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

                GAMMA RAY TOOL SHOP CALIBRATION SUMMARY
PERFORMED:  22:22:30  11/ 3/92    LAST SHOP CALIBRATION:    17:37:39  08/ 8/92
SERIAL NUMBER: 114401             MODEL: NGRT-A
TRUCK UNIT NUMBER: 10598          PROGRAM VERSION: 2.24
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:  14:10:22  12/ 6/92    LAST SHOP CALIBRATION:    22:22:30  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:  19:11:33  12/ 6/92    LAST SHOP CALIBRATION:    22:22:30  11/ 3/92

                            BEFORE           AFTER            UNITS
                           --------        ----------         -----
BACKGROUND                      5                 4            GAPI
BACKGROUND+CALIBRATOR         223               225            GAPI
CALIBRATOR                    217               220            GAPI


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              DITS DUAL LATEROLOG SHOP CALIBRATION SUMMARY
PERFORMED:  22:45:54  11/ 5/92    LAST SHOP CALIBRATION:    22:21:33  11/ 5/92
SERIAL NUMBER: B008               MODEL: DLLT-A
TRUCK UNIT NUMBER: 10598          PROGRAM VERