EXLOG SMITH R.F. SMITH CORP.

GEOTHERMAL DIVISION (SM)

GEOTHERMAL DATA LOG

COMPANY Steam Reserve Corp.
WELL Animas 55-7
FIELD Lightning Dock
COUNTY Hidalgo STATE New Mexico
LOCATION NW NW SE SEC7 T25S R19W
ELEVATION 4201'+ 19' to KB ☒ DF ☐ GL ☐
CONTRACTOR/RIG Will Brothers
SPUD DATE 12/29/84 TD DATE 2/14/85
TD 7001' TRUE VERT DEPTH
BOTTOM HOLE LOCATION
WELL STATUS
COMPANY REPRESENTATIVE Otis Day

LOG INTERVAL

DATE LOGGED 12/29/84 to 2/14/85
DEPTH LOGGED 56' to 7001'
MUD DRILLING 56' 7001'
AIR DRILLING
TEMPERATURE INSTRUMENT TYPE T-thermocouple
PRESSURE INSTRUMENT TYPE
GAS TRAP-AGITATOR ELEC ☐ AIR ☒
LOG SCALE 1:600 UNIT NO. 321
LOG PREPARED BY Manuel A. Hernandez
Frank Gonzalez , Ed Zifcheck

HOLE SIZE		CASING RECORD	
to		30"	at 30'
26"	to 385'	20"	at 360'
17½"	to 1070'	13 3/8"	at 1070'
	to		at
	to		at
	to		at

ENTRIES-WATER/STEAM

✱ = TESTED ZONES

LOST CIRCULATION ZONES

MISC. REMARKS

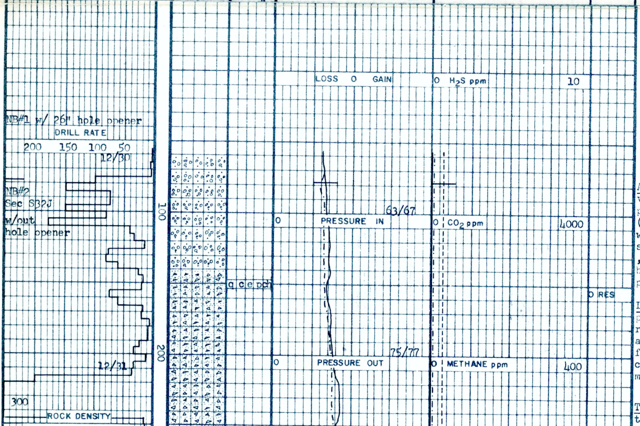
LITHOLOGY SYMBOLS

- Breccia
- Tuff and tuff-breccia
- Conglom.
- Graywacke
- Sandstone
- Siltstone
- Claystone Argillite
- Limestone Dolomite
- Chert
- Solution Deposit
- Mineralized Zone
- Granitic Rock
- Intermed Igneous
- Basic Igneous
- Peridotite
- Acidic Volcanic
- Intermed. Volcanic
- Basic Volcanic
- Porphyry
- Serpentine
- Schist Gneiss

SECONDARY MINERALS
Q = QUARTZ
C = CALCITE
P = PYRITE
E = EPIDOTE
ch= chlorite

NB	NEW BIT	W	MUD DENSITY #/gal
RRB	RE-RUN BIT	V	FUNNEL VISCOSITY
CB	CORE BIT	PV	PLASTIC VISCOSITY
WOB	WEIGHT ON BIT	YP	YIELD POINT
RPM	REVS PER MINUTE	F	FILTRATE API
SPM	STROKES PER MINUTE	FC	FILTER CAKE
CFM	CUBIC FT PER MINUTE	SOL	SOLIDS- %
NR	NO RETURNS	SD	SAND CONTENT- %
C	CARBIDE TEST	S	SALINITY- PPM Cl
LAT	LOGGED AFTER TRIP	CA	CALCIUM-PPM Ca
BHT	BOTTOM HOLE TEMPERATURE	RM	MUD RESISTIVITY
TC	TIME SINCE CIRCULATION		WIRELINE LOG RUN
	CASING SHOE		WATER/STEAM ENTRY
	CORED INTERVAL		ORIFICE/FLOW TEST
	NO RECOVERY		

DRILL RATE ft/hr ☒ min/ft ☐ m/hr ☐ min/m ☐
ROCK DENSITY (g/cc) — — —
DEPTH
LITHOLOGY
SECONDARY
MINERALIZATION
TEMPERATURE °C ☐ °F ☒
IN — — OUT — · —
PRESSURE KSC ☐ PSI ☐
IN — — — OUT — · — · —
LOSS/GAIN · · · · · · · · ·
M³ ☐ BBLS ☐
H_2S ppm ————
CO_2 ppm — — — — —
METHANE ppm — · — · —
ETHANE ppm — · — · — · —
SURVEYS
RESISTIVITY Ω-M
LITHOLOGY DESCRIPTION AND REMARKS



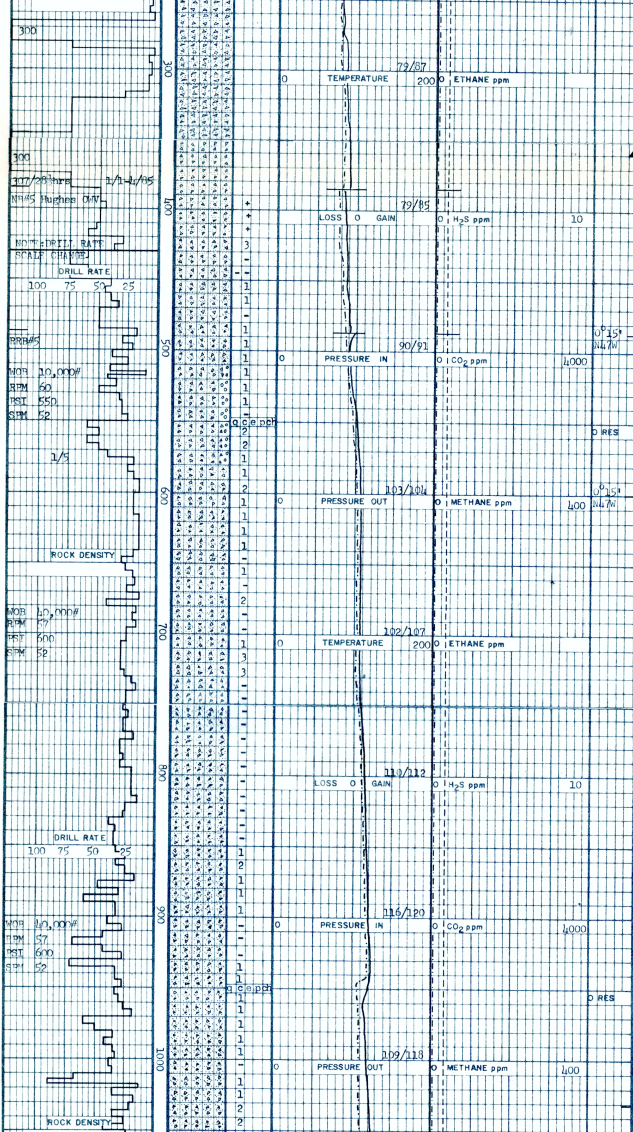
Note:Secondary minerals expressed in direct percentages, e.g.,1=1% etc;"-" = trace,"+"=greater than 9%.

Note:Set 30" surface conductor @ 30'. Spud in on 12/29/84 w/ 17½" bit & 26" hole opener, begin logging f/56'.

Alluvium:pred orng-yel, v prly srtd fn-v crs, pred volcanic clasts (tuffs,ash & andesite) w/ comm-v abdnt wht yel sft clay mtrx,r clr qtz ,r loc drusy qtz,comm hematite,mnr poss psilomelane.

Lithic Ash Flow Tuff?: pred lt-red orng,abdnt rndd clasts,cong-sandy? apparent pore space, fria-v hd,prly-v well cnsldtd,comm sft clr mnrl lining grs,mnr clay

Tuff:red orng,red brn, tan,wht,pred trans w/



comm earthy app,highly silic w/ 10-20% clay, aphan-sucrosic text w/ comm qtz & felds phenos mnr-comm rhyolite frags

Tuff:red,red brn,stained appr,tan,wht,comm elongated gr struc,comm-abdnt silic & lith frag ,decr clay content.

Note:Drilled 17½" hole f/ 78' to 385', POH,rig up 26" hole opener & drill out to 385';used bit #3 & NB#4. POH & set 20" casing @ 360'. Drill ahead w/ 17½" bit.

Tuff:red,orng,pink,brn, yell & mnr purp,v hd, pred welded w/ comm flow banding,comm xln text w/ felds & qtz phenos,comm lith frags, mnr-comm dissem subhdrl hem,mnr calc vng,mnr loc intbdd Ash:pred wht ,silic w/ v fn sucrose text.

Tuff:red,pink,tan,hd-v hd,pred welded text, comm-abdnt cong appr w/ subrnd-rnd clasts,abdnt lithic frags(igns extr & igns intr)abdnt red clay,tr-mnr clr calc vng.

Tuff:pred red to red-brn,com wht to tan, pred welded lithic frags,com-abdt xln text,mod hd,com frac'd appear,oxid appear,tr-mnr clr calcite.

Note:100 bbl mud loss @ 695'.

W 9.1 V 50 PV 20 YP 14 pH 10 Fil 13 Cl 700 Slds 5%

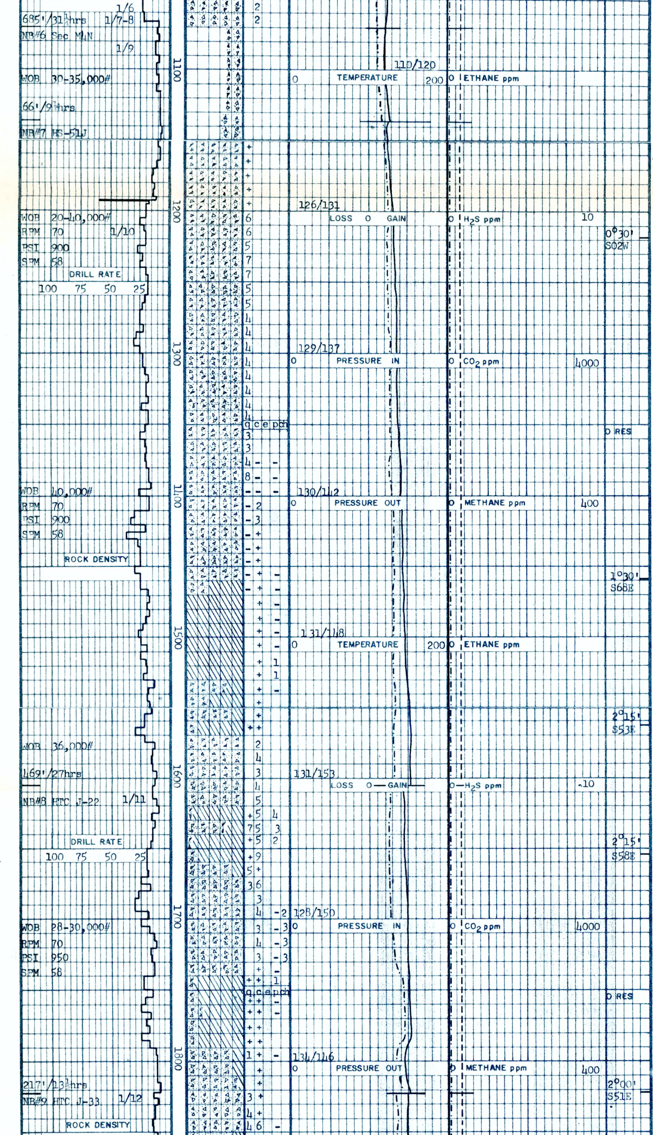
Tuff:brick red due Fe stn,sub ang-rnd clasts in clay mtrx,pred welded w/ mnr rhyolite & xl tuff clasts,colors vary,tr calc frac fill, mnr dissem subhdrl hem.

