FIELD Vale
LOCATION 101'S AND 718'E
WELL ESI A-S ALT
COMPANY Trans-Pacific Geothermal

Schlumberger

DUAL INDUCTION - SFL

COMPANY	Trans-Pacific Geothermal		
WELL	ESI A-S ALT		
FIELD	Vale		
COUNTY	Malheur	STATE	Oregon

LOCATION	101'S AND 718'E FROM THE N 1/4 CORNER			Other Services: DIL-BHC-GR FMS-TEMP
API SERIAL NO.	SECT. 33	TWP. 18S	RANGE 45E	

ermanent Datum	GL	Elev.	2465.0 F	Elev.: K.B.2487.0 F
g Measured From	KB	22.0 F	above Perm. Datum	D.F.
illing Measured From	KB			G.L.2465.0 F

ate	05-MAR-1994					
un No.	TWO					
epth Driller	5758.0 F					
epth Logger (Schl.)	5700.0 F					
m. Log Interval	5694.0 F					
op Log Interval	3010.0 F					
asing-Driller	7"	@ 3010.0 F		@		@
asing-Logger	3010.0 F					
t Size	6 1/4"	@ 5758.0 F		@		@
ype Fluid in Hole	GEL/LINE/PAC					
ens. | Visc.	8.70 LB/G	43.0 S				
H | Fld. Loss	10.0	7.0 C3				
ource of Sample	FLOWLINE					
m @ Meas. Temp.	1.820 OHMM	@	80.0 DEGF	@		
mf @ Meas. Temp.	2.900 OHMM	@	50.0 DEGF	@		
mc @ Meas. Temp.	2.270 OHMM	@	50.0 DEGF	@		
ource: Rmf | Rmc	MEASURED	MEASURED				
m @ BHT	.915 OHMM	@	166. DEGF	@		
Circulation Ended	09:00 5-MAR-1994					
Logger on Bottom	13:29 05-MAR-1994					
lax. Rec. Temp.	166. DEGF					
quip. | Location	8271	SACRAMENTO				
ecorded By	SCOTT PILCH					
Vitnessed By	B. TEPLOW / G. SUEMNICHT					

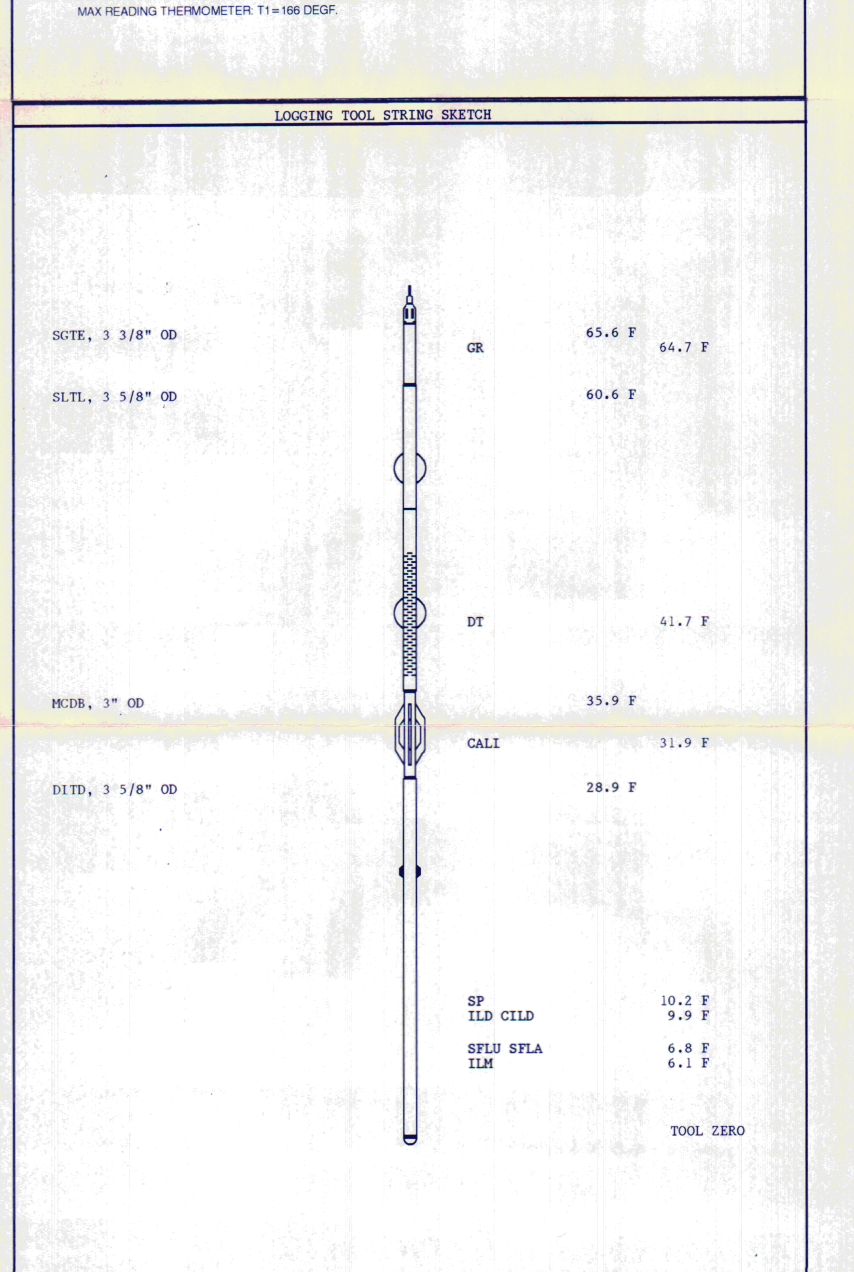
The well name, location and borehole reference data were furnished by the customer.

