Schlumberger

5" NEUTRON-DENSITY

CSU

CONFIDENTIAL

COMPANY: ARCO EXPLORATION COMPANY

WELL: "COLUMBIA COUNTY" #44-21

FIELD: SOUTH MIST
COUNTY: COLUMBIA
STATE: OREGON
NATION: U.S.A.
LOCATION: 272'N AND 472'W FROM SE CORNER OF
SEC: 21 TWP: 6N RGE: 5W

PERMANENT DATUM: GL
ELEV. OF PERM. DATUM: 869.6 F
LOG MEASURED FROM: KB
10.3 F ABOVE PERM. DATUM
DRLG. MEASURED FROM: KB

ELEVATIONS-
KB: 880.0 F
DF: 879.0 F
GL: 869.6 F

DATE: 7 FEB 85
RUN NO: 1

OTHER SERVICES-
DIL-BHC
HDT
WST
CST

API SERIAL NO: 36 009 001

PROGRAM TAPE NO: 26.2

SERVICE ORDER NO: 432309

DEPTH-DRILLER: 4500.0 F
DEPTH-LOGGER: 4500.0 F
BTM. LOG INTERVAL: 4498.0 F
TOP LOG INTERVAL: 990.0 F

CASING-DRILLER: 990 F
CASING-LOGGER: 990 F
CASING: 9 5/8"

BIT SIZE: 8 3/4"
DEPTH: 4500 F

TYPE FLUID IN HOLE: GEL/LIGNO
DENSITY: 11.6 LB/G
VISCOSITY: 51.0 S
PH: 8.0
FLUID LOSS: 6.1 C3
SOURCE OF SAMPLE: MUDPIT
RM: 2.640 OHMM AT 64.0 DEGF
RMF: 2.700 OHMM AT 48.0 DEGF
RMC: 3.590 OHMM AT 48.0 DEGF
SOURCE RMF/RMC: MEASURED/MEASURED
RM AT BHT: 1.629 OHMM AT 108. DEGF
RMF AT BHT: 1.291 OHMM AT 108. DEGF
RMC AT BHT: 1.716 OHMM AT 108. DEGF

TIME CIRC. STOPPED:	03:00 2-5
TIME LOGGER ON BTM.:	00:05 2-7
MAX. REC. TEMP:	108.0 DEGF
LOGGING UNIT NO:	8128
LOGGING UNIT LOC:	SACRAMENTO
RECORDED BY:	PILCH
WITNESSED BY:	ANDERSON

REMARKS:

EQUIPMENT NUMBERS-

PGS-HB 660 PGC-JA 569 CNC-A 2359 SGC-JA 3206
NLM-BC 418

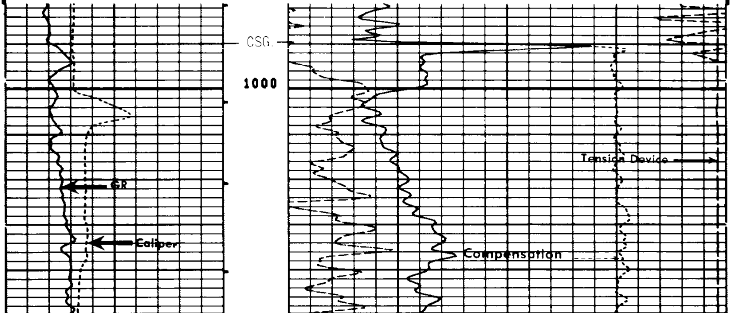
ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILLFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, 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.

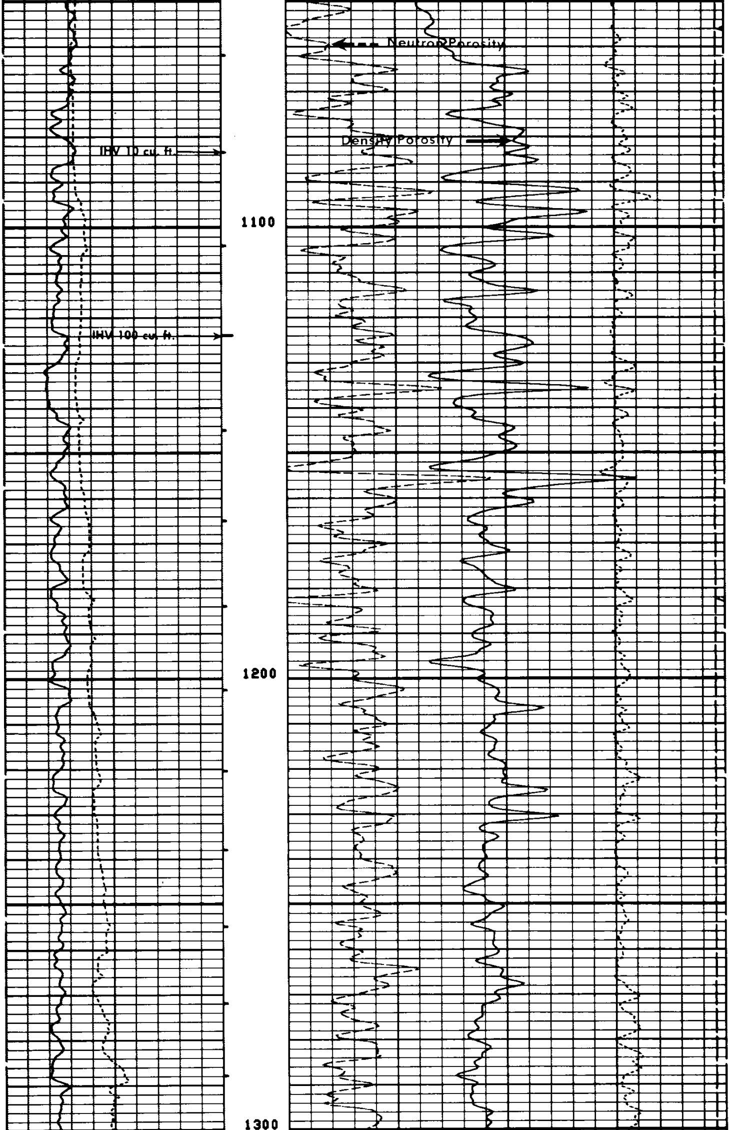
TENS(LB)
20000. 0.0
DRHO(G/C3)
-.2500 .25000

