5 inch

Schlumberger

LITHO DENSITY COMPENSATED NEUTRON

COUNTY	COOS
FIELD	WILDCAT
LOCATION	2130' FSL & 2399' FWL OF:
WELL	'WNS MENASHA' #32-1
COMPANY	CARBON ENERGY INT.

COMPANY CARBON ENERGY INT.

WELL "WNS MENASHA" #32-1

FIELD WILDCAT

COUNTY COOS **STATE** OREGON

LOCATION 2130' FSL & 2399' FWL OF:

Other Services:
DIL/GR
LDT/CNL/GR
SHDT

API SERIAL NO.	SECT.	TWP.	RANGE
36-011-00026	32	26S	13W

Permanent Datum	GL	**Elev.**	165.0 F		**Elev.: K.B.183.0 F**
Log Measured From	KB	18.0 F	**above Perm. Datum**		**D.F.182.0 F**
Drilling Measured From	KB				**G.L.165.0 F**

Date		09-NOV-1993				
Run No.		ONE				
Depth Driller		1158.0 F				
Depth Logger (Schl.)		1157.0 F				
Btm. Log Interval		1154.0 F				
Top Log Interval		154.0 F				
Casing-Driller		9 5/8	@ 154.0 F	@		@
Casing-Logger		154.0 F				
Bit Size		8 3/4	@ 1158.0 F	@		@
Type Fluid in Hole		FRESH				
Dens.	**Visc.**	8.90 LB/G	33.0 S			
pH	**Fld. Loss**		10.4 C3			
Source of Sample		FLOWLINE				
Rm @ Meas. Temp.		5.510 OHMM	@ 55.0 DEGF		@	
Rmf @ Meas. Temp.		6.850 OHMM	@ 53.0 DEGF		@	
Rmc @ Meas. Temp.		4.470 OHMM	@ 53.0 DEGF		@	
Source: Rmf	**Rmc**	MEASURED	MEASURED			
Rm @ BHT		3.634 OHMM	@ 87.0 DEGF		@	
TIME **Circulation Ended**		17:00 9-NOV-93				
TIME **Logger on Bottom**		23:00 9-NOV-93				
Max. Rec. Temp.		87.0 DEGF				
Equip.	**Location**	8504	SACRAMENTO			
Recorded By		M.DEMSKIE				
Witnessed By		S.PAPPAJOHN				

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

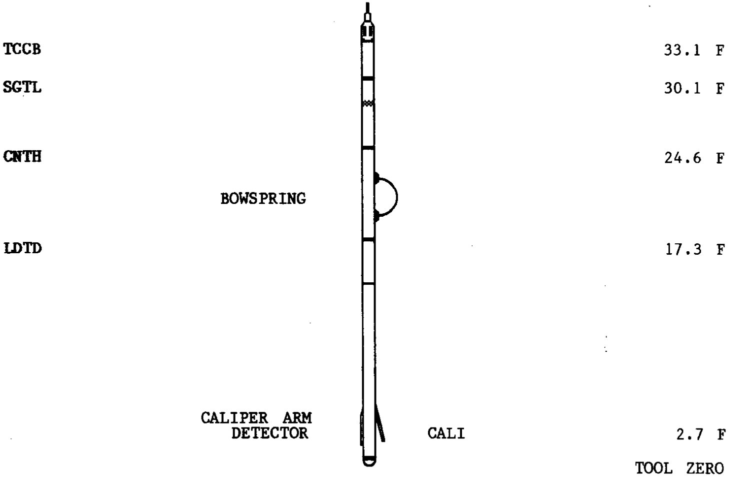
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, 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.	ONE	
Service Order No.	624386	
Drilling Fluid Level	5.0 F	
Salinity		
Rmf @ BHT	4.372 OHMM @ 87.0 DEGF	@
Rmc @ BHT	2.853 OHMM @ 87.0 DEGF	@
Logging Speed	3600.0 F/HR	
EQUIPMENT DATA		
Tool Number 1	DRS-C 3756	
Tool Number 2	NSC-E 2939	
Tool Number 3	CNC-HA 2524	
Tool Number 4	SGC-SA 544	
Tool Number 5	TCM-AB 1516	
Tool Number 6		
Tool Number 7		
Tool Number 8		
Tool Number 9		
Tool Number 10		
Tool Number 11		
Tool Number 12		

REMARKS:

CORRELATED TO SWS INDUCTION LOG
SOME HEADER INFORMATION NOT AVAILABLE AT WELLSITE

LOGGING TOOL STRING SKETCH



TOTAL TOOL STRING LENGTH IS 36.6 F.
TOTAL TOOL STRING WEIGHT IS 658. LB IN AIR.

