HALLIBURTON LOGGING SERVICES, INC.

DUAL INDUCTION ACOUSTIC VELOCITY LOG

5" = 100'

FINAL PRINT

COMPANY ____________
WELL ____________
FIELD ____________
COUNTY ________ ST __

COMPANY NAHAMA AND WEAGANT ENERGY CO.

WELL L.F. NO.13-35-65

FIELD MIST

COUNTY COLUMBIA

STATE OR
OTHER SERVICES

DSN/SDL
DIPMETER

API NO. 36-009-00272
LOCATION :
2224 FEET NORTH AND
1193 FEET EAST FROM THE
SOUTHWEST CORNER OF:
SEC. 35 TWP 6N RGE 5W

PERMANENT DATUM G.L. ELEV. 654.2
LOG MEASURED FROM K.B. 11.5FT.ABOVE PERM.DATUM
DRILLING MEASURED FROM KELLY BUSHING

ELEV.:K.B. 665.7
D.F. ----
G.L. 654.2

DATE	11/16/90			
RUN NO.	ONE			
DEPTH-DRILLER	2150			
DEPTH- LOGGER	2157			
BTM. LOG INTER.	2154			
TOP LOG INTER.	442			
CASING-DRILLER	8 5/8@442	@	@	@
CASING- LOGGER	442			
BIT SIZE	7 7/8			
TYPE FLUID IN HOLE	GEL/POLYMER			
DENS. : VISC	10.1 :54	:	:	:
PH : FLUID LOSS	9.0 :4.0	:	:	:
SOURCE OF SAMPLE	CIRCULATED			
RM @ MEAS. TEMP.	2.2 @50	@	@	@
RMF @ MEAS. TEMP.	3.1 @41	@	@	@
RMC @ MEAS. TEMP.	2.2 @46	@	@	@
SOURCE RMF : RMC	CIRC.:CIRC.	:	:	:
RM @ BHT	1.15 @102	@	@	@
TIME SINCE CIRC.	2.5 HOURS			
TIME ON BOTTOM	2:00 AM			
MAX. REC. TEMP.	102 @BHT	@	@	@
EQUIP. : LOCATION	2890 :WDLND	:	:	:
RECORDED BY	B.JOHNSON			
WITNESSED BY	J.VAUGHAN	T.THOMAS		

Fold Here

Service Ticket No.: 44428 API Serial No.: 36-009-00272 PGM Version: 2.60 B

Change in Mud Type or Additional Samples		
Date/Sample No.	11/16/90: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	1.15 @102	@
Rmf @ BHT	1.36 @102	@
Rmc @ BHT	1.06 @102	@

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	DUSL #W109432	N/A	1.5"S.O.	M412
ONE	SGRD #W108932	N/A	1.5"S.O.	M405

EQUIPMENT DATA

GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No.	ONE	Run No.	ONE	Run No.	N/A	Run No.	N/A
Serial No.	W108580	Serial No.	W109088	Serial No.	W109740	Serial No.	W108749
Model No.	M432	Model No.	M305	Model No.	M465	Model No.	M434
Diameter	3 5/8	No.of Cent.	FOUR	Diameter	4 1/2	Diameter	3 5/8
Detector Model No.	M432	Spacing	1 FOOT	Log Type	GAMMA	Log Type	THERMAL
Type	SCINT.			Source Type	CS137	Source Type	AM241BE
Length	4 IN.	LSA	YES	Serial No.	047	Serial No.	25
Distance To Source	N/A	FWDA	NO	Strength	1.5 CU	Strength	19 CU