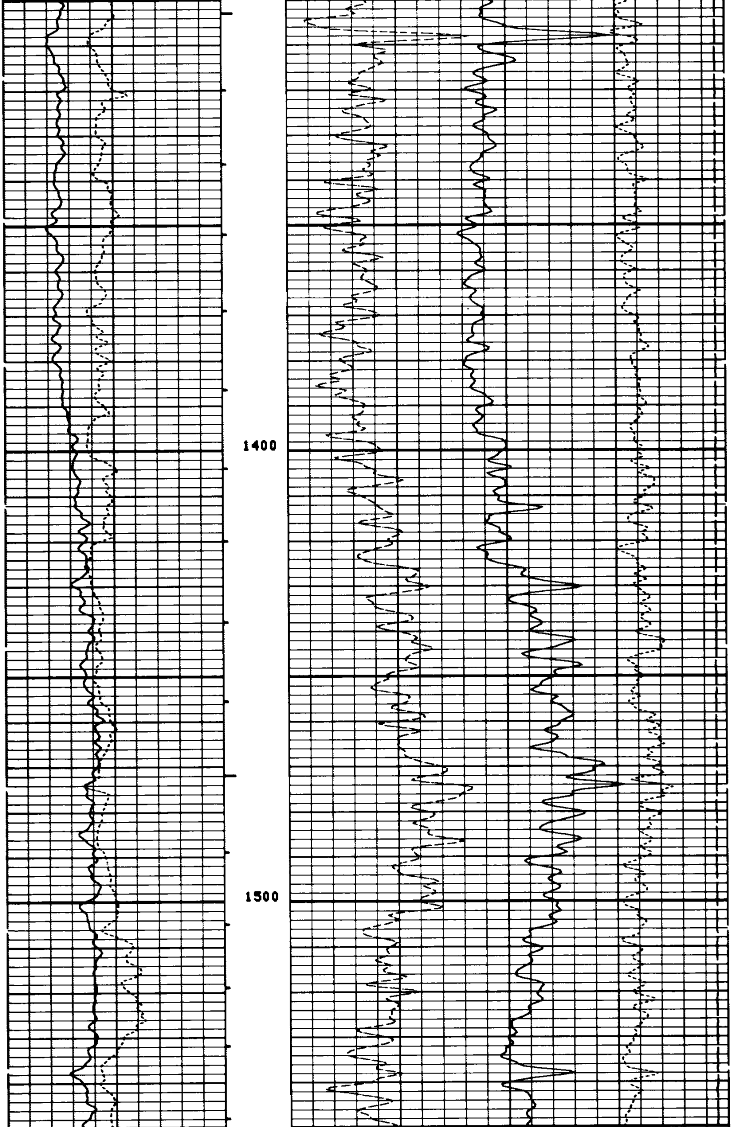
CALI(IN)
6.0000 16.000
GR (GAPI)
0.0 150.00

