CC 34-08-75

HALLIBURTON LOGGING SERVICES, INC.

FINAL PRINT

DUAL INDUCTION SHORT GUARD LOG

5" = 100'

COMPANY ______________

WELL ______________

FIELD ______________

COUNTY __________ ST __

COMPANY ARCO OIL AND GAS COMPANY

WELL SKUNK CABBAGE CC 34-8-75

FIELD MIST

COUNTY COLUMBIA

STATE OR

API NO. N/A

LOCATION : W.W.M.
1973.52 FEET WEST AND
1411.77 FEET NORTH FROM
THE SOUTHWEST CORNER OF:
SEC. 8 TWP 7N RGE 5W

OTHER SERVICES

NONE

PERMANENT DATUM G.L. ELEV. 660.55
LOG MEASURED FROM K.B. 12.5FT.ABOVE PERM.DATUM
DRILLING MEASURED FROM KELLY BUSHING

ELEV.:K.B. 672.05
D.F. -----
G.L. 660.55

DATE	09/27/89			
RUN NO.	ONE			
DEPTH-DRILLER	2706			
DEPTH- LOGGER	2703			
BTM. LOG INTER.	2700			
TOP LOG INTER.	466			
CASING-DRILLER	9 5/8● 468	●	●	●
CASING- LOGGER	466			
BIT SIZE	8 1/2- 562	6 1/4- TD		
TYPE FLUID IN HOLE	POLYMER	LS. ND		
DENS. : VISC	10.2 : 44	:	:	:
PH : FLUID LOSS	9.0 : 5.2	:	:	:
SOURCE OF SAMPLE	CIRCULATED			
RM ● MEAS. TEMP.	2.2 ● 75	●	●	●
RMF ● MEAS. TEMP.	2.15● 75	●	●	●
RMC ● MEAS. TEMP.	1.5 ● 75	●	●	●
SOURCE RMF : RMC	MEAS.:MEAS.	:	:	:
RM ● BHT	1.46●116	●	●	●
TIME SINCE CIRC.	4 HOURS			
TIME ON BOTTOM	9:30 PM			
MAX. REC. TEMP.	116 ●BHT	●	●	●
EQUIP. : LOCATION	2890 :WDLND	:	:	:
RECORDED BY	B.JOHNSON			
WITNESSED BY	JIM EASTES			

Fold Here

Service Ticket No.: 12307 API Serial No.: N/A PGM Version: 1.31 PC

Change in Mud Type or Additional Samples		
Date/Sample No.	09/27/89:ONE	/ / :
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	1.46 @116	@
Rmf @ BHT	1.43 @116	@
Rmc @ BHT	1.00 @116	@

RESISTIVITY SCALE CHANGES

Type Log	Depth	Scale Up Hole	Scale Down Hole

RESISTIVITY EQUIPMENT DATA

Run No	Tool Type & No	Pad Type	Tool Pos.	Other
ONE	DUAL W109432	N/A	1.5"S.O.	M412
ONE	SGRD W108932	N/A	1.5"S.O.	M416

EQUIPMENT DATA

GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No.	ONE	Run No.	ONE	Run No.	N/A	Run No.	N/A
Serial No.	W108594	Serial No.	W112458	Serial No.	W109740	Serial No.	W108749
Model No.	432	Model No.	305	Model No.	465	Model No.	434
Diameter	3 5/8	No.of Cent.	FOUR	Diameter	4 1/2	Diameter	3 5/8
Detector Model No.	N/A	Spacing	1 FOOT	Log Type	GAMMA	Log Type	NEUTRON
Type	SCINT.			Source Type	CS137	Source Type	AM241BE
Length	4 IN.	LSA	Y	Serial No.	118	Serial No.	66
Distance To Source	N/A	FWDA	N	Strength	1.5 CU.	Strength	19.5 CU

LOGGING DATA

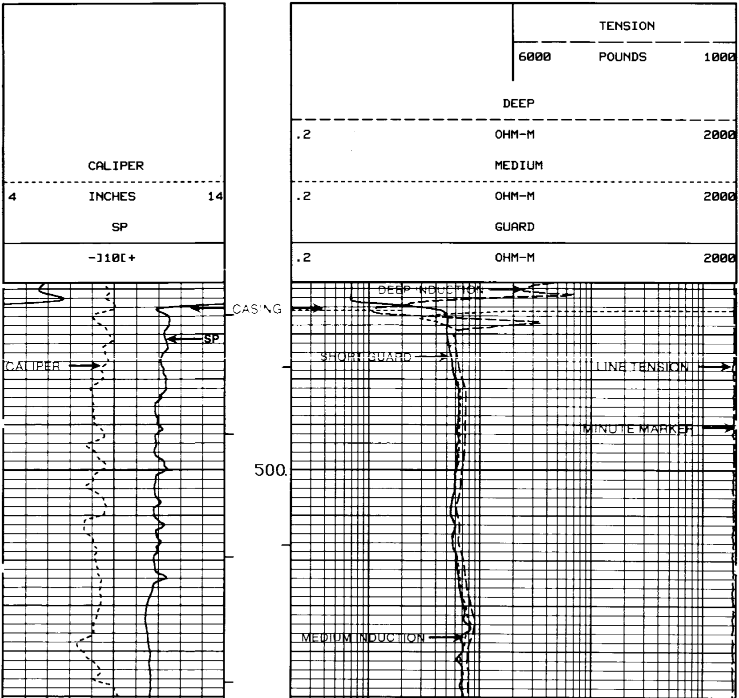
GENERAL				GAMMA		ACOUSTIC			DENSITY			NEUTRON		
Run	Depth		Speed	Scale		Scale			Scale			Scale		
No.	From	To	Ft/Min	L	R	L	R	Matrix	L	R	Matrix	L	R	Matrix
ONE	2703	466	30.0	0	150	150	50	57.0						
					API			US/FT						

