Western Atlas International®

ATLAS WIRELINE SERVICES

COMPENSATED DENSILOG® COMPENSATED NEUTRON GAMMA RAY

FILE NO. 3947

API NO. 36-009-00267

5" = 100'

COMPANY **NORTHWEST NATURAL GAS COMPANY**

WELL I. W. 13b - 11

FIELD MIST

COUNTY COLUMBIA STATE OREGON

LOCATION:
272.25' NORTH & 344.20' EAST
FROM THE WEST 1/4 CORNER OF:

SEC 11 TWP 6N RGE 5W

OTHER SERVICES
DIFL-GR-CAL
BHC AC-GR-CAL
DIPLOG

PERMANENT DATUM GROUND LEVEL ELEV. 886.45
LOGGING MEASURED FROM K. B. 11.4 FT. ABOVE P.D.
DRILLING MEASURED FROM K. B.

ELEVATIONS
KB 897.85'
DF ---
GL 886.45'

DATE	25-SEP-91		29-SEP-91	
RUN	1		2	
SERVICE ORDER	66910		65912	
DEPTH-DRILLER	2214'		2905'	
DEPTH-LOGGER	2208'		2905	
BOTTOM LOGGED INTERVAL	2205'		2902	
TOP LOGGED INTERVAL	530'		2210'	
CASING - DRILLER	13 3/8"	@ 532'	8 5/8"	@ 2210'
CASING - LOGGER	530'		2210'	
BIT SIZE	12 1/4"		7-7/8"	
TYPE FLUID IN HOLE	GEL/POLYMER		KCL/HEC 10/CAC	
DENSITY / VISCOSITY	9.3	55	9.2	42
PH / FLUID LOSS	9.0	4.6	9.0	12.4
SOURCE OF SAMPLE	FLOWLINE		FLOWLINE	
RM AT MEAS. TEMP.	2.14	@ 72 F	.130	@ 69 F
RMF AT MEAS. TEMP.	2.31	@ 72 F	.126	@ 69 F
RMC AT MEAS. TEMP.	2.01	@ 72 F	.154	@ 69 F
SOURCE OF RMF / RMC	MEASURED	MEASURED	MEASURED	MEASURED
RM AT BHT	1.55	@ 101 F	.090	@ 103 F
TIME SINCE CIRCULATION	5 1/2 HRS.		6 HRS.	
MAX. REC. TEMP. DEG. F	102 F		103 F	
EQUIP. NO. / LOC.	HL 6399	BAKRSFLD	HL 6399	BAKRFLD
RECORDED BY	TORGERSON		TORGERSON	
WITNESSED BY	CLAYTON ROTH		CLAYTON ROTH	

FINAL PRINT

FOLD HERE

IN MAKING INTERPRETATIONS OF LOGS OUR EMPLOYEES WILL GIVE CUSTOMER THE BENEFIT OF THEIR BEST JUDGEMENT, BUT SINCE ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS, WE CANNOT, AND WE DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATION. WE SHALL NOT BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COST, DAMAGES, OR EXPENSES WHATSOEVER INCURRED OR SUSTAINED BY THE CUSTOMER RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR EMPLOYEES.

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	@		@
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REMARKS RUN (1)

TAYLOR RIG 4
BHT 102 F & 102 F
VOLUME COMPUTED FOR 8 5/8" CASING
REPEAT SECTION RECORDED 3' SHALLOW
GAMMA RAY SPIKE @ 2105' ON MAIN LOG DUE TO NEUTRON ACTIVATION

REMARKS RUN (2)

TAYLOR RIG 4
BHT 103 F & 103 F
TOTAL BOREHOLE VOLUME RECORDED = 230 FT3
VOLUME COMPUTED FOR 5 1/2" LINER = 120 FT3

EQUIPMENT DATA

RUN	TRIP	TOOL	SERIAL NO.	SERIES NO.	POSITION
1	1	CDL	74178	2227XA	DECENT.
1	1	CAL	74178	2227XA	DECENT.
1	1	CN	56066	2435XA	DECENT.
1	1	GR	78607	1309XA	DECENT.
1	1	TEMP			
1	1	PCM	73007	3506XA	DECENT.

EQUIPMENT DATA

RUN	TRIP	TOOL	SERIAL NO.	SERIES NO.	POSITION
2	1	CDL	74178	2227XA	DECENT.
2	1	CAL	74178	2227XA	DECENT.
2	1	CN	56066	2435XA	DECENT.
2	1	GR	78607	1309XA	DECENT.
2	1	TEMP			
2	1	PCM	73007	3506XA	DECENT.

5" = 100'

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*******************************************************************************************

                              FILE:   3


            CURVE  DELAY  REPORT
            --------------------


                                     PHYS.
                          CURVE      DELAY     UNITS
                          -----      -----     -----

                          SSD          0.3     FT.IN
                          LSD            0     FT.IN
                          CAL          0.3     FT.IN
                          SSN         10.3     FT.IN
                          LSN         10.9     FT.IN
                          GR          16.6     FT.IN
                          TEMP           0     FT.IN
                          DTEM           0     FT.IN


            PARAMETERS
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NAME	DEPTH INTERVAL	VALUE	UNITS
A	2217 TO 505	1.000	
CAL COR	2217 TO 505	CAL	
CASING CNC	2217 TO 505	NOT ACTIVE	
CHISM CN	2217 TO 505	NOT ACTIVE	
CHISM DEN	2217 TO 505	NOT ACTIVE	
M	2217 TO 505	2.000	
MATRIX	2217 TO 505	SANDSTONE	
O.D.	2217 TO 505	8.625	INCH
RHO F	2217 TO 505	0.980	G/CC
RHO M	2217 TO 505	2.650	G/CC
SALINITY	2217 TO 505	0.000	PPK

