Schlumberger

2" & 5" NEUTRON-DENSITY

CSU Field Log

COMPANY: ARCO OIL AND GAS COMPANY

WELL: "CFI" #33-9

FIELD: MIST
COUNTY: COLUMBIA
STATE: OREGON

LOCATION: 1706'N AND 2536'W
FROM SE CORNER
SEC: 9 TWP: 5N RGE: 4W

PERMANENT DATUM: GL
ELEV. OF PERM. DATUM: 1110.3 F
LOG MEASURED FROM:
12.0 F ABOVE PERM. DATUM
DRLG. MEASURED FROM:

ELEVATIONS-
KB: 1122.3 F
DF: 1121.3 F
GL: 1110.3 F

OTHER SERVICES-
DIL-BHC

PROGRAM
TAPE NO:
28.2A

DATE: 6 SEP 86
RUN NO: 1

DEPTH-DRILLER: 3243.0 F
DEPTH-LOGGER: 3234.0 F
BTM. LOG INTERVAL: 3230.0 F
TOP LOG INTERVAL: 1768.0 F

CASING-DRILLER: 1773.0 F
CASING-LOGGER: 1768.0 F
CASING: 7"
WEIGHT: 26.0000 LB/F
BIT SIZE: 6 1/4"
DEPTH: 3243.0 F

TYPE FLUID IN HOLE: LIGNOSULFONATE
DENSITY: 10.20 LB/G
VISCOSITY: 39.0 S
PH: 9.5
FLUID LOSS: 5.6 C3
SOURCE OF SAMPLE: FLOWLINE
RM: 2.310 OHMM AT 88.0 DEGF
RMF: 1.950 OHMM AT 72.0 DEGF
RMC: 2.760 OHMM AT 72.0 DEGF
SOURCE RMF/RMC: MEASURED/MEASURED
RM AT BHT: 1.908 OHMM AT 108. DEGF
RMF AT BHT: 1.340 OHMM AT 108. DEGF
RMC AT BHT: 1.896 OHMM AT 108. DEGF

TIME CIRC. STOPPED: 15:15 9-6
TIME LOGGER ON BTM.: 19:54 9-6

MAX. REC. TEMP: 108.0 DEGF

LOGGING UNIT NO: 8128
LOGGING UNIT LOC: SACRAMENTO
RECORDED BY: HARPER/PILCH
WITNESSED BY: ANDERSON/STAFFORD

REMARKS:

EQUIPMENT NUMBERS-

DRS-C 3756 NSC-D 1955 CNC-HA 1263 SGC-SA 581
CCC-B 1880 CCSM-AB 322

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CP 28.2A FILE 3 06-SEP-86 20:58
DATA ACQUIRED 06-SEP-86 20:44

DRHO(G/C3) -.2500 .25000

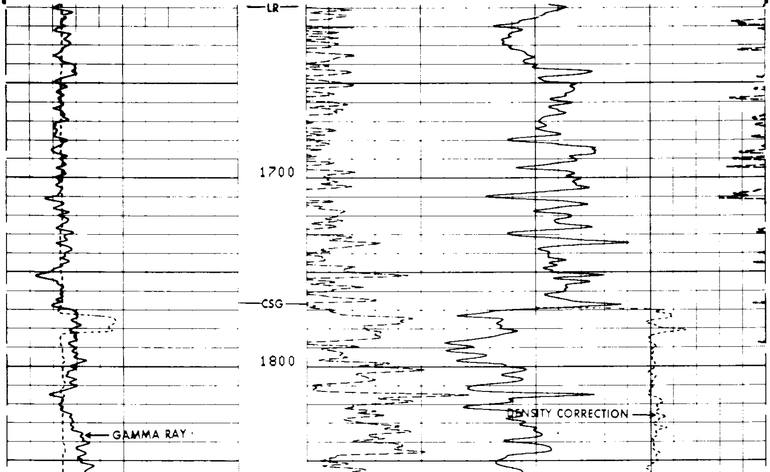
CALI(IN) 4.0000 14.000

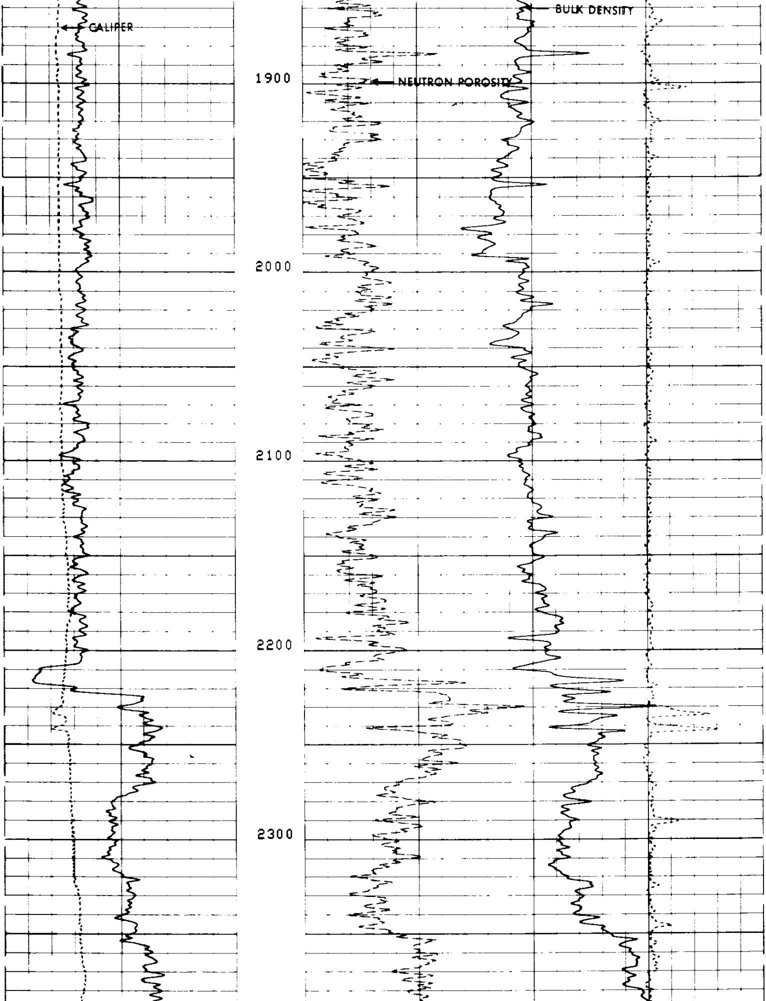
NPHI .60000 0.0

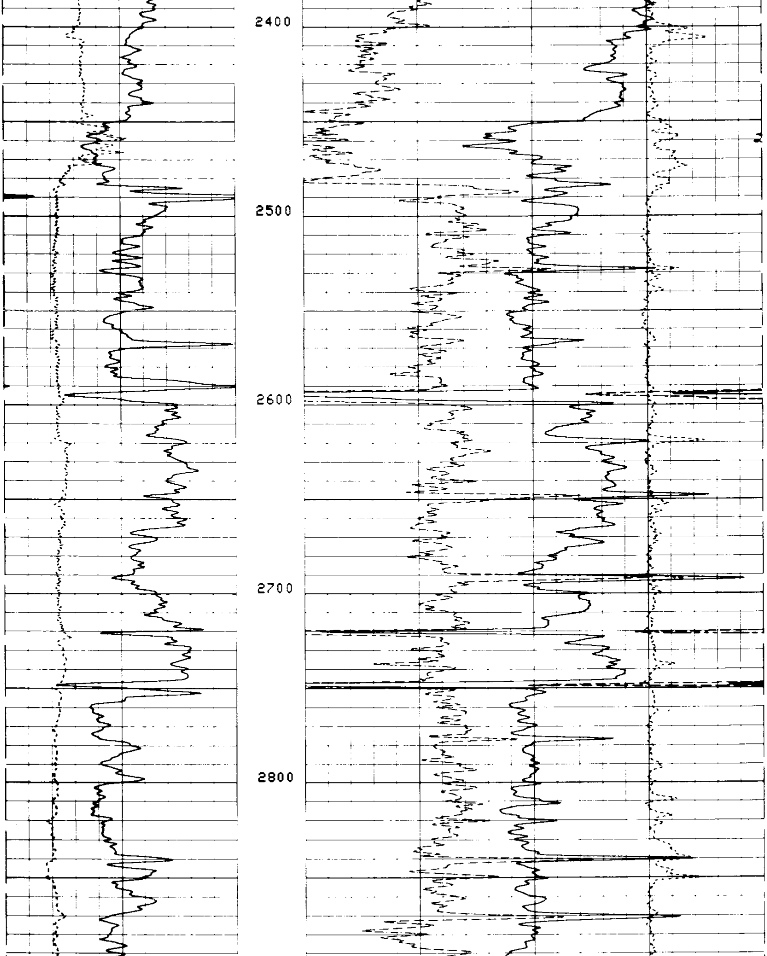
GR (GAPI) 0.0 150.00

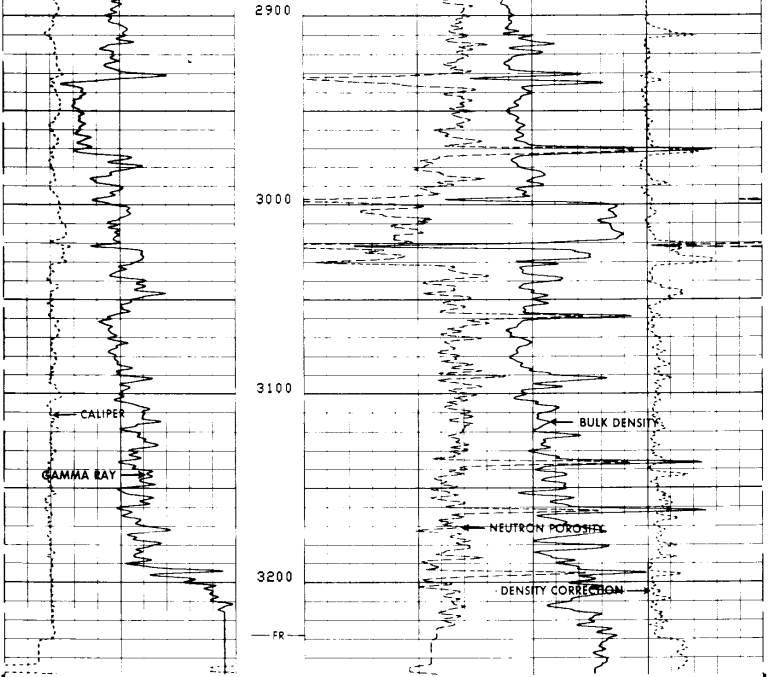
RHOB(G/C3) 1.6500 2.6500

CP 28.2A FILE 3 06-SEP-86 20:58
DATA ACQUIRED 06-SEP-86 20:44









CP 28.2A FILE 3 06-SEP-86 20:53

DATA ACQUIRED 06-SEP-86 19:53

DRHO(G/C3) -.2500 .25000

CALI(IN) 4.0000 14.000

NPHI .60000 0.0

GR (GAPI) 0.0 150.00

RHOB(G/C3) 1.6500 2.6500

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	2.17500	
FD	1.00000	G/C3	MATR	SAND	
WMUD	8.00000	LB/G	MDEN	2.65000	G/C3
DHC	BS		BFM	LIQU	
BS	6.25000	IN	BHS	OPEN	
PP	NORM		DO	0.0	F

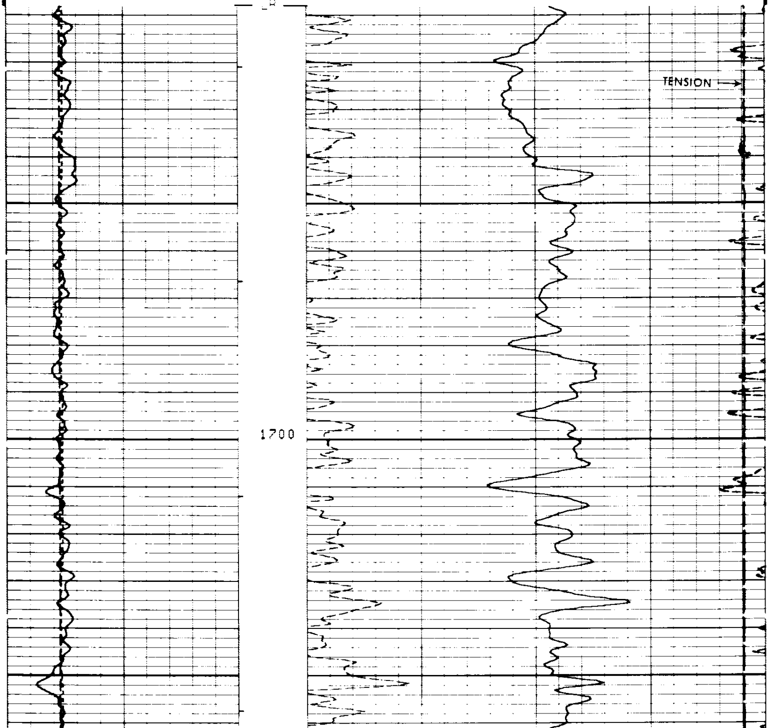
TAPE NOT MADE

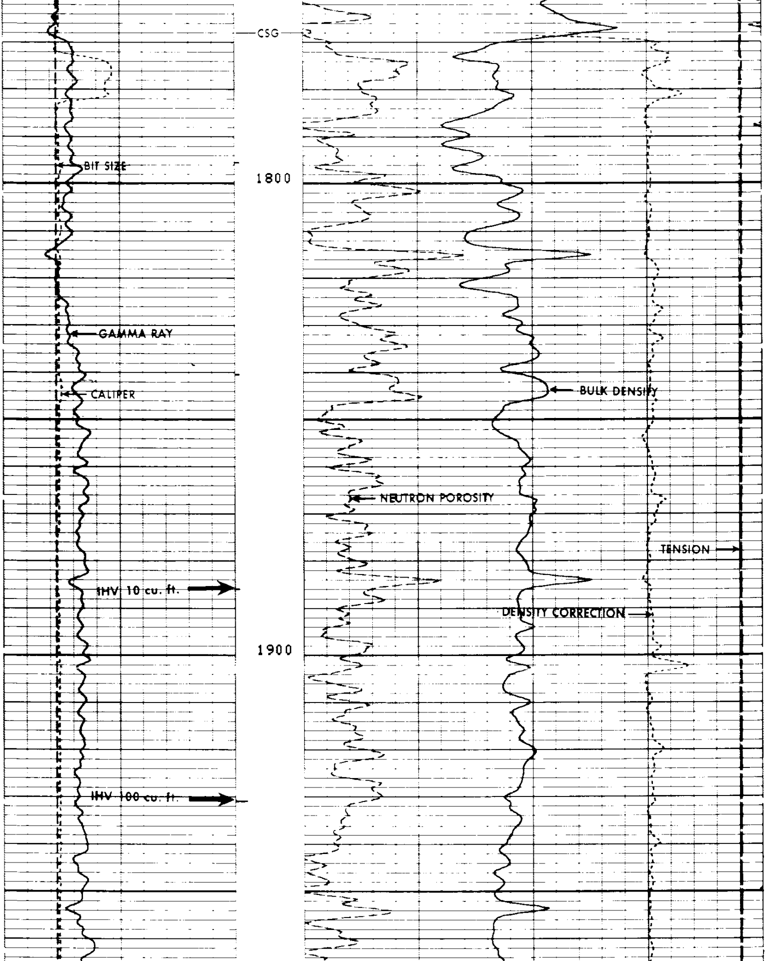
TENS(LB)
10000. 0.0
DRHO(G/C3)
-.2500 .25000

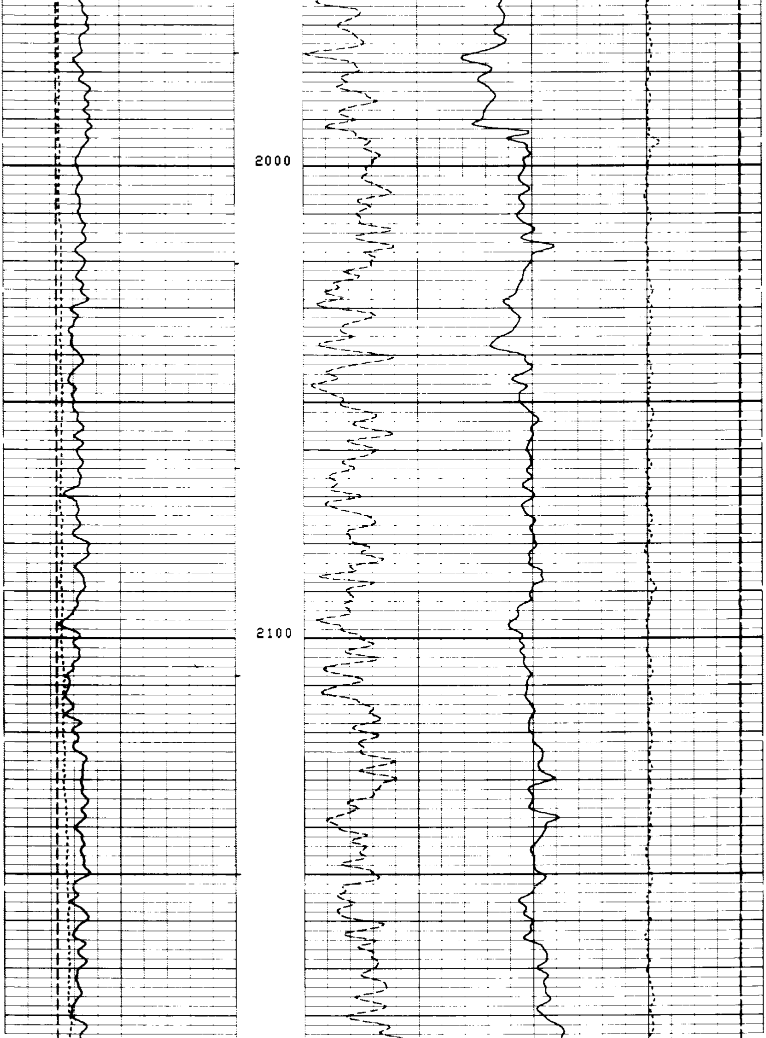
BS (IN)
4.0000 14.000
CALI(IN)
4.0000 14.000
GR (GAPI)
0.0 150.00