Note:Losing approx 6 bbls/hr drilling fluid f/ 695'.

Tuff:pred cont'd as above w/ incr igns intr clasts.

Note:Temp drop due add H_2O to build volume.

Tuff:red brn-red,oxid appr,cong-sandy appr, abdnt lithic frags(tuff welded & xln,ash,igns intr & r breccia),tr-mnr calc frac fill,r clr qtz,tr-mnr hem.



Note:Drilled 17½" hole to 1070',set 13 3/8" casing @ 1070'. Begin Drilling 12¼" hole.

Note:cement present in cuttings f/ 1080-1150'.

Tuff: pred red,mnr brn, oxid appr,pred cong-sandy appr,abdnt lith frags w/ mnr brecc app ,v highly silicic w/ r drusy qtz,comm mag.

Tuff:pred red brn,oxidized appearence,mnr wht,tan,fn gr xln text, mod silicic,decr silica w/ depth,sft-mod hd, granular appr,comm mag, r-tr calcite.

W 9.1 V 40 PV 14 YP 7 pH 9.5 Fil 10.4 Cl 600 Slds 4%

Tuff:red-brn,gry,wht, tan,granular appr,cont decr silica,v sft-sft-mnr hd,comm-abdnt lith frags,comm mag,tr pyr tr-comm poss kaolin.

Tuff:lt grn gry-red brn fria,highly calcic,com sft blk mnrl,comm slty appr(lt gry grn),loc highly alt w/ v abdnt clay.

Solution Deposit:lt-med gry,pred mass appr, pred calcium carbonate, highly frac w/ v abdnt clr-wht calc vng,loc rexln appr,loc comm blk sft mnrl.

Tuff:v highly altered, v highly calcic,red,lt grn,abdnt clay,sft-hd.

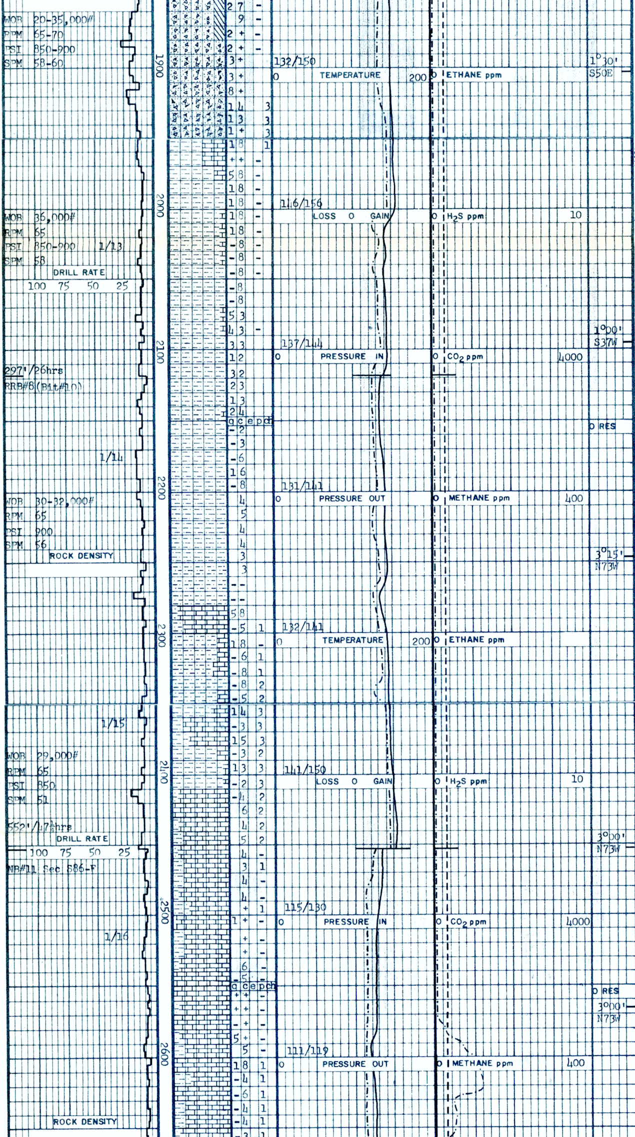
Solution Deposit:@ 1570' pred clr qtz w/ calc frac fill,abdnt sft blk mnrl,highly fractured. Tuff:red-lt grn-brn,highly altrd & oxid appr,sandy-slty appr w/ abdnt clay.

Solution Deposit:clr-wht-lt tan,pred qtz w/ calc,highly frac,loc abdnt sft blk mnrl,loc abdnt pyr vng.

Tuff:wht w/ grn mottled appr,pred xln text w/ mnr poss felds phenos, sft-hd,comm-abdnt calc micro vng,abdnt mag w/ wht mnrl aureoles.