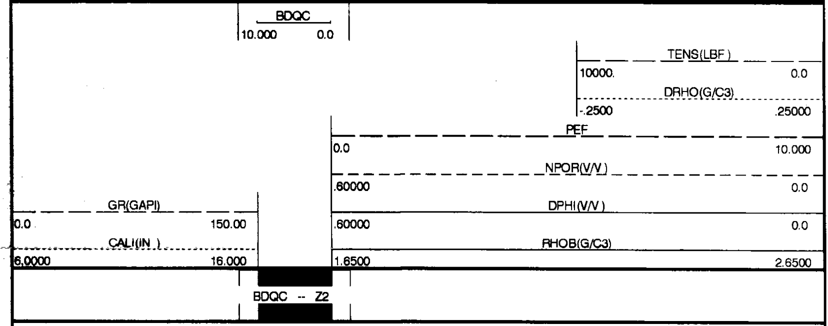
Main Log - 5"/100

ACCUMULATED INTEGRATION VALUES SUMMARY:

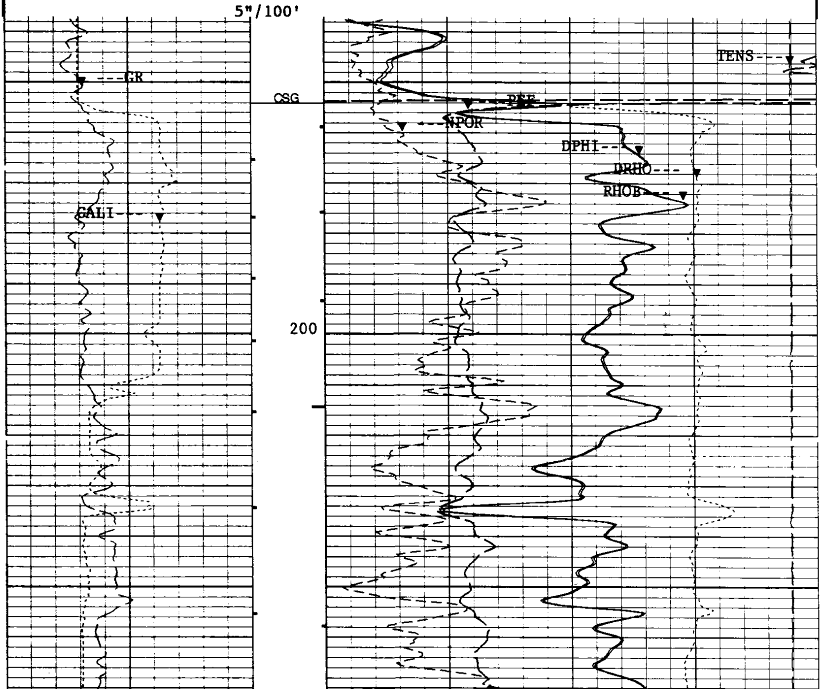
Integrated Hole Volume: 498.788 F3 FROM 1157.00 F TO 154.000 F
Integrated Cement Volume: 232.046 F3 FROM 1157.00 F TO 154.000 F
(ASSUMING 7.00000 IN O.D. CASING)

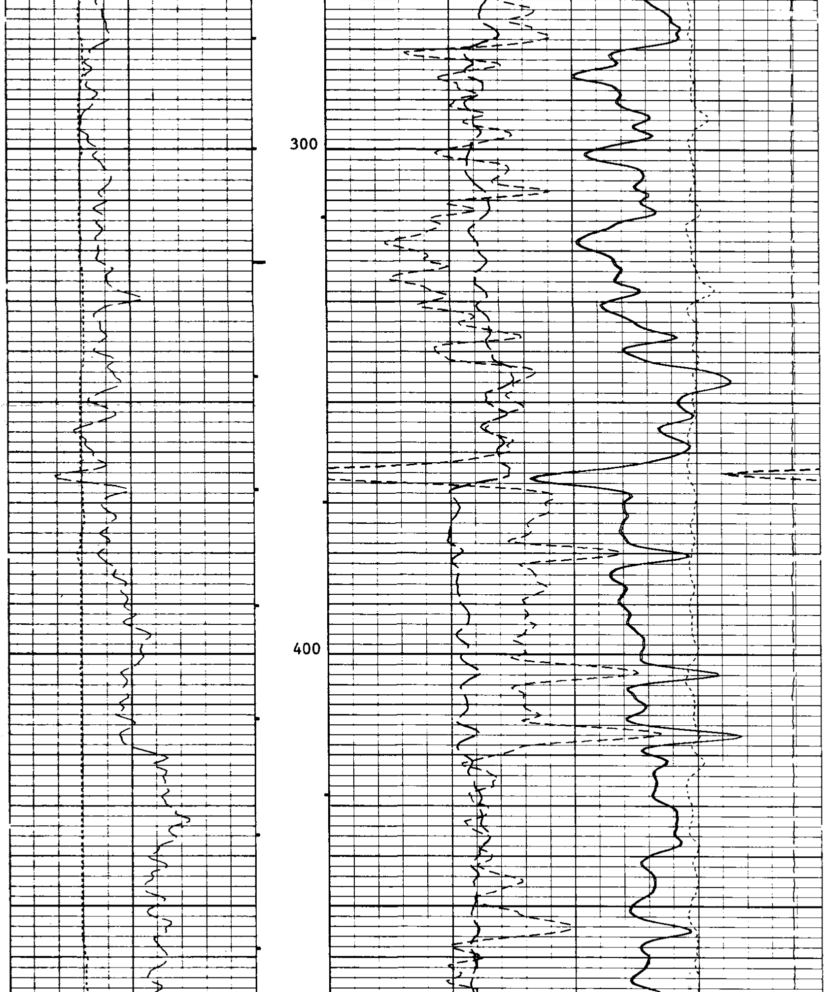
EVENT MARK SUMMARY:

