Schlumberger

5" DENSITY NEUTRON GR

CSU

COMPANY: ARCO OIL AND GAS

WELL: COLUMBIA COUNTY 14-23

FIELD: MIST
COUNTY: COLUMBIA
STATE: OREGON
NATION: USA
LOCATION: **102.97'S** & 1099.69' E
FR **NW**COR
SEC: **26** TWP: 6N RGE: 5W

OTHER SERVICES-
DIL SLT
VSP
HDT

PERMANENT DATUM: GL
ELEV. OF PERM. DATUM: 652.7 F
LOG MEASURED FROM: KB
11.0 F ABOVE PERM. DATUM
DRLG. MEASURED FROM: KB

ELEVATIONS-
KB: 663.7 F
DF:
GL: 652.7 F

PROGRAM
TAPE NO:
28.2A
SERVICE
ORDER NO:
524217

DATE: 11 AUG 86
RUN NO: 1

DEPTH-DRILLER: 2180.0 F
DEPTH-LOGGER: 2180.0 F
BTM. LOG INTERVAL: 2179.0 F
TOP LOG INTERVAL: 432.0 F

CASING-DRILLER: 433.0 F
CASING-LOGGER: 432.0 F
CASING: 9 5/8
WEIGHT:
BIT SIZE: 8 1/2
DEPTH:

TYPE FLUID IN HOLE: LIGNOSULFONATE
DENSITY: 10.50 LB/G
VISCOSITY: 38.0 S
PH: 9.0
FLUID LOSS: 5.8 C3
SOURCE OF SAMPLE: FLOWLINE
RM: 2.290 OHMM AT 75.0 DEGF
RMF: 3.050 OHMM AT 76.0 DEGF
RMC: 2.920 OHMM AT 76.0 DEGF
SOURCE RMF/RMC: MEAS/MEAS
RM AT BHT: 1.591 OHMM AT 111. DEGF
RMF AT BHT: 2.145 OHMM AT 111. DEGF
RMC AT BHT: 2.054 OHMM AT 111. DEGF

TIME CIRC. STOPPED: 09:00 8/11
TIME LOGGER ON BTM.: 13:55

MAX. REC. TEMP: 111.0 DEGF

LOGGING UNIT NO: 8128
LOGGING UNIT LOC: SACRAMENTO
RECORDED BY: HARPER/KUNKLER
WITNESSED BY: SHARP

REMARKS:

CHLORIDES: 1500 MG/L

EQUIPMENT NUMBERS-

DRE 3756	NSC 1955	PDH 2348	PGD 2710
LSN 6929	CNC HA 241	SGC SA 681	CCC B 1801

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 INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

EVENT MARK SUMMARY:

OUTPUT	INTERVAL BETWEEN PIPS	DEPTH TRACK EDGE
IHV	10.0000 F3	LEFT EDGE

TENS LB
10000. 0.0

[illegible]
.150 .25000

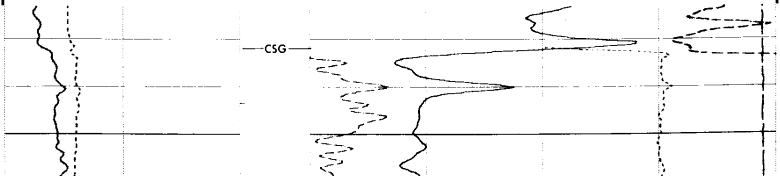
CALI IN
6.0000 16.000

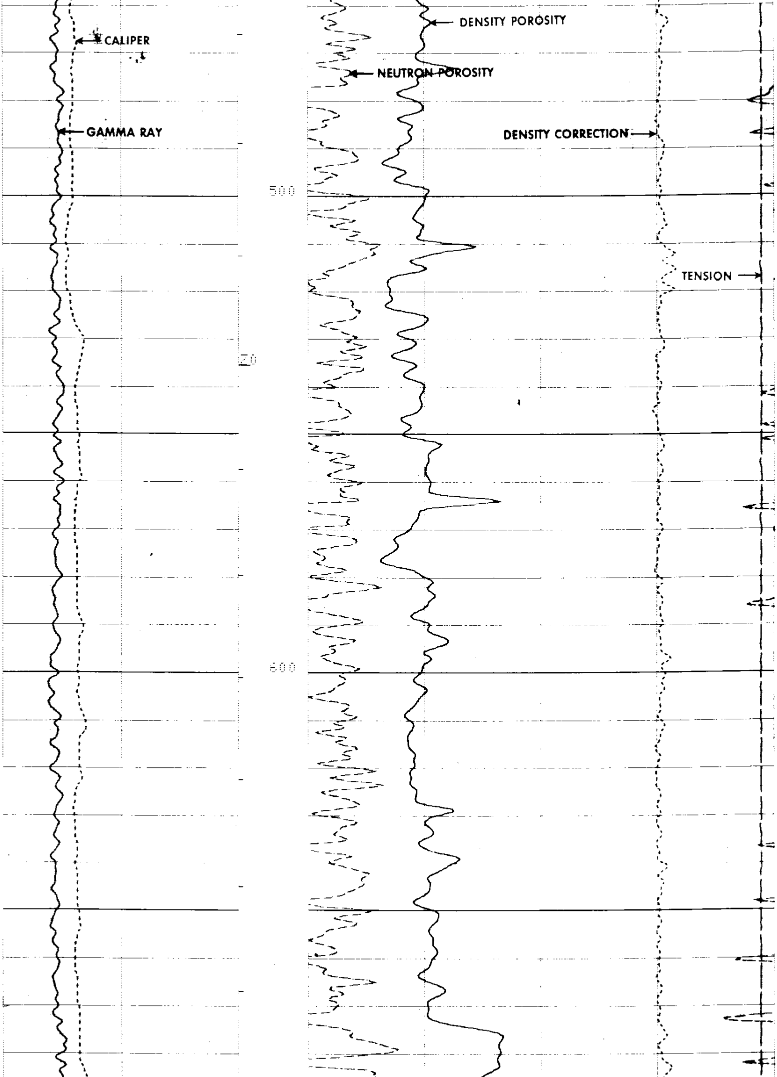
IMPH
.20000 [illegible]

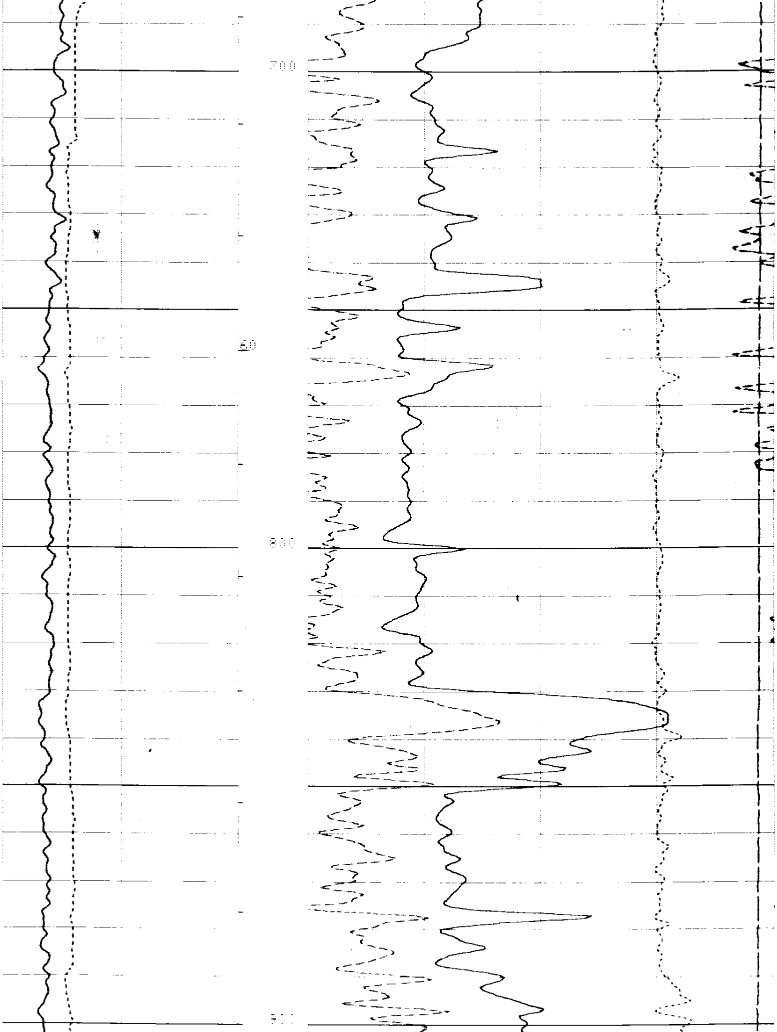
GR (GAPI)
0.0 200.00

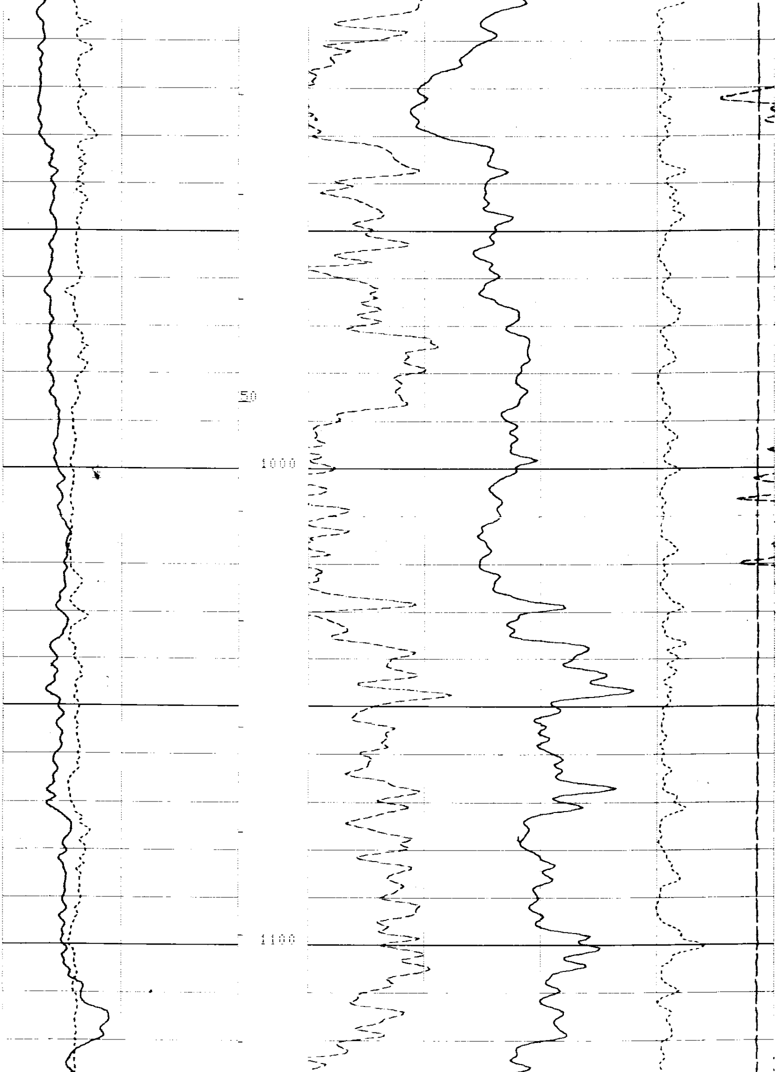
IDPH
.20000 0.0

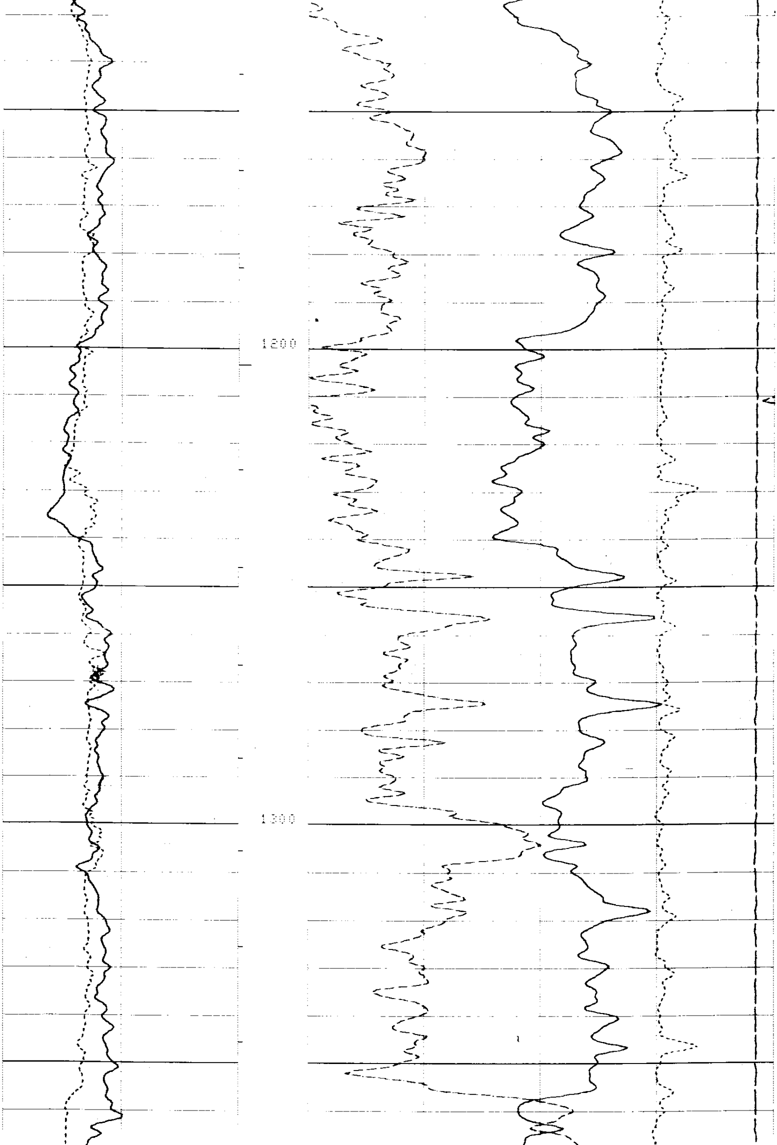
CP 28.2A FILE 4 11-AUG-86 14:43

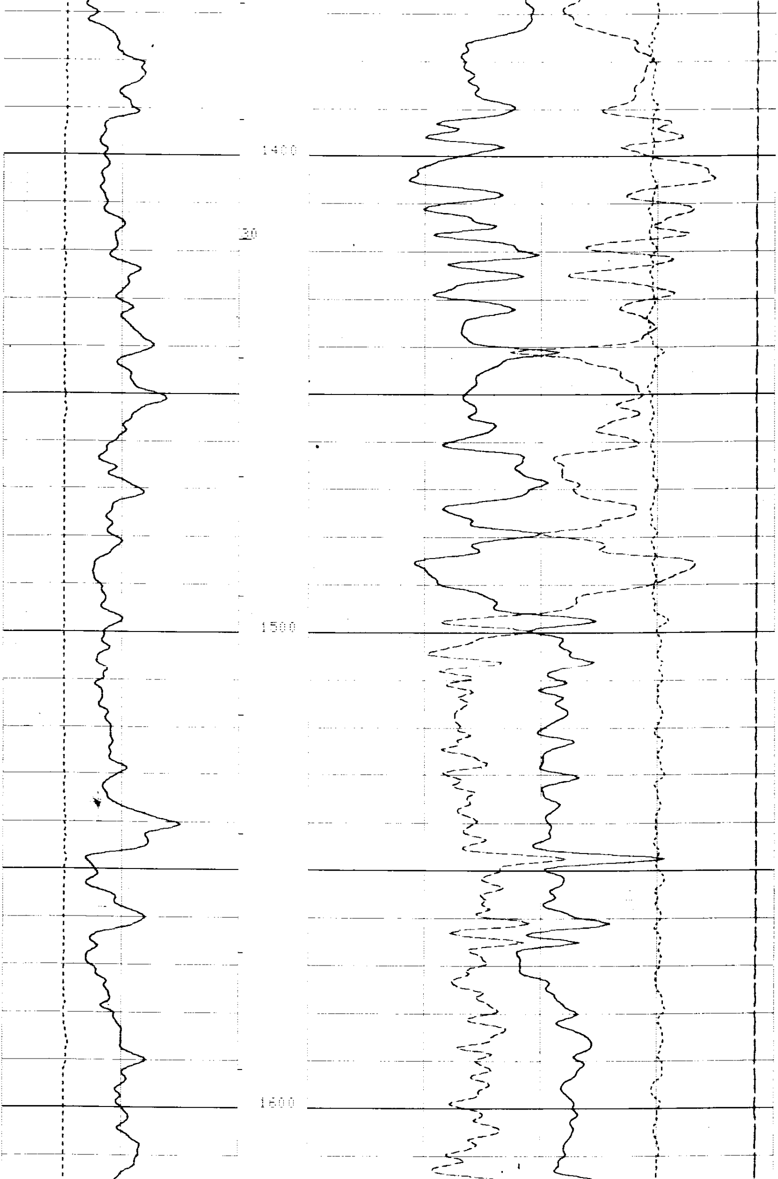


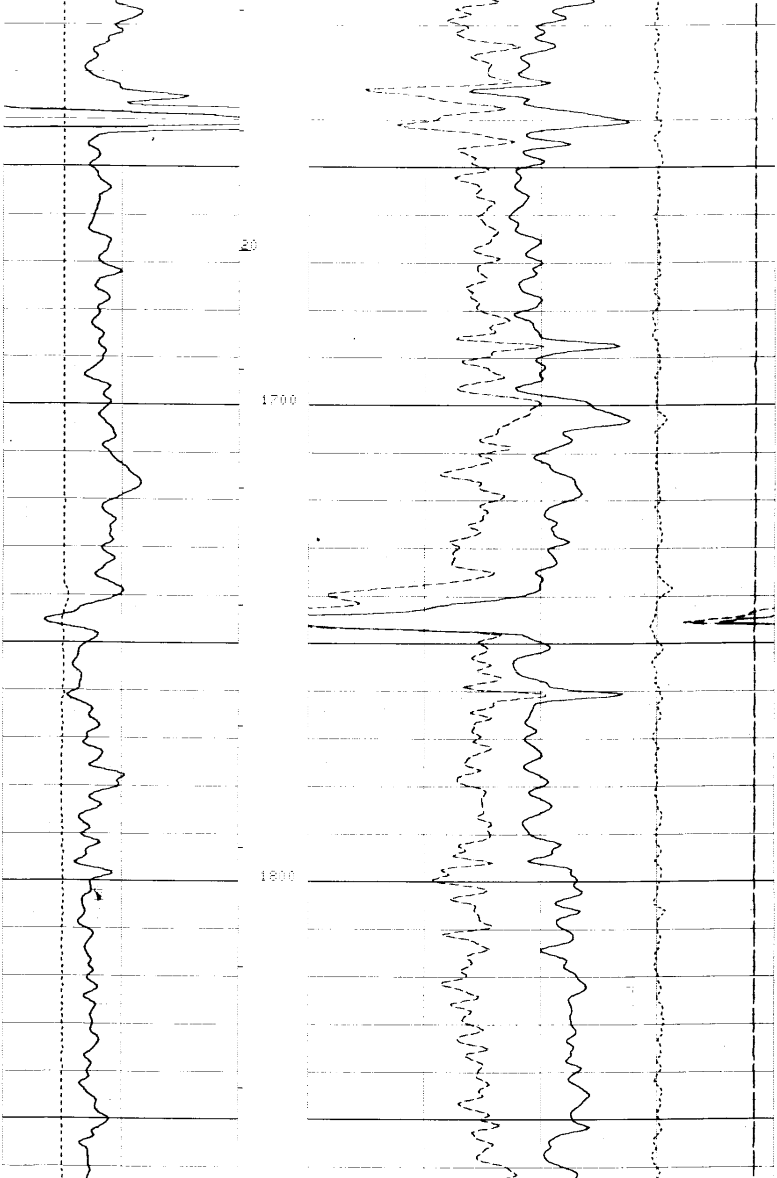


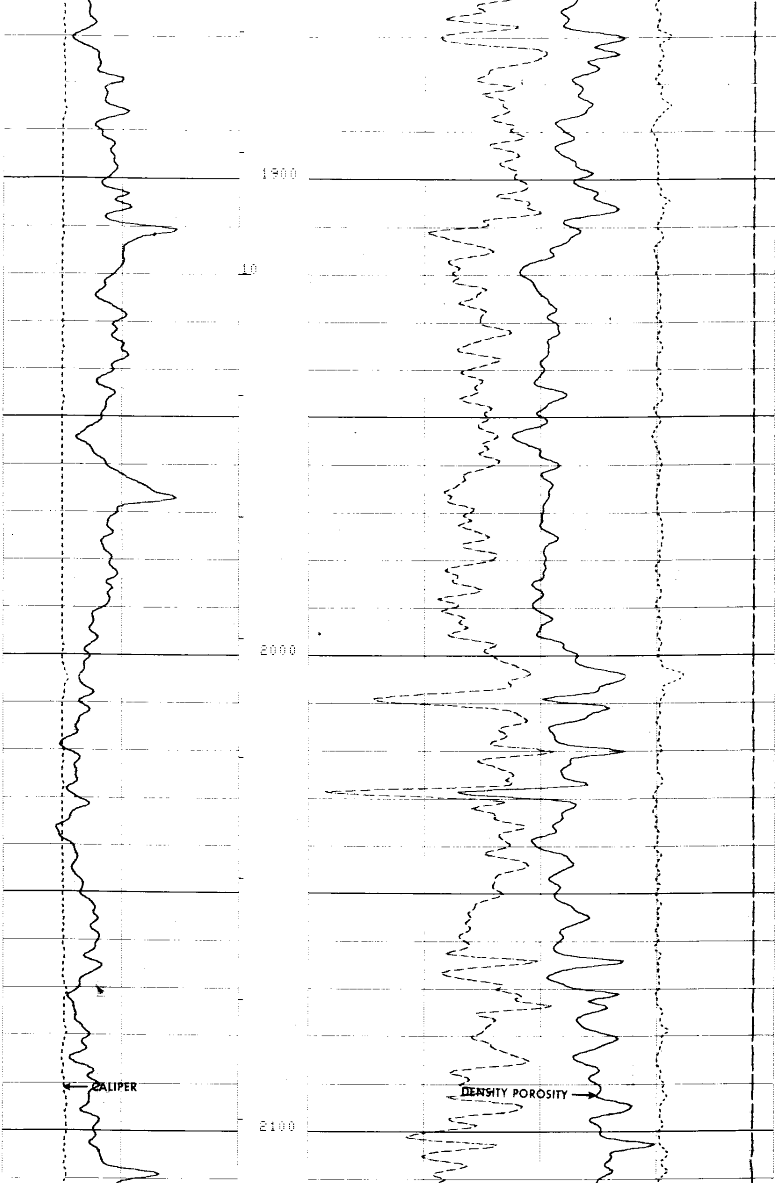


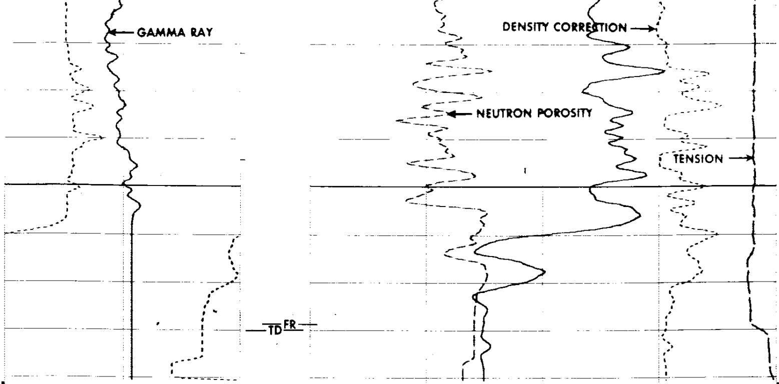












```
    CP 28.2A              FILE     4       11-AUG-86 13:53
```

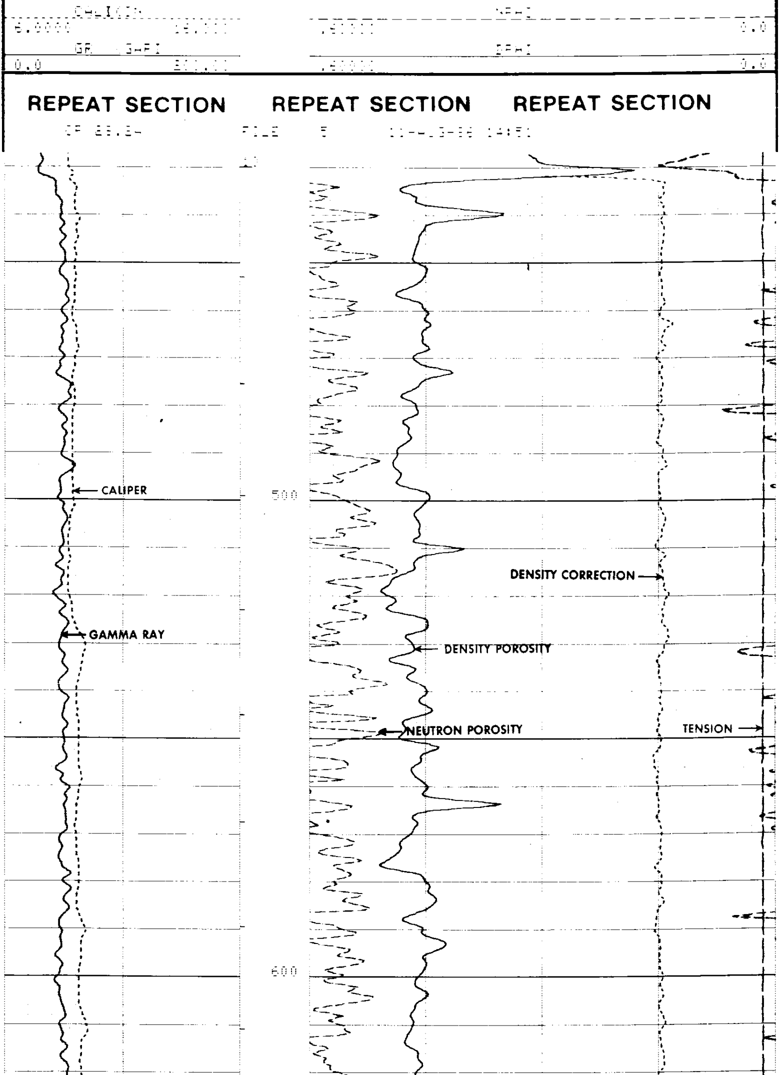
```
                                                              TENS(LB   )
                                                        10000.                0.0
                                                              DRHO(G/C3)
                                                        -.2500              .25000
          CALI(IN   )                                            NPHI
 6.0000              16.000        .60000                                      0.0
          GR    (GAPI)                                           DPHI
 0.0                 200.00        .60000                                      0.0
```