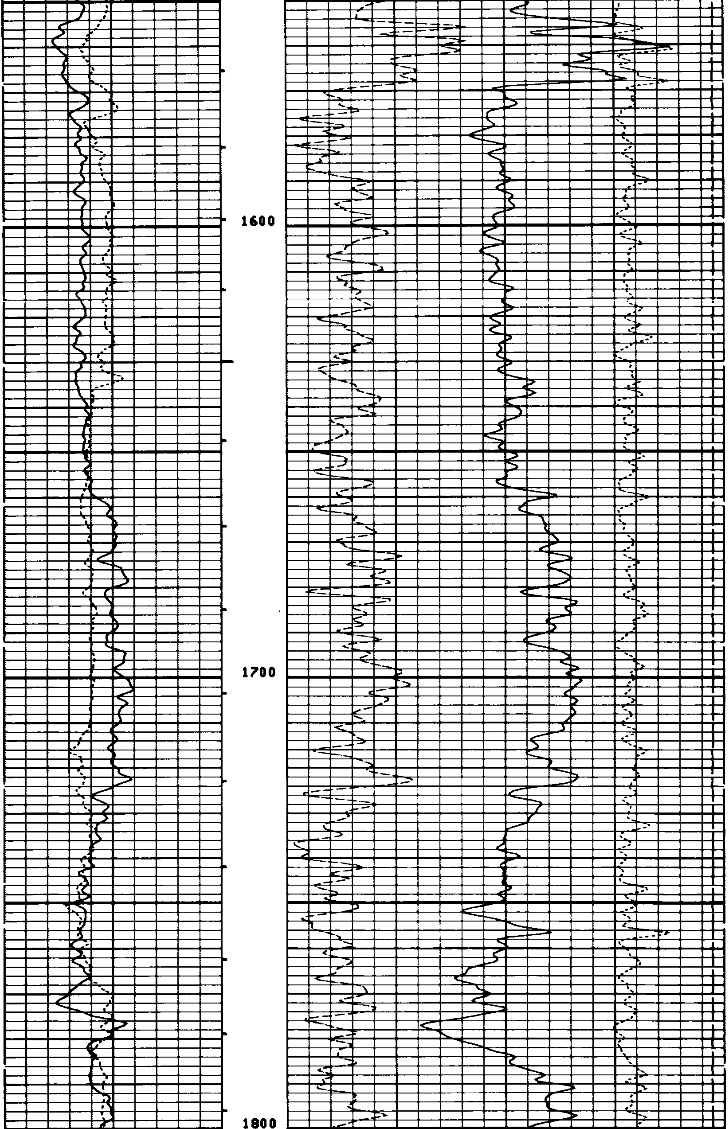
NPHI
.60000 0.0
DPHI
.60000 0.0

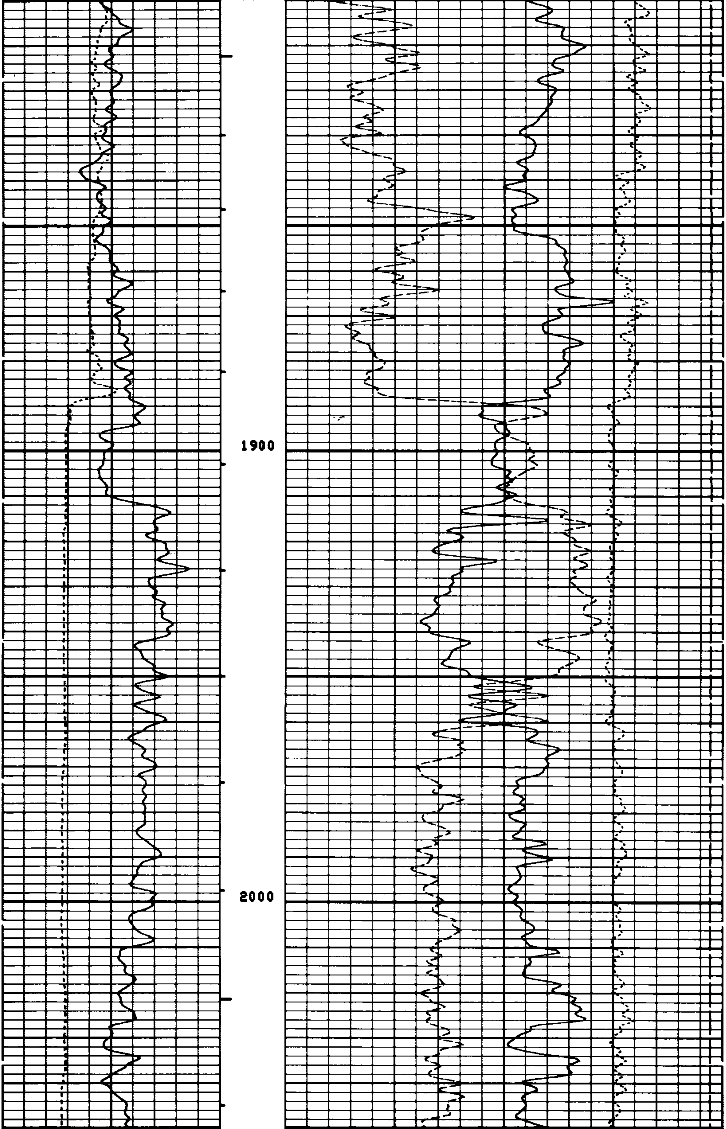
FILE 4 07-FEB-85 02:05

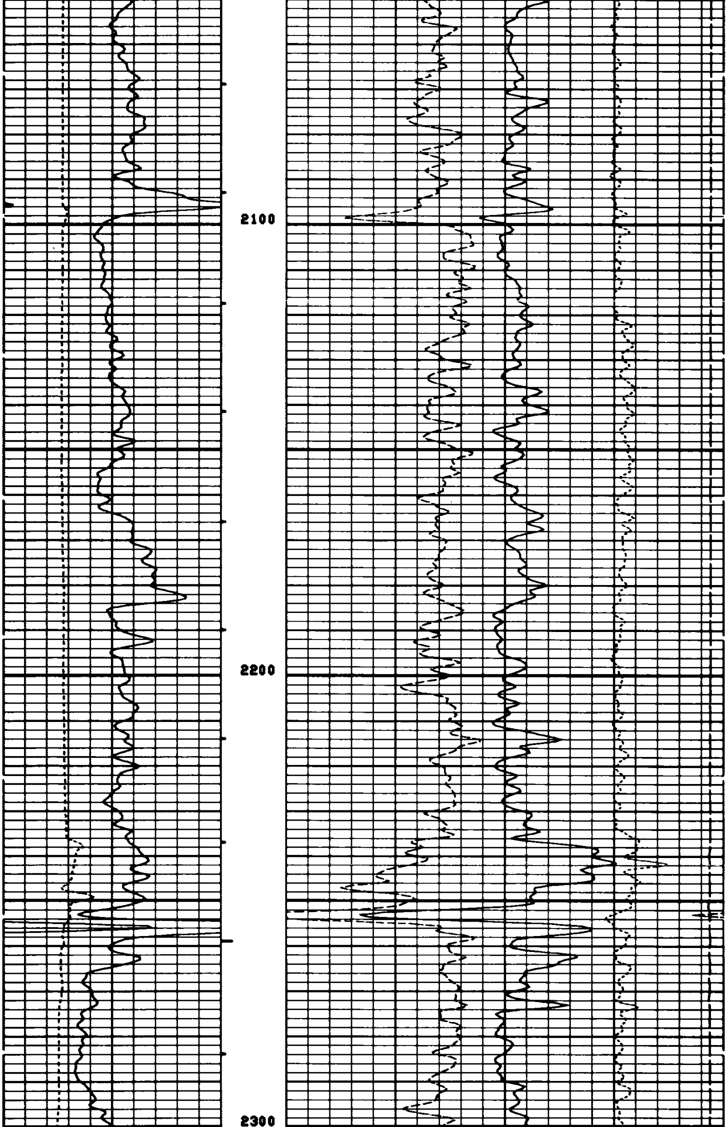


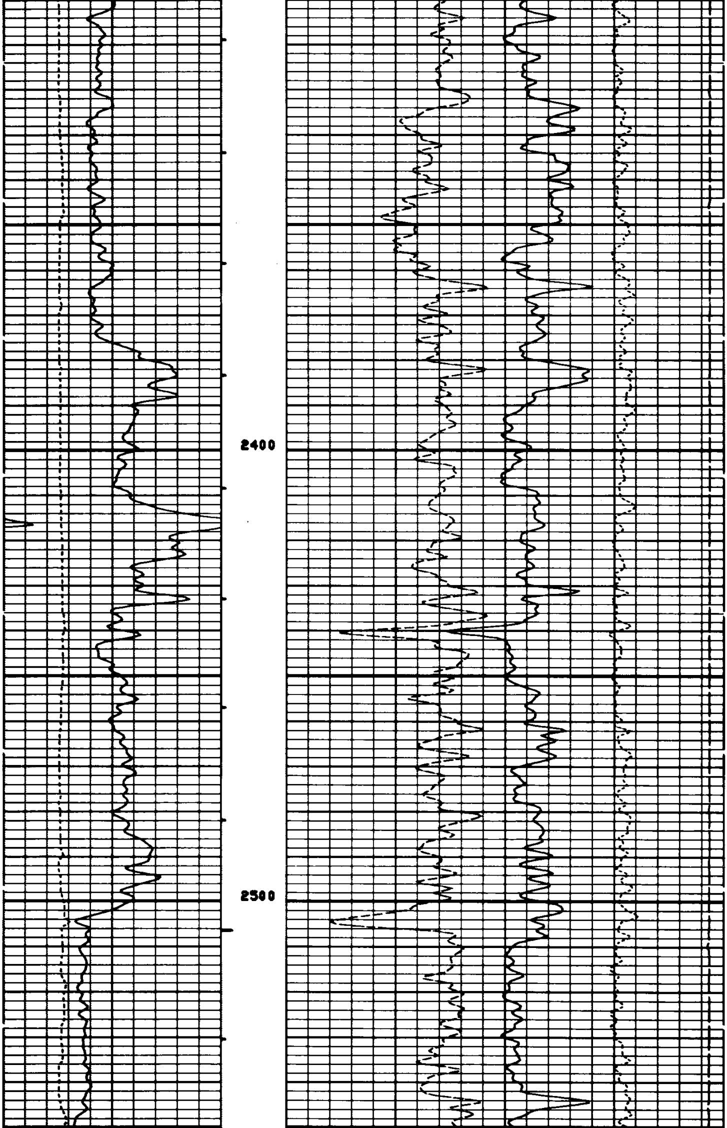


