**WELL** CROWN ZELLERBACH #1

**COMPANY** OREGON NATURAL GAS DEVELOPMENT CORPORATION

**AREA** TILLAMOOK AREA

**LOCATION** 1714'S & 2059'E OF NW CRN SEC 13; T2S; R10W, W.B.&M

**COUNTY, STATE** TILLAMOOK COUNTY, ORE.

## - WEGE -
## WESTERN GEO-ENGINEERS
*"A SERVICE TO THE OIL AND GAS INDUSTRY"*

**LITHOLOGY SYMBOLS**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ⊡ | ☐ | ☰ | ⊟ | ◎ | ▣ | V | X | ┘ | ⊡ | A | ☐ |
| Sand | Clay and Shale | Siltst. | Sandy Siltst. | Conglomerate | Lignite or Coal | Volcanic | Intrusive | Salt | Limest. | Chert | |

**REMARKS**

WELL ELEV. GL. ~~240.0'~~ 199.7

KB. ~~250.8'~~ 210.5

SALINITY IN PPM CL

FILTRATE IN CC/ 30 MIN.

GAS TRAP AGITATOR TYPE

MUD LIGNOSULFANATE (BARIOD)

BRINKERHOFF #61

**LEGEND**

**MUD DATA**
- W WEIGHT
- V VISCOSITY
- F FILTRATE
- FC FILTER CAKE
- SD SAND IN %

- S SALINITY
- R RESISTIVITY
- RF FILTRATE RESISTIVITY

**BIT DATA**
- NB NEW BIT
- RRB RERUN BIT

- CB CORE BIT
- WLCB WIRE LINE CB

**OTHER DATA**
- TG TRIP GAS
- CG CONNECTION GAS
- C CARBIDE GAS

- CR CIRCULATE RETURNS
- NR NO RETURN
- DST DRILL STEM TEST
- [ DST INTERVAL
- ] CORE INTERVAL

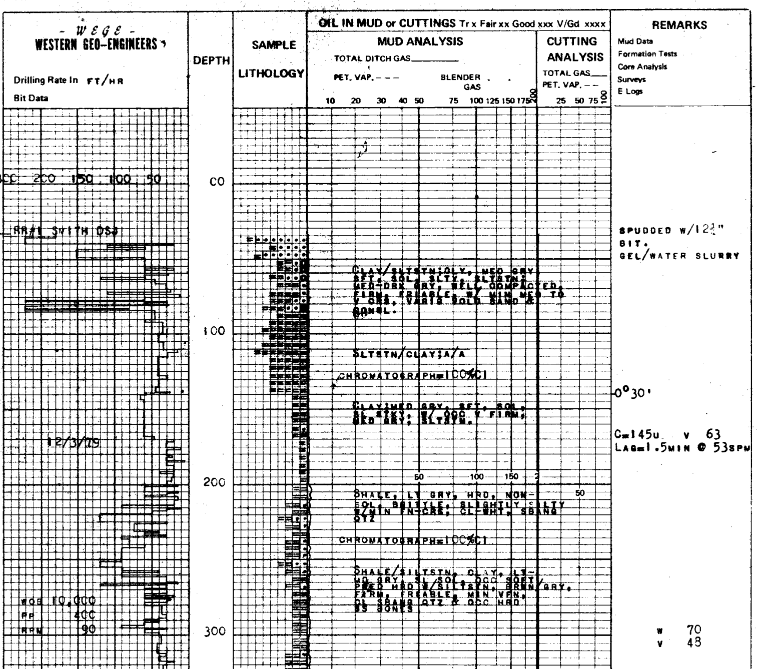
**CASING**

8 5/8" TO 667'

TO

TO

**DATE** 12/2/79 TO 1/5/80 **DEPTH** 34' TO 6158' **ENGINEERS** CONVERSE, BUTLER, MARKS, RALLS



CLAY/SLTSTN;CLY, MED GRY SFT, SOL, SLTY, SLTSTN; MED-DRK GRY, WELL COMPACTED, FIRM, FRIABLE, W/ MIN MED TO V CRS, VARIG COLD SAND & CONGL.

SLTSTN/CLAY;A/A

CHROMATOGRAPH=100%C1

CLAY;MED GRY, SFT, SOL, SL STKY; W/ OCC V FIRM; MED GRY; SLTSTN.

SHALE, LT GRY, HRD, NON-SOL, BRITTLE; SLIGHTLY SILTY W/MIN FN-CRS; CL-WHT, SBANG QTZ

CHROMATOGRAPH=100%C1

SHALE/SILTSTN, CLAY, LT-MD GRY, SL SOL, OCC SOFT/PRED HRD W/SILTSTN, BRWN/GRY, FIRM, FRIABLE, MIN VFN, CL SBANG QTZ & OCC HRD SS BONES

SPUDDED W/12¼" BIT. GEL/WATER SLURRY

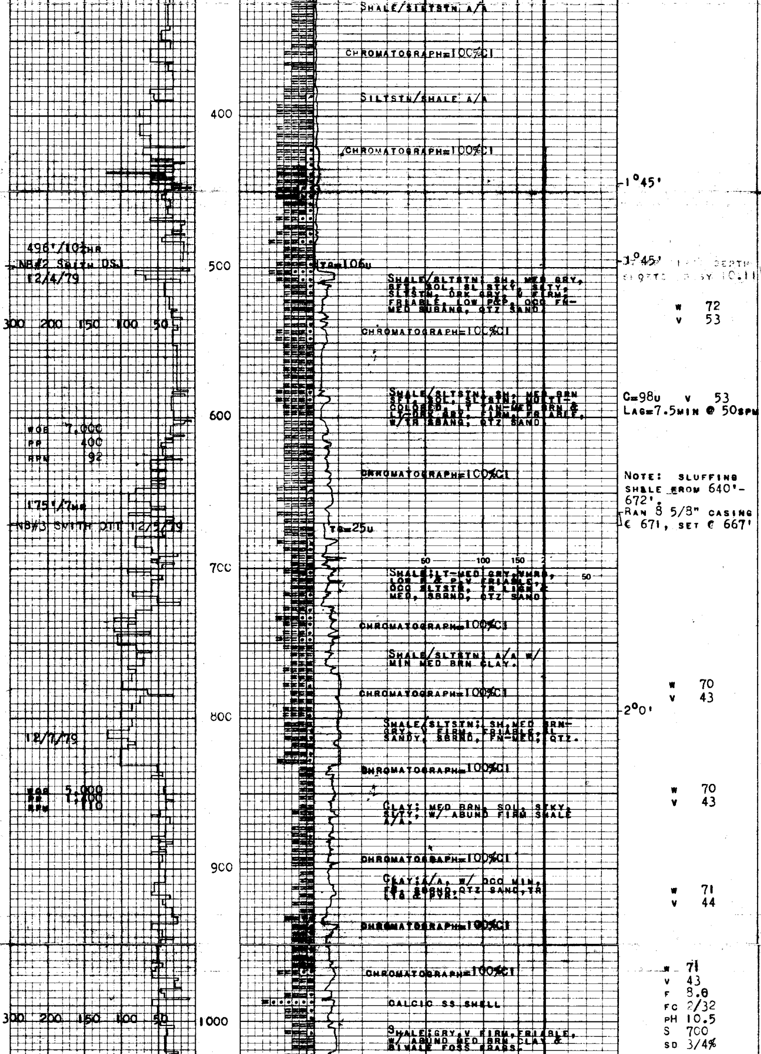
0°30'

C=145u V 63

LAG=1.5MIN @ 53SPM

W 70

V 48



SHALE/SILTSTN A/A

CHROMATOGRAPH=100%C1

SILTSTN/SHALE A/A

CHROMATOGRAPH=100%C1

1°45'

496'/10½HR
NB#2 SMITH DSJ
12/4/79

1°45' [illegible] DEPTH
[illegible] BY 10.11

SHALE/SLTSTN: SH, MED GRY, SFT, SOL, SL STKY, SLTY, SLTSTN, DRK GRY, V FIRM, FRIABLE, LOW P&P, OCC FN-MED SUBANG, QTZ SAND.