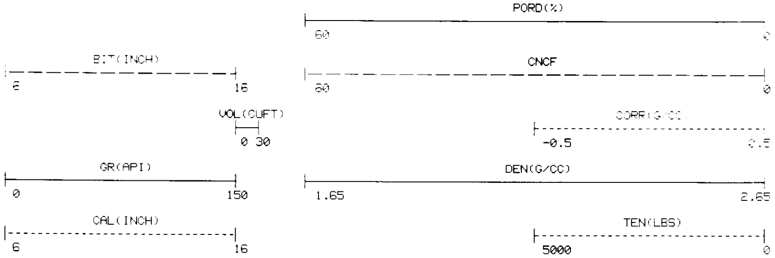
PARAMETERS

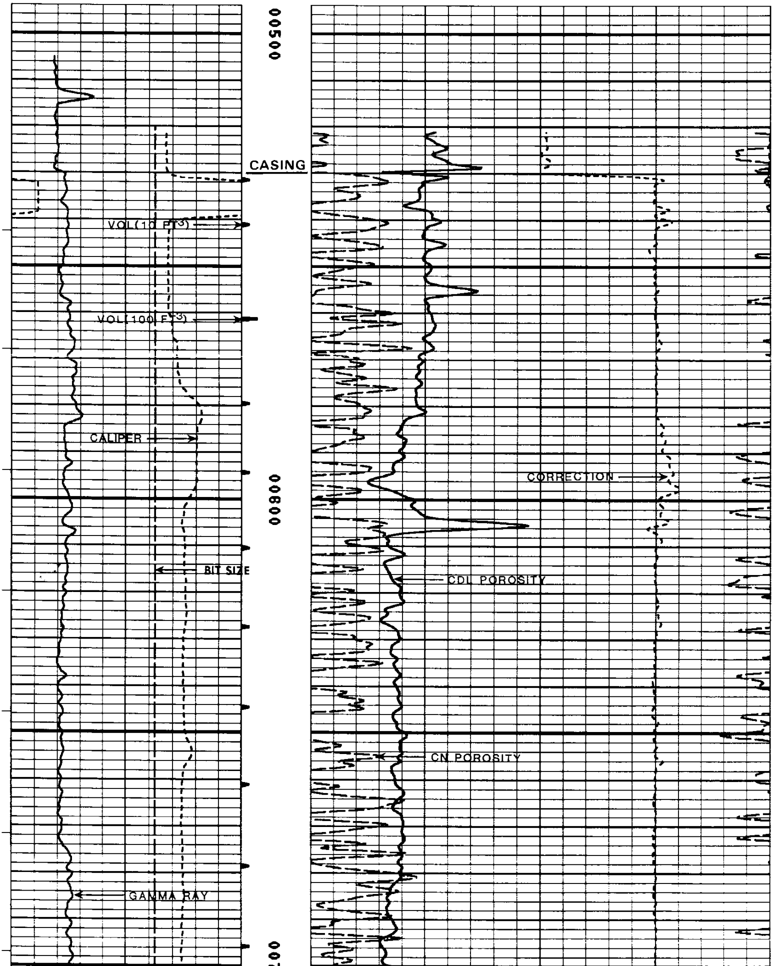
NAME	DEPTH INTERVAL	VALUE	UNITS
A	2917 TO 2142	1.000	
CAL COR	2917 TO 2142	CAL	
CASING CNC	2917 TO 2142	NOT ACTIVE	
CHISM CN	2917 TO 2142	NOT ACTIVE	
CHISM DEN	2917 TO 2142	NOT ACTIVE	
M	2917 TO 2142	2.000	
MATRIX	2917 TO 2142	SANDSTONE	
O.D.	2917 TO 2142	0.000	INCH
RHO F	2917 TO 2142	0.980	G/CC
RHO M	2917 TO 2142	2.650	G/CC
SALINITY	2917 TO 2142	0.000	PPK

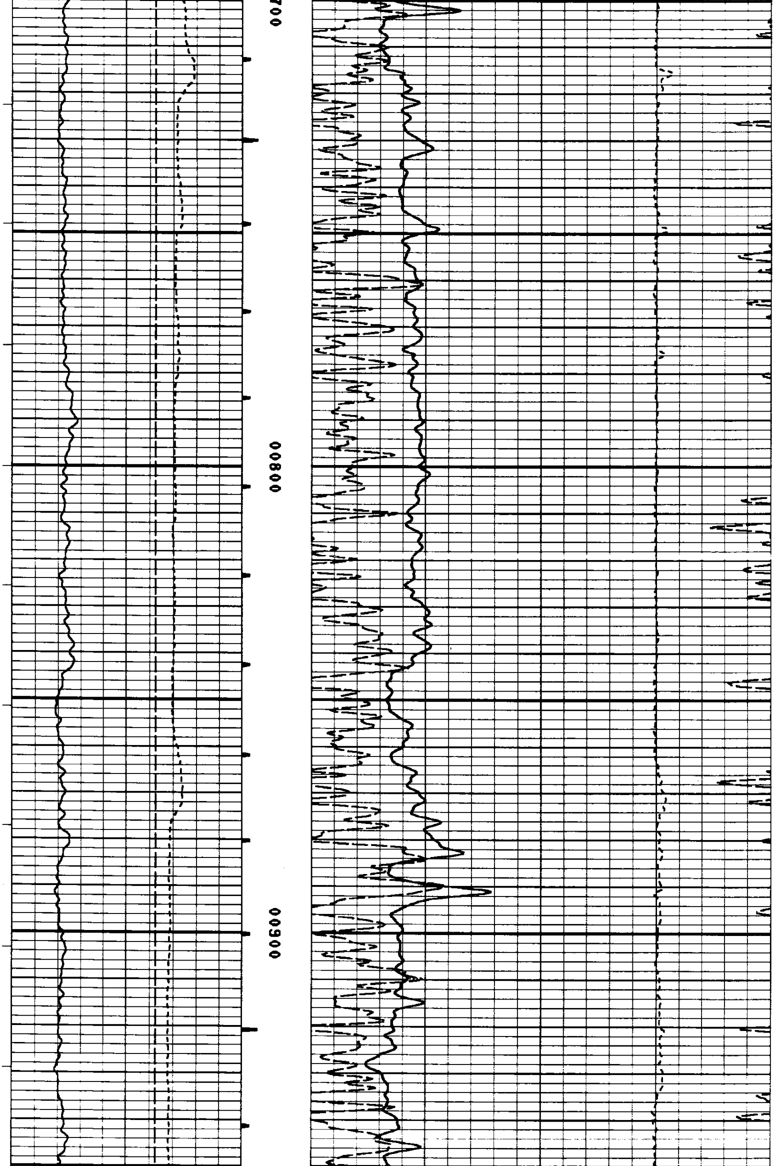
DISPLAY SCALE CHANGES

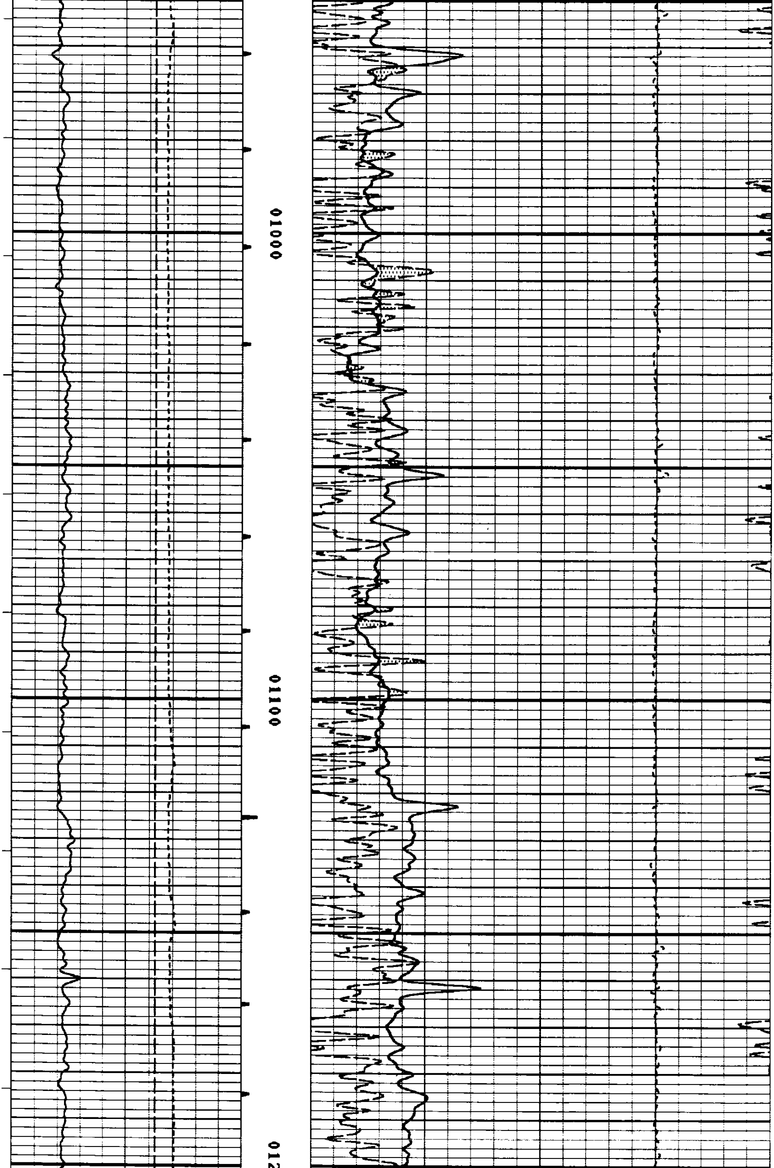
*** NONE ***

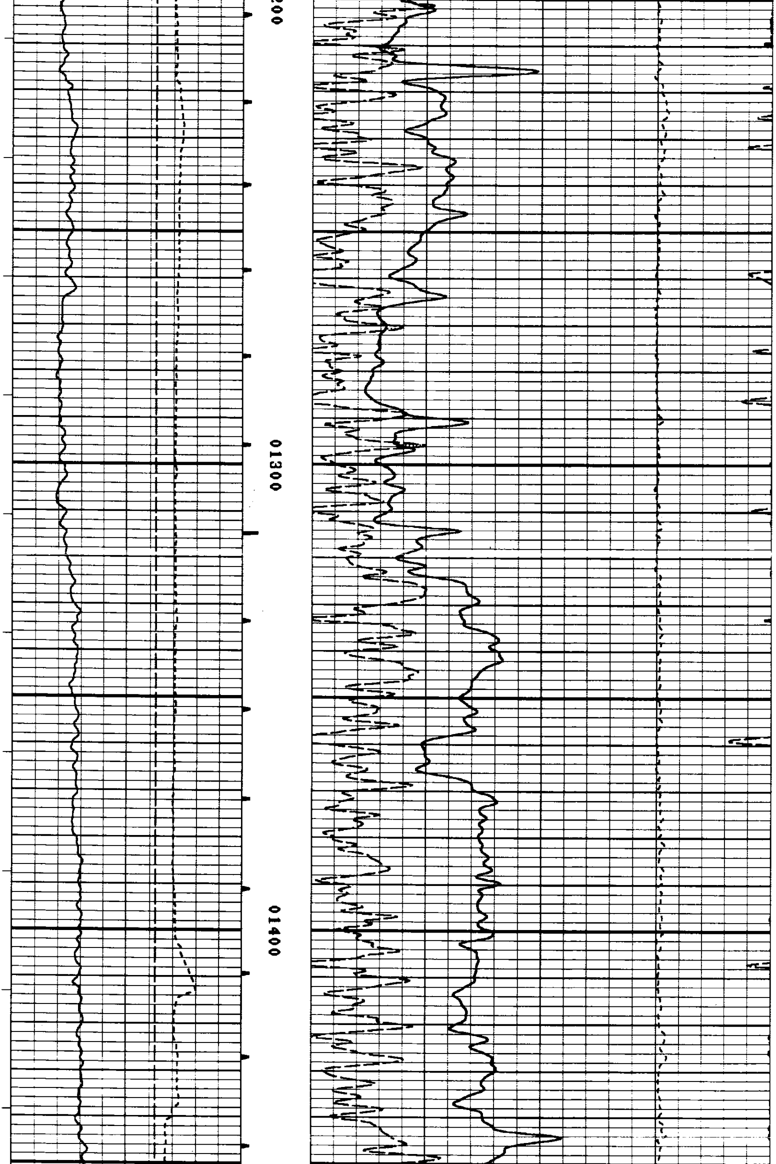
COMPANY:	OREGON NATURAL GAS DEVELOPMENT CORP.		RUN: 1
WELL NAME:	I. W. 13b - 11		TRIP: 1
SERVICE:	BK013A	FILE: 3 DATE: 09/24/91	TIME: 23:13:12
REVISION:	FSYS256 REV:G002 VER:2.0		MODE: RECORD