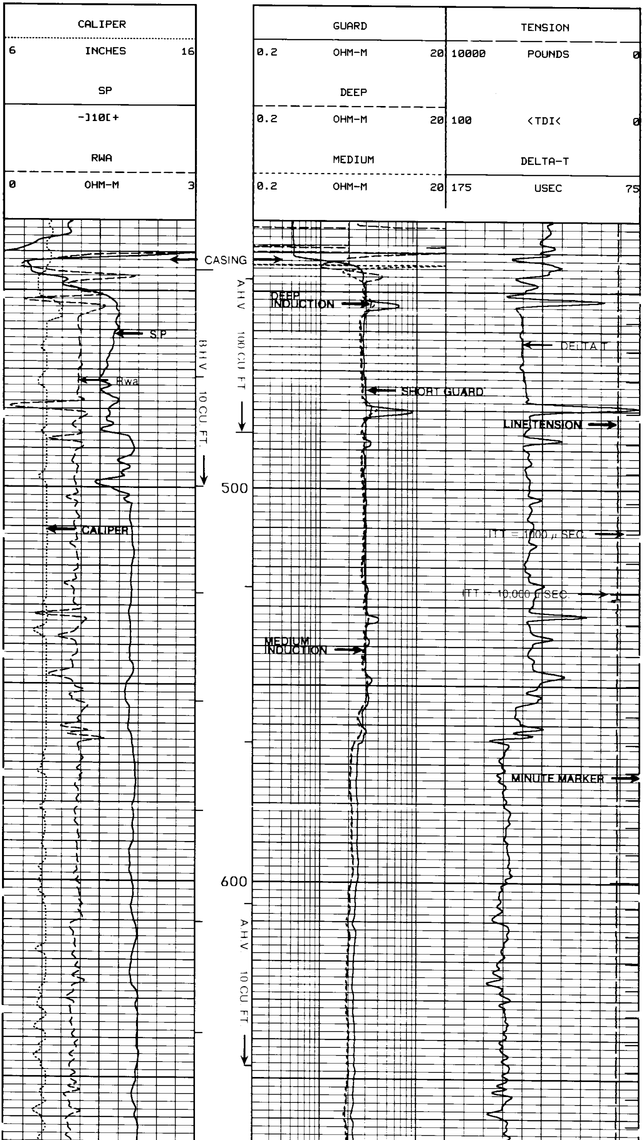
LOGGING DATA

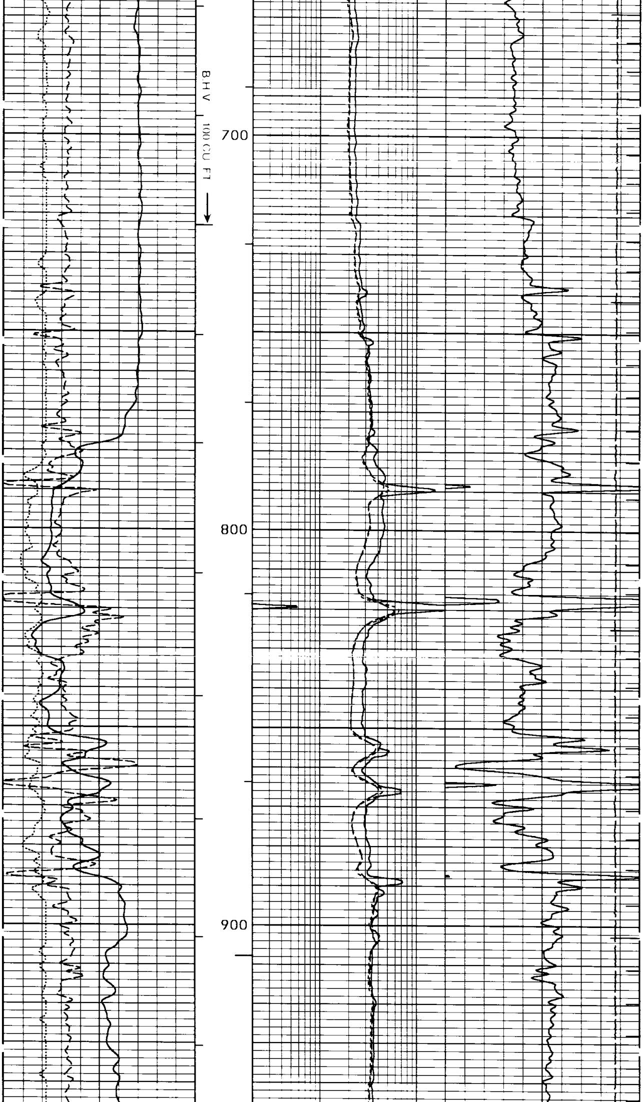
GENERAL				GAMMA		ACOUSTIC			DENSITY			NEUTRON		
Run	Depth		Speed	Scale		Scale			Scale			Scale		
No.	From	To	Ft/Min	L	R	L	R	Matrix	L	R	Matrix	L	R	Matrix
ONE	2157	442	30	0	150	175	75	57						
					API			US/FT						