W 72
V 53

CHROMATOGRAPH=100%C1

SHALE/SLTSTN: SH, MED BRN SFT, SOL, SLTSTN, MULTI-COLORED, LT TAN-MED BRN & LT-DRK GRY, FIRM, FRIABLE, W/TR SBANG, QTZ SAND.

C=98u V 53
LAG=7.5MIN @ 50SPM

WOB 7,000
PP 400
RPM 92

CHROMATOGRAPH=100%C1

NOTE: SLUFFING SHALE FROM 640'-672'.

175'/7HR
NB#3 SMITH DTT 12/5/79

RAN 8 5/8" CASING @ 671, SET @ 667'

SHALE: LT-MED GRY, WHRD, LOW P & P, V FRIABLE, OCC SLTSTN, TR LIGN & MED, SBRND, QTZ SAND.

CHROMATOGRAPH=100%C1

SHALE/SLTSTN: A/A W/ MIN MED BRN CLAY.

CHROMATOGRAPH=100%C1

W 70
V 43

2°0'

SHALE/SLTSTN; SH, MED BRN-GRY, V FIRM, FRIABLE, SL SANDY, SBRND, FN-MED, QTZ.

12/7/79

CHROMATOGRAPH=100%C1

WOB 5,000
PP 1,100
RPM 110

W 70
V 43

CLAY; MED BRN, SOL, STKY, SLTY; W/ ABUND FIRM SHALE A/A.

CHROMATOGRAPH=100%C1

CLAY: A/A, W/ OCC MIN, FN, SBRND, QTZ SAND, TR LIG & PYR.

W 71
V 44

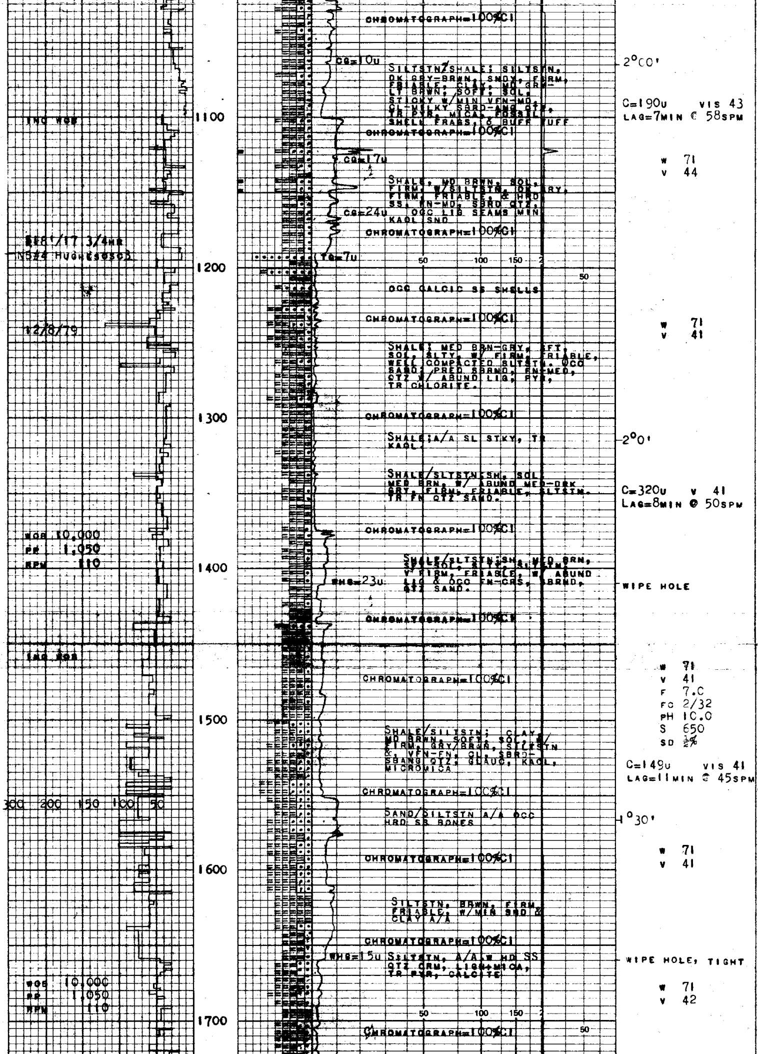
CHROMATOGRAPH=100%C1

CHROMATOGRAPH=100%C1

W 71
V 43
F 8.6
FC 2/32
pH 10.5
S 700
SD 3/4%

CALCIC SS SHELL

SHALE: GRY, V FIRM, FRIABLE, W/ ABUND MED BRN CLAY & BIVALE FOSS FRAGS.



CHROMATOGRAPH=100%C1

CG=10u

SILTSTN/SHALE; SILTSTN, DK GRY-BRWN, SNDY, FIRM, FRIABLE, CLAY, MD GRY-LT BRWN, SOFT, SOL, STICKY W/MIN VFN-MD, CL-MILKY SBRD-ANG QTZ, TR PYR, MICA, FOSSIL SHELL FRAGS, & BUFF TUFF

2°00'

C=190u VIS 43
LAG=7MIN @ 58SPM

INC WOB

CHROMATOGRAPH=100%C1

CG=17u

W 71
V 44

SHALE, MD BRWN, SOL, FIRM, W/SILTSTN, DK GRY, FIRM, FRIABLE, & HRD SS, FN-MD, SBRD QTZ, OCC LIG SEAMS MIN KAOL SND

CG=24u

CHROMATOGRAPH=100%C1

888'/17 3/4HR
NB#4 HUGHES OSC3

TG=7u

OCC CALCIC SS SHELLS

CHROMATOGRAPH=100%C1

12/8/79

W 71
V 41

SHALE: MED BRN-GRY, SFT, SOL, SLTY, W/ FIRM, FRIABLE, WELL COMPACTED SLTSTN. OCC SAND; PRED SBRND, FN-MED, QTZ W/ ABUND LIG, PYR, TR CHLORITE.

CHROMATOGRAPH=100%C1

SHALE;A/A SL STKY, TR KAOL.

2°0'

SHALE/SLTSTN;SH, SOL, MED BRN, W/ ABUND MED-DRK GRY, FIRM, FRIABLE, SLTSTN. TR FN QTZ SAND.

C=320u V 41
LAG=8MIN @ 50SPM

CHROMATOGRAPH=100%C1

WOB 10,000
PP 1,050
RPM 110

SHALE/SLTSTN;SH, MED BRN, SFT, SOL, SLTY, SLTSTN, V FIRM, FRIABLE, W/ ABUND LIG & OCC FN-CRS, SBRND, QTZ SAND.