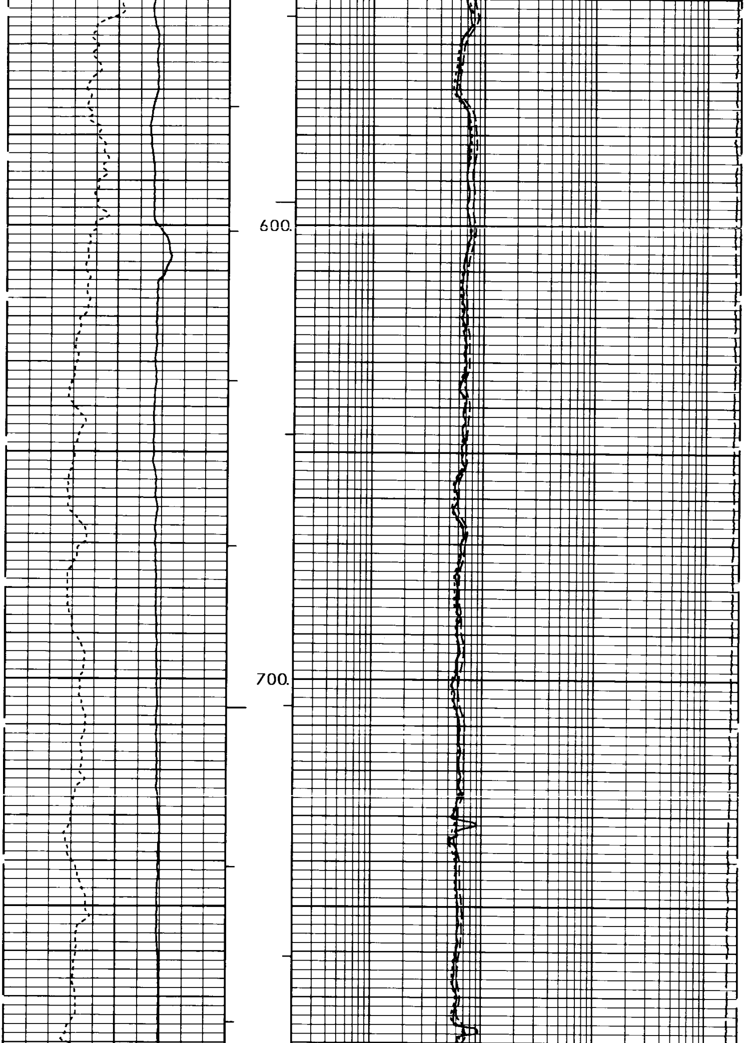
Remarks: ANNULAR HOLE VOLUME CALCULATED USING 4 1/2 INCH CASING.