Solution Deposit:Pred calc w/ abdnt clr qtz, pred tan,rexln appr w/ mnr calc frac fill, intercalated wht-clr cryptoxln silica,r-tr poss forams?.

Tuff:variable color, wht,grn,red,brn,pred xln,mnr pumaceous appear,com sandy appear v calcareous,r-tr pyr.



Solution Deposit:pred calc w/abdt clr qtz, v fn-fn gr calcite w/ com clr calcite x-tals, mnr-com blk mnrl(poss magnetite),tr-mnr pyr.

Tuff:gry brn,gd welding xln text,abdnt sl-mod alt felds phenos. comm alt mica,mnr hem.

Siltstone:pred gry,tr red,mod hd-hd,v fn-fn gr,abdnt clay,loc abdt sft blk mnrl,highly calcic,loc highly silic (poss frac fill),comm tuff frags poss slough.

Note:Temp variation due dump pits & add H_2O to keep drlng fluid conditioned.

W 9.4 V 38 PV 16 YP 5 pH 11.5 Fil 8.4 Cl 770 Slds 6%

Note:Dumped pits during trip. Temp drop due to adding water & new mud to build volume.

Siltstone:pred gry,mnr wht,pred fn gr w/ mnr v fn gr,fria-v sft-mod hd,v calcic,pred fissile,comm-abdnt sft blk mnrl.

Siltstone:pred gry w/ loc abdnt wht due calc cmnt,v fn-fn gr,mnr clay tr poss kaol,v highly calcic w/ abdnt calc vng.

Siltstone:pred blk,mnr dk gry brn,mod hd sl fissile,highly calcic, tr silic frac fill.

Note:lost 85 bbls drlng fluid f/ 2275 spot LCM pill.

Limestone:f/2290'-2360' lt-dk brn,pred rexln sucrosic text,hd-v hd, loc abdnt microfossils, abdnt wht-clr calc vng, sl silic.

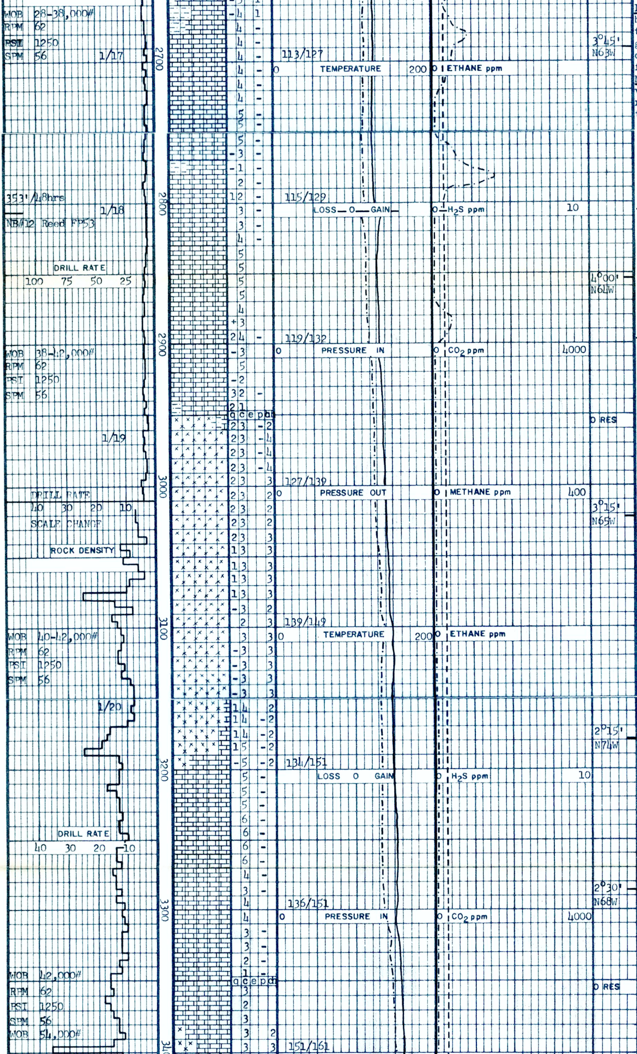
W 9.1 V 38 PV 12 YP 4 pH 11 Fil 10 Cl 500 Slds 3%

Note:POH,chng bit & BHA to decrease angle,rig up mud cooler.

Limestone:lt-dk brn,v highly frac,tr-mnr bioclasts,loc slty-sandy Marl,grades & intbds w/ mnr highly calcic sft Siltstone.

Limestone:pred lt tan, mnr dk brn,loc v abdnt cryptoxln lt blu silica w/ v abdnt bioclasts ,tr carbonized plant material.

Limestone:pred dk brn, hd-v hd due sl silic, pred slty.



Limestone:med-dk gry, hd-v hd,pred sucrosic text,loc rexln fn-med gr,com-abdnt wht-clr calc vng,loc tr microfossils,tr pyr,assoc w/ Marl:lt brn-lt gry,sl-v hd,com mottled,com rexln,abdnt calc vng, tr pyrite.

W 9.1 V 46 PV 15
YP 7 pH 10 Fil 6
Cl 370 Slds 4%

Limestone:pred lt-med brn,mnr dk gry w/ sucrosic text,sl-v hd,com rexln,comm mottled,loc intbdd w/ mnr Marl & Siltstone,comm-abdnt wht calc vng,tr clr, loc tr microfossils,tr dissem pyrite.

Limestone:lt brn-brn, mnr dk brn,hd-v hd due tr-loc v abdnt lt brn cryptoxln silica w/ dolo rhombs as inclusions,loc highly frac, loc comm bioclasts,tr pyr vng.