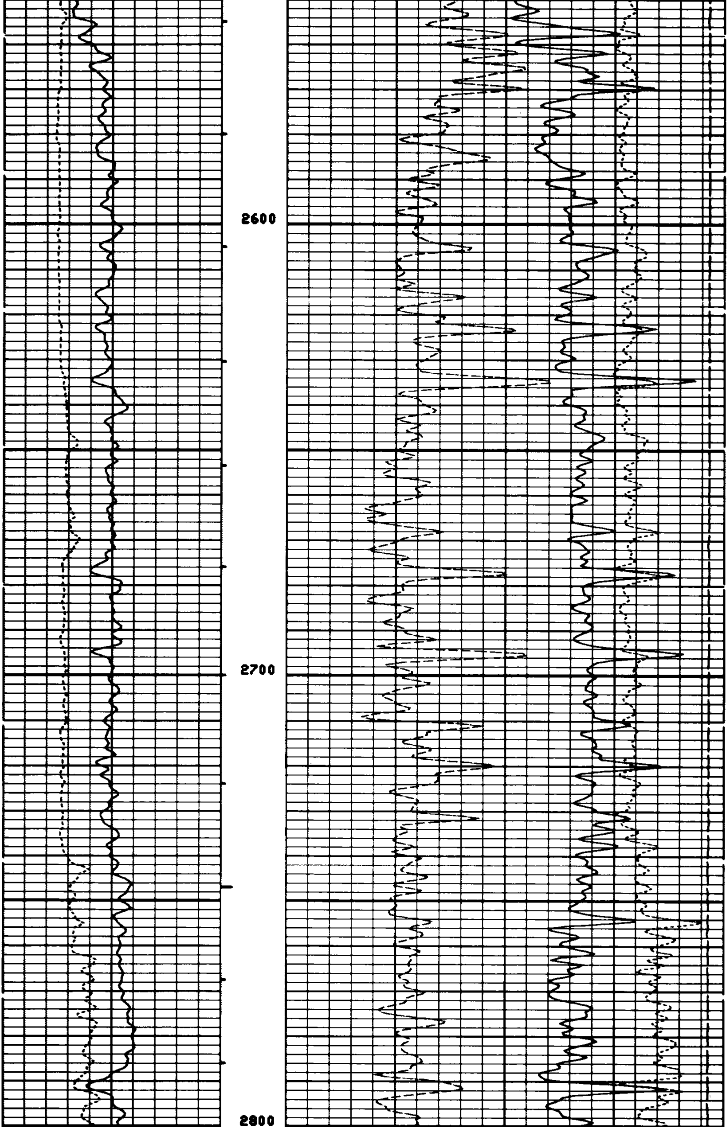


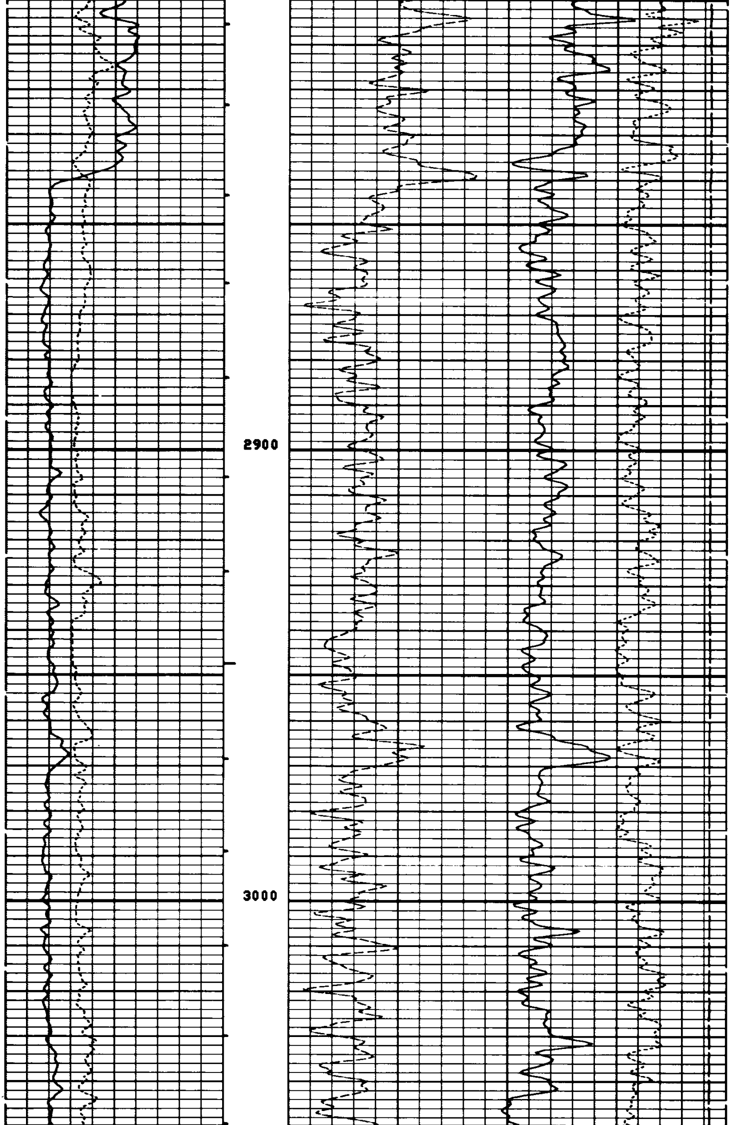


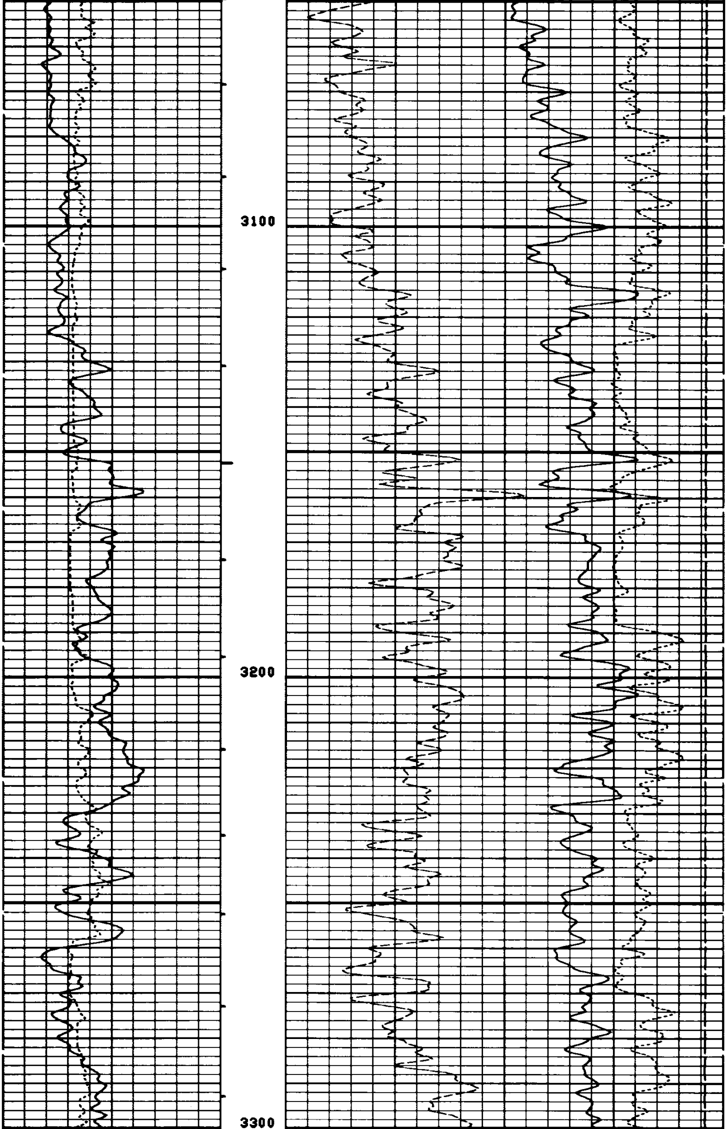


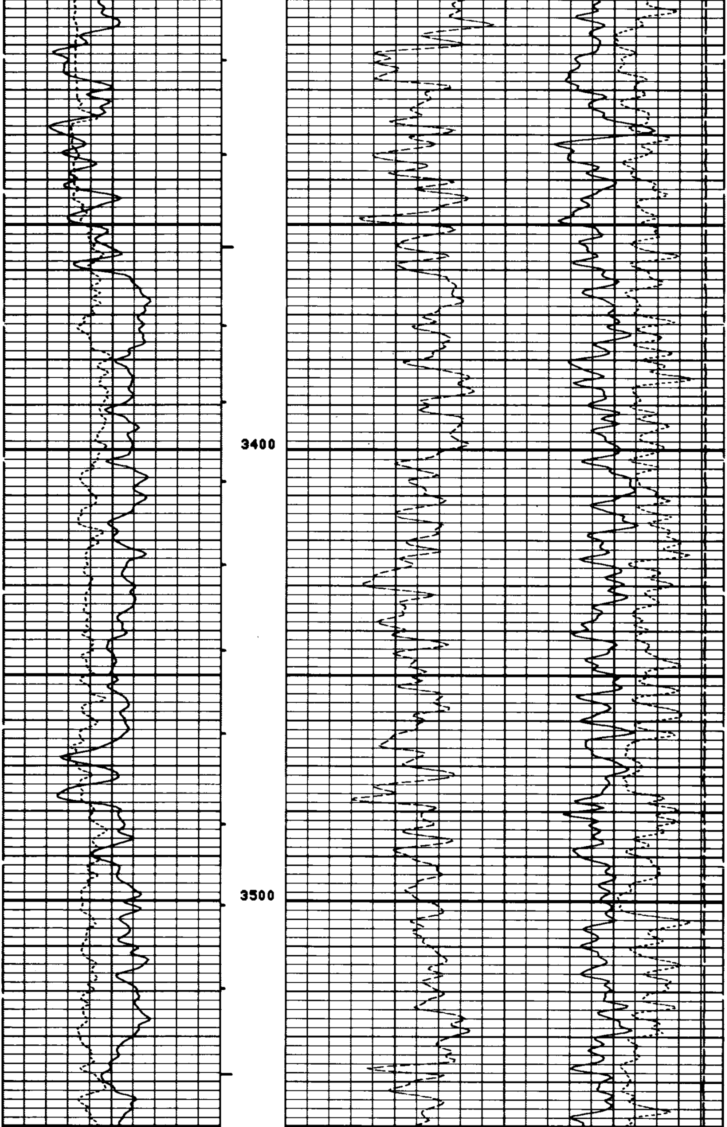


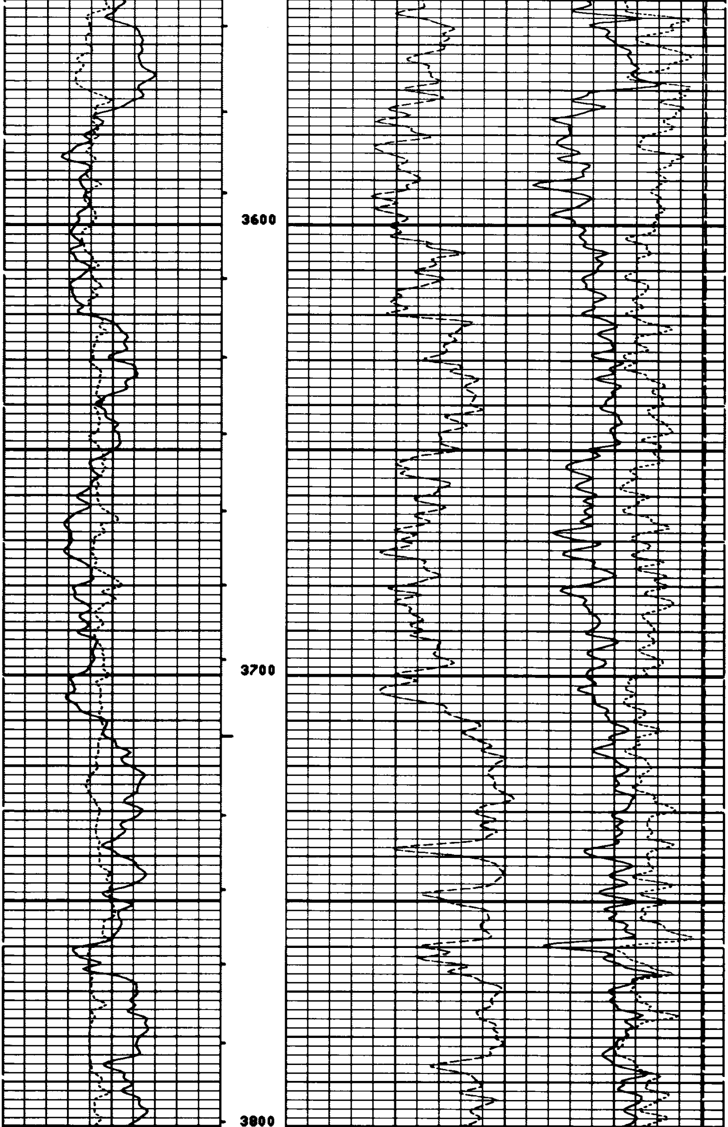


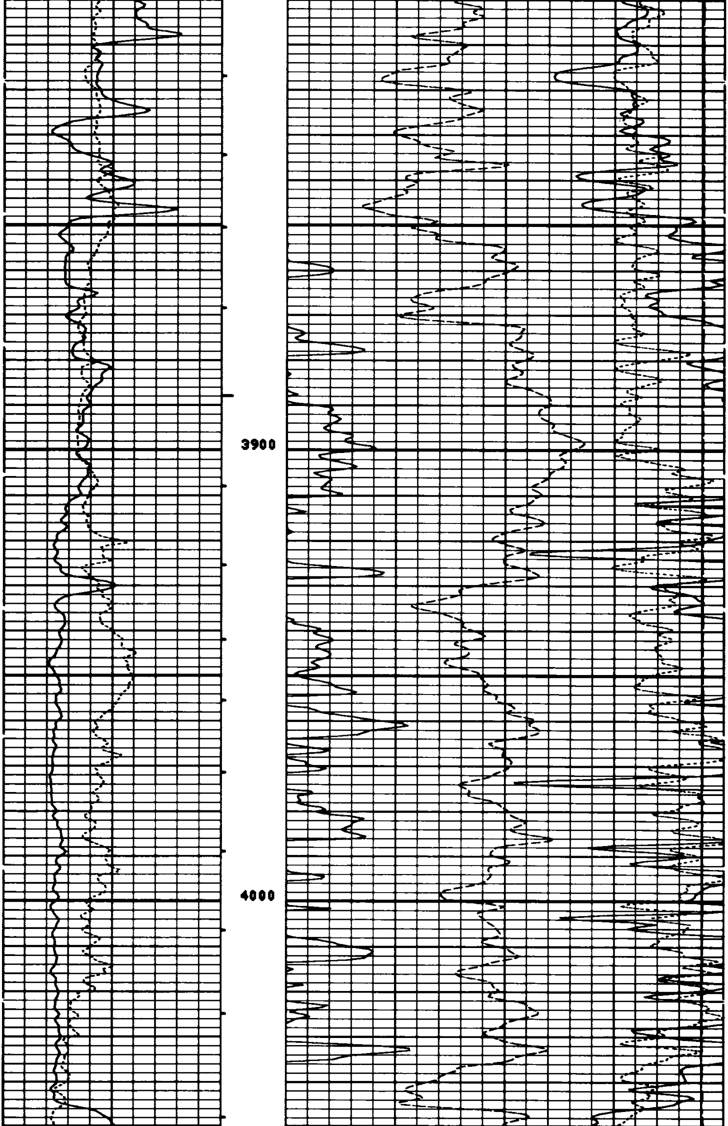


