Schlumberger

DUAL INDUCTION-SFL-SONIC

COUNTY COLUMBIA
FIELD MIST
LOCATION 899'W AND 1537'N
WELL "STEELHEAD" #43-33-75
COMPANY NAHAMA & WEAGANT ENERGY CO

COMPANY NAHAMA & WEAGANT FNFRGY CO.

WELL Columbia Co. ~~STEELHEAD~~ #43 33 75

FIELD MIST

COUNTY COLUMBIA **STATE** OREGON

LOCATION 899'W AND 1537'N
FROM SE CORNER

API SERIAL NO.	SECT.	TWP.	RANGE
36 009 00295	33	7N	5W

Other Services:
DII
SLT
SHDT
LDT
CNT

Permanent Datum	GL	Elev.	10410 F	Elev.: K B 10510 F
Log Measured From	KB	10.0 F	above Perm. Datum	D F 1050 0 F
Drilling Measured From	KB			G L 10410 F

Date	17-JUN-1992			
Run No.	ONE			
Depth Driller	2548.0 F			
Depth Logger (Schl.)	2547.0 F			
Btm. Log Interval	2540.0 F			
Top Log Interval	520.0 F			
Casing-Driller	9 5/8" @ 520.0 F	@		@
Casing-Logger	520.0 F			
Bit Size	8 1/2" @ 2548.0 F	@		@
Type Fluid in Hole	POLYMER/GEL			
Dens. | Visc.	9.50 LB/G	410 S		
pH | Fld. Loss	8.5	6.0 C3		
Source of Sample	FLOWLINE			
Rm @ Meas. Temp.	2.970 OHMM @ 76.0 DEGF		@	
Rmf @ Meas. Temp.	4.550 OHMM @ 76.0 DEGF		@	
Rmc @ Meas. Temp.	2.660 OHMM @ 76.0 DEGF		@	
Source: Rmf | Rmc	MEASURED	MEASURED		
Rm @ BHT	2.595 OHMM @ 88.0 DEGF		@	
TIME Circulation Ended	15:00 6-17			
TIME Logger on Bottom	17:54 6-17			
Max. Rec. Temp.	88.0 DEGF			
Equip. | Location	8504	SACRAMENTO		
Recorded By	SCOTT PILCH			
Witnessed By	JEFF VAUGHAN,BOB PINOTTI			

The well name, location and borehole reference data were furnished by the customer

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretations made by any of our officers, agents or employees. These interpretations are also subject to Clause 4 of our General Terms and Conditions as set out in our current Price Schedule

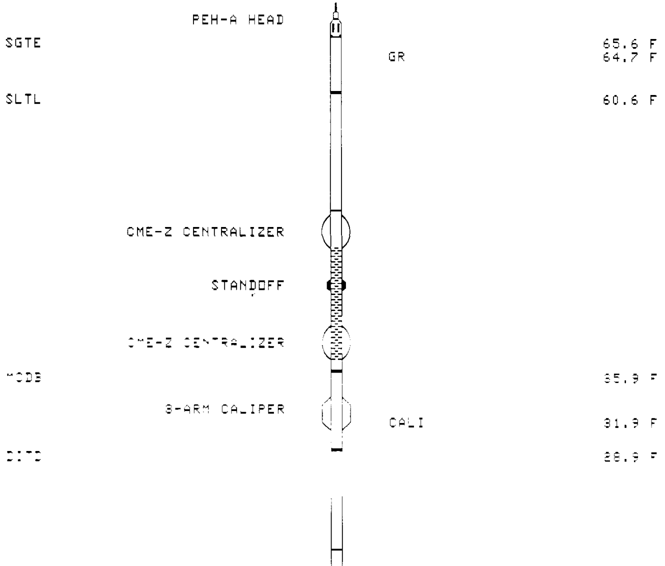
Run No.	ONE				
Service Order No.	595051				
Drilling Fluid Level	5.0 F				
Salinity	650.0 PPM				
Rmf @ BHT	3.875 OHMM	@	88.0 DEGF		@
Rmc @ BHT	2.324 OHMM	@	88.0 DEGF		@
Logging Speed	3600.0 F/HR				
EQUIPMENT DATA					
Tool Number 1	DIS-EC 298				
Tool Number 2	DIC-DA 1078				
Tool Number 3	MCD-DA 1237				
Tool Number 4	SLS-WA 1335				
Tool Number 5	SLC-MA 119				
Tool Number 6	SGC-JC 3604				

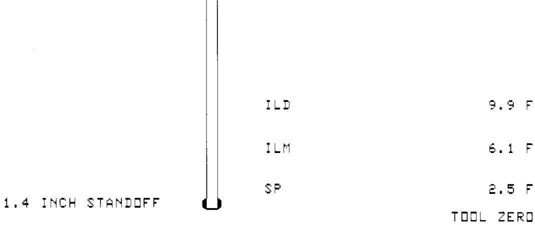
Tool Number 7	IEM-BD 304	
Tool Number 8	SLM-DA 443	
Tool Number 9	NLM-BC 456	
Tool Number 10		
Tool Number 11		
Tool Number 12		

REMARKS:

1.5 INCH STANDOFFS USED ON DIL.
SONIC CENTRALIZED WITH CME-Z'S AND STANDOFFS.
CALIPER NOT PRESENTED ON REPEAT-JAMMED WITH SHALE.
CALIPER SUPPRESSED DUE TO HOLE DEVIATION.
MAXIMUM HOLE DEVIATION IS 13.5 DEGREES AT 1778 FT.

