS TUFFACEOUS SEDIMENTS = LT BRNISH GRY; SLI FRM; FRI; SILT–MED GR TUFF & LITHICS; HIGHLY CALCAREOUS ASH/ SILT MTX; REXLN CALC; 20% WELDED TUFF FRAGS; ABNT MARLY CLAY OVER SKRS.

DEBRIS FLOW = PRED LT MED GRNISH GRY W/ MNR LT MED GRY; FRM; GEN RNDD ABRAIDED CTTNGS; FN ASH/CLY TO PEB+ SZ GRS; COM DEVIT FN TUFF; GEN DIST GR BNDRS; PR SRTD; FN–CRS ANG TUFF; VAR AMTS OF ASSORTD LITHICS 2–7mm SUSPENDED IN MTX; LITHICS INCLUDE BSLT, ANDS, RHYO, HD SILIC TUFF, ARGIL, WELDD TUFF, XTL TUFF & PUMICE; LITHICS GEN 30% OF TOTAL MASS; PERV CHLOR ALTRN OF ASHY MTX; GEN MNR KAOLTZN OF MTX DECR W/ DEPTH; DECR AMT SOL CLY OVER SHKRS RESULTING F/ BIT ACTION; HD WHT–LT GRY ASH F/2920–2940'

SURVEY: 2986' 11.25 DEG, S67E, TVD 2959

DEBRIS FLOW = LT GRY TO MED LT GRY W/COM WT, TR GRNS, REDS & BLKS; MOD HD–HD; GEN IRREG ANG–SBANG, MNR SBRND CTTNGS, 1–7mm IN SZ; W INDRTRD CLAY–upper FN SN W/ABNT >70% TUFF, WELD TUFF & XL TUFF LITHICS; GEN WHT TO LT GRY, HD; TR–MNR >20% RHYO–DACITE, BASALT & ANDESITE, LT GRY–BLK; LITH SZ PRO >10mm; V RR VIS CONTACT OF LITH FRAGS W/MTX MTRL; TR–MNR LSE CALC, INTRSL & VNG CALC; TR–MNR HEMA; RR MASS MICRO PYR; INCRS WELL INDURTD CLAY/CLAYSTONE @ 2990', NON CALC, NON FISSIL.

MW 9.2 VIS 44 PV 18 YP 9
gels 3/5 FIL 13.8 CT 2/32 SOL 6.3%
SD Tr pH 9.5 Cl 100 Ca 0

DEBRIS FLOW = LT–LT MED GRY 3000'–3050', SLI–MOD HD; IRREG ANG–SBANG, OCC SBRND; DOM WHT–LT GRY SILIC TUFF W/FLDSPR PHENO OCC SLI CALC MTX, MOD OVERALL BLEACHED APPR; BELOW 3060' DOM NON VESC BASALT & ANDESITE LITHICS APPROX 80%; PRED APHAN W/RR FLDSPR + PX PHENOS; MOD HEMA ALTRN INCRS TO STRNG HEMA ALTR BELOW 3100'; TR LOOSE CALC; RR MICRO PYR.

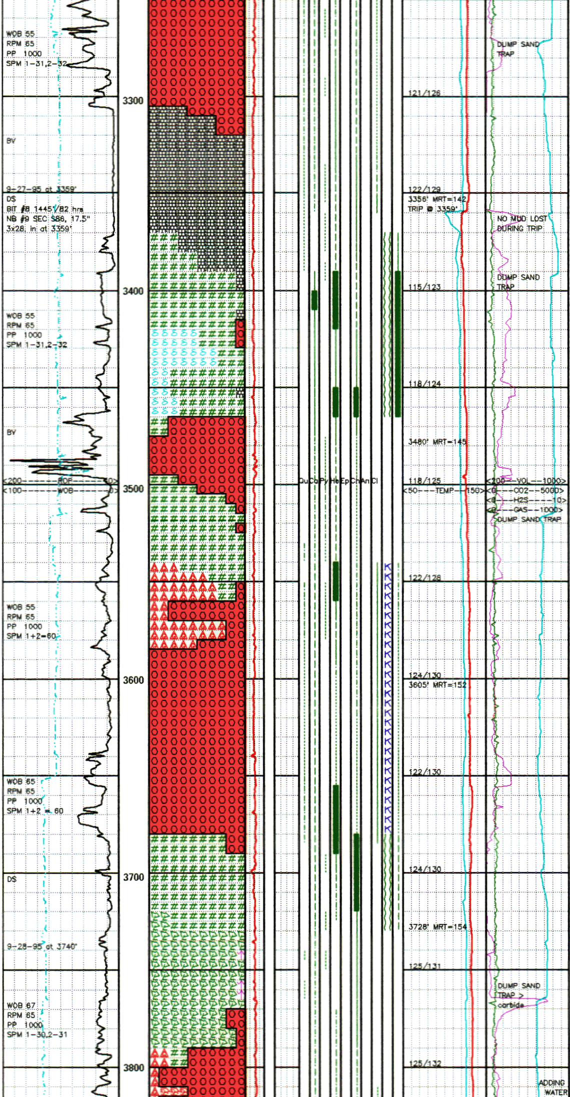
SURVEY: 3108' 11.00 DEG, S65E, TVD=3079

DEBRIS FLOW = MED–DK GRY & MED–DK GRYSH BRN BELOW 3100'; HD–V HD, WELL INDUR & TIGHT; IRREG ANG 1–7mm CTTNGS; FN ASH–GRV SZ LAPLI + INFERD FLOW BLOCKS; PR SRTD; GD DIST GR BNDRS; GEN 40–90% BSLT + ANDS W/MNR ASH/TUFF MTX TO 3130'; ABNT ASH/FN TUFF MTX BELOW 3130'; VAR SZ LITHIC; LITHICS INCLUDE BSLT, ANDS, RHYO, PUM, SCORIA, HD WHT ASH, & MED GRY LAMN ARGILLITE; HILY VAR DEG HEMA ALTRN BETWEEN LITHIC FRAGS W/OCC HEMA RIMS; WELL SEALED IN SILIC/CALC ASHY MTX; V MNR KAOL OR CHLOR ALTRN OF MTX; TR–MNR CALC VNS & VUGS; RR FN DISSM PYR IN MTX; INCR CHLORTZD MTX AT 3170'.

CARBIDE LAG @ 3175' 55.4m / 3490 stks
500cc, #1–31, #2–32, 12m DUR, 98% THEOR

SURVEY: 3232' 11.00 DEG, S68E, TVD=3201

DEBRIS FLOW = MED–DK GRY & MED–DK GRYSH BRN OVERALL; VAR COL BLK, GRNS & BRNS UNSCOPE; HD–VHD; WELL INDUR & TIGHT; IRREG ANG 1–7mm CTTNGS; FN ASH–GRV SZ LAPLI TUFF + INFERD FLOW BLOCKS; PR SRTD; GD DIST GR BNDRS; VAR AMTS ASH/ TUFF & LAPLI TUFF F/10–80% OF SAMPL; MIXED APHAN CTTNGS OF BSLT, ANDS & RHYO W/ VAR DEG HEMA ALTRN; OCC RD SCORIA, PUM & SILIC ASH; APPRS V TIGHT & WELL



SEALED IN SILIC/CALC ASHY MTX; NO VIS OPEN VUGS; MNR BLU-GRN CLY VUG FILL; TR-MNR CALC VNS & VUGS; V MNR KAOL ALTRN OF ASHY MTX; HEMA ALTRN ASSOC WITH LITHIC FRAGS & OCC HEMA RIMS; COM HILY CHLOR CTTNGS OF TUFF; 90% HILY CHLOR BSLT/ANDS AT 3200-10'; RR EXTRM FN DISSM PYR ASSOC W/ ASH/FN TUFF MTX.

DIABASE/BASALT = MED DK GRY-DK GRY OVERALL; 10% VAR COL BLK, GRNS & BRN SLUFF; HD-V HD; DOM IRREG ANG W/MNR-COM SBANG-SBRND ON UNCUT SURFS; 1-7mm CTTNGS; APHANITIC; EQUIXLN ANHED MICRO GRNDMASS 60% MAFICS-40% FLDSPR; OCC FLDSPR LATHS TO 1mm; SLI INTRSTL CALC, COMLY CRUMBLY ON EXPOSURE TO 10% HCL; PSEUDO MICRO BRECCIA TEX UNDER HIGH POWER SCOPE WHEN VIEWED WET.

TRIP FOR NEW BIT AND MAG BHA AT 3359'.

SURVEY: 3356' 11.00 DEG, S67E, TVD=3322

MW 9.4 VIS 70 PV 32 YP 26
GELS 5/12 FIL 11.8 CT 2/32 SOL 7.7%
SD 1/4% pH 9.5 Cl 100 Ca -

ANDESITE = DK REDISH BRN-MED GRY; HD; MTLD GRN/RD IRREG ANG CTTNGS; ALTRD APHAN CRYPTOXLN GRNDMASS; 1% SCAT ELONG PLAG LATHS TO 2mm; SBTRNSLU EDGES ON CTTNGS; HIGHLY HEMA ALTRD F/3390-3420'; PERV CHLOR ALTRN, LOC INTENSE; COM FN PIN-POINT CHLOR (RELIC MAFIC PHENOS?); COM CLR-WHT CALC VN FRAGS & VUGS; 5% LOC RNDD CALC/SMEC AMYGS; LG CLR CALC RHOMB @ 3410'; BLCHD ANDS (POSS TUFF) 3370-90' 10% APHAN BSLT FRAGS F/3450-60'.

DACITE = V LT-LT GRY; HD, BRTTL; SHARP ANG IRREG CTTNGS, W/HACKLY EDGES; APHAN, PSEUDO MICROXLN GRNDMASS; TR VIS CLR PLAG MICROLITES; COM SCAT PIN-POINT CHLOR SPOTS (RELIC FSPR PHENOS?).

SURVEY: 3480' 10.50 DEG, S65E, TVD N/A

MW 9.4+ VIS 55 PV 26 YP 18
GELS 4/6 FIL 11.8 CT 2/32 SOL 8.4%
SD 1/4% pH 9.5 CL 125 Ca N/A

DEBRIS FLOW = LT MED-DK GRY & REDISH BRN MNR AMTS RED, WHT & GRNS; SLI HD-HD; OCC V HD; IRREG ANG-SBRNDD, .5-7mm CTTNGS; DOM ANDESITE LITHICS IN CLAY-FN GR SNDY MTX; PRLY SRTD; LOCLY V WELL INDRTD W/ SILICA CMT; COMLY CALCIFIED MTX; MOD ALTRD OVERALL W/Fe Ox & CHLORTZN; COM LOOSE & VN CALC TO 1mm; LOC TR DISSEM PYRITE IN MTX; TR FRM WHT KAOLIN FRAGS.

ANDESITE = LT MED-MED GRY & REDISH BRN; OCC MULTI CLR DEBRIS FLOW & SLUFF; HD, TOUGH UN-PROBE; SHARP IRREG ANG CTTNGS F/1-7mm; APHAN, CRYPTOXLN GRNDMASS W/ TR PLAG LATHS TO 1mm; PRED FRESH UNALTRD APPR.

SURVEY: 3605' 10.00 DEG, S63E, TVD 3567

SCORIA = PRED REDISH BRN W/MNR MED-DK GRY ANDS & BSLT FRAGS; SLI HD-HD; IRREG ANG-SBRNDD CTTNGS; PRED VESC 30-50%; APPROX 50% VUGS FILLED W/CLAY &/OR SILCA V STRNGLY HEMATZD F/3540-3560'; CLAY-FN GR SAND SZ MTX, LOCLY MICRO BRECCIA & SILIC APPR; GRDNG TO DEBRIS FLOW APPROX 3580'.

DEBRIS FLOW = PRED MED-DK GRY; COM BRICK RED @ 3660'; SLI HD-HD; FRM-BRTTL/TOUGH UN-PROBE; PRED MED-DK GRY ANDS & DK GRY BSLT LITHICS IN SOL CLAY-HD SNDY/MICRO BRECCIA SILIC MTX; COM BRICK RED CLAY SILT/ASH FRAGS BEGNNG @ 3660', 10-15% OF SMPL; POSS MARKER BED, UN CALC, LOCLY IN CNTCT W/SLTY-SNDY MTX.

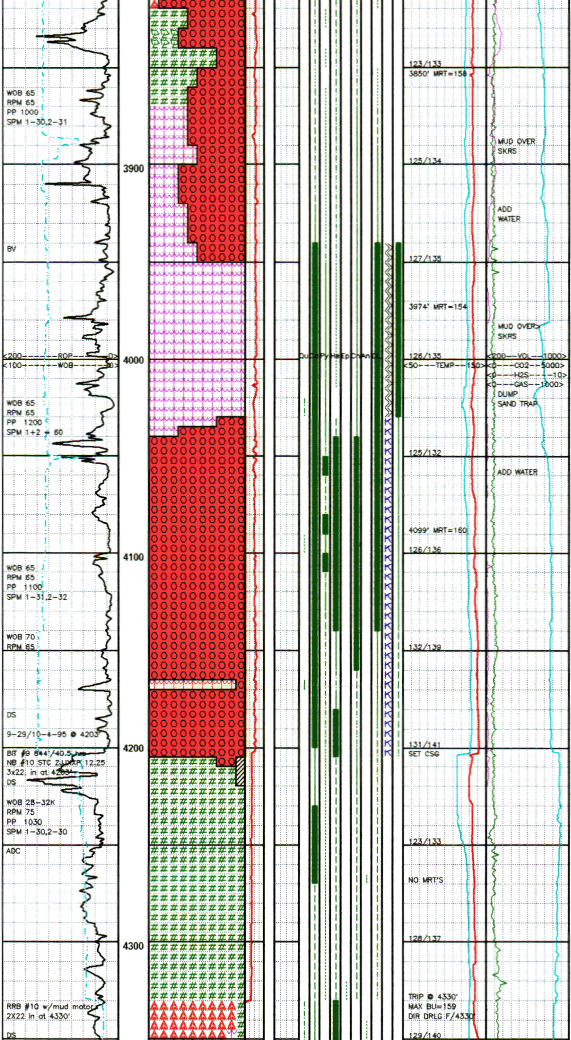
ANDESITE = MED BRNISH GRY; HD; MTLD GRN/BRN IRREG ANG CTTNGS; DENSE; APHAN CRYPTOXLN GRNDMASS; <1% VIS 1mm PLAG LATHS; COM PIN-POINT CHLORTZD (RELIC PHENOS); NON-VESC; PERV CHLOR ALTRN, LOC INTENSE; LOC INTENSE HEMA OVERPRINTING ALTRN; MNR CALC VNG & VUGS; TR EXTRM FN BLK OPQ MNRL (MAG?).

SURVEY: 3728' 10.25 DEG, S63E, TVD=3688

CARBIDE LAG @ 3764' 66.4min / 4050 stks
500cc, #1-30, #2-31, 17m DUR, 97% THEOR

RHYOLITE = V LT GRY-LT GRY W/ SLI GRNISH TINT; HD; SHARP ANG CTTNGS; SBTRANSLU ON THIN EDGES; APHAN, MICROXLN GRNDMASS; NO VIS PHENOS; NON-VESC; FN WHT STREAKS; COM MICRO-BRECCIATED & FRAGMENTAL APPR, TIGHLY SEALED W/SILICA; LOC 10% LAPLI TUFF; TR-MRN CALC VNG & INTRSTL IN TUFF MTX; TR-MNR FN CHLOR SPECKS.

SURVEY: 3850' 10.00 DEG, S62E, TVD=3808



DEBRIS FLOW = MED-DK GRY TO MED GRNISH GRY OVERALL; VAR COL BLK, GRNS & BRNS UNSCOPE; HD-V HD; WELL INDUR & TIGHT; IRREG ANG 1-7mm CTTNGS; FN ASH-GRV SZ LAPLI TUFF + INFERD FLOW RX BLOCKS; PR SRTD; GD DIST GR BNDRS; 20-50% AMTS ASH TUFF & LAPLI TUFF BELOW 3870'; MIXED APHAN CTTNGS OF BSLT, ANDS & RHYO W/ VAR DEG HEMA ALTRN; 10-20% RD SCORIA F/ 3790-3820'; APPRS WELL SEALED IN SILIC & CALC ASHY MTX; NO VIS FRAC INDC; OPEN VUGS ASSOC W/LITHICS; MNR BLU-GRN CLY IN BSLT; COM SFT PALE GRN SEMI TRANSLU CLY FRAGS BELOW 3880' ASSOC W/ASHY TUFF; HEMA ALTRN ASSOC WITH LITHIC FRAGS & OCC HEMA RIMS; COM HILY CHLOR FRAGS OF TUFF; COM CALC VN FRAGS & VUG FILL BELOW 3880' AND INCR W/ DEPTH; TR EXTRM FN DISSM PYR ASSOC W/ WHT ASH/FN TUFF MTX.

DEBRIS FLOW = CONT AS ABOVE, MED GRNISH GRY OVERALL; DOM COMPSD OF ASH/FN TUFF: LT GRNISH GRY; FRM-SLI HD; EASILY SCRATCHED; FN-LAPLI SZ; APPRS SMEC RICH IN VUGS & MTX; INCR CALC VN FRAGS; FRI ASHY ZONES; COM CHLOR TUFF FRAGS; GD TR PYR.

TUFF = V LT GRY-LT GRY OVERALL, WHT-V LT GRY W/COM PALE SBTRNSLU GRNS UN-SCOPE; SBANG-SBRND LOOSE GRS W/ABNT LT GRY MOD SOL, MOD EXPANSIVE ON REHYDRTN; COM ASHY APPRS; COM CHLRTD ALTD PLAG, GEN SFT UNPROBE, SLI WAXY/TALC APPRS; ABUNT FN EUHEDRAL MASS PYRITE; V CALCIC, STRNG FIZZ

SURVEY: 3974' 10.00 DEG, S63E, TVD 3930

MW 9.5+ VIS 80 PV 48 YP 44
GELS 8/12 FIL 13.2 CT 2/32 SOL 8.5
SD 1/3% pH 9.0 Cl 75 Ca -

DEBRIS FLOW = LT-MED GRY W/COM REDISH BRN CTTNGS & SOL CLAY OVERALL; RED-BRNSH RED; WHT, LT GRY, PALE LT-DK GRN UNSCOPE COM FLOW, MICRO-BRECCIA, WELDD & XL TUFF LITHICS; MOD ALTRD F/4050-4100'; STRNGLY ALTRD F/4100-4150', COM ALTRN OF PLAG TO CHLOR; VESC BSLT W/CHLR & SMEC FILLED VUGS; COMLY NO RELIC TEX/FABRIC; ABNT DEVIT OF GRNDMASS TO CLAY; COM STRNG HEMA ALTRN OF GRNDMASS & REPLCNG RELIC Px SITES; ABNT INTRSL + VNG CALC; COM DISSEM FN GR MASS PYRITE; RR EUHED QTZ 4090'; TR LAUMONITE @ 4130'; POSS TR ANKERITE @ 4170'.

NOTE = ABNT CLAY & WALL CAKE IN SMPLES F/4060-4180'.

SURVEY: 4099', 9.75 DEG, S63E, TVD N/A

DEBRIS FLOW = LT-MED GRY W/COM REDISH BRN CTTNGS; SLI HD-HD; OCC SFTR CLY ALTRD FRAGS DECR W/DEPTH; MIXED APHAN FLOW RX, WELDD & XTL TUFF LITHICS, MICRO BRECCIA; PR SRTD; WELL SEALED IN SILIC CALC ASHY MTX & TIGHT; NO FRAC INDC; COM CHLOR; VESC BSLT W/CHLR & SMEC FILLED VUGS; TUFF LOC ABNT DEVIT TO CLAY; VAR DEG OF HEMA ALTRN OF LITHICS; ABNT CLR & WHT CALC VN FRAGS & INTRSTL IN TUFF MTX STRNG HEMA AT 4180-4200'; COM FN PYR CUBES ASSOC W/ ASHY MTX; 90% SILICIC TUFF @ 4170'.

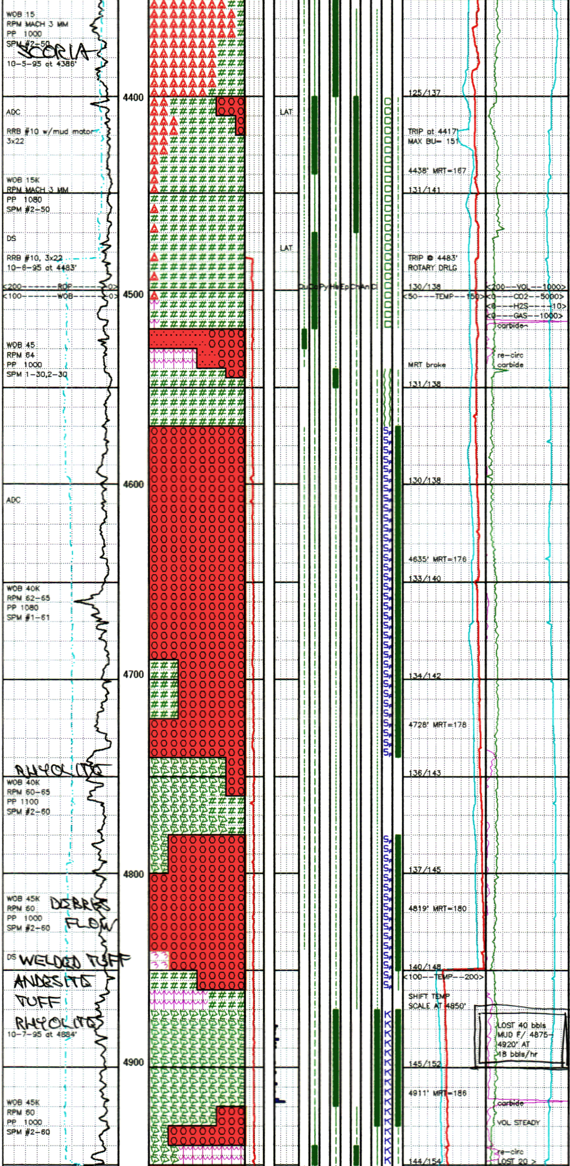
DRILL 17.5" HOLE TO 4203', SET 13 3/8" CASING AT 4199', DRLL AHEAD 12.25" HOLE

SURVEY: 4185' 9.5 DEG, S61E, TVD 4138

ANDESITE = MED GRY-MED BRN GRY; HD, BRTL WHERE VESC; APHAN CRYPTOXLN GRNDMASS; OCC FN GRANULAR TEX; TR VIS 1mm PLAG PHENOS; TR CHLORTZD RELIC MAFIC PHENOS; LOC ABNT LG IRREG CLY LINED VESC, 10-20% OF TOT MASS; COM BRICK RED HEMA ALTRN GEN ASSOC W/ VESC, LOC INTENSE HEMA ALTRN; BLU GRN CLY + CHLOR + CALC FILLED VESC, SOME PARTIALLY OPEN, CALC AFTER CHLOR; AMYGS W/ SAME; SLI CHLOR ALTRN OF GRNDMASS; COM CALC IN GRNDMASS & VESC ABNT CALC F/4230-70'; TR AGGR PYR CLUSTERS; DECR CALC BELOW 4290'; TR GYPSUM/ ANHYDITE @ 4270'; RR YEL EPID IN VN FILL @ 4330'; 0-5% CMT IN SAMPLS F/4203-20'.

MW 9.0 VIS 42 PV 10 YP 5
GELS 7 FIL 23 CT 2/32 SOL 4.8
SD 1/3% pH 10.7 Cl 100 Ca -
SURVEY: 4293' 9.50 DEG, S60E, TVD=4245
SURVEY: 4341' 10.25 DEG, S64E, TVD=4293
PICK UP MUD MOTOR W/ 1.5 DEG KICK SUB AT 4330';

SCORIA: DUSKY RD-DK RDISH BRN; FRM, BRTL CRUNCHY, RNDD ABRADED CTTNGS; FN SCOR-



IACEOUS TEX, INTERSTICES FILLED W/ CLR CALC + HYDROUS SILICA; COMPLETE HEMATITE REPLACEMENT OF BASALTIC/ANDS SCORIA; INTERCAL W/10-20% ANDS; 5% LITHIC TUFF OR TUFFACEOUS SEDS AT 4350'; TR BLADED GYPSUM/ANHYDRITE XTLS AT 4350'; HEMA DISCOLORING MUD RED F/4340'; CHLOR IN ANDESITE.

SURVEY LINE BROKE AT 4417', POOH.

