GL04463-10

Reproduced By
Rocky Mountain Well Log Service
Midland, Texas 79701

10 **REFERENCE # C 1350A**

10

EXPLORATION LOGGING INC.

A GEOLOGICAL - ENGINEERING SERVICE CO.

REMARKS

DRILLING CONTRACTOR: MONTGOMERY DRILLING CO. RIG NO. 2
SPUD DATE 1/23/74 "SIDETRACK" 5/30
TYPE MUD: GEL-WATER, LIGNOSULFONATE, CHROME LIGNOSULFONATE

CASING RECORD

20" AT 123'
13 3/8" AT 812'

HOLE SIZE

12 1/4" TO 8653'
9 7/8" TO

ABBREVIATIONS

NB	NEW BIT	W	MUD WEIGHT
RRB	RERUN BIT	#	MUD VISCOSITY
CB	CORE BIT	F	MUD FILTRATE CC/30 MIN
CR	CIRCULATE RETURNS	FC	FILTER CAKE
NR	NO RETURNS	SD	SAND CONTENT
PR	POOR RETURNS	S	SALINITY ___ OR PPM NaCl
LAT	LOGGED AFTER TRIP	R	RESISTIVITY OF MUD
TG	TRIP GAS	RF	RESISTIVITY MUD FILTRATE
CG	CONNECTION GAS		
C	CARBIDE		
DST	DRILL STEM TEST		
[	TEST INTERVAL		
■	CORE INTERVAL		

% based on [illegible] of unwashed cuttings and percentage [illegible] of washed cuttings.

GAS UNITS: Gas Detector calibrated to record 100 units with a mixture of 2% methane in air.

LITHOLOGY SYMBOLS

LIMESTONE, DOLOMITE, GYPSUM AND ANHYDRITE, SALT, COAL AND LIGNITE, CLAY, SHALE, SILTSTONE, SANDY SILTST., SAND, CONGLOMERATE, CHERT, [illegible], [illegible], TUFF, OF 2#

COMPANY	CHEVRON OIL COMPANY
WELL	"CHEVRON-ATR-GINN" NO. 1-13
FIELD	WHIRLWIND VALLEY AREA
LOCATION	SEC. 13, T31N-R47E, MDB&M
COUNTY, STATE	LANDER COUNTY, NEVADA
API WELL INDEX NO.	
ELEVATION	4946.90FT (GL) 4960.40FT (KB)
DATE	FROM 1/25/74 TO
DEPTH	FROM 123' TO 8644'
UNIT NO.	33
LOGGING GEOLOGISTS	D.B. FINNELL D.E. WALTERS

CHEVRON OIL COMPANY; "CHEVRON-ATR - GINN" NO. 1 - 13; SEC. 13, T31N-R47E, MDB&M; LANDER CTY, NEVADA

EXPLORATION LOGGING INC.
DRILLING RATE AND DATA
■ FT/HR
☐ MIN/FT
VISUAL POROSITY

DEPTH

LITHOLOGY

OIL

DRILLING MUD
CONTINUOUS DITCH GAS
OIL IN MUD
TOTAL GAS
PETROL VAP
BLENDER GAS

CUTTINGS
GAS
TOTAL GAS
PETROL VAP

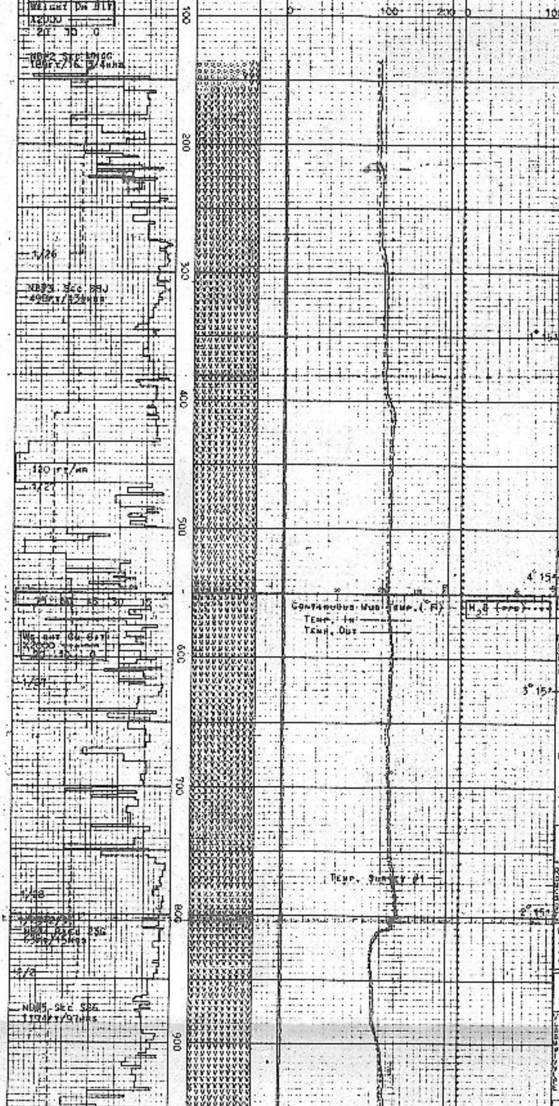
REMARKS AND LITHOLOGY DESCRIPTION

75 60 45 30 15

CONTINUOUS MUD TEMP. (°F)
TEMP. IN
TEMP. OUT

H_2S (PPM)

CMNTD 123FT OF 20IN 94# H - 40 CASING. DRILLING AHEAD WITH 17 1/2IN BIT.



W 69 V 38

VOLC AGLM: DK GRY/BLK, W/ LT TAN/WHT, WEATHERED; UNCONSOL GRAVEL, NON BRECCIA (VALLEY FILL), TRACE XLN EPIDOTE, SO TRC IRON OXIDE IN VUGS.

W 67 S 500 FC 2/32
V 52 F 16.4 PH 8.5

BASALT: DK GY/BLK, GRADING BRN/REDBRN (OXIDATION), APHANITIC TEXTURE, HARD, DENSE, W/ LOC PHENOCRYSTS OF OLIVINE & HORNBLENDE.

CHERT: HARD, DENSE, GLASSY, W/ CONCHOIDAL FRACTURES.

C = 10U AT 52 VIS
LAG = 4MIN W/90SPM

FELSITIC VOLCANIC: LT BRN TO YELLOWISH BRN, COM GRY BRN, HARD, DENSE, APHANITIC TEXTURE, NOTE ABSENCE OF DEFINATE VISIBLE PHENOCRYSTS, POSS RHYODACITE OR LATITE.

W 67 V 55

RHYODACITE: LT BRN, YEL BRN, HARD, DENSE, APHANITIC, COM WHT PLAGIOCLASE FELSPARS ALTERED TO KAOLINITE, MINOR YEL & RED MICROCLINE, TRC ORTHOCLASE (SANIDINE?) W/ POSSIBLE CARLSBAD TWINS, QUARTZ GROUND MASS IN UNDETERMINED AMT, TRC - 10% MAFICS CONSISTING OF COM BIOTITE AND MINOR HORNBLENDE.

W 67 S 250 FC 2/32
V 61 F 15.0 PH 8.5
SOL 2%

BASALT: RED BRN, HARD, DENSE, VY VESICULAR, VESICLE FILLING SILICATES & POSSIBLE SULFUR, VY WEATHERED AND ALTERED, RARE FELSPAR PHENOCRYSTS W/ TWINNING VISIBLE.

BASALT: BLK, MED BRN, FRACTURED, VY VESICULAR, COMN VESICLE VESICULAR FLOW PATTERN, VESICLE & FRACTURE FILLING, CALCITE, EPIDOTE & SILICATE, ALTERED IN PART, COMMON RED BLK BANDED VOLCANIC GLASS.

LITHIC TUFF: TAN, CRM, PINKISH CAST, GLASSY MATRIX, PROB WATER LAID, ABUNDANT PERLITE, COM MED GRY ANG, VESICULAR, FLOW BANDED RHYOLITE FRAGS, SANIDINE.

LOST 50BBL OF DRLG MUD.

C = 11U AT 62 VIS
LAG = 12MIN W/90SPM

RHYOLITE: DK GRY, GLASSY, RESINOUS GRND MASS WITH SANIDINE PHENOCRYSTS, RED ORANGE, VITREOUS LUSTER, RARE SOLID PLAGIOCLASE PHENOCRYSTS.

W 70 V 75

BASALT: DK GRY/BLK, HARD, BRECCIATED, W/ RED GLASSY SANIDINE, AND THINLY INTERBEDDED WELDED TUFF SEEN AS FRACTURE FILLING.

RHYOLITE BRECCIA: LT BRN, RED BRN, HARD, DENSE, W/ COM PHENOCRYSTS OF QTZ AND TRC SANIDINE, SILICA FRAC FILLING.

TUFF: RED/REDDISH BRN, SOFT TO WELL CMTD, W/ THIN INTRBDS W/ BRECCIAS A/A.

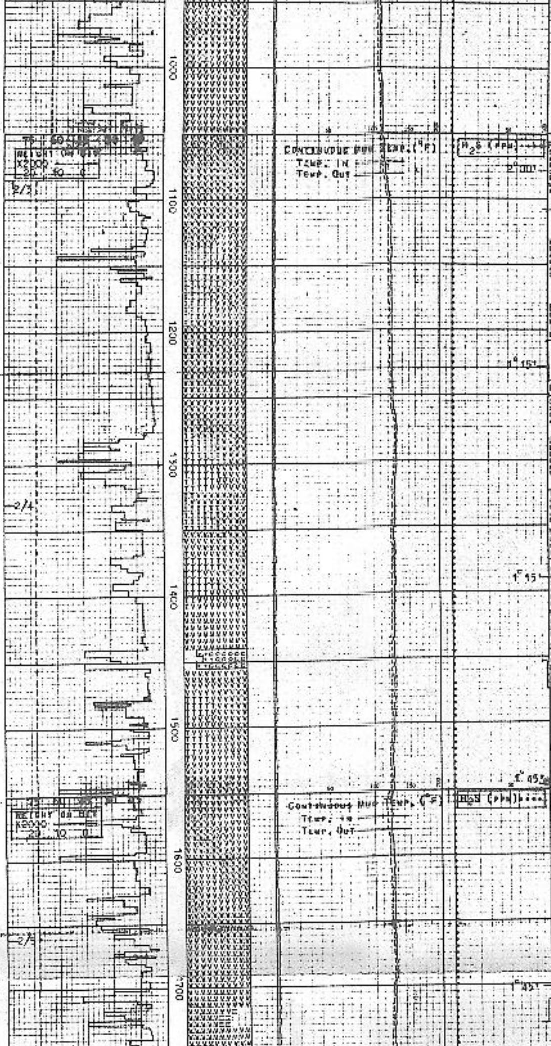
W 70 PH 8 FC 2/32
V 75 F 15 SOL 5%
S 300 PPM

RHYOLITE: MED RED BRN, HD, DENSE, APHANITIC GROUND MASS, WAXY LUSTER, SOME CONCHOIDAL FRACTURES, SANIDINE PHENOCRYSTS, RARE QUARTZ, MINOR BIOTITE, SOME CALCITE VEIN/VESICLE FILLING.