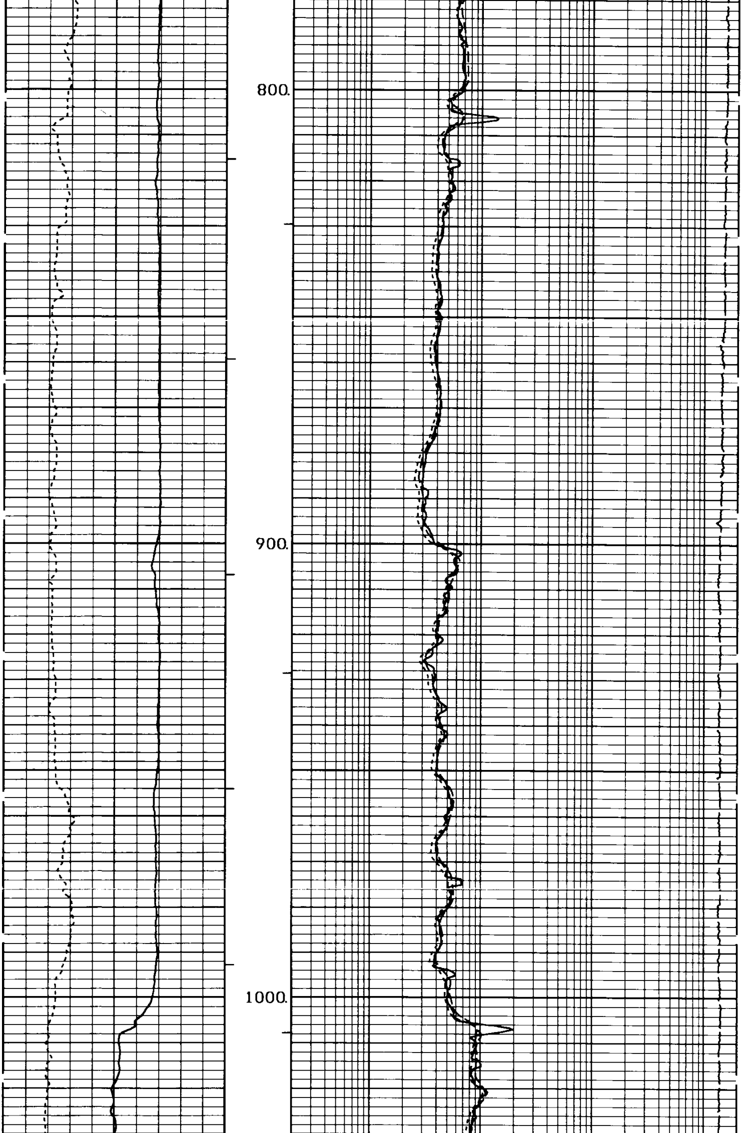
CREW ON LOCATION: JEFFREY, BRIGHT

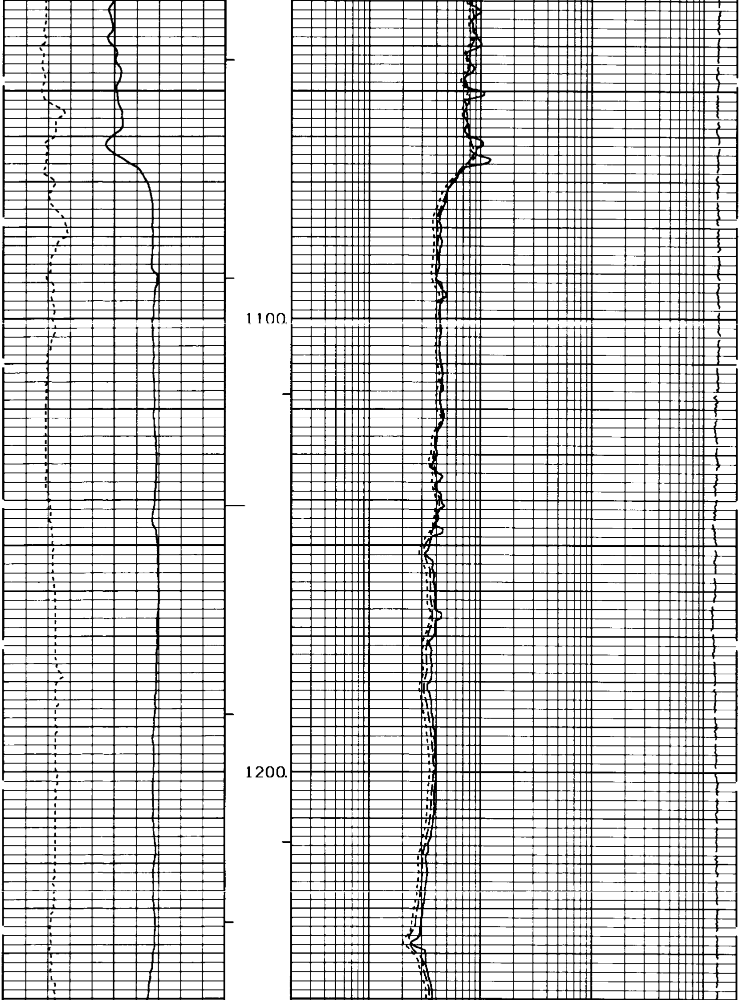
THANK YOU FOR USING HALLIBURTON LOGGING SERVICES!

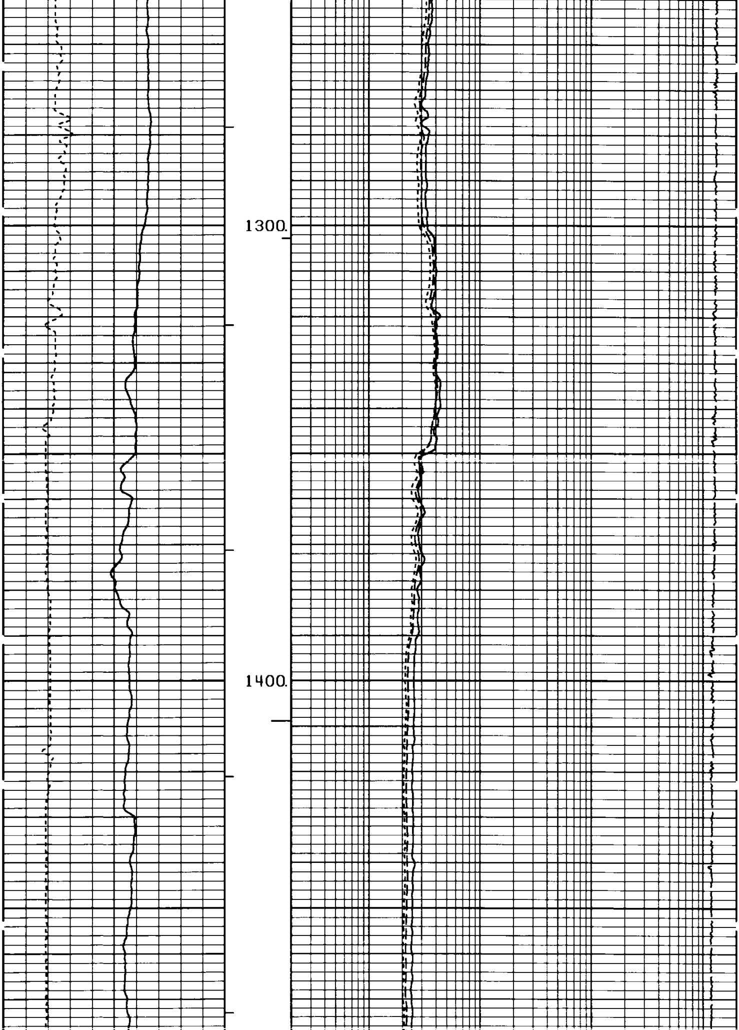
Halliburton Logging Services, Inc. does not guarantee the accuracy of any interpretation of log data, conversion of log data to physical rock parameters or recommendations which may be given by HLS personnel or which may appear on the log or in any other form. Any user of such data, interpretations, 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.

