APPENDIX D

EXLOG SMITH

R. F. SMITH CORP.

GEOTHERMAL DIVISION

COMPANY [illegible]
WELL OLD MAID FLAT NO. 7A
FIELD MT. HOOD AREA **COUNTY** CLACKAMAS
LOCATION **SEC** 15 **T** 2S **R** 8E
STATE OREGON **COUNTRY** U.S.A.

LOGGING GEOLOGISTS TERRY MACLEOD, JIM HILL
PRESSURE INST TYPE SILICON CHIP TEMP. TYPE J-THERMOCOUPLE

DEPTH LOGGED FROM 96' TO 6027'
DATE LOGGED FROM 8-5-80 TO 9-22-80
ELEVATION 2760' KB ☐ DF ☐ GR ☒

-LITHOLOGY-

Sandstone	Siltstone	Graywacke Type # 1	Graywacke Type # 4	Solution Deposit	Basalt	Peridotite	Schist	Volcanic Mud-flow Debris	
Breccia	Claystone	Graywacke Type # 2	Chert	Minerlzd Deposit	Other Volcanic	Igneous Rock	Quartzite	Volcaniclastic Debris	
Conglom.	Shale or Argillite	Graywacke Type # 3	Limestone	MELANGE'	Tuff or Tuff Brec	Granitic Rock	Serpentine	Dacite Andesite	

ENGINEERING DATA

HOLE SIZE
24" to 96'
14 3/4" to 1191'
9 7/8" to 6011'

CASING SIZE
18" to 96'
10 3/4" to 1120'
to

DRILLING RATE
☒ FT/HR ☐ MIN/FT

ROCK DENSITY - - - -

DEPTH

LITHOLOGY

AIR AND MUD DRILLING DATA

TEMPERATURE (°F)
IN - - - - - - - -
OUT ———
CO_2 ppm —·—·—
on Air Drilling
TOTAL MUD GAIN / LOSS —··—··—

PRESSURE PSIG
IN - - - - - -
OUT ———

METHANE ppm —·—·—
ETHANE ppm —··—··—

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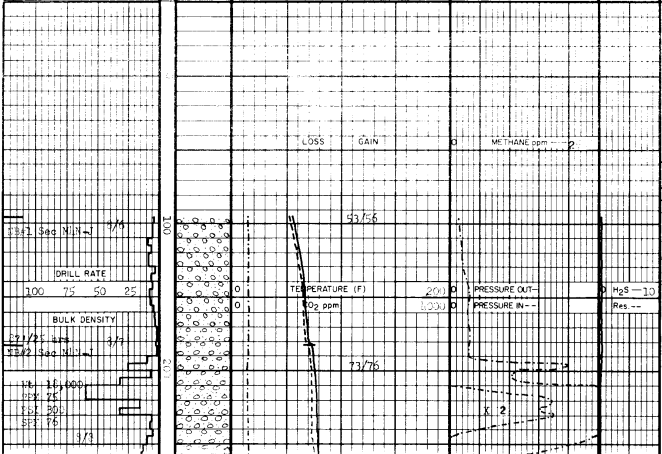
H_2S ppm
Resistivity - - - -

REMARKS

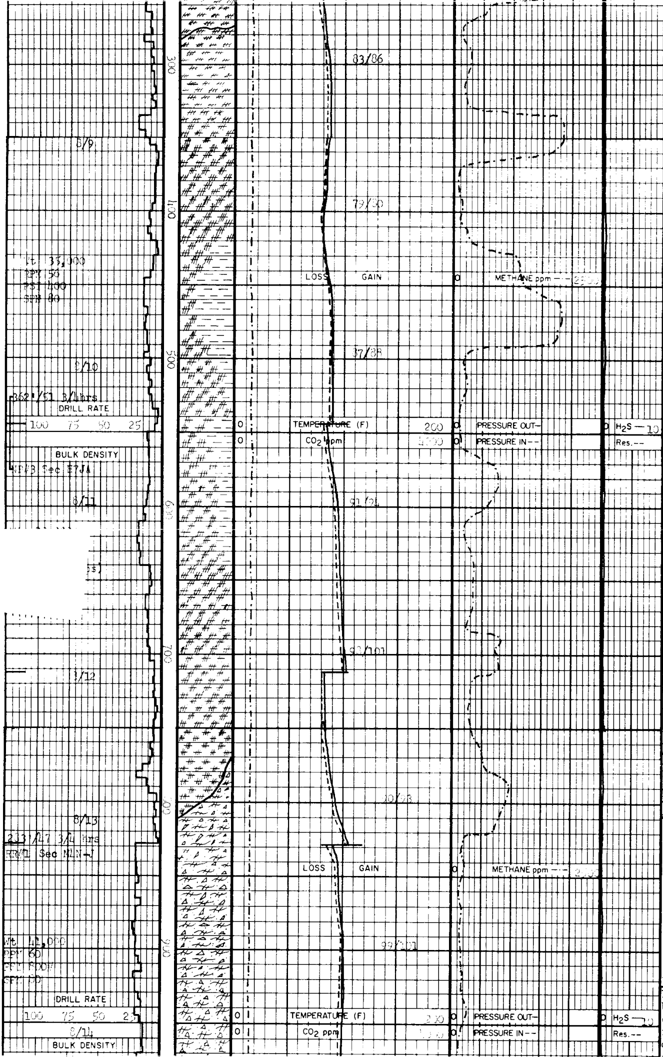
DESCRIPTIONS
CORE RESULTS
SURVEYS
FORMATION TESTS
MUD AGITATOR
ELECTRIC ☐
AIR ☒



Drld 24" hole & set 18" csg to 96', begin logging at 96' on 8-5-80. Drlg 14 3/4" hole on mud

Volcanic mudflow debris
lt-m gry,rd-brn,tr pnk & dk gry,pred altd & fresh andesite frags, m xtaln,com phenos of clr plag,brn-blk biot, blk & dk grn pyrx,tr blk hbld,tr pnk dacite.

Volcanic mudflow debris
lt-dk gry,rd-brn,occ pnk & grn,hd-mod hd, pred fresh & altd andesite frags w/occ-tr dacite,gen'ly con't as above,com wood/tree debris causing drill brea On kicks.



Basalt:pred red-dk gry v fn,mod-v hd.

Porphyritic/Andesitic Basalt:phenos of felds sec chlor mins set in dk gry fn gr matrix, com amygdules,com fe oxide,tr fn dism [illegible] pyrite,tr calc.

Porphyritic/Andesitic Basalt:M-dk gry,rd-brn (FeO altn),phenos of plag & remnant mafics in dk gry aphanitic mtx,com amygdules filled w/silica & dk grn chlor minerals,tr xtln calc,tr dism/sbhdrl py

Porphyritic/Andesitic Basalt:med-dk gry,gen as above w/decr FeO alt & incr chlor alt, Clay up to 80% of samp tr calc,tr silic micro veng.

Andesitic Basalt:m-dk gry,occ rd-brn,occ-com plag & tr mafic phenos marked decr in chlor altn @ 520' & cont w/ depth, cont amygduloidal w/ sec silica/chlor fill,tr calc & pyrite.

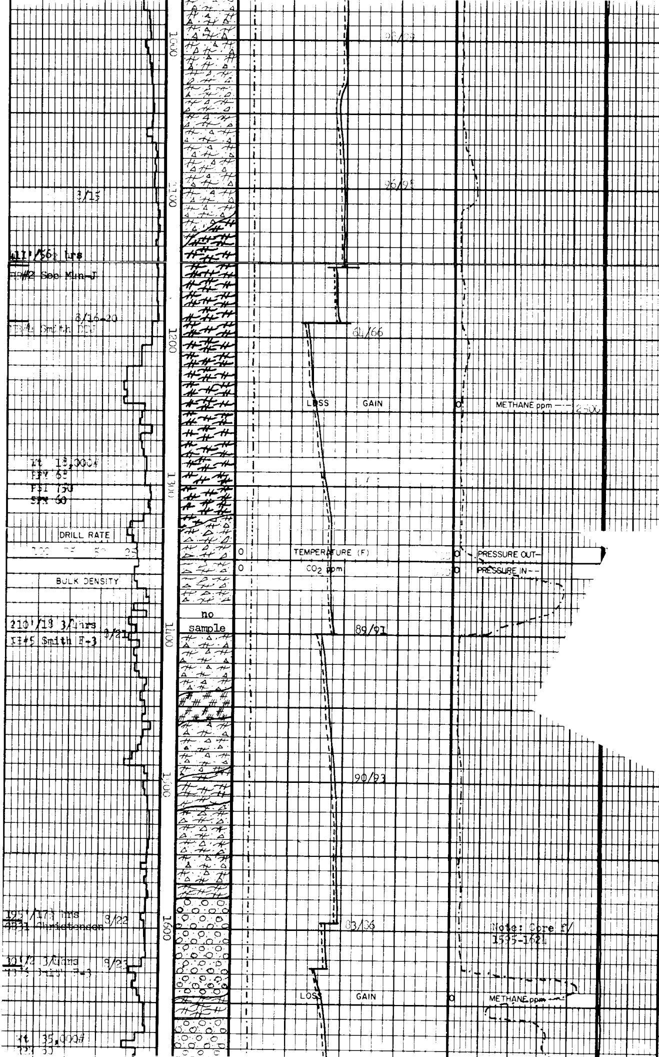
Andesitic Basalt:lt-dk gry,grn,rd-brn,sl-mod porphyritic,com phenos of plag & remnant mafics partially/totally altd to chlor mins,occ hematite & FeO stn,com amygdules filled w/ chlor/silicic mat decr w/ depth,com mlky-wht silica vn fill, tr dism pyrite

W 68 V 43 PV 20 YP 13
pH 8.5 Fc 2 Cl⁻ 270
Ca 4 Sd tr Sol 4%

Andesitic Basalt:med-dk gry,lt grn,rd-brn, poss bake zone,occ phenos plag & rem mafics partially/totally altd to chlor mins,sl silic app,tr silic veng.

Volcaniclastic debris: wht-lt gry,lt grn,pnk-brn,mod hd-sft w/alt, predom epiclastic matrx andesite,tuff seds,occ basalt,mafics com'ly altd to chlor,com plag phenos,loc calcic,occ anhed qtz.

Volcaniclastic debris: lt-m grn,m-dk gry,rd-brn,tr wht,mottled app, com phenos of plag & rem mafics, v abdt chlortzn,com v tuffa-



clastic volcs:andesite, basalt,muddy tuffs,tr silicic vng,rare tr wht calc.

Drlg delay while [illegible] ging bit causing 1° dro

Wt 69 Vis 45 PV 21 YP 1
pH 8.5 Fc 2 [illegible] CA50
Sd 1/8 Sol 5

Volcaniclastic debris: lt grn-lt gry,tr lt br andesite & andesitic tuff(epiclastic)in a v tuffaceous mtrx,com plag [illegible] rem mafics w/ abdt chlor altn,com silicic vng,chging @ 1120 to **Dacite**:m-lt gry,fn gr,tr fn phenos of plg biot,mag,rare chlr alt

Drld 14 3/4" hole to 1191',ran E Logs,set 10 3/4" Csng to 1190', Drlg w/ 9 7/8" bit.

Dacite:wht-lt gry,tr lt grn,vf-f gr,sm phenos of clr plag,tr blk hbld(pyrx?),tr mag, rare tr lt-dk brn biot, pred aphan grndmass w/ tr-com pale grn chlor? altn, occ tr dism & vn pyrite

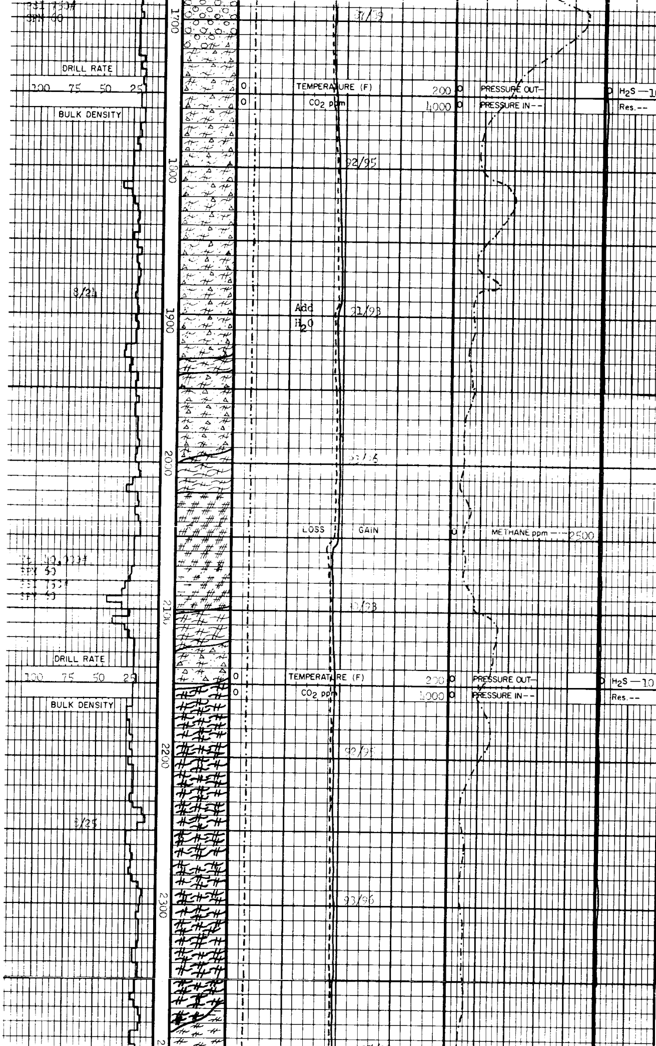
Lithic Tuff Breccia:

grn
plag p
(clino & or
tr pyrite

Lithic Tuff:wht,lt gry -grn,pur-rd,silic app.

Andesite:lt gry-grn,fn-med gr,com'ly altd to chlor & zeolite mins.

Volcanic mudflow debris: lt gry-grn,pur-lt rd, mod hd-hd,predom andesite frags in a clastic tuffaceous matrix altd to chlor/smectite mins, occ calc/silic veng,intercalated w/Andesitic flow @ 1645-60,dk gry



w/sl grn cast,com wood
debris f/ 1670-1700

Wt 8.8 Vis 39 PV 13
YP 4 pH 8 Fc 2 Cl 260
Ca 20 Sd tr Sol 40

Volcaniclastic debris:
gry-grn,rd,brn,wht,mod
hd sft in pts,andesite,
basalt,intbdd tuffs &
tuff breccia/mudflow,
com sec chlor & zeolit
mins,com'ly calcareous,
w/occ calc frac fill,
loc silic,tr agg & dism
pyrite