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 willful 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.	TWO			
Service Order No.	624429			
Drilling Fluid Level	10.0 F			
Salinity	600.0 PPM			
Rmf @ BHT	.955 OHMM	@ 166. DEGF		@
Rmc @ BHT	.748 OHMM	@ 166. DEGF		@
Logging Speed	3600.0 F/HR			
EQUIPMENT DATA				
Tool Number 1	DIS-EC 1422			
Tool Number 2	DIC-DA 1149			
Tool Number 3	MCD-DA 1237			
Tool Number 4	SLS-WA 1464			
Tool Number 5	SLC-MA 88			
Tool Number 6	SGC-JC 3545			
Tool Number 7	IEM-BD 1349			
Tool Number 8	SLM-DA 1329			
Tool Number 9	NLM-BC 456			
Tool Number 10				
Tool Number 11				
Tool Number 12				

REMARKS:
CUSTOMER DID NOT WANT TO LOG BELOW 5700' DUE TO HOLE CONDITIONS.
MAXIMUM READING THERMOMETERS LAST ON BOTTOM AT 13:29 5-MAR-1994.
MAX READING THERMOMETER: T1=166 DEGF.

LOGGING TOOL STRING SKETCH



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TOTAL TOOL STRING LENGTH IS 69.2 F.
TOTAL TOOL STRING WEIGHT IS 993. LB IN AIR.
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MAIN LOG

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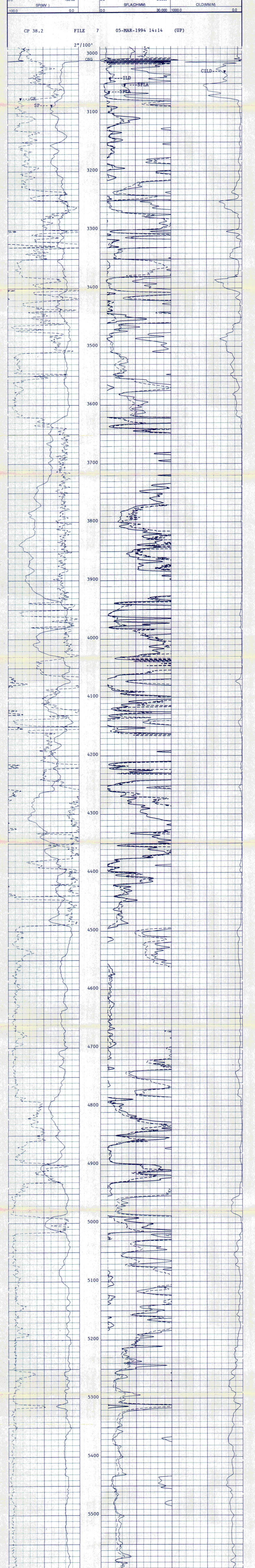
ACCUMULATED INTEGRATION VALUES SUMMARY:

Integrated Hole Volume:    982.820 F3    FROM 5700.00 F    TO 3010.00 F
Integrated Transit Time:   .197049 S     FROM 5700.00 F    TO 3010.00 F
```

ILD(OHMM) 0.0 30.000
GR(GAPI) 0.0 150.00
SFLA(OHMM) 0.0 6.0000
SP(MV) -100.0 0.0
SFLA(OHMM) 0.0 30.000
CILD(MM/M) 1000.0 0.0

CP 38.2 FILE 7 05-MAR-1994 14:14 (UP)

2"/100'



2"/100'

CP 38.2 FILE 7 05-MAR-1994 13:29 (UP)

ILD(OHMM) 0.0 30.000
GR(GAPI) 0.0 150.00
SFLA(OHMM) 0.0 6.0000
SP(MV) -100.0 0.0
SFLA(OHMM) 0.0 30.000
CILD(MM/M) 1000.0 0.0

```
                 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   62.7  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
VDLR - Defn not found                              2IN
TOCA - TO Correction Status                        DISA
RATE - Firing Rate                                 15           HZ
DG   - Downhole Gain                               /5
DETE - Detection                                   E2
NMSG - Near Minimum Sliding Gate                   180          US
CBLG - CBL Gate Width                              35           US
AMPL - Sonic Amplitude                             2
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-H
WMUD - Weight of Mud                               8.70000      LB/G
MSEC - Medium Sonde Error Correction               6.80000      MM/M
SBR  - Shoulder Bed Resistivity                    1.00000      OHMM
DSEC - Deep Sonde Error Correction                 3.30000      MM/M
FCD  - Future Casing Diameter                      0.0          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                                    6.25000      IN
BHS  - BoreHole Status (Open or Cased)             OPEN
```

```
ACCUMULATED INTEGRATION VALUES SUMMARY:

Integrated Hole Volume:    982.820 F3    FROM 5700.00 F    TO 3010.00 F
Integrated Transit Time:   .197049 S     FROM 5700.00 F    TO 3010.00 F
```

TENS(LBF) 10000. 0.0
ILM(OHMM) 20000 2000.0
GR(GAPI) 0.0 150.00
SFLU(OHMM) 20000 2000.0
SP(MV) -100.0 0.0
ILD(OHMM) 20000 2000.0

CP 38.2 FILE 7 05-MAR-1994 14:14 (UP)

5"/100'

5"/100'

CP 38.2 FILE 7 05-MAR-1994 13:29 (UP)

TENS(LBF) 10000. 0.0
ILM(OHMM) 20000 2000.0
GR(GAPI) 0.0 150.00
SFLU(OHMM) 20000 2000.0
SP(MV) -100.0 0.0
ILD(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   62.7  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
VDLR - Defn not found                              2IN
TOCA - TO Correction Status                        DISA
RATE - Firing Rate                                 15           HZ
DG   - Downhole Gain                               /5
DETE - Detection                                   E2
NMSG - Near Minimum Sliding Gate                   180          US
CBLG - CBL Gate Width                              35           US
AMPL - Sonic Amplitude                             2
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-H
WMUD - Weight of Mud                               8.70000      LB/G
MSEC - Medium Sonde Error Correction               6.80000      MM/M
SBR  - Shoulder Bed Resistivity                    1.00000      OHMM
DSEC - Deep Sonde Error Correction                 3.30000      MM/M
FCD  - Future Casing Diameter                      0.0          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                                    6.25000      IN
BHS  - BoreHole Status (Open or Cased)             OPEN
```

REPEAT SECTION

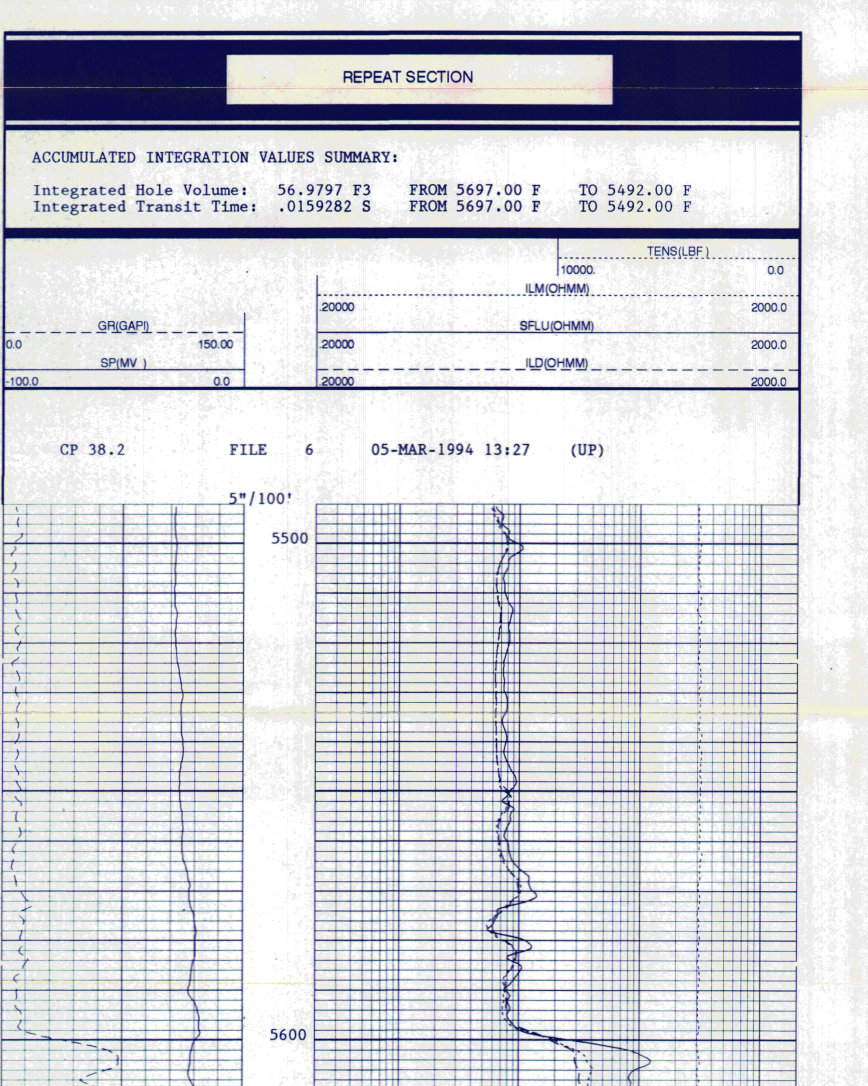
```
ACCUMULATED INTEGRATION VALUES SUMMARY:

Integrated Hole Volume:    56.9797 F3    FROM 5697.00 F    TO 5492.00 F
Integrated Transit Time:   .0159282 S    FROM 5697.00 F    TO 5492.00 F
```

TENS(LBF) 10000. 0.0
ILM(OHMM) 20000 2000.0
GR(GAPI) 0.0 150.00
SFLU(OHMM) 20000 2000.0
SP(MV) -100.0 0.0
ILD(OHMM) 20000 2000.0

CP 38.2 FILE 6 05-MAR-1994 13:27 (UP)

5"/100'



5"/100'

CP 38.2 FILE 6 05-MAR-1994 13:23 (UP)

TENS(LBF) 10000. 0.0
ILM(OHMM) 20000 2000.0
GR(GAPI) 0.0 150.00
SFLU(OHMM) 20000 2000.0
SP(MV) -100.0 0.0
ILD(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   62.7  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
VDLR - Defn not found                              2IN
TOCA - TO Correction Status                        DISA
RATE - Firing Rate                                 15           HZ
DG   - Downhole Gain                               /5
DETE - Detection                                   E2
NMSG - Near Minimum Sliding Gate                   180          US
CBLG - CBL Gate Width                              35           US
AMPL - Sonic Amplitude                             2
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-H
WMUD - Weight of Mud                               8.70000      LB/G
MSEC - Medium Sonde Error Correction               6.80000      MM/M
SBR  - Shoulder Bed Resistivity                    1.00000      OHMM
DSEC - Deep Sonde Error Correction                 3.30000      MM/M
FCD  - Future Casing Diameter                      0.0          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                                    6.25000      IN
BHS  - BoreHole Status (Open or Cased)             OPEN
```

CALIBRATION SUMMARY