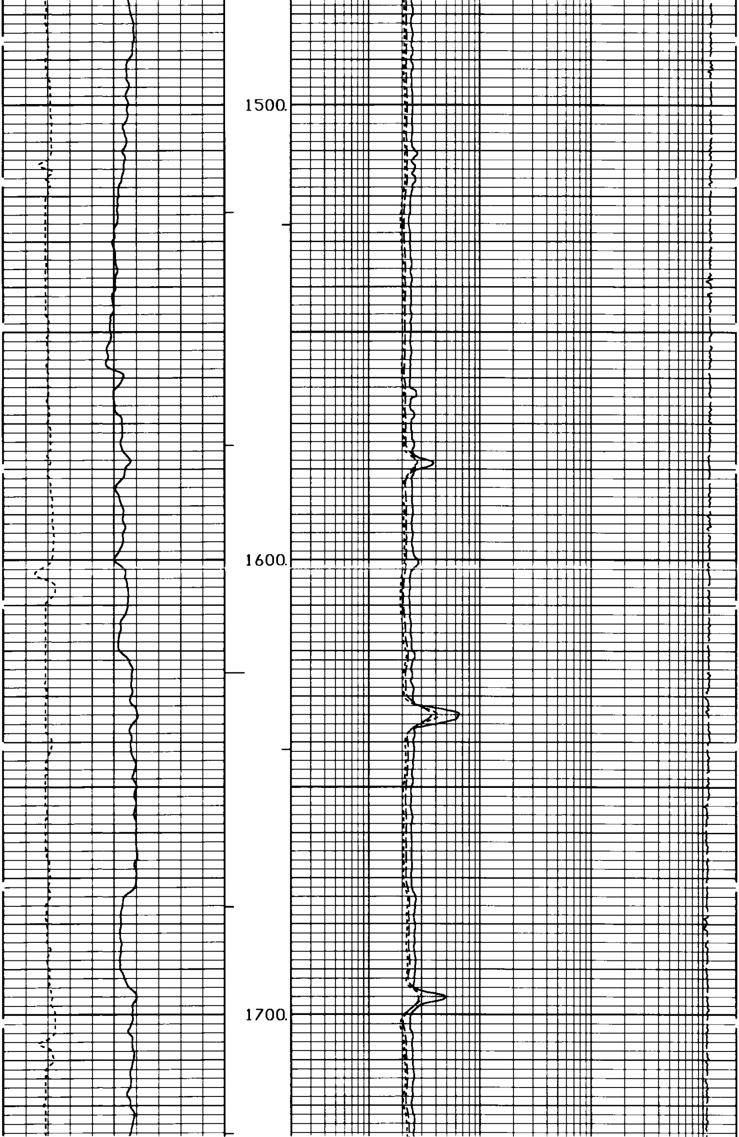


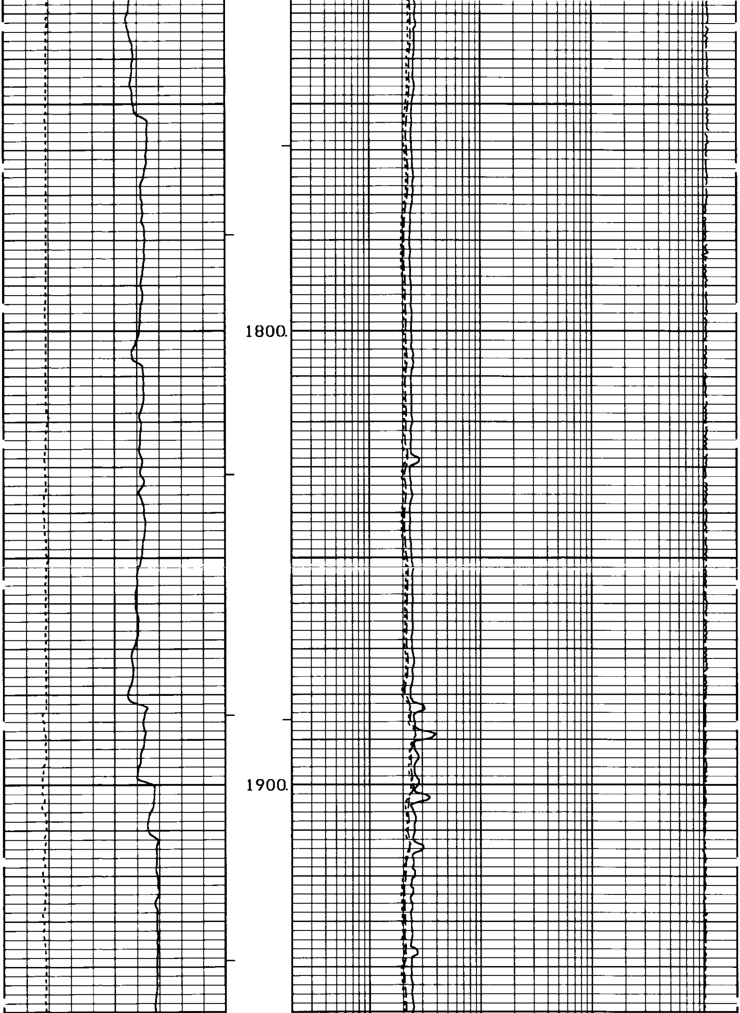


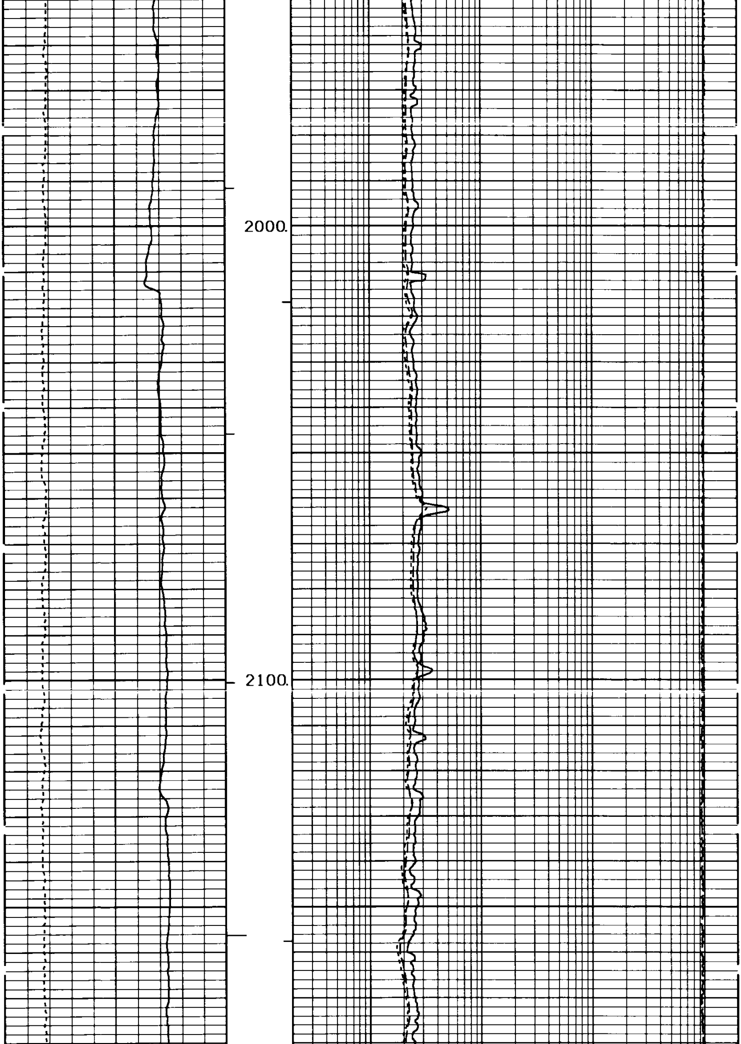


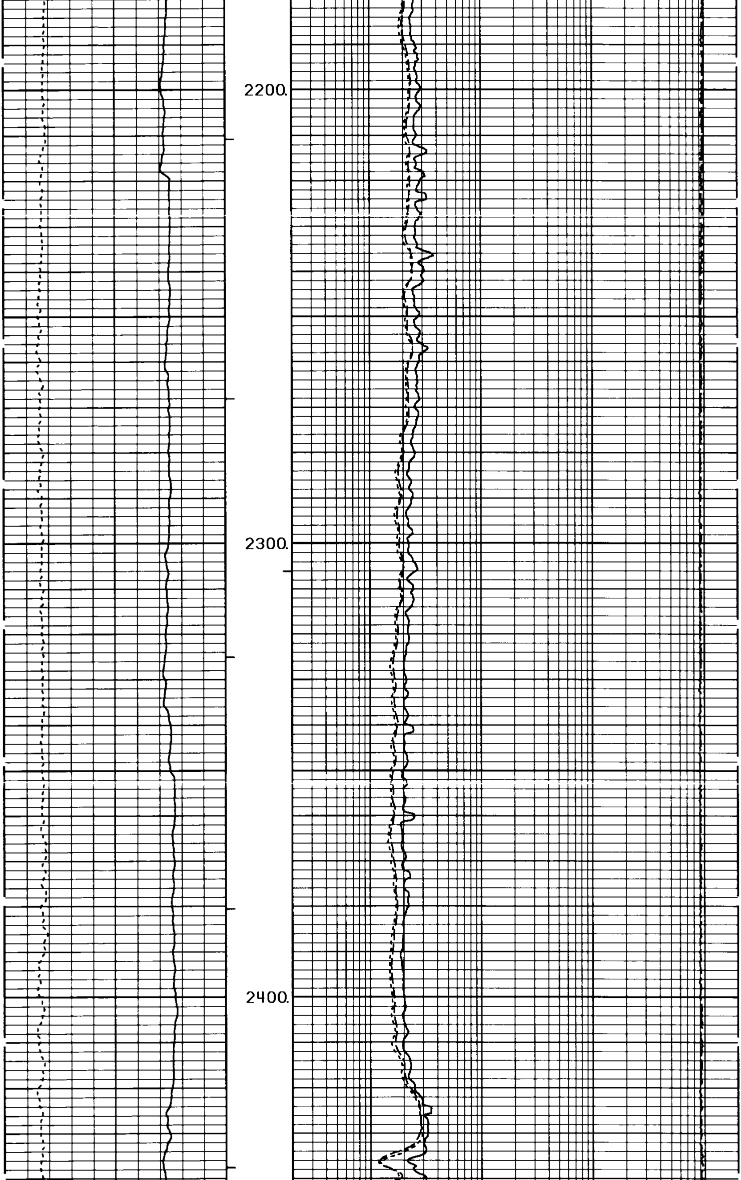


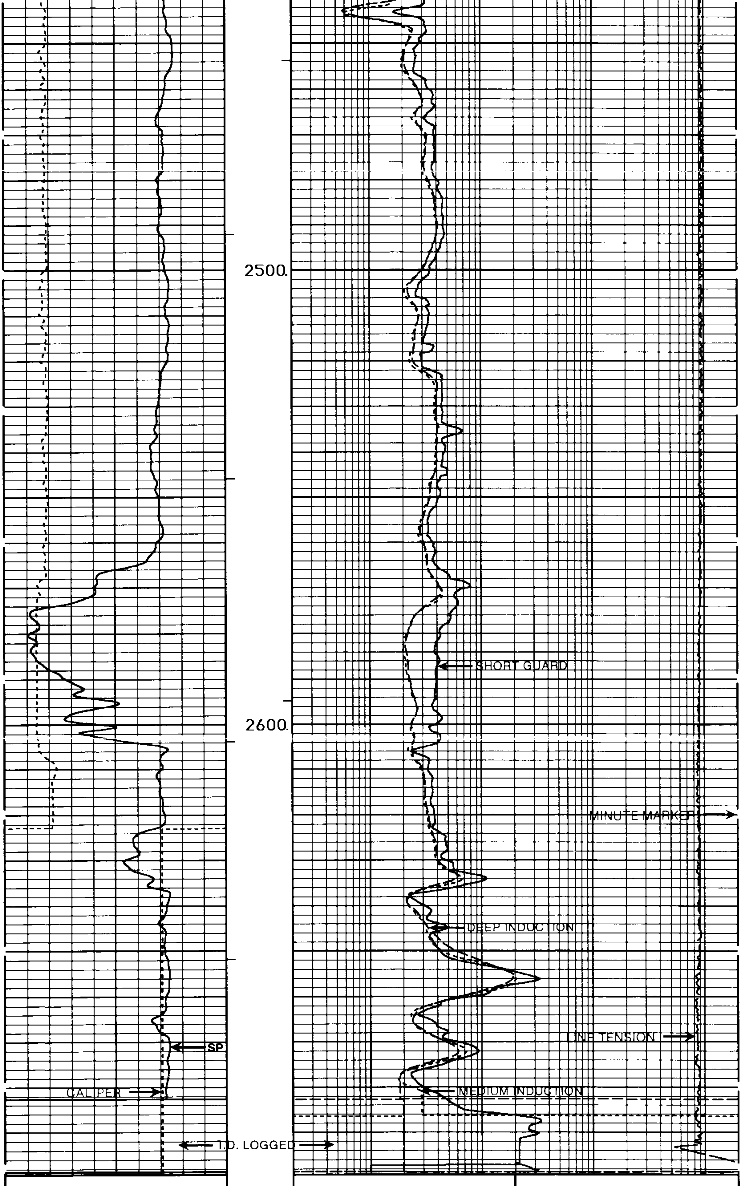


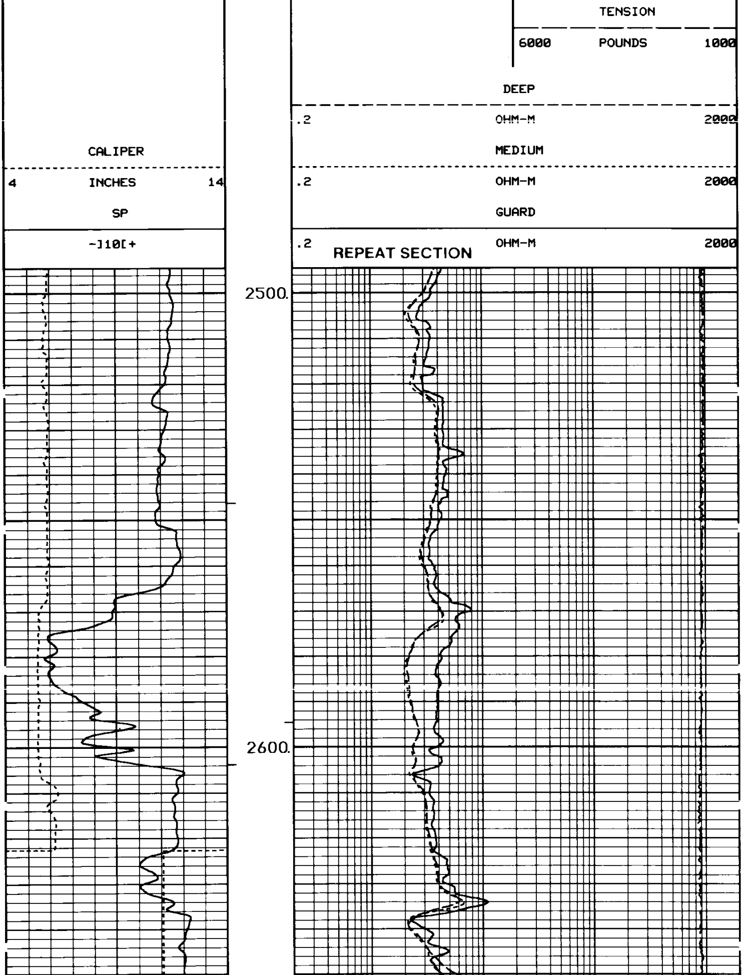


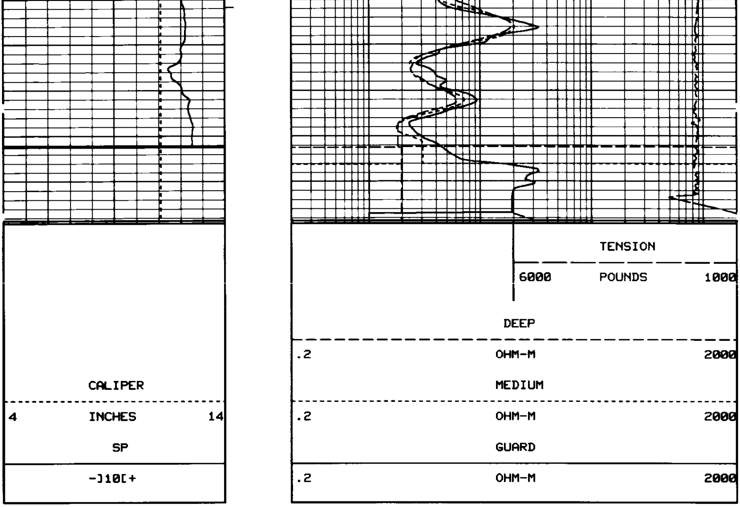












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                  SHORT GUARD   SHOP CALIBRATION SUMMARY
PERFORMED:  10:57:24  08/31/89    LAST SHOP CALIBRATION:   14:26:45  08/10/89
SERIAL NUMBER: 108932             PROGRAM VERSION: 1.31 PC
MODEL: #405
PERFORMED BY: MCDANIEL
                        MEASURED         CALIBRATED          UNITS
                        --------         ----------          -----
EXT. CAL. POINT #1         1.996             2.000           OHM-M
EXT. CAL. POINT #2        20.018            20.000           OHM-M
EXT. CAL. POINT #3       192.589           200.000           OHM-M
INTERNAL REFERENCE        19.974            19.942           OHM-M