WHG=23u

WIPE HOLE

CHROMATOGRAPH=100%C1

INC ROP

CHROMATOGRAPH=100%C1

W 71
V 41
F 7.0
FC 2/32
pH 10.0
S 650
SD ½%

SHALE/SILTSTN; CLAY, MD BRWN, SOFT, SOL, W/ FIRM, GRY/BRWN, SILTSTN &, VFN-FN, CL, SBRD-SBANG QTZ, GLAUC, KAOL, MICROMICA

C=149u VIS 41
LAG=11MIN @ 45SPM

CHROMATOGRAPH=100%C1

SAND/SILTSTN A/A OCC HRD SS BONES

1°30'

CHROMATOGRAPH=100%C1

W 71
V 41

SILTSTN, BRWN, FIRM, FRIABLE, W/MIN SND & CLAY A/A

CHROMATOGRAPH=100%C1

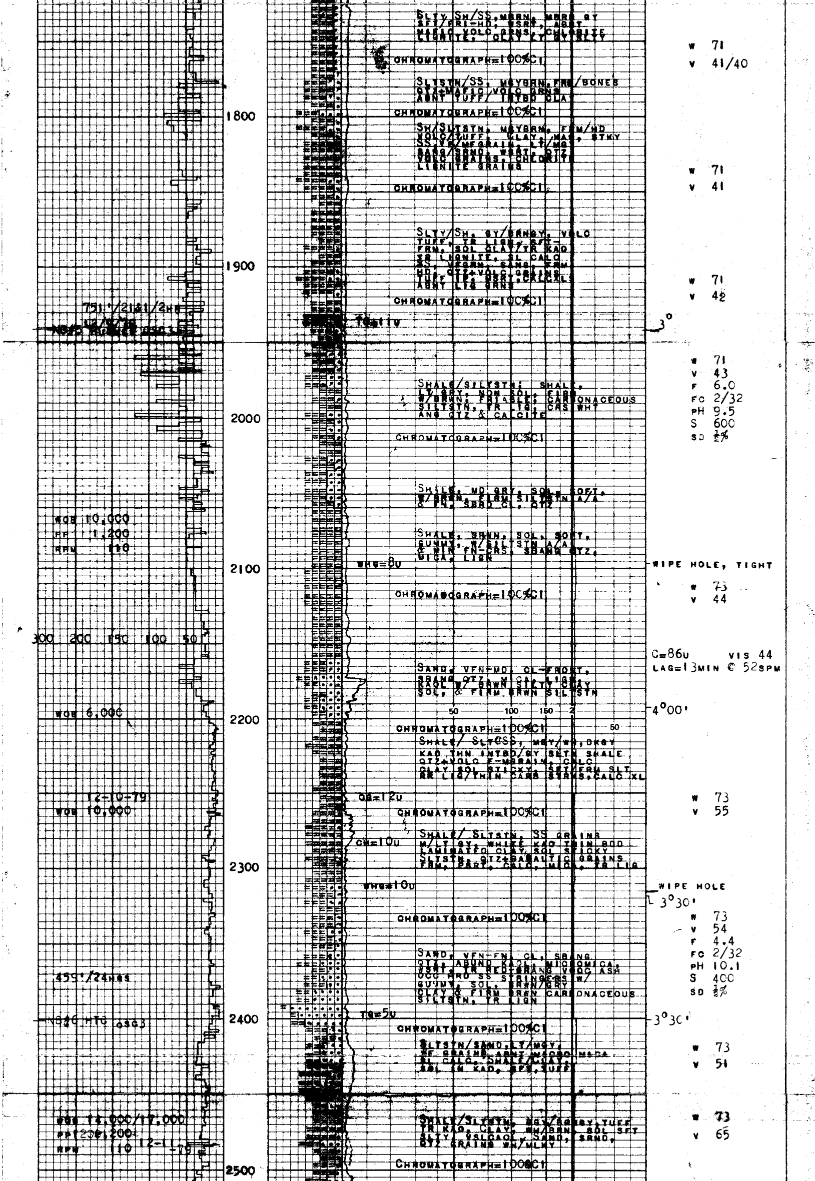
WHG=15u SILTSTN, A/A W MD SS QTZ CRM, LIG+MICA, TR PYR, CALCITE

WIPE HOLE, TIGHT

WOB 10,000
PP 1,050
RPM 110

W 71
V 42

CHROMATOGRAPH=100%C1



SLTY SH/SS, MBRN, MBRN GY
SFT/FRI-HD, WSRT, ABNT
MAFIC VOLC GRNS, CHLORITE
LIGNITE, CLAY LT GY SLTY

CHROMATOGRAPH=100%C1

w 71
v 41/40

SLTSTN/SS, MGYBRN, FRM/BONES
QTZ+MAFIC VOLC GRNS
ABNT TUFF/ INTBD CLAY

CHROMATOGRAPH=100%C1

SH/SLTSTN, MGYBRN, FRM/HD
VOLC/TUFF, CLAY, MAG, STKY
SS,VF/MFGRAIN, LT/MGY
SANG/SRND, WSRT, QTZ
VOLC GRAINS, CHLORITE
LIGNITE GRAINS

w 71
v 41

CHROMATOGRAPH=100%C1

SLTY/SH, GY/BRNGY, VOLC
TUFF, TR LIGN, SFT-
FRM, SOL CLAY/TR KAO
TR LIGNITE, SL CALC
SS, VFGRN, SANG, FRM
HD, QTZ+VOLC GRAINS
TUFF TP, USRT, CALCXLS
ABNT LIG GRNS

w 71
v 42

CHROMATOGRAPH=100%C1

751'/21 1/2HR

NB#5 [illegible] OSC3

TG=11U

3°

w 71
v 43
F 6.0
FC 2/32
pH 9.5
S 600
SD 1/2%

SHALE/SILTSTN; SHALE,
LT GRY, NON SOL, FIRM
W/BRWN, FRIABLE; CARBONACEOUS
SILTSTN, TR LIG, CRS WHT
ANG QTZ & CALCITE

CHROMATOGRAPH=100%C1

SHALE, MD GRY, SOL, SOFT,
W/BRWN, FIRM SILTSTN A/A
& FN, SBRD CL, QTZ

WOB 10,000
PP 1,200
RPM 110

SHALE, BRWN, SOL, SOFT,
GUMMY, W/SILTSTN A/A
& MIN FN-CRS, SBANG QTZ,
MICA, LIGN

WHG=8U

WIPE HOLE, TIGHT

w 73
v 44

CHROMATOGRAPH=100%C1

C=86U VIS 44
LAG=13MIN @ 52SPM

SAND, VFN-MD, CL-FROST,
SBANG QTZ, MICA, LIGN,
KAOL W/ BRWN SILTY CLAY
SOL, & FIRM BRWN SILTSTN

WOB 6,000

4°00'

CHROMATOGRAPH=100%C1

SHALE/ SLT@SS, MGY/WH, DKGY
KAO THN INTBD/GY SLTN SHALE
QTZ+VOLC F-MGRAIN, CALC
CLAY SOL STICKY, SFT/FRM SLT
RR LIG/THIN CARB STRKS, CALC XL

12-10-79
WOB 10,000

CG=12U

w 73
v 55

CHROMATOGRAPH=100%C1

SHALE/ SLTSTN, SS GRAINS
M/LT GY, WHITE KAO THIN BDD
LAMINATED CLAY, SOL STICKY
SLTSTN, QTZ+BASALTIC GRAINS
FRM, PSRT, CALC, MICA, TR LIG

CG=10U

WHG=10U

WIPE HOLE
3°30'

w 73
v 54
F 4.4
FC 2/32
pH 10.1
S 400
SD 1/2%

CHROMATOGRAPH=100%C1

SAND, VFN-FN, CL, SBANG
QTZ, ABUND KAOL, MICROMICA,
USRT, TR RED-ORANG VOLC ASH
OCC HRD SS STRINGERS W/
GUMMY, SOL, BRWN/GRY
CLAY & FIRM BRWN CARBONACEOUS
SILTSTN, TR LIGN

459'/24HRS

NB#6 HTC OSC3

TG=5U

3°30'