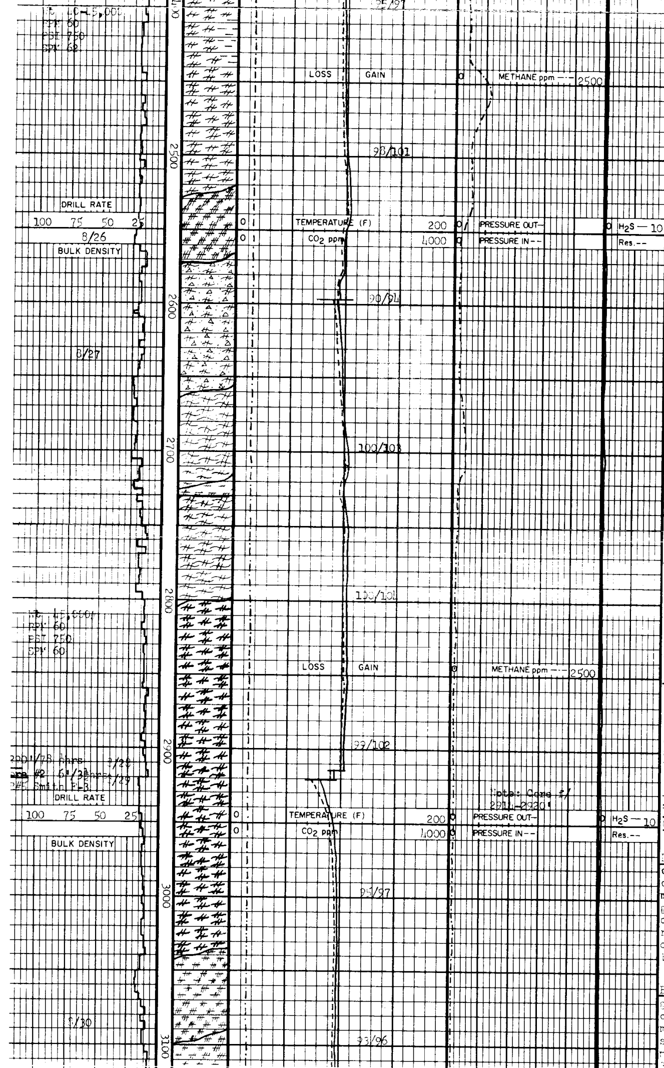
Volcaniclastic debris:
rd-brn,brn,gry to grn,
wht,mod hd,chlor altd
andesite frags w/ some
basalt & v com tuffa-
ceous material, com se
calc vn fill, tr zeoli
ic fill, some strong
weathered(FeO) zones,
Andesite flow intbd @
1930-40'.

Volcaniclastic debris:
rd-brn,gry-grn,wht,gen
ly as above w/ sl incr
basaltic frags,com chl
altn,com calc veng,in-
cr calc w/depth
Andesite:m gry-grn,f-m
gr,some phenos of plag,
pyrx & poss hbld,com
hem & calc veng,to 202
Basaltic Andesite:rd-
brn,tr gry & wht,ex-
treme wx/oxidation w/
v abdt FeO,tr rem ma-
fics,com wht-clr plag
phenos,tr chlor,tr
calc veng,tr silic ven
Andesite:m-dk gry-grn,
f-m gr,tr plag,pyrx
phenos,com calc,tr sil
veng.

Note:Artesian water
flow while surveying
at 2187',temp 95°F,
approx 60 gal/min.

Dacite:med-lt-gry,wht,
ltgrn,tr m gry,S & P,
f-m gr,wht-lt grn aph-
anitic matrix w/ com
wht-clr plag phenos,
rare fine dism mafics
of magnetite,lt brn
biot,pyrx/hbld,com
chlor altn of [illegible]
groundmass,com calc
mtrx w/ tr veng,[illegible]
euhedral qtz frac [illegible]
at top of contact,incr
silic w/ depth,sl incr
magnetite xtals & [illegible]
aggregates w/ depth

Dacite:com lt-med gry,
lt grn,gen'lt con't as
above.



Note: Core f/ 2911-2920'

Propylitized Andesite: grn,wht,blk,mod hd,sft w/incr alt,med gr,mafics com'ly alt to chlor, occ rem pyx,sl calcareous,com calc frac fill, occ silic frac fill,tr-occ agg/dism pyrite, clay up to 25% @2410-2435'.

Propylitized Andesite: grn,wht,occ rem blk mafics,mod hd-v sft,gen'ly as above w/decr pyrite, mod calcareous.

Basalt: dk gry-blk,vf-f gr,aphan grndmass w/tr microlites w/tr pyrx, tr dism hem & pyrite tr calc veng.

Note: Twist off at 2606'.
Fish @ 694' f/ surface.
Recover on first attempt

Volcaniclastic debris: lt-dk grn,wht,lt brn, pred f-m gr andesite frags w/ phenos of fine plag laths & amber pyx xtals,tr pyrite,abdt laumontite/zeolites.

Andesite: m-dk gry,tr wht & lt grn,vf-f gr, tr chlor w/ propylitic/ zeolitic altn of plag laths,tr mafics pred altd,tr magnetite,tr pyrite

Basalt: dk gry,chlor filled amygdules,calc.