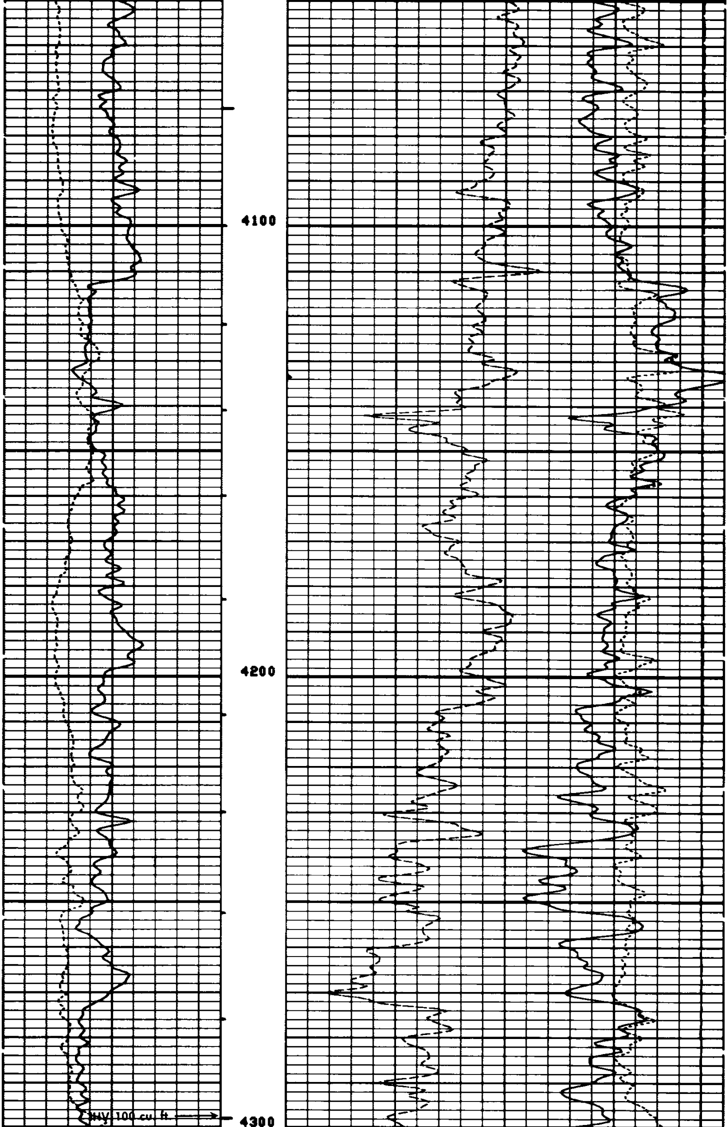


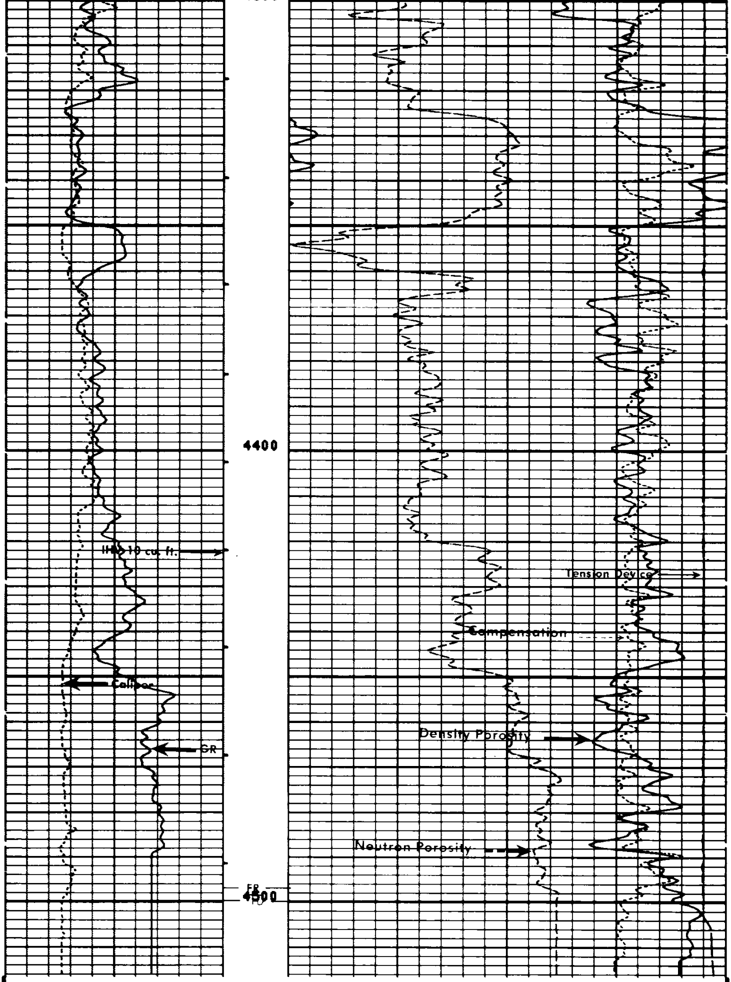












FILE 4 07-FEB-85 00:07

TENS(LB)
20000. 0.0
DRHO(G/C3)
-.2500 .25000

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

NPHI
.60000 0.0
DPHI
.60000 0.0