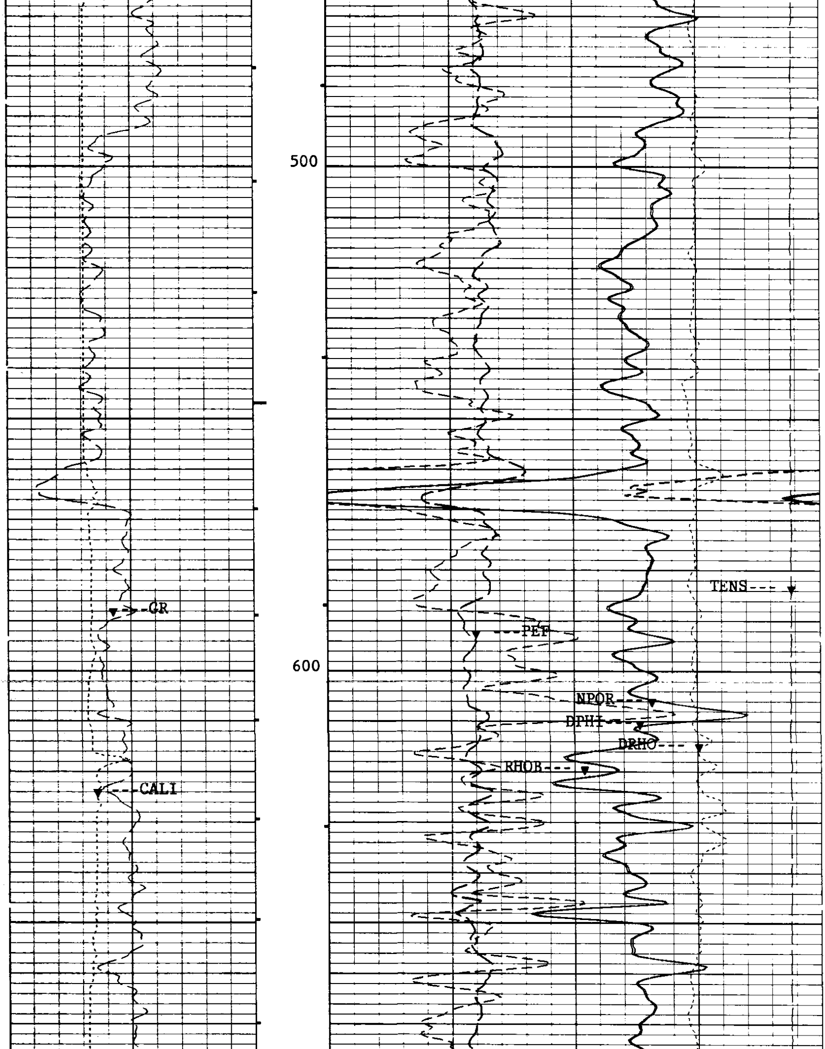
OUTPUT	INTERVAL BETWEEN PIPS	DEPTH TRACK EDGE
Integrated Hole Volume	10.0000 F3	LEFT EDGE
Integrated Cement Volume	10.0000 F3	RIGHT EDGE