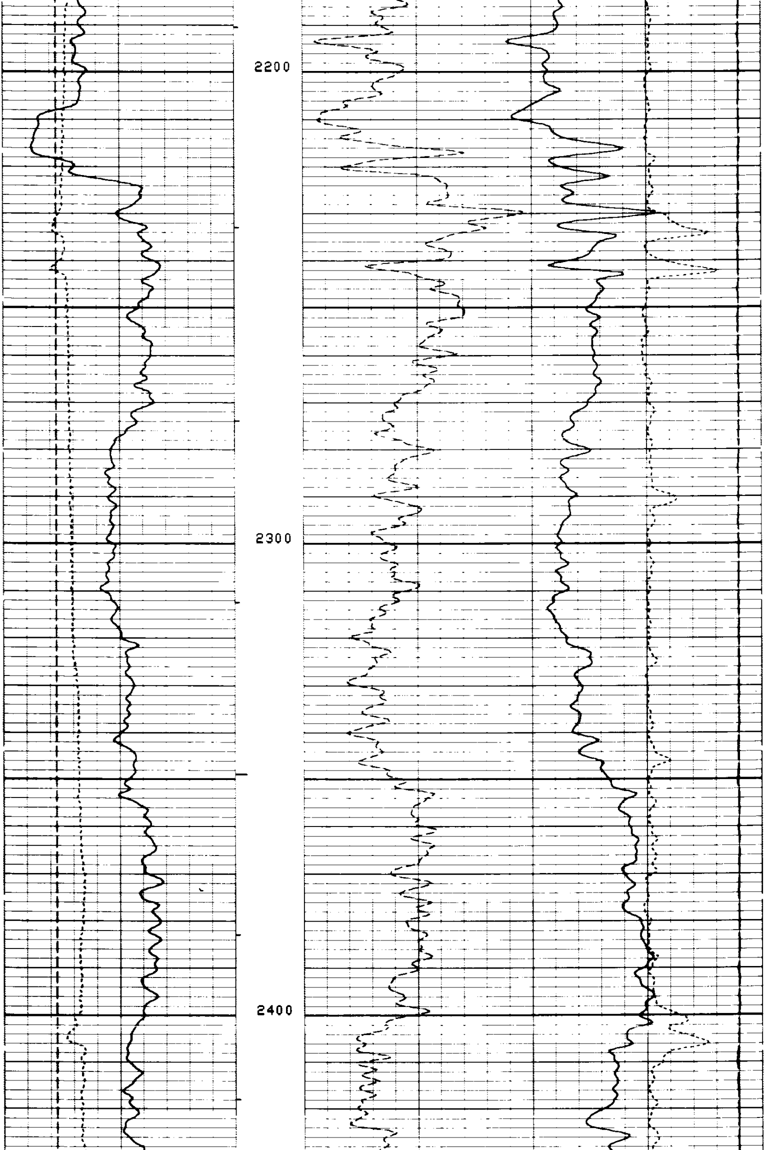
NPHI
.60000 0.0
RHOB(G/C3)
1.6500 2.6500