CHROMATOGRAPH=100%C1

SLTSTN/SAND, LT/MGY,
VF GRAINS, ABNT MACRO MICA
SL CALC, SHALE/CLAY,
SOL IN KAO, SFT, TUFF

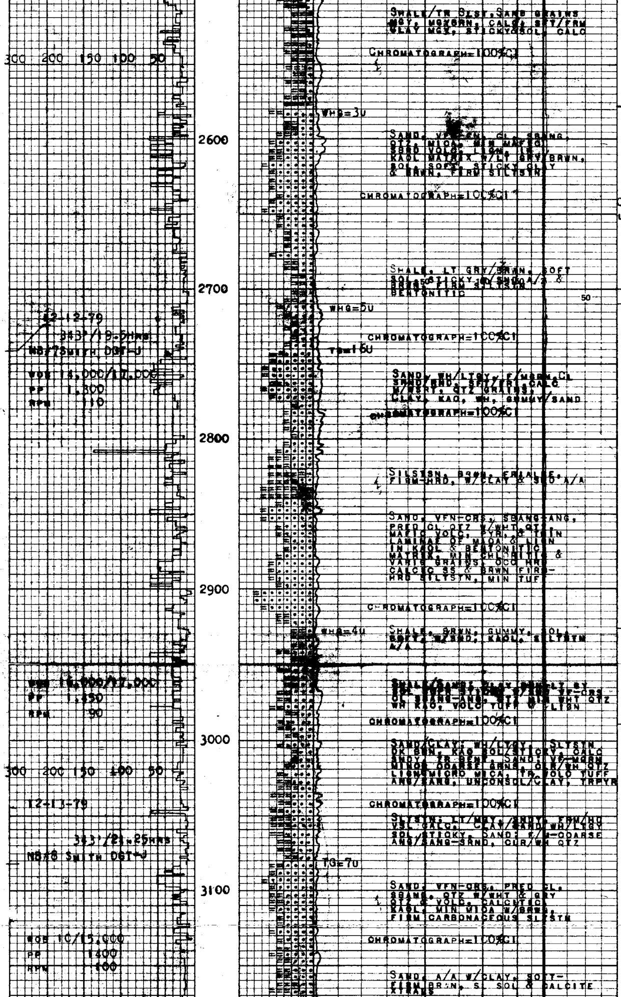
w 73
v 51

SHALE/SLTSTN, MGY/BRNGY, TUFF
TR KAO, CLAY, WH/BRN, SOL SFT
SLTY, VSLCAOL, SAND, SRND,
QTZ GRAINS WH/MLKY

WOB 15,000/17,000
PP 200, 2004
RPM 110 12-11-79

w 73
v 65

CHROMATOGRAPH=100%C1



SHALE/TR SLST, SAND GRAINS MGY, MGYBRN, CALC, SFT/FRM CLAY MGY, STICKY&SOL, CALC

CHROMATOGRAPH=100%C1

WIPE HOLE

WHG=3U

w 73 v 63 F 4.5
FC 2/32 PH 9.5
S 350 SD 3/4%

SAND, VF-FN, CL, SBANG, QTZ, MICA, MIN MAFIC, SBRD VOLC, LIGN, IN KAOL MATRIX W/LT GRY/BRWN, SOL, SOFT, STICKY CLAY & BRWN, FIRM SILTSTN

CHROMATOGRAPH=100%C1

C=51U VIS 63
LAG220MIN @ 42SPM

SHALE, LT GRY/BRWN, SOFT SOL, STICKY W/SND A/A & BRWN, FIRM SILTSTN BENTONITIC

3°30'
WIPE HOLE

WHG=5U

12-12-79
343'/19.5HRS
NB#7 SMITH DGT-J

WOB 14,000/17,000
PP 1,300
RPM 110

CHROMATOGRAPH=100%C1

TG=16U

SAND, WH/LTGY, F/MGRN, CL SBND/RND, SFT/FRI, CALC W/WSRT, QTZ GRAINS, CLAY, KAO, WH, GUMMY/SAND

CHROMATOGRAPH=100%C1

w 74
v 60
F 5.5
FC 2/32
pH 9.0
S 350
SD 3/4%

SILTSTN, BRWN, FRIABLE, FIRM-HRD, W/CLAY & SND A/A

SAND, VFN-CRS, SBANG-ANG, PRED CL QTZ W/WHT QTZ, MAFIC VOLC, PYR, & THIN LAMINAE OF MICA & LIGN IN KAOL & BENTONITIC MATRIX, MIN CHLORITIC & VARIC GRAINS, OCC HRD CALCIC SS & BRWN FIRM-HRD SILTSTN, MIN TUFF

CHROMATOGRAPH=100%C1

WHG=4U

SHALE, BRWN, GUMMY, SOL, SOFT, W/SND, KAOL, SILTSTN A/A

WIPE HOLE

WOB 16,000/17,000
PP 1,350
RPM 90

SHALE/SANDY CLAY [illegible] LT GY [illegible] VF-CRS CL SBANG-ANG, QTZ MIN WHT QTZ WH KAO, VOLC TUFF & LIGN

C=31U VIS 54
LAG=30MIN @ 42SPM
3°

CHROMATOGRAPH=100%C1

w 74
v 54

SAND/CLAY: WH/LTGY, SLTSTN DK BRN, KAO SOL/STICKY, CALC SNDY, TR BENT, SAND: VF-MGRN MINOR COARSE GRNS, CLR/WH QTZ LIGN&MICRO MICA, TR VOLC TUFF ANG/SANG, UNCONSOL/CLAY, TRPYR

12-13-79

CHROMATOGRAPH=100%C1

SLTSTN, LT/MGY, SNDY, FRM/HD VSL CALC, CLAY/SAND WH/LTGY SOL/STICKY, SAND: F/M-COARSE ANG/SANG-SRND, CLR/WH QTZ

w 73
v 57

343'/21.25HRS
NB#8 SMITH DGT-J

TG=7U

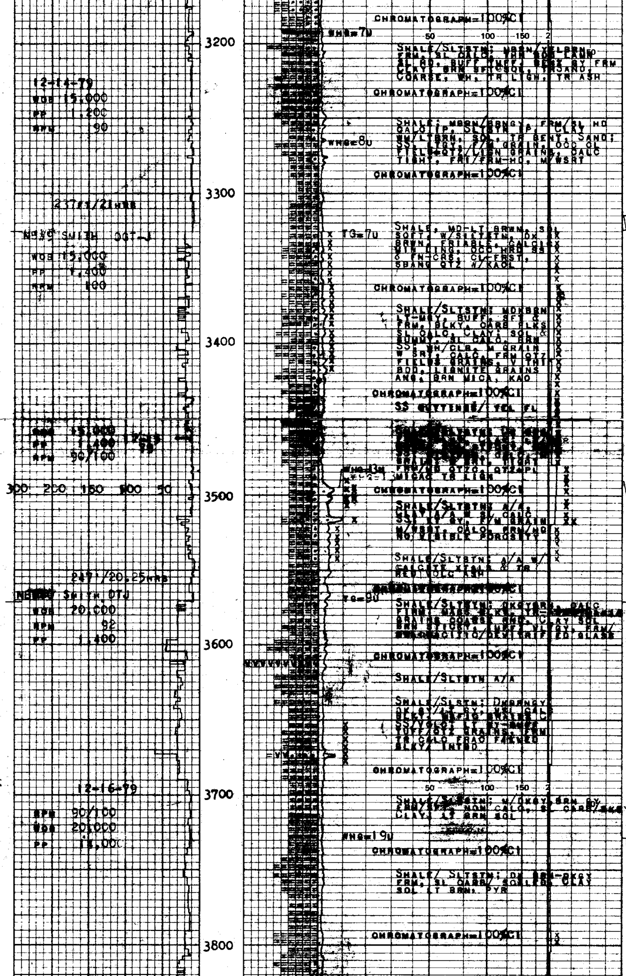
SAND, VFN-CRS, PRED CL, SBANG, QTZ W/WHT & GRY QTZ & VOLC, CALCITIC, KAOL, MIN MICA W/BRWN, FIRM CARBONACEOUS SLTSTN