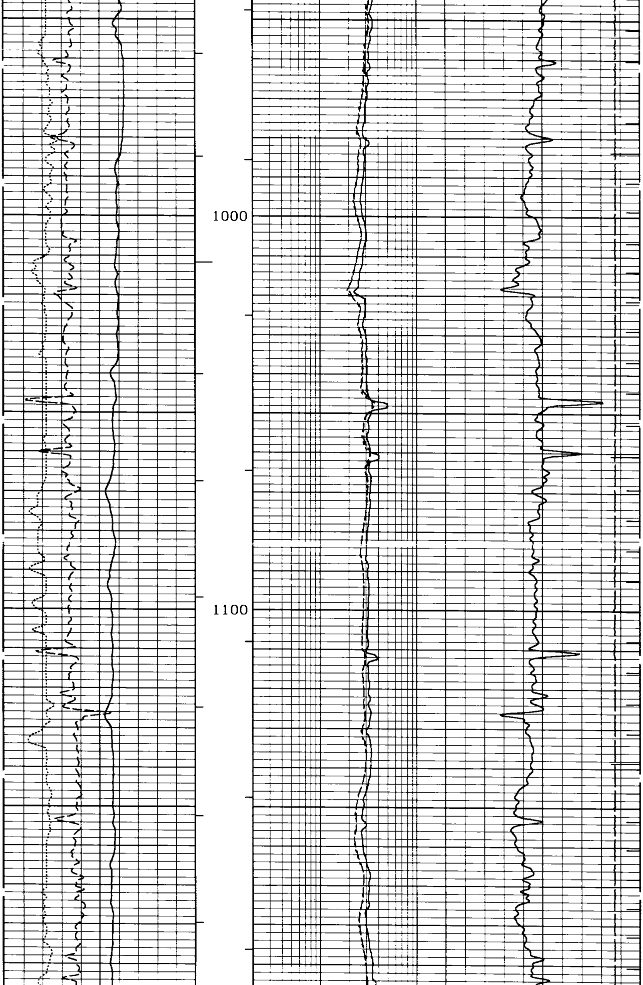
Remarks: ANNULAR HOLE VOLUME CALCULATED USING 4 1/2 INCH CASING.

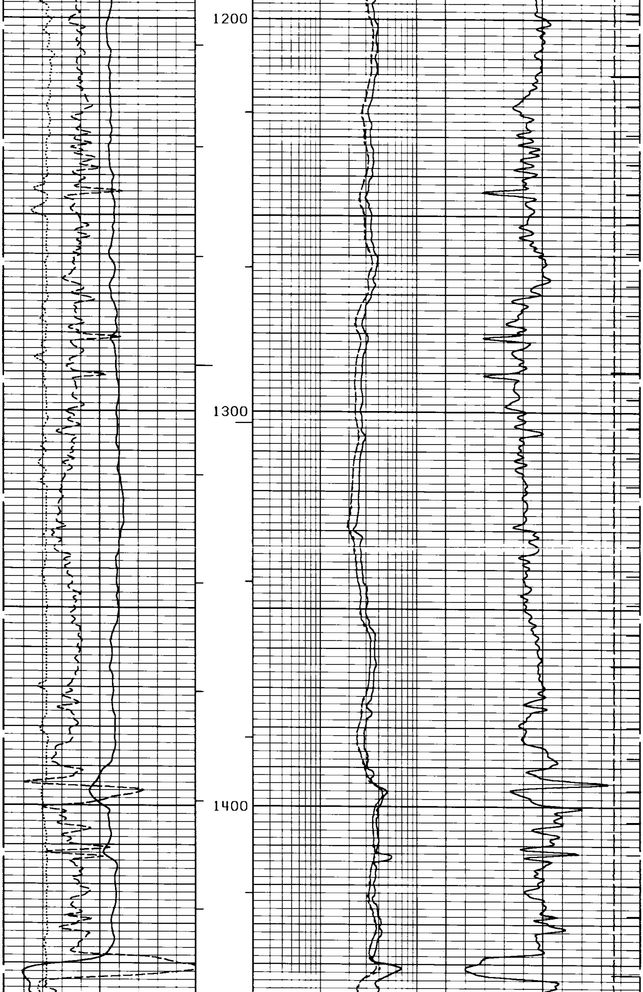
CREW ON LOCATION: EMERSON, JEFFREY.
THANK YOU FOR USING HALLIBURTON LOGGING SERVICES!