ANDESITE = MED GRY W/GRN TINT, OCC MTLD RDISH GRY; HD, OCC SFT BIT PULVERIZED FRAGS; APHAN, V FN GRANULAR TEX; DENSE; TR PLAG PHENOS W/CALC ALTRD RIMS; COM FN CHLORTZD SPECKS; FN DISSM OPQ MNRL (MAG) PERV CHLORTZN; ABNT CALC IN GRNDMASS & VNG; TR SEALED FRACS; HEMA ON SME SURFS.

SURVEY: 4405' 10.75 DEG, S70E, TVD=4356
SURVEY: 4438' 11.00 DEG, S72E, TVD=4388

MW 8.9+ VIS 13 PV 13 YP 6
GELS 1/15 FIL 16 CT 2/32 SOL 4.1%
SD 1/4% pH 11.3 Cl 75 Ca -
LAY DOWN MUD MOTOR AT 4483'

ANDESITE = MED GRY W/ GRNISH TINT; HD. DENSE; APHAN. FN GRANULAR TEX; TR VIS PLAG LATH PHENOS SLI CHLORTZD; TR SCAT FN RELICT MAFIC PHENOS; 1% PARTIAL OPEN VESC LINED W/ CHLOR + WHT CLY + CALC; ABNT CALC IN GRNDMASS & VUGS; PERV CHLOR ALTRN OF GRNDMASS; COM EXTRM FN DISSEM OPQ MNRL (MAG?); TR MICRO BRECCIA APPR UP TO 5% SCORIA SLUFF, OCC HEMA ON ANDS BRECCIA SURFACES.

CARBIDE LAG @ 4515' 46.6min / 2332 stks
500cc, 10u, 60 SPM, 19m DUR, 98% THEOR
SURVEY: 4542' 12.75 DEG, S76E, TVD=4490

DEBRIS FLOW = MED GRNISH GRY, WHT-LT GRY F/4520-40; HD; DOM HD WL SILICFD V PALE GRN ASH F/4520-30; DOM GRN TUFF F/4530-40'; 100% ANDS F/4540-70; FN GRAN TEX, V HEMA & CLY ALTRD, NON-VESC; MIXED VOLCAN-CLASTIC MATRL BELOW 4570; PREV CHLORTZD THRUOUT; COM-ABNT CALC VN & VUG FL, DECR AFTER 4570; WELL SILICIFIED; TR EUHED QTZ VUG FILL @ 4590; INCREASED CHLORTZD FROM 4600-30; SLI INC IN CALC 4610-30'.

SURVEY: 4635' 13.75 DEG, S77E, TVD=4580

DEBRIS FLOW = MED GRNISH GRY, LT GRY, LT GRN, OCC WHT TO V LT GRY; WELL SILICIFD; COMP VARIES FROM 4610-70', W/TUFF AND ANDESITE PRED; HIGHLY CHLORITIZED THROUGHOUT; SLI TO MOD CALCAREOUS FROM 4640-70; COM CONCHOIDAL FRAGS; OCC VEIN FILL; RR PYRITE.

DEBRIS FLOW = MED GRNISH GRY, LT GRY, LT GRN TO MED GRN; WELL SILICIFIED; FRM TO HARD; PRED MIXED VOLCANICLASTIC MATERIAL ABNT CHLORITIZATION THROUGHOUT; COM CALC VEIN AND VUG FILL; OCC MICRO BRECCIA; INCR IN VIS ANDESITE FROM 4690-4710'.

ANDESITE = MED GRY TO DRK GRY; V HARD; DENSE; V FINE GRAN TEXTURE; OCC CHLORTZD PLAGIOCLASE PHENOS; OCC OPEN VESICLES; MOD TO V CALCAREOUS IN PART.

SURVEY: 4728' 15.75 DEG, S76E, TVD=467

RHYOLITE = V LT GRY TO LT GRY; LT GRNISH GRY; V HARD; PRED CONCHOIDAL FRAC CTTNGS COM APHANITIC; RR BRECCIATED, WITH OCC LINEAR FRACTURES; NO VISIBLE VESICLES; V SILICEOUS; OCC CALCAREOUS VEIN FILL.

DEBRIS FLOW = LT GRY TO MED GRY, LT GRNISH GRY, OCC V LT GRNISH GRY; HARD; DENSE; PRED VOLCANICLASTIC MATERIAL, WITH LT GRNISH GRY RHYOLITE DOM FROM 4780-4800'; RR FILLED VESICLES; COM V SILICIFIED; OCC CALC VEIN FILL.

SURVEY: 4819' 16.50 DEG, S78E, TVD=4758

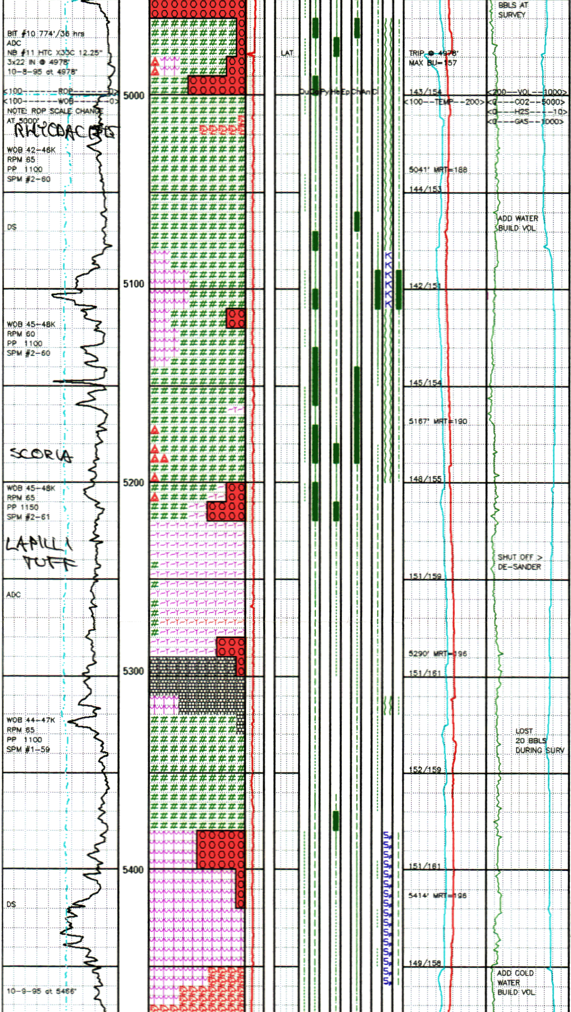
MW 9.0 FV 34 PV 12 YP 5
GELS 2/5 FIL 12.4 CT 2 SOL 5
SD TR pH 11.5 Cl 50 Ca 0

DEBRIS FLOW = LT-MED GRY W/COM REDISH BRN CTTNGS; SLI HD-HD; OCC SFTR CLY ALTRD FRAGS DECR W/DEPTH; MIXED APHAN FLOW RX, MICRO-BRECCIA, 20% WELDED TUFF F/4840-4850'; PR SRTD; WELL SEALED IN IN SILIC/CALC ASHY MTX; NO FRAC INDC; COM CHLOR; OCC VESC BSLT W/ CHLOR + SMEC FILLED VESC; 40-50% ANDS F/4850-70'.

ALTERED RHYOLITE = LT BRNISH GRY, MOTTLD BRN/WHT UNDERSCOPE; FRM-SLI HD, BRTL & SFT WHERE CLY ALTRD; PARTIAL TO NEARLY COMPLETE DEVIT OF GLASSY GRNDMASS; VAGUE RELICT PHENOS; SFT WHT FLUFFY CLY ALTRN ATTACKING 60-70% OF ROCK MASS; THIN QTZ MICROVNG; COM CALC IN GRNDMASS; SPOTTY HEMA ALTRN; COM CHLOR/SMEC ALTRD RELIC PHENOS.

BEGIN LOSING MUD AT 4875' @ 18 BBLS/HR
STOP LOSING BY 4920'.

CARBIDE LAG @ 4914' 42min / 2520 stks
500cc, 12u, 60 SPM, 17m DUR, 98% THEOR



SURVEY: 4911' 18.75 DEG, S76E, TVD=4846
TRIP @ 4978' CHANGE BHA.

DEBRIS FLOW = MED GRY, REDDISH GRY, REDDISH BRN, BRN; FRM TO HD; DENSE; DEC AMNTS OF ANDESITE FROM 4975-90'; INC IN CHLORITIZATION FROM 4980-90'; LOC HEMATITE ALTERATION FROM 4970-80'; INC CALCAREOUS FRAGMENTS WITH DEPTH FROM 4990'; NO VIS VESC OR PHENOCRYSTS.

SURVEY: 5041' 19.5 DEG, S78E, TVD=4968

ANDESITE = MED GRNISH GRY; HD-V HD; DENSE; APHAN, FN GRANULAR TEX; TR VIS PLAG PHENOS W/ CALC RIMS; V MNR CHLORTZD FN MAFIC PHENOS; DENSE NON-VESC TO 5070' 5-10% CLY FILLED AMYGS & OPEN VESC F/ 5070-5120'; PREV CHLORTZN OF GRNDMASS; COM-ABNT WHT CALC VN FILL & CALC IN GRNDMASS; GD TR EXTRM FN DISSM OPQ MNRL (MAG?); OCC LOC VIS FN FSPR MICROLITES; VAR HEMA ALTRN ON SME SURFS; LOC BRECCIA & FRAGMENTAL APPR; VESC LINED W/ PALE GRN CLY + SFT WHT CLY + CHLOR + CALC + HYDROUS SILICA; PROPYLIC ANDESITE.

TUFF = V PALE GRN; SFT-SLI HD; V BRTL CRUMBLY CTTNGS; ASHY-V FN GR TUFF; ABNT WHT CALC FILLED VUGS; PERV CHLORTZN OF ASHY MTX; OCC 1-2mm LAPPLI FRAGS; INTERCAL W/ VESICULAR ANDS/BSLT; TR HYDROUS SILICA.

ANDESITE = MED GRNISH GRY W/SCAT RD BRN FRAGS; HD-V HD; APHAN, V FN GRANULAR TEX TR VIS PLAG LATH SHAPED PHENOS; MNR CHLORTZD FN MAFIC PHENOS; GD TR EXTRM FN DISSM MAG; GRNDMASS FN WHT SPECKLED IN PT PROB INCIP SERICITE/KAOLINITE ALTRN; GEN DENSE NON-VESC, UP TO 10% MICRO VESC/AMYG W/ HEMA ALTRN BECOMING 10-20% SCORIACEOUS @ 5170'; SCORIA INTER STICES W/ CLR CALC & OPAL; PERV CHLOR & CALC OF GRNDMASS; TR LITHIC TUFF @ 5170' TR BRECCIA; LOC 5-10% VESC/AMYGS FILLED SFT GRN CLY + CHLOR + CALC + OPAL; TR DRUSY QTZ XTLS IN VUG @ 5170'.

SURVEY: 5167' 20.5 DEG, S76E, TVD=5087
MW 9.0 VIS 10 PV 10 YP 8
GELS 1/4 FIL 11.5 CT 2 SOL 5%
SD TR pH 11.5 Cl 50 Ca 0

LITHIC TUFF/DEBRIS FLOW = MED GRY W/BRN TINT; HD; ANG MED-CRS TUFF & LAPLI FRAGS IN ASHY MTX W/ ASSORTD LITHICS; WL INDUR SLI CALCIC MTX; BRN FLUFFY CLY ALTRN OF OF MTX; SHARP DISTINCT GR BNDRS; MNR AMT LGR CLAST SZ MATRL; GEN WK ALTRN OVERALL TR-COM LOC HEMA & TR SPOTTY CHLOR ALTRN.