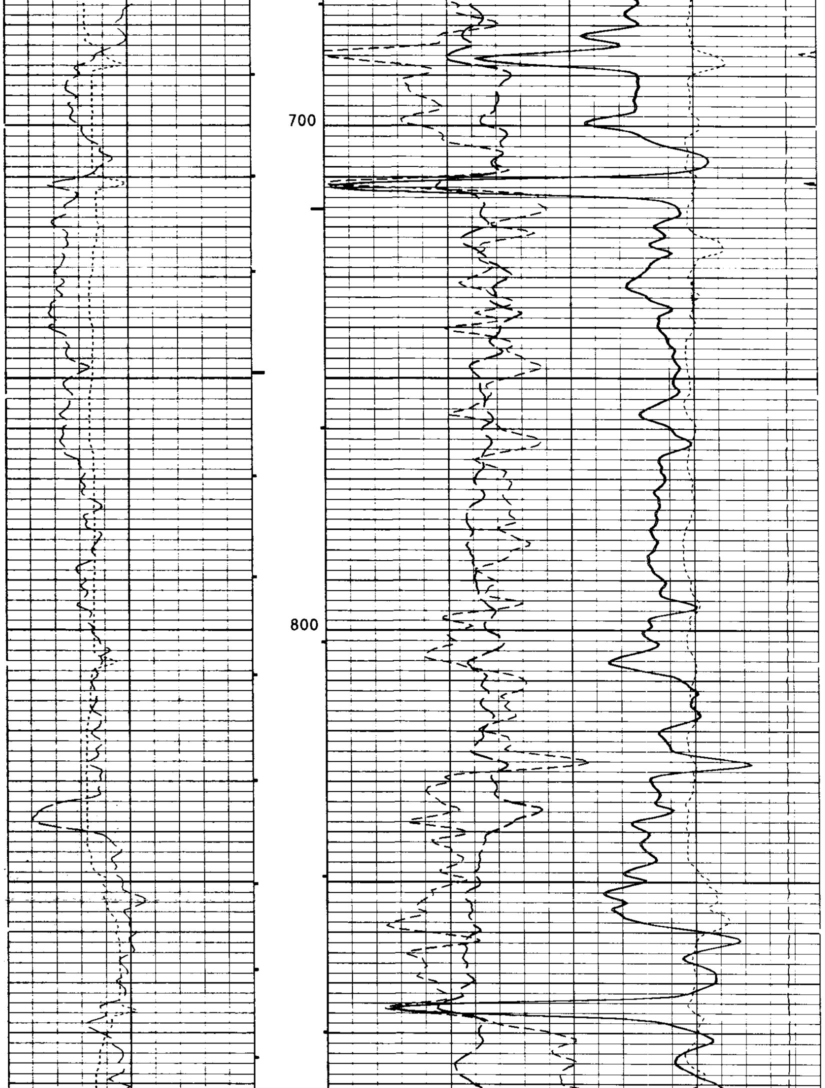


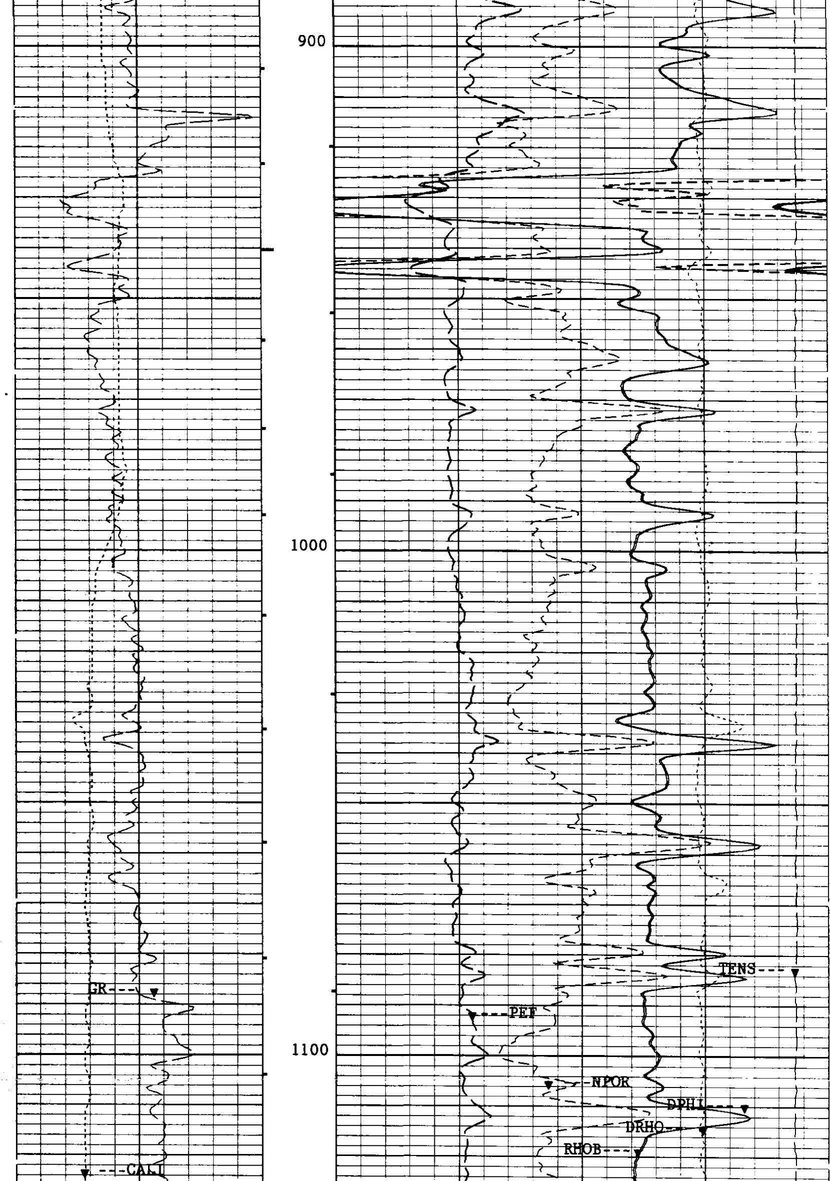
CP 38.2 FILE 5 10-NOV-1993 00:25 (UP)