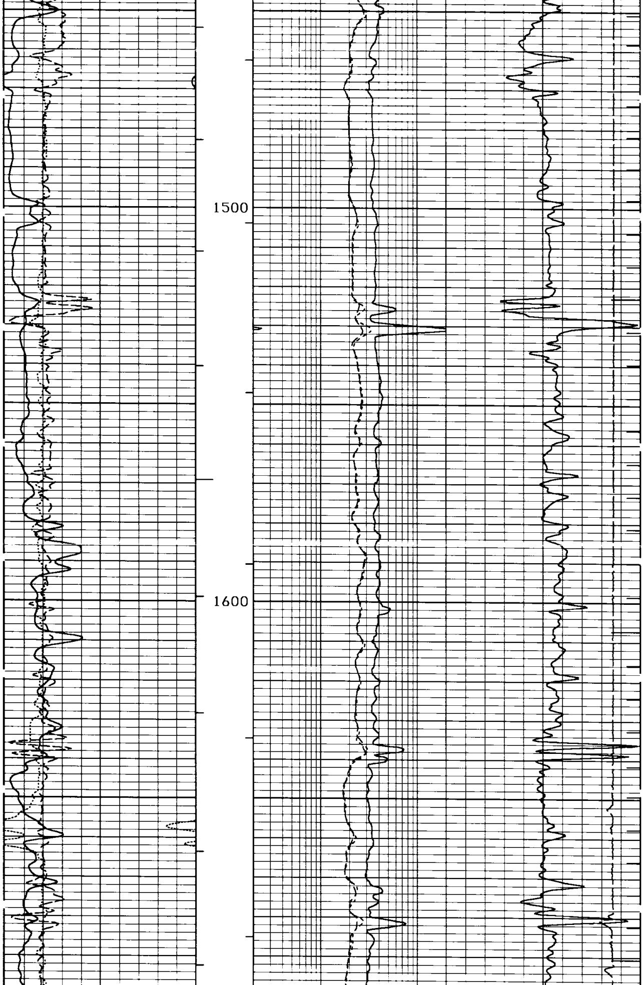
Halliburton Logging Services, Inc. does not guarantee the accuracy of any interpretation of log data, conversion of log data to physical rock parameters or recommendations which may be given by HLS personnel or which may appear on the log or in any other form. Any user of such data, interpretations,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