WOB 10/15,000
PP 1400
RPM 100

CHROMATOGRAPH=100%C1

w 82
v 53

SAND, A/A W/CLAY, SOFT-FIRM BRWN, SL SOL & CALCITE XTRALS



12-14-79
WOB 15,000
PP 1,200
RPM 90

237FT/21HRS

NB#9 SMITH DGT-J
WOB 15,000
PP 1,400
RPM 100

WOB 15,000
PP 1,400
RPM 90/100

247'/20.25HRS

NB#10 SMITH DTJ
WOB 20,000
RPM 92
PP 1,400

12-16-79
RPM 90/100
WOB 20,000
PP 1,500

CHROMATOGRAPH=100%C1

SHALE/SLTSTN: MBRN/YELBRN, FRM, SL CALC, YHN SOL LAMN, SL HD, BUFF TUFF; BENT GY FRM CLAY; BRN SFT&SOL; SAND, COARSE, WH, TR LIGN, TR ASH

CHROMATOGRAPH=100%C1

SHALE: MBRN/BRNGY, FRM/SL HD CALC IP, SLTSTN IP, CLAY WH/LTBRN, SOL, TR BENT, SAND; SS, LTGY, F/M GRAIN, OCC CL FELDS&QTZ/LIGN GRAINS, CALC TIGHT, FRI/FRM-HD, M/WSRT

CHROMATOGRAPH=100%C1

SHALE, MD-LT BRWN, SOL SOFT, W/SILTSTN, DK BRWN, FRIABLE, CALCIC WIN DING, OCC HRD SS & FN-CRS, CL-FRST, SBANG QTZ W/KAOL

CHROMATOGRAPH=100%C1

SHALE/SLTSTN: MDKBRN LT-MGY, BUFF, SFT & FRM, BLKY, CARB FLKS SL CALC, CLAY: SOL & GUMMY, SL CALC, BRN SS, WH/CLR, M GRAIN W SRT, CALC, FRM QTZ FIELDS GRAINS, V THI BDD, LIGNITE GRAINS ANG, BRN MICA, KAO

CHROMATOGRAPH=100%C1

SS CUTTINGS/ YEL FL

[illegible] FRM/HD QTZC, QTZ&PL MICAC TR LIGN

CHROMATOGRAPH=100%C1

SHALE/SLTSTN A/A, CLAY A/A W SL CALC SS: LT GY, F/M GRAIN, M/WSRT, CALC, FRM/HD NO VISIBLE POROSITY

SHALE/SLTSTN: A/A W/ CALCITE XTALS & TR REDT VOLC ASH

CHROMATOGRAPH=100%C1

SHALE/SLTSTN: DKGYBRN, CALC FIRM, MASS BLKY, [illegible] GRAINS COARSE [illegible], CLAY SOL BRN STICKY, TUFF, VLTGY, FRM/ [illegible] ACICULAR/DEVITRIFIED GLASS

CHROMATOGRAPH=100%C1

SHALE/SLTSTN A/A

SHALE/SLSTN: DKBRNGY DK GY/LT GY, [illegible] CALC BLKY, [illegible] SS/VOLC LT GY-BUFF TUFF/QTZ GRAINS, FRM TR CALC FRAC [illegible] BLKY/ INTBD

CHROMATOGRAPH=100%C1

SHALE/SLTSTN: M/DKGY, BRN GY FRM/SFT, NON CALC, SL CARB/[illegible] CLAY, LT BRN SOL

CHROMATOGRAPH=100%C1

SHALE/ SLTSTN: DK BRN-DKGY FRM, SL CARB/ SOL [illegible] CLAY SOL LT BRN, PYR

CHROMATOGRAPH=100%C1

WIPE HOLE
W 76
C=31U VIS 52
LAG=30.5MIN@40SPM

WIPE HOLE
W 75
V 50
NO FLUOR

2°CO'
TR FLUOR IN MUD & CUTTINGS, DULL YELLOW, CUTS TO DULL YELLOW, NO ODOR.

W 75 V 55 F 4.2
FC 2/32 PH 10.5
S 400 SD 1%

TR FLUOR IN MUD & CUTTINGS, SS, CUTS TO WK DULL YELLOW, VERY SLIGHT THIN WK YELLOW FILM ON MUD

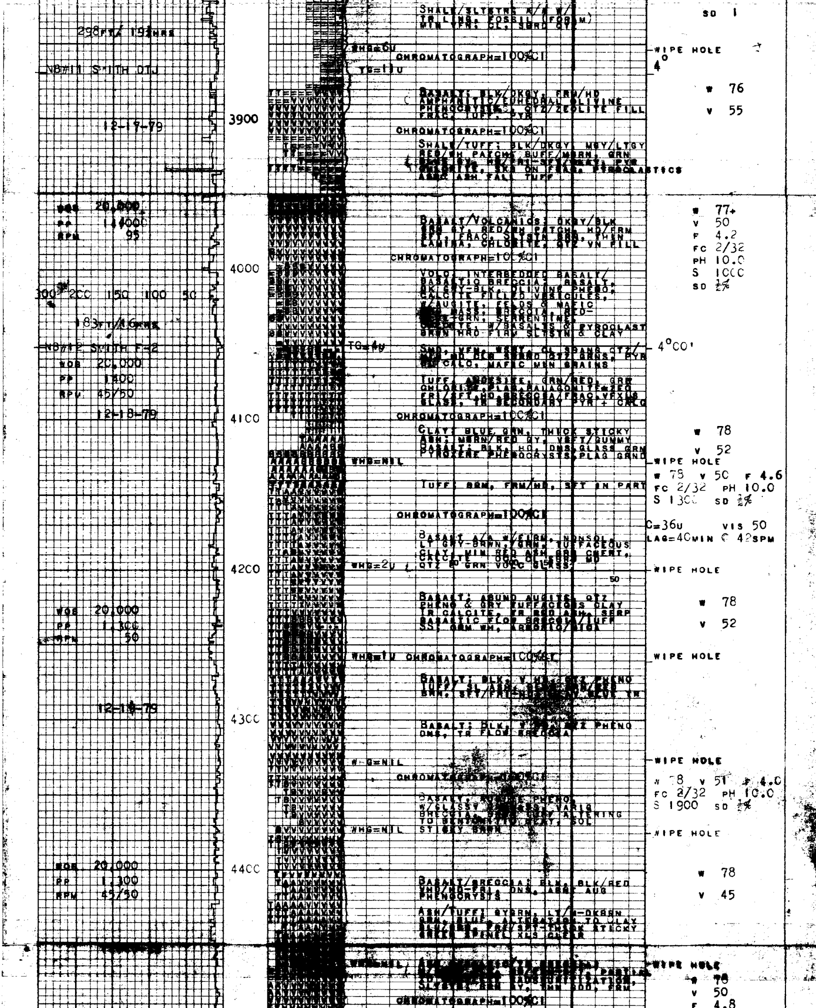
SS MODERATE YEL FLUOR/SLOW WK YEL STREAM © CUT
C=45U V 51
LAG=31MIN@ 43SPM
WIPE HOLE
FLUOR IN MUD/TR IN SS CUTTINGS