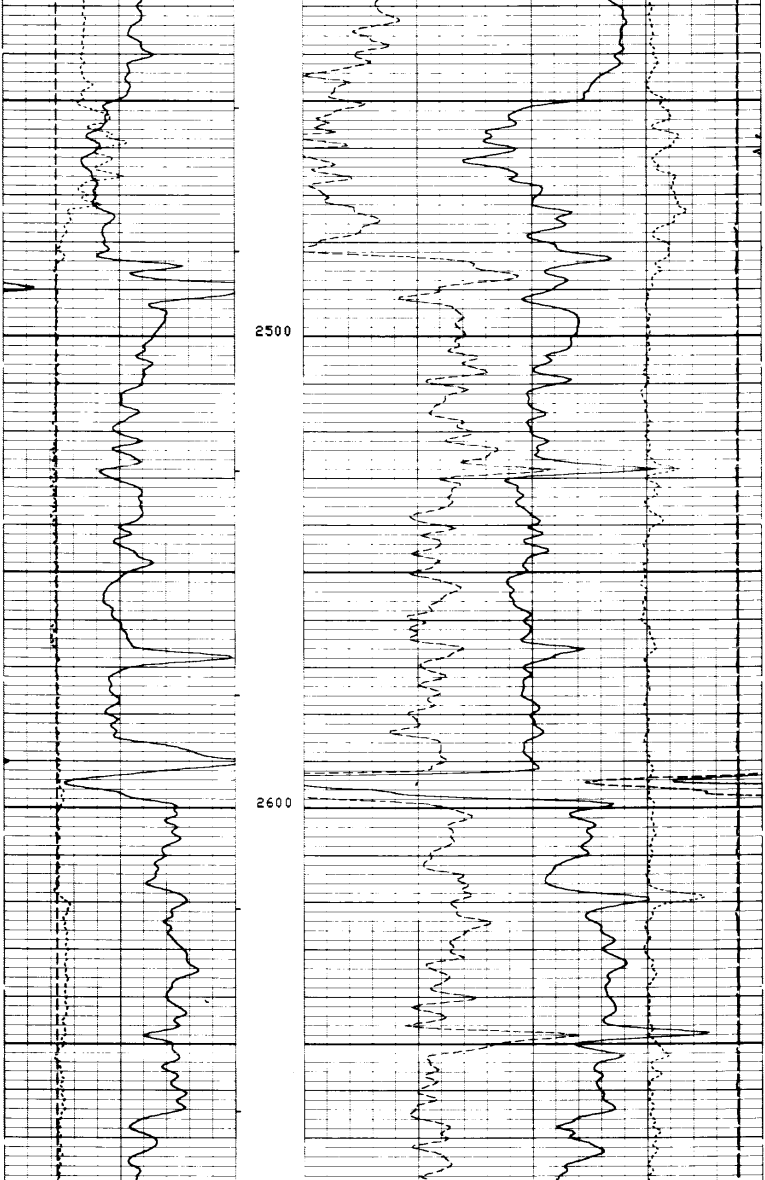
CP 28.2A FILE 3 06-SEP-86 20:45

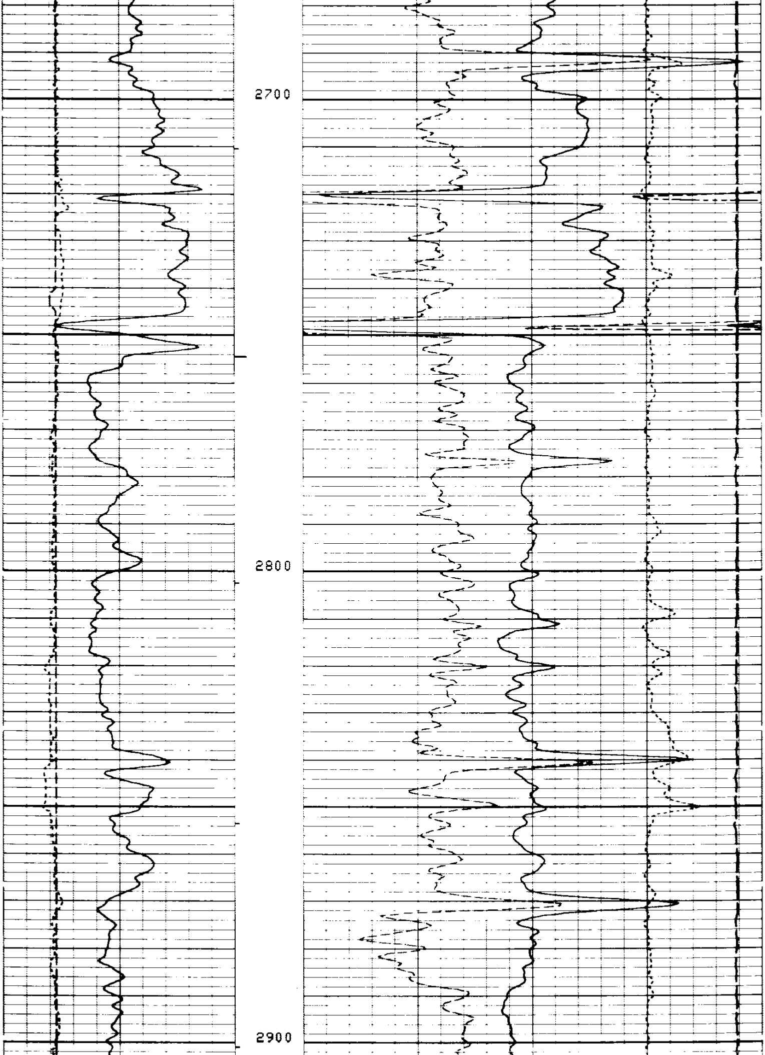


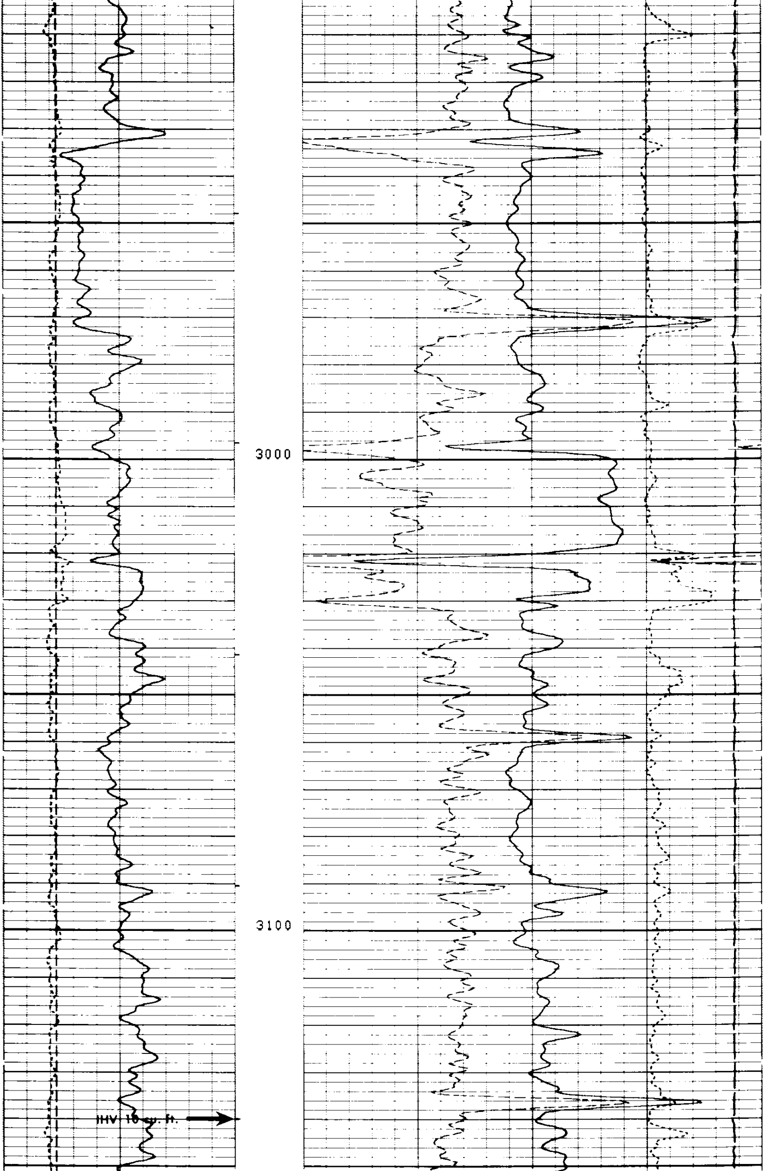


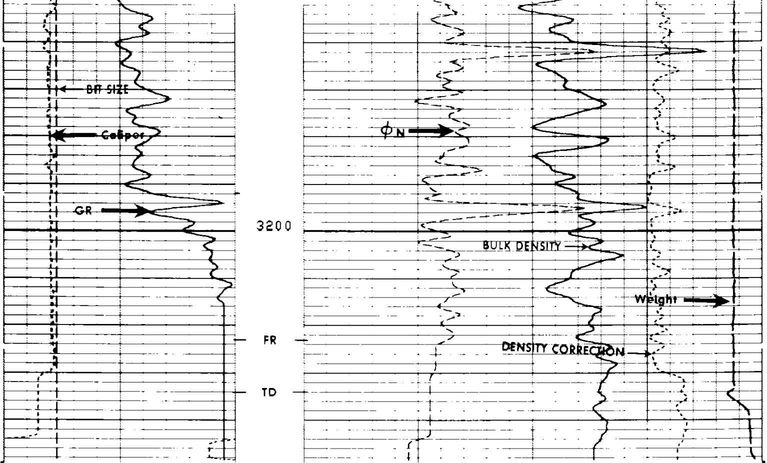












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CP 28.2A            FILE     3      06-SEP-86 19:53
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```
                                                               TENS(LB   )
                                                       10000.               0.0
         BS  (IN  )                                                 DRHO(G/C3)
4.0000              14.000                             -.2500            .25000
         CALI(IN  )                                  NPHI
4.0000              14.000          .60000                                  0.0
         GR  (GAPI)                                  RHOB(G/C3)
0.0                 150.00          1.6500                               2.6500
```