                  SHORT GUARD  BEFORE SURVEY FIELD CHECK SUMMARY
PERFORMED:  20:52:47  09/27/89    LAST SHOP CALIBRATION:   10:57:24  08/31/89

                          SHOP            FIELD              UNITS
                        --------        ----------          ------
INTERNAL REFERENCE        19.941            19.929           OHM-M


                  SHORT GUARD  AFTER SURVEY FIELD CHECK SUMMARY
PERFORMED:  23:36:26  09/27/89    LAST SHOP CALIBRATION:   10:57:24  08/31/89

                         BEFORE            AFTER             UNITS
                        --------        ----------           -----
INTERNAL REFERENCE        19.929            19.905           OHM-M

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                 DUAL INDUCTION  SHOP CALIBRATION SUMMARY
PERFORMED:  11:05:42  08/31/89    LAST SHOP CALIBRATION:   14:34:51  08/10/89
SERIAL NUMBER: 109432             PROGRAM VERSION: 1.31 PC
MODEL: #412
PERFORMED BY: MCDANIEL
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                          DEEP INDUCTION         MEDIUM INDUCTION
                       MEASURED  CALIBRATED   MEASURED  CALIBRATED    UNITS
                       --------------------   --------------------   -------
TOOL ZERO                 -.883       .000       -.007       .000    MMHOS/M
INTERNAL REFERENCE      494.528    496.539     499.505    502.422    MMHOS/M
WHEEL                   496.819    500.000     497.376    500.000    MMHOS/M
MANDREL BASE              4.517      3.727       5.650      5.896    MMHOS/M

          DUAL INDUCTION BEFORE SURVEY FIELD CHECK SUMMARY
PERFORMED:  20:54:22  09/27/89    LAST SHOP CALIBRATION:   11:05:42  08/31/89

                          DEEP INDUCTION         MEDIUM INDUCTION
                          SHOP     FIELD        SHOP      FIELD       UNITS
                       --------------------   --------------------   -------
TOOL ZERO                  .000      1.230        .000      -.048    MMHOS/M
INTERNAL REFERENCE      496.539    501.992     502.420    509.592    MMHOS/M
MANDREL BASE              3.727      3.727       5.896      5.896    MMHOS/M

          DUAL INDUCTION AFTER SURVEY FIELD CHECK SUMMARY
PERFORMED:  23:34:35  09/27/89    LAST SHOP CALIBRATION:   11:05:42  08/31/89

                          DEEP INDUCTION         MEDIUM INDUCTION
                         BEFORE    AFTER       BEFORE     AFTER       UNITS
                       --------------------   --------------------   -------
TOOL ZERO                 1.230      1.525       -.049      -.146    MMHOS/M
INTERNAL REFERENCE      501.991    503.862     509.591    510.524    MMHOS/M
MANDREL BASE              3.727      3.727       5.896      5.896    MMHOS/M


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                GAMMA   SHOP CALIBRATION SUMMARY
PERFORMED:  10:05:26  09/01/89    LAST SHOP CALIBRATION:   14:24:17  08/08/89
SERIAL NUMBER: 108594             PROGRAM VERSION: 1.31 PC
MODEL: #432          FIELD CALIBRATOR: #2141
PERFORMED BY: MCDANIEL