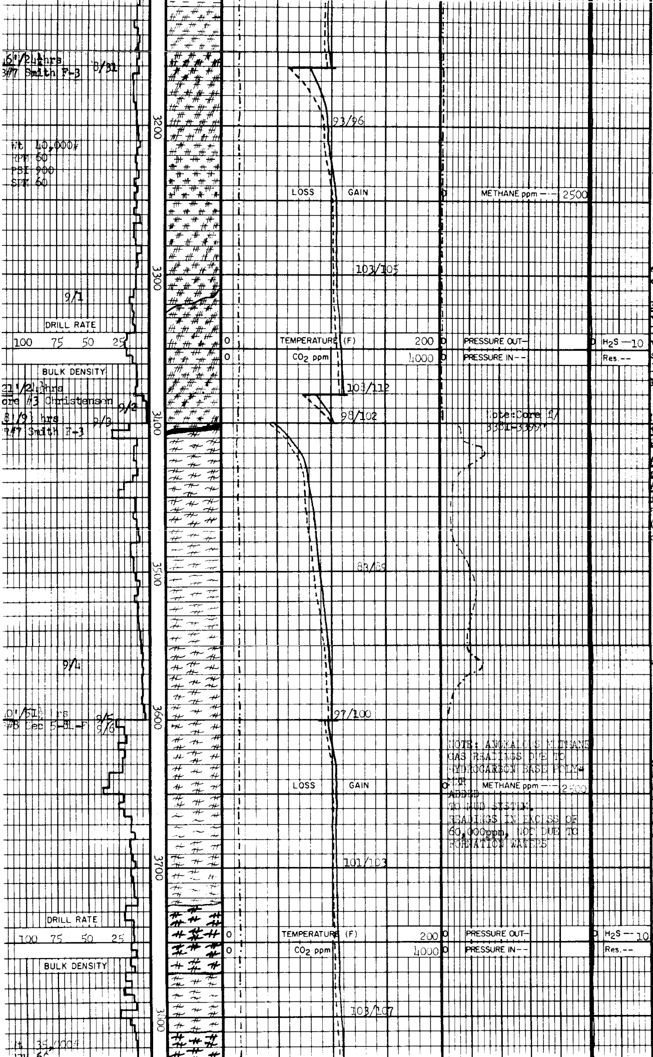
Andesite: lt-dk grn,wht,a altn,acdt la zeolite altn, xtln plag & r v calc aphan g mass, tr pyrite,tr mag,tr epidote? @ 2780' w/ depth.

Dacite: @ 2800',wht,lt gry,grn,mod hd,brittle, occ sft w/incr alt,med gr,pred plag,qtz,pyx, brn biot,mafics com'ly alt to chlor,occ calc/ silic veng,tr pyrite, tr yel epidote.

Wt 9.1 Vis 43 PV 20
YP 12 pH 8 Fc 2 Cl 300
Ca 60 Sd tr Sol 5%

Dacite: wht,grn,blk,hd-occ sft w/incr alt,med-occ crs gr,s&p tex w/ mafics alt to chlor, gen'ly as above,occ calc veng,tr silic veng r tr pyrite,r tr chalcopyrite,occ color banding @ 3030'.

Basalt: dk gry to lt-m gry @ 3100',vf-f gr, com plag microlites w/ minute amber pyrx xtls, sl chlor altn,sl laumontite altn-mod @ 3100',veng & frac fill



Note: Core #/ 3381-3399'

NOTE: ANOMALOUS METHANE GAS READINGS DUE TO HYDROCARBON BASE POLYMER ADDED TO MUD SYSTEM. READINGS IN EXCESS OF 60,000ppm, NOT DUE TO FORMATION WATERS

w/ depth, tr magnetite, rare tr pyrite, chging to Basaltic Andesite @ 3100'

Andesitic Basalt :m-dk gry, f-m gr, minute plag & pyrx xtals in an aphanitic groundmass, sl chlor altn, tr pyr xtal agg.

Andesitic Basalt:med-occ dk gry, pred fn gr, com minute pyx xtls & occ plag phenos in an aphan grndmass, con't sl chlor alt, com silic/chlor amygdules @ 3270 tr agg pyrite, r-r tr calc & silic veng, very oxidized zone @ 3320'.

Basalt:dk gry, vf-f gr, vf microlitic plag laths, tr minute pyrx, v amygdaloidal zone w/ silic/chlor fill @ 3340-3355', rare tr agg pyrite

Note:Change from mud to drlg ahead w/ water @ 3400'.

A possible Fault Zone: encountered @ 3400-10'.

Andesite:lt-m grn-gry, f-m gr, minute plag lath & com elongate mafics, (poss pyrx?), sl-mod chlor altn decr w/depth

Note:Artesian water flow during connections approx 20-40 gal/min.

Andesite: lt-med gry, grn, wht, mod hd-sft, sl-mod propyltzd, tr epid.

Andesite:lt-med gry, grn, r tr rd-brn, f-occ m gr, tr microxtln plag laths, com blk mafics, sl-mod calc, tr pyr.