2°

W 75
V 57/49
F 4.4
FC 2/32
PH 9.5
S 600

VERY SLIGHT FLUOR IN MUD/NO CUT OR CUTTINGS FLUOR

C=44U V=50
LAG=33MIN@ 46SPM
WIPE HOLE
W 76
V 43
F 4.2
FC 2/32
PH 9.5
S 700



SD 1

SHALE/SLTSTNS A/A W/ TR LING, FOSSIL (FORAM) MIN VFN; CL, SBRD QTZ

WHG=6U

CHROMATOGRAPH=100%C1

WIPE HOLE

4°

TG=11U

BASALT: BLK/DKGY, FRM/HD AMPHANITIC/EUHEDRAL OLIVINE PHENOCRYSTS, QTZ/ZEOLITE FILL FRAC, TUFF, PYR

W 76

V 55

CHROMATOGRAPH=100%C1

SHALE/TUFF: BLK/DKGY, MGY/LTGY RED/WH PATCHS BUFF/MBRN, GRN [illegible] GY, HD/FRI-SFT/[illegible], PYR CHLORITE, SKS ON FRAC, PYROCLASTICS ABND ASH FALL TUFF

W 77+
V 50
F 4.2
FC 2/32
pH 10.0
S 1000
SD ½%

BASALT/VOLCANICS: DKGY/BLK GRN GY, RED/WH PATCHS, HD/FRM SFT, FRAC, SLTSTN GRN, THIN LAMINA, CHLORITE, QTZ VN FILL

CHROMATOGRAPH=100%C1

VOLC: INTERBEDDED BASALT/ BASALTIC BRECCIA: BASALT, DK GRY-BLK, OLIVINE PHENO; CALCITE FILLED VESICULES, W/AUGITE, FELDS & MAFIC [illegible] MASS; BRECCIA, RED- [illegible]-GRN, SERPENTINE, [illegible]ITE, W/BASALTS & PYROCLAST BRWN HRD FIRM SLTSTN & CLAY

TG=4U

4°CO'

SND, VFN, WSRT, CL SBANG QTZ/ [illegible] RD BLK SBRND QTZ GRNS, PYR [illegible] CALC, MAFIC MIN GRAINS

TUFF, ANDESITE, GRN/RED, GRN CHLORITE, PLAG, PALAGONITE+ZEO FRI/SFT, HD, BRECCIA/FRAC, VFXLN GLASS, TR SECONDARY PYR + CALC

CHROMATOGRAPH=100%C1

CLAY: BLUE GRN, THICK STICKY ASH: MBRN/RED GY, VSFT/GUMMY BASALT: BLK, HD, DNS, GLASS GRN PYROXENE PHENOCRYSTS, PLAG GRND

W 78

V 52

WHG=NIL

WIPE HOLE

W 78 V 50 F 4.6
FC 2/32 pH 10.0
S 1300 SD ½%

TUFF: BRN, FRM/HD, SFT IN PART

CHROMATOGRAPH=100%C1

C=36U VIS 50
LAG=40MIN @ 42SPM

BASALT A/A W/FIRM, NONSOL, LT GRY-BRWN, /GRN, TUFFACEOUS CLAY, MIN RED ASH, GRN CHERT, CALCITE OCC CL SBRD MD QTZ & GRN VOLC GLASS?

WHG=2U

WIPE HOLE

50

BASALT: ABUND AUGITE, QTZ PHENO & GRY TUFFACEOUS CLAY TR CALCITE, TR RED ASH, SERP BASALTIC FLOW BRECCIA/TUFF SS; GRN WH, ARKOSIC/BIGA

W 78

V 52

WHG=1U CHROMATOGRAPH=100%C1

WIPE HOLE

BASALT: BLK, V HD, QTZ PHENO TUFF/ SL ASH, [illegible] BWN, SFT/FRI-[illegible] BLUE TR

BASALT: BLK, V HD, QTZ PHENO DNS, TR FLOW BRECCIA

WHG=NIL

WIPE HOLE

CHROMATOGRAPH=100%C1

W 78 V 51 F 4.0
FC 2/32 pH 10.0
S 1900 SD ½%

BASALT, AUGITE PHENO, W/GLASSY [illegible], VARIG BRECCIA, [illegible] ALTERING TO BENTONITIC CLAY, SOL STICKY BRWN

WHG=NIL

WIPE HOLE

W 78

V 45

BASALT/BRECCIA: BLK, BLK/RED VHD/HD-FRI, DNS, ABNT AUG PHENOCRYSTS

ASH/TUFF: GYBRN, LT/M-DKBRN GRN, BLUE, ALTERATION TO CLAY BLUE/GRN, PREVSFT-THICK STICKY GREEN SPINEL XLS CLEAR

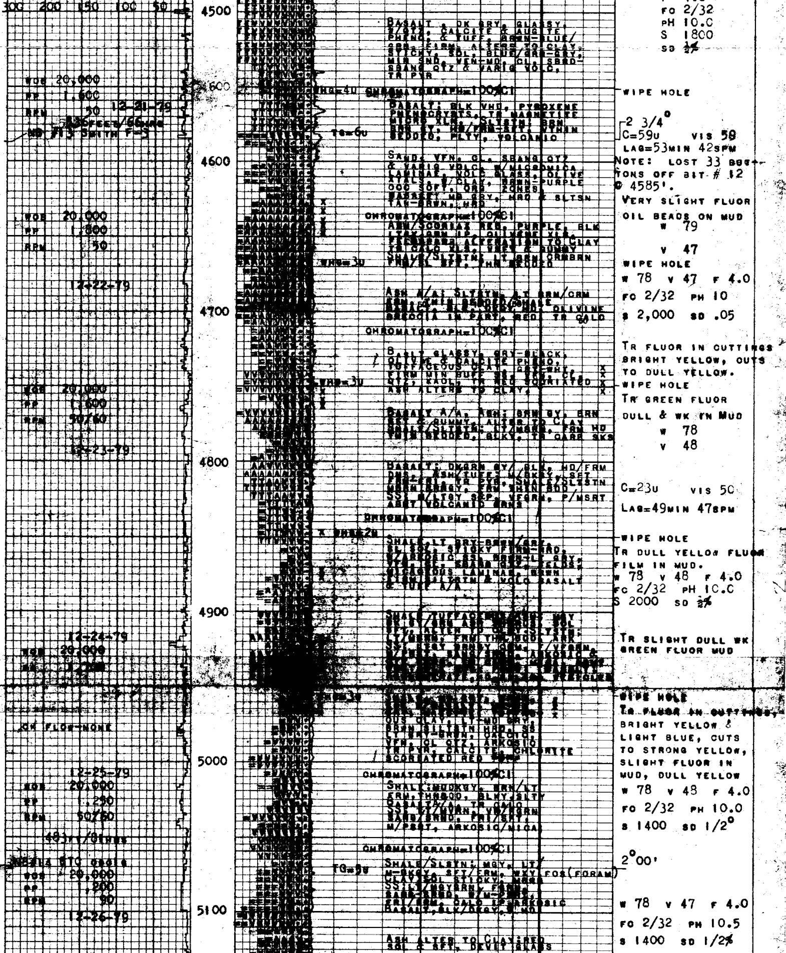
WHG=NIL

WIPE HOLE

[illegible] PARTLY [illegible] CEMENTATION, SLTSTN, GRN GY, THN BDD, FRM

W 78
V 50
F 4.8

CHROMATOGRAPH=100%C1



FC 2/32
pH 10.0
S 1800
SD ½%

BASALT, DK GRY, GLASSY, W/QTZ, CALCITE & AUGITE PHENO, & TUFF, BRWN-BLUE/GRN, FIRM, ALTERS TO CLAY, STICKY, SOL, BLUE/GRN-GRY, MIN SND, VFN-MD, CL, SBRD-SBANG QTZ & VARIG VOLC, TR PYR

WOB 20,000
PP 1,600
RPM 50
12-21-79
83FEET/66HRS
NO #13 SMITH F-5

CHROMATOGRAPH=100%C1

WIPE HOLE

BASALT: BLK VHD, PYROXENE PHENOCRYSTS, TR MAGNETITE MICRO XLN, SLTSTN: BRN, BRN GY, HD/FRM-SFT, VTHIN BEDDED, PLTY, VOLCANIC

2 3/4°
C=59u VIS 59
LAG=53MIN 42SPM

SAND, VFN, CL, SBANG QTZ & VARIG VOLC, W/MICROMICA LAMINAE, VOLC GLASS, OLIVE XTALS, W/CLAY, BRWN-PURPLE OCC SOFT, ORG ZONES, BASALT MD GRY, HRD & SLTSN TAN-BRWN, HRD

NOTE: LOST 33 BUTTONS OFF BIT #12 @ 4585'.