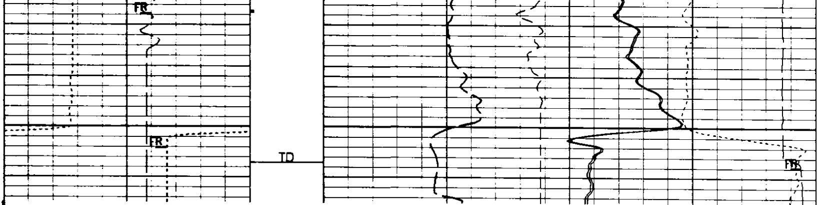






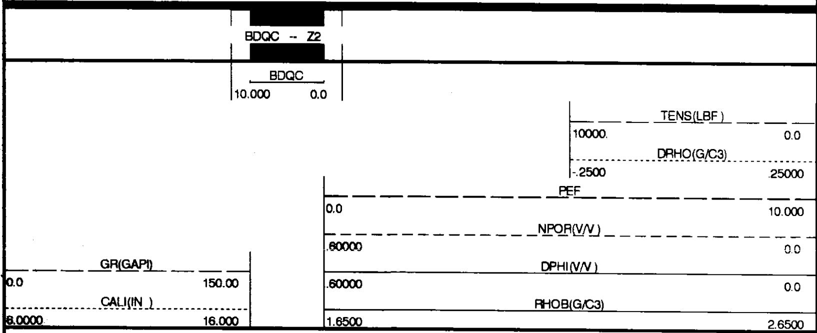






5"/100'

CP 38.2 FILE 5 10-NOV-1993 00:05 (UP)



SENSOR MEASURE POINT TO TOOL ZERO

CFTC	20.2	FEET	GR	29.2	FEET
LITH	2.6	FEET	CNTC	19.7	FEET
LS	2.6	FEET	LL	2.6	FEET
PARI	2.1	FEET	LU	2.6	FEET
SS2	2.1	FEET	SS1	2.1	FEET
TENS	-.9	FEET	CALI	2.7	FEET
TNRA	20.7	FEET			

PARAMETERS

PARAMETER	VALUE	UNIT
WMUD - Weight of Mud	8.90000	LB/G
TD - Total Depth	1157.00	F
FCD - Future Casing Diameter	7.00000	IN
DHC - Density Hole Correction	BS	
BFM - Borehole Fill Medium	LIOU	

```
MDEN - Matrix Density                               2.65000       G/C3
FD   - Fluid Density                                1.00000       G/C3
DPPM - Density/Porosity Processing Mode             HISP
MATR - Matrix                                       SAND
HC   - Hole Correction Origin                       CALI
NPDC - Neutron Alpha Process Depth Constant         2
HSCO - Hole Size Correction Option                  YES
SOCO - Stand Off Correction Option                  NO
MCCO - Mud Cake Correction Option                   NO
BSCO - Borehole Salinity Correction Option          NO
FSCO - Formation Salinity Correction Option         NO
MWCO - Mud Weight Correction Option                 NO
PTCO - Pressure Temperature Correction Option       NO
CCCO - Casing & Cement Correction Option for ThickNO
SDAT - Standoff Data Source                         SOCN
MCOR - Mud Correction                               NATU
SOCN - Stand Off for Compensated Neutron            .500000       IN
FSAL - Formation Salinity                           -50000.0      PPM
ANGL - Angle of Well                                0.0           DEG
GGRD - Geothermal Gradient                          .0100000      DF/F
BHFL - BoreHole Fluid Type                          WATE
CDSE - Corrected Density Selector                   RHOB
CNPS - Compensated Neutron Porosity Selector        NPHI
NCJT - NGT Calibration Jig Type                     GSRY
GTSE - Generalized Temperature Selection            TEMP
SHT  - Surface Hole Temperature                     80.0000       DEGF
BHT  - Bottom Hole Temperature                      82.0000       DEGF
TDL  - Total Depth - Logger                         1157.00       F
MRT  - Maximum Recorded Temperature                 82.0000       DEGF
DFD  - Drilling Fluid Density                       8.90000       LB/G
RMFS - Resistivity of Mud Filtrate Sample           6.85000       OHMM
RMS  - Resistivity of Mud Sample                    5.51000       OHMM
MST  - Mud Sample Temperature                       55.0000       DEGF
MFST - Mud Filtrate Sample Temperature              53.0000       DEGF
BS   - Bit Size                                     8.75000       IN
BHS  - BoreHole Status (Open or Cased)              OPEN
```

Repeat Section - 5"/100'

```
ACCUMULATED INTEGRATION VALUES SUMMARY:

Integrated Hole Volume:    116.683 F3    FROM 1157.00 F    TO 907.500 F
Integrated Cement Volume: 52.4576 F3    FROM 1157.00 F    TO 907.500 F
  (ASSUMING 7.00000 IN   O.D. CASING)
```

```
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
```