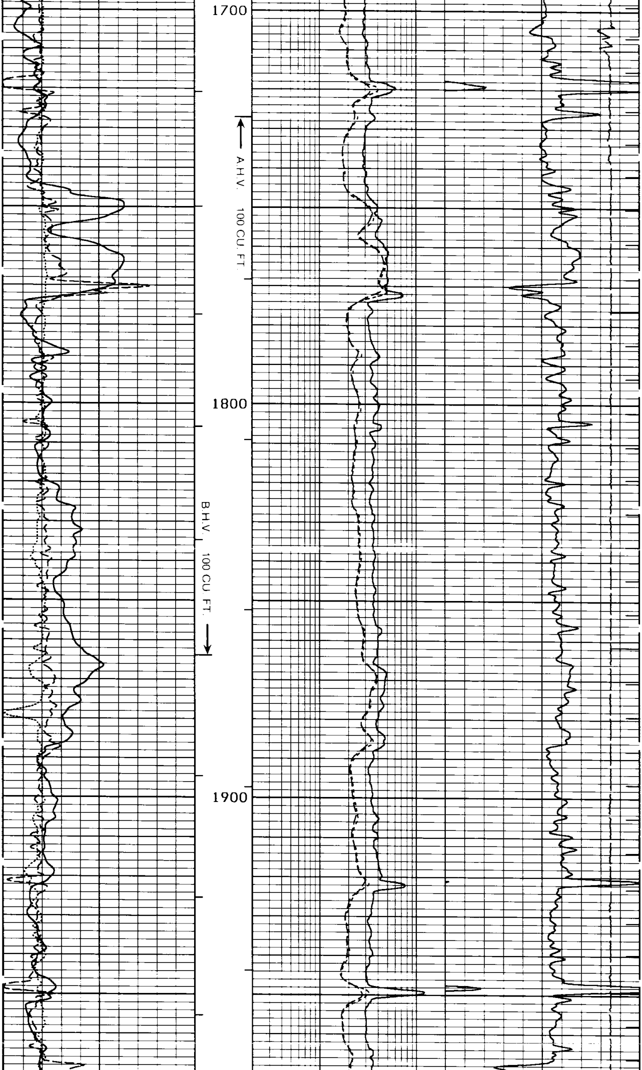


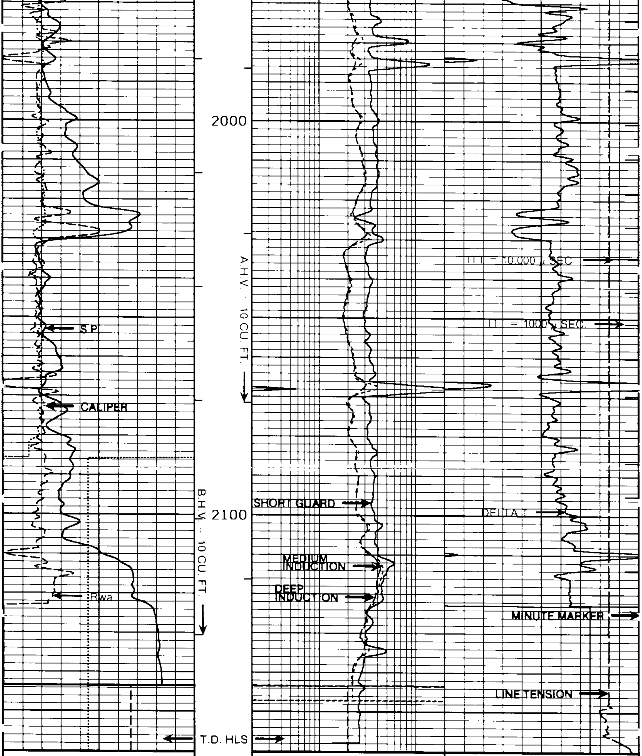






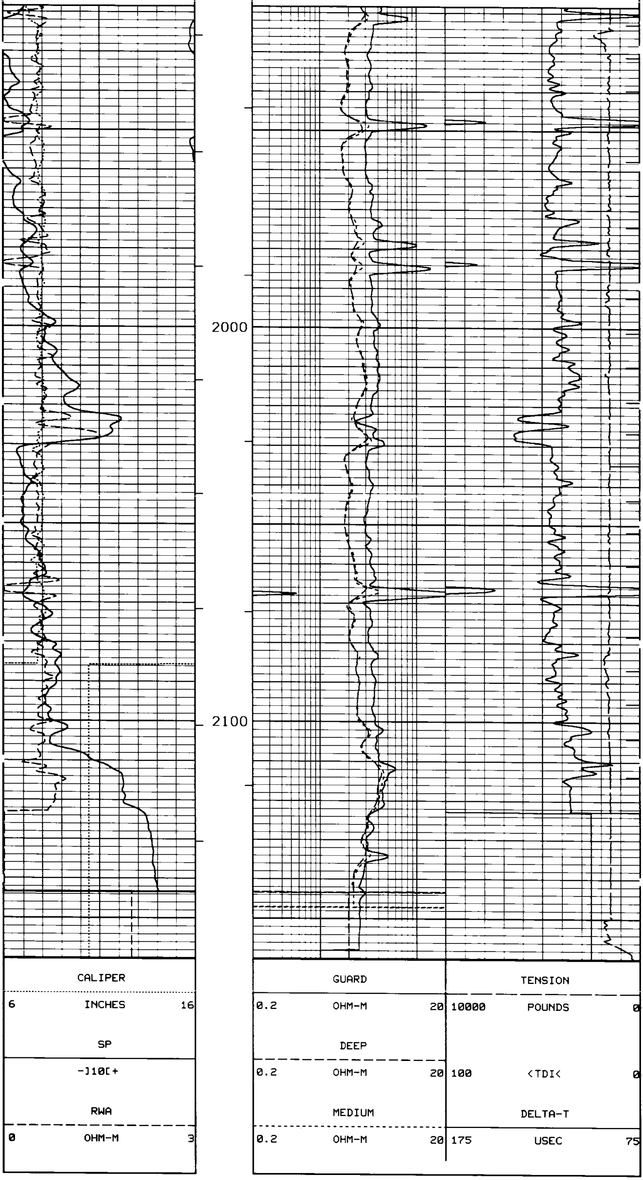






CALIPER	GUARD	TENSION
6 INCHES 16	0.2 OHM-M 20	10000 POUNDS 0
SP	DEEP	
-]10[+	0.2 OHM-M 20	100 <TDI< 0
RWA	MEDIUM	DELTA-T
0 OHM-M 3	0.2 OHM-M 20	175 USEC 75

