CC 34-28-65

HALLIBURTON
LOGGING SERVICES, INC.

FINAL PRINT

COMPENSATED DENSITY DUAL SPACED NEUTRON

5" = 100'

COMPANY ________
WELL ________
FIELD ________
COUNTY ________ ST __

COMPANY ARCO OIL AND GAS COMPANY

WELL DEEP CREEK PROSPECT
CC NO. 34-28-65

FIELD MIST

COUNTY COLUMBIA

STATE OR

API NO. NA
LOCATION 1003.69 FT. NORTH
AND 2843.76 FT. WEST FROM
THE SOUTHEAST CORNER OF

SEC. 28 TWP 6N RGE 5W

OTHER SERVICES
DIGL
AVL

PERMANENT DATUM G.L. ELEV. 732.1
LOG MEASURED FROM K.B. 11.5 FT. ABOVE PERM. DATUM
DRILLING MEASURED FROM K.B.

ELEV.: K.B. 743.6
D.F.
G.L. 732.1

DATE	10/27/89			
RUN NO.	ONE			
DEPTH-DRILLER	2240			
DEPTH- LOGGER	2229			
BTM. LOG INTER.	2226			
TOP LOG INTER.	CASING			
CASING-DRILLER	9.625@449	@	@	@
CASING- LOGGER	448			
BIT SIZE	6.25			
TYPE FLUID IN HOLE	LSND/POLYMR			
DENS. ! VISC	10.7 !45	!	!	!
PH ! FLUID LOSS	9.0 !4.4	!	!	!
SOURCE OF SAMPLE	CIRCULATED			
RM @ MEAS. TEMP.	2.74 @75	@	@	@
RMF @ MEAS. TEMP.	2.50 @75	@	@	@
RMC @ MEAS. TEMP.	3.08 @75	@	@	@
SOURCE RMF ! RMC	MEAS.!MEAS.	!	!	!
RM @ BHT	2.00 @105	@	@	@
TIME SINCE CIRC.	7 HOURS			
TIME ON BOTTOM	11:30			
MAX. REC. TEMP.	105 @TD	@	@	@
EQUIP. ! LOCATION	50632!BKFLD	!	!	!
RECORDED BY	DOMBROWSKI			
WITNESSED BY	J. EASTER			

Fold Here

Service Ticket No.: 28521 API Serial No.: NA PGM Version: 2.20 E

Change in Mud Type or Additional Samples

Date/Sample No.	/ / :	/ / :
Depth-Driller		
Type Fluid		
in Hole		
Dens. : Visc.	:	:
pH. : Fluid Loss	:	:
Source of Sample		
Rm @ Meas.Temp.	@	@
Rmf @ Meas.Temp.	@	@
Rmc @ Meas.Temp.	@	@
Source: Rmf:Rmc	:	:
Rm @ BHT	2.00 @105	@
Rmf @ BHT	1.83 @105	@
Rmc @ BHT	2.25 @105	@

RESISTIVITY SCALE CHANGES

Type Log	Depth	Scale Up Hole	Scale Down Hole
		NONE	

RESISTIVITY EQUIPMENT DATA

Run No	Tool Type & No	Pad Type	Tool Pos.	Other
ONE	DSTU #111527	M430		

EQUIPMENT DATA

GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No.	ONE	Run No.		Run No.	ONE	Run No.	ONE
Serial No.	W108579	Serial No.		Serial No.	WPAD009	Serial No.	W108759
Model No.	432	Model No.		Model No.	465	Model No.	432
Diameter	3.625	No.of Cent.		Diameter	4.5	Diameter	3.625
Detector Model No.	NA	Spacing		Log Type	G-G	Log Type	N-N
Type	SCINT			Source Type	CS-137	Source Type	AMBE
Length	4"	LSA		Serial No.	022	Serial No.	94
Distance To Source	NA	FWDA		Strength	1.5 CI	Strength	18.5 CI