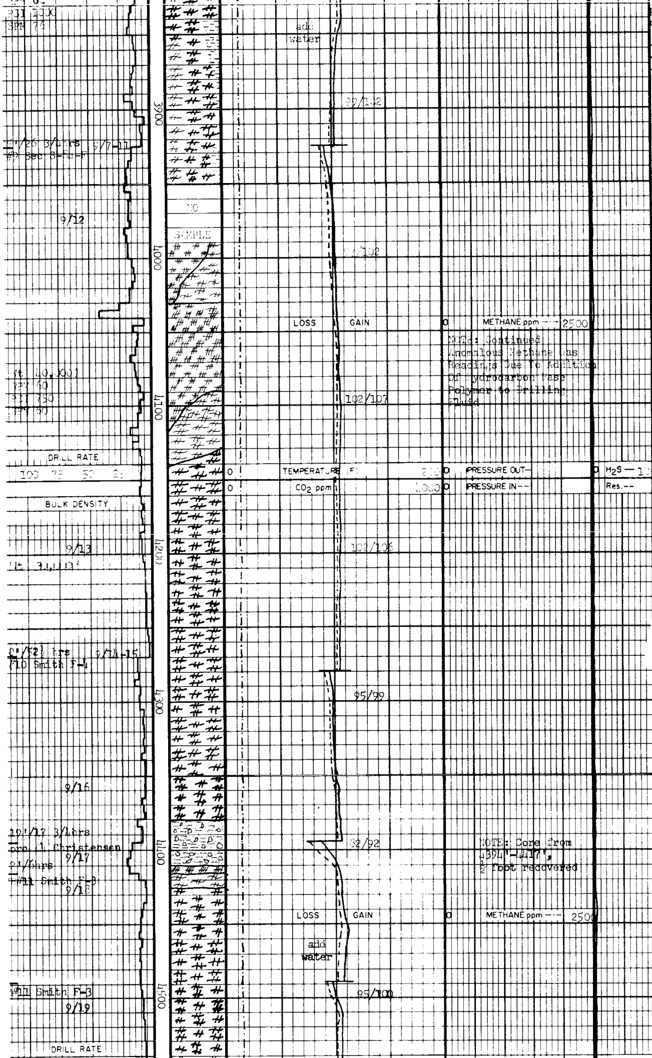
Note:Poor sample quality due to water drlg.

Andesite:med-dk gry, grn, wht, hd-sft w/ altn, gen aphan tex, com chlor & zeolite altn, occ rem mafics & plag, occ-com calc/silic veng, tr agg & dism pyr, Bake zone w/ severe oxidation 3680' to 3700'.

Dacite:wht, lt grn, sup tex, mod hd, f-m gr, com plag phenos w/ occ mafics of dk brn hbld, pale brn-lt grn biot, sl chlor altn of grndmass & mafics, tr fn dism pyr, tr calc veng, tr poss pyrx xtals.

Andesite:3770-3810', gen as last described.

Dacite:wht, gry, grn, sup



pred plag,hbld,biot,ltd calc,tr pyrite.

Note: Poor sample quality.

Dacite:20-40%,gen'ly as above,Andesite:up to 30% med gr,abun loc chlor/zeo alt,Sltstn:f/3880'-3890',up to 15%,blk,sl-mod indurated,v sl fis

Note:Twist off at 392 Fish @ 1604' f/surface Recover on first attem

Note:No sample f/ 3950-3990.Run Polymer slug to clean hl.

Andesite:lt gry-lt grn, f-m gr,s&p tex,plag & pyrx phenos in a v calc mtrx,sl chlor altn,pyr.

Basalt:gry-black & m-dk gry,f gr,com microlites of plag,minute pyrx xtls,dk gry aphan grndmass,tr laumontite altn, tr dism & vn pyrite,tr calc veng.

Andesite:blk,wht,grn,m gr,mod hd,mafics com'ly alt to chlor,loc calc, occ silic veng,[illegible], abun slck.

Dacite:wht,lt gry,grn, com s&p tex,mod hd-sft w/incr alt,med gr,mafics com'ly alt to chlor,occ calc frac fill,tr dism pyr slc

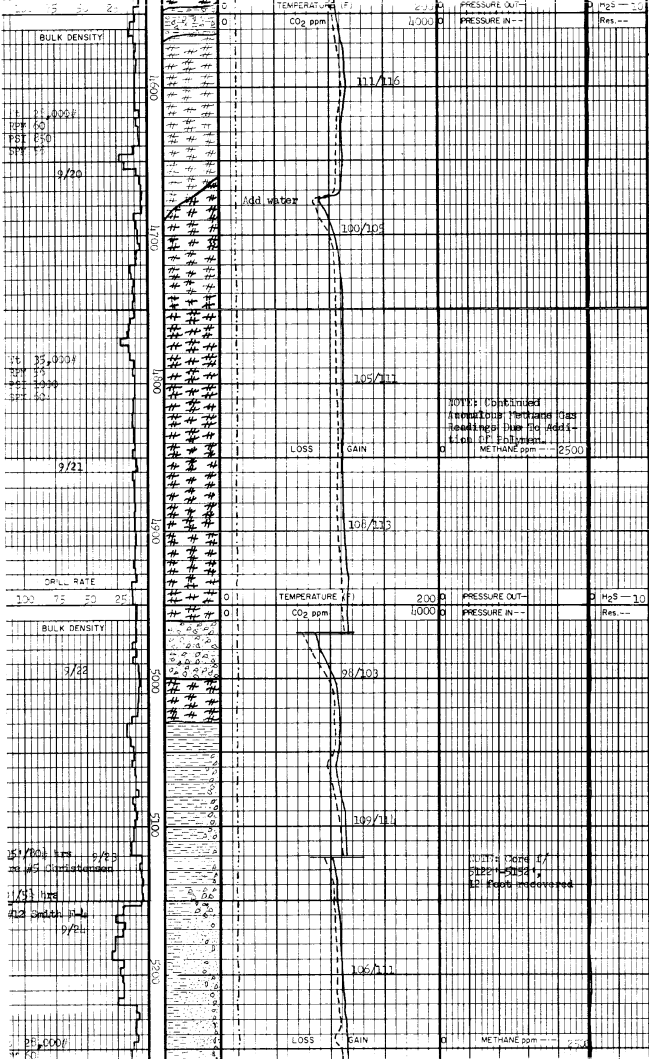
med gr, incr rem hbld occ-com calc frac fill occ silic veng,r tr yel epidote,r tr dism pyrite.