BDQC
10.000 0.0

TENS(LBF)
10000. 0.0
DRHO(G/C3)
-.2500 .25000

PEF
0.0 10.000
NPOR(V/V)
.60000 0.0

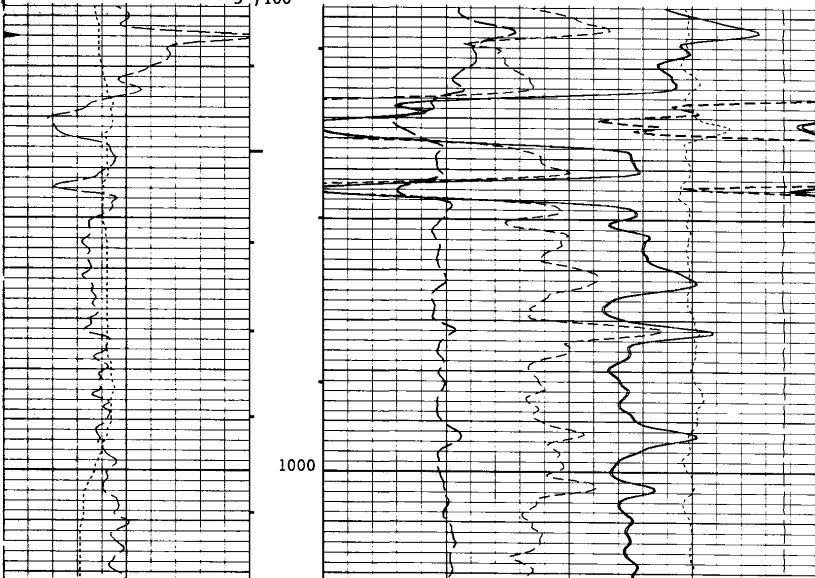
GR(GAPI)
0.0 150.00
CALI(IN)
6.0000 16.000

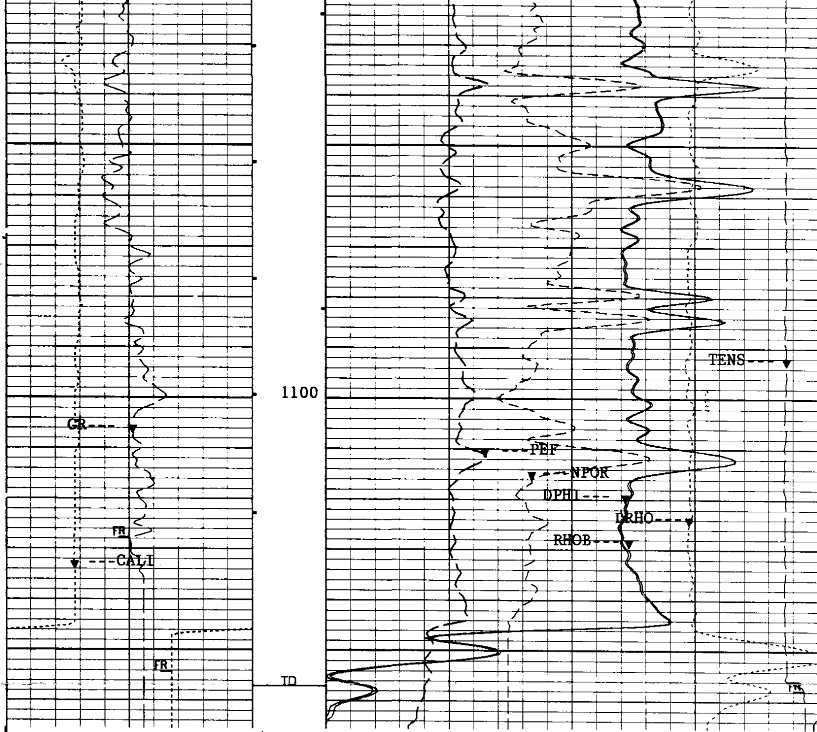
DPHI(V/V)
.60000 0.0
RHOB(G/C3)
1.6500 2.6500

BDQC - Z2

CP 38.2 FILE 4 10-NOV-1993 00:01 (UP)

5"/100'





5"/100'

CP 38.2 FILE 4 09-NOV-1993 23:56 (UP)

BDQC - Z2

BDQC
10.000 0.0

TENS(LBF)
10000. 0.0
DRHO(G/C3)
-.2500 .25000

PEF
0.0 10.000
NPOR(V/V)
.60000 0.0
DPHI(V/V)
.60000 0.0
RHOB(G/C3)
1.6500 2.6500

GR(GAPI)
0.0 150.00
CALI(IN)
6.0000 16.000

SENSOR MEASURE POINT TO TOOL ZERO

```
CFTC 20.2  FEET                       GR   29.2  FEET
LITH  2.6  FEET                       CNTC 19.7  FEET
LS    2.6  FEET                       LL    2.6  FEET
PARI  2.1  FEET                       LU    2.6  FEET
SS2   2.1  FEET                       SS1   2.1  FEET
TENS  -.9  FEET                       CALI  2.7  FEET
TNRA 20.7  FEET
```