SENSOR MEASURE POINT TO TOOL ZERO

NCNL	18.0	FEET	GR	26.5	FEET
FFDC	2.7	FEET	FCNL	18.0	FEET
CALI	2.7	FEET	NFDC	2.7	FEET
NRAT	18.0	FEET	TENS	-.2	FEET

PARAMETERS

NAME	VALUE	UNIT	NAME	VALUE	UNIT
HC	CALI		PSNR	2.18200	
FD	1.00000	G/C3	MATR	SAND	
FDCC	ALLO		MDEN	2.65000	G/C3
BHS	OPEN		BHF	WATE	
BS	8.00000	IN			

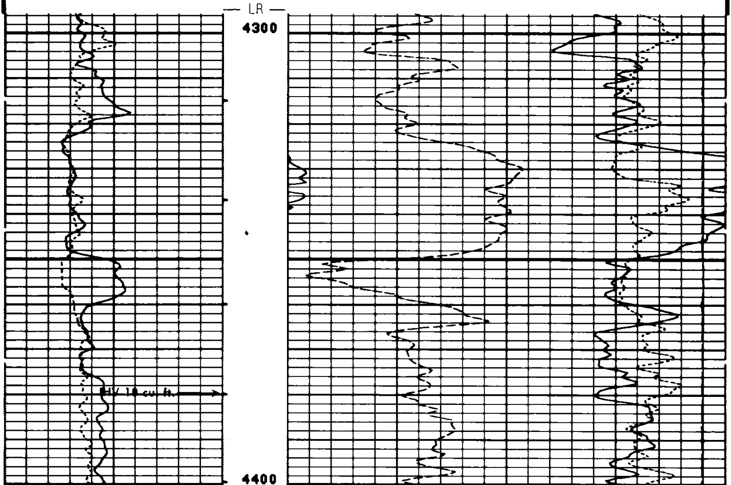
TENS(LB)
20000. 0.0
DRHO(G/C3)
-.2500 .25000

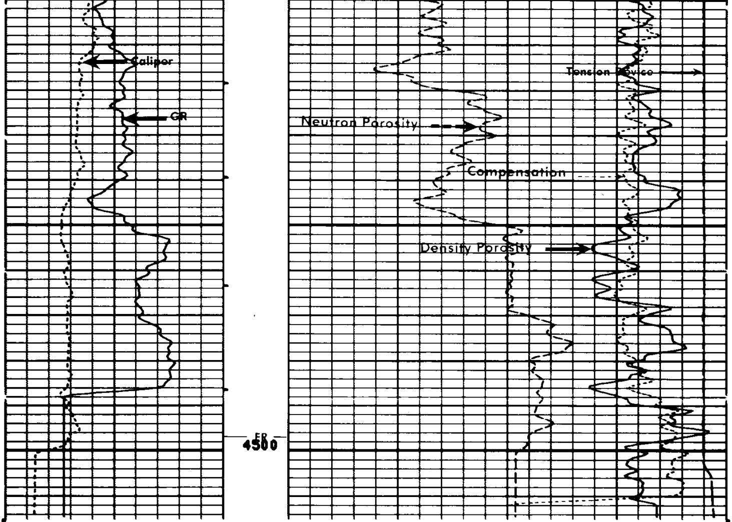
CALI(IN)
6.0000 16.000
GR (GAPI)
0.0 150.00