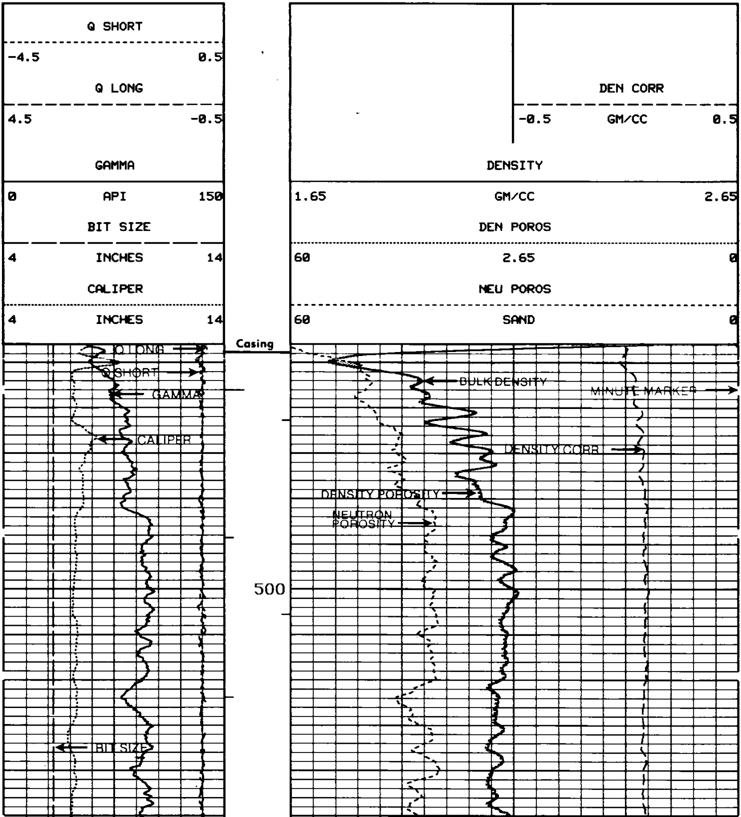
LOGGING DATA

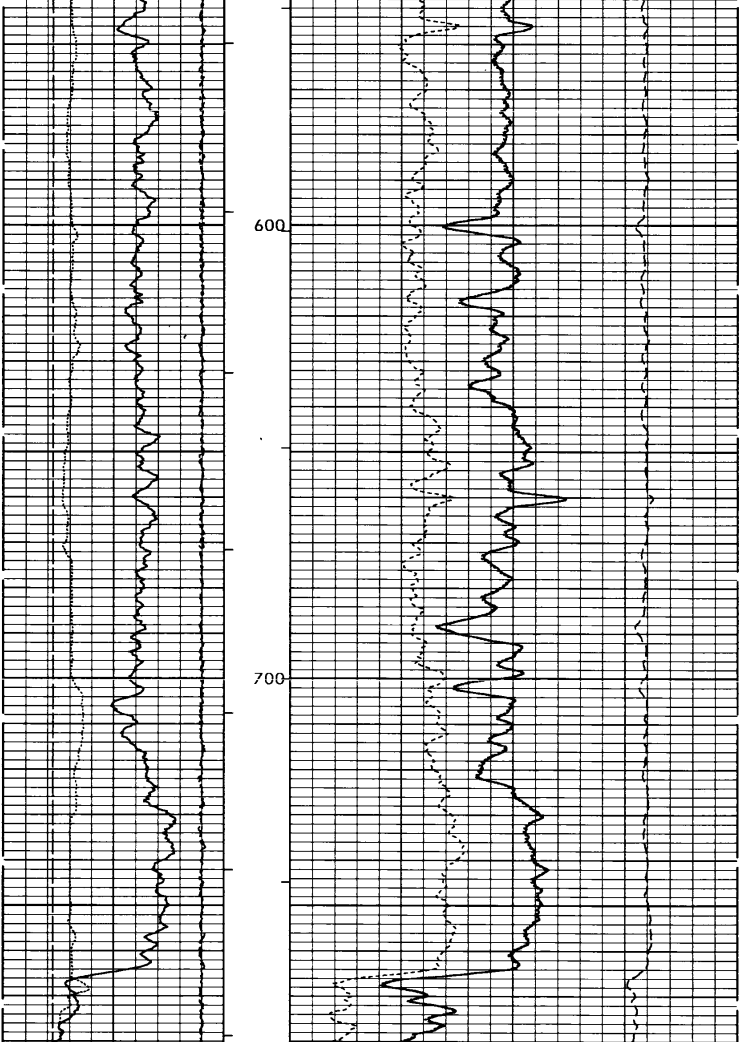
GENERAL				GAMMA		ACOUSTIC			DENSITY			NEUTRON		
Run	Depth		Speed	Scale		Scale			Scale			Scale		
No.	From	To	Ft/Min	L	R	L	R	Matrix	L	R	Matrix	L	R	Matrix
ONE	TD	CSG	30	0	150				1.65	2.65	2.65	60%	0%	SAND
				API	API				GMCC	GMCC	GMCC			
									60%	0%	2.65			