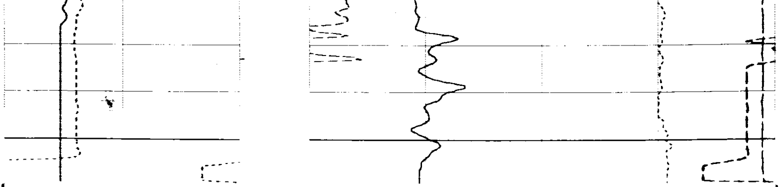
```
                    SENSOR MEASURE POINT TO TOOL ZERO

          STSG  -.9   FEET                        GR    32.3   FEET
          NCNL 23.7   FEET                        FCNL 23.7    FEET
          LITH  2.6   FEET                        DCNL  -.9    FEET
          LS    2.6   FEET                        LL    2.6    FEET
          SS1   2.1   FEET                        LU    2.6    FEET
          CALI  2.7   FEET                        SS2   2.1    FEET
          NRAT 23.7   FEET                        TENS  -.9    FEET
```

```
                                PARAMETERS

        NAME   VALUE         UNIT                 NAME   VALUE         UNIT

        SHT    80.0000       DEGF                 TD     10000.0       F
        HC     CALI                               FINR   2.269[illegible]
        FD     1.00000       G/C3                 MATR   SAND
        WMUD   10.5000       LB/G                 MDEN   2.65000       G/C3
        DHC    BS                                 BFM    LIQU
        BS     8.50000       IN                   BHS    OPEN
```

```
   EVENT MARK SUMMARY:

   OUTPUT  INTERVAL         DEPTH TRACK
           BETWEEN PIPS     EDGE

   IHV     10.0000 F3       LEFT EDGE
```