NPHI
.60000 0.0
DPHI
.60000 0.0

REPEAT SECTION

FILE 3 07-FEB-85 00:06





FILE 3 06-FEB-85 23:58

TENS(LB)
20000. 0.0
DRHO(G/C3)
-.2500 .25000

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

NPHI
.60000 0.0
DPHI
.60000 0.0

SENSOR MEASURE POINT TO TOOL ZERO

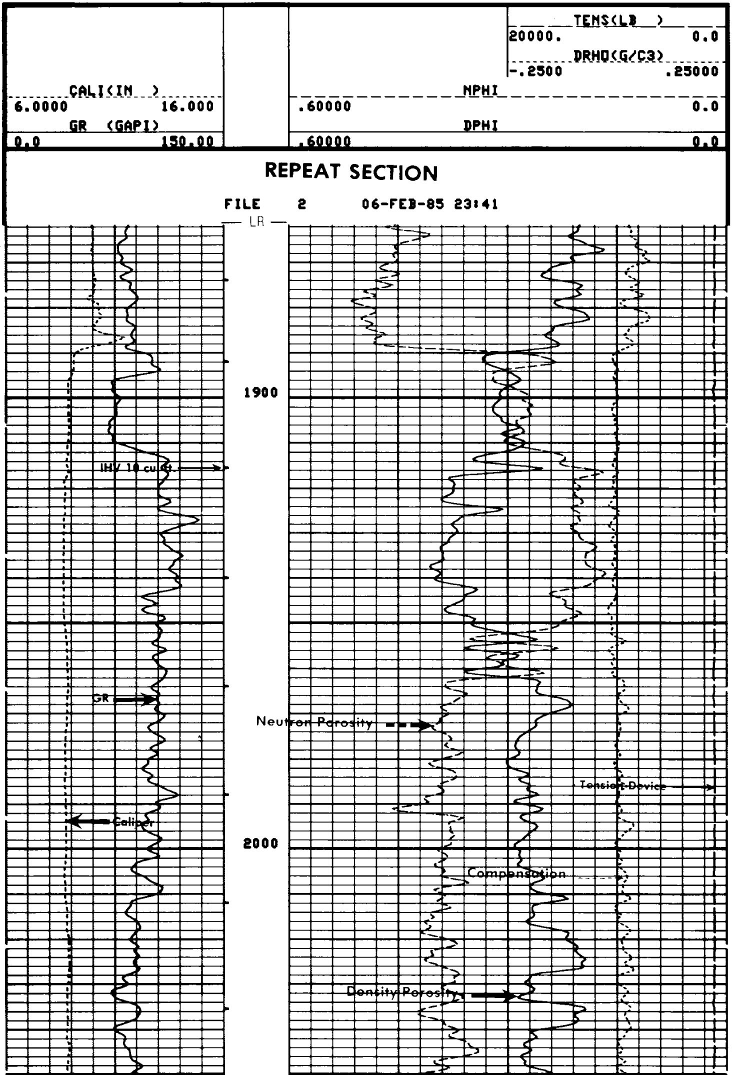
NCNL	18.0	FEET	GR	26.5	FEET
FFDC	2.7	FEET	FCNL	18.0	FEET
CALI	2.7	FEET	NFDC	2.7	FEET
NRAT	18.0	FEET	TENS	-.2	FEET

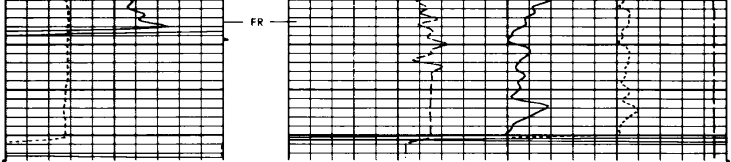
PARAMETERS

NAME	VALUE	UNIT	NAME	VALUE	UNIT
HC	CALI		PSNR	2.18200	
FD	1.00000	G/C3	MATR	SAND	
FDCC	ALLO		MDEN	2.65000	G/C3
BHS	OPEN		BHF	WATE	
BS	8.00000	IN			

REPEAT SECTION

FILE 2 06-FEB-85 23:41





FILE 2 06-FEB-85 23:32

```
                                                    TENS(LB  )
                                                 20000.            0.0
                                                     DRHO(G/C3)
                                                 -.2500        .25000
     CALI(IN  )                               NPHI
6.0000          16.000      .60000                                 0.0
     GR  (GAPI)                               DPHI
0.0             150.00      .60000                                 0.0
```

SENSOR MEASURE POINT TO TOOL ZERO

```
NCNL 18.0  FEET                      GR    26.5  FEET
FFDC  2.7  FEET                      FCNL  18.0  FEET
CALI  2.7  FEET                      NFDC   2.7  FEET
NRAT 18.0  FEET                      TENS   -.2  FEET
```

PARAMETERS

```
NAME  VALUE     UNIT                 NAME  VALUE     UNIT

HC    CALI                           PSNR  2.18200
FD    1.00000   G/C3                 MATR  SAND
FDCC  ALLO                           MDEN  2.65000   G/C3
BHS   OPEN                           BHF   WATE
BS    8.00000   IN
```

```
                BEFORE SURVEY CALIBRATION SUMMARY


  PERFORMED:      85/02/06
  PROGRAM FILE: ISN    (VERSION    26.2    83/11/17)


SGTE                DETECTOR CALIBRATION SUMMARY

              MEASURED
           BKGD     JIG         CALIBRATED         UNITS
   GR       58      218            165             GAPI


CNTA                DETECTOR CALIBRATION SUMMARY

               TANK                           JIG
          INPUT  CALIBRATED          MEASURED    CALIBRATED
  NRAT    2.18200  2.158               2.179        2.155


PGTK                DETECTOR CALIBRATION SUMMARY

               BLOCK                          JIG
          INPUT  CALIBRATED          MEASURED    CALIBRATED      UNITS
  FFDC     496      337                461          313          CPS
  NFDC     660      528                690          552          CPS


PGTK                CALIPER CALIBRATION SUMMARY
```

```
             MEASURED                              CALIBRATED
           SMALL    LARGE                        SMALL       LARGE        UNITS
  CALI     11.2     15.0                          8.0        12.0          IN

                         FILE     1         06-FEB-85 08:56
```

```
                  AFTER SURVEY TOOL CHECK SUMMARY


   PERFORMED:      85/02/07
   PROGRAM FILE: ISN     (VERSION     26.2     83/11/17)


 CNTA                         TOOL   CHECK

                            JIG
                      BEFORE        AFTER
   NRAT               2.155         2.148

   POROSITY CHANGE  (LIME):   -.000


 PGTK                         TOOL   CHECK

                            JIG
                      BEFORE        AFTER      UNITS
   FFDC                313           314        CPS
   NFDC                552           572        CPS

   RHOB  CHANGE (WATER):    .027 G/C3

                         FILE    6       07-FEB-85 03:54
```

```
                    SHOP SUMMARY


   PERFORMED:      85/01/15
   PROGRAM FILE: SHOP    (VERSION     26.2     83/11/17)


 PGTK                   DETECTOR CALIBRATION SUMMARY

                  BLOCK                             JIG
          MEASURED    CALIBRATED      MEASURED    CALIBRATED      UNITS

   FFDC    496          337             465          316           CPS
   NFDC    660          528             665          531           CPS

             (PGS:542 , PDH:264 , GSR:5    , SFT :500  )
```

```
                    SHOP SUMMARY


  PERFORMED:      85/02/04
  PROGRAM FILE: SHOP    (VERSION     26.2     83/11/17)


CNTA                    DETECTOR CALIBRATION SUMMARY

                TANK                              JIG
        MEASURED   CALIBRATED       MEASURED    CALIBRATED

  NRAT     2.182        2.158           2.150        2.125

                         (CNC:2359, CNB:1564)
```