

WELL 68-8 MUD LOG  
REVENING



CONFIDENTIAL

GEOHERMAL DIVISION

WELL GLASS MOUNTAIN FEDERAL 68-8 DEEPENING  
 FIELD GLASS MOUNTAIN UNIT  
 COMPANY UNOCAL  
 COUNTY SISKIYOU  
 STATE CALIFORNIA  
 LOCATION T43N R4E SEC. 8, ~3225'E and  
500'N OF SW CORNER SEC. 8 EL. 7032'  
 KB EL. 7063' T.D. 8417'  
 BHL 45'N and 165'W OF THE SURFACE  
 LOCATION  
 SPUD DATE 7/5/88  
 COMPLETION DATE 8/2/88  
 DRILLING CONTRACTOR GRACE DRILLING  
 ENGINEERS STROUD, WALTERS  
 GEOLOGISTS CRECRAFT, THOMPSON AND  
CARRIER

CASING	RECORD
DIA	INTERVAL
30"	0-12'
20"	0-228'
13 3/4"	0-1084'
9 5/8"	912'-3515'
7" perf. liner	3377'-8410'

DATE	INTERVAL	SERVICES	TEMPERATURES	TC
7/27/85	230'-1088'	DIL		
7/23/88	3515'-8410'	TEMP-DIL		5.0 hr
7/23/88	3515'-8410'	NEUTRON-DENSITY		8.5 hr

DATE	TIME	SIP/TIME	RIG		TEST			
			WHP	FLP	Δ P	FLT	ORIFICE	RATE
REMARKS								
REMARKS								
REMARKS								

EXPLANATION

DRILLING	LITHOLOGY	MINERALS	PHYSICAL-CHEMICAL
NB NEW BIT	<input checked="" type="checkbox"/> SHALE, ARGILLITE (MICROGRAYWACKE)	Q QUARTZ	T TEMPERATURE
RRB RERUN BIT	<input type="checkbox"/> MUDSTONE	C CALCITE	BH BOTTOM HOLE
CB CORE BIT	<input type="checkbox"/> GRAYWACKE SANDSTONE	E EPIDOTE	DH DOWN HOLE
DD DIRECTIONAL DRLG.	<input type="checkbox"/> SANDSTONE	CH CHLORITE	FL FLOW LINE
	<input type="checkbox"/> SANDSTONE		
	<input type="checkbox"/> SANDSTONE		

DD DIRECTIONAL DRLG.  
 BW WEIGHT  
 DEV DEVIATION  
 KOP KICK OFF POINT  
 DST DRILL STEM TEST  
 LC LOST CIRCULATION  
 PB PLUG BACK  
 DP DRILL PIPE  
 DC DRILL COLLAR  
 KB KELLY BUSHING

□ SANDSTONE  
 ⊞ CONGLOMERATE  
 ⊞ LIMESTONE  
 ⊞ DOLOMITE  
 ⊞ EVAPORITE  
 ⊞ CHERT  
 ⊞ SERPENTINITE  
 ⊞ GREENSTONE  
 ⊞ METAMORPHIC

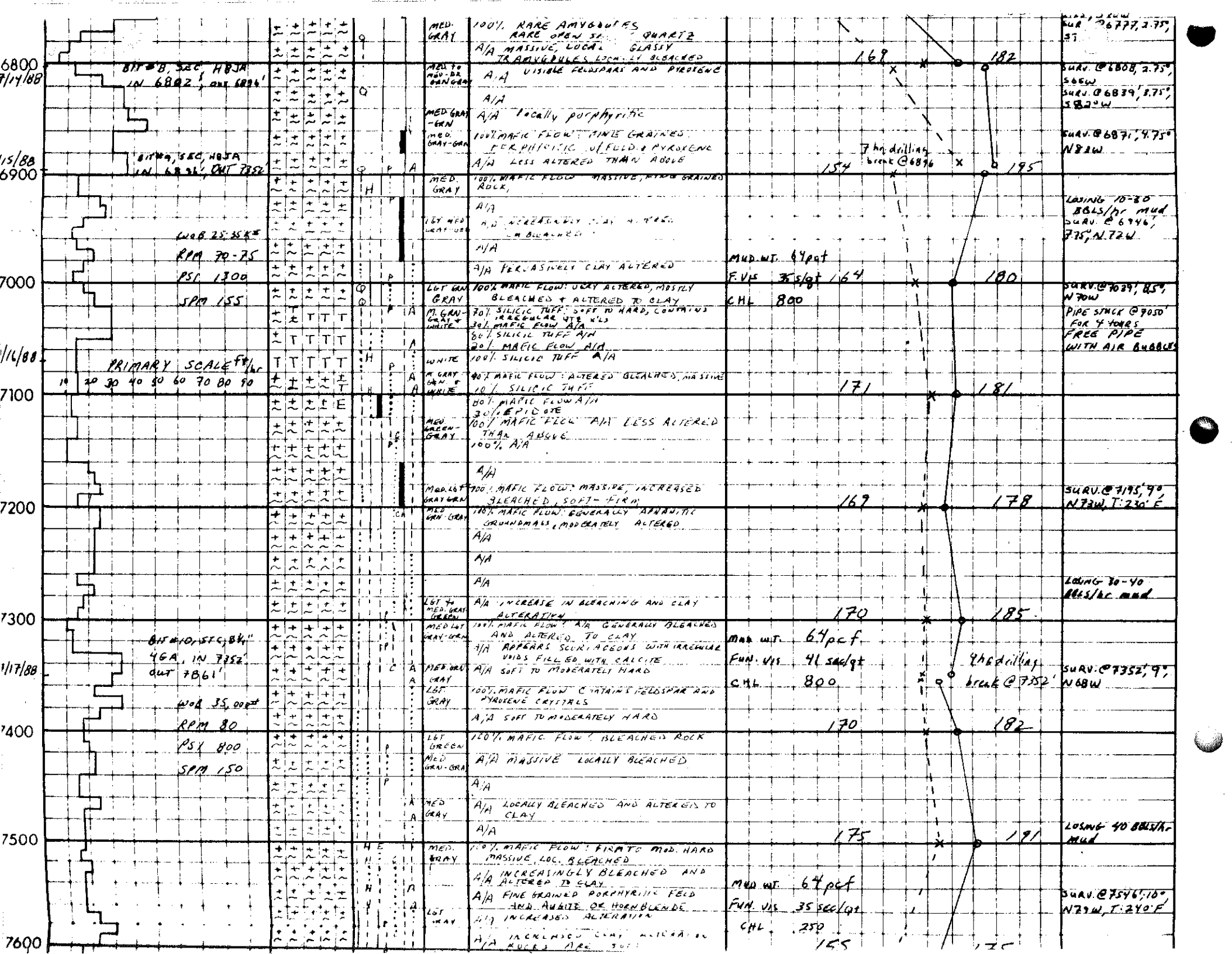
— INTRUSIVE  
 ⊞ FELSPAR  
 ⊞ INTERMEDIATE EXTRUSIVE  
 ⊞ MAFIC EXTRUSIVE  
 ⊞ TUFF  
 ⊞ VOLCANIC BRECCIA  
 ⊞ CEMENT  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

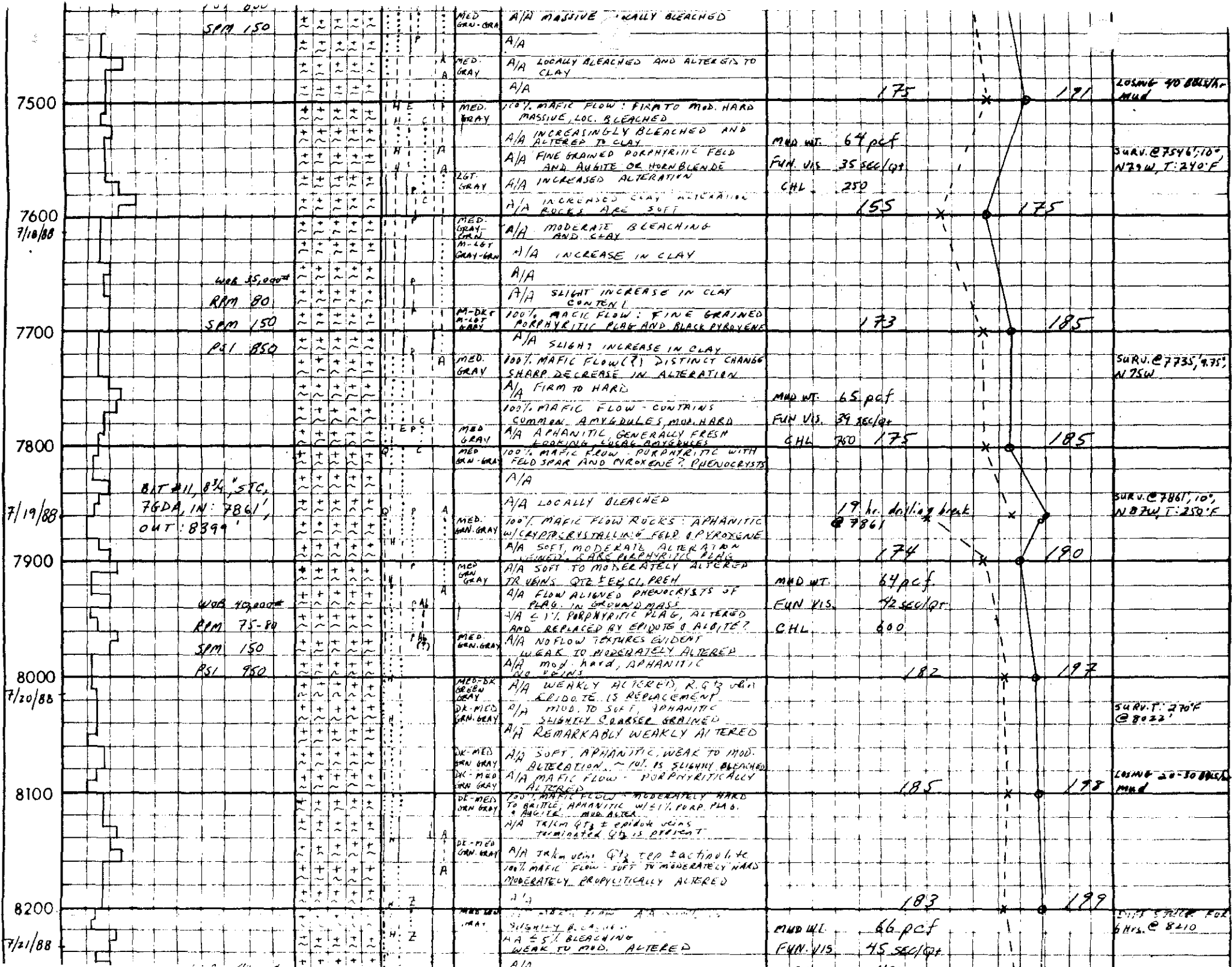
CH CHLORITE  
 F FELDSPAR  
 M MICA  
 Z ZEOLITE  
 CY CLAY  
 O OPAL  
 L LIMONITE  
 H HEMATITE  
 P PYRITE  
 S SPHALERITE  
 G GALENA  
 A ACTINOLITE  
 Ab ALBITE

FL FLOW LINE  
 BU BOTTC UP  
 TC TIME SINCE CIRC  
 P PRESSURE  
 WH WELL HEAD  
 SI SHUT IN  
 PPM PARTS PER MILLION  
 MW MUD WEIGHT  
 CR CIRCULATION RATE  
 VIS VISCOSITY  
 WL WATER LOSS  
 GP GALVANIC PROBE  
 CHL CHLORIDES