Intrusive Dike:intermed,lt pnk-lt gry mott w/ grn & wht,hd-v hd, v fn-fn gr grndmass w/ abdnt feld phenos,mnr-comm chlrtzd hnblnd, mnr calc,mnr mag,tr qtz,loc tr pyr.

Intrusive Dike:pred lt orng poss due Fe stn, mott w/ grn & wht,pred hd,aphan grndmass w/ fresh-alt plag & alt bio & tr musc phenos, abdnt subhdrl-euh mag, comm wht/clr calc vng.

Note:Temp incr due inefficient cooling by mud cooler.

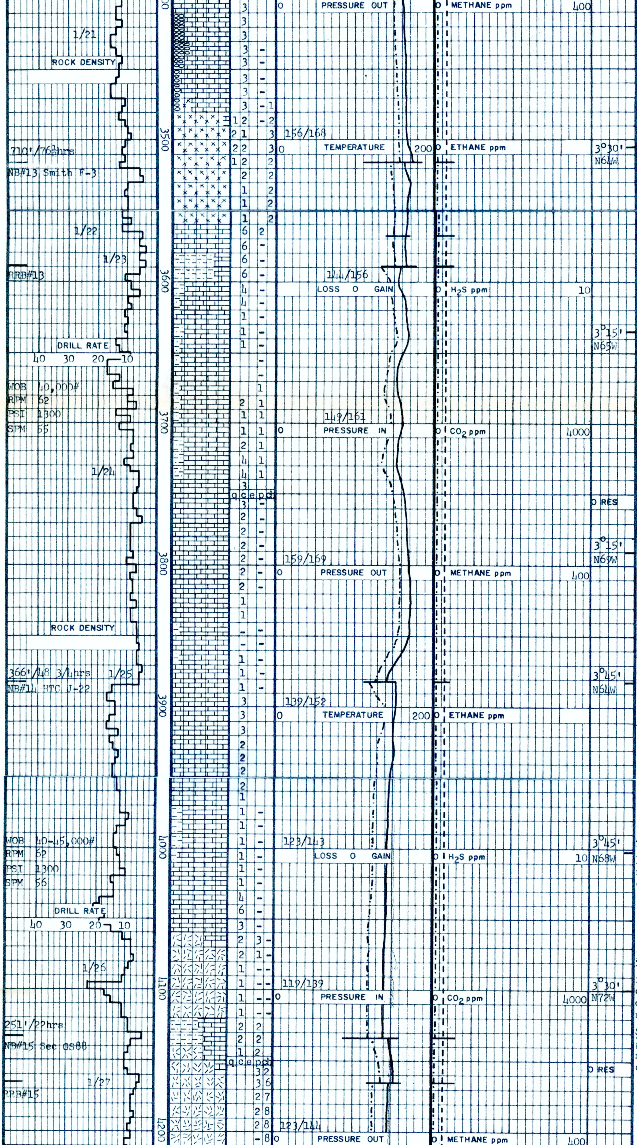
W 9.4 V 44 PV 17
YP 6 pH 10.5 Fil
6.4 Cl 600 Slds 4%

Limestone:lt-med brn, dk gry,hd-v hd,pred sucrosic text,com rexln com mottled,loc intbdd w/mnr marl & sltstn, com-abdnt wht calc vng, tr dism pyrite.

Limestone:pred lt tan, mnr dk brn-blk,pred hd, mnr v hd,pred sucrosic text,rexln,loc abdnt microfossils,comm wht calc vng,tr pyr.

Note:Temp incr due mud cooler down.

Limestone:pred lt brn, mnr blk & sl slty,hd-v hd due loc sl silic, comm bioclasts,comm wht-clr calc vng.



Intrusive Dike:med-dk grn,hd-v hd,aphan grndmass w/abdnt feld phen, comm chlor,mnr calc, mnr mag,tr pyrite.

Chert:lt-med brn,v hd, transluscent,loc frac w/calc microvng,tr pyr, intbdd w/lmstn a/a.

Intrusive Dike:gry,grn, & wht,hd-v hd,aphan grndmass w/abdnt feld phenos,com chlor,mnr-comm mag,mnr calc vng.

Note:twist off at 3568',twisted off 10 stnds & 1 sngl f/kelly,fishing, POH w/fish,RIH.

Siltstone:dk gry,v fn gr,blocky,sft,v calcareous,tr-mnr dism pyr.

Note:temp changes due to erratic efficiency of mud cooler.

Limestone:med brn w/ comm fusilinids,tan-lt brn comm mottled & rexln,intbdd w/calc sltstn,mnr-comm calc vng, tr pyrite.

Limestone:lt tan-lt brn,sl-v hd,comm mott, comm rexln,mnr-loc com clr & wht calc vng,loc mnr fusilinids,tr dism pyrite.

W 9.4 V 39 PV 11
YP 5 pH 11.5 Fil
6.6 Cl 500 Slds 5%

Note:temp decrease due to mud cooler on.

Limestone:tan-lt brn, mod hd,comm rexln,loc comm fusilinids,tr-mnr wht & clr calc vng,r dism mag,loc r pyr.

