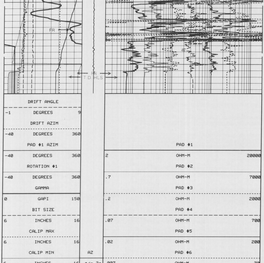

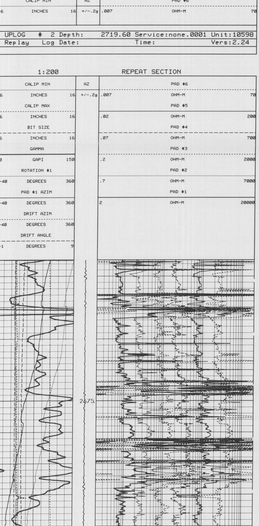


```
**************************************************************************

                GAMMA RAY TOOL SHOP CALIBRATION SUMMARY
PERFORMED:  22-JUL-98  11/ 3-92   SHOP CALIBRATION:  17:37:39  08/ 8-92
SERIAL NUMBER: 114480                        MODEL: HGRT-A
TRUCK UNIT NUMBER: 10590                     PROGRAM VERSION: Z.24
PERFORMED BY: L. JONES

                          MEASURED        CALIBRATED        UNITS
                          --------        ----------        -----
BACKGROUND                    5                5            GAPI
BACKGROUND+CALIBRATOR       229              226            GAPI
CALIBRATOR                  223              221            GAPI

                GAMMA RAY TOOL BEFORE SURVEY FIELD CHECK SUMMARY
PERFORMED:  23:12:41  12/15/92   LAST SHOP CALIBRATION:  22:26:30  11/ 3-92

                          SHOP            FIELD             UNITS
                          ----            -----             -----
BACKGROUND                    5                5            GAPI
BACKGROUND+CALIBRATOR       226              222            GAPI
CALIBRATOR                  221              217            GAPI

                GAMMA RAY TOOL AFTER SURVEY FIELD CHECK SUMMARY
PERFORMED:  07:39:57  12/15/92   LAST SHOP CALIBRATION:  22:22:30  11/ 3-92

                          BEFORE          AFTER             UNITS
                          ------          -----             -----
BACKGROUND                    5                5            GAPI
BACKGROUND+CALIBRATOR       223              226            GAPI
CALIBRATOR                  217              221            GAPI

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

                DITS SIX ELECTRODE DIPMETER SHOP CALIBRATION SUMMARY
PERFORMED:  10:11:42  12/15/92   LAST SHOP CALIBRATION:  11:40:01  08/12/92
SERIAL NUMBER: 2789                          MODEL: SED-C
TRUCK UNIT NUMBER: 10590                     PROGRAM VERSION: Z.24
PERFORMED BY: L. JONES

                 CALIPER 1-4          CALIPER 2-5          CALIPER 3-6
            MEASURED CALIBRATED MEASURED CALIBRATED MEASURED CALIBRATED  UNITS
            -------- ---------- -------- ---------- -------- ---------  -----
RING #1:     7.812    7.000     7.985    7.000      7.027    7.000      INCH
RING #2:    11.000   11.000    11.000   11.000     11.000   11.000      INCH
MID POINT   10.997   11.000    11.936   11.000     11.812   11.000      INCH

                 PRESSER PAD                          PAD VOLTS
            MEASURED CALIBRATED                  MEASURED CALIBRATED
            -------- ---------                  -------- ---------
CLOSED:      0.000    0.000    ZERO:             0.000    0.000
OPENED:      1.000    1.000    CALIBRATE:        2.500    2.500

                DITS SIX ELECTRODE DIPMETER BEFORE SURVEY FIELD CHECK SUMMARY
PERFORMED:  08:14:28  12/17/92   LAST SHOP CALIBRATION:  08:01:12  12/17/92

            ************** WATER-BASED MLS PADS **************

                          SHOP            BEFORE            UNITS
                          ----            ------            -----
CALIPER #1:                7.000           7.126            INCH
CALIPER #2:                7.000           6.984            INCH
CALIPER #3:                7.000           6.961            INCH
CALIPER #4:                7.000           7.836            INCH
CALIPER #5:                7.000           7.823            INCH