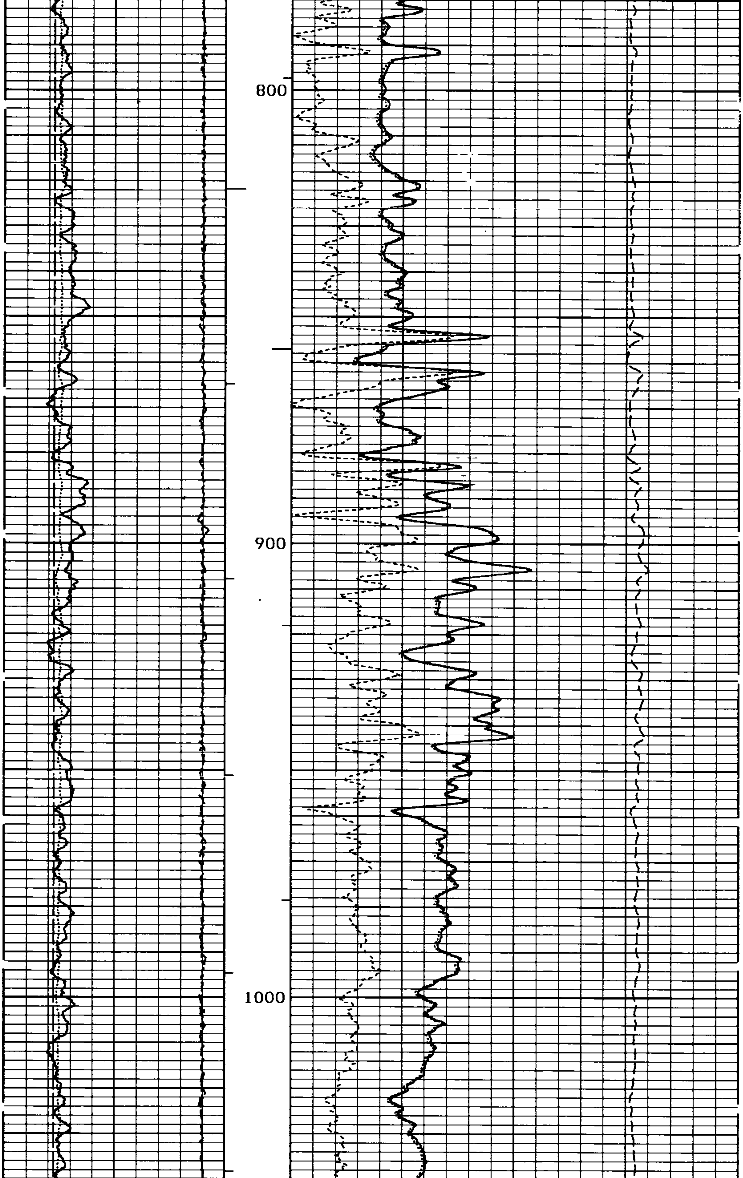
Remarks: AHV CALCULATED FOR 3.5 INCH CASING.