RAN SCHLUMBERGER IES LOG AND SET 13 3/8" CASING AT 812' - DRILLING AHEAD W/ 12¼" BIT.

W 66 F 18 PH 8.5
V 46 FC 2/32 S 300
SOL .1%

VOLCANIC BRECCIA: LT-MED GRY, RED BRN CAST, W/ DK GRY BLK FRAGS, PRED HARD, DENSE, BRECCIATION DISORDERED & MIXED, FRAGS IRREG & ANG, W/ COM SPHERICAL RHYOLITIC VESICLE CASTS, COM FRAC VESICULAR CAVITIES & SEEPAGES OF GLASS, COM ORTHO (SANIDINE), CALCIC PLAGIO PHENOCRYSTS, AGG MINS OF EPIDOTE, CALCITE, POSS SILICA



W 66 F 12 pH 8.0
V 70 FC 3/32 S 300
SO 2% Rm 4.0 Rmf 3.9

VOLCANIC BRECCIA:GRY-BRN HARD,DENSE,VERY ANGULAR FRAGS IN MASSIVE GROUND MASS W/ COMMON FRACTURED AND VESICULAR FILLING W/ (COMMON),RHYOLITIC [illegible] (CASTS):[illegible] EPIDOTE:MINOR SILICA AND CALCITE.

RHYOLITE:LT GRY,FAINT RED-BRN CAST,HD,DENSE,VY FN APHANITIC GRND MASS,PORPHYRITIC IN PART,VY FN QTZ,ORTHOCLASE,SODIC PLAG PHENOCRYSTS,MINOR MAFIC MINERALS,FRACTURED IN PT ABUND IRON OXIDE STAINS.

C = 25u AT 69 VIS
LAG=12MIN W/58SPM

WELDED TUFF:LT GRY,W/COM LAVENDER CAST,HARD,DENSE APHANITIC,COM PHENOCRYST OF FELSPAR,COM MAFIC MIN ALTERING TO IRON OXIDE, SOME VESICULATION PRESENT.

BASALT:DK GRY,BLK,HARD,DENSE,APHANITIC GROUND MASS,W/ PHENOCRYSTS OF INTERMEDIATE PLAGIOCLASE BIOTITE,MAFIC MINERALS.

W 66 F 13.2 pH 8
V 50 FC 3/32 S 300
SOL 2% Rm 4.1 Rmf 3.8

BASALT:DK GRY/BLK,W/DENSE HARD,APHANITIC TEXTURE TO GROUND MASS,COMMON GREEN BLK OLIVINE,COMMON IRON OXIDIZING OF MAFIC MINERALS DUE TO WEATHERING.

WELDED TUFF:GRY/BRN,RED-BRN,W/ LAVENDER CAST,HARD DENSE,APHANITIC TEXTURE,COMMON IRON OXIDE ALTERATION,OCC OLIVINE:MINOR VESICLES.

TUFF:[illegible],LT GRY,VITRIC,COMPACT,COM FN MAFIC INCLUSIONS W/IRON OXIDE ALTERATION,ABUND FELSPAR PHENOCRYSTS.

VOLCANIC GLASS:PROB VITROPHYRE,DK GRY,BLK,GLASSY MATRIX,COM RED BRN FELSPAR PHENO,ABND CRYSTALL

TUFF:LT GRY,SLIGHT GREEN CAST,COMPACT,VITRIC,COM FELSPAR PHENOCRYSTS,IRON STAINING PREVALENT,POSS OPALIZATION OF FRACTURES ROCK TYPE(POSS RHYOLITE PORPHRY).

VOLCANIC GLASS:DK GRY,BLK GREEN CAST,GLASSY MATRIX HIGHLY FRACTURED,ABUNDANT CRYSTALLITES.

SAND & GRAVEL:MULTICOLOR PRED DK GRY,PRLY SRTD,UNCONSOL,ANG,VOLCANIC FRAGMENTS,CLAYEY IN PART.

C = 25u AT 55 VIS
LAG=15MIN W/52SPM

BASALT:DK GRY/BLK,HD,DNS APHANITIC,W/CALCITE FRAC FILLING,W/INTRBDD TUFF: HD,DNS,LT GRY/GRN,COMPACT

RHYOLITE:LT-MED GRY,W/LOC RED CAST,HARD,DENSE,APHAN MATRIX,PHENOCRYSTS OF QTZ AND FELDSPARS,RARE SANIDN 5% MAFIC MINERALS.

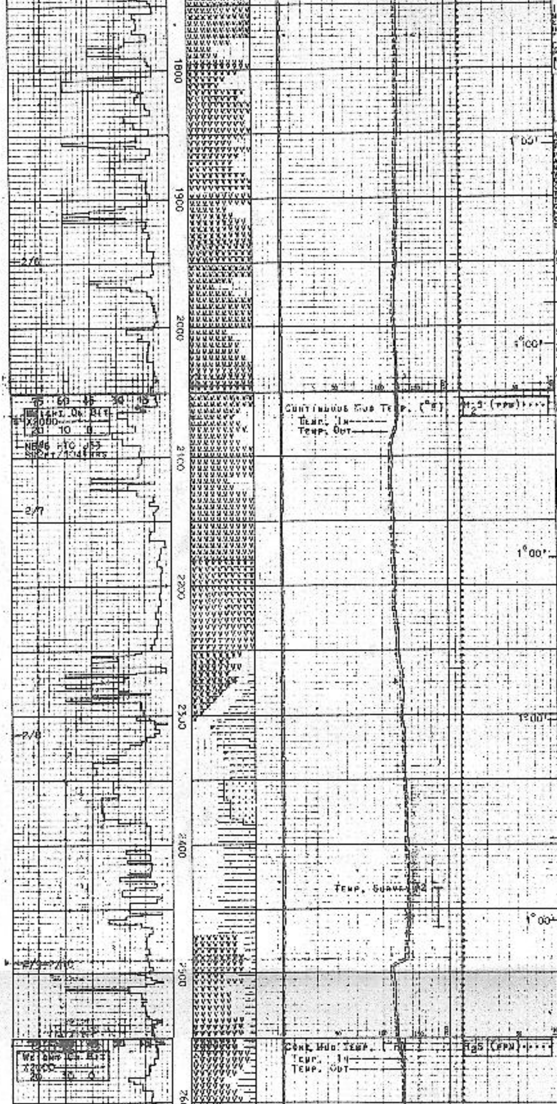
W 67 F 12.0 pH 9.0
V 45 FC 2/32 S 300
SOL 2% Rm 4.0 Rmf 3.9

RHYOLITE:LT-MED GRY/WHT, MINOR REDDISH CAST,HARD, DENSE,APHANITIC,CALCITE AND SILICA FRACTURE FILL OCC THIN STRINGERS OF CALCITE W/GRN,BOTRYOIDAL FRACTURE FILLING,OCC VESICLES,5% MAFIC MIN.

DACITE:MED-DK GRY,GREENISH CAST,MICROCRYSTALLINE,HD, DENSE,RARE VISIBLE FELSP PHENOCRYSTS,INTERMEDIATE PLAGIOCLASE,PROB QTZ,COM MAFIC CONSTITUENTS,MINOR BIOTITE:MINOR FRACTURE FILLING,CALCITE.

C = 38u AT 45 VIS
LAG=19MIN W/58SPM

WEATHERED ZONE:MULTICOLOR VOLCANIC FRAGS IN REDBRN SILTY CLAY,VOLCANIC FRAGS HIGHLY ALTERED IN PART.



INTERMEDIATE VOLCANIC:SLT MED GRY GRN, PASTEL COLORED, MICROCRYSTALLINE, MOD HARD, SME ALTERATION OF FELSPARS.

CLAY:RED BRN, GRY GRN, COM PASTEL, MOD SOL, SOFT, COM ALTERATION, DECOMP FELSPARS (WEATHERED VOLCANIC) FRAGS

W	67	F	13.6	pH	9.0
V	46	FC	2/32	S	300
SOL	2%	Rw	4.3	Rmf	4.1

ANDESITE:MED-DK GRY, GREEN CAST, HARD, DENSE, OCC VIS FELDSPARS PHENOCRYSTS, MNR PLAGIOCLASE (LABRADORITE) AND PYROXENE (AUGITE) PHEN MINOR FRACTURE FILLING & VESICULES FILLED W/ CHALCEDONY, 5% MAFICS CONSIST OF MAGNETITE & MNR BIOTITE, MINOR APATITE, W/INTERBEDS OF CLAY:RED BRN, GRY, MOD SOL, SOFT-SLI FIRM HIGHLY ALTERED, COMMON DECOMPOSED FELDSPARS (WEATHERED VOLCANIC) FRAGS.

ANDESITE:CONT'D AS ABOVE W/ VARYING DEGREES OF ALTERATION COINCIDING WITH INCREASES IN DRILL RATE, FELSPARS DECOMPOSING.

C = 50U AT 45 VIS
LAG=22MIN W/56SPM

ALTERED ANDESITE?:LT GRN TO DK GRN, VY FIRM-HD, COM ALTERATION PRODUCTS, FELDSPARS DECOMPOSED, POSS SAUSSURITE, ABUND CALC, PYRITE.

ANDESITE:MED-DK GRY, HARD, DENSE, UNALTERED.

ANDESITE:HIGHLY ALTERED LT-DK GREEN, LOC LT GRY, SOFT, SOL, COM DECOMPOSED FELSPARS, CALCAREOUS IN PART.

ANDESITE:MED-DK GRY, HARD, DENSE, APHANITIC TEXTURE, UNALTERED.

W	67	F	13.2	pH	8.5
V	43	FC	2/32	S	300
SOL	2%	Rw	4.2	Rmf	4.1

ANDESITE/BASALT:DK GRY-BLK, APHANITIC, VERY FINE GRND, HD, DENSE, MNR FELSPAR ALTERATION, TRC CALCITE.

C = 35U AT 43 VIS
LAG=29MIN W/53SPM

ANDESITE/BASALT:DK GRY-BLACK, HARD, DENSE, APHANITIC TEXTURE, MINOR FELDSPAR ALTERATION, TRC CALCITE.

ANDESITE:HIGHLY ALTERED, LT-MED GRY, SOFT-MOD FIRM, SOL, GUMMY, ABNDT DECOMPOSED FELDSPAR, LOC CALCAREOUS.

ALTERED ANDESITE:LT GREEN-LT GRY, SOFT-MOD FIRM, VERY FINE GRAINED, APHANITIC, ABNDT DECOMPOSED FELDSPAR, MOD CALCAREOUS, TR BIOTITE

CLAYSTN/SHALE:LT-MED GRY, MOD SOFT-VYHARD, WELL HYDR IN PART, INDURATED IN PART, BLOCKY, CALC, LAMINATED W/ CALC BANDS, POSS SILICEOUS, COM VY FN PYRITE INCLUSIONS, TRC LS, TRC VOLCANICS.

CLAYSTN:LT GRY, MOD SOFT, WELL HYDR, ARGILL, SILTY, CALCAREOUS, MICROMICACEOUS

SANDSTN:LT GRY, GRN CAST, VY FN, ANG-SUB ANG QTZ & LITH GRNS, FELDSPATHIC, VY CALCAREOUS, MICACEOUS.