```
                AFTER SURVEY TOOL CHECK SUMMARY

   PERFORMED:    05-MAR-1994 14:19
   PROGRAM FILE: ISN     (VERSION    38.2    92/10/12  92/10/12)

 DITD                        TOOL  CHECK

                      ZERO                         PLUS
              BEFORE         AFTER          BEFORE      AFTER     UNITS
     ILD        0.0           -.5            495.5      489.1     MM/M
     ILM        0.0            .1            499.7      490.0     MM/M
     SFL        0.0           -.3            500.0      504.1     MM/M

 ILD SONDE ERROR CORRECTION :          3.3 MM/M
 ILM SONDE ERROR CORRECTION :          6.8 MM/M

 BEFORE SURVEY:              ZERO: 05-MAR-1994 13:18  PLUS: 05-MAR-1994 13:18
 AFTER SURVEY CHECK:         ZERO: 05-MAR-1994 14:16  PLUS: 05-MAR-1994 14:16

    CP 38.2            FILE    9        05-MAR-1994 14:19


                BEFORE SURVEY CALIBRATION SUMMARY

   PERFORMED:    05-MAR-1994 13:19
   PROGRAM FILE: ISN     (VERSION    38.2    92/10/12  92/10/12)

 DITD               ELECTRONICS CALIBRATION SUMMARY

                 MEASURED                       CALIBRATED
              ZERO     PLUS                   ZERO      PLUS           UNITS
     ILD       .45     514.6                  0.0       495.5          MM/M
     ILM      -.07     530.4                  0.0       499.7          MM/M
     SFL      -.30     516.4                  0.0       500.0          MM/M

 ILD SONDE ERROR CORRECTION :          3.3 MM/M
 ILM SONDE ERROR CORRECTION :          6.8 MM/M

 ZERO: 05-MAR-1994 13:18  PLUS: 05-MAR-1994 13:18   COMP: 05-MAR-1994 13:18

 SGTE               DETECTOR CALIBRATION SUMMARY

                 MEASURED
              BKGD     JIG           CALIBRATED           UNITS
      GR       26      175              165                GAPI

 BACK: 05-MAR-1994 12:51   JIG: 05-MAR-1994 12:54   COMP: 05-MAR-1994 12:54

 MCDB               CALIPER CALIBRATION SUMMARY

                 MEASURED                       CALIBRATED
              SMALL    LARGE                  SMALL     LARGE          UNITS
    CALI       7.36    10.76                  8.00      12.00           IN

 SMALL: 05-MAR-1994 12:46 LARGE: 05-MAR-1994 12:47 COMP: 05-MAR-1994 12:47

    CP 38.2            FILE    5        05-MAR-1994 13:19


                SHOP SUMMARY

   PERFORMED:    04-JAN-1994 17:11
   PROGRAM FILE: SHOP    (VERSION    38.2    92/10/12  92/10/12)

 DITD               ELECTRONICS CALIBRATION SUMMARY

                 TEST LOOP CALIBRATION              TOOL CHECK
              MEASURED          CALIBRATED          CALIBRATED
            ZERO     PLUS     ZERO      PLUS      ZERO      PLUS     UNITS
     ILD    -2.1     515.7    0.0       500.0     0.0       495.5    MM/M
     ILM    -7.4     524.8    0.0       500.0     0.0       499.7    MM/M
 ILD  SONDE ERROR CORRECTION :         3.3 MM/M
 ILM  SONDE ERROR CORRECTION :         6.8 MM/M

                    (IS:1422, IC:1149)

    CP 38.2            FILE    6        04-JAN-1994 17:11
```

COMPANY	Trans-Pacific Geothermal			SCHL.	FR	5694.0 F
				SCHL.	TD	5700.0 F
WELL	ESI A-S ALT			DRLR.	TD	5758.0 F
FIELD	Vale			Elev:	KB	2487.0 F
					DF	
COUNTY	Malheur	STATE	Oregon		GL	2465.0 F

Schlumberger

DUAL INDUCTION - SFL