SURVEY: 5290' 20.5 DEG, S78E, TVD=5202

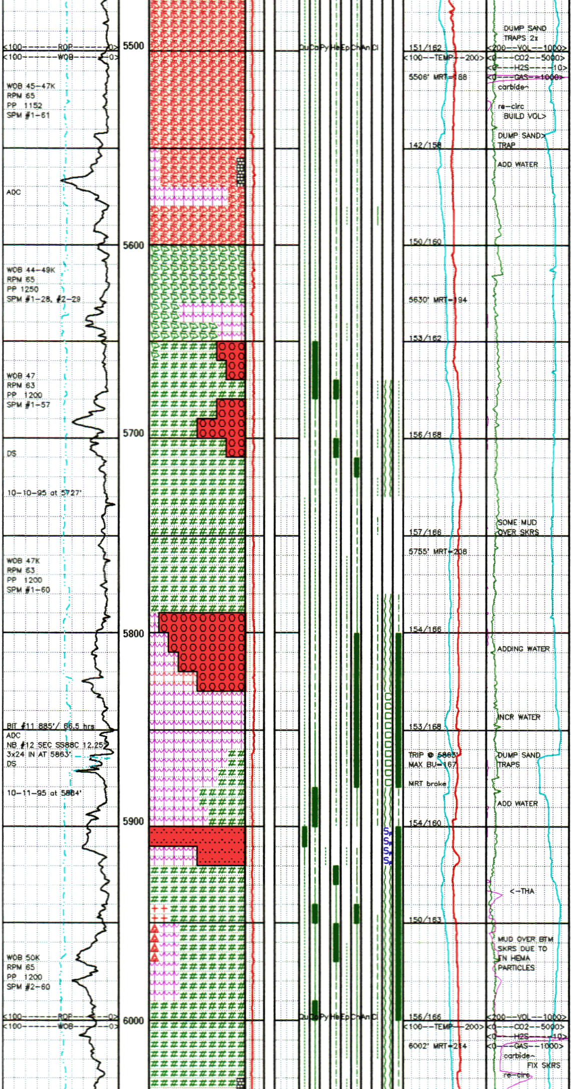
BASALT = MED DRK GRY; V HARD; APHANITIC, MICROXLN-CRYPTOXLN GROUNDMASS; V FRESH CUTTINGS, IRREG TO ANGULAR; RR SML PALG LATH PHENOS; GEN NO VIS ALTERATION; RR LOC HEMATITE STAINS; TR CHLORITE STAINS; PRED V CALCAREOUS.

ANDESITE = MED GRY, OCC MED GRNISH GRY WHERE CHLORITIZED; FIRM TO V HARD; DENSE APHANITIC, V FINE TEX; RR VIS MICRO PLAG LATHS, WITH ALTERED EDGES; TR FN CHLOR SPECKS; NO VIS OPEN VESICLES; CALCITE COMP VARIES IN SAMPLES, GEN CTTNGS ARE SLI TO MOD CALC; INC HEMATITE AND CHLORITE ALTERATION FROM 5360-70'.

ANDESITE = LT GRY TO MED GRY, MED GRNISH GRY; V FRM TO HRD; APHANITIC, V FINE GRANULAR TEXTURE; NO VIS PHENOS; OCC CHLOR MICRO-AMYGS; MOD HEMATITE ALTRN INC CHLORITE ALTRN WITH DEPTH FROM 5360-80'.

MW 9.2 FV 38 PV 18 YP 10 GELS 1/5
FIL 12.5 CT 2 SOL 6.5% SD TR
pH 11.5 Cl 50 Ca 0
SURVEY: 5414' 18.75 DEG, S75E, TVD=5319

SILICIC ASH/TUFF? = WHT TO V LT GRY W/ VAR SHADES OF GRN; SFT-HD; IRREG TO BLKY CTTNGS; VAGUE GRAINY TEX IN PT?; LOC FRI WHEN RUBBED W/ POWDERY SURFS; SILICIC APPR, LOC EXTRM SILIC W/ ELONG CLR SILICA STREAKS; V MNR SCAT FN DK FRAGS; TR OPEN VUGS W/ FN DRUSY QTZ XTLS; V THIN QTZ MICROVNG; GEN HOMOGENEOUS PALE GRN CHLORTZN OF SFTR MTRL, LOC PATCHES OF INCR CHLORTZN; SOME 2mm CLR QTZ FRAGS @ 5440'; TR PLAG LATHS VIS @ 5440; POSS HIGHLY DEVIT OBSID/RHYOLITE FLOW.



RHYODACITE = LT-MED GRY W/ BRN STREAKS; V HD; SHARP ANG CTTNGS, OCC SFT BIT PULVERIZED FRAGS; APHAN, MICROXLN; 1-5% 1-2mm PLAG LATHS, GEN UNALTERED; 1% FN MAFIC Px PHENOS; STREAKY INTERNAL FEATURES RESEMBLE FLOW BNDG, CRM COL STRKS; PLAG PHENOS OCC CHLOR ALTRD; FN WHT SPOTS IN GRDMASS, ALBITE ALTRN?; COM THIN QTZ MICRO-VNG; OCC FRAGMENTAL APPR; NON-VESC/AMYG; VAR CHLOR ALTRD GRNDMASS; TR WHT CALC; STREAKY HEMA/LIMONITE STAIN

CARBIDE LAG @ 5510' 46.0min / 2670 stks
500cc, 13u, 58 SPM, 20m DUR, 99% THEOR
SURVEY: 5501' 19.5 DEG, S78E, TVD=5401

RHYODACITE = LT GRY TO MED GRY, REDDISH BRN STREAKS FROM 5580-90'; V HARD; ANG CUTTINGS; APHANITIC, MICROXLN; PRED FRSH UNALTERED APPEARANCE; OCC MICRO CHLORTIZATION VIS UNDERSCOPE; REDDISH-BRN STREAKS RESEMBLE FLOW BANDING; NO VIS PLAGIOCLASE LATHS; OCC QTZ FILLED VUGS/VNG; RR YEL EPID; DEVIT APPR @ 5580;

SURVEY: 5630' 19.5 DEG, S74E, TVD=5523
MW 9.0 FV 45 PV 24 YP 14
GELS 3/9 FIL 12.5 CT 2/9 SOL 5
SD TR pH 11.5 Cl 50 Ca 0

RHYOLITE = MED DK GRY W/RD BRN BNDG; V HD; SHARP ANG CTTNGS; SEMI-GLASSY GRNDMASS; NO VIS PHENOS; NON-VESC; FN WHT SPOTS IN GRNDMASS; COM WHT TO RD BRN THIN BANDING; MINOR WHT CALC FRAGMENTS.

DEBRIS FLOW = MED GRY, REDDISH BRN TO BRN; V HARD; VARIOUS APHANITIC ROCKS; COM HEMATITE STAINS; SM VIS 3-4mm ANG CLASTS IN TUFF MTX; HIGHLY CALC F/5650-5680; BRKN/FRAGMENTAL APPR.

ANDESITE = MED GRNISH GRY W/SCAT RD BRN FRAGS; HD, OCC SFT BIT PULVERIZED FRAGS; CRYPTOXLN-V FN GRANULAR TEX; MICRO-VESC 5700-5720' & HEMATITIC; DENSE, NON-VESC BELOW 5720'; TR CHLOR ALTRD PLAG PHENOS; FN WHT SPECKLED GRNDMASS; < 1% CHLOR+CLY FILLED MICRO-AMYGS; TR EXTRM FN DISEM BLK MNRL(MAG); PERV CHLORTZN OF GRNDMASS; ABNT CALCIC GRNDMASS & VN FILL TO 5730', DECR CALC BELOW 5730'; GEN LESS PROPYLITICALLY ALTRD BELOW 5730'; TR OPAL VUG FILL @ 5750'; LOC 5% GRN CLY AMYGS @ 5760'; TR STUBBY YEL GRN EPID XTLS AT 5770-80' ASSOC W/QTZ VNG.

SURVEY: 5755' 19.00 DEG, S79E, TVD=5641
NOTE: FIRST OCCURENCE OF EPIDOTE XTLS AT 5770-80', IN ANDESITE; SIGNIFICANT INCREASE IN PROPYLITIC ALTRN AT 5800'.

DEBRIS FLOW = LT MED GRNISH GRY OVERALL, VARCOL TUFF & GRNISH LITHIC FRAGS; FRM-HD, COM BRTL FRAGS; DOM CHLORTZD & SLI BLEACHED MED-CRS TUFF W/ OCC BSLT, ANDS, & HEMATITIC FRAGS; SOME ANG INTENSELY CHLOR ALTRD INCLUSIONS; CLAYEY MTX POSS HYDRATING IN MUD; UP TO 3% YEL-YELGRN EPIDOTE MNRLZTN; HIGHLY CHLORITIC OVERALL; MNR WHT & CRM CALC FRAGS; MNR SPOTTY HEMA; DOM CHLORITIC TUFF F/5830'.

MW 9.1 FV 45 PV 22 YP 10 GELS 2/-
FIL 11.8 CT 2/- SOL 5.8 SD TR
pH 10.8 Cl 50 Ca TR

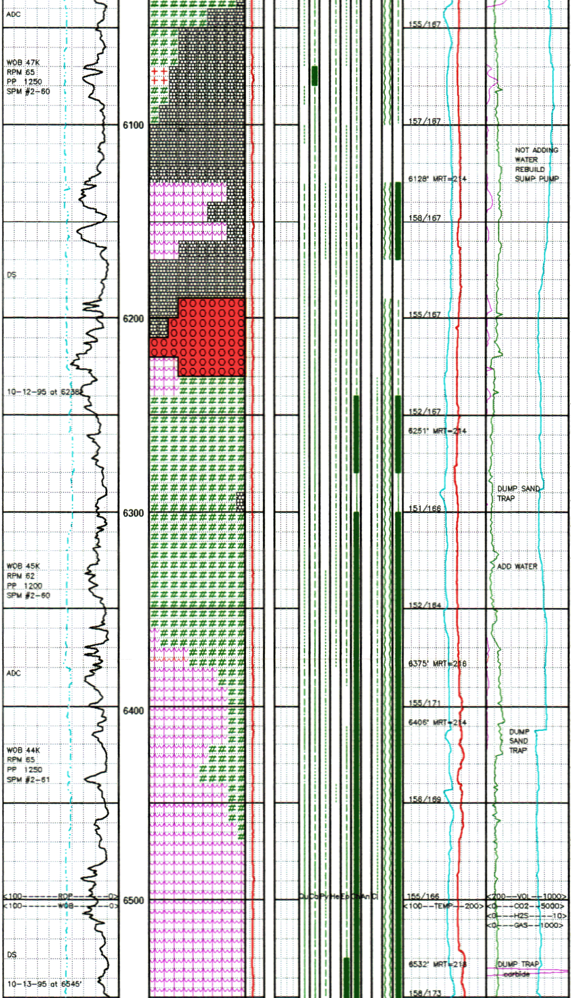
ALTERED TUFF = MED GRNISH GRY TO PALE OLIVE; FRM-HD, COM V BRTL FRAGS; FEW RECOGNIZABLE ANGULAR HIGHLY CHLORTZD LAPLI SZ FRAGS W/ INDIST BOUNDRIES; TAN-PALE GRN COMPLETELY ALTRD/REXLN MTX MATRL; HI DEG OF HYDROTHERMAL ALTRN, DOM CHLOR + CLY; UP TO 6% YEL EPID.

SILICIC ASH = WHT; HD; VAGUE GRAINY TEX; COM CLR SILICA INCLU; EXTRM FN DISSEM BLK OPQ MNRL; MNR WHT CALC VNG.

SURVEY: 5878' 19.25 DEG, S83E, TVD=5757

ANDESITE = MED GRNISH GRY-GRYISH GRN W/ ABNT RD BRN FRAGS F/5950-5980'; GEN HD, LOC FRM-BRTL WHERE HEMATITIC; FN-MED GRANULAR TEX @ 5940-50'; ABNT MICRO-VESC & SCORIACEOUS F/5950-70' W/ HEMA REPLACE-ING 60% OF ROCK MASS; 20-30% ASHY TUFF W/ INTENSE HEMA & CHLOR ALTRN F/5950-5990', COM LAVENDAR COL; DENSE CRYPTOXLN ANDESITE BELOW 6000'; COM-ABNT CHLORTZD GRNDMASS; HIGHLY CALCIC GRNDMASS PLUS WHT CALC VN FILL BELOW 5940'; DENSE ANDS AT 5990-6020 VERY SIMILAR TO ANDS AT 5700-5790' W/ FN WHT SPECKLED GRNDMASS; TR OCTAHEDRAL MAGNETITE XTLS @ 6010'; TR CLR QTZ VUG FILL THRUOUT; RR EXTRM FN PYR & BRASS SULFIDES @ 5920 TR QTZ+EPID VNG @6000-20', EPID AFTR QTZ

CARBIDE LAG @ 6006' 47.9min / 2879 STKS
500cc, 30u, 60 SPM, 17m DUR, 98% THEOR
SURVEY: 6002' 19.00 DEG, S76E, TVD=5874



BASALT = DRK GRY TO BLK; V FRM TO HARD; DENSE; APHANITIC, W/OCC WHT SPOTS, PRED MICROXLN TO CRYPTOXLN GRNDMASS; RR ALTRD PLAG PHENOS; NON-VESC; COM FRESH CTTNGS WITH LOC HEMATITIC STAIN; DECR CHLORITIC ALTERATION W/ DEPTH; TR EPID TO 6070'; OCC SLI TO MOD CALCIC GRNDMASS; FN-MED GRAINED TEX F/6070-80'.