C = 8U AT 80 VIS.
LAG =31MIN W/48SPM

SHALE:LT-MED GRY, GRY BRN, MED BRN, MOD FIRM TO VY HARD, INDURATED IN PT, BLOCKY, MNR LAMINATED, MOD FRAGS, CALCAREOUS IN PART, MNR MICA & PYRITE.

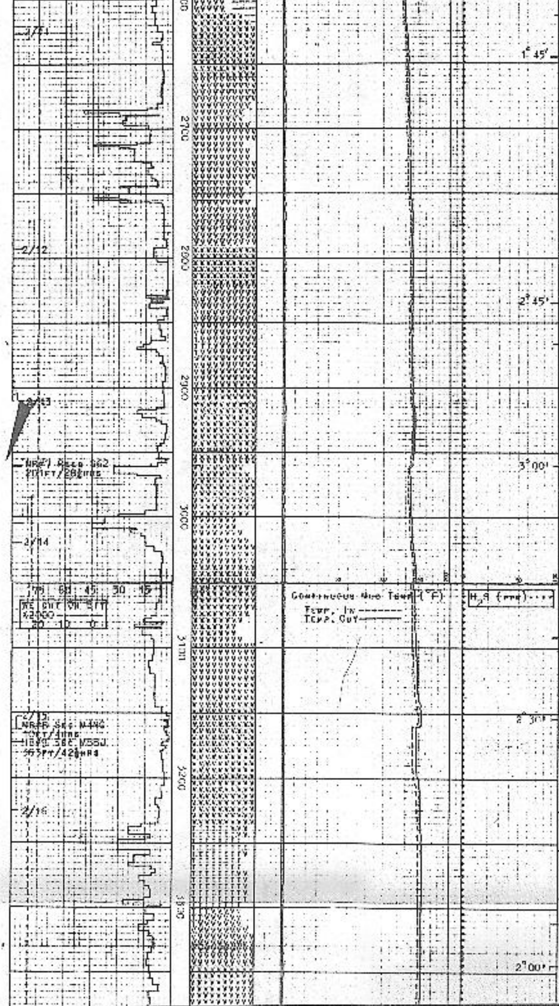
W	67	F	12.6	pH	8.5
V	46	FC	2/32	SOL	3%
S	300	Rw	4.2	Rmf	4.1

DST#1 SET AT 2233FT.

ANDESITE/BASALT:MED-DK GRY, MICROCRYSTALINE, HARD, DENSE, APHANITIC GROUND MASS, MINOR FELDSPAR ALTR, TR PYRITE (POSS INTRUSIVE SILL?) W/THIN INTBDS OF RED-BRN, SOFT, SOL, WL HYDR CLAY.

SHALE:LT-MED GRY, LT GRN, FM-HD, INDURATED, LOC LAM.

ANDESITE/BASALT:MD-DK GRY, HARD, DENSE, APHANITIC GRND MASS, MINOR FELDSPAR ALTR, TR PYRITE & MICA, LOC QTZ VEIN AND FRACTURE FILLING, MNR CALCITE FRAG FILLING, THINLY INTBDD W/GRY-GRN, FM SHALE; MNR CHERT CONGL



C = 15u AT 49 VIS
LAG=29MIN W/57SPM

BASALT: DK GRY-BLK, APHAN, VY FN GRND, HARD, DENSE, NO XLN STRUCT OR PHENOCRYSTS VISIBLE.

W 67 F 10.8 pH 8.5
V 44 FC 2/32 S 400
SOL 4% Rm 3.5 Rmf 3.4

BASALT: DK GRY-BLK, HARD, DENSE, APHANITIC, MASSIVE, GROUND MASS, INTERBEDDED W/HIGHLY ALTERED BASALT: RED-BRN/DK GRY-BLK, SILICA VESICLE FILLING (CHALCEDONY) COMMON FELDSPAR ALTERATN W/REDDISH BRN, SOFT, MD SOL WELL HYDRATED CLAY; TRC PYR AND MICA.

BASALT/ANDESITE: LT-MED GRY, HARD, DENSE, COM FELD ALTERATION TO KAOLINITE, COMMON PHENOCRYSTS, GOOD TRC PYRITE.

W 67 F 12.0 pH 9.0
V 45 FC 2/32 S 400
SOL 2% Rm 3.2 Rmf

BASALT/ANDESITE: MD-DK GRY HARD, DENSE, APHANITIC GRND MASS, COMMON FELDSPAR ALTR, LOC RED-BRN, HIGHLY ALTR, TRC PYRITE & MICA.

C = 60u AT 45 VIS
LAG=30MIN W/61 SPM

TUFF: LT-MED BRN, INDURATED, PLATY, ASHY, VIS PHENOCRYSTS OF FELDSPAR, OLIVINE AS VESICLE FILLING.

W 68 F 14.0 pH 8.0
V 46 FC 2/32 S 400
SOL 2½% Rm 3.1 Rmf 2.8

BASALT/ANDESITE: MED-DK GRY, HARD, DENSE, MICROXLN, GRANULAR, VRF CALCITE.

W 69 F 12.8 pH 8.0
V 45 FC 3/32 S 400
SOL 2% Rm 3.2 Rmf 2.9

BASALT/ANDESITE: MED - DK GRY, ABT FELDSPAR ALTERATION, HARD, DENSE, MICROXLN, GRANULAR, W/ VRR RED BRN ALTERED GLASS.

BASALT/ANDESITE: MED - DK GRY, HD, DENSE, MICROXLN, GRANULAR, COM MAGNETITE.

BASALT/ANDESITE: MED - DK GRY, HARD, DENSE, MICROXLN, ABUNDT MAGNETITE, GRADING TO DEEP RED BRN, WEATHERED, HYDR IN PART, BASALT.

C=9u WITH 50 VIS
LAG=34MIN W/57SPM

BASALT: MED-DK GRY, HARD, DENSE, APHANITIC GROUND MASS, ABUNDANT MAGNETITE, LOC WHT/LT GRY, ALTERED, COMMON BIOTITE; LOC CALC.

W 67 F 14.0 pH 9.5
V 65 FC 2/32 SOL 3%
S 300 Rm 2.4 Rmf 2.0

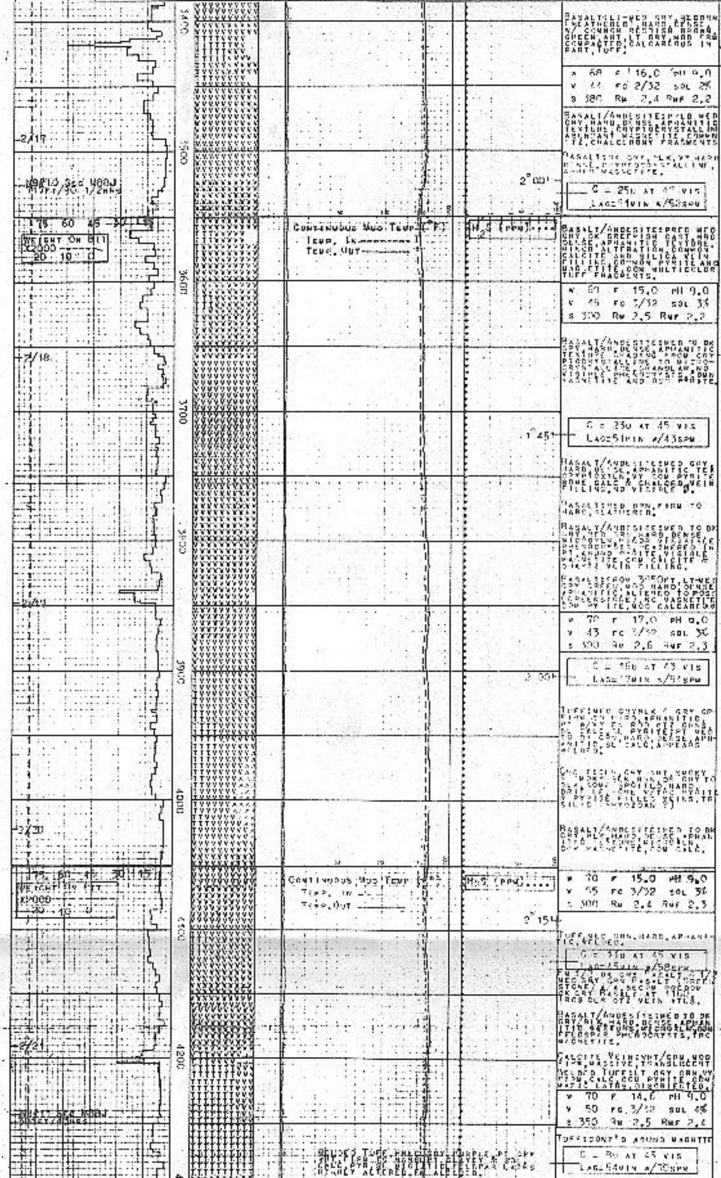
BASALT/ANDESITE: MED GRY, DK GRY, V/HARD, DENSE, APHANITIC TEXTURE, CRYPTOCRYSTALLINE, VRR PHENOCRYSTS OF FELDSPAR, COMMON FELDSPAR ALTERATION, ABND MAGNETITE, PYRITE, COMMON BIOTITE, LOC CALCITE AND QUARTZ VEIN FILLING.

W 67 F 16.0 pH 9.8
V 60 FC 2/32 SOL 2%
S 300 Rm 2.5 Rmf 2.1

TUFF: WHT, LT GRY, MINOR GRN AND RED SPKS, FIRM, COMPACT, POROUS, CALCAREOUS IN PT, COMMON PYRITE INCLUSIONS, OCC PHENOCRYSTS, (POSSIBLE VITRIC TUFF).

C = 30u AT 45 VIS
LAG=37MIN W/60SPM

BASALT: (POSSIBLE BASALTIC DIKE) LT-MED GRY, HARD, DENSE, HIGHLY ALTERED, GRANULAR, COMMON PHENOCRYSTS OF PYROXENE (AUGITE) ABNT ALTERED FELDSPAR TO CHLORITE, LABRADORITE, POS



BASALT: LT-MED GRY, BROWN (WEATHERED), HARD, DENSE, W/ COMMON REDDISH BROWN, GREEN, WHT, LT GRY, MOD FRM COMPACTED, CALCAREOUS IN PART, TUFF.

W 68 F 16.0 PH 9.0
V 44 FC 2/32 SOL 2%
S 380 RM 2.4 RMF 2.2

BASALT/ANDESITE: PALE MED GRY, HARD, DENSE, APHANITIC TEXTURE, CRYPTOCRYSTALLINE, ABUNDANT MAGNETITE, COMMON QTZ, CHALCEDONY FRAGMENTS.

BASALT: DK GRY, BLK, V HARD, DENSE, CRYPTOCRYSTALLINE, [illegible] MAGNETITE.

C = 25U AT [illegible] VIS
LAG=[illegible]MIN W/[illegible]SPM

BASALT/ANDESITE: PRED MED GRY, DK GREENISH CAST, HARD, DENSE, APHANITIC TEXTURE, MINOR ALTERATION, COMMON CALCITE AND SILICA VEIN FILLING, COMMON PYRITE AND MAGNETITE, COM MULTICOLOR TUFF FRAGMENTS.

W 69 F 15.0 PH 9.0
V 45 FC 3/32 SOL 3%
S 300 RM 2.5 RMF 2.2

BASALT/ANDESITE: MED TO DK GRY, HARD, DENSE, APHANITIC TEXTURE, GRADING FROM CRYPTOCRYSTALLINE TO MICROCRYSTALLINE, GRANULAR, NO VISIBLE PHENOCRYSTS, ABUN MAGNETITE AND [illegible] PYRITE.

C = 25U AT 45 VIS
LAG=51MIN W/43SPM

BASALT/ANDESITE: MED GRY, HARD, DENSE, APHANITIC TEXTURE, CRYPTOXLN, V COM PYRITE, SOME CALC & CHALCED VEIN FILLING, NO VISIBLE Ø.

BASALT: MED BRN, FIRM TO HARD, WEATHERED.

BASALT/ANDESITE: MED TO DK GRY, MED GRY, HARD, DENSE, MICROXLN, [illegible] VISIBLE PHENOCRYSTS, WEATHERED IN PT, ABUND PYRITE, VISIBLE MAGNETITE, COM CALCITE & [illegible] VEIN FILLING.

BASALT: BROWN [illegible]FT, LT-MED GRY GREEN, MOD HARD, DENSE, APHANITIC, ALTERED TO POSS [illegible], NO MAGNETITE, COM PYRITE, MOD CALCAREOUS.

W 70 F 17.0 PH 9.0
V 43 FC 3/32 SOL 3%
S 300 RM 2.6 RMF 2.3

C = [illegible]U AT 43 VIS
LAG=[illegible]MIN W/[illegible]SPM

TUFF: MED GRY/BLK & GRY GRN, FIRM TO HARD, APHANITIC, PT W/ V FN RND QTZ GRNS, SL CALC, SL PYRITE; PT MED TO DK GRY, HARD, DENSE, APHANITIC, SL CALC, APPEARS WELDED.

CHALCEDONY: GRY, WHT, MILKY, [illegible] DK GRY TO BLK, SOME SPOTTED, HARD, [illegible] PYRITE & PYRITE FILLED VEINS, TR SILICA [illegible]

BASALT/ANDESITE: MED TO DK GRY, BLK, HARD, DENSE, APHANITIC, [illegible], COM MAGNETITE, COM CALC.

W 70 F 15.0 PH 9.0
V 55 FC 3/32 SOL 5%
S 300 RM 2.4 RMF 2.3

TUFF: MED GRN, HARD, APHANITIC, WELDED.

C = [illegible]U AT 45 VIS
LAG=45MIN W/58SPM

[illegible] DK GRY BASALT & 1/2 MED GRY GRN BASALT (GREENSTONE) & [illegible] DK GRY BASALT AT [illegible], TRCS CLR QTZ VEIN MTLS.

BASALT/ANDESITE: MED TO DK GRY/BLK, HARD, DENSE, APHANITIC TEXTURE, MICROXLN, COM FELDSPAR PHENOCRYSTS, TRC MAGNETITE.

CALCITE VEIN: WHT/GRN, MOD FIRM, MASSIVE, TRANSLUCENT.

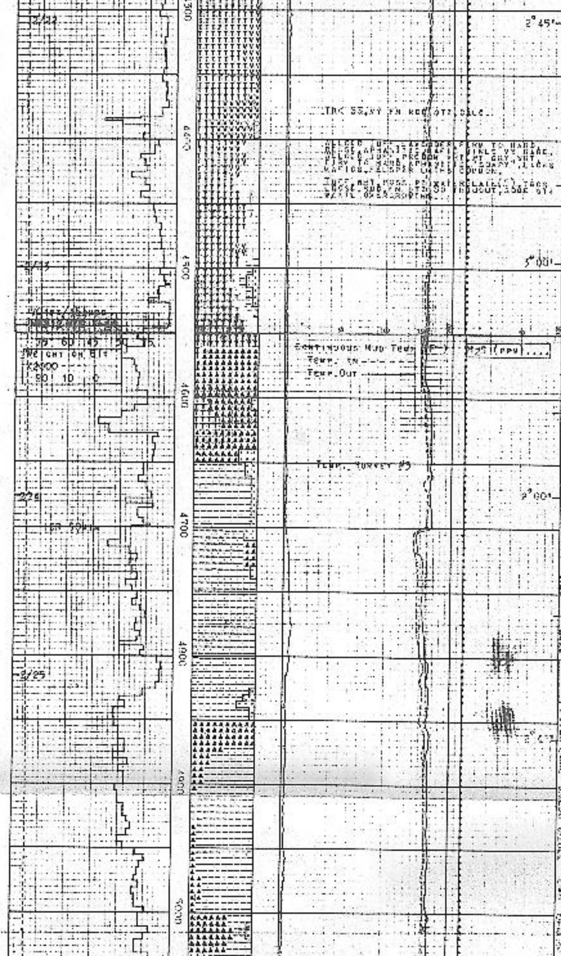
WELDED TUFF: LT GRY GRN, V FIRM, CALC, OCC PYRITE, COM MAFIC LATHS, DISORIENTED.

W 70 F 14.6 PH 9.0
V 50 FC 3/32 SOL 4%
S 350 RM 2.5 RMF 2.4

TUFF: CONT'D AROUND MAGNETITE

C = [illegible]U AT 45 VIS
LAG=[illegible]MIN W/70SPM

WELDED TUFF: PRED GRY, PURPLE, PT GRY, [illegible] NONBUET [illegible] & [illegible] CALC, PYR, SL [illegible] FELDSPAR LATHS, HIGHLY ALTERED, [illegible].



TUFF; WELDED, WHT, LT GRY TO DSK RED GRY, LAVENDER CAST, FIRM TO VY HARD, CALC, COM PYRITE, MAGNETITE, ABUNDNT MAFIC LATHS (HORNBLENDE), SOME ALTERED FELDSPARS, W/ COM RED BRN, MICROXLN, AND SL PORPHYRITIC (FELDSPAR & MAFIC PHENOCRYSTS), COM MAG & PYRITE; FRAGS POSS RHYOLITE.

w 65 F 15.0 pH 9.0
v 47 fc 3/32 sol 5%
s 470 Rw 2.45 Rwf 2.4

LS, WHT TO GRY, WHT TO BRN WHT, HARD, APHANITIC TO VY FN XTLN, SL DIRTY.
CLAY, MED RED BRN, SOFT, STICKY, NON-CALC, COLOR DUE PROBABLY TO MUD.
TUFF; VY SL CALC, HIGHLY ALTERED.

G = 130 AT 43 VIS
LAG 50MIN W/60SPM

WELDED TUFF, DECOM LT TO RD BRN, FIRM TO HARD, APHANITIC, VY FN MAFICS; SOME FELSPAR, ALTERED.

TUFF; (PROB WATER-LAID) LT GRY, WHT, MULTICOLOR LITH FRAGS, POSS ASH, MOD SOFT TO FIRM, BLOCKY FRAGS, MNR VOLC QTZ GRNS, TRC PYRITE.

w 69 F 14.0 pH 9.0
v 45 fc 3/32 sol 6%
s 400 Rw 2.55 Rwf 2.4

FRACTURED QTZT, LT OL WHT, PT SUCKY, HARD, BRITTLE, SOME CONCHOID FRAX, PYR ALONG FRAX, MASS PYR COMMON.

G = 100 AT 45 VIS
LAG 52MIN W/60SPM

QTZT, OL TAN, DENSE, HARD.

SHALE, TAN, HARD, SPLINTERY, SILICEOUS.

SHALE/CLAYSTONE, TAN, LT BRN, FIRM-HARD, COMPACT, BLOCKY IN PART, SILICEOUS, ABUNDT FRACTURES, COM PYRITE, NON CALCAREOUS.

w 70 F 16.0 pH 9.0
v 70 fc 3/32 sol 6%
s 300 Rw 2.6 Rwf 2.5

SILIC SH, DK BRN TO BLK, HARD, BRITTLE, APHANITIC; PT W/SHINY BLK "COAL"

G = 19 AT 43 VIS
LAG = 78MIN W/43SPM

LUSTRE, GENLY BLOCKY & IRREG FRAGS, SOME FISSILITY, NONCALC, PYR & QTZ AS FRAX FILLING, LOC SLTY.

w 68 F 14.0 pH 9.[illegible]
v 43 fc 3/32 sol 3%
s 350 Rw 2.7 Rwf 2.6

SHALE; MED-DK GRY, BLK, FM-HARD, COMPACT, LOC BLOCKY, NON CALCAREOUS, ABUNDANT PYRITE, SLI FISSIL, MINOR CARBONACEOUS.

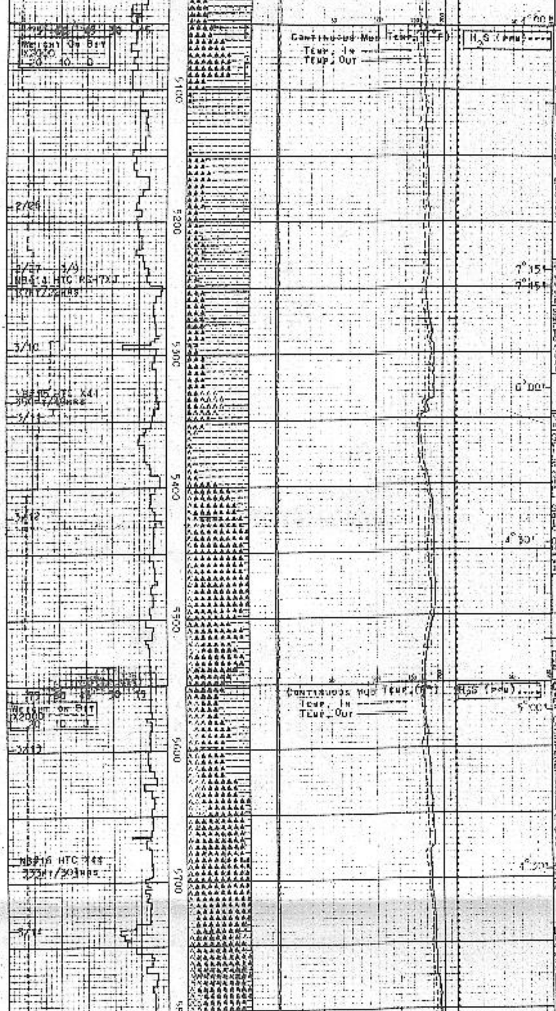
QTZITE; LT GRY-BRN, HARD, DENSE, APHANITIC TEXTURE, OCC TRC DETRITAL CHERT GRAINS, PYRITIC.

SHALE; MED-DK GRY, HARD, DNS, SILICEOUS, CALCAREOUS AS ABOVE, FISSILE, [illegible] THIN INTERBEDS OF GRY-BRN, HARD, DENSE, QTZITE.

SHALE; MED-DK GRY/BLK, DNS, HARD, SILICEOUS, BLOCKY, COMPACT, PYRITE AS VEIN & FRACTURE FILLING, SOME FISSILITY, LOC SILTY.

QTZITE; GRY-BRN, HARD, DNS, APHANITIC, TRC CHERT, SOME DISSEMINATED PYRITE.

QTZITE, LT-M GRY, HARD, BRITTLE, LOC VY CHERTY, PYRITIZED VEINS COM, AT [illegible] APPEARING LT GRY, HARD, VY FN-FG, SILICEOUS.



QTZITE:WHT,HARD,BRITTLE,CONCHOIDAL FRACT,PERF FRAC-LED, EINLETS COMMON,GRANULAR APPEARANCE WHEN DRY

SLTSTN & SS:GRY,WHT,HARD,NONCALC,SILICEOUS VY FN.

SH:DK OL GRN TO BLK,HARD,PREDOM BLOCKY,PT SPLINTERY,SUB FISSILITY,LOC SILTY,SILIC,PYR,CHTY IN PT.

G = 33u AT 43 VIS
LAG=8MIN W/43SPM

SHALE:MED-DK GRY,LOC SLI OLIVE CAST,FIRM-HARD,SMS COMPACT,BLOCKY,SILICEOUS,MINOR FISSILITY,NON CALC,GOOD TRC PYRITE,LOC CHTY

QTZITE:LT GRY/GRN,HARD,DENSE,APHANITIC TEXTURE,CONCHOIDAL FRACTURES,SLI CHERTY,PYRITE AS FRACTURE AND VEIN FILLING,LOC MNR SILTY.

W 68 F 15.0 pH 9.5
V 43 FC 3/32 SOL 4%
S 300 Rm 3.0 Rmf 2.9

NOTE: STUCK PIPE AT 4880' WHILE RUNNING IN HOLE W/ NB#13-RECOVERED FISH,RAN SERVCO MILL ON JUNK,RE-RAN BIT#13 TO CLEAN HOLE

SHALE:DK GRY,BLK,FIRM TO HARD,BLOCKY,CONCHOIDAL FRACTURES IN PT,RESINOUS TO EARTHY LUSTER,SILICIC CARBONACEOUS,MNR PYRITE.

QTZITE:LT GRY/GRN,HARD,DENSE,CONCHOIDAL FRACTS,APHANITIC TEXTURE,CHERTY IN PT,PYRITE,MNR SILTY.

W 68 F 10.2 pH 8.5
V 30 FC 3/32 SOL 3%
S 350 Rm 2.9 Rmf 2.7

NOTE: TWISTED OFF AT 5345' RETRIEVED FISH W/OVRSHOT

SHALE:DK GRY,BLK,FIRM TO VY HARD,BLOCKY,OCC FISSILE,RESINOUS TO EARTHY LUSTER,SILTY IN PART,MOD SILIC,CARBONACEOUS,PYRITE

QTZITE:WHT,LT-MED GRY,VY HARD,BRITTLE,FRACTURED IN PART,MNR PYRITE VEIN FILLING,VY CALCAREOUS.

SHALE:MED-DK GRY,FM-HARD,BRITTLE,BLOCKY,SLI FISSILE IN PT,SILTY,SLI SILIC,V/CARB,TRC PYRITE.

QTZITE:WHT,LT-MED GRY,V/HARD,DENSE,LOC GRANULAR,TR PYRITE AS FRACTURE FILLING,V/CALCAREOUS,W/ THINLY INTRBDD CHERT.

W 66 F 11.0 pH 8.5
V 43 FC 2/32 SOL -
S 350 Rm 3.0 Rmf 2.0

G = 210 AT 50 VIS
LAG=[illegible]MIN W/42 SPM

QTZITE:WHT,VF-DK GRY,VY HARD,DENSE,BLOCKY FRACTS CALC,COM PYRITE FILLING.

CHERT:LT GRY,HARD,DENSE,APHANITIC TEXTURE,CONCH FRACTURES,DISSEMINATED PYRITE.

QTZITE:WHT,LT-MED GRY,MOD DENSE,MASSIVE TO LOC GRANULAR,BLOCKY,IN PT BRITTLE,COMMON CALCITE VEIN FILL,TRC PYRITE AS FRACTURE FILLING,INTRBDD W/BLK,DK GRY,FIRM-HARD,BRITTLE,MOD CALC SHALE.

W 66 F 11.0 pH 9.5
V 50 FC 2/32 SOL 3%
S 350 Rm 2.[illegible] Rmf 2.7

QTZITE:WHT,LT-MED GRY,MOD DENSE,VITREOUS LUSTER TO VERY FINELY GRANULAR,COM AND FRACTURE FILLING,TRC PYRITE AS FRAC FILLING.

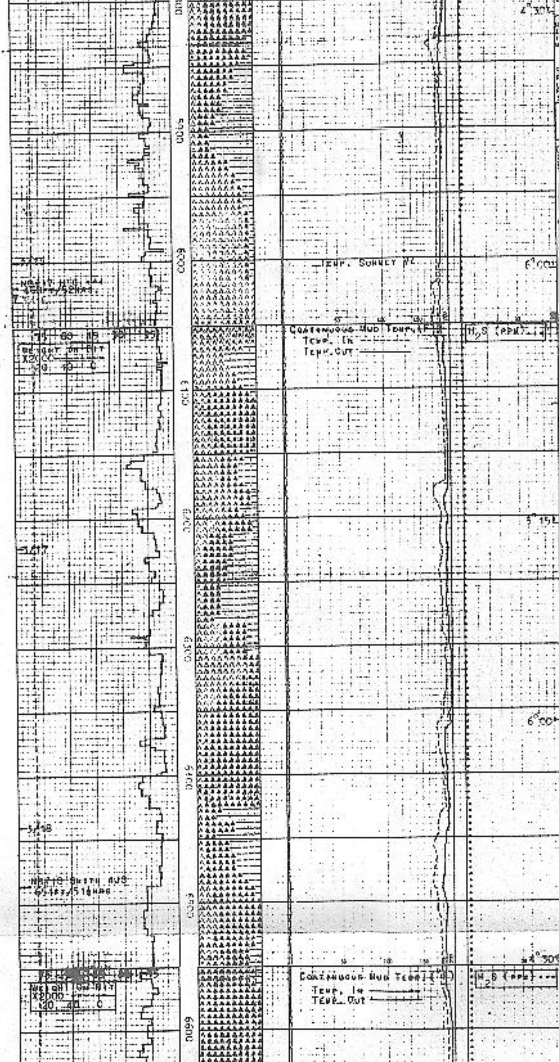
QTZITE:BLK-DK GRY,VY HD,DENSE,VISIBLE GRAINS,VITREOUS LUSTER,COM FRACTURE,COM PYRITE,NON CALCAREOUS W/ COM LT GRY CHERT FRAGS

G = 27u AT 50 VIS
LAG=[illegible]MIN W/57SPM

SILT GRY/TAN/WHT,HARD,V DENSE,DISSEMINATED PYRITE

QTZITE:MED-DK GRY,DENSE,HARD,COM AND FRAC FILLING,COM PYRITE,AND LT GRY,HARD,DENSE CHERT FRAGS.

W 67 F 11.0 pH 8.5
V 65 FC 3/32 SOL 4%
S 350 Rm 3.0 Rmf 2.9



QTZITE: WHT, LT-MED GRY, VY HARD, DENSE, GRANULAR TEXTURE IN PART, BLOCKY, FRACTURED, COM PYRITE, VY CALC WHT LT GRY CHERT FRAGS.

SHALE: DK GRY, BLK, HARD, PT FISSILE, PRED BLOCKY, DULL LUSTER, CONCHOIDAL FRAC, FN CALC VEIN FILLINGS, VY SILICEOUS IN PART.

W 67 F 11.0 PH 9.5
V 55 FC 3/32 SOL 4½%
S 350 RM 3.0 RMF 2.9

CHERT: LT GRY, HARD, DENSE, CONCHOIDAL FRACTURE, HIGHLY FRACTURED, TR CALCITE, TRC PYRITE DISSEMINATED.

C = 0U AT 55 VIS
LAG=71MIN W/56SPM

CHERT: LT-MED GRY, HD, DENSE, CRYPTOCRYSTALLINE, HIGHLY FRACTURED, CONCHOIDAL, TRC CALCITE AS FRAC FILLING, COMMON DISSEMINATED PYR.

W 67 F 8.0 PH 9.0
V 55 FC 2/32 SOL 6%
S 300 RM 2.8 RMF 2.7

CHERT: WHT, LT GRY, DULL TO PEARLY LUSTER, CONCHOIDAL FRACTURES, COMMON CALCITE AS FRAG FILL, MNR PYRITE, INTRBDD W/DK GRY/BLK, HD, DENSE, BLOCKY, CARB SHALE.

C = 9U AT 55 VIS
LAG=75MIN W/61SPM

QTZITE: MED-DK GRY, HARD, GRANULAR TEXTURE, POSSIBLE ALTERATIONS, VY CALCAREOUS, COM PYRITE, ABN FRACTURES.

CHERT: WHT, LT GRY, DULL TO PEARLY LUSTER, CONCHOIDAL FRACTURE, COMMONLY FRACTD, CALCITE, PYRITE VEIN FILLING, INTRBDD W/DK GRY TO BLK, HARD, DENSE, BLOCKY, SH.

QTZITE: WHT, LT-MED GRY, MED FIRM-HARD, LOC DENSE, HIGHLY ALTERED, V/CALCAREOUS, COM FRACTURES, MINOR PYRITE.

SHALE: DK GRY/BLK, HARD, DNS BLOCKY, SILICEOUS, CARB W/ CONCHOIDAL FRACTURES, DULL LUSTER.

W 67 F 13.6 PH 9.0
V 47 FC 3/32 SOL 4%
S 300 RM 2.9 RMF 2.8

CHERT: WHT, LT GRY, DULL TO PEARLY LUSTER, CONCHOIDAL FRACTURES, COMMON CALCITE AS VEIN AND FRAC FILLING, MINOR PYRITE, SILICEOUS VEIN FILLING.

QTZITE: MED-DK GRY, GRNISH GRY, HARD, LOC DENSE, SLTY, ALTERED IN PART, CALCAREOUS, COM FRACTURES, MNR PYRITE.

C = 5U AT 55 VIS
LAG=79MIN W/58SPM

QTZITE: MED-DK GRY GRN, VY HARD, LOC DENSE, ALTERED IN PART, VY CALCAREOUS, COMN CALCITE FRAGS, MNR PYRITE.

SHALE: DK GRY/BLK, HARD, DNS BLOCKY, CONCHOIDAL FRACTRS, SILICEOUS, CARBONACEOUS, DULL LUSTER, FISSIL IN PT, CALCAREOUS VEIN AND FRAC FILLINGS.

QTZITE: LT-MED GRY, LOC GRN, VERY HARD, DENSE, ALTERED IN PT, VERY CALCAREOUS, COM CALCITE VEINLET MATERIAL, MINOR PYRITE.

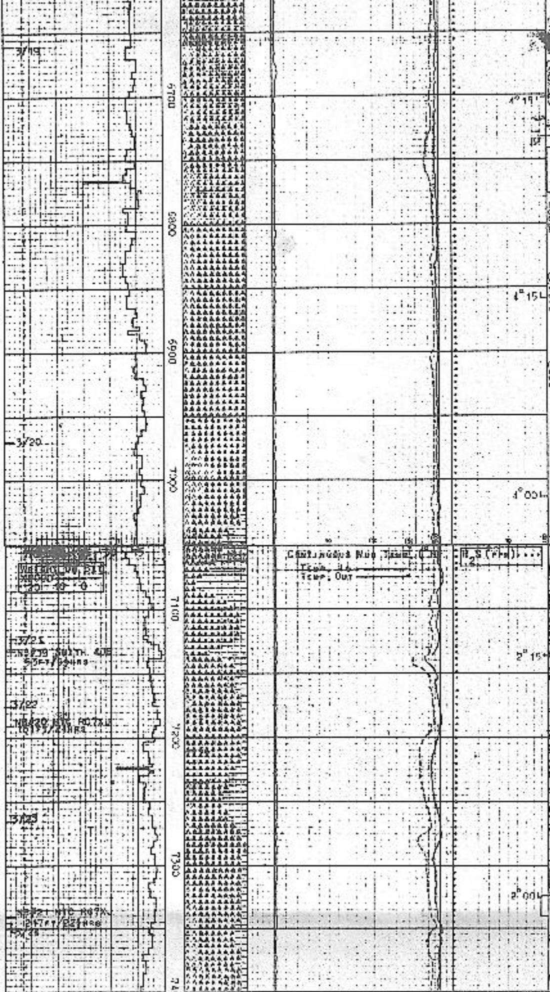
W 67 F 8.8 PH 9.0
V 55 FC 2/32 SOL 6%
S 300 RM 2.9 RMF 2.8

QTZITE: MED-DK GRY GRN, VY HARD, LOC DENSE, SL ALTERED, BLOCKY, COM CALCITE, MNR PYRITE W/COM LT GRY CHRT.

C = 15U AT 56 VIS
LAG=84MIN W/55SPM

QTZITE: MED-DK GRY GRN, VY HARD, LOC DENSE, SL ALTERED, BLOCKY FRACTURE, COMN CALCITE, MNR PYRITE, TRACE DK GRY, BLK, HARD, SILICEOUS SHALE, COM CHERT FRAGMENTS.

QTZITE: MED-DK GRY, GRNISH CAST, VY HARD, SL ARGIL, SL ALTERED, VY CALCAREOUS IN PART, MNR PYRITE.



QTZITE: GRY W/DK GRNISH CAST, VY HARD, VY DENSE, [illegible] BASALT & CLR QTZ [illegible] MINOR PYRITE & CHALCOPYRITE.

QTZITE: MED TO DK [illegible] GRNSH CAST, VY HARD, DENSE IN PART, SLI ALT W/ SOME WHT - LT GRY, PEARLY LUSTER, VY HARD CONCHOIDAL FRAC CHERT-W/OCC CALCITE VEIN FILL.

C = 5U AT 59 VIS
LAG = 90 MIN W/43GPM

W 68 # 9.8 PH 9.0
V 59 FC 2/32 SOL 6%
S 300 RM 3.1 RMF 3.0

INCR. IN CHERT: WHT TO LT GRY & TAN, CRYPTOCRYSTALLINE CONCHOIDALLY FRAG, DULL LUSTER W/MINOR CALCITE FRAC FILL, MINOR LOOSE SILICEOUS FRAG FILL MATERIAL.

QTZITE: PRED MED-DK GRY, GRNISH CAST, VY HARD, MOD TO VY DENSE, BLOCKY FRACT, MOD CALCAREOUS, SLI ALTERED, PYRITE GROWTHS W/ COMMON LT GRY CHERT FRAGS.

QTZITE: MED-DK GRY, GRNISH CAST, VY HARD, DENSE, BLOCKY FRACTURE, SLI ALTERED, MOD CALCAREOUS, COM PYRITE.

CHERT: ABUND WHT/MILKY, CAST CHIPS, PEARLY LUSTER, CONCHOIDALLY FRAC W/[illegible] CLR CALCITE FRAC FILL, MINOR PYRITE.

C = 6U AT 55 VIS
LAG = 78MIN W/6[illegible]

W 68 F [illegible]
V 40 FC 2/32 SOL 6%
S 300 RM 3.0 RMF 2.9

SHALE: DK GRY/BLK, HARD, VY DENSE, FISSILE, SILICEOUS-CALCAREOUS, CONCHO FRACT.

LOST 40BBL MUD AT 7090FT.

QTZITE: LT-MED GRY, VY HARD, DENSE, VISIBLE GRAIN FORM, FRAC ACROSS/THRU GRAINS, MOD CALC, MNR PYRITE W/COMM LT GRY, DENSE CHERT FRAGS.

SHALE: DK GRY, HARD, FISSILE IN PART, SILICEOUS, CALC.

MUD TEMP. CHANGE DUE TO SAND TRAP-PIT CLEANING & MIXING ADDITIONAL MUD.

QTZITE: CLR, LT GRY, VY HARD, VISIBLE VY FN-FN, SUB RND QTZ GRNS, CLR SILICEOUS CEMENT, PRED BROKEN ACROSS GRAINS, TRC PYRITE, CHERT.

TEMPERATURE CHANGE DUE TO INSTALLATION OF COOLING TOWER IN MUD SYSTEM.

QTZITE: CONT'D AS ABOVE.

QTZITE: CLR, LT GRY, VY HARD, VISIBLE GRAINS, SILICEOUS CEMENT, PRED BROKEN ACROSS GRAINS.

CHERT: LT GRY, HARD, DENSE, CONCHOIDAL FRACTURE.

SHALE: DK GRY, BLK, HARD, FISSLE IN PT, SILICEOUS.

COOLING TOWER INOPERATIVE 7255' TO 7270'.

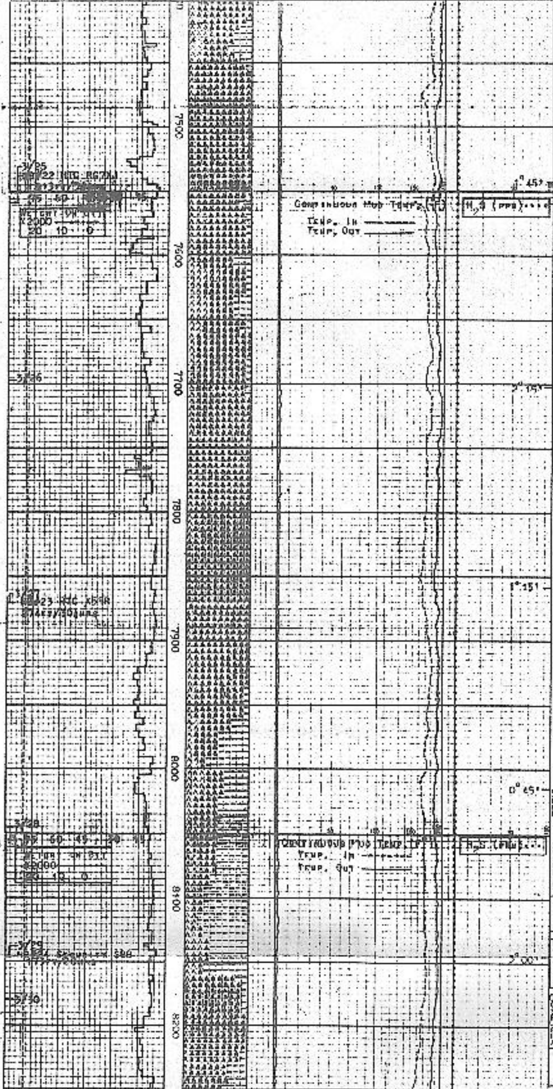
QTZITE: CLR, SMOKED GRY, VY HARD, VISIBLE VFN-FN CLR GRAINS, SILICEOUS CEMENT, PRED BROKEN ACROSS GRAINS.

W 68 F 9.5 PH 9.5
V 55 FC 2/32 SOL 6%
S 300 RM [illegible] RMF 3.0

C = 8U AT 55 VIS.
LAG=84MIN W/62GPM

COOLING TOWER INOPERATIVE 7335FT TO 7350FT.

QTZITE: LT GRY, ABUND W/ GREENISH CAST, HARD, SILICEOUS CEMENT, SLI CALCAREOUS, W/ COMMON DENSE MILKY WHT TO DK GRY, CONCHOIDALLY FRAC CHERT. MINOR ALTERED PYRITE GROWTHS, TRC HARD, DK



QTZITE: LT GRY TO PALE GRN, SLI TO MOD HARD, CRUMBLY, VY CALCAREOUS.

W	68	F	9.4	SOL	7%
V	56	FC	2/32	pH	9.0
S	300	Rm	3.0	Rmf	2.9

SHALE: MED-DK GRY/BLK, HRD, FISSILE IN PART, BLOCKY, SILICEOUS, CALCAREOUS IN PT.

QTZITE: LT-MED GRY-GRNISH CAST, FIRM TO HARD-FREQ BROKEN AROUND GRAINS, MOD CEMENT, MOD CALCAREOUS, TR PYRITE.

QTZITE: CONT'D AS ABOVE W/ SME ALTERATION VISIBLE, SLI CALCAREOUS, TR PYRITE.

C = 6u AT 55 VIS.
LAG=85MIN W/ [illegible]SPM

W	69	V	58	[illegible]	6%
F	8.4	FC	2/32	pH	9.0
S	300	Rm	2.9	Rmf	2.8

QTZITE: WHT, LT GRY, FIRM - HARD, DENSE, V/ CALCAREOUS GRANULAR, DECOMPOSED, W/ SD TRC PYRITE.

SHALE: BLK, DK GRY, HARD, DNS BLOCKY, SLI FISSILE, SILIC, LOC CALCAREOUS.

QTZITE: LT-MED GRY, GREEN CAST, FIRM-HARD, GRANULAR, MOD CALCAREOUS, SLI SILIC, MINOR BLK/ALTERED PYRIT CLUSTERS, W/COMMON DENSE, HARD, DULL TO PEARLY LUST, CONCHOIDAL FRACTURES, WHT TO DK GRY CHERT.

QTZITE: CONT'D AS LAST AB W/ MNR ALTERATION, SLIGHT CALCAREOUS, TRC PYRITE.

QTZITE: WHT, LT-MED GRN, FIRM-HARD, MOD CALCAREOUS GRANULAR W/COMMON ALTERED PYRITE.

W	68	V	57	SOL	6%
F	12.6	FC	4/32	pH	9.5
S	300	Rm	3.2	Rmf	3.0

QTZITE: LT-MED GRY, FIRM TO HARD, GRANULAR, SLI CALCAREOUS, W/COMMON ALTERED PYRITE CLUSTERS, MINOR LT-DK GRY, DENSE CONCHOIDALLY FRAC CHERT.

C = 6u AT 57VIS
LAG=87MIN W/58SPM

QTZITE: GREEN, LT-MED GRY, HARD, DENSE, GRANULAR, MOD CALCAREOUS, BLOCKY FRACT, COMMON PYRITE, W/COM WHT/LT GRY, HD, DNS CONCH CHERT.

QTZITE: MED TO DK GRY/GREEN, GRANULAR, HARD, MOD CALCAREOUS, COMMON ALTERED PYRITE CLUSTERS, MINOR WHT/LT GRY, DENSE CHERT.

QTZITE: GREEN, MED-DK GRY, FIRM-HARD, DENSE, GRANULAR, MOD CALCAREOUS, LOC WHT/LT GRY, FIRM, ALTERED, SLI CALC, COMMON ALTERED PYR CLUSTERS, W/MINOR GRY, HD, DENSE, CHONCHOIDALLY FRAC CHERT, TRC PYRITE.

SHALE: BLK/MED-DK GRY, DNS, HARD, BLOCKY, MICROLAMINT, ABUNDANT PYRITE IN FRAC AND DISSEMINATED, SLI SIL, MINOR FISSILITY.

C = 10u AT 55 VIS
LAG=97MIN W/59SPM

SHALE: AS LAST ABOVE W/ COMMON LT GRY/DK GRY HARD, DENSE, CONCHOIDAL FRAC CHERT.

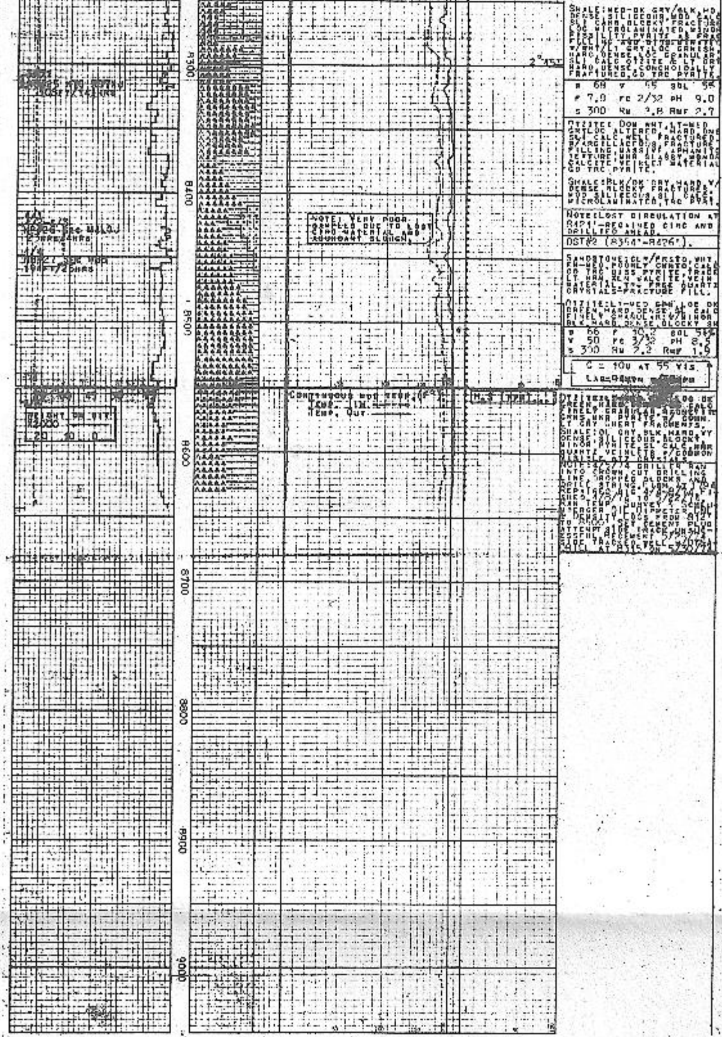
SHALE: BLK-DK GRY, HARD, DENSE, BLOCKY FRACTURE, SILICEOUS, W/LT-DK GRY, DENSE, HARD CHERT, MINOR CALCAREOUS FRAC FILL, COMMON LT GRY/LT GREEN GRANULAR QTZITE, LOC TRC PYRITE CLUSTERS.

W	68	V	55	SOL	6%
F	8.7	FC	2/32	pH	9.0
S	300	Rm	2.8	Rmf	2.7

NOTE: STUCK PIPE AT 5506' WORKED SAME FREE WHILE RUNNING IN HOLE W/NB #24, CONT'D OCC TIGHT HOLE PROBLEMS TO BOTTOM-PULLED OUT OF HOLE W/ WASHOUT-RUN BACK IN W/BIT #24.

QTZITE: WHT/CLR TO LT GREENISH, MOD TO VY HARD SLI CALC, VISIBLE GRAINS FRACTURE AROUND GRAINS, COMMON VY HARD, DK GRN/BLK SHALE & LT-DK GRY HARD, DENSE CHERT, TRC OF ALTERED PYRITE CLUSTERS.

W	69	V	50	SOL	5%
F	7.8	FC	2/32	pH	9.0
S	300	Rm	2.7	Rmf	2.6



SHALE: MED-DK GRY/BLK, HD, DENSE, SILICEOUS, MOD CALC, SLI CARB, BLOCKY FRACTURE, LOC MICROLAMINATED, W/INDH FISSILITY, PYRITE AS FRAC FILLING AND DISSEMINATED, W/WHT/LT GRY, LOC GRNISH, HARD, DENSE, LOC GRANULAR, SLI CALC QTZITE & LT GRY HARD, DENSE, CONCHOIDALLY FRACTURED, GD TRC PYRITE.

D 68 V 55 SOL 5%
F 7.0 FC 2/32 pH 9.0
S 300 Rm 2.8 Rmf 2.7

QTZITE: DOM WHT, LT-MED GRY, LOC ALTERED, HARD, DNS, SLI CALC, WELL FRACTURED, W/ARGILLACEOUS, FRACTURE FILLING, MASSIVE, APHANITIC TEXTURE, W/NR GLASSY, W/MINOR CALCITE VEINLET MATERIAL, GD TRC PYRITE.

SHALE: BLK/DK GRY, HARD, V/DENSE, BLOCKY FRACTURES, MOD SILICEOUS, SLI CALC, MICROLAMINATED, TRC PYRI.

NOTE: LOST CIRCULATION AT 8471'-REGAINED CIRC AND DRILLED AHEAD.

DST#2 (8354'-8476').

SANDSTONE: CLR/FRSTD, WHT, FN-MED, POORLY CMNTD, CALC, GD TRC DISS PYRITE, TRACE LT TAN, XLN CALCITE, VEIN MATERIAL, TRC FREE QUARTZ CRYSTALS-FRACTURE FILL.

QTZITE: LT-MED GRN, LOC DK GREEN, HARD, DENSE, SL CALC, FINELY GRANULAR, W/MINOR BLK, HARD, DENSE, BLOCKY SH

D 66 F 10.2 SOL 5%
V 50 FC 3/32 pH 8.5
S 300 Rm 2.2 Rmf 1.9

C = 10U AT 55 VIS.
LAG-DOWN [illegible]

QTZITE: [illegible] DK GREEN, HARD, [illegible] CALC, FINELY GRANULAR, ABUNDANT [illegible] GRNS, MNR PYRITE, W/ COMN. LT GRY CHERT FRAGMENTS.

SHALE: DK GRY, BLK, HARD, VY DENSE, SILICEOUS, BLOCKY, MINOR PYRITE, SL CALC, RARE QUARTZ VEINLETS W/COMMON VISIBLE QTZ CRYSTALS.

NOTE: 4/25/74 DRILLER RAN INTO CROWN, CUT DRILLING LINE, DROPPED BLOCKS AND DRILL STRING. [illegible] REPAIRED RIG 4/[illegible] [illegible] 5/[illegible] RAN TEMP SURVEY, SCHLUMBERGER DIPMETER, [illegible] & DENSITY LOGS FROM 8127' TO 8100'. SET CEMENT PLUG. ATTEMPT SIDE TRACK UNSUCCESSFUL. RECEMENT 5/[illegible] SIDE TRACKED WELL [illegible] AT 8315' ON 5/30/74.

RETURN TO DENVER

EXPLORATION LOGGING INC.

A GEOLOGICAL-ENGINEERING SERVICE CO.

REMARKS

DRILLING CONTRACTOR — RIG NO.
MONTGOMERY DRLG. CO. — 2
SPUD DATE 1/23/74
TYPE MUD
GEL-WATER

CASING RECORD

20" AT 123'
13 3/8" AT 812'

HOLE SIZE

12 1/4" TO 8655'
9 7/8" TO

ABBREVIATIONS

NB	NEW BIT	W	MUD WEIGHT
RRB	RERUN BIT	V	MUD VISCOSITY
CB	CORE BIT	F	MUD FILTRATE CC/30 MIN
CR	CIRCULATE RETURNS	FC	FILTER CAKE
NR	NO RETURNS	SC	SAND CONTENT
PR	POOR RETURNS	S	SALINITY ☐ SIG / ☐ PPM NaCl
LAT	LOGGED AFTER TRIP	R	RESISTIVITY OF MUD
TG	TRIP GAS	RF	RESISTIVITY MUD FILTRATE
CG	CONNECTION GAS		
C	CARBIDE		
DST	DRILL STEM TEST		
]	TEST INTERVAL		
]	CORE INTERVAL		

COMPANY CHEVRON OIL COMPANY
WELL "CHEVRON-ART-GINN" #1-13 "SIDETRACK"
FIELD WHIRLWIND VALLEY AREA
LOCATION SEC. 13, T31N-R47E
COUNTY, STATE LANDER, NEVADA
API WELL INDEX NO.
ELEVATION 4946.9 FT (GL) 4960.4 FT (KB)
DATE FROM 6/4/74 TO
DEPTH FROM 8424 FT TO
UNIT NO. 33
LOGGING GEOLOGISTS D.E. WALTERS
D.F. FINNELL
C.L. EWBANK

OIL Based on the oil in unwashed cuttings and percentage staining of washed cuttings.

GAS UNITS Gas detector calibrated to record [illegible] units with a mixture of 2% methane in air.

LITHOLOGY SYMBOLS

D	Z	/	]	▣	☐	⊟	☰	⊥	·	⊙	Δ	V	☒	T	⌐
LIMESTONE	DOLOMITE	GYPSUM AND ANHYDRITE	SALT	COAL AND LIGNITE	CLAY	SHALE	SILTSTONE	SANDY SILTST	SAND	CONGLOMERATE	CHERT	VOLCANICS	INTRUSIVE	TUFF	OTIT

EXPLORATION LOGGING INC.

DRILLING RATE AND DATA — E FT/HR — D MIN/FT — VISUAL POROSITY

DEPTH

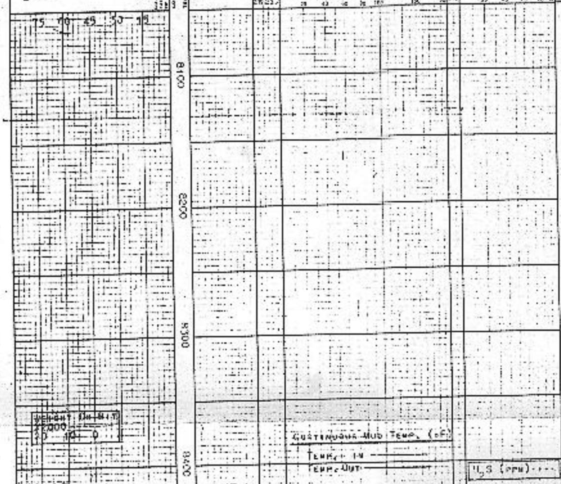
LITHOLOGY

OIL

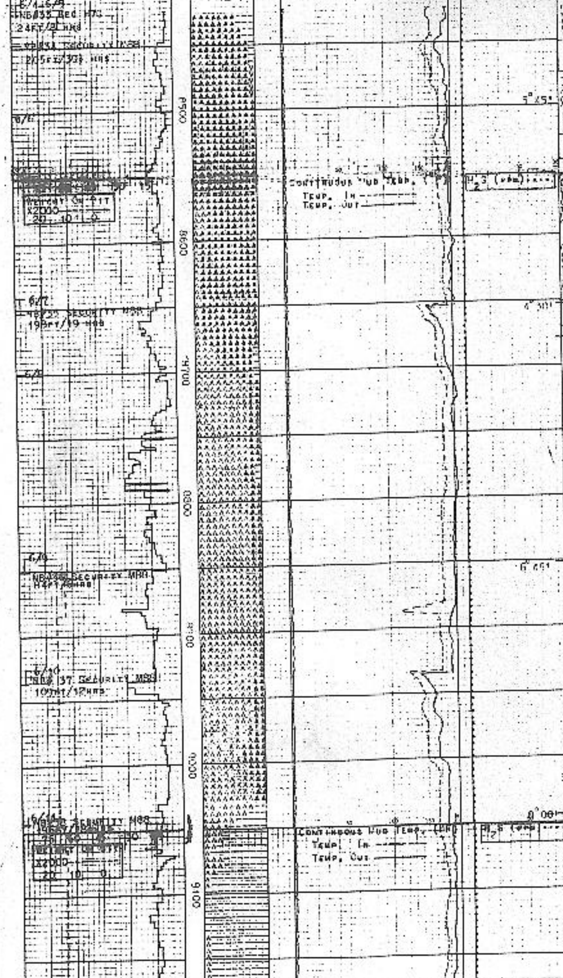
DRILLING MUD — **CONTINUOUS DITCH GAS** — OIL IN MUD — TOTAL GAS — PETROL VAP — BLENDER GAS

CUTTINGS — **GAS** — TOTAL GAS — PETROL VAP

REMARKS AND LITHOLOGY DESCRIPTION



SIDE TRACKED "CHEVRON-ART-GINN" NO. 1-13 AT 8315FT WITH DYNA-DRILL.



QTZITE/SLT-MED GREEN, GRY MOTTLED WHT, LOC DK GRN, HARD, DENSE, SL CALC, FRLY GRANULAR, COM PYRITE, TRC SHALE, COM CEMENT CONTAM.

W 67 F 22 SOL 5%
V 42 FC 3/32 PH 9.0
S 600 RM .92 RMF .9

QTZITE: MED GREEN TO WHT DENSE, SLI TO MOD CALC COMMON CLR/MILKY, AND QTZ SOME W/CRYSTAL FACES COMMON SULFIDES.

C = 50 AT 43 VIS.
LAG=115M W/54SPM.

W 66 F 15 SOL 4%
V 43 FC 3/32 PH 9.0
S 900 RM 1.3 RMF 1.2

QTZITE: LIGHT GREEN, WHT, DK GRN, HARD, DENSE, COM GRANULAR, VISIBLE QTZ GRAINS, IN SILICEOUS MATRIX, COM CALC AROUND FREE QTZ GRNS TERMINATED IN PART FRAC FILLINGS, PYRITE, COM LT GRY, HARD, CHERT.

QTZITE: MED TO DK GRY, SOME GREEN CAST, V FN GRND TO VISIBLY GRANULAR, DENSE, W/COM LATHS OF FELDSPAR? SL FACES, [illegible] ALTERED PROBABLY SECONDARY FELDSPAR COMMON FREE QTZ GRNS-MINOR GRY HARD CHERT.

NOTE: REDUCED HOLE TO 9 7/8" AT 8653'

C = 370 AT 47 VIS.
LAG=116MIN W/42SPM

CHERT/SLT-DK GRY, BANDED, PEARLY LUSTER, CONCHOIDAL FRAC, [illegible] COM FRACTURING, [illegible] PYRITE, TRC SHALE.

W 65 F 13.4 SOL 4%
V 47 FC 3/32 PH 9.0
S 600 RM 1.3 RMF 1.2

CHERT: WHT, LT TO DK GRY, PEARLY LUSTER, FINE SUGARY TEXTURE, CONCHOIDAL FRACTURE, AROUND THIN FRACTURES HEALED W/HARD SILICEOUS MATERIAL-SOME VISIBLE CLR QTZ FRAC FIL, OCC CALC FRAC FIL, COM FREE CLR QTZ GRNS, COM PYRITE INCLUSIONS.

W 66 F 14.4 SOL 4%
V 62 FC 3/32 PH 9.0
S 900 RM 1.2 RMF 1.1

NOTE: LOST 100BBL DRILLING FLUID TO FORMATION AT 8855FT, ADDED LOST CIRC MATERIAL & REGAINED CIRC

CHERT: WHT, LT GRY TO DK GRY-BLK, FINE SUGARY TEXT, AROUND FRACTURES FILLED W/BLK SILC MATERIAL, QTZ, COM PYRITE, COM FREE QTZ

NOTE: LOST DRILLING FLUID ON TRIP, MIXED NEW SYSTEM W/ GEL/WATER AND LOST CIRCULATION MATERIAL.

CHERT: WHT, LT-DK GRY/BLK V/FINE SUGARY TEXTURE, W/ CONCOIDAL FRACTURES, WHT TO PEARLY LUSTER, COMMON DISSEMINATED PYRITE, SOME FREE QTZ, W/INTRAMOD GREEN MOD DENSE, GREENSTONE AS INCLUDED IN QTZITE DESCRIP ABOVE, W/OCC GRN, ROUNDED INCLUSIONS, FRAC FILLING W/BLK SILICEOUS MATERIAL

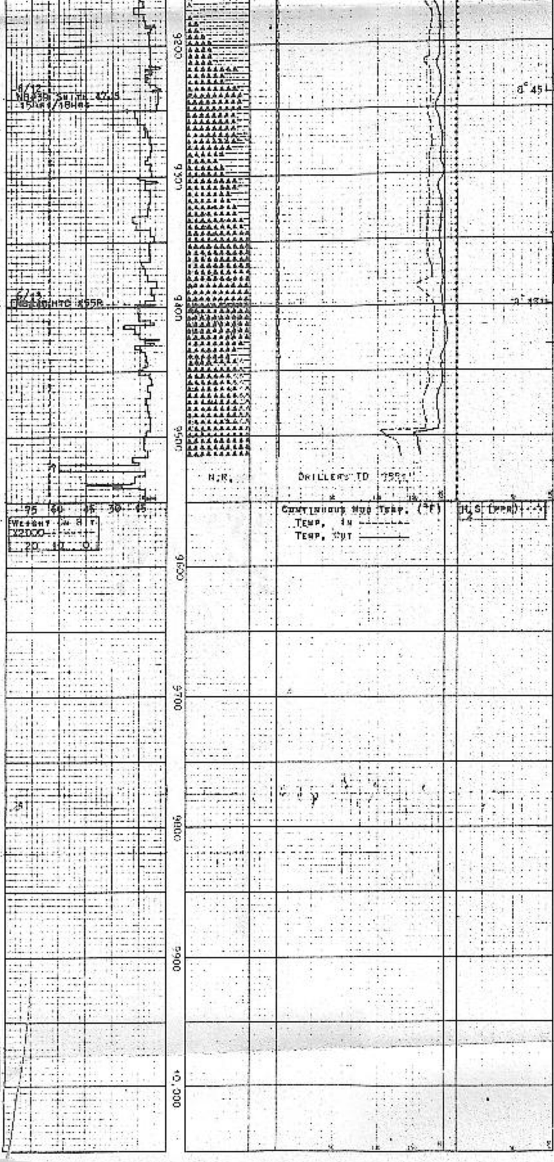
W 67 F 17.4 SOL 5%
V 62 FC 3/32 PH 8.7
S 925 RM 2.0 RMF 1.9

SHALE: DK GRY, BLK, HARD, DENSE, SILIC, CARB, COM [illegible] FILLED VEINS, [illegible]

SHALE: DK GRY, BLK, HARD, V DENSE, SILICEOUS, COM CALC VEINS, AROUND PYRITE INCL, GRADING TO ARGILLITE.

C = 100 AT 62 VIS
LAG=120MIN W/59SPM

SHALE: DK GRY/BLK, HD, OMS, SILICEOUS, OCC QTZ VEINLETS, BLOCKY, COMMON CALCITE VEIN MATERIAL, COM DISSEMINATED PYRITE, OCC PYR INCLUSIONS, LOC METAMORPHOSED, POSS TRC GRAPTOLITE



QTZITE:GRN,COMMON MOTTLED WHT,HARD,DENSE,FINELY-MD GRANULAR-MASSIVE,ABNDT PYRITE,W/INTRBDD SHALE AS LAST ABOVE.

w 65	F 18	SOL 4%
v 43	FC 3/32	pH 9.0
s 800	Rw 2.2	Rmf 2.1

QTZITE:GREEN,LOC MOTTLED WHT,HARD,DENSE,COM FNLY GRANULAR,ANG-SUBRND,SCAT MED-CRS,WL RND GRAINS,V/POORLY SORTED,LOC FRACTR ACROSS INDIVIDUAL GRAINS ABNDT PYRITE,COM KAOLIN CMNT,W/INTRBDD SH:DK GRY BLK,HARD,DENSE,SILICEOUS COM CALCITE VEINLETS,W/ ABUNDANT PYRITE,GRADING TO ARGILLITE.

QTZITE:WELL ALTERED,WHT-LT GRY,HARD,DENSE,[illegible] AS LAST ABOVE.

w 65	F 17.5	SOL 4%
v 43	FC 3/32	pH 8.5
s 800	Rw 2.0	Rmf 1.9

QTZITE:MED GRN,GRY,GRN, COM V/ LT GRY/WHT,VY FN GRAINED,DENSE,HARD,FRACS FREQ GREEN,IN PART ALTERED,HARD,DENSE,GRANULAR, VISIBLE GRNS,CALC IN PT.

C = 7.0 AT 43 VIS.
LAG=124MIN W/61SPM

QTZITE:DOM GRN/GRY-GRN, LOC MOTTLED WHT,DOM V/FN GRANULAR,ANG-SBRND,PRL SORTED,ABUNDANT PYRITE, CALC CMNTD,TRC KAOLINITE SCAT GRNS LT-MED GRY,MD SLTSTN METAMORPHOSED TO GREISEN:QTZITE LOC GRADNG TO CHERT:LT GRY,HARD,DNS VF-MASSIVE,TRC GREENSTN.

NOTE:LOST 500BBLS MUD WHILE DRLG AT [illegible]-MIX LOST CIRC MAT-REGND CIRC