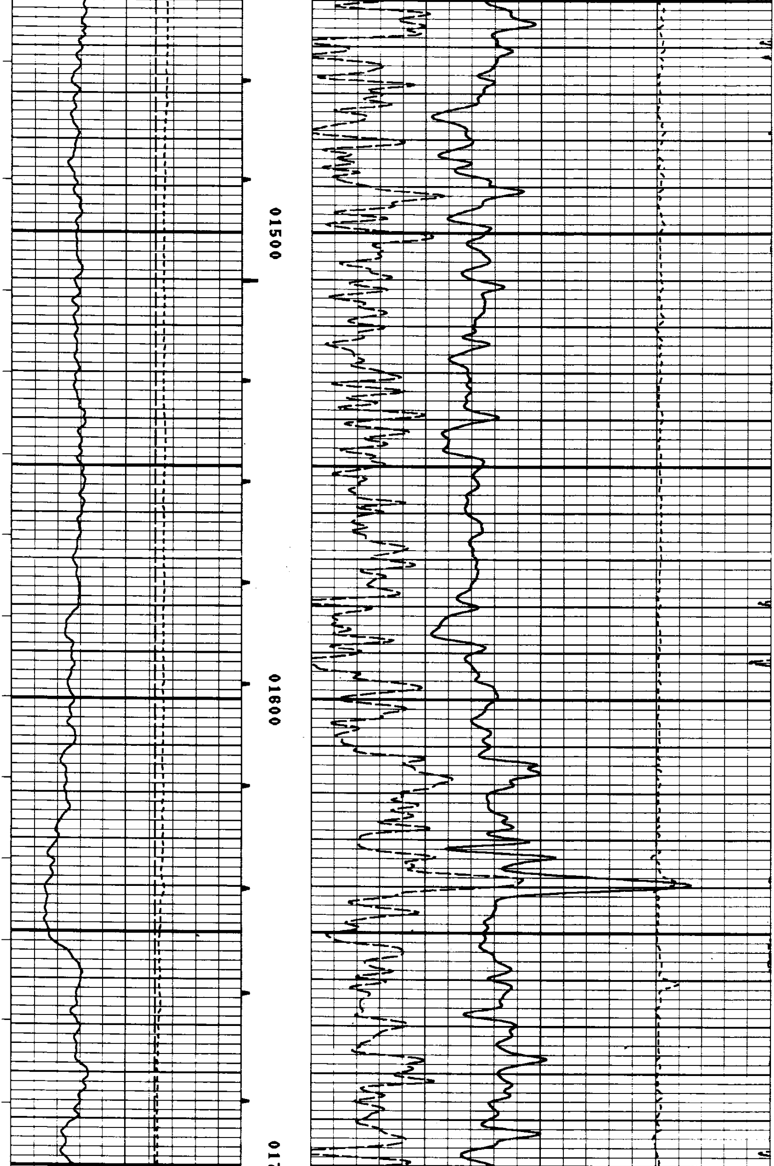


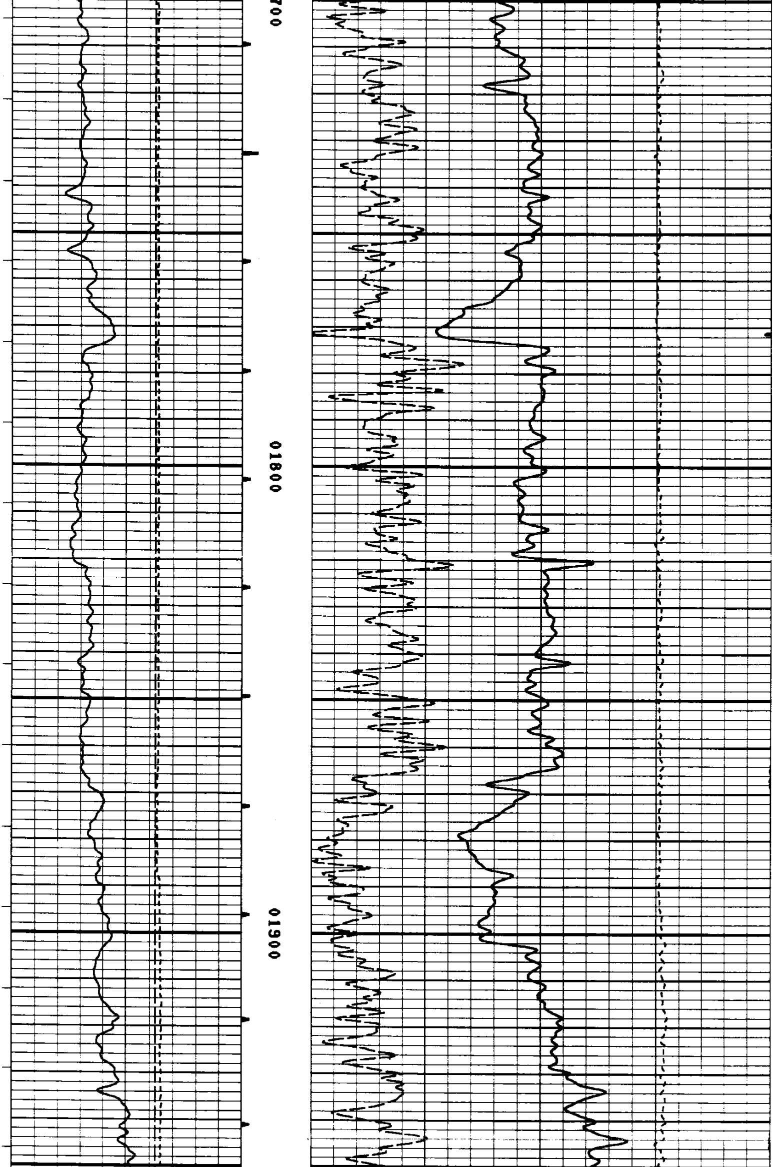


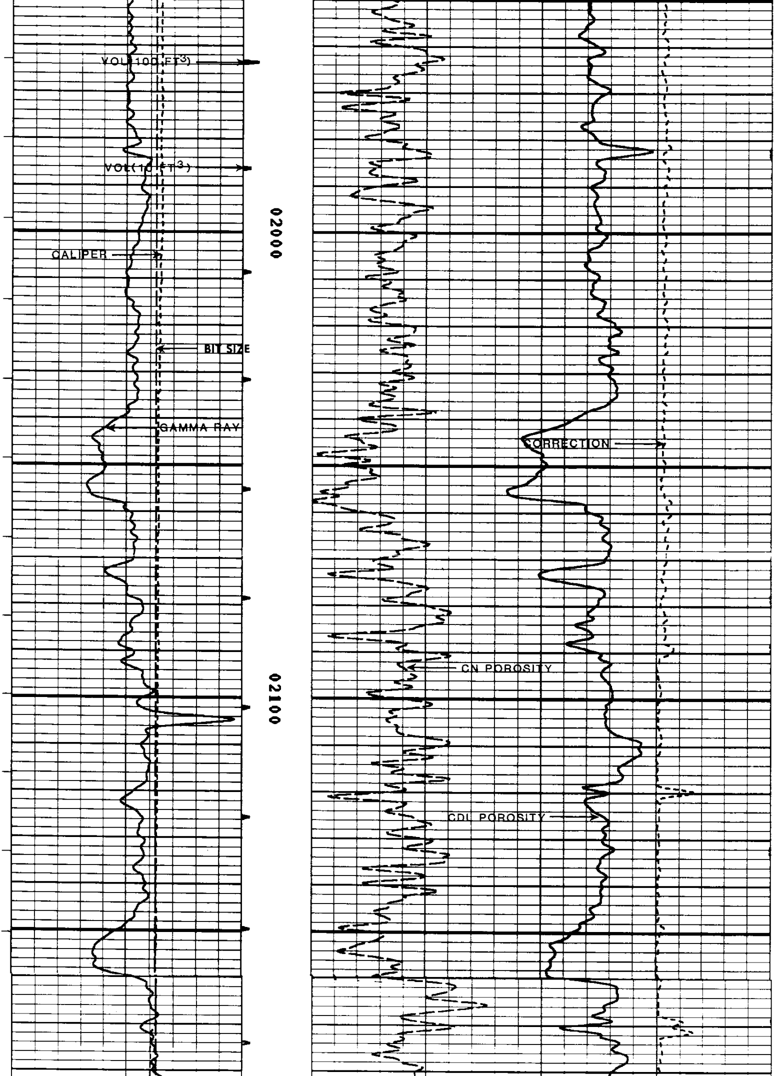


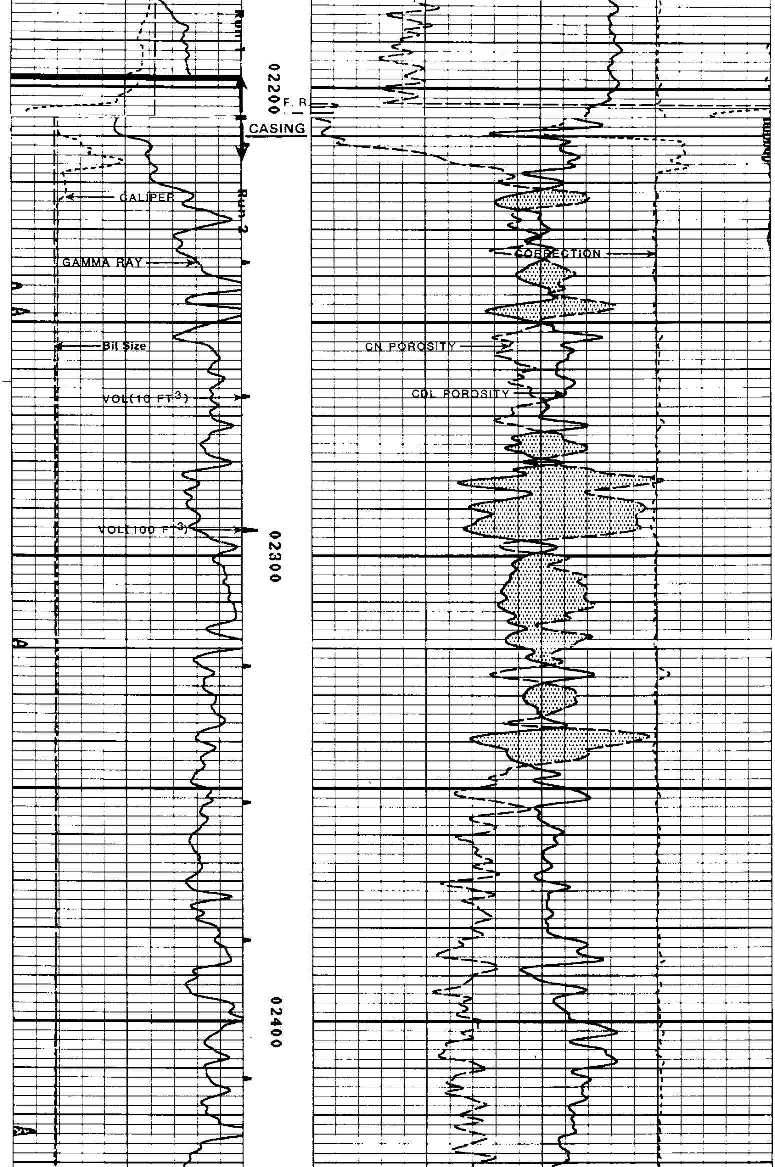


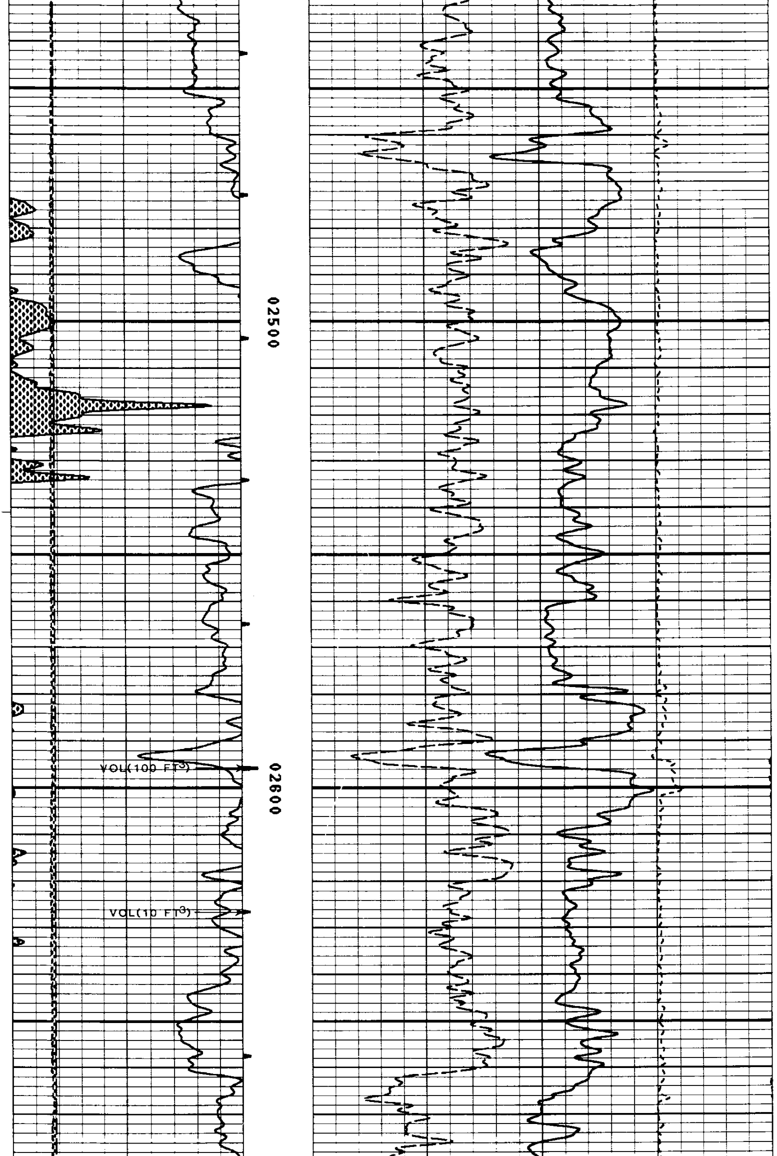


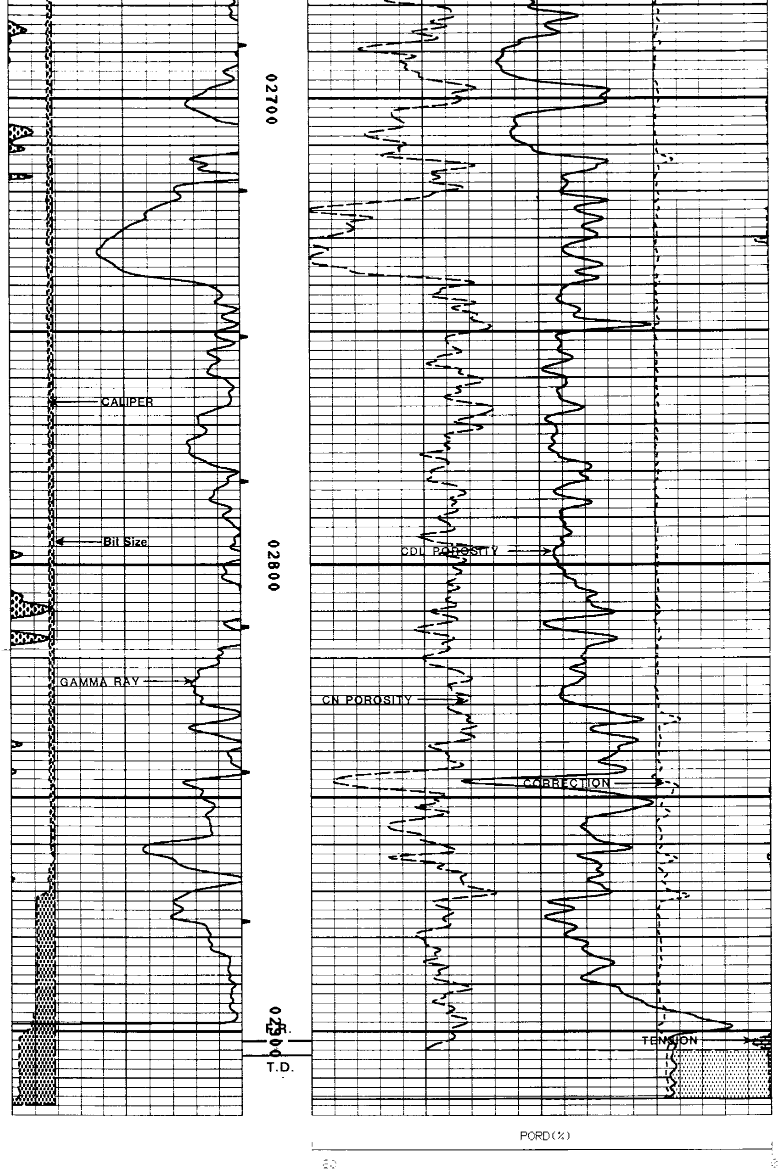












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          BIT INCH                                                  CNCF
|------------------------------|   |------------------------------------------------------------------|
6                             16   30                                                                  0

                        VOL(CUFT)                                                 CORR G/CC