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





```
    CP 28.2A            FILE     5        11-AUG-86 14:45
```

```
                                                              TENS LB
                                                       10000.                  0.0
                                                              DRHO(G/C3)
                                                       -.2500               .25000
        CALI(IN  )                                  NPHI
 6.0000           16.000        .60000                                         0.0
        GR   (GAPI)                                 DPHI
 0.0              200.00        .60000                                         0.0
```

```
                   SENSOR MEASURE POINT TO TOOL ZERO

         STSG  -.9  FEET                     GR    32.3  FEET
         NCNL 23.7  FEET                     FCNL  23.7  FEET
         LITH  2.6  FEET                     SCNL  -.9   FEET
         LS    2.6  FEET                     LL    2.6   FEET
         SS1   2.1  FEET                     LU    2.6   FEET
         CALI  2.7  FEET                     SS2   2.1   FEET
         NRAT 23.7  FEET                     TENS  -.9   FEET
```

```
                              PARAMETERS

       NAME   VALUE        UNIT                 NAME   VALUE        UNIT

       SHT   80.0000       DEGF                 TD    10000.0       F
       HC    CALI                               PSNR  2.26900
       FD    1.00000       G/C3                 MATR  SAND
       WMUD  10.5000       LB/G                 MDEN  2.65000       G/C3
       DHC   BS                                 BFM   LIQU
       BS    8.50000       IN                   BHI   OPEN
```

```
                BEFORE SURVEY CALIBRATION SUMMARY


   PERFORMED:     11-AUG-86 10:25
   PROGRAM FILE: LEP    (VERSION    28.2A   85/07/10)


 SGTL                DETECTOR CALIBRATION SUMMARY

                 MEASURED
               BKGD     JIG          CALIBRATED           UNITS
     GR         27      195             165               GAPI
```

```
LDTC                   DETECTOR CALIBRATION SUMMARY

        DRS SONDE NUMBER                             :    3756
        NUCLEAR SERVICE CARTRIDGE NUMBER             :    1955
        POWERED DETECTOR HOUSING NUMBER              :    2942
        POWERED GAMMA-GAMMA DETECTOR NUMBER          :    2710
        LDT LOGGING SOURCE NUMBER                    :    6929
        LDT CALIBRATION MODE                         :    WATE
        MUD DENSITY                                  :    10.5000    LB/G

              M E A S U R E D
            BKGD   AL+FE    AL   UNITS
     LL     18.7    85.3   94.3   CPS
     LU     70.9   130.2  145.1   CPS
     LS     54.1   150.5  167.0   CPS
   LITH      5.3    32.6   48.4   CPS
    SS1     13.7   177.0  197.5   CPS
    SS2      9.3   250.0  273.0   CPS


CNTH                   DETECTOR CALIBRATION SUMMARY

                TANK                          JIG
            INPUT   CALIBRATED          MEASURED   CALIBRATED
   NRAT     2.26900   2.156               2.271       2.158


LDTC                   CALIPER CALIBRATION SUMMARY

              MEASURED                      CALIBRATED
            SMALL    LARGE                SMALL     LARGE         UNITS
   CALI     7.00     11.3                 8.00      12.0           IN

   CP 28.2A            FILE     4        11-AUG-86 10:25


                 AFTER SURVEY TOOL CHECK SUMMARY


   PERFORMED:     11-AUG-86 14:53
   PROGRAM FILE: LEP     (VERSION    28.2A    85/07/10)


LDTC                        TOOL   CHECK

        DRS SONDE NUMBER                             :    3756
        NUCLEAR SERVICE CARTRIDGE NUMBER             :    1955
        POWERED DETECTOR HOUSING NUMBER              :    2942
        POWERED GAMMA-GAMMA DETECTOR NUMBER          :    2710
        LDT LOGGING SOURCE NUMBER                    :    6929
        LDT CALIBRATION MODE                         :    WATE
        MUD DENSITY                                  :    10.5000    LB/G

            BACKGROUND MEASURED
            BEFORE          AFTER          UNITS
     LL     18.67           18.78           CPS
     LU     70.87           70.56           CPS
     LS     54.12           54.09           CPS
   LITH      5.285           5.39           CPS
    SS1     13.71           13.77           CPS
    SS2      9.312           9.32           CPS


CNTH                        TOOL   CHECK

                          JIG
                BEFORE          AFTER
   NRAT         2.158           2.164

   POROSITY CHANGE  (LIME):    .001
```

```
  CP 28.2A            FILE    7       11-AUG-86 14:53

                      SHOP SUMMARY


    PERFORMED:     01-AUG-86 11:17
    PROGRAM FILE:  CCSHOP (VERSION    28.2A   85/07/10)


  CNTH                    DETECTOR CALIBRATION SUMMARY

                   TANK                        JIG
          MEASURED  CALIBRATED      MEASURED   CALIBRATED

    NRAT     2.269      2.158          2.255       2.146

                           (CNC:H241, CNB:3200)

                      SHOP SUMMARY


    PERFORMED:     01-AUG-86 10:13
    PROGRAM FILE:  CCSHOP (VERSION    28.2A   85/07/10)


  LDTC                    DETECTOR CALIBRATION SUMMARY

           DRS SONDE NUMBER                      :    4775
           NUCLEAR SERVICE CARTRIDGE NUMBER      :    1760
           POWERED DETECTOR HOUSING NUMBER       :    2706
           POWERED GAMMA-GAMMA DETECTOR NUMBER   :    2933
           LDT LOGGING SOURCE NUMBER             :    6929
           LDT CALIBRATION MODE                  :    WATE
           MUD DENSITY                           :    8.00000   LB/G

            MASTER  CALIBRATED
            BKGD   AL+FE    AL   UNITS
      LL    18.7    79.6   88.6   CPS
      LU    72.6   119.7  133.0   CPS
      LS    55.0   139.5  155.0   CPS
    LITH     5.6    34.0   50.9   CPS
     SS1    14.9   169.3  187.0   CPS
     SS2    10.4   238.6  261.0   CPS

            SPECTRUM QUALITY RATIOS
     QRLS       .6659
     QRSS       .7165
     QRLI       .3282
     QLIR      1.3467
     QR        1.0064
```

COMPANY	ARCO OIL AND GAS	SCHL. FR	2179
		SCHL. TD	2180
WELL	COLUMBIA COUNTY 14-23	DRLR. TD	2180
FIELD	MIST	Elev: KB	663.7
		DF	
COUNTY	COLUMBIA STATE OREGON	GL	652.7