VERY SLIGHT FLUOR

WOB 20,000
PP 1,800
RPM 50

CHROMATOGRAPH=100%C1

OIL BEADS ON MUD
W 79
V 47

ASH/SCORIAE RED, PURPLE, BLK LTAX/GRN IP, OLIVENE XLS, [illegible] ALTERATION TO CLAY TR CALC XLS, VSFT & GUMMY SHALE/SLTSTN: LT GRN CRMBRN FRM/SL SFT, THN BEDDED

WIPE HOLE
W 78 V 47 F 4.0

12-22-79

ASH A/A; SLTSTN, LT BRN/CRM [illegible] THIN BEDDED SHALE BASALT, BLK, DKGY, HD, OLIVINE BRECCIA IN PART, RED, TR CALC

FC 2/32 PH 10
S 2,000 SD .05

CHROMATOGRAPH=100%C1

BASALT GLASSY, GRY-BLACK, OLIVINE & CALCITE PHENO, TUFFACEOUS CLAY, GRY-WHT, FIRM MIN BUFF SS, VFN, CL QTZ, KAOL, TR RED SCORIATED ASH ALTERS TO CLAY.

TR FLUOR IN CUTTINGS BRIGHT YELLOW, CUTS TO DULL YELLOW.

WOB 20,000
PP 1,600
RPM 90/60

WIPE HOLE
TR GREEN FLUOR DULL & WK IN MUD
W 78
V 48

BASALT A/A, ASH; BRN GY, BRN SFT & GUMMY, ALTER TO CLAY SHALE/SLTSTN: LT/MGRN, FRM HD THIN BEDDED, BLKY, TR CARB SKS

12-23-79

BASALT: DKGRN GY/ BLK, HD/FRM DNS, ASH/TUFF: W/GKGY, SFT [illegible], TR PYR, SHALE/SLTSTN MGRN [illegible], FRM THIN BDD SS: W/LTGY SLP, VFGRN, P/MSRT ABNT VOLCANIC GRNS

C=23u VIS 50
LAG=49MIN 47SPM

CHROMATOGRAPH=100%C1

WIPE HOLE
TR DULL YELLOW FLUOR FILM IN MUD.
W 78 V 48 F 4.0
FC 2/32 PH 10.0
S 2000 SD ½%

SHALE, LT GRY-BRWN/GRY, SL SOL, STICKY FIRM-HRD, W/ARKOSIC SS, BRWN-LT GRY, VFN, CL, SBANG QTZ, FELDS, MICACEOUS LAMINAE, BRWN FIRM SILTSTN & VOLC BASALT & TUFF A/A

SHALE/TUFFACEOUS [illegible] GY/GRN ASH [illegible] SOL SFT, ALTER TO CLAY; SLTSTN: LT/MGRN, FRM THN BDD, ARK SS: [illegible] SANDY [illegible], F/VFGRN, [illegible] ARKOSIC & [illegible] VESICULAR

12-24-79
WOB 20,000
PP [illegible]

TR SLIGHT DULL WK GREEN FLUOR MUD

[illegible] OUS CLAY, LT-MD GRY, BRWN SILTSTN HRD, SS LT GRY-BRWN, CALCIC, VFN, CL QTZ, ARKOSIC TR PYR, CALCITE, CHLORITE SCORIATED RED [illegible]

WIPE HOLE
TR FLUOR IN CUTTINGS, BRIGHT YELLOW & LIGHT BLUE, CUTS TO STRONG YELLOW, SLIGHT FLUOR IN MUD, DULL YELLOW

CK FLOW-NONE

CHROMATOGRAPH=100%C1

SHALE: MUDKGY, BRN/LT FRM, THNBDD, BLKY, SLTY BASALT: A/A, TR CALC SS: LT/MVRN, VF/FGRN SAND/GRND, FRI/SFT, M/PSRT, ARKOSIC/MICA

12-25-79
WOB 20,000
PP 1,250
RPM 50/60

W 78 V 48 F 4.0
FC 2/32 PH 10.0
S 1400 SD 1/2°

483FT/81HRS

CHROMATOGRAPH=100%C1

SHALE/SLSTN; MGY, LT/M-DKGY, SFT/FRM, WXY, FOS(FORAM) CLAY: SOL STICKY, MGRN SS: LT/MGYGRN, FGRN, SAND-GRND, W/M-PSRT, FRI/FRM, CALC IP, ARKOSIC BASALT, BLK/DKGY, HD

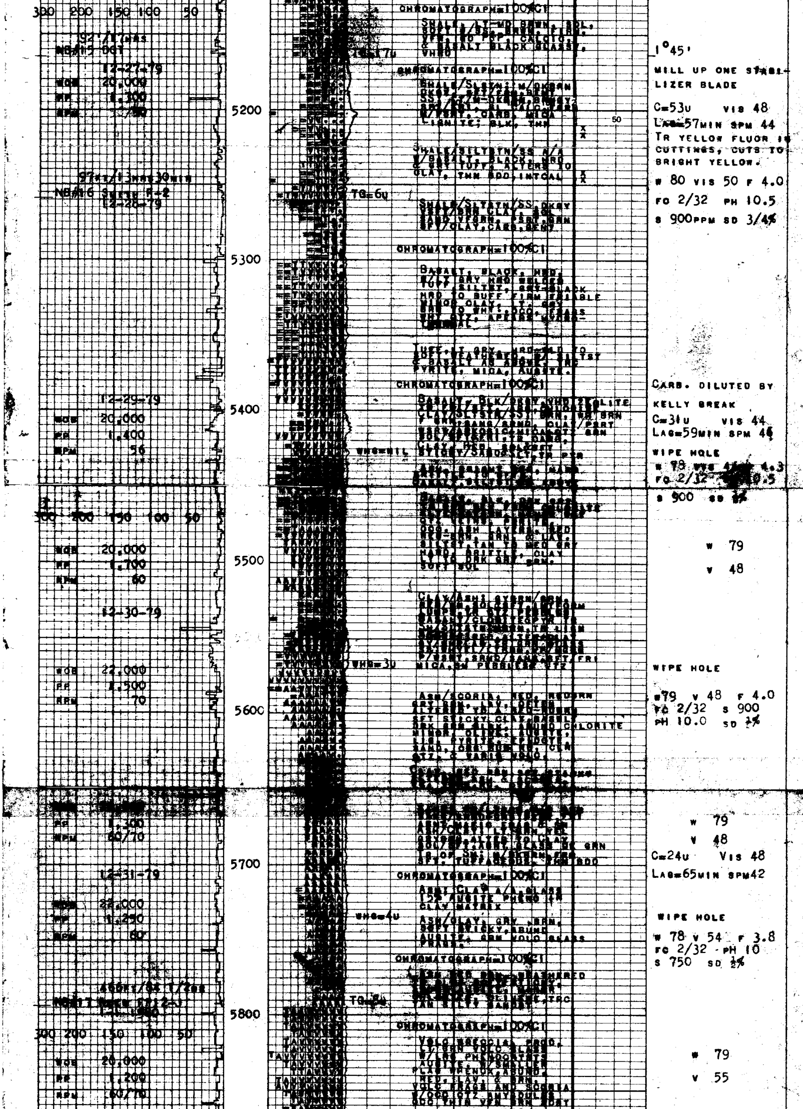
2°00'