W 9.3 V 41 PV 18
YP 11 pH 11 Fil
6.8 Cl 600 Slds 4%

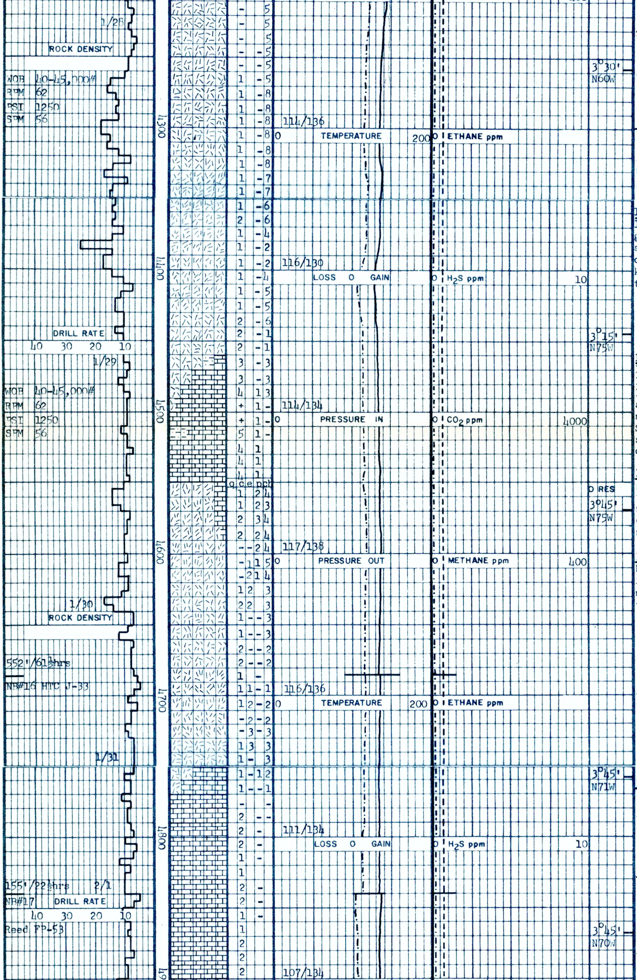
Limestone:lt brn-grn, tan,mod hd,loc brittle, loc sft,comm rexln,abdt microfossils,tr wht vn calcite,r-tr fn gr pyr.

Note:45 bbl mud loss @ 4060'.

Intusive Dike:wht-pnk, v hd,silicified,aplitic,pred qtz & feld,tr chlor,tr dism mag,r dism pyr,tr-mnr calc microvng.

Siltstone:dk gry,v fn gr,pred massive w/ loc microlams,mod-v hd, calcic,tr dism pyr.

Note:twist off @ 4165',twisted off 29 stnds f/kelly, fishing,POH w/fish, RIH w/bit #15.



Intrusive:wht-pnk,hd-v hd,granitic,fn-med gr,pred qtz & k-feld, comm-abdt chlor,comm-abdt mag,loc comm hnbld loc mnr biot,tr pyr,tr-mnr calc vng.

Intrusive:wht-lt grn-pnk,hd,granitic,v fn-fn gr,pred qtz & feld, abdnt chlor,mnr-comm mag,tr-mnr calc vng,tr pyr,tr kaolin.

Intrusive:pred wht,mnr lt grn-pnk,hd,decr granitic appr w/incr altered appr,v fn gr, decr hd w/loc sft comm kaolin,decr chlorite, tr dism pyr.

Note:temp drop @ 4400' due to adding new mud.

Limestone:lt-med brn, lt-dk gry,sl-mod hd, loc silty,comm rexln, loc comm foss,comm-v abdnt calc vng,tr-loc mnr pyr,intbdd w/ Siltstone:med-dk gry, sl-mod hd,calcareous, comm-abdnt calc,tr pyr.

Intrusive:grn-gry,fn gr,hd,grn color & altered appr poss montmorillonite,comm fn gr chlorite,mnr-comm pyr, mnr magnetite.

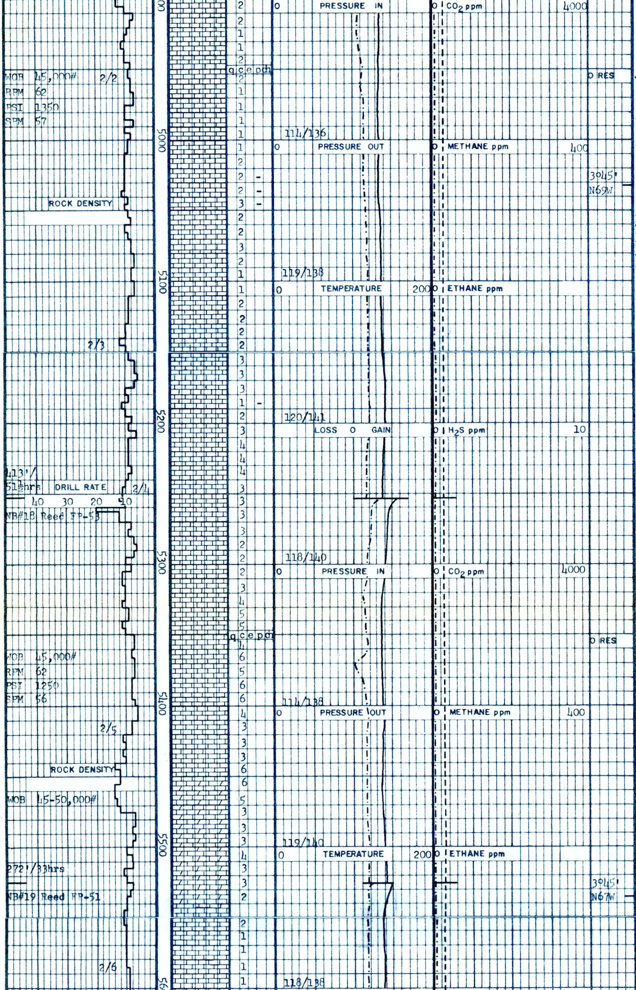
Intrusive:med gry/grn, hd,fn gr,pred qtz & feld,mnr-comm chlor, mnr mag,tr-comm epidote tr-mnr calc,tr pyr.