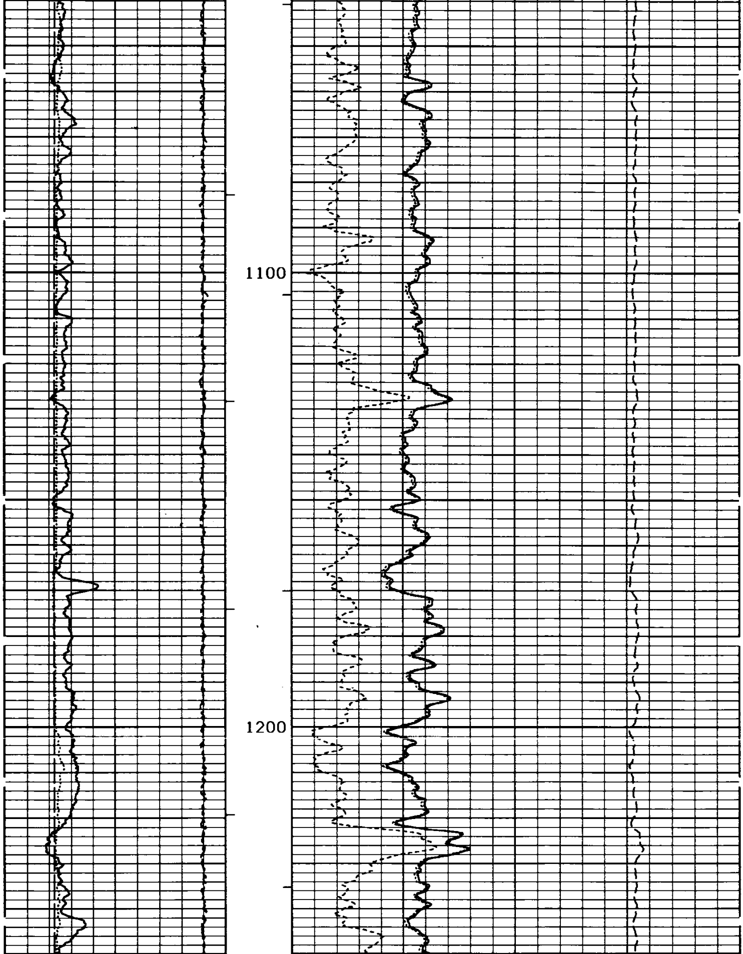
CREW: J. HARES, W. LARSON

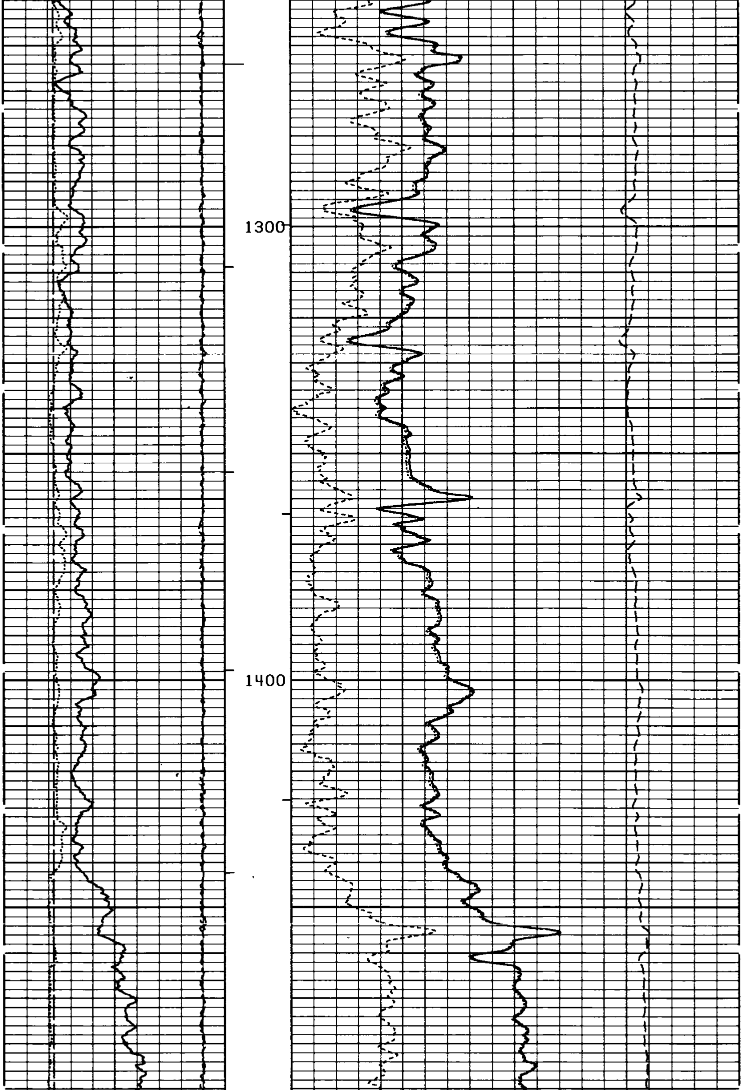
Halliburton Logging Services, Inc. does not guarantee the accuracy of any interpretation of log data, conversion of log data to physical rock parameters or recommendations which may be given by HLS personnel or which may appear on the log or in any other form. Any user of such data, interpretations, conversions or recommendations agrees that HLS is not responsible except where due to gross negligence or wilful misconduct, for any loss, damages, or expenses resulting from the use thereof.