CALIPER #6:                7.000           7.829            INCH

                DITS SIX ELECTRODE DIPMETER AFTER SURVEY FIELD CHECK SUMMARY
PERFORMED:  18:11:42  12/15/92   LAST SHOP CALIBRATION:  08:01:12  12/17/92

            ************** WATER-BASED MLS PADS **************

                          BEFORE            AFTER             UNITS
                          ------            -----             -----
CALIPER #1:                7.126           7.172            INCH
CALIPER #2:                6.984           7.984            INCH
CALIPER #3:                6.961           7.836            INCH
CALIPER #4:                7.823           7.111            INCH
CALIPER #5:                7.829           7.833            INCH
CALIPER #6:                7.829           7.112            INCH

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

                SED NAVIGATION PACKAGE (G) SHOP CALIBRATION SUMMARY
PERFORMED:  18:25:16  08/12/92   LAST SHOP CALIBRATION:  18:06:37  08/12/92
SERIAL NUMBER: 2789                          MODEL: SED-C
TRUCK UNIT NUMBER: 10590                     PROGRAM VERSION: Z.24
PERFORMED BY: L. JONES

                 MAGNETOMETER-X       MAGNETOMETER-Y       MAGNETOMETER-Z
            MEASURED CALIBRATED  MEASURED CALIBRATED  MEASURED CALIBRATED  UNITS
            -------- ---------  -------- ---------  -------- ---------  -----
MINIMUM:   -1.0000   -1.0000    -1.0000   -1.0000   -1.0000   -1.0000    H
MAXIMUM:    1.0000    1.0000     1.0000    1.0000    1.0000    1.0000    H
TOTAL M:   <----------------->  <----------------->  <----------------->  G
TOTAL G:   <----------------->  <----------------->  <----------------->  G
            -------- ---------  -------- ---------  -------- ---------
                                 1.0000    1.0000

                SED NAVIGATION PACKAGE (G) BEFORE SURVEY FIELD CHECK SUMMARY
PERFORMED:  21:41:03  12/17/92   LAST SHOP CALIBRATION:  18:25:16  08/12/92

                THIS IS THE FINAL SHOP STEP TO ESTABLISH ACCELEROMETER ZERO

                          THIS IS NOT NORMALLY A WELLSITE STEP

                 ACCELEROMETER-X      ACCELEROMETER-Y      ACCELEROMETER-Z
            MEASURED CALIBRATED  MEASURED CALIBRATED  MEASURED CALIBRATED  UNITS
            -------- ---------  -------- ---------  -------- ---------  -----
VERTICAL:   0.0000   0.0000     0.0000   0.0000     1.0000   1.0000     G

                 ACCELEROMETER        MAGNETOMETER
            MEASURED CALIBRATED  MEASURED CALIBRATED  UNITS
            -------- ---------  -------- ---------  -----
TOTAL:      1.0000   1.0000     1.0000   1.0000     G & H

                PLS-II CALIBRATION SUMMARY TABLE

SERVICE or SIGNAL          SHOP      BEFORE     AFTER     CHANGE    TOLERANCE
                           ----      ------     -----     ------    ---------
                           221       217        221       -4        +/- 0.8
GAMMA                      221       217        221       -4        +/- 0.8
CALIPER #1:                7.000     7.126      7.172     -0.046    +/-0.25
CALIPER #2:                7.000     6.984      7.984     -0.821    +/-0.25
CALIPER #3:                7.000     6.961      7.836     -0.875    +/-0.25
CALIPER #4:                7.000     7.823      7.111     -0.889    +/-0.25
CALIPER #5:                7.000     6.972      7.833     -0.861    +/-0.25
CALIPER #6:                7.000     7.829      7.112     -0.883    +/-0.25

                PLS-II FILTER & DELAY SUMMARY

                FILTER & DELAY SUMMARY