W 9.4 V 32 PV 9
YP 3 pH 11.0 Fil
7 Cl 600 Slds 4%

Intrusive:pred grn, mnr wht-lt gry,hd,v fn-fn gr,pred qtz & feld w/mnr-comm grn, prismatic epidote, comm magnetite,tr calcite,tr pyr.

Limestone:lt-med gry, sl-mod hd,loc friable, rexln,marblized,pred v fn-fn gr,mnr med gr, mnr calc vng,r-tr dism pyrite.

Limestone:lt gry-wht, sl hd,brittle,v fn-fn gr matrix w/comm-abdt intraclasts(rnd-elongate),loc sft-friable, mnr-comm lt brn-gry transluscent chert,mnr wht calc vng,r-tr dism pyr.



W 9.3 V 37 PV 12
YP 7 pH 11.0 Fil
6.8 Cl 500 Slds 4%

Limestone:wht-lt gry, sl-mod hd,comm brittle, rexln,comm intraclasts, intbdd w/mnr lt gry chert,tr-mnr calc vng.

Limestone:wht-lt gry, sl-mod hd,comm brittle, rexln,comm intraclasts, intbdd w/tr lt gry cht, tr-mnr calc vng,r-tr dism pyr.

Limestone:wht-lt gry, sl hd,comm brittle, rexln,comm-abdt intraclasts,loc v sft,tr-mnr calc vng.

Limestone:lt-dk gry, mottled,mod hd-v hd, comm brittle,rexln,tr-mnr wht calc vng.

Limestone:lt-dk gry, mottled,mod hd-v hd, comm brittle,rexln,tr-mnr calc vng,tr intbdd chert,r pyr,r fossil (prob bivalve).

Limestone:pred wht,mnr lt gry,mod hd,loc brittle,microxln,loc silty appr,mnr-comm wht calc vng,tr intbdd lt brn chert.

Limestone:brn w/ mnr dk brn,pred hd-loc v hd,microxln,mass appr, tr lt brn translucent cryptoxln silica,comm calc vng.

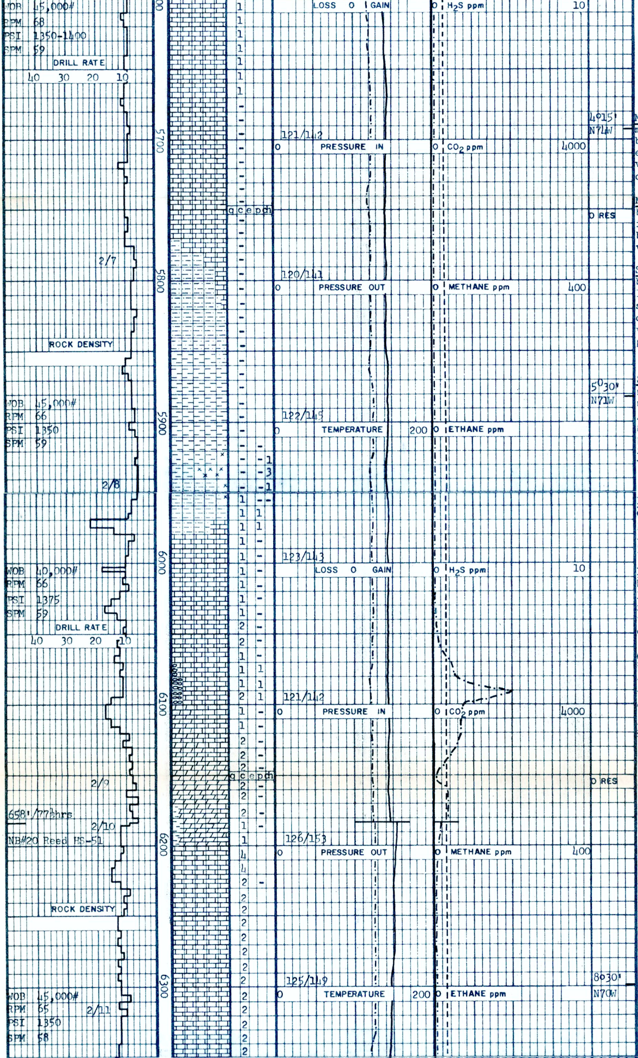
Note:jet shaker pit @ 5359'.Temp in drop @ 5370' due to adding new mud.

Limestone:pred brn-dk gry,mnr lt gry,hd-v hd, pred mass appr,comm frac'd appr,cryptoxln, comm-abdt calc frac vng.

Limestone:pred wht w/ mnr-comm gry brn,hd, granular rexln text, pred sl dolomitic,loc dolo rhombs vis,comm-abdnt calc vng,r pyr.

Limestone:lt-dk gry,w/ comm-abdt wht interbdd dolomite,sl hd-v hd, mass appr,mnr vn calc.

Marl:gry,sft-mod hd, mnr hd,highly calcic, sl-highly silty w/ mnr gran text,loc mnr clay mnr calc vng,r dissem



pyr.

W 9.3 V 40 PV 13
YP 4 pH 10.5 Fil
6.6 Cl 500 Slds 4%

Marl:med-dk gry,sft-mod hd,mnr v hd,interbdd v fn-fn gr calcareous silt & clay,w/ loc vis microlams,tr wht calc vng.

Marl:med-dk gry,sft-sl hd,v fn-fn gr,comm-abdt interbdd silt & clay, blocky,loc fissile w/ vis microlams.