#14 STC [illegible]
WOB 20,000
PP 1,200
RPM 90

W 78 V 47 F 4.0
FC 2/32 PH 10.5
S 1400 SD 1/2%

12-26-79

ASH ALTER TO CLAY: RED SOL & SFT, DEVIT GLASS



92'/17HRS
NB#15 DGT
12-27-79
WOB 20,000
PP 1,300
RPM 70/80

97FT/13HRS30MIN
NB#16 Smith F-2
12-28-79

12-29-79
WOB 20,000
PP 1,400
RPM 56

WOB 20,000
PP 1,700
RPM 60

12-30-79

WOB 22,000
PP 1,500
RPM 70

[illegible]
PP 1,300
RPM 60/70

12-31-79

WOB 22,000
PP 1,250
RPM 60

465FT/64 1/2HR
NB#17 [illegible]
1-1-1980

WOB 20,000
PP 1,200
RPM 60/70

CHROMATOGRAPH=100%C1

SHALE, LT-MD BRWN, SOL, SOFT W/SS, BRWN, FIRM, VFG, MD PSP, CALCIC, & BASALT BLACK GLASSY, VHRD

CHROMATOGRAPH=100%C1

SHALE/SLSTN: W/DKBRN DKGY, SFT/FRM, BENT SS: [illegible]-DKBRN, BRNGY [illegible] CALC, [illegible] W/PSRT, CARB, MICA LIGNITE; BLK, THN

SHALE/SILTSTN/SS A/A W/BASALT, BLACK, HRD & GRY TUFF, ALTERS TO CLAY, THN BDD, INTCAL

SHALE/SLTSTN/SS, DKGY [illegible]/BRN CLAY, SOL SAND VFGRN, PSRT, BRN SFT/CLAY, CARB, BENT

CHROMATOGRAPH=100%C1

BASALT, BLACK, HRD, & LT GRY HRD WELDED TUFF, SILTST, GRY-BLACK HRD TO BUFF FIRM FRIABLE MINOR CLAY, LT. GRY BRN TO WHT, OCC. FRAGS WHT QTZ, APEARS HYDRO-THERMAL

TUFF, LT GRY, HRD-MED TO SOFT WEATHERED, W/ SILTST & BASALT AS ABOVE, TRC PYRITE, MICA, AUGITE.

CHROMATOGRAPH=100%C1

BASALT, BLK/DKGY, VHD, ZEOLITE [illegible]
CLAY/SLTSTN/SST, BRN, WH BRN F GRN, SAND/SRND, CLAY/PSRT [illegible] BRN
[illegible], TR CARB, CLAY, RED, SOL, SFT STICKY/SANDY SLT, TR PYR
[illegible]
[illegible]
[illegible]
[illegible], ASH LAYERS, RED RED-BRN, BRN, & LAV, SILTST, TAN TO MED GRY HARD, BRITTLE, CLAY LT TO DRK GRY, BRN, SOFT SOL

CLAY/ASH: GYBRN/BRN, RED/WH, SOL, SFT, [illegible] LUMPS, TR QTZ [illegible] BASALT/CLORITE PYR TR [illegible], TR LIGN [illegible]
[illegible]
P/VSRT, SRND/SAND, SFT, FRI MICA, SW PEBBLES QTZ

ASH/SCORIA, RED, RED BRN GRY BRN, LAV, OFTEN ALTERED TO A RED-BRN SFT STICKY CLAY, BASALT DRK GRN-BLK, ABUND CHLORITE MINOR OLIVINE, AUGITE, LIG, PYRITE, EPIDOTE SAND, [illegible], CLR QTZ, & VARIE VOLC.

[illegible]
[illegible]
ASH/MAFIC FRAG & [illegible]
ASH/CLAY: LT BRN YEL GRY GRN, ALTER TO CLAY SOL/SFT, ABNT GLASS DK GRN [illegible] SH; W/DKBRN, FRM SFT, TUFFACEOUS, THN BDD

CHROMATOGRAPH=100%C1

ASH; CLAY A/A, GLASS 12% AUGITE PHENO IN CLAY MATRIX

ASH/CLAY, GRY, BRN, SOFT, STICKY, ABUND AUGITE, GRN VOLC GLASS FRAGS.

CHROMATOGRAPH=100%C1

[illegible] WEATHERED
[illegible]
[illegible], TRC
TAN SILTY SANDST

CHROMATOGRAPH=100%C1

VOLC BRECCIA, PRED. LT GRN VOLC GLASS W/LRG PHENOCRYSTS AUGITE, W/SMALLER PLAG PHENOS, ABUND. RED, LAV, & BRN, VOLC FRAGS AND SCORIA W/OCC QTZ AMYGDULES OCC THIN VFN BRN SOFT

1°45'

MILL UP ONE STABILIZER BLADE

C=53u VIS 48
LAG=57MIN SPM 44
TR YELLOW FLUOR IN CUTTINGS, CUTS TO BRIGHT YELLOW.

W 80 VIS 50 F 4.0
FC 2/32 PH 10.5
S 900PPM SD 3/4%

CARB. DILUTED BY KELLY BREAK
C=31u VIS 44
LAG=59MIN SPM 46

WIPE HOLE
W 78 VIS [illegible] 4.3
FC 2/32 [illegible] 10.5
S 900 SD [illegible]

W 79
V 48

WIPE HOLE

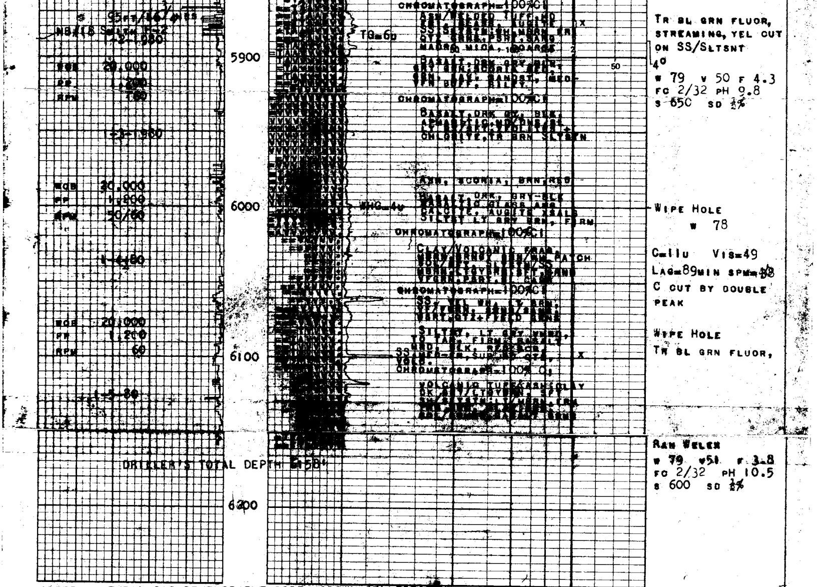
W79 V 48 F 4.0
FC 2/32 S 900
PH 10.0 SD 1%

W 79
V 48
C=24u VIS 48
LAG=65MIN SPM42

WIPE HOLE

W 78 V 54 F 3.8
FC 2/32 PH 10
S 750 SD 1/2%

W 79
V 55



OREGON NATURAL GAS DEVELOPMENT CORP. CROWN ZELLERBACH #1, SEC 13; T2S; R10W, W.B.&M.
TILLAMOOK COUNTY, ORE.