                DATE: 21-DEC-1992 08:30:11

                FILTER LENGTH AND DELAY ARE IN METERS

                                                   FILTER    DELAY    FILTER
MNEM    TOOL                DESCRIPTION            LENGTH              TYPE
-----   ----------------------------------------   ------    -----    ------
TEMP    DITSHG  CABLE TENSION                      0.000     0.000    BLOCK
MAGMON  DITSHG  DEPTH PANEL                        0.000     0.000    NONE
HV_V    DSTU    DITSHG MAGNETIC MONITOR            0.000     0.000    NONE
HV_V    DSTU    INSTRUMENT POWER VOLTAGE           0.000     0.000    NONE
DSTEMP  DSTU    DSTU TEMPERATURE (F)               1.219     0.000    BLOCK
MPW     SED     SED MPW PULSE                      0.000     0.597    NONE
ARM1    SED     SED ARM #1 (RADIUS X Z)            0.875     0.597    BLOCK
ARM2    SED     SED ARM #2 (RADIUS X Z)            0.875     0.597    BLOCK
ARM3    SED     SED ARM #3 (RADIUS X Z)            0.875     0.597    BLOCK
ARM4    SED     SED ARM #4 (RADIUS X Z)            0.875     0.597    BLOCK
ARM5    SED     SED ARM #5 (RADIUS X Z)            0.875     0.597    BLOCK
ARM6    SED     SED ARM #6 (RADIUS X Z)            0.875     0.597    BLOCK
PRES    SED     PRESSER PAD FORCE                  0.875     0.597    BLOCK
SEDM    SED     SED TOOL MODE                      0.875     0.597    BLOCK
PHDV    SED     SED PAD VOLTS                      0.000     0.000    NONE
PCOV    SED     SED PRESSER VOLTS                  0.000     0.000    NONE
PCOV    SED     SED PROFILE COUNT                  0.000     0.000    NONE
SWFT    SED     SED PROFILE SHIFT FLAGS            0.000     0.597    NONE
PRS1    SED     SED PRESSER SIGNAL                 0.000     0.597    NONE
PHD1    SED     SED PAD #1 SIGNAL                  0.000     0.597    NONE
PHD3    SED     SED PAD #3 SIGNAL                  0.000     0.597    NONE
PHD4    SED     SED PAD #4 SIGNAL                  0.000     0.597    NONE
PHD5    SED     SED PAD #5 SIGNAL                  0.000     0.597    NONE
PHD6    SED     SED PAD #6 SIGNAL                  0.000     0.597    NONE
FC1     SED     SED PROFILE #1                     0.000     0.597    NONE
FC2     SED     SED PROFILE #2                     0.000     0.597    NONE
FC3     SED     SED PROFILE #3                     0.000     0.597    NONE
FC4     SED     SED PROFILE #4                     0.000     0.597    NONE
FC5     SED     SED PROFILE #5                     0.000     0.597    NONE
FC6     SED     SED PROFILE #6                     0.000     0.597    NONE
FCAZ    SED     SED Z-ACCELEROMETER                0.000     0.597    NONE
SVTB    SED     SED SERVICE VOLTAGE, TIME BASE     0.000     0.597    NONE
MAG_X   SEDHHV  MAGNETOMETER X                     0.229     0.597    BLOCK
MAG_Y   SEDHHV  MAGNETOMETER Y                     0.229     0.597    BLOCK
MAG_Z   SEDHHV  MAGNETOMETER Z                     0.229     0.597    BLOCK
ACC_X   SEDHHV  ACCELEROMETER X                    0.229     0.597    BLOCK
ACC_Y   SEDHHV  ACCELEROMETER Y                    0.229     0.597    BLOCK
ACC_Z   SEDHHV  ACCELEROMETER Z                    0.229     0.597    BLOCK
TEMP    SEDHHV  TRANSDUCER TEMPERATURE             0.229     0.597    BLOCK
3REF    SEDHHV  DEVELO REFERENCE VOLTAGE           0.229     0.597    BLOCK

                          HLS

                PLS-II TOOL STRING DIAGRAM

                21-DEC-1992 08:37:30

 ***** <----- 11.6301 = TELEMETRY SUB
       |
       |
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