MW 9.1 FV 40 PV 19 YP 10 GELS 2/4
FIL 12 CT 2/- SOL 5.8% SD TR
pH 10.5 Ca 50 Cl TR
SURVEY: 6128' 19.75 DEG, S75E, TVD=5993

SILICIC TUFF = V LT GRY TO LT GRNISH GRY FRM TO V HRD; GRANULAR TO SUCROSIC TEXTURE; IRREG TO BLKY CTTINGS; PRED FRM, RR FRIABLE; PRED WELL SILICFD; TR QTZ FILLED VUGS; INCR ALTERATION FROM 6130-6170' COM YEL-GRN EPIDOTE XLS & VN FILL; PREV CHLORTZN W/SCAT ANG CHLORTZD INCLUS; COM CLR-WHT CALC VNG; TR FN DISSEM PYR & PYR CLUSTERS.

BASALT = DK GRY TO BLK; HD; CRYPTOXLN; TR LOC PLAG MICROLITES; DENSE, NON-VESC; WHT SPECKLED GRNDMASS IN PT; NON-CALCIC GRNDMASS; MNR HEMA STAIN; GD TR EPID + QTZ MICROVNG; TR AGGR PYR; ZONED VEIN @ 6190 W/ HEMA + CHLOR + QTZ + EPID FILL

DEBRIS FLOW = LT MED GRNISH GRY OVERALL; MIXED VOLCANICLASTIC MTRL DOM CHLORITIC TUFF W/BSLT, ANDS, FN-MED GRAIN PORPHYRITIC DIKE RK; BSLT FRAGS APPR FRESH; UP TO 6% EPIDOTE; OCC FRAGMENTAL APPR WITHIN CTTNGS.

SURVEY: 6252' 20.00 DEG, S77E, TVD=6109

ANDESITE = MED GRNISH GRY W/MNR RD BRN PATCHES; HD, OCC SFT BIT PULVERIZED FRAGS; APHAN, MICROXLN-CRYPTOXLN; TR RECOGNIZABLE CHLOR ALTRD PLAG LATH SHAPED PHENOS; COM FN CHLOR SPECKS POSS RELIC MAFIC PHENOS; DENSE, NON-VESC; FN WHT SPECKELED GRNDMASS; GRNDMASS APPRS SEMI-TRANSLU ON THIN EDGES; GD TR DISSEM FN BLK MAG, BULK OF ROCK MAGNETIC; TR IRREG CHLOR + CLY AMYGS?; FLUFFY WHT RIMS AROUND CHLORTZD PATCHES; ABNT CHLORTZD GRNDMASS; COM YEL-YEL GRN EPID; COM QTZ+CHLOR+EPID+CALC+HEMA MICROVNG; MOD-VERY CALCIC GRNDMASS; TR AGGR PYR ASSOC W/ VNG AT 6330-60+'

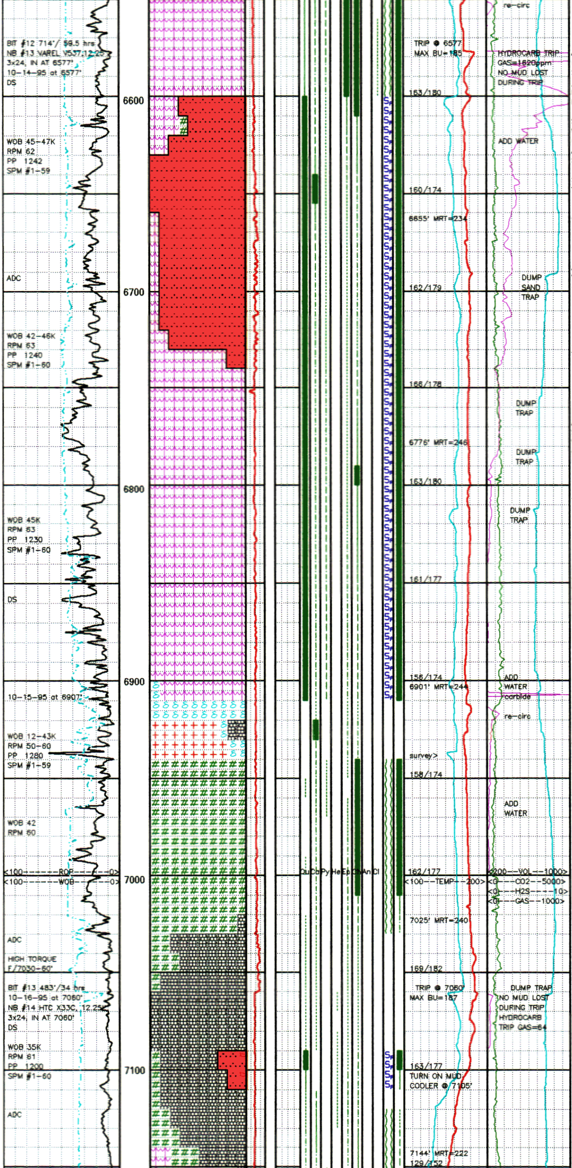
ANDESITE = MED GRNISH GRY; HD; APHAN, MICROXLN-CRYPTOXLN; TR CHLOR ALTRD PLAG LATH SHAPED PHENOS; COM CHLOR SPECKS, RELIC MAFIC PHENO SITES?; DENSE, NON-VESC; FN WHT SPECKLED GRNDMASS; GD TR DISSEM FN BLK MAG, BULK OF RK MAGNETIC; CONT CHLOR PATCHES A/A; HILY CHLOR/CALC GRNDMASS; COM YEL-YELGRN EPID; MICRO VNG A/A

ALTERED TUFF = LT GRNISH GRY, NOTICABLE COL CHANGE; HD, INCR BRTL FRAGS; VAGUE SILICFD TUFFACEOUS TEX; RR ELONG LATH SHAPED PLAG IN TUFF; LOC GRN/LT GRN MTTLG; TR-MNR AMTS FN DISSEM BLK & DK BRASS SULFIDES, TR-MNR AGGR PYR XTLS & PYRITIZED LITHIC FRAGS; CTTNGS NON MAGNETIC COMPARED TO ANDS ABOVE; COM WHT SHARP SILIC FRAGS F/6420-6500+; PERV CHLORTZN THRUOUT; MOD-V CALCAREOUS; COM YEL GRN EPIDOTE XTLS F/6410-6500+; COM QTZ+EPID+CHLOR VNG, TR LG CLR QTZ FRAGS; NON-VESC; OCC FRAGMENTAL & CONTORTED APPR; 40-50% ANDS F/6420-6440'.

SURVEY: 6406' 20 DEG, S75E, TVD=6254
MW 9.0 FV 35 PV 15 YP 6 GELS 1/4
FIL 14.5 CT 2/- SOL 5% SD TR
pH 10.5 Cl 100 Ca TR

ALTERED TUFF = MED GRNISH GRY W/ INCR YELISH TINT; HD-V HD; VAGUE SILICFD TUFFACEOUS TEX, BECOMING LESS IDENTIFIABLE W/ MOTTLED WHT/GRN/YEL COLORING BELOW 6530'; GEN APPRS AS ABOVE W/ INCR AMTS OF EPIDOTE & PYR; INCR PATCHES OF DK GRN CHLOR, POSS RELIC LAPLI SZ FRAGS; UP TO 10% YEL & YEL GRN EPID & EPID VNG; NOTICABLE INCR IN DISSEM PYR @ 6510'; COM QTZ + EPID + CHLOR MICRO VNG; PYR & OTHER SULFIDES IN AND AROUND VN FILL; HACKLY FRACTURE ON CTTNG EDGES INDICATING ORIGINAL TUFF MTRL; TR CRM CALC; NON HEMATITIC.

CARBIDE LAG @ 6534' 54.8min / 3343 stks
500cc,20u,61 SPM @95%,19mDUR,101% THEOR



SURVEY: 6532' 19.75 DEG, S75E, TVD=6373
POOH AT 6577', MAG BHA & KELLY, RUN TEMP LOG, BHT=428F, RESUME DRLG, HYDROCARB TRIP GAS=1620ppm, RE-CIRC IN PITS.

ALTERED TUFF = CONT AS ABOVE; MED GRNISHISH GRY W/SLI YELISH TINT; HD-V HD; OCC SFT BIT PULVERIZED FRAGS; MOTTLD MED GRN /LT GRN &WHT; OCC RELIC ANG LITHIC FRAGS MICRO VNG A/A; TR-MNR DISSEM PYR & DK BRASS SULFIDES; DECR TO MNR CALC F/6580'

SILICIC ASH = V PALE YELISH GRN, MOTTLD WHT/PALE GRN; V HD SHARP ANG CTTNGS TO 6640', SLI HD HACKLY CTTNGS BELOW 6640'; APHAN; FN CLR SILIC BLEBS IN WHT AREAS; SLI POWDERY SURFS WHEN DRY BELOW 6640', POSS DEVITRFD; SCAT DK GRN CHLORTZD SPECKS; MNR EPID ASSOC W/CHLORTZN; COM YELISH TAN-CRM COL VUG FILL SLI EFFRV IN HCL; TR DISM PYR & BLK-DK BRASS SULFIDES; DECR CHLOR & EPID BELOW 6650; INCR CALC AT 6650-60'; CHOPPY DRILLING AND HIGH TORQUE F/6650-6740'.

SURVEY: 6655' 18.75 DEG, S74E, TVD=6489

ALTERED TUFF = WHITE, YEL-GRN, LT GRN, V LT GRY; V FRM TO HARD; PRED SHARP ANG CONCHOIDAL CUTTINGS; COM APHANITIC, OCC MICROXLN TEXT; ABNT GRN CHLORITIZED SPECKS FROM 6700-20', LESS VIS CHLORTZN FROM 6720-30', FRESHER APPR; V SILICIC FROM 6700-40'; INCR IN CHLORITE BELOW 6730'; COM SLI TO MOD CALC THROUGHOUT; OCC V FN DISM PYRITE TO 6730'; HIGH TORQUE FROM 6670-6740.

MW 9.1 FV 36 PV 15 YP 5 GELS 1/3
FIL 15 CT 2/- SOL 5.8% SD TR
pH 10.5 Cl 100 Ca TR
SURVEY: 6776' 19.5 DEG, S76E, TVD=6603'

ALTERED TUFF = V LT GRNISH GRY W/VAR SHADES OF GRN, INDIV CTTNGS DOM V LT GRY W/GRYISH YEL GRN TO PALE GRN, COM MED-DK GRN F/6740-6800; V HD & SILIC/REXLN; ANG IRREG CTTNGS W/HACKLY EDGES; SIGNIFICANTLY ALTERED BUT STILL RETAINING SAME COLORING AS ASH & TUFF ABOVE; NO RECOGNIZABLE ORIGINAL TEXTURE OR FABRIC; VAGUE GRAINY APPR ON SOME CTTNGS; MTTLD LT GRY/LT GRN W/COM LT GRN STREAKS & BLOTCHES; WL SILICIFD W/SEMI-TRANSLU EDGES, POWDERY SURFS ON SOME CTTNGS; COM CLR QTZ VUGS & MICROVNG; MNR-COM YEL EPID; V SILICIC F/6780-6800'; PYR GRADUALLY INCR F/6740', COM-LOC ABNT AMTS OF CUBIC PYR XTLS UP TO 1mm; COM PYR XTL CLUSTERS ALONG QTZ VNG; MOD CALCIC THRUOUT; COM TAN-LT YELISH BRN MNRLZTN; FN WHT SPECKLED IN PT; CTTNGS OXIDIZING LT ORGISH BRN WHEN EXPOSED TO AIR; ERATIC DRILL RATE F/6830-6910'.