                        MEASURED        CALIBRATED          UNITS
                        --------        ----------          -----
BACKGROUND                 13               13             API-CPS
BACKGROUND+CALIBRATOR     269              271             API-CPS
CALIBRATOR                256              258             API-CPS

                GAMMA  BEFORE SURVEY FIELD CHECK SUMMARY
PERFORMED:  20:50:36  09/27/89    LAST SHOP CALIBRATION:   10:05:26  09/01/89
FIELD CALIBRATOR: #2141

                          SHOP            FIELD             UNITS
                        --------        ----------          -----
BACKGROUND                 13               13             API-CPS
BACKGROUND+CALIBRATOR     271              275             API-CPS
CALIBRATOR                258              262             API-CPS

                GAMMA  AFTER SURVEY FIELD CHECK SUMMARY
PERFORMED:  23:51:56  09/27/89    LAST SHOP CALIBRATION:   10:05:26  09/01/89

                         BEFORE           AFTER             UNITS
                        --------        ----------          -----
BACKGROUND                 13               19             API-CPS
BACKGROUND+CALIBRATOR     275              281             API-CPS
CALIBRATOR                262              262             API-CPS


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               CALIPER   SHOP CALIBRATION SUMMARY
PERFORMED:  08:19:38  09/19/89    LAST SHOP CALIBRATION:   08:17:59  09/19/89
SERIAL NUMBER: TAN                PROGRAM VERSION: 1.31 PC
MODEL: #202
PERFORMED BY: JOHNSON

                        MEASURED        CALIBRATED          UNITS
                        --------        ----------          -----
VALUE 1                   7.896            8.000           INCHES
VALUE 2                  16.000           16.000           INCHES
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                    CALIPER  BEFORE SURVEY FIELD CHECK SUMMARY
PERFORMED:  20:44:13  09/27/89    LAST SHOP CALIBRATION:   08:19:38  09/19/89

                          SHOP            FIELD            UNITS
                        --------        ---------          -----
VALUE 1                  8.000            8.074            INCHES

                    CALIPER  AFTER SURVEY FIELD CHECK SUMMARY
PERFORMED:  23:44:34  09/27/89    LAST SHOP CALIBRATION:   08:19:38  09/19/89

                         BEFORE           AFTER            UNITS
                        --------        ---------          -----
VALUE 1                  8.074            8.104            INCHES


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                    TENSION   SHOP CALIBRATION SUMMARY
PERFORMED:  20:42:15  09/27/89    LAST SHOP CALIBRATION:   07:08:35  09/24/89
SERIAL NUMBER: TOP                PROGRAM VERSION: 1.31 PC


                        H L S CALIBRATION SUMMARY TABLE
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   SERVICE or SIGNAL          SHOP      BEFORE     AFTER     CHANGE   TOLERANCE
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GUARD                        19.941    19.929     19.905      .023     +/-.80
DEEP INDUCTION              496.539   501.991    503.862    -1.870     +/- 20
MEDIUM INDUCTION            502.420   509.591    510.524     -.932     +/- 20
GAMMA                       258       262        262        0          +/- 9.0
CALIPER VALUE 1               8.000     8.074      8.104     -.029     +/- 0.50
    1 18:12:27 00000 >DATE OF LOG: MMDD              927
   2 18:15:22 00000 >PLS SOFTWARE REVISION         1.31
   3 18:15:22 00000 >CURRENT REVISION UPDATE NUMBER PC
   4 19: 2:44 00000 >CASING SIZE O.D. (INCHES)       5.500+0
   5 19: 2:45 00000 >BIT SIZE? (INCHES)              7.875+0
   6 19: 2:48 00000 >DT-MATRIX(40=DOL<DT<70=SHALY)   5.700+1
   7 19: 2:48 00000 >DT-SHALE (100=MIN<DT<160=MAX)   1.000+2
   8 19: 2:49 00000 >FOR FORMATION FACTOR(.5<A<2.5)  1.000+0
   9 19: 2:49 00000 >FOR FORMATION FACTOR(1.2<M<2.5) 2.000+0
  10 19: 2:56 00000 >CASING SIZE O.D. (INCHES)       4.500+0
  11 19: 3: 2 00000 >BIT SIZE? (INCHES)              6.250+0
  12 19: 3:10 00000 >FOR FORMATION FACTOR(.5<A<2.5)  8.100-1
  13 19: 3:24 00000 >>LOG PARAMETERS UPDATED HERE
  14 21:18:19 02702 >LOGGING SECTION NO.                 2
  15 21:25:44 02486 >"HALTING" END OF SECTION
  16 21:29: 5 02699 >LOGGING SECTION NO.                 3
  17 21:40:56 02371 >"HALTING" END OF SECTION
  18 21:47: 9 02699 >LOGGING SECTION NO.                 4
  19 21:54:16 02489 >"HALTING" END OF SECTION
  20 21:56:41 02699 >LOGGING SECTION NO.                 5
  21 22: 6: 0 02421 >"HALTING" END OF SECTION
  22 22: 9:21 02699 >LOGGING SECTION NO.                 6
  23 22:16:12 02493 >"HALTING" END OF SECTION
  24 22:16:12 02493 >"HALTING" END OF SECTION
  25 22:18:52 02699 >LOGGING SECTION NO.                 7
  26 23:31:53 00458 >"HALTING" END OF SECTION
  27  0: 0: 2 00055 >DATE OF LOG: MMDD              928
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-END-