REPEAT SECTION



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                  SHORT GUARD   SHOP CALIBRATION SUMMARY
PERFORMED:  11:19:59  10/26/90    LAST SHOP CALIBRATION:   11:14:49  09/26/90
SERIAL NUMBER: 108932             PROGRAM VERSION: 2.60 B
MODEL: #405
PERFORMED BY: JOHNSON
                        MEASURED        CALIBRATED          UNITS
                        --------        ----------          -----
EXT. CAL. POINT #1        2.006            2.000            OHM-M
EXT. CAL. POINT #2       20.027           20.000            OHM-M
EXT. CAL. POINT #3      199.928          200.000            OHM-M
INTERNAL REFERENCE       19.957           19.930            OHM-M

                  SHORT GUARD  BEFORE SURVEY FIELD CHECK SUMMARY
PERFORMED:  01:27:34  11/16/90    LAST SHOP CALIBRATION:   11:19:59  10/26/90

                          SHOP            FIELD             UNITS
                        --------        ---------          ------
INTERNAL REFERENCE       19.930           19.942            OHM-M


                  SHORT GUARD  AFTER SURVEY FIELD CHECK SUMMARY
PERFORMED:  03:01:20  11/16/90    LAST SHOP CALIBRATION:   11:19:59  10/26/90

                         BEFORE           AFTER             UNITS
                        --------        ---------           -----
INTERNAL REFERENCE       19.942           19.879            OHM-M


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                 DUAL INDUCTION  SHOP CALIBRATION SUMMARY
PERFORMED:  11:30:02  10/26/90    LAST SHOP CALIBRATION:   11:20:07  09/26/90
SERIAL NUMBER: 109432             PROGRAM VERSION: 2.60 B
MODEL: #412
PERFORMED BY: JOHNSON

                           DEEP INDUCTION         MEDIUM INDUCTION
                        MEASURED  CALIBRATED   MEASURED  CALIBRATED    UNITS
                        ---------------------  ---------------------  -------
TOOL ZERO                 -.008       .000       .060        .000     MMHOS/M
INTERNAL REFERENCE      496.925    491.923    500.347     499.398     MMHOS/M
WHEEL                   505.022    500.000    501.490     500.000     MMHOS/M
MANDREL BASE              4.803      4.785      6.587       6.994     MMHOS/M

                 DUAL INDUCTION BEFORE SURVEY FIELD CHECK SUMMARY
PERFORMED:  01:28:56  11/16/90    LAST SHOP CALIBRATION:   11:30:02  10/26/90

                           DEEP INDUCTION         MEDIUM INDUCTION
                          SHOP     FIELD         SHOP       FIELD      UNITS
                        ---------------------  ---------------------  -------
TOOL ZERO                  .000       .921       .000       -.251     MMHOS/M
INTERNAL REFERENCE      491.923    494.687    499.397     500.031     MMHOS/M
MANDREL BASE              4.785      4.785      6.994       6.994     MMHOS/M

                 DUAL INDUCTION AFTER SURVEY FIELD CHECK SUMMARY
PERFORMED:  02:59:39  11/16/90    LAST SHOP CALIBRATION:   11:30:02  10/26/90

                           DEEP INDUCTION         MEDIUM INDUCTION
                         BEFORE     AFTER        BEFORE       AFTER    UNITS
                        ---------------------  ---------------------  -------
TOOL ZERO                  .921      1.740      -.251       -.180     MMHOS/M
INTERNAL REFERENCE      494.687    500.336    500.030     504.232     MMHOS/M
MANDREL BASE              4.785      4.785      6.994       6.994     MMHOS/M


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                     GAMMA   SHOP CALIBRATION SUMMARY
PERFORMED:  13:45:55  11/14/90    LAST SHOP CALIBRATION:   10:35:12  09/21/90
SERIAL NUMBER: 108580             PROGRAM VERSION: 2.60 B
MODEL: #432          FIELD CALIBRATOR: #67
PERFORMED BY: JOHNSON