PARAMETERS

```
NAME  VALUE        UNIT                NAME  VALUE        UNIT

WMUD 8.90000       LB/G                TD    1157.00      F
FCD  7.00000       IN                  DHC   BS
BFM  LIQU                              MDEN  2.65000      G/C3
FD   1.00000       G/C3                DPPM  HISP
MATR SAND                              HC    CALI
NPDC 2                                 HSCO  YES
SOCO NO                                MCCO  NO
BSCO NO                                FSCO  NO
MWCO NO                                PTCO  NO
CCCO NO                                SDAT  SOCN
MCOR NATU                              SOCN  .500000      IN
FSAL -50000.0      PPM                 ANGL  0.0          DEG
GGRD .0100000      DF/F                BHFL  WATE
CDSE RHOB                              CNPS  NPHI
NCJT GSRY                              GTSE  TEMP
SHT  80.0000       DEGF                BHT   82.0000      DEGF
TDL  1157.00       F                   MRT   82.0000      DEGF
DFD  8.90000       LB/G                RMFS  6.85000      OHMM
RMS  5.51000       OHMM                MST   55.0000      DEGF
MFST 53.0000       DEGF                BS    8.75000      IN
BHS  OPEN
```

Calibration Summary

```
            AFTER SURVEY TOOL CHECK SUMMARY


  PERFORMED:     10-NOV-1993 00:58
  PROGRAM FILE:  TOH     (VERSION     38.2     92/10/12  92/10/12)


LDTD                        TOOL   CHECK

       DENSITY RESISTIVITY SONDE NUMBER          :     3756
       NUCLEAR SERVICE CARTRIDGE NUMBER          :     2939
       POWERED DETECTOR HOUSING NUMBER           :     2942
       POWERED GAMMA-GAMMA DETECTOR NUMBER       :     2710
       LDT LOGGING SOURCE NUMBER                 :     1862
       LDT CALIBRATION MODE                      :     WATE
```

```
             MEASURED BACKGROUND                    TOLERANCE ON
             BEFORE          AFTER       UNITS      BEFORE-AFTER
      LL      16.0            16.0        CPS         +/- 1.0
      LU      59.4            59.9        CPS         +/- 1.0
      LS      45.7            46.0        CPS         +/- 1.0
    LITH       4.5             4.6        CPS         +/- 0.3
     SS1      11.7            11.7        CPS         +/- 0.5
     SS2       7.9             7.9        CPS         +/- 0.5

            HV SETTINGS             DETECTOR RESOLUTIONS
          HV LS:  1238.5 V              LS:  8.8 %
          HV SS:  1253.1 V              SS:  8.9 %

BKGD                                BKGD
  BEFORE SURVEY: 09-NOV-1993 23:12   AFTER SURVEY: 10-NOV-1993 00:43


CNTH                       TOOL  CHECK


          INPUT    BEFORE JIG   AFTER JIG


          CNTC       2599.28     2606.65

          CFTC       1118.25     1100.21


CHANGE IN THERMAL POROSITY AT 20 PU IS    .655  PU


BEFORE SURVEY:              BACK: 09-NOV-1993 23:12   JIG: 09-NOV-1993 23:24
AFTER SURVEY CHECK:         BACK: 10-NOV-1993 00:43   JIG: 10-NOV-1993 00:57

   CP 38.2             FILE    7      10-NOV-1993 00:57


               BEFORE SURVEY CALIBRATION SUMMARY


  PERFORMED:    09-NOV-1993 23:32
  PROGRAM FILE: TOH    (VERSION    38.2    92/10/12  92/10/12)


SGTL            DETECTOR CALIBRATION SUMMARY

             MEASURED
           BKGD    JIG         CALIBRATED         UNITS
    GR      26     195            165             GAPI

BACK: 09-NOV-1993 23:12   JIG: 09-NOV-1993 23:24  COMP: 09-NOV-1993 23:24


LDTD            DETECTOR CALIBRATION SUMMARY

        DENSITY RESISTIVITY SONDE NUMBER      :     3756
        NUCLEAR SERVICE CARTRIDGE NUMBER      :     2939
        POWERED DETECTOR HOUSING NUMBER       :     2942
        POWERED GAMMA-GAMMA DETECTOR NUMBER   :     2710
        LDT LOGGING SOURCE NUMBER             :     1862
        LDT CALIBRATION MODE                  :     WATE
```

```
                MEASURED       SHOP  VALUES
                  BKGD        AL+FE    AL      UNITS
         LL       16.0         95.1  103.2       CPS
         LU       59.4        144.9  156.0       CPS
         LS       45.7        167.5  181.2       CPS