Dacite:wht,lt gry-grn, genly as above

Conglomerate/Mudstone: dk purp-gry,f-crs,com ang w/ som sbrd,muddy matrix intercalated w/ mudstone 4380-4410',thin Basalt flow 4410-4415', Andesite flow 4415-25'

Dacite:wht,lt grn,s&p, f-m xtln,com plag phenos, tr hbld & biot xtls,sl-mod chlor altn,tr calc, tr agg & dism pyrite.

Dacite:wht,pale grn,v s&p,pred f xtln-occ m xtln,sl-mod chlor altn, occ plag phenos,tr-com amber hbld,rare biot, incr magnetite,tr pyr.



NOTE: Continued Anomalous Methane Gas Readings Due To Addition Of Polymer.

NOTE: Core f/ 5122'-5152', 12 foot recovered

Conglomerate:gry,brn, grn,mod hd,p-mod srt, calc cmt,tr agg pyrite

Andesite:m-dk gry,wht, grn,mod hd-sft,com'ly alt to chlor,laumontite, loc calcareous,occ silic veng,tr dism pyrite, tr yel epidote

Andesite:lt-m gry,pred aphanitic-occ f xtln, microlitic plag,tr f dism mafics,tr pyrite

Dacite:wht,lt grn,clr, occ lt gry,microxtln, aphanitic grndmass, rare tr amber hbld,com vf dism magnetite xtls, sl-mod chlrtzn,tr dism pyrite

Dacite:wht,lt gry,lt grn,blk,com s&p tex, med-fn gr,mod hd,gen decr in alt,com rem plag,hbld,occ biot in felsitic grndmass,occ/ mod chlor alt,tr calc frac fill,tr euh & dism pyrite,r tr yel epidote

Dacite:wht,pale-m grn, clr,com s&p tex,m xtln, sl-mod chlor altn of grndmass & mafics,pred aphanitic grndmass w/ com plag phenos,mnr amber hbld,tr biot,tr-com blk magnetite,tr calc frac fill,tr agg & dism pyrite.

Note:Pull 5 stands out of hole,clean pits,work on pump.

Conglomerate:lt grn,wht, dk gry,tr brn,pred crs dacitic & andesitic clasts w/ lesser amts basalt,mod srtd,calc-silic mtrx,tr pyrite

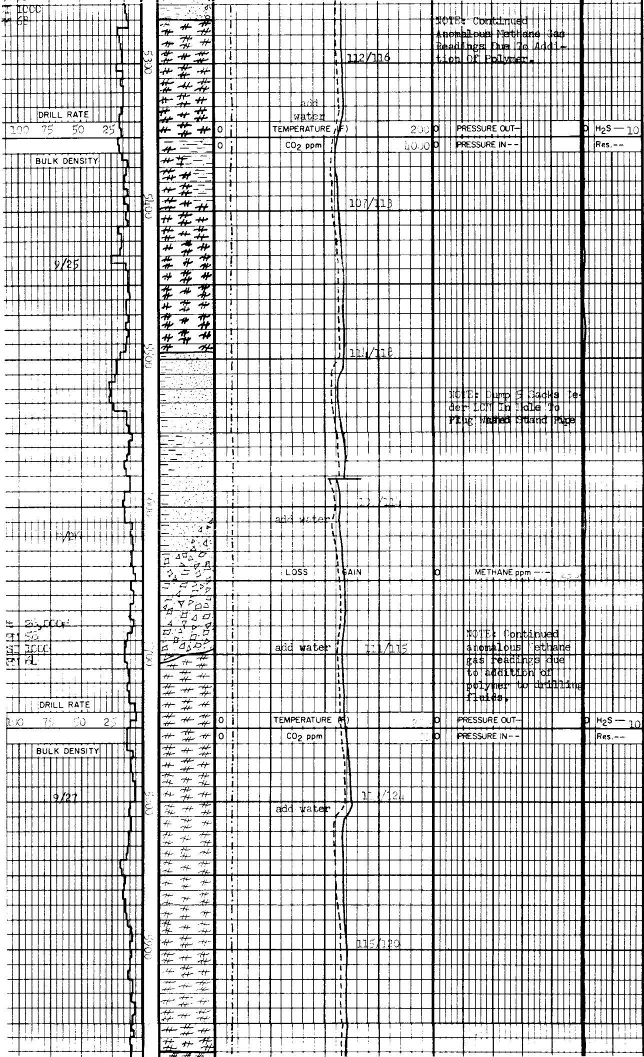
Dacite:as above 5000-30

Mudstone:purp-brn,frm, v slty,occ sdy intrbds, non-calc.