CARBIDE LAG @ 6905' 59.9min / 3537 stks
500cc,25u,59 SPM @95%,21mDUR,101% THEOR
NOTE: PICK UP OFF BOTTOM EVERY FEW FEET WHEN DRILL STRING TORQUES UP F/6900-65'

DACITE = LT MED GRY; V HD, DENSE; APHAN, CRYPTOXLN; 1-5% CHLOR ALTRD FSPR PHENOS; TR SCAT FN CHLORTZD MAFIC PHENOS; FAIRLY FRESH APPR; GRANODIORITE PORPHYRY F/6920-6940', V FN GRAINED GRNDMASS, EQUIGRANULAR, PRED PLAG W/ CHLORTZD MAFICS W/ VERY CALCIC GRNDMASS F/6920-30'; 20% APHAN DACITE/ANDS F/6930-40.

SURVEY: 6901' 20.0 DEG, S75E, TVD=6721'

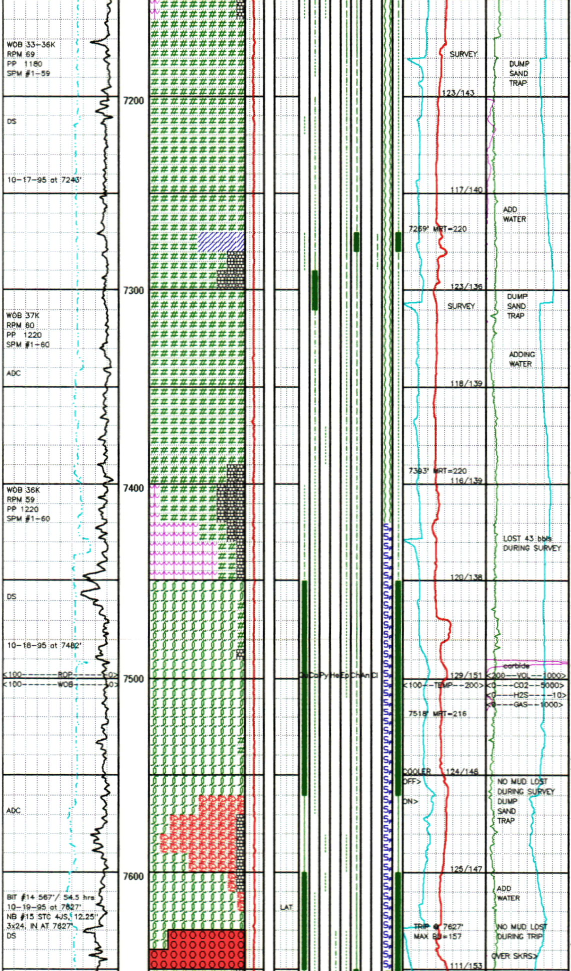
ANDESITE = MED GRNISH GRY TO GRYISH GRN; HD, OCC SFTR BIT PULVERIZED FRAGS; APHAN FN MOTTLED TX; PREV HILY CHLOR GRNDMASS; PALE GRN GRNDMASS W/ FN CHLOR SPECKLING IN PT, PROB AREAS W/ COARSER GRNDMASS; FN WHT SPECKLED WHERE V CHLORTZD; TR BLK MAGNETITE, COM FN DISM MAG F/7000-10'; TR EPID TO 6980, COM TO LOC ABNT YEL EPID MNRLZTN F/6980-7020'; MNR QTZ + EPID + CALC + CHLOR MICROVNG; TR AGGR PYR CUBES TO 6970', NO VIS PYR BELOW 6970'; MOD CALCIC GRNDMASS.

SURVEY: 7025' 21.0 DEG, S71E, TVD=6837'
POOH AT 7060', CHANGE BIT & BHA.
MW 9.2 FV 42 PV 20 YP 10 GELS 1/3
FIL 16 CT 2/- SOL 6.5% SD TR
pH 11.0 Cl 100 Ca TR

BASALT = V DK GRY; V HD; ANG-SPLINTERY CTTNGS; APHAN, DENSE; MICROXLN-CRYPTOXLN DULL LUSTR; 1% V FN CLR PLAG PHENOS & RANDOMLY ORIENTED PLAG MICROLITES; NON-VESC OR AMYDALODIAL; COM BLK MAGNETITE, SLI MAGNETIC CTTNGS; MNR LOC CHLORTZD GRNDMASS; OCC SFT WHTISH BIT PULVERIZED FRAGS; TR-MNR QTZ + EPID + CHLOR + CALC MICRO VNG, DOM EPID W/TR CALC; TR HEMA STAIN; FAIRLY FRESH APPR OVERALL.

SILICIC ASH = WHT, LOC PALE GRN; V HD, SHARP-ANG IRREG CTTNGS; NO VIS TEXTURE; MOD CHLOR IN PT; POSS SILICA PRECIP DEPOSIT; BSLT W/ BRECCIATED APPR.

BASALT = AS ABOVE; V DK GRY-BLK; COM-ABNT CALCIC GRNDMASS/VNG F/7120-40; CONT SLI MAGNETIC CTTNGS; POSS TUFF? F/7140-7160'; TR CRM CALC FRAGS F/7120-50'



NOTE: COM LT GRY BIT PULVERIZED FRAGS, SFT & CRUMBLY, W/ BIT MARKINGS.
SURVEY: 7144' 21.0 DEG, S70E, TVD=6948'

ANDESITE = MED GRNISH GRY W/ YEL TINT; V HD, DENSE, ANG IRREG CTTNGS; DOM MICRO-XLN, CRYPTOXLN TO V FN GRANULAR IN PT F/7160-7200'; V FN WHT SPECKLED GRNDMASS PROB INCIP PLAG GROWTHS; 1% V FN CHLORTZ RELIC PHENO SITES; V FN DISSEM MAG, SLI MAGNETIC CTTNGS; MOD-STRONGLY CHLORTZD GRNDMASS, DECR BELOW 7180'; NON VESC OR AMYG; WK CALCIC GRNDMASS; TR YEL GRN EPID MICROVNG W/ RR QTZ & CALC VN FILL. MOD CHLORTZN BELOW 7180'

MW 9.1 FV 37 PV 15 YP 9 GELS 1/3
FIL 13.6 CT 2/- SOL 5.8% SD TR
pH 11.0 Cl 100 Ca TR
SURVEY: 7269' 22.0 DEG, S68E, TVD=7026'

ANDESITE = MED GRNISH GRY W/ YEL TINT; V HD, DENSE, ANG CTTNGS; DOM MICROXLN, LOC CRYPTOXLN-V FN GRANULAR; WHT SPECKLED GRNDMASS CONT A/A; NON AMYG; CONT MAG A/A; MOD-LOC STRNG CHLORTZD GRNDMASS STRONGLY BLEACHED GRNDMASS AT 7270-80 W/ SIGNIF INCR CHLOR & EPID MNRLZTN, DISM MAG; COM-ABNT EPID TO 7310'; WHT CALC FRAGS @ 7280-90; V CALCIC GRNDMASS F/ 7290-7310 APPRS TO BE ASSOC W/ COARSER GRAIN SZ; 20-30% DK GRY BSLT F/7280-7300 ANDS BELOW 7310 SIMILAR TO ANDS @ 7250.

ANDESITE = MED GRY TO MED GRNISH GRY; V HARD; DENSE, ANGULAR TO BLOCKY CUTTINGS; APHANITIC, PRED MICROXLN; CONT WHITE SPECKLED GROUNDMASS A/A ; OCC MAGNETIC; WK TO MOD CHLORITIZED; CONT CHLORITE AND EPIDOTE MNRLZTN, OCC LOCALIZED; OCC TR PYRITE F/7370-90'; SLI TO MOD CALC.

MW 9.0 FV 37 PV 11 YP 3 GELS 1/2
FIL 12.8 CT 2/- SOL 5% SD TR
pH 11.0 Cl 100 Ca TR
SURVEY: 7393' 21.5 DEG, S75E, TVD=7179'

ALTERED TUFF = OFF WHT TO V LT GRY, LT GRY, LT GRNISH GRY; FRM TO V HARD; ANG IRREG CTTNGS W/ HACKLY EDGES; SIGNIF ALTRED TUFFACEOUS TEX; DECR IN VIS EPID F/ 7390-7420', SLI INCR FROM 7420-30'; COM FRESH BSLT F/7390-7420', OCC CHLORITE ALTRN OF ANDESITE; ABNT GRN AND BLACK SPECKLED TUFF CUTTINGS F/7420-30; NON TO SLI CALCAREOUS.

LOST 43 BBLS DURING SURVEY AT 7427'

FELSITE = V LT GRNISH GRY, WHT-V LT GRY BELOW 7490'; V HD; ANG HACKLY CTTNGS, SHARP "PORCELAIN LIKE" CTTNGS W/OCC CONCHOIDAL FRAC BELOW 7500; GLASSY-MICROXLN GRNDMASS; < 5% RECTANGULAR FSPR PHENOS W/ CHLORTZD INTERIORS, TR VIS CLEAVAGE FACES OF FSPR; NON VESC (AMYGS?); COM RNDD-IRREG BLEBS OF CLR SILICA, TR CLR QTZ MICROVNG; ABNT GRN CHLOR MOTTLING F/ 7450-90, SPOTTY PIN-POINT CHLORTZN BELOW 7500'; RR EPID, NONE BELOW 7510; TR CALC

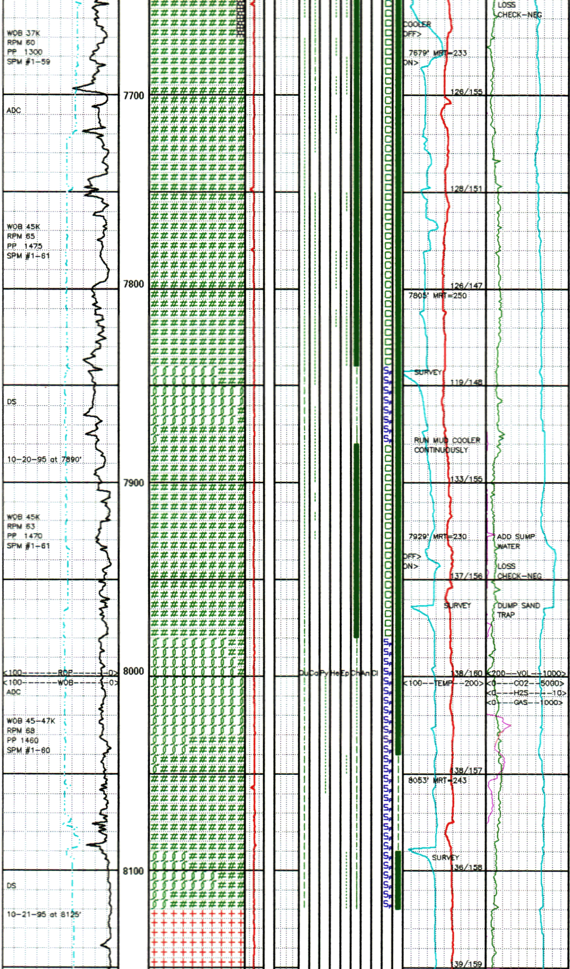
RUN MUD LOSS CHECK AT 7552-60', NO LOSS
CARBIDE LAG @ 7491' 64.7min / 3823 stks
500cc,18u,59 SPM @95%,19mDUR,101% THEOR
SURVEY: 7517' 20.0 DEG, S67E, TVD=7295'

FELSITE = WHT-V LT GRY; V HD; ANG HACKLY TO SHARP CTTNGS; GLASSY-MICROXLN GRNDMAS TR POSS FSPR PHENOS SLI CHLORTZD; MNR IRREG BLEBS OF CLR SILIC; SPOTTY PIN-POINT CHLORTZN; TR CALC.

RHYODACITE = LT GRY-MED GRY W/ BRNISH TINT, LT GRY/MED BRNISH GRY MOTTLED GRND MASS; V HARD; PRED SHARP ANGULAR CTTNGS; MICROXLN GRNDMASS, SUB VITR LUSTR; < 5% RELC FSPR PHENOS; MNR CHLORTZN, SLI INCR CHLOR F/7590-7610'; TR EPID MNRLTZN F/ 7580-7600'; NON CALC; OCC PYRITE XLS IN FELSITE CTTNGS F/7580-7610'.

MW 9.2 FV 41 PV 23 YP 9 GELS 2/5
FIL 12.8 CT 2/- SOL 6.5% SD TR
pH 10.5 Cl 100 Ca TR

DEBRIS FLOW? = MED GRNISH GRY OVERALL; VARCOL GRN, GRY & BRNISH GRY CTTNGS; V HD; SILICEOUS SHARP ANG CTTNGS; COM BRECCIA/FRAGMENTAL APPR WITHIN CTTNGS;



WL SILICIFD; OCC HEMATITIC FRAGS.