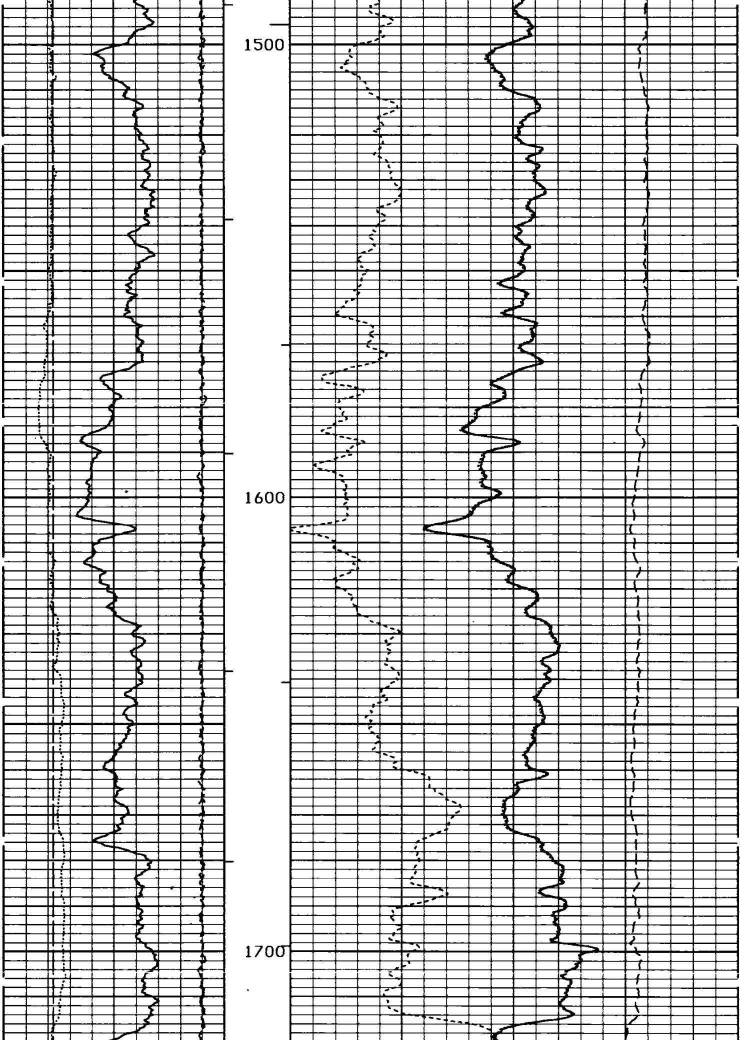


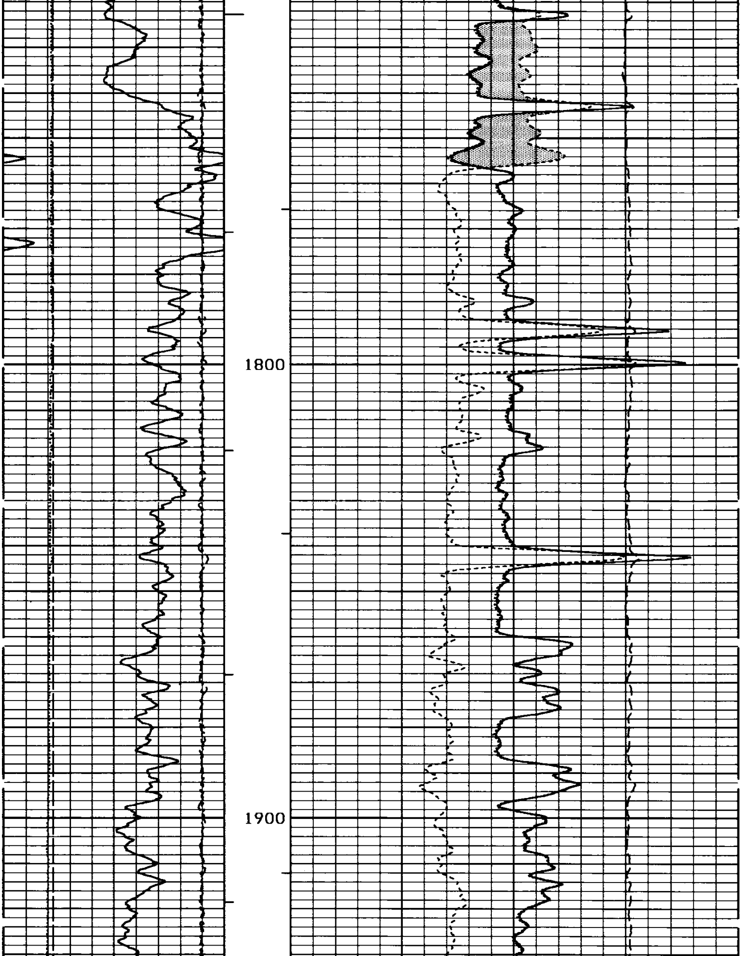


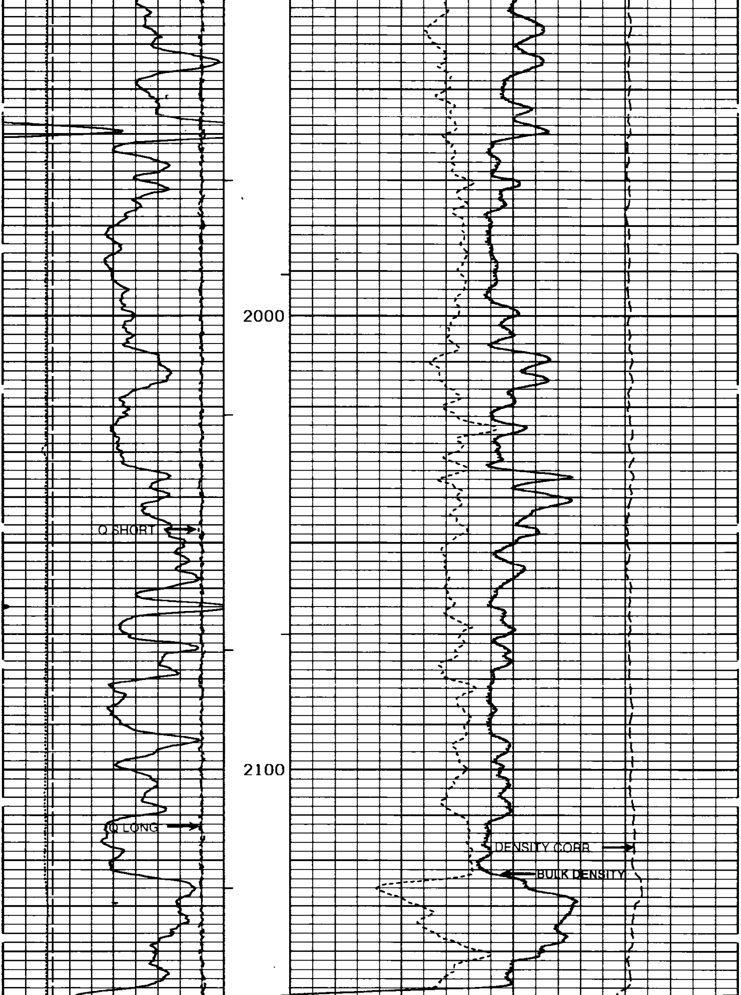


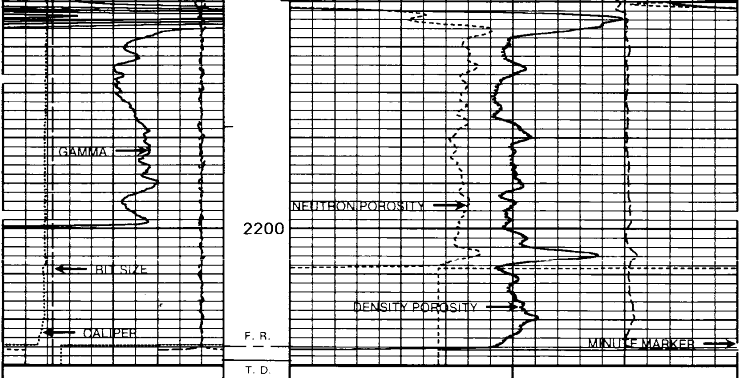












Curve	Left	Unit	Right
Q SHORT	-4.5		0.5