LOGGING TOOL STRING SKETCH





TOTAL TOOL STRING LENGTH IS 68.6 F.
TOTAL TOOL STRING WEIGHT IS 993. LB IN AIR.

MAIN LOG

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ACCUMULATED INTEGRATION VALUES SUMMARY:

Integrated Hole Volume:    709.497 F3    FROM 2548.00 F    TO 520.000 F
Integrated Cement Volume: 485.505 F3    FROM 2548.00 F    TO 520.000 F
  (ASSUMING 4.50000 IN   O.D. CASING)
Integrated Transit Time:  .267266 S     FROM 2548.00 F    TO 520.000 F
```

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EVENT MARK SUMMARY:

OUTPUT                       INTERVAL        DEPTH TRACK
                             BETWEEN PIPS    EDGE

Integrated Hole Volume       10.0000 F3      LEFT EDGE
Integrated Cement Volume     10.0000 F3      RIGHT EDGE
```
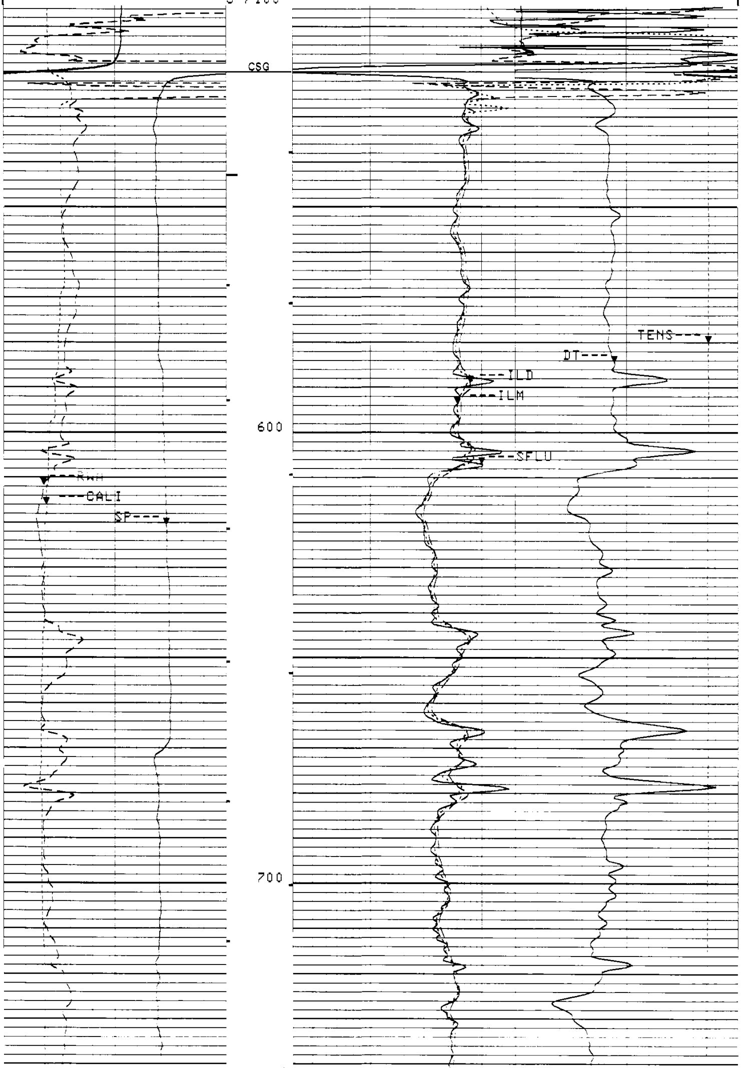
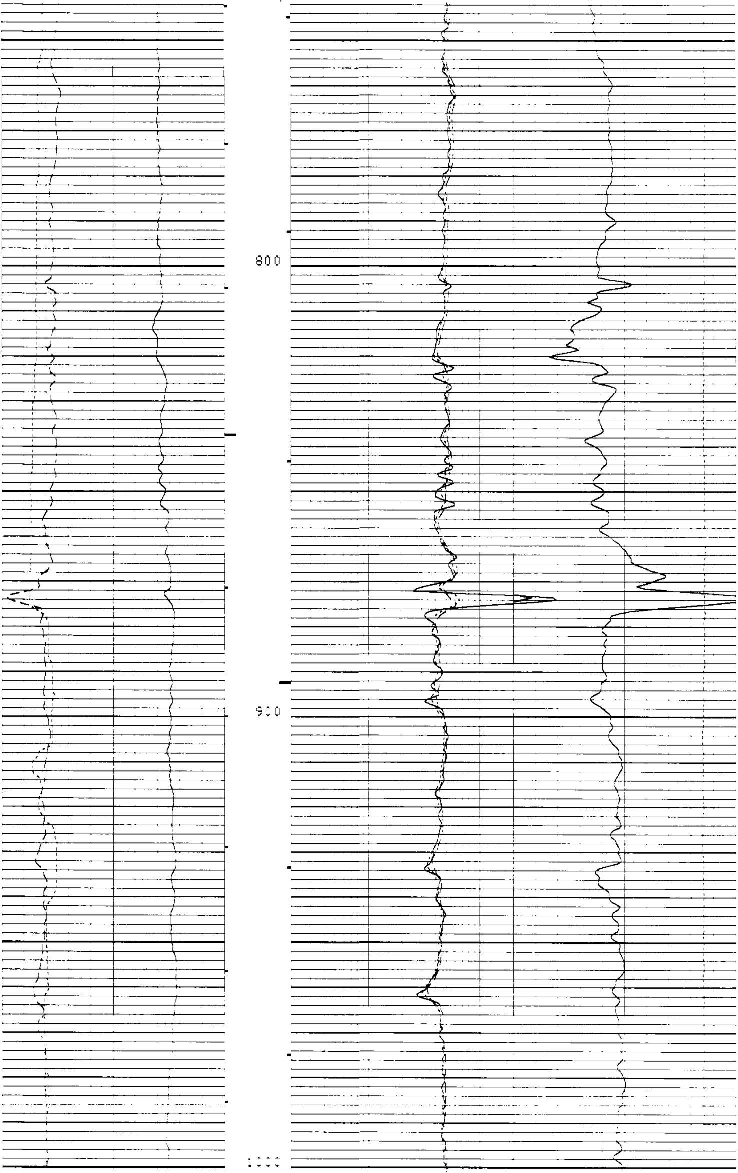

```
                                                        TENS(LBF )
                                              10CCC.                     0.0
                                                        DT(US/F)
                                              175.00                  75.000
          RWA(OHMM)                                ILD(OHMM)
0.0                  3.0000        .20000                             2000.0
          CALI(IN  )                               ILM(OHMM)
6.0000               16.000        .20000                             2000.0
          SP(MV)                                   SFLU(OHMM)
-130.0               -30.00        .20000                             2000.0
```

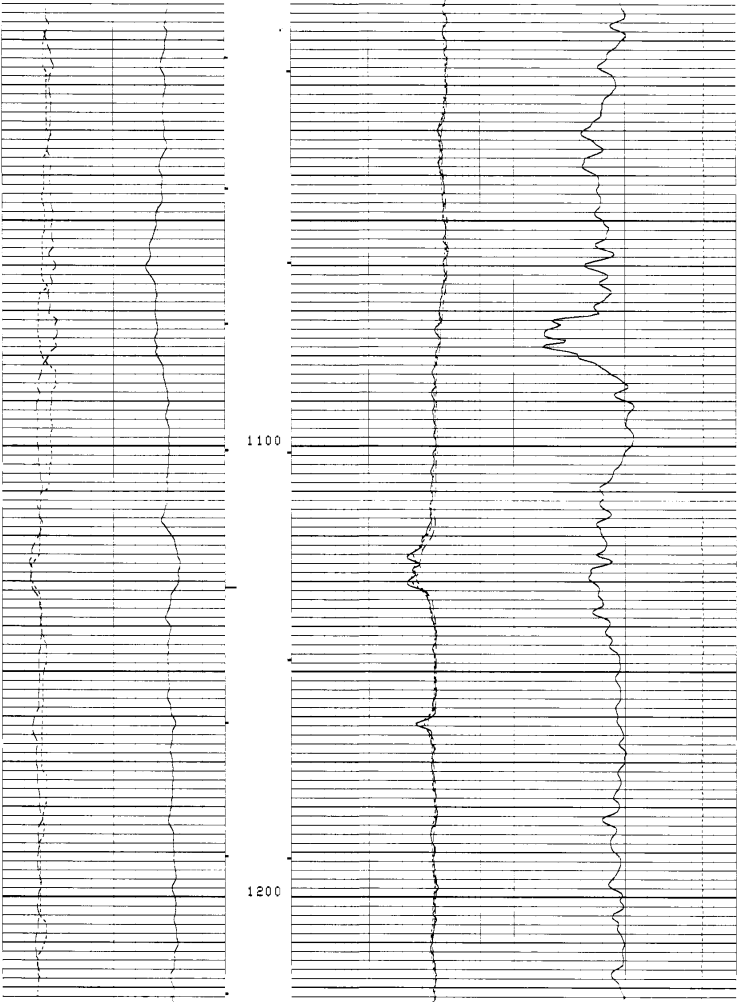
CP 32.6 FILE 14 17-JUN-1992 19:07

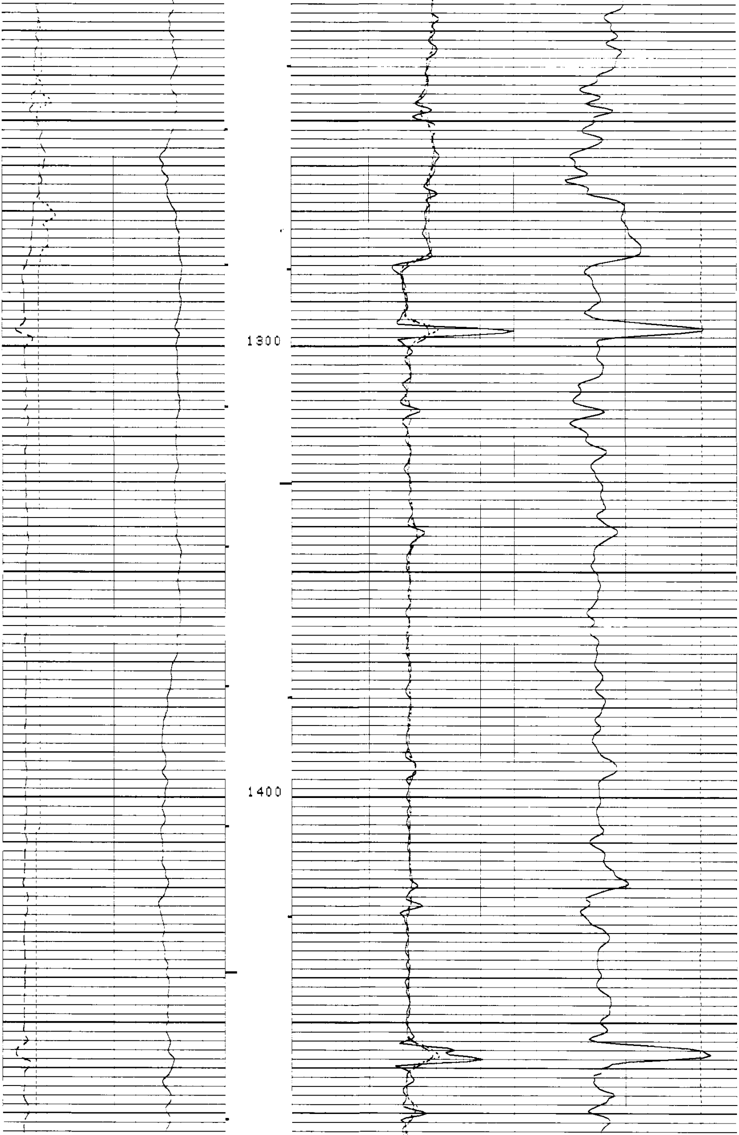