Siltstone:pred med gry brn,mod hd,pred v well laminated w/ comm fissile appr,sl-v highly calcic,tr calc microvng w/ r v fn dissem pyr.

Shale:pred dk gry-blk, mnr med gry,v fn gr, mod-v hd,mod calcareous /w calc cmt,abdt dk gry-blk organic matter, pred blocky w/comm fissile appr,tr calc vng,r dism pyr.

Intrmdt igneous:lt grn cast,pred hd mnr sft, pred porph text,abdnt fn gr mag,sl calcic,f/ 5930'-5960'.

Limestone:med-dk gry,sl hd,brittle,sl dolomitic, loc granular appr w/ incr interbdd silica, tr vn calcite,r-tr f gr dism pyr.

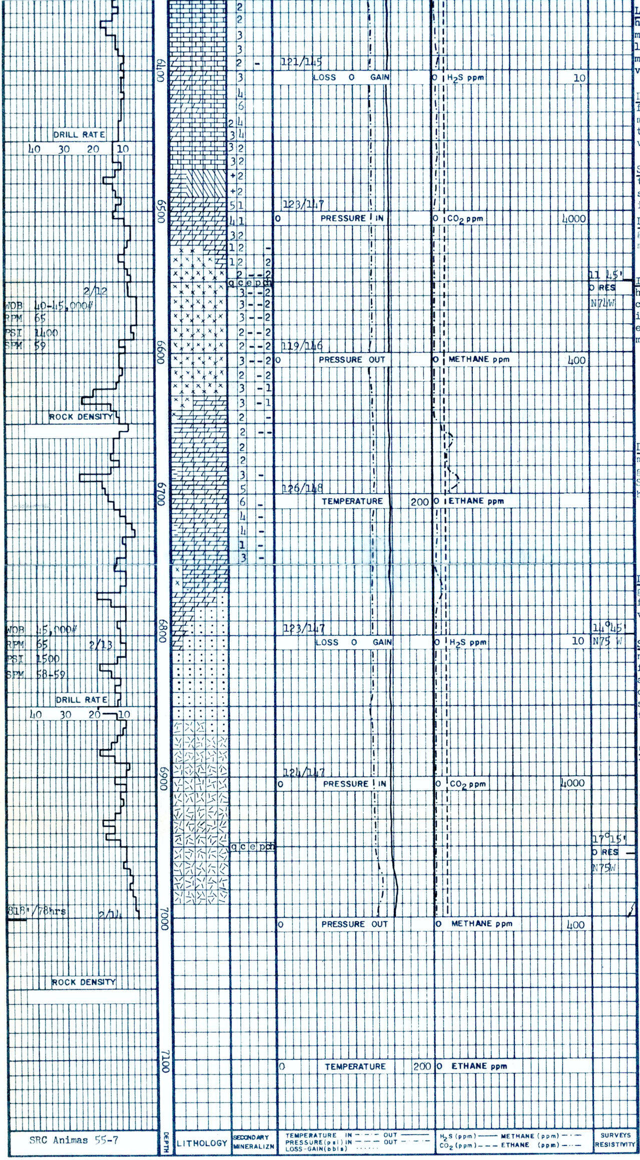
Chert:pred lt gry,mnr brn-blk,v hd & angular, translucent w/mnr v transparent,comm-abdt carbonate inclusions.

Dolomite:wht-lt brn, buff,mod hd-hd,fn-med gr xln,w/comm vis rhombs,loc comm crs granular masses,tr calc vng,tr dism pyr.

Note:Run two time Temp survey for ten hours each. Projected maximum bottom hole temp @ 290°F-307°F.

Limestone:lt gry-lt tan,hd,pred rexln text mass appr,loc tr fossils,mnr calc vng,r-tr dissem pyr.

W 9.4 V 38 PV 14
YP 4 pH 11.0 Fil
7.2 Cl 800 Slds 5%



Limestone:lt gry,mod hd,rexln w/incr dolomite,pred cryptoxln w/ loc granular dolomite, massive appr,mnr calc vng,r dism pyr.

Dolomite:pred lt gry, fn gr,rexln gran text, mod hd,loc mod fractured w/ abdnt calc vng.

Solution Deposit:lt tan-comm wht,pred translucent,cryptoxln silica,highly fractured.

Dolomite:pred wht,med gr,rexln gran text,hd, mnr calc vng.

Intrusive:lt-med grn, hd,fn gr,altered appr, comm-abdt dism magnetite,comm chlor,tr-mnr epidote,tr-mnr calc microvng,tr dism pyr.

W 9.4 V 41 PV 18
YP 6 pH 11.0 Fil
7.4 Cl 800 Slds 5%

Dolomite:gry-lt gry, mod hd-hd,pred rexln gran text,intbdd w/ mnr **Shale**:pred blk,sft-mod hd,pred sl fissile.

Note:Mnr slough vis in samples f/ 6730' ;poss f/ 1800'.

Dolomite:lt-med gry,hd granular text,fn gr,sl fractured w/ comm calc vng,tr dissem pyr.

Sandstone:pred clr-wht, mnr gry/grn cast,pred fn gr w/mnr med gr,subang-rd,pred qtz w/loc comm arkosic,mod-well srtd,mnr-comm chlorite, tr vn calc,tr dism pyr.

Granite:lt pink w/ mnr wht-lt grn,pred v hd, hypidiomorphic text, loc mod fractured w/ mnr kaol & chlor frac fill,tr calc,r pyr,loc tr hem fresh subhdrl-oxid.

Note:Temp incr due mud cooler malfunction.

Total Depth 7001'. Run Schlumberger E logs.

REMARKS - LITHOLOGY
EXLOG / SMITH