                         |--|                                   |------------------------------------|
                         0 30                                   -0.5                                0.5

          GR API                                                DEN(G/CC)
|------------------------------    --------------------------------------------------------------------
0                            150   1.65                                                             2.65

          CAL(INCH)                                                         TEN(LBS)
|------------------------------|                                |------------------------------------
6                             16                                5000                                 0
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FILE: 3

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REPEAT SECTION

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FILE: 1

CURVE DELAY REPORT

CURVE	PHYS. DELAY	UNITS
SSD	0,3	FT,IN
LSD	0	FT,IN
CAL	0.3	FT,IN
SSN	10,3	FT,IN
LSN	10,9	FT,IN
GR	16,6	FT,IN
TEMP	0	FT,IN
DTEM	0	FT,IN

PARAMETERS

NAME	DEPTH INTERVAL	VALUE	UNITS
A	2229 TO 1963	1.000	
CAL COR	2229 TO 1963	CAL	
CASING CNC	2229 TO 1963	NOT ACTIVE	
CHISM CN	2229 TO 1963	NOT ACTIVE	
CHISM DEN	2229 TO 1963	NOT ACTIVE	
M	2229 TO 1963	2.000	
MATRIX	2229 TO 1963	SANDSTONE	
O.D.	2229 TO 1963	8.625	INCH
RHO F	2229 TO 1963	0.980	G/CC
RHO M	2229 TO 1963	2.650	G/CC
SALINITY	2229 TO 1963	0.000	PPK