Q LONG	4.5		-0.5
GAMMA	0	API	150
BIT SIZE	4	INCHES	14
CALIPER	4	INCHES	14

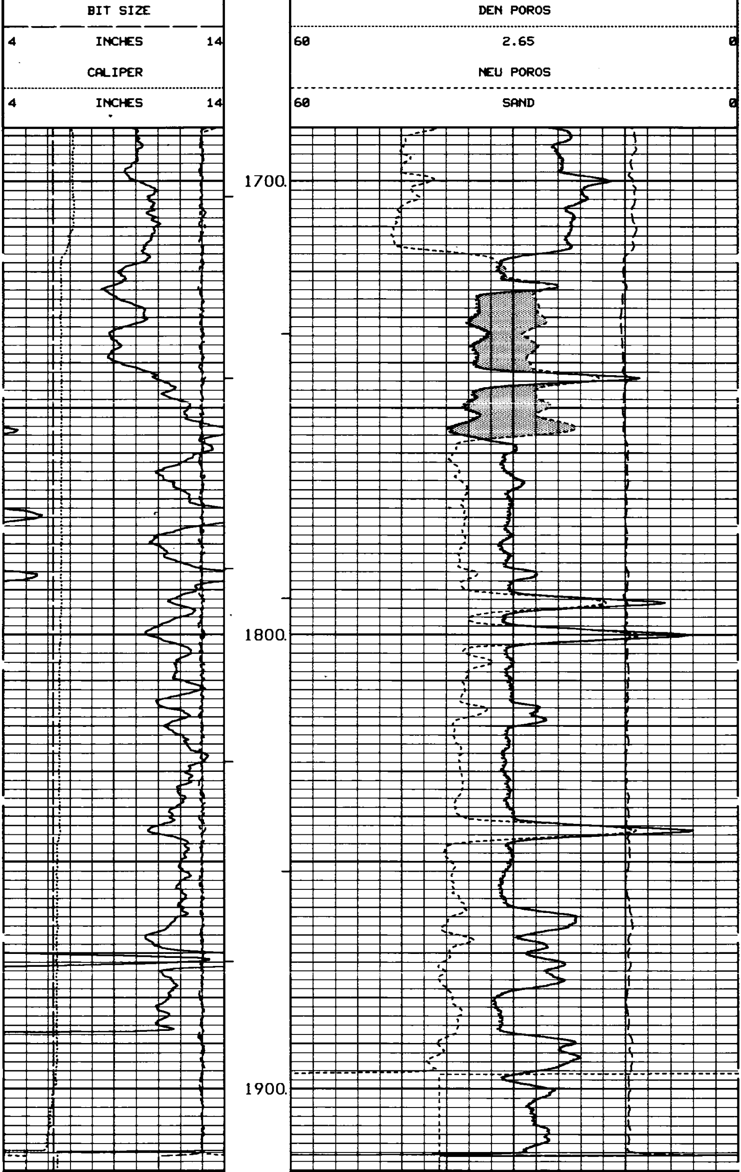
Curve	Left	Unit	Right
DEN CORR	-0.5	GM/CC	0.5
DENSITY	1.65	GM/CC	2.65
DEN POROS	60	2.65	0
NEU POROS	60	SAND	0