Mudstone:purp-brn,45%, gen'ly as above,**Sandstone**:multi col,55%,pr srt,fn-crse gr,com andesitic frags,tr pyr

Mudstone/Sandstone:as above,occ turning to rse gr sndstn/conglom.

Sandstone:varicol clasts w/ lt gry-wht mtrx,f-crs,mod srtd,occ granules,mod-w cmtd,sbrd-sbang,pred andesite w/ tr basalt clasts,mod chlor altn,tr calc,com pyrite frac fill,grding to 30% **Siltstone**: wht,lt gry,lt grn,occ sdy,sl calc.



NOTE: Continued Anomalous Methane Gas Readings Due To Addition Of Polymer.

NOTE: Dump 5 Sacks Ceder LCM In Hole To Plug Washed Stand Pipe

NOTE: Continued anomalous Methane gas readings due to addition of polymer to drilling fluids.

Dacite:wht,lt grn,clr, occ gry,microxtln,aphantic grndmass,occ hbld,com v fn dism magnetite,sl-mod chlrtzn, r tr pyr & yel epidote.

Mudstone/Siltstone:med brn,pink,gry,sft,friable,well srtd,sl fissile,decr/sloughing to 10% @ 5400'.

Dacite:wht,lt-m grn, s&p tex,vf to m gr w/ depth,tr-com plag phen w/ tr mafics of hbld, rare biot & magnetite, sl-occ mod chlor altn, com wht calc veng,tr agg pyrite

Sandstone:wht-lt grn, pnk-purp,vf-m w/occ crs,mod srtd,rd-sbang, pred slty & sl calc mtrx,tr pyrite.

Note:Pull 5 stands out of hole,work on pump, weld stand pipe.

Breccia:brn,rd-brn,blk tr wht & lt grn,pred crs w/tr f,p srtd,ang w/tr sbrd-rd,pred basalt clasts to 85% w/ mnr andesitic frags tr fn qtz sand,mod cmtd w/silic,tr calc veng,r tr pyr,severe oxidation zone 5660'-5700'.

Andesite:dk-med gry, grn,mod hd-hd,aphanitic tex,com chlor alt,com fn dism magnetite,mod-v calcareous,abnt calc veng,occ silic veng.

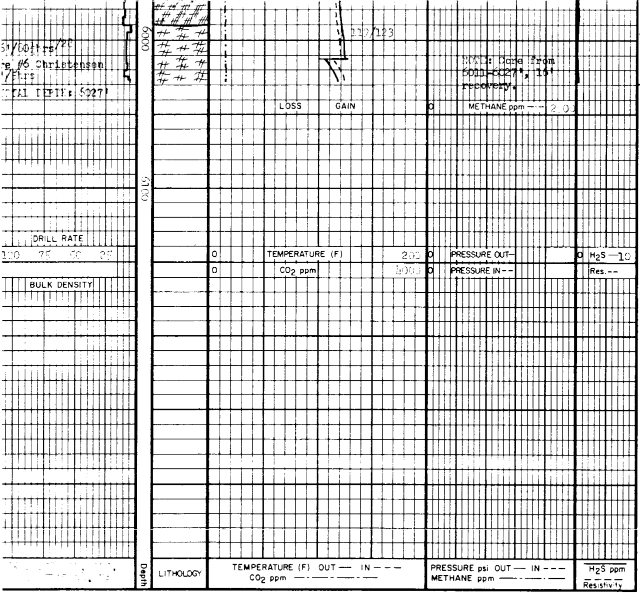
Note:Drlg w/ mod torque

Andesite:lt-m gry,gry-brn,microxtln-vf xtln, tr sl altd plag microlites,com vf dism magnetite,mod-v calcareous aphanitic grndmass,tr-com hematite veng,tr silic veng,tr vf dism pyrite.

Note:Poor sample quality,Drlg w/ mod torque

Andesite/Andesitic Basalt:med-dk gry,blk,grn mod hd,v fn xln,com chlor alt,r phenos,mod-v calcareous,occ oxidized grs,tr calc/silic veng.

Andesitic Basalt:dk gry-brn,vf-f gr,tr plag



microlites,aphan mtrx, tr pyr, 5970'-[illegible]
Andesite:lt gry-lt grn, microxtln,mod chlor altn,mod calc,tr hematite veng, **CORE: Highly Brecciated Andesite**

Logging unit released 9/29/80

REMARKS
EXLOG/SMITH

PAGE