DISPLAY SCALE CHANGES

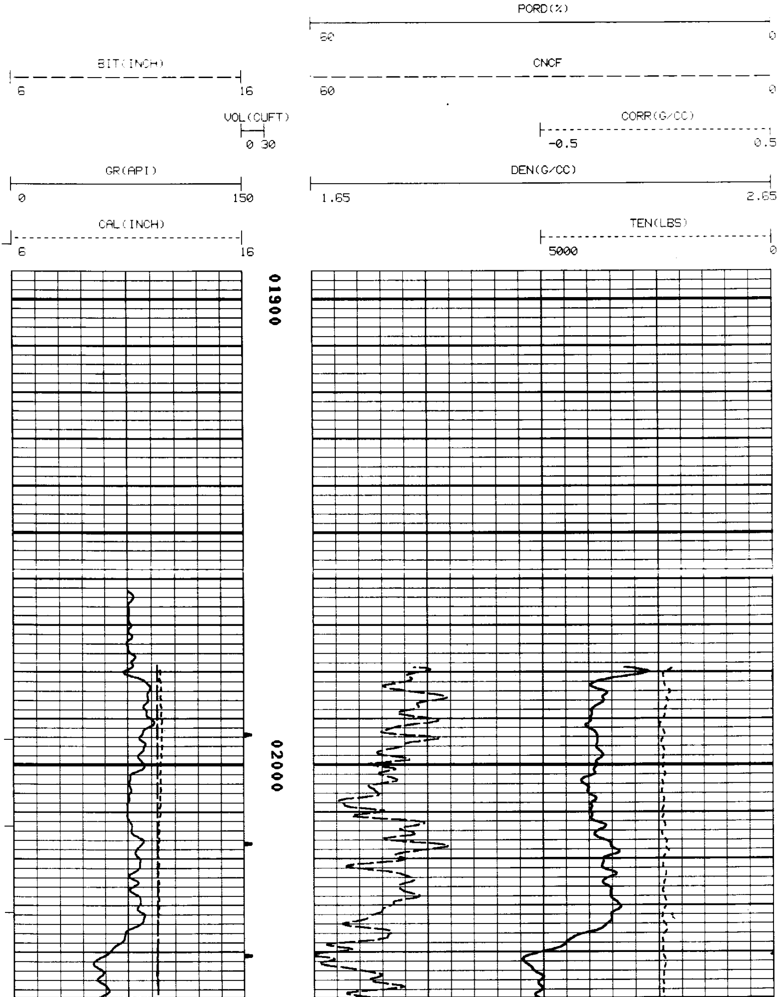
*** NONE ***

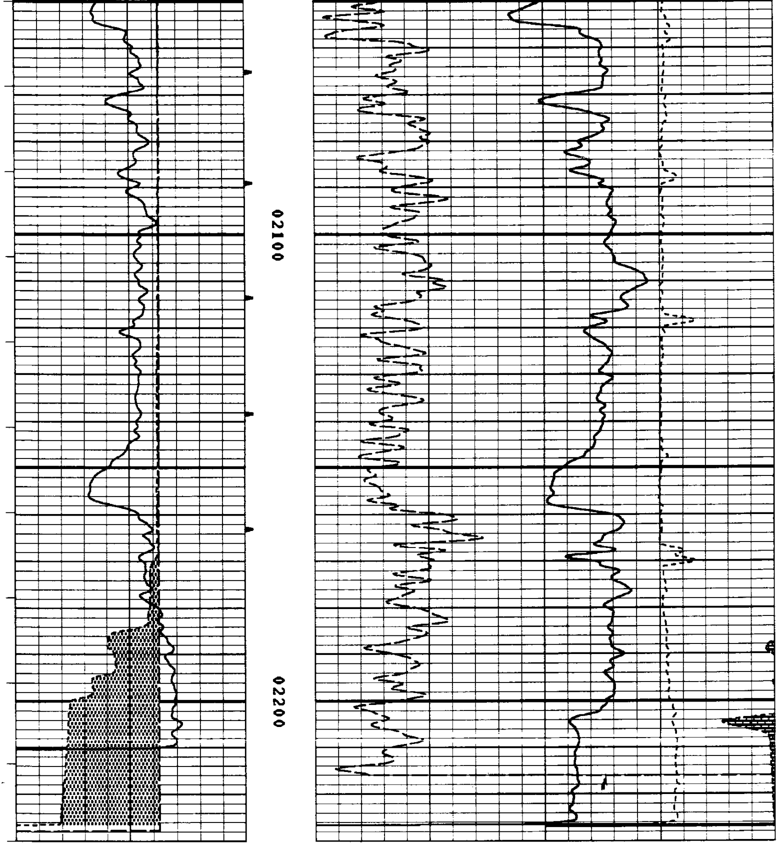
COMPANY: OREGON NATURAL GAS DEVELOPMENT CORP. RUN: 1

WELL NAME: I. W. 13b - 11 TRIP: 1

SERVICE: B4013A FILE: 1 DATE: 09/24/91 TIME: 22:41:13

REVISION: FSYS256 REV:G002 VER:2.0 MODE: RECORD





REPEAT SECTION

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                                FILE:   2

         CURVE  DELAY  REPORT
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                                      PHYS.
                          CURVE       DELAY      UNITS
                          -----       -----      -----
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SSD	0.3	FT.IN
LSD	0	FT.IN
CAL	0.3	FT.IN
SSN	10.2	FT.IN
LSN	10.2	FT.IN
GR	13.2	FT.IN
TEMP	0	FT.IN
DTEM	0	FT.IN

PARAMETERS

NAME	DEPTH INTERVAL	VALUE	UNITS
A	2317 TO 2679	1.000	
CAL COR	2317 TO 2679	CAL	
CASING CNC	2317 TO 2679	NOT ACTIVE	
CHISM DN.	2317 TO 2679	NOT ACTIVE	
CHISM DEN	2317 TO 2679	NOT ACTIVE	
M	2317 TO 2679	2.000	
MATRIX	2317 TO 2679	SANDSTONE	
O.D.	2317 TO 2679	5.500	INCH
RHO F	2317 TO 2679	0.980	G/CC
RHO M	2317 TO 2679	2.650	G/CC
SALINITY	2317 TO 2679	0.000	PPK