INPUT FILE(S) CREATION DATE
9 17-JUN-1992 17:57

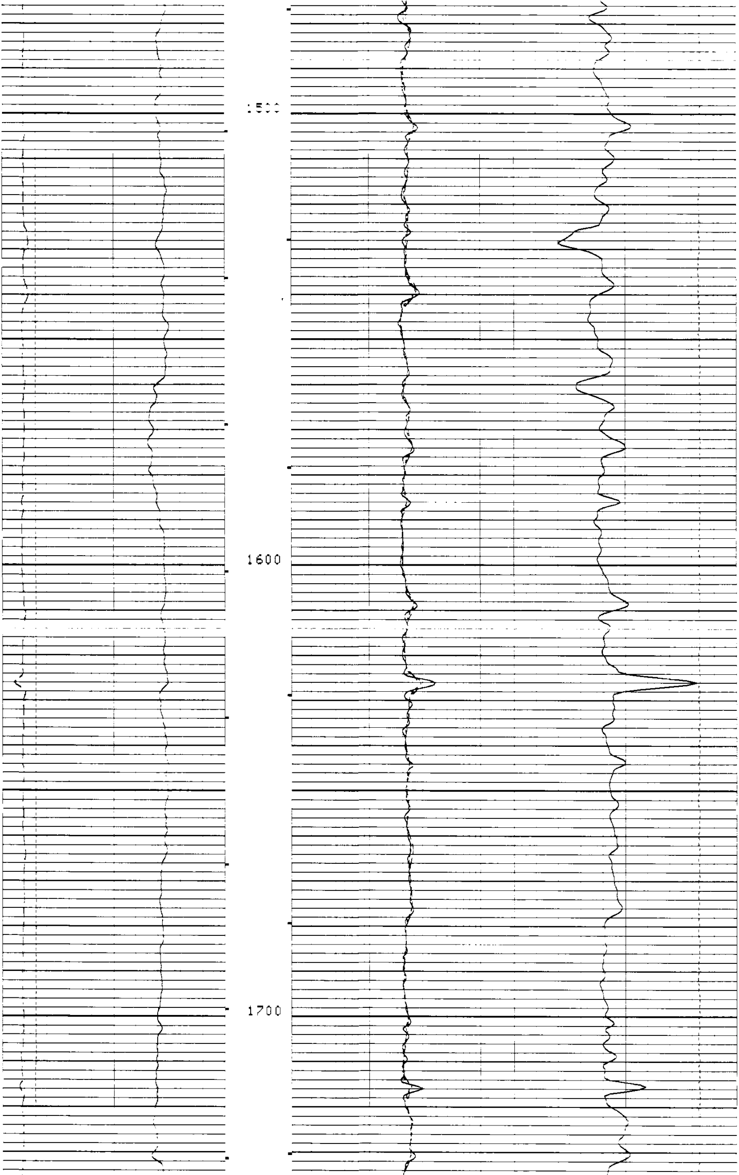
5"/100'