ALTERED ANDESITE = MED-DK GRNISH GRY TO GRYISH GRN; V HD, IRREG CTTNGS; APHAN; INTENSE CHLORITE ALTRN THROUGHOUT, HIGHLY MOTTLED WHT/LT GRN/DK GRN COLORING; NO IDENTIFIABLE TEX OR PHENOS; TR LOC STEEL GRY MAG, SLI MAGNETIC CTTNGS; MNR QTZ+CALC+CHLOR VN/VUG FILL; TR LOC EPID MNRLZTN; MNR WHT CALC VUG FILL; TR HEMA STAIN; DECR CALC BELOW 7700'

SURVEY: 7679' 20.5 DEG, S70E, TVD=7447'

ALTERED ANDESITE = MED GRY TO LT GRY, MED TO DRK GRNISH GRY, DRK GRN; V HARD; PRED SHARP ANGULAR CTTNGS, OCC IRREG TO BLKY; APHAN, CRYPTOXLN; CONT INTENSE CHLOR ALTRN OF GRNDMASS & RELIC PHENO SITES; COM FN WHT SPECKLED GRNDMASS; TR STEEL GRY MAG, OCC MAGNETIC CTTNGS; MNR VNG A/A; RR EPID MNRLZTN; TR HEMATITE STAINS IN MUD; SLI TO MOD CALC.

MW 9.1 FV 36 PV 13 YP 3 GELS 1/3
FIL 15.6 CT 2/- SOL 5.8% SD TR
pH 10.5 Cl 100 Ca TR
SURVEY: 7805' 21.0 DEG, S76E, TVD=7565'

ALTERED ANDESITE = MED TO DRK GRNISH GRY LT GRY TO MED GRY, OCC MED TO DRK GRN; V HARD; BLKY TO IRREG, SHARP-CONCHOIDAL CTTNGS; APHANITIC, CRYPTOXLN TO MICROXLN CONT INTENSE CHLORITE ALTRN A/A; UNALTRD FRAG CONTAIN BLK SPECKS, POSS MAFIC MNRL MAFICS ALTERED FORMING CHLORITE SPECKS; OCC V FN EPIDOTE XLS; SLI MOD CALC.

FELSIC DIKE = V LT BRNISH GRY; V HD; FN SUCROSIC TEX W/ VITR LSTR, TRANSLU ON THIN EDGES; HVY SILICFD W/ COM CLR QTZ INCLUS; FN DISM BIOT, DISTINCTIVE BRN COLOR DUE TO BIOTZN; DISM EUHED HRNBLND + AMPH; V MNR SPOTTY CHLOR W/ MICACEOUS CHLOR; RR DK BRASS SULFIDE; POSS SILICFD DEBRIS FLOW @ 7860-80'.

ALTERED ANDESITE = MED-DK GRNISH GRY; OCC DK GRY; V HD, IRREG CTTNGS; APHAN; ABNT CHLORITE ALTRN OF GRNDMASS & RELIC PHENO SITES; HIGHLY MOTTLED WHT/LT GRN/DK GRN; NO ORIGINAL TEX VIS; TR LOC STEEL GRY MAG, SLI MAGNETIC CTTNGS; COM FN WHT SPECKLED GRNDMASS; SM WHT ALTRN OF GRNDMASS, POSS ALBITE; MNR QTZ+CHLOR MICROVNG, TR DK GRN-BLK VN FILL; NO EPID OCC SFT BIT PULVERIZED FRAGS.

SURVEY: 7929' 20.0 DEG, S73E, TVD=7681'

ALTERED ANDESITE = CONT AS ABOVE; MED-DK GRNISH GRY; V HD; CONT HIGHLY MOTTLED COLORING AS ABOVE; TR LOC STEEL GRY MAG; MNR QTZ+CHLOR MICROVNG; TR DK GRN-BLK VN FILL; NON CALC.

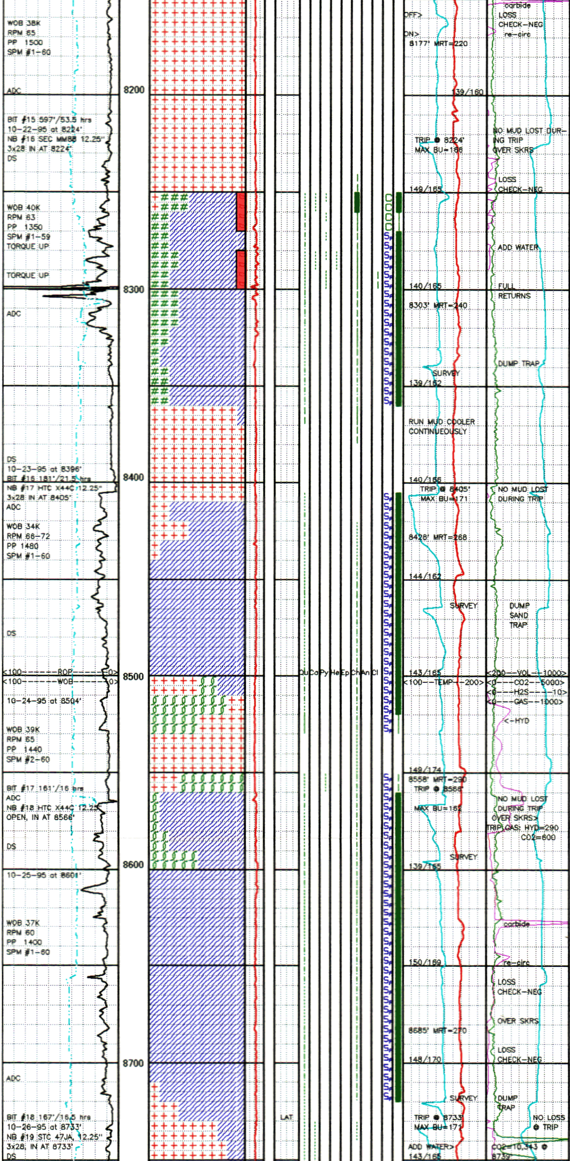
FELSIC DIKE = V LT BRNISH GRY; V HD; FN SUCROSIC TEX; SAME TEX & APPR AS AT 7840-70 BUT LIGHTER COL & LESS DISM BIOT; HVY SILICFD W/CLR QTZ INCLUS; MNR DISM BIOT; DISM EUHED HRNDBLD + AMPH CHLOR A/A; TR DISM DK BRASS SULFIDE; OCC BIOT CLUSTERS & CHLOR VNG.

MW 9.1 FV 41 PV 23 YP 9 GELS 1/3
FIL 12.4 CT 2/- SOL 5.8% SD TR
pH 11.0 Cl 50 Ca TR
SURVEY: 8053' 21.0 DEG, S62E, TVD=7797

ALTERED ANDESITE? = MED-DK GRY OVERALL; COM BRN & GRN MOTTLING WITHIN CTTNGS; V HD; SHARP CTTNGS; INCR SILIC/REXLN APPR THAN ALTRD ANDS ABOVE, TRANSLU ON THIN EDGES; COM DK BRN AREAS W/ VITR LUSTR, POSS BIOTZN; LOC ABNT CHLORTZN; BECOMING HORNFELSIC GRADE?; GD TR STEEL GRY MAG W/ SLI MAGNETIC CTTNGS; NON CALC SIGNIF INCR IN CHLOR & EPID AT 8090'.

FELSIC/SILICIC DIKE = WHT, GRN & DK GRY; V HD; SHARP IRREG CTTNGS; V SILIC/REXLN APPR, COM CLR QTZ; TR-MNR AMTS BLK MAG CTTNGS V ATTRACTED TO MAGNET; COM CHLOR COM DK GRN HRNDBLD XTLS BELOW 8090'; POSS ACTINOLITE.

GRANODIORITE = DK GRNISH GRY OVERALL; CLR-WHT & DK GRN W/BLK-DK GRY CTTNGS; V HD; IRREG HACKLY CTTNGS; PHANERITIC; MED GRAINED; COM 1-2mm CLR-SUBTRANSLU



EUHED PLAG; OCC ANHEDRAL CLR QTZ; COM MAFICS, PRED GRN HRNBLND; COM LG MAGNETITE XLS AS ACCESSORY MNRL; TR YEL EPID; NON CALCIC.

SURVEY: 8177' 21.75 DEG, S65E, TVD=7913
CARBIDE LAG @ 8149' 70.6min / 4165 stks
500cc,20u,59 SPM @95%,21mDUR,101% THEOR
MW 9.2 FV 44 PV 22 YP 10 GELS 2/4
FIL 14 CT 2/- SOL 6.5% SD TR
pH 11.0 Cl 50 Ca TR

GRANODIORITE = MED-DK GRNISH GRY OVERALL W/ CLR-WHT & DK GRN W/BLK-DK GRY CTTNGS; V HD; IRREG HACKLY CTTNGS; PHANERITIC; MED GRAINED; COM 1-2mm CLR-SUBTRANSLU EUHED PLAG; OCC ANHEDRAL CLR QTZ; COM MAFICS, PRED GRN HRNBLND; COM LG MAGNETITE XLS AS ACCESSORY MNRL; TR YEL EPID; NON CALCIC.

SILICIFIED ZONE?= GRNISH BLK OVERALL, DK BRN, DK GRN & DK GRY W/MNR WHT CTTNGS; V HD; SHARP IRREG CTTNGS; V SILICEOUS APPR W/MOTTLED BRN/GRN COLORING; VITR LUSTR; TRANSLU ON THIN EDGES; PRED DK BRN SEMI-TRANSLU FRAGS; POSS A SILICA PRECIP DEPOSIT AROUND BRECCIA MATRL; NO FRAC INDICATORS; MNR SFT WHT CLY ALTRD FRAGS F/8290-8300'; TR QTZ VNG W/PYRITE; EXTRM FN DISSEM PYR? IN SILICIC AREAS; COM DISSEM MAG; NON TO SLI CALC; ROUGH DRILLING F/8260-8320'.

SURVEY: 8303' 22.0 DEG, S70E, TVD=8030

SILICIFIED ZONE? = CONT A/A, DK GRY-BLK, DK BRN & DK GRNISH GRY; V HD; SHARP IRREG CTTNGS; V SILICEOUS, SEMI-TRANSLU; APPRS AS V FN GRY-BLK OPQ SPECKS SUSPENDED IN SILICA, GIVING DK COLOR TO ROCK MASS; NO VIS FRACTURE INDICATORS; OCC CHLORITIZED ANDESITE? FRAGS; NON CALC.

GRANODIORITE = MED-DK GRNISH GRY OVERALL W/ CLR-WHT & DK GRN W/BLK-DK GRY CTTNGS; V HD; IRREG HACKLY CTTNGS; PHANERITIC; MED GRAINED; COM 1-2mm CLR-SUBTRANSLU EUHED PLAG; OCC ANHEDRAL CLR QTZ; COM MAFICS, PRED GRN HRNBLND; COM LG MAGNETITE XLS; NON CALC.

MW 9.1 FV 40 PV 18 YP 7 GELS 1/-
FIL 16.5 CT 2/- SOL 5.8% SD TR
pH 10.0 Cl 100 Ca TR
SURVEY: 8428' 22.5 DEG, S65E, TVD=8146

SILICIFIED ZONE? = PRED V DK GRY, LOC DK BRN, DK GRN & BLK; V HD; SHARP ANG SILICEOUS-GLASSY CTTNGS W/ VITR LUSTR; CLR-TRANSLU ON THIN EDGES; EXTRM FN GLOSSY-METALIC BLK MNRL DISSEM IN SEMI-TRANSLU SILICA; SIMILAR TO MTRL AT 8250-8360'; CTTNGS V ATTRACKED TO MAGNET; OCC DK BRN VITR FRAGS; APPRS AS MASS SILICA W/ NO PHENOS OR INTERNAL FEATURES; OCC DK BRN & DK GRN STREAKS & SWIRLS; TR SECONDARY CLR QTZ VNG; NON CALC; NO FRAC INDICATORS; INCR CHLOR F/8450-8510'; GRADATIONAL CONTACT INTO WHT FELSITE STARTING AT 8500'.