GMF 69-8 ORIGINAL HOLE WAS DRILLED TO 6571' FROM 7/12/85 TO 8/19/85

DEPTH FEET (DATE)	PENETRATION ■ FT/HR □ MIN/FT OVER FLOW SCALE PRIMARY SCALE 10 20 30 40 50 60 70 80 90	LITHOLOGY		DESCRIPTION	PHYSICAL - CHEMICAL		MISC.
		PRIMARY LITHOLOGY	SECONDARY MINERALS		TEMP °F □ °C	FLOWLINE SUCTION SURVEY (BH) MAX READ THERMO	
		ABUNDANT	BULK COLOR		CH		
6500							
7/10/88	BITS 8 3/4" SEC. GMBB IN 6571' OUT 6580'			90% CEMENT 10% BASALT - BLEACHED BY ALTERATION. CORE: PROPHYLITIC BASALT TO ANDESITE			SURVEY @ 6538 3.5" STROKE, T: 135'
7/14/88	BITS 8 1/2" EASTMAN, SOB-2 IN 6580' OUT 6603'	+		100% MAFIC FLOW FINE GRAINED MASSIVE HARD, MOD. PROPHYLITIC ALTER. A/A LOCAL BLEACHING AND LOCAL WELL PRESERVED FELDSPAR LATHS.		TEMPERATURE SCALE 100 120 140 160 180 200 220	BEGIN DRILLING DEEPENING 7/14/88 CORE 6580-6603'
7/14/88	BITS 6" HTC GMA 44 IN 6603' OUT 6604'	+		A/A		MUD WT. 63pcf F.VIS 76 sec/qt CI 1200	
7/13/88	BITS 4" HTC GMA 44, IN 6606' OUT 6602'	+		MAFIC FLOW A/A INCREASINGLY BLEACHED SLIGHT GLASSY APPEARANCE 100% MAFIC FLOW A/A WITH FLOW TEXTURES			
7/13/88		+		A/A WITH AMPHIBOLES FILLED WITH URTO MORE CLAY THAN ABOVE A/A		MUD WT. 64pcf Funnel VIS. 3.7 sec/qt	LOSING 200 BBL/hr @ 6750' prob. up hole





SFM 150

WORK 35,000'  
RAM 80  
SFM 150  
PSI 850

BAT #11, 8 3/4" STC,  
76DA, IN: 7861',  
OUT: 8399'

WORK 40,000'  
RAM 75-80  
SFM 150  
PSI 950

MWD WT. 64 pcf  
FUN. VIS. 35 sec/ft  
CHL. 250

MWD WT. 65 pcf  
FUN. VIS. 39 sec/ft  
CHL. 760

MWD WT. 64 pcf  
FUN. VIS. 42 sec/ft  
CHL. 600

MWD WT. 66 pcf  
FUN. VIS. 45 sec/ft  
CHL. 400

175 191

155 175

173 185

175 185

174 190

182 197

185 198

183 199

LOG NO 90 BLS/A - Mud

SURV. @ 7546, 10° N 73 W, T: 240°F

SURV. @ 7735, 975', N 75 W

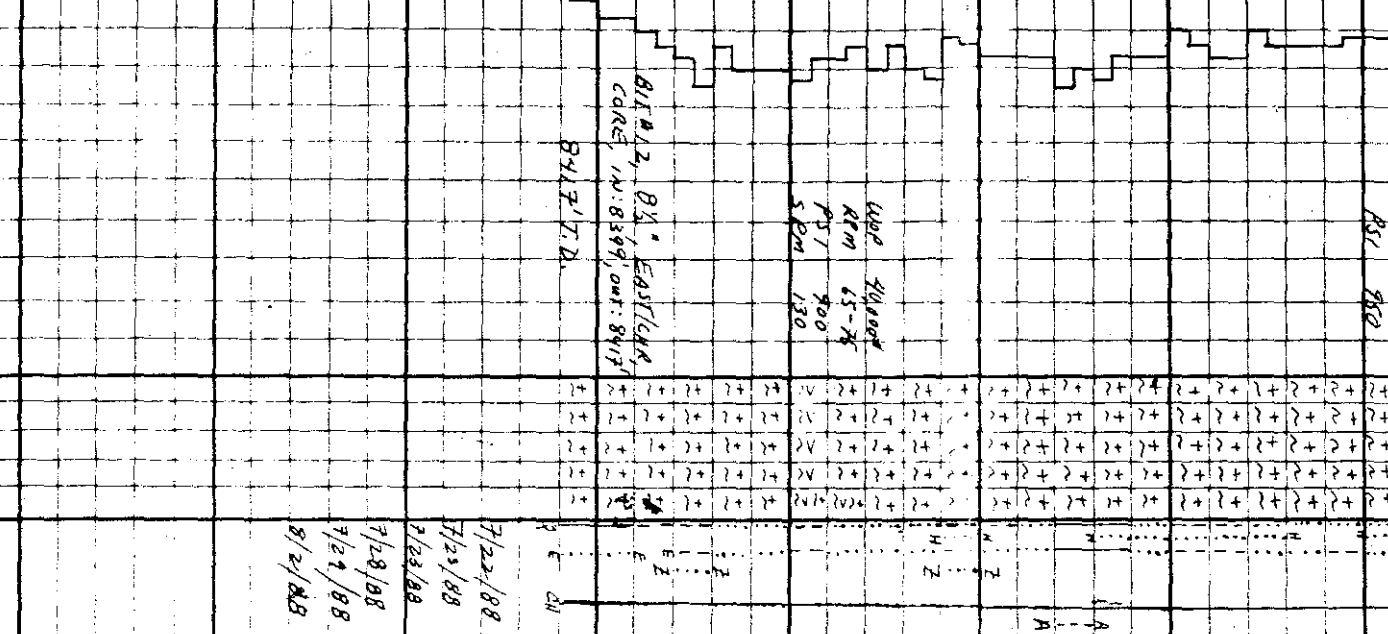
SURV. @ 7861, 10° N 87 W, T: 250°F

SURV. T: 270°F @ 8022'

LOG NO 20-30 BLS/A - Mud

SURV. @ 8210

8000  
7/20/88  
8100  
8200  
8300  
8400  
8500  
8600  
8700



Date	Time	Pressure (psi)	Depth (ft)	Notes
7/20/88	8:50	8150	173	Flow rate 150 gpm, pressure 8150 psi
7/20/88	9:00	8150	173	Flow rate 150 gpm, pressure 8150 psi
7/20/88	9:10	8150	173	Flow rate 150 gpm, pressure 8150 psi
7/20/88	9:20	8150	173	Flow rate 150 gpm, pressure 8150 psi
7/20/88	9:30	8150	173	Flow rate 150 gpm, pressure 8150 psi
7/20/88	9:40	8150	173	Flow rate 150 gpm, pressure 8150 psi
7/20/88	9:50	8150	173	Flow rate 150 gpm, pressure 8150 psi
7/20/88	10:00	8150	173	Flow rate 150 gpm, pressure 8150 psi
7/20/88	10:10	8150	173	Flow rate 150 gpm, pressure 8150 psi
7/20/88	10:20	8150	173	Flow rate 150 gpm, pressure 8150 psi
7/20/88	10:30	8150	173	Flow rate 150 gpm, pressure 8150 psi
7/20/88	10:40	8150	173	Flow rate 150 gpm, pressure 8150 psi
7/20/88	10:50	8150	173	Flow rate 150 gpm, pressure 8150 psi
7/20/88	11:00	8150	173	Flow rate 150 gpm, pressure 8150 psi
7/20/88	11:10	8150	173	Flow rate 150 gpm, pressure 8150 psi
7/20/88	11:20	8150	173	Flow rate 150 gpm, pressure 8150 psi
7/20/88	11:30	8150	173	Flow rate 150 gpm, pressure 8150 psi
7/20/88	11:40	8150	173	Flow rate 150 gpm, pressure 8150 psi
7/20/88	11:50	8150	173	Flow rate 150 gpm, pressure 8150 psi
7/20/88	12:00	8150	173	Flow rate 150 gpm, pressure 8150 psi

8412, 8 1/2" EASTERN CORE, IN: 8399, OUT: 8412

8412, 7' TD

8412, Total Depth

RUN LOGS: TEMP-OIL, DENSITY, NEUTRON

TEST WELLS: WELL BRIDGES OFF 7/26/88

RUN LINER

TEST WELL

RELEASE RIG

8399 TO 8412 CORE INTERVAL

12' RECOVER

8399 TO 8412 CORE INTERVAL

12' RECOVER

8399 TO 8412 CORE INTERVAL

12' RECOVER