SECTION # 4 Date:10/27/89 Time:12: 6 Version:2.20 E

REPEAT SECTION

Curve	Left	Unit	Right
Q SHORT	-4.5		0.5
Q LONG	4.5		-0.5
GAMMA	0	API	150

Curve	Left	Unit	Right
DEN CORR	-0.5	GM/CC	0.5
DENSITY	1.65	GM/CC	2.65



```
          Q SHORT
-4.5                 0.5
          Q LONG                                        DEN CORR
4.5                 -0.5                     -0.5        GM/CC         0.5
          GAMMA                                 DENSITY
0          API       150     1.65               GM/CC                 2.65
         BIT SIZE                               DEN POROS
4        INCHES       14     60                 2.65                     0
         CALIPER                                NEU POROS
4        INCHES       14     60                 SAND                     0

 SECTION # 3  Date:10/27/89  Time:13:23  Version:2.20 E
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                    GAMMA   SHOP CALIBRATION SUMMARY
PERFORMED:  11:10:49  10/04/89    LAST SHOP CALIBRATION:   10:31:50  09/25/89
SERIAL NUMBER: 108579             PROGRAM VERSION: 2.20 G
MODEL: #432         FIELD CALIBRATOR: #2121
PERFORMED BY: DOMBROWSKI

                         MEASURED        CALIBRATED         UNITS
                         --------        ----------         -----
BACKGROUND                  62               61              GAPI
BACKGROUND+CALIBRATOR      335              329              GAPI
CALIBRATOR                 273              268              GAPI

                    GAMMA  BEFORE SURVEY FIELD CHECK SUMMARY
PERFORMED:  00:45:31  10/27/89    LAST SHOP CALIBRATION:   11:10:49  10/04/89
FIELD CALIBRATOR: #2121

                           SHOP             FIELD           UNITS
                         --------        ----------         -----
BACKGROUND                  61               20            API-CPS
BACKGROUND+CALIBRATOR      329              281            API-CPS
CALIBRATOR                 268              261            API-CPS

                    GAMMA  AFTER SURVEY FIELD CHECK SUMMARY
PERFORMED:  13:58:27  10/27/89    LAST SHOP CALIBRATION:   11:10:49  10/04/89

                          BEFORE            AFTER           UNITS
                         --------        ----------         -----
BACKGROUND                  20               37            API-CPS
BACKGROUND+CALIBRATOR      281              302            API-CPS
CALIBRATOR                 261              265            API-CPS


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               DUAL SPACE NEUTRON  SHOP CALIBRATION SUMMARY
PERFORMED:  11:28:13  10/04/89    LAST SHOP CALIBRATION:   15:12:29  09/16/89
SERIAL NUMBER: 108759             PROGRAM VERSION: 2.20 G
MODEL: #434       FIELD CALIBRATOR: #72          SOURCE: #94
PERFORMED BY: DOMBROWSKI

                                    PRIMARY CALIBRATOR

                         MEASURED        CALIBRATED         UNITS
                         --------        ----------         -----
RATIO                      6.583           6.663
POROSITY                  24.949          25.322              %
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                                     FIELD CHECK BLOCK

                        MEASURED          DEFINED            UNITS
                        --------         ----------          -----
CHECK RATIO                6.552            6.632
CHECK POROSITY            24.804           25.175              %

               DUAL SPACE NEUTRON BEFORE SURVEY FIELD CHECK SUMMARY
PERFORMED:  10:43:38  10/27/89    LAST SHOP CALIBRATION:   11:28:13  10/04/89
FIELD CALIBRATOR: #72           SOURCE: #94

                          SHOP             FIELD             UNITS
                        --------         ---------          ------
CHECK RATIO                6.632            6.563
CHECK POROSITY            25.175           24.852              %


               DUAL SPACE NEUTRON AFTER SURVEY FIELD CHECK SUMMARY
PERFORMED:  14:03:49  10/27/89    LAST SHOP CALIBRATION:   11:28:13  10/04/89

                         BEFORE            AFTER             UNITS
                        --------         ---------           -----
CHECK RATIO                6.563            6.680
CHECK POROSITY            24.852           25.398              %


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                  SDL CALIPER   SHOP CALIBRATION SUMMARY
PERFORMED:  11:16:05  10/05/89    LAST SHOP CALIBRATION:   13:35:51  09/19/89
SERIAL NUMBER: 112308             PROGRAM VERSION: 2.20 E
MODEL: #465
PERFORMED BY: DOMBROWSKI

                        MEASURED        CALIBRATED           UNITS
                        --------        ----------           -----
VALUE 1                    8.296            8.000            INCHES
VALUE 2                   10.355           10.000            INCHES

                  SDL CALIPER  BEFORE SURVEY FIELD CHECK SUMMARY