```
                 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  2.17500
        FD    1.00000     G/C3             MATR  SAND
        WMUD  8.00000     LB/G             MDEN  2.65000    G/C3
        DHC   BS                           BFM   LIQU
        BS    6.25000     IN               BHS   OPEN
```

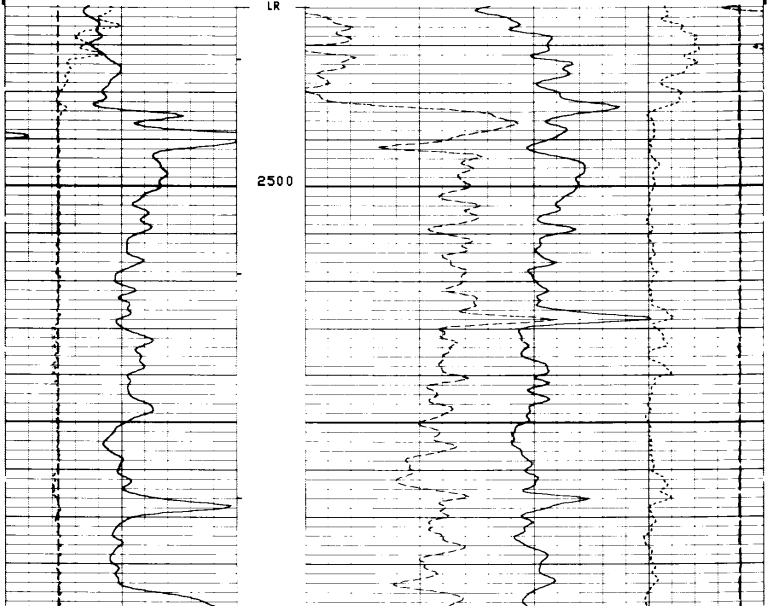
EVENT MARK SUMMARY:

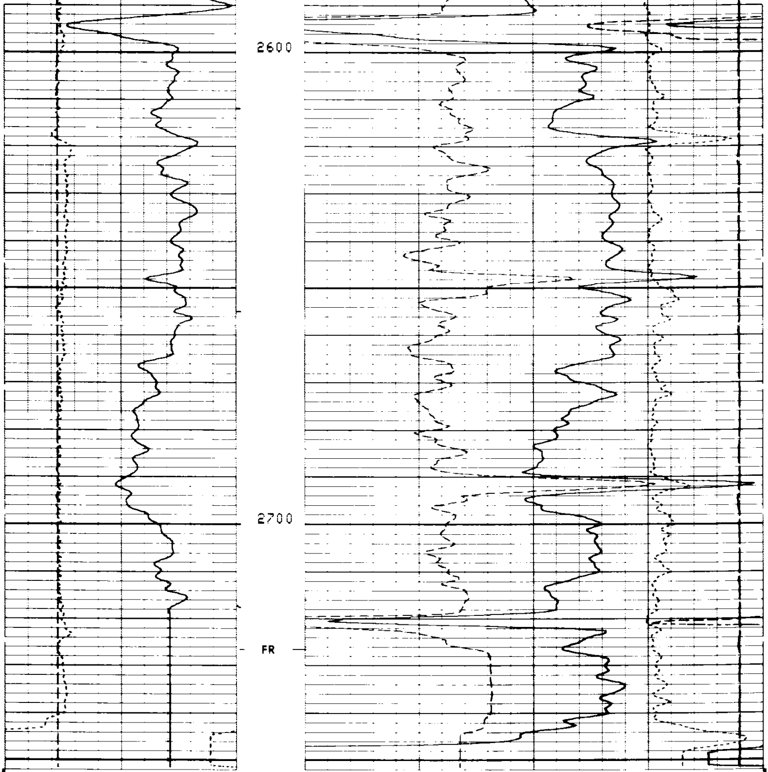
OUTPUT	INTERVAL BETWEEN PIPS	DEPTH TRACK EDGE
IHV	10.0000 F3	LEFT EDGE

Curve	Left	Right
TENS(LB)	10000.	0.0
BS (IN)	4.0000	14.000
DRHO(G/C3)	-.2500	.25000
CALI(IN)	4.0000	14.000
NPHI	.60000	0.0
GR (GAPI)	0.0	150.00
RHOB(G/C3)	1.6500	2.6500

REPEAT SECTION

CP 28.2A FILE 2 06-SEP-86 19:50





CP 28.2A FILE 2 06-SEP-86 19:39

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

BS (IN)
4.0000 14.000
CALI(IN)
4.0000 14.000
GR (GAPI)
0.0 150.00

NPHI
.60000 0.0
RHOB(G/C3)
1.6500 2.6500

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  2.17500
        FD    1.00000     G/C3                MATR  SAND
        WMUD  8.00000     LB/G                MDEN  2.65000     G/C3
        DHC   BS                              BFM   LIQU
        BS    6.25000     IN                  BHS   OPEN
```

```
                  BEFORE SURVEY CALIBRATION SUMMARY


     PERFORMED:     06-SEP-86 19:28
     PROGRAM FILE: LEP    (VERSION    28.2A   85/07/10)


   SGTL                DETECTOR CALIBRATION SUMMARY

                MEASURED
              BKGD     JIG         CALIBRATED         UNITS
      GR       23      185            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                              :    8.00000   LB/G

                MEASURED
             BKGD   AL+FE     AL   UNITS
      LL     19.0    85.3    94.4   CPS
      LU     72.0   130.3   145.2   CPS
      LS     55.0   150.6   167.1   CPS
     LITH     5.5    32.6    48.4   CPS
      SS1    14.0   177.0   197.5   CPS
      SS2     9.5   250.0   273.0   CPS


   CNTH                DETECTOR CALIBRATION SUMMARY

                 TANK                           JIG
             INPUT   CALIBRATED          MEASURED   CALIBRATED
     NRAT    2.17500  2.158                2.162       2.145


   LDTC                CALIPER CALIBRATION SUMMARY

                MEASURED                        CALIBRATED
              SMALL    LARGE                 SMALL     LARGE        UNITS
     CALI     6.90     11.1                  8.00      12.0          IN

      CP 28.2A          FILE    1        06-SEP-86 19:28
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                    AFTER SURVEY TOOL CHECK SUMMARY


   PERFORMED:     06-SEP-86 20:59
   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                               :    8.00000    LB/G

            BACKGROUND MEASURED
            BEFORE         AFTER         UNITS
     LL     19.04          18.98          CPS
     LU     72.00          72.56          CPS
     LS     55.03          55.28          CPS
   LITH      5.546          5.57          CPS
    SS1     14.02          13.96          CPS
    SS2      9.453          9.33          CPS


CNTH                         TOOL  CHECK

                         JIG
                BEFORE        AFTER
  NRAT          2.145         2.143

  POROSITY CHANGE  (LIME):    .000

   CP 28.2A           FILE    6       06-SEP-86 20:59


                      SHOP SUMMARY


   PERFORMED:     17-AUG-86 11:14
   PROGRAM FILE: CCSHOP (VERSION    28.2A   85/07/10)


LDTC                    DETECTOR CALIBRATION SUMMAR

        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                               :    8.00000    LB/G

          MASTER  CALIBRATED
          BKGD  AL+FE     AL  UNITS
    LL    18.7   85.3   94.4   CPS
    LU    70.6  130.3  145.3   CPS
    LS    54.0  150.6  167.1   CPS
  LITH     5.3   32.6   48.4   CPS
   SS1    13.9  177.0  197.5   CPS
   SS2     9.3  250.1  273.2   CPS

          SPECTRUM QUALITY RATIOS
   QRLS       .6497
   QRSS       .7333
   QRLI       .8373
   QLIR      1.0054
   QR         .9944

                      SHOP SUMMARY


   PERFORMED:     14-AUG-86 15:02
   PROGRAM FILE: CCSHOP (VERSION    28.2A   85/07/10)


CNTH                    DETECTOR CALIBRATION SUMMARY

                 TANK                          JIG
       MEASURED  CALIBRATED        MEASURED   CALIBRATED

  NRAT     2.175       2.158          2.134        2.110

                       (CNC:1263, CND:3200)
```