FELSITE = WHT-V LT GRY, OPAQUE; V HD; SHARP IRREG CTTNGS; DULL LUSTR; MASS APPR; MNR FN DISSEM BLK MNRL (BIOTITE?); FN SUCROSIC TEX; MNR LOC CHLOR; NON CALC

GRANODIORITE (8530-50) = MED GRNISH GRY; V HD; IRREG HACKLY CTTNGS; PHANERITIC; MED GRAINED; COM 1-2mm CLR-SUBTRANSLU EUHED PLAG; COM DK GRN HRNBLND; COM MAG ACC MNRL; V SIMILAR TO 8360-8410' ABOVE.

SURVEY: 8558' 22.0 DEG, S75E, TVD=8266

SILICIFIED ZONE? = PRED V DK GRY, LOC DK BRN, DK GRN & BLK; V HD; SHARP ANG SILICEOUS-GLASSY CTTNGS W/ VITR LUSTR; CLR-SEMI-TRANSLU ON THIN EDGES; EXTRM FN DISSEM GLOSSY-METALIC BLK MNRL, CTTNGS V ATTRACKED TO MAGNET; V SIMILAR TO MTRL AT 8250-8360 & 8410-8500'; OCC DK BRN VITR FRAGS; MASS APPR W/ OCC DK BRN & DK GRN STREAKS; TR SECONDARY CLR-WHT QTZ MICROVNG; NON CALC; TR DISSEM PYR AT 8560-70; PROB DIABASE.

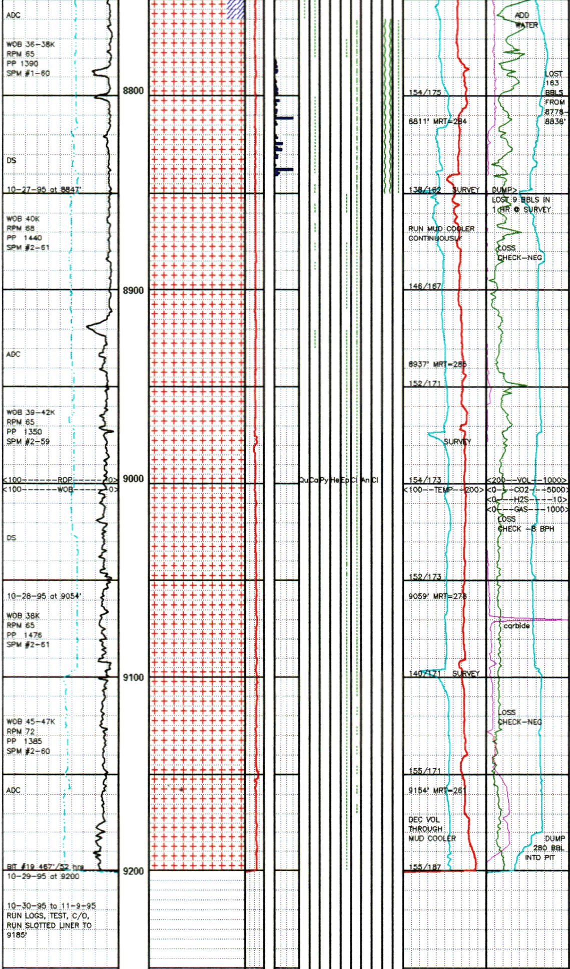
CARBIDE LAG @ 8625' 75.5min / 4453 stks
500cc,18u,59 SPM @95%,22mDUR,102% THEOR

SILICIFIED ZONE? = CONT AS ABOVE; PRED V DK GRY, LOC DK GRN & BLK, SM DK BRN; V HD; SHARP ANG SILICEOUS-GLASSY CTTNGS; SEMITRANSLU ON THIN EDGES; ABNT FN DISM METALIC MNRL, CTTNGS V ATTRACKED TO MAGNET; SLI DARKER OVERALL THAN ABOVE; NO VIS PHENOS; TR-MNR SECONDARY CLR-WHT QTZ VNG & VUGS; MNR LOC CHLOR ALTRN; NON CALC.

SURVEY: 8685' 22.0 DEG, S73E, TVD=8384
TRIP GAS @ 8733: CO2=2400, HYD=180

CO2 PEAK OF 10,682 ppm AT 8739' W/ SLI INCR T-OUT.

GRANODIORITE = WHT-V LT GRY, LT GRNISH GRY; V HARD, IRREG CTTNGS; PHANERITIC; MED GRAINED; EQUIGRAN; OCC 1-2mm EUHED CLR-SUBTRANSLU PLAG; COM CLR ANHED QTZ;



COM DK GRN HRNBLND MAFICS, W/ OCC ELONGATED HRNBLND XLS; MNR CHLOR ALTRN AROUND HRNBLND MAFICS; TR MAG ACC MNRL; TR INTERSTITIAL CALC; RR YEL EPID @ 8780

LOSING 22 BBLS/HR, CHECK MUD LOSS F/ 8778-8838', LOST 163 BBLS.

SURVEY: 8811' 22.0 DEG, S70E, TVD=8500
MW 9.0 FV 36 PV 13 YP 3 GELS 1/3
FIL 16 CT 2/- SOL 5% SD TR
pH 10.5 Cl 150 Ca TR

GRANODIORITE = WHT TO V LT GRY, OCC LT GRNISH GRY; V HARD, IRREG CTTNGS; PHANERITIC; PRED MED GRAINED; EQUIGRAN; V FN GRAINED F/8780-90' W/ SIGNIF INCR IN HORNBLENDE MAFICS; OCC 1-2mm EUHEDRAL CLR TO WHT PLAGIOCLASE; COM ANHED QTZ; COM DK GRN HORNBLENDE; TR-MNR CHLOR ALTRN AROUND MAFICS; TR MAG ACC MNRL; RR INTERSTITIAL CALC; PROB FN GRAINED INTRUSIVE ZONE AT 8780-90'; OCC WHT SFT BIT PULVERIZED FRAGS.

CHECK MUD LOSS F/8880-8886'- NO LOSS.

GRANODIORITE = WHT-V LT GRY, LT GRNISH GRY; V HARD, IRREG CTTNGS; PHANERITIC; MED GRAINED; EQUIGRAN; MNR 1-2mm EUHED CLR PLAG, COM MLKY WHT ANHED-SUBHED FSPR COM CLR ANHED QTZ; COM BLK-DK GRN HORNBLENDE, W/ OCC ELONG HRNBLND XLS; 40% FN GRAINED AT 8920-30'(DRL BRK); TR-MNR CHLORITE ALTRN AROUND MAFICS, SLI DECR BELOW 8940'; RR-TR BRIGHT YEL EPIDOTE FROM 8920-8970+'; RR CALC F/8900-50'.

SURVEY: 8937' 20.0 DEG, S71E, TVD=8618
MW 8.9 FV 35 PV 15 YP 5 GELS 1/3
FIL 14 CT 2 SOL 4.2% SD TR
pH 11.0 Cl 150 Ca TR

GRANODIORITE = WHT TO V LT GRY, GRNISH GRY; V HARD; PHANERITIC; IRREG TO BLKY CUTTINGS; MED GRAINED, EQUIGRANULAR; MNR -COM 1-2mm EUHEDRAL PLAGIOCLASE & ANHED QUARTZ; COM BLK-DK GRN HORNBLENDE XLS, W/OCC ELONG XLS; RR CHLORITE ALTRN OF MAFICS; OCC TR BRIGHT YEL FINE EPIDOTE CLUSTERS; RR CALCAREOUS.

LOSS CHECK F/9005-20', LOSING 8 BBLS/HR

CARBIDE LAG @ 9069' 78.2min / 4774 stks
500cc,19u,61 SPM @95%,18mDUR,104% THEOR

GRANODIORITE = V LT GRY; CLR & WHT W/ SCAT BLK UNDERSCOPE; V HD, IRREG CTTNGS; PHANERITIC; MED GRAINED, EQUIGRANULAR; DOM SUBTRANSLU-CLOUDY FSPR; MNR EUHED CLR PLAG; COM ANHED CLR-WHT QTZ; BECOMING LIGHTER COLORED BELOW 9030' DUE TO DECR AMT & SIZE OF MAFICS; MNR BLK-DK GRN HRNBLND; TR YEL EPID, SLI INCR AT 9040-50' W/ THIN EPID VNG; TR BLK MAG ACC MNRL; V RARE CALC.

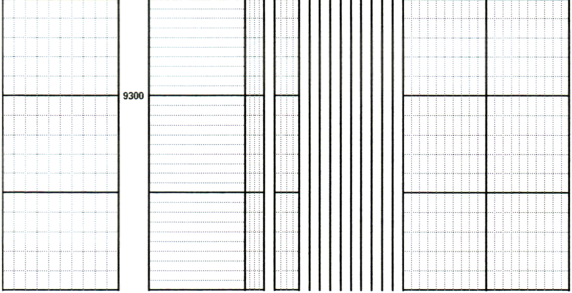
LOSS CHECK F/9099-9130' - NO LOSS
SURVEY: 9059' 19.0 DEG, S70E, TVD=8733

GRANODIORITE = V LT GRY; CLR & WHT W/ SCAT BLK UNDERSCOPE; V HD, IRREG CTTNGS; PHANERITIC; MED GRAINED, EQUIGRANULAR; DOM SUBTRANSLU-CLOUDY FSPR; MNR EUHED CLR PLAG; COM ANHED CLR-WHT QTZ; MNR SML BLK-DK GRN HRNBLND MAFICS; TR YEL EPID; RR CHLORTZN OF MAFICS DECR W/DEPTH.

GRANODIORITE = WHT TO V LT GRY, W/ABNT BLK SPECKS; V HARD; PHANERITIC; COM IRREG CUTTINGS; MED GRAINED, COM EQUIGRANULAR; PRED WHT FSPR AND CLR QTZ; COM DRK MAFICS, PRED HORNBLENDE XLS; RR V FN BRIGHT YEL EPIDOTE XLS; NO CHLORITE ALTRN; V RR CALC.

SURVEY: 9154' 18.0 DEG, S67E, TVD=8823

DRILLED 12.25" HOLE TO 9200', CIRC & COND MUD, WORK STUCK PIPE @ 9175', SPOT 22 BBLS MINERAL OIL, PIPE PULLED LOOSE, POOH, RIH, CIRC & COND MUD FOR LOGS, RUN SCHLUMB LOGS: GR-FMS f/9198-4196', DIL-LDT-CNL-GR f/8900-4176', RIG UP FOR AIR, STAGE IN AND UNLOAD MUD W/ AIR, C/O TO 9200', RUN 5" ORIFICE TEST, FLOW PEAKED @ 45 psig & 281 deg F, STABILIZED FLOW AFTER 5.75hr TEST = 15.1 psig & 233 deg F, CO2=148,000ppm,



H2S=330-825ppm, RUN SHUT-IN PRESSURE BUILD UP TEST FOR 20hrs: 704 psig AND STILL RISING, OPEN WELL, ABNT CO2 & H2S NO SUSTAINED FLOW, PUMP AIR CAP, WELL UNLOADED @ 159 psig & 353 deg F W/ 825+ppm H2S & ABNT RED HEMATITC MTRL, RIH & CLEAN OUT BRIDGE F/ 7494-7576', WELL UNLOAED @ 7576'(46 psig & 281 F), COULD NOT REAM PAST 8792', POOH & MUD UP, KILL WELL, RIH & C/O FILL F/8766-8792', BEGAN SIDETRACKING? F/ 8792' TO 8847', POOH, CHANGE BIT & BHA, RIH, REAM F/ 8780-9200' (WENT INTO OLD HOLE) MAKE 2 WIPER TRIPS TO SHOE, CIRC & COND MUD, RUN 78 jts. 9 5/8" SLOTTED LINER + 38 jts 9 5/8" BLANK LINER, SET LINER AT 9185', TOL @ 3987', STAGE-IN & UNLOAD MUD W/ AIR TO 9185', AT 9185': T-OUT= 199 deg F, P-OUT= 1.5-2.5 psig, CO2= 147,700+ppm, H2S=825+ppm, HYD=60ppm, PUMP SOAP SLUG, POOH AND SURGE WELL AT LAP @ 3937', RIH TO BTM, PUMP 2 SOAP SLUGS, POOH, PUMP AIR CAP, SHUT IN WELL OPEN WELL AFTER 3hrs: MAX T-OUT=165 F, MAX P-OUT=24psig, CO2=147,700+ppm, H2S=825+ppm.