DISPLAY SCALE CHANGES

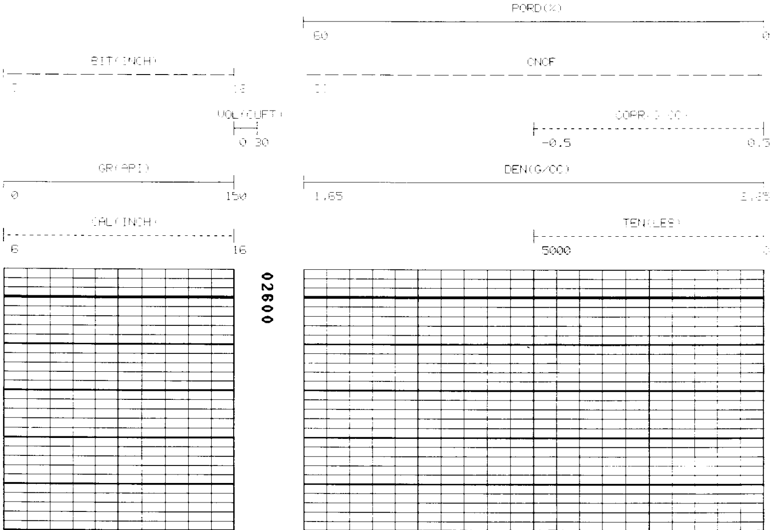
*** NONE ***

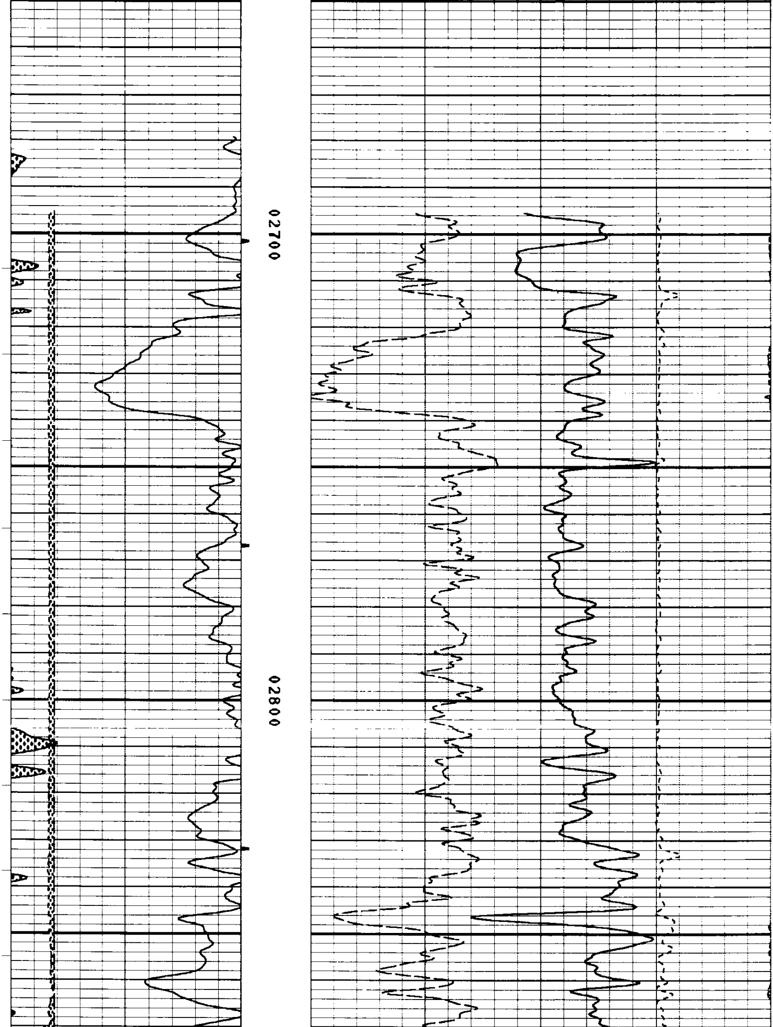
COMPANY: OREGON NATURAL GAS DEVELOPMENT CORP. RUN: 2

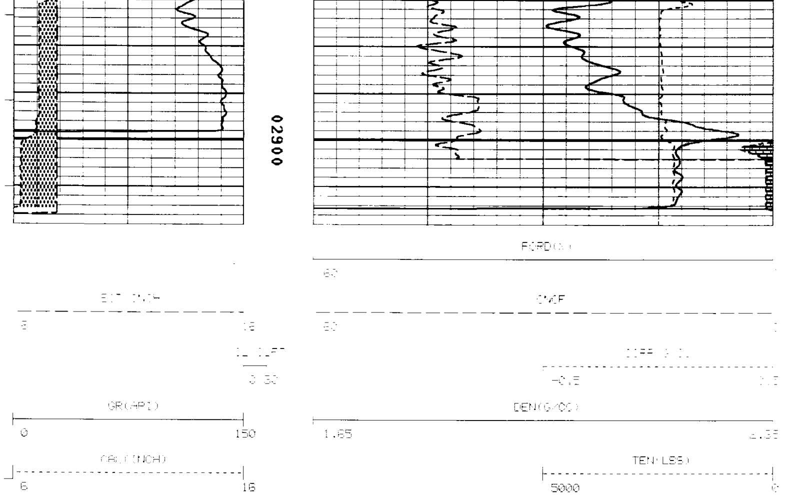
WELL NAME: I. W. 13b - 11 TRIP: 1

SERVICE: BKC13A FILE: 3 DATE: 09 22 91 TIME: 01:08:13

REVISION: FS:S256 REV:G002 VER:2.0 MODE: RECORD







FILE: 2

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*******************************************************************************************************************

                ****************************************
                *                                      *
                *  CALIBRATION/VERIFICATION SUMMARIES  *
                *  DATE 09/29/91        TIME 03:02:22  *
                *  RUN  2               TRIP 1         *
                *                                      *
                ****************************************


          LOG NAME CDL    ASSET NO. 74178    UNIT NO. HL 6399
      CALIBRATION ENTERED ON  09/28/91 AT 18:04:01     2227 DUAL SCINT.
                         SOURCE NUMBER   845

   CURVE   COUNTS/SEC.    SCALING FACTORS    RATIO    ENG. VALUE  UNITS
           BLOCK  VALUE   ADD.     MULT.     MG/AL
   ----    ----------   ----------------   --------  ----------  -----

       DATE 09/19/91         CALIBRATION          TIME 11:48:53

   LSD     MG      353.8
   SSD             313.3
   DEN                                                    1.706  G/CC
   CORR                                                  -0.007  G/CC
   DENP                                                   1.685  G/CC
   CORP                                                  -0.041  G/CC
   LSD     AL       34.8   0.000     1.0000  10.1604
   SSD              99.0   0.000     1.0000   2.1591
   DEN                                                    2.697  G/CC
   CORR                                                  -0.006  G/CC
   DENP                                                   2.682  G/CC
   CORP                                                  -0.039  G/CC
   LSD     RIBL     65.2
   SSD             144.4
   DEN                                                    2.591  G/CC
   CORR                                                   0.138  G/CC
   LSD     RIBH    149.9
   SSD              99.2
   DEN                                                    1.731  G/CC
   CORR                                                  -0.324  G/CC

       DATE 09/19/91     PRIMARY VERIFICATION      TIME 12:15:21
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LSD     JIG     130.5    0.000    1.0000
SSD             163.7    0.000    1.0000
DEN                                                        2.186  G/CC
CORR                                                       0.047  G/CC

     DATE 09/28/91   BEFORE LOG VERIFICATION    TIME 18:25:44

LSD     JIG     128.5    0.000    1.0000
SSD             161.9    0.000    1.0000
DEN                                                        2.186  G/CC
CORR                                                       0.041  G/CC

     DATE 09/29/91    AFTER LOG VERIFICATION    TIME 02:50:56

LSD     JIG     128.3    0.000    1.0000
SSD             163.4    0.000    1.0000
DEN                                                        2.198  G/CC
DIFF                                                       0.051  G/CC


      LOG NAME CAL     ASSET NO. 74178    UNIT NO. HL 6399
  CALIBRATION ENTERED ON  09/28 91 AT 18:03:43

CURVE   MILLIVOLTS      SCALING FACTORS     ENGINEERING VALUES   UNITS
          LOW    HIGH    ADD.      MULT.        LOW         HIGH
----  --------------- ------------------ --------------------- -----

     DATE 09/19/91          CALIBRATION              TIME 12:25:34

CAL     3219.0  5597.2   -3.326     0.0246      7.000      15.000 INCH

                        PRIMARY VERIFICATION              NOT DONE

     DATE 09/29/91   BEFORE LOG VERIFICATION    TIME 01:01:53

CAL        E      3874.0   -5.051     0.0246       E            7.978 INCH

     DATE 09/29/91    AFTER LOG VERIFICATION    TIME 02:08:59

CAL        E      3875.5   -5.051     0.0246       E            7.983 INCH


      LOG NAME CN      ASSET NO. 56066    UNIT NO. HL 6399
  CALIBRATION ENTERED ON  09/28/91 AT 18:04:29          2435
                   SOURCE NUMBER   117836

CURVE   COUNTS/SEC.     SCALING FACTORS    RATIO    ENG. VALUE  UNITS
                         ADD.     MULT.  LSN/(SSN*4)
----    ----------    ----------------- --------- ----------  -----

     DATE 09/19/91          CALIBRATION             TIME 09:41:15

LSN          74.3          0.000    1.0000
SSN         155.4          0.000    1.0000
CN                                           0.1194        25.738  %

     DATE 09/19/91    PRIMARY VERIFICATION      TIME 10:08:16

LSN          88.5          0.000    1.0000
SSN         145.6          0.000    1.0000
CN                                           0.1519        15.632  %

     DATE 09/28/91   BEFORE LOG VERIFICATION    TIME 18:32:45

LSN          85.5          0.000    1.0000
SSN         141.3          0.000    1.0000
CN                                           0.1512        15.780  %

     DATE 09/29/91    AFTER LOG VERIFICATION    TIME 02:55:35

LSN          83.7          0.000    1.0000
SSN         140.0          0.000    1.0000
CN                                           0.1495        16.171  %


      LOG NAME GR      ASSET NO. 78607    UNIT NO. HL 6399
  CALIBRATION ENTERED ON  09/28/91 AT 18:04:53

CURVE   COUNTS/SEC.     SCALING FACTORS     ENGINEERING VALUES   UNITS
          LOW    HIGH    ADD.      MULT.        LOW         HIGH
----  --------------- ------------------ --------------------- -----

     DATE 09/19/91          CALIBRATION             TIME 17:04:50

GR        72.0    290.8    0.000     0.6854      0.000     150.000 API

     DATE 09/19/91    PRIMARY VERIFICATION      TIME 17:07:43
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GR        73.6   231.0    0.000    0.6854     50.411    199.452 API

     DATE 09/28/91   BEFORE LOG VERIFICATION    TIME 18:35:50

GR       128.2   351.0    0.000    0.6854     87.851    240.559 API

     DATE 09/29/91    AFTER LOG VERIFICATION    TIME 02:58:51

GR       163.7   386.0    0.000    0.6854    112.200    264.565 API
```