       LITH        4.5         42.0   63.4       CPS
        SS1       11.7        201.3  218.5       CPS
        SS2        7.9        293.1  313.0       CPS

          HV SETTINGS           DETECTOR RESOLUTIONS
        HV LS:  1247.7 V             LS:  8.8 %
        HV SS:  1269.1 V             SS:  8.9 %

BKGD: 09-NOV-1993 23:12


CNTH              DETECTOR CALIBRATION SUMMARY

      NEUTRON COMPENSATED CARTRIDGE NUMBER: 2524
      NEUTRON SOURCE SERIAL NUMBER        : 1441
      THERMAL HOUSING NUMBER              : 3290
      THERMAL CALIBRATED NEUTRON BOX      : 1446

          INPUT      PLUS       SHOP       SHOP      BEFORE     GAIN
                  REFERENCE     TANK       JIG        JIG
                    COUNTS     COUNTS     COUNTS     COUNTS

          CNTC    6031.00    6119.77    2611.69    2599.28     .985
          CFTC    2793.00    2534.45    1125.95    1118.25    1.102

          RATIO     2.159      2.415      2.320      2.324


BACK: 09-NOV-1993 23:12   JIG: 09-NOV-1993 23:24  COMP: 09-NOV-1993 23:07

LDTD              CALIPER CALIBRATION SUMMARY

            MEASURED                        CALIBRATED
          SMALL   LARGE                   SMALL     LARGE       UNITS
  CALI    6.88   10.88                    8.00     12.00         IN

SMALL: 09-NOV-1993 23:29 LARGE: 09-NOV-1993 23:31 COMP: 09-NOV-1993 23:31

   CP 38.2            FILE    3       09-NOV-1993 23:31



                  SHOP SUMMARY


  PERFORMED:      14-OCT-1993 10:54
  PROGRAM FILE: CCSHOP (VERSION    38.2    92/10/12  92/10/12)


CNTH              DETECTOR CALIBRATION SUMMARY

      NEUTRON COMPENSATED CARTRIDGE NUMBER: 2524
      NEUTRON SOURCE SERIAL NUMBER        : 1441
      THERMAL HOUSING NUMBER              : 3290
      THERMAL CALIBRATED NEUTRON BOX      : 1446


          INPUT      PLUS       SHOP       SHOP      GAIN
                  REFERENCE     TANK       JIG
                    COUNTS     COUNTS     COUNTS

          CNTC    6031.00    6119.77    2611.69     .985
          CFTC    2793.00    2534.45    1125.95    1.102

          RATIO     2.159      2.415      2.320
```

```
          SHOP COUNTS TEMPERATURE AND HOUSING SIZE CORRECTED

 BKGD: 14-OCT-1993 10:28 TANK: 14-OCT-1993 10:36  COMP: 14-OCT-1993 10:36

    CP 38.2            FILE    5      14-OCT-1993 10:54



                SHOP SUMMARY


   PERFORMED:     28-OCT-1993 17:27
   PROGRAM FILE: CCSHOP (VERSION    38.2    92/10/12  92/10/12)


 LDTD           DETECTOR CALIBRATION SUMMARY

       DENSITY RESISTIVITY SONDE NUMBER     :  3756
       NUCLEAR SERVICE CARTRIDGE NUMBER     :  2939
       POWERED DETECTOR HOUSING NUMBER      :  2942
       POWERED GAMMA-GAMMA DETECTOR NUMBER :  2710
       LDT LOGGING SOURCE NUMBER            :  1862
       LDT CALIBRATION MODE                 :  WATE

                     MASTER CALIBRATED
                    BKGD   AL+FE     AL  UNITS
             LL     16.0    95.1  103.2   CPS
             LU     59.8   144.9  156.0   CPS
             LS     46.0   167.5  181.2   CPS
           LITH      4.5    42.0   63.4   CPS
            SS1     11.8   201.3  218.5   CPS
            SS2      7.9   293.1  313.0   CPS

        HV SETTINGS          DETECTOR RESOLUTIONS
       HV LS:  1237.9 V          LS:  8.9 %
       HV SS:  1249.8 V          SS:  8.9 %

                    SPECTRUM QUALITY RATIOS
         COMPUTED VALUE        NOMINAL VALUE   TOLERANCE
    QRLS          .661              0.65        +/- 0.05
    QRSS          .698              0.72        +/- 0.10
    QRLI          .350              0.39        +/- 0.06
    QLIR         1.396              1.39        +/- 0.06
    QR            .996              1.00        +/- 0.02

 BKGD: 28-OCT-1993 17:09   AL: 28-OCT-1993 17:26  AL+FE: 28-OCT-1993 17:17

    CP 38.2            FILE    2      28-OCT-1993 17:27
```

COMPANY	CARBON ENERGY INT.			SCHL.	FR	1154.0 F
				SCHL.	TD	1157.0 F
WELL	'WNS MENASHA' #32-1			DRLR.	TD	1158.0 F
FIELD	WILDCAT			Elev:	KB	183.0 F
					DF	182.0 F
COUNTY	COOS	**STATE**	OREGON		GL	165.0 F

Schlumberger

LITHO DENSITY
COMPENSATED NEUTRON