PERFORMED:  10:36:13  10/27/89    LAST SHOP CALIBRATION:   11:16:05  10/05/89

                          SHOP             FIELD             UNITS
                        --------         ---------           -----
VALUE 1                    8.000            7.763            INCHES

                  SDL CALIPER  AFTER SURVEY FIELD CHECK SUMMARY
PERFORMED:  13:54:08  10/27/89    LAST SHOP CALIBRATION:   11:16:05  10/05/89

                         BEFORE            AFTER             UNITS
                        --------         ---------           -----
VALUE 1                    7.763            7.705            INCHES


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                SPECTRAL DENSITY  SHOP CALIBRATION SUMMARY
PERFORMED:  10:19:12  10/05/89    LAST SHOP CALIBRATION:   17:24:01  09/05/89
SERIAL NUMBER: PAD009             PROGRAM VERSION: 2.20 E
MODEL: #465        FIELD CALIBRATOR: #SDL         SOURCE: #022
PERFORMED BY: DOMBROWSKI




                                    PRIMARY CALIBRATOR
                        MEASURED        CALIBRATED           UNITS
                        --------        ----------           -----
AL BLOCK
--------------
AL DENSITY                 2.584            2.588            GM/CC
AL CORRECTION               .027             .036            GM/CC
AL Pe SHORT                2.985            3.084
AL Pe LONG                 3.088            3.087

AL BLOCK W/SLEEVE
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AL DENSITY                  2.588           2.589          GM/CC
AL CORRECTION               -.066           -.061          GM/CC
AL Pe SHORT                 6.010           6.193
AL Pe LONG                  6.225           6.235

MAGNESIUM BLOCK
---------------
MAGNESIUM DENSITY           1.679           1.682          GM/CC
MAGNESIUM CORRECTION         .000            .007          GM/CC
MAGNESIUM Pe SHORT          3.160           3.264
MAGNESIUM Pe LONG           2.819           2.818


                                     FIELD CHECK BLOCK
                        MEASURED         DEFINED            UNITS
                        --------        ----------          -----
AL SLIDE
--------------
AL DENSITY                  1.672           1.654          GM/CC
AL CORRECTION               -.031           -.038          GM/CC
AL Pe SHORT                 4.508           4.650
AL Pe LONG                  4.171           4.174


ALUMINUM SLIDE IN
-----------------
AL DENSITY                  2.165           2.175          GM/CC
AL CORRECTION                .007            .015          GM/CC
AL Pe SHORT                 4.703           4.850
AL Pe LONG                  3.927           3.929

BRASS SLIDE
------------
BRASS DENSITY               2.341           2.355          GM/CC
BRASS CORRECTION            -.378           -.371          GM/CC
BRASS Pe SHORT              6.297           6.489
BRASS Pe LONG               3.836           3.838

                SPECTRAL DENSITY BEFORE SURVEY FIELD CHECK SUMMARY
PERFORMED:  10:46:54  10/27/89    LAST SHOP CALIBRATION:   10:19:12  10/05/89
FIELD CALIBRATOR: #SDL          SOURCE: #0223


ALUMINUM SLIDE IN           SHOP           FIELD            UNITS
-----------------       --------         ---------          -----
ALUMINUM DENSITY            2.175           2.170          gm/cc
ALUMINUM CORRECTION          .015            .006          gm/cc
ALUMINUM PE SHORT           4.850           4.864
ALUMINUM PE LONG            3.929           4.027

                SPECTRAL DENSITY AFTER SURVEY FIELD CHECK SUMMARY
PERFORMED:  14:06:49  10/27/89    LAST SHOP CALIBRATION:   10:19:12  10/05/89


ALUMINUM SLIDE IN         BEFORE           AFTER            UNITS
-----------------       --------          -------           -----
ALUMINUM DENSITY            2.170           2.169          gm/cc
ALUMINUM CORRECTION          .006            .005          gm/cc
ALUMINUM PE SHORT           4.864           4.830
ALUMINUM PE LONG            4.027           4.113


                        H L S CALIBRATION SUMMARY TABLE
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   SERVICE or SIGNAL           SHOP       BEFORE      AFTER      CHANGE   TOLERANCE
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GAMMA                       268        261        265        -4          +/- 9.0
DSN POROSITY                 25.175     24.852     25.398     -.545     +/-.90
CALIPER VALUE 1               8.000      7.763      7.705      .058     +/- 0.50
BULK DENSITY                  2.175      2.170      2.169      .001     +/-.015
DENSITY CORRECTION             .015       .006       .005      .001     +/-.015
DENSITY PE SHORT              4.850      4.864      4.830      .033     +/-.30
DENSITY PE LONG               3.929      4.027      4.113     -.086     +/-.30
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- END -