                        MEASURED        CALIBRATED          UNITS
                        --------        ----------          -----
BACKGROUND                 18               18               GAPI
BACKGROUND+CALIBRATOR     270              265               GAPI
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CALIBRATOR                    252             247                 GAPI

                    GAMMA  BEFORE SURVEY FIELD CHECK SUMMARY
PERFORMED:  00:40:46  11/16/90    LAST SHOP CALIBRATION:   13:45:55  11/14/90
FIELD CALIBRATOR: #67

                               SHOP            FIELD              UNITS
                             --------        ----------           -----
BACKGROUND                     18              31                 GAPI
BACKGROUND+CALIBRATOR         265             275                 GAPI
CALIBRATOR                    247             244                 GAPI

                    GAMMA  AFTER SURVEY FIELD CHECK SUMMARY
PERFORMED:  03:11:18  11/16/90    LAST SHOP CALIBRATION:   13:45:55  11/14/90

                              BEFORE           AFTER              UNITS
                             --------        ----------           -----
BACKGROUND                     31              26                 GAPI
BACKGROUND+CALIBRATOR         275             272                 GAPI
CALIBRATOR                    244             247                 GAPI


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                   CALIPER   SHOP CALIBRATION SUMMARY
PERFORMED:  00:35:00  11/03/90    LAST SHOP CALIBRATION:   18:50:00  09/29/90
SERIAL NUMBER: TAN                PROGRAM VERSION: 2.60 B
MODEL: #202
PERFORMED BY: MCDANIEL

                             MEASURED        CALIBRATED           UNITS
                             --------        ----------           -----
VALUE 1                         8.371           8.000             INCHES
VALUE 2                        16.000          16.000             INCHES

                   CALIPER  BEFORE SURVEY FIELD CHECK SUMMARY
PERFORMED:  00:11:14  11/16/90    LAST SHOP CALIBRATION:   00:35:00  11/03/90

                               SHOP             FIELD             UNITS
                             --------         ---------           -----
VALUE 1                         8.000            8.124            INCHES

                   CALIPER  AFTER SURVEY FIELD CHECK SUMMARY
PERFORMED:  02:58:03  11/16/90    LAST SHOP CALIBRATION:   00:35:00  11/03/90

                              BEFORE            AFTER             UNITS
                             --------         ---------           -----
VALUE 1                         8.124            8.162            INCHES


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                             H L S CALIBRATION SUMMARY TABLE
                             -------------------------------

   SERVICE or SIGNAL           SHOP       BEFORE      AFTER      CHANGE    TOLERANCE
------------------------     ---------- ---------  ---------   --------   ---------
GUARD                          19.930     19.942     19.879       .063     +/-.80
DEEP INDUCTION                491.923    494.687    500.336     -5.648     +/- 20
MEDIUM INDUCTION              499.397    500.030    504.232     -4.201     +/- 20
GAMMA                         247        244        247         -3         +/- 9.0
CALIPER VALUE 1                 8.000      8.124      8.162      -.037     +/- 0.50
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#	TIME	FT	EVENT	REMARKS
			PRE-LOGGING DATA	
1	0: 7:30	00000	DATE OF LOG: MMDD 1116	
2	0: 9:49	01000	PLS SOFTWARE REVISION 2.60	
3	0:42:50	01000	CASING SIZE O.D. (INCHES) 5.500	
4	0:42:50	01000	BIT SIZE? (INCHES) 7.875	
5	0:42:50	01000	DT-MATRIX(40=DOL<DT<70=SHALY) 57.000	
6	0:42:50	01000	DT-SHALE (100=MIN<DT<160=MAX) 100.000	
7	0:42:50	01000	FOR FORMATION FACTOR(.5<A<2.5) 1.000	
8	0:42:50	01000	FOR FORMATION FACTOR(1.2<M<2.5) 2.000	
9	0:42:50	01000	FOR FORMATION FACTOR(.5<A<2.5) 8.100-1	
10	0:42:50	01000	CASING SIZE O.D. (INCHES) 4.500	
11	1:35:53	00430	"HALTING" END OF SECTION	
12	1:47:45	02160	LOGGING SECTION NO. 2	
13	1:55:58	01917	"HALTING" END OF SECTION	
14	1:58:10	02160	LOGGING SECTION NO. 3	
15	2:56:34	00431	"HALTING" END OF SECTION	