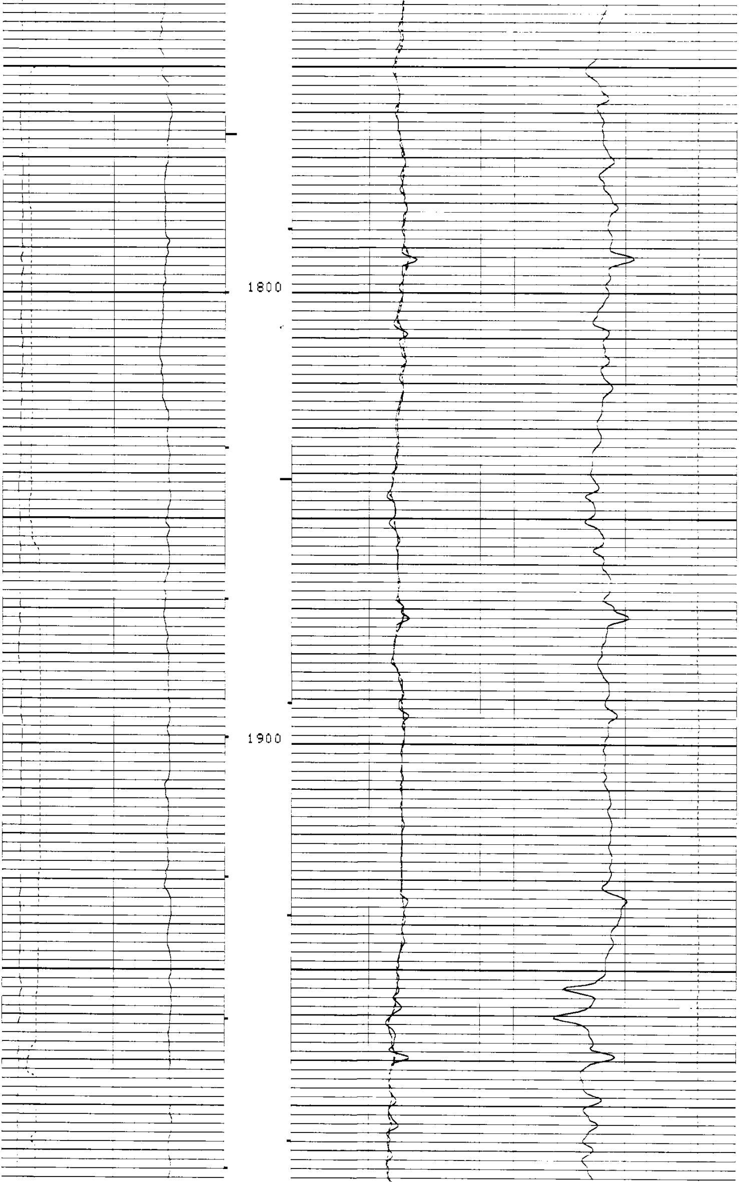


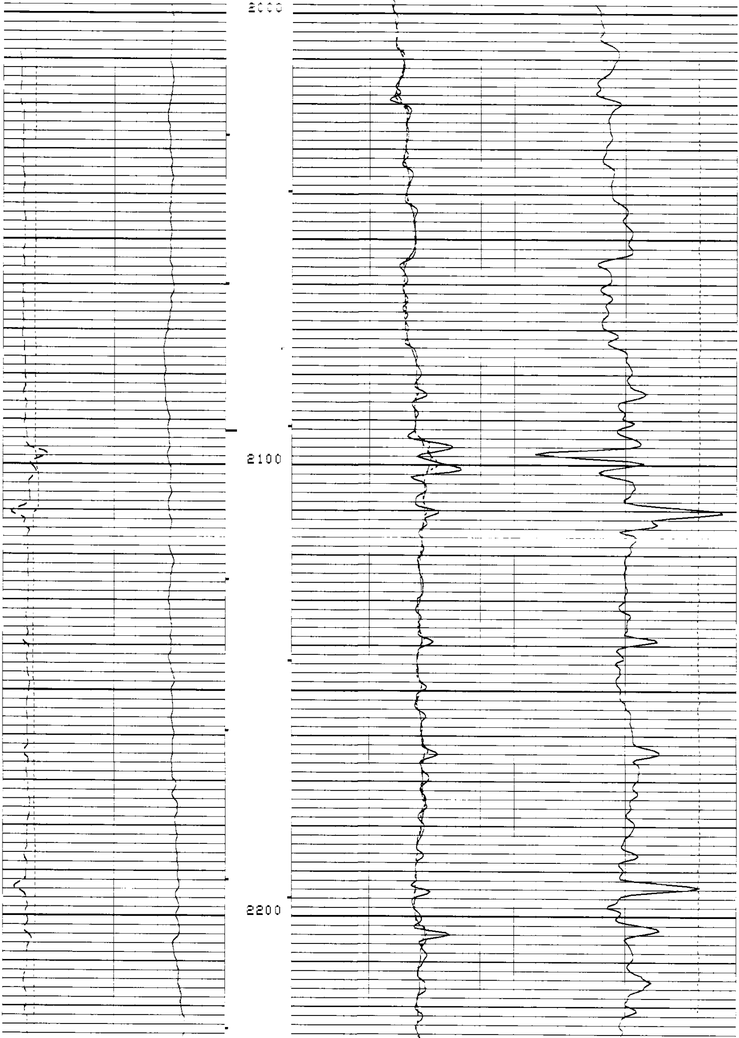


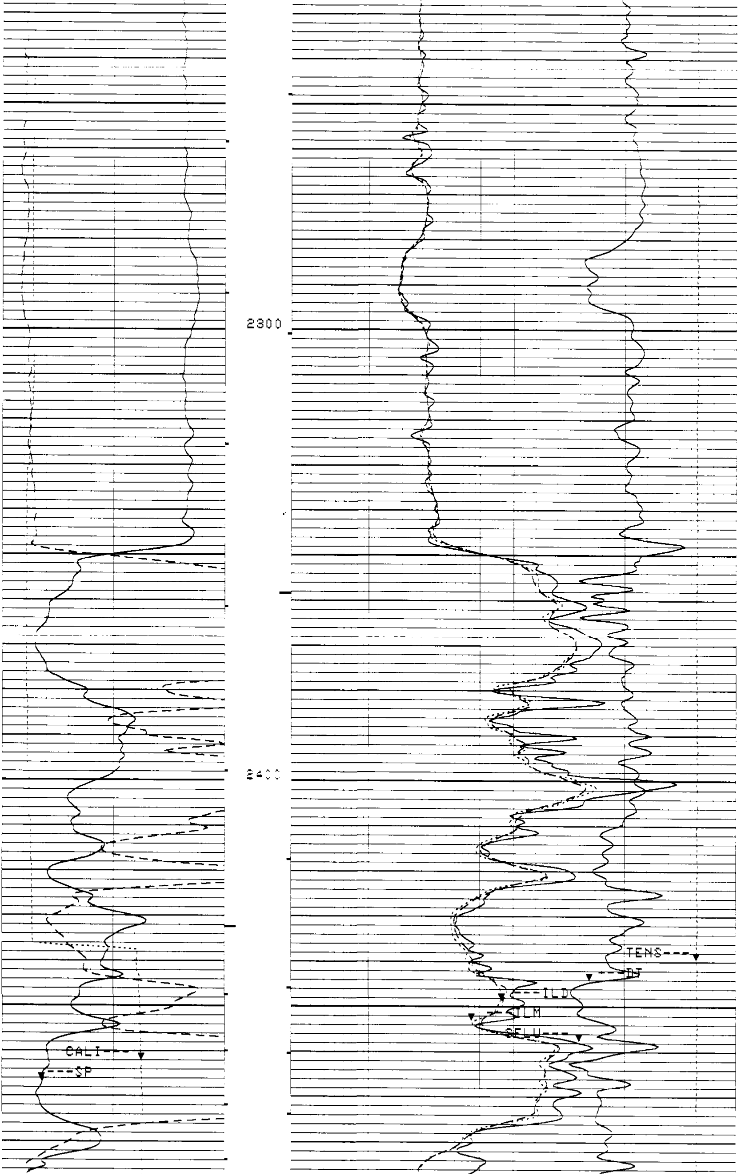


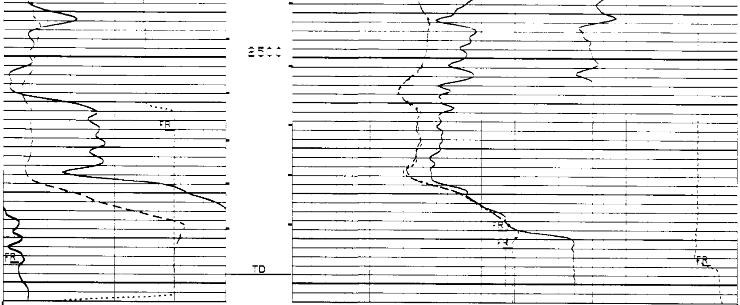












5"/100'

CP 32.6 FILE 14 17-JUN-1992 18:57

INPUT FILE(S) CREATION DATE
9 17-JUN-1992 17:57

TENS(LBF)
10000. 0.0
DT(US/F)
175.00 75.000

RWA(OHMM)
0.0 3.0000
CALI(IN)
6.0000 16.000
SP(MV)
-130.0 -30.00

ILD(OHMM)
.20000 2000.0
ILM(OHMM)
.20000 2000.0
SFLU(OHMM)
.20000 2000.0

SENSOR MEASURE POINT TO TOOL ZERO

SRAT	41.7	FEET	AMPL	44.1	FEET
CBFS	43.1	FEET	CBL	44.1	FEET
TT2	44.1	FEET	TT1	43.1	FEET
TT4	39.3	FEET	TT3	40.3	FEET
TT	44.1	FEET	T0	44.1	FEET
CBSL	44.1	FEET	TTSL	44.1	FEET
CALI	31.9	FEET	GR	64.7	FEET
ILM	6.1	FEET	ILD	9.9	FEET
SP	2.5	FEET	SFL	6.8	FEET
TENS	2.5	FEET	SPAR	2.5	FEET
NOIS	2.5	FEET			

PARAMETERS

PARAMETER	VALUE	UNIT
SMB - Sonic Memory Board	DISA	
TOCA - T0 Correction Status	DISA	
RATE - Firing Rate	15	HZ
DG - Downhole Gain	/5	
DETE - Detection	E2	
AMPL - Sonic Amplitude	2	

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CBL  - Cement Bond Log Amplitude                  UT
WFM  - Waveform Mode                              1
SS   - Sweep Speed                                FAST
TOD  - TO Delay                                   DISA
DTF  - Delta-T Fluid                              189.000      US/F
DTM  - Delta-T Matrix                             56.0000      US/F
CDTS - Correction for Delta-T Shale: Empirical    100.000
SPFS - Sonic Porosity Formula Select              R--
PP   - Playback Processing                        NORM
DO   - Depth Offset for Logical Unit LI1          0.0          F
WMUD - Weight of Mud                              9.50000      LB/G
MSEC - Medium Sonde Error Correction              6.00000      MM/M
SBR  - Shoulder Bed Resistivity                   1.00000      OHMM
DSEC - Deep Sonde Error Correction                6.30000      MM/M
FCD  - Future Casing Diameter                     4.50000      IN
NCLT - NGT Calibration Jig Type                   33RM
FPHI - Formation Factor Formula Porosity          SP-I
DWCO - Digitizer Word Count                       512
DSIN - Digitizer Sample Interval                  5            US
DDEL - Digitizing Delay                           200          US
BS   - Bit Size                                   8.50000      IN
BHS  - BoreHole Status (Open or Cased)            OPEN
```

REPEAT SECTION

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ACCUMULATED INTEGRATION VALUES SUMMARY:

Integrated Hole Volume:   172.835 F3    FROM 2548.00 F    TO 2309.00 F
Integrated Cement Volume: 146.439 F3    FROM 2548.00 F    TO 2309.00 F
  (ASSUMING 4.50000 IN   O.D. CASING)
Integrated Transit Time:  .0311237 S    FROM 2548.00 F    TO 2309.00 F
```
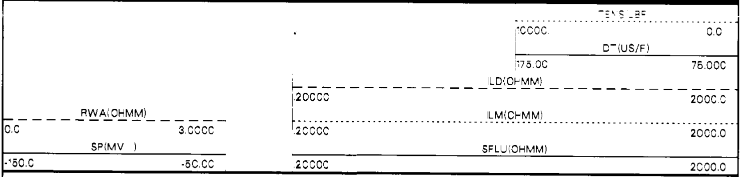

```
EVENT MARK SUMMARY:

OUTPUT                          INTERVAL        DEPTH TRACK
                                BETWEEN PIPS    EDGE

Integrated Hole Volume          10.0000 F3      LEFT EDGE
Integrated Cement Volume        10.0000 F3      RIGHT EDGE
```



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CP 32.6          FILE   13       17-JUN-1992 18:55

                 INPUT FILE(S)   CREATION DATE
                       7         17-JUN-1992 17:44
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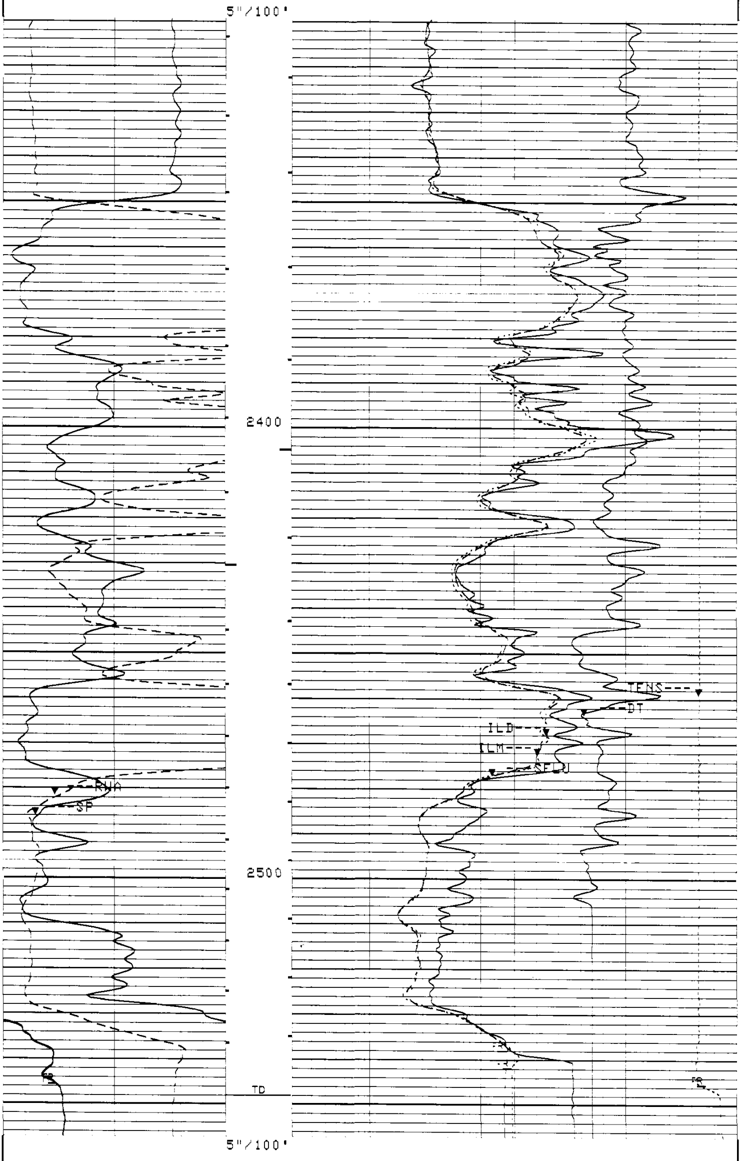

CP 32.6　　FILE 13　　17-JUN-1992 18:54

INPUT FILE(S) CREATION DATE
7 17-JUN-1992 17:44

TENS(LBF)	10000.	0.0
DT(US/F)	175.00	75.000
ILD(OHMM)	20000	2000.0
RWA(OHMM)	0.0	3.0000
ILM(OHMM)	.20000	2000.0
SP(MV)	-150.0	-50.00
SFLU(OHMM)	.20000	2000.0

SENSOR MEASURE POINT TO TOOL ZERO

SRAT	41.7	FEET	AMPL	44.1	FEET
CBFS	43.1	FEET	CBL	44.1	FEET
TT2	44.1	FEET	TT1	43.1	FEET
TT4	39.3	FEET	TT3	40.3	FEET
TT	44.1	FEET	TO	44.1	FEET
CBSL	44.1	FEET	TTSL	44.1	FEET
CALI	31.9	FEET	GR	64.7	FEET
ILM	6.1	FEET	ILD	9.9	FEET
SP	2.5	FEET	SFL	6.8	FEET
TENS	2.5	FEET	SPAR	2.5	FEET
NOIS	2.5	FEET			

PARAMETERS

PARAMETER	VALUE	UNIT
SMB - Sonic Memory Board	DISA	
TOCA - T0 Correction Status	DISA	
RATE - Firing Rate	15	HZ
DG - Downhole Gain	75	
DETE - Detection	E2	
AMPL - Sonic Amplitude	2	
CBL - Cement Bond Log Amplitude	UT	
WFM - Waveform Mode	1	
SS - Sweep Speed	FAST	
TOD - T0 Delay	DISA	
DTF - Delta-T Fluid	189.000	US/F
DTM - Delta-T Matrix	56.0000	US/F
CDTS - Correction for Delta-T Shale: Empirical	100.000	
SPFS - Sonic Porosity Formula Select	R-H	
PP - Playback Processing	NORM	
DO - Depth Offset for Logical Unit LI1	0.0	F
WMUD - Weight of Mud	9.50000	LB/G
MSEC - Medium Sonde Error Correction	6.00000	MM/M
SBR - Shoulder Bed Resistivity	1.00000	OHMM
DSEC - Deep Sonde Error Correction	6.30000	MM/M
FCD - Future Casing Diameter	4.50000	IN
NCJT - NGT Calibration Jig Type	GSRY	
FPHI - Formation Factor Formula Porosity	SPHI	
DWCO - Digitizer Word Count	512	
DSIN - Digitizer Sample Interval	5	US
DDEL - Digitizing Delay	200	US
BS - Bit Size	8.50000	IN
BHS - BoreHole Status (Open or Cased)	OPEN	

CALIBRATION SUMMARY

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                BEFORE SURVEY CALIBRATION SUMMARY


   PERFORMED:     17-JUN-1992 17:43
   PROGRAM FILE: ISN    (VERSION    32.6    91/08/23  91/08/23)


 DITD              ELECTRONICS CALIBRATION SUMMARY

              MEASURED                          CALIBRATED
           ZERO    PLUS                     ZERO       PLUS          UNITS
    ILD     .80    550.3                    0.0        502.7          MM/M
    ILM     .40    531.6                    0.0        501.7          MM/M
    SFL     .79    528.4                    0.0        500.0          MM/M

 ILD SONDE ERROR CORRECTION :          6.3 MM/M
 ILM SONDE ERROR CORRECTION :          6.0 MM/M

 ZERO: 17-JUN-1992 17:41  PLUS: 17-JUN-1992 17:42  COMP: 17-JUN-1992 17:42


 SGTE              DETECTOR CALIBRATION SUMMARY

              MEASURED
           BKGD     JIG          CALIBRATED          UNITS
   GR       31      180             165              GAPI

 BACK: 17-JUN-1992 15:45   JIG: 17-JUN-1992 15:49  COMP: 17-JUN-1992 15:49


 MCDB              CALIPER CALIBRATION SUMMARY

              MEASURED                          CALIBRATED
           SMALL   LARGE                    SMALL      LARGE         UNITS
  CALI     6.79    11.66                    8.00       12.00          IN

 SMALL: 17-JUN-1992 15:10 LARGE: 17-JUN-1992 15:10 COMP: 17-JUN-1992 15:10

    CP 32.6            FILE    6        17-JUN-1992 17:43



               AFTER SURVEY TOOL CHECK SUMMARY


   PERFORMED:     17-JUN-1992 18:34
   PROGRAM FILE: ISN    (VERSION    32.6    91/08/23  91/08/23)


 DITD                         TOOL  CHECK

                    ZERO                          PLUS
             BEFORE        AFTER          BEFORE      AFTER     UNITS
    ILD        0.0          -.3           502.7       500.2     MM/M
    ILM        0.0           .1           501.7       500.5     MM/M
    SFL        0.0           .3           500.0       495.7     MM/M

 ILD SONDE ERROR CORRECTION :          6.3 MM/M
 ILM SONDE ERROR CORRECTION :          6.0 MM/M

 BEFORE SURVEY:              ZERO: 17-JUN-1992 17:41  PLUS: 17-JUN-1992 17:42
 AFTER SURVEY CHECK:         ZERO: 17-JUN-1992 18:33  PLUS: 17-JUN-1992 18:34

    CP 32.6            FILE   11        17-JUN-1992 18:34


                SHOP SUMMARY
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PERFORMED:     28-APR-1992 11:10
PROGRAM FILE:  SHOP   (VERSION    32.6     91/08/23  91/08/23)


DITD               ELECTRONICS CALIBRATION SUMMARY

                  TEST LOOP CALIBRATION              TOOL CHECK
               MEASURED          CALIBRATED          CALIBRATED
             ZERO      PLUS      ZERO       PLUS      ZERO       PLUS    UNITS
    ILD      -3.4      544.7      0.0       500.0      0.0       501.2   MM/M
    ILM      -3.8      521.1      0.0       500.0      0.0       504.3   MM/M
ILD  SONDE ERROR CORRECTION :              4.9 MM/M
ILM  SONDE ERROR CORRECTION :              4.4 MM/M

                         (IS:298 , IC:1078)

    CP 32.6            FILE     1        28-APR-1992 11:10
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COMPANY	NAHAMA & WEAGANT ENERGY CO			SCHL.	FR	2540.0 F
				SCHL.	TD	2547.0 F
WELL	"STEELHEAD" #43-33-75			DRLR.	TD	2548.0 F
FIELD	MIST			Elev:	KB	1051.0 F
					DF	1050.0 F
COUNTY	COLUMBIA	**STATE**	OREGON		GL	1041.0 F

Schlumberger

DUAL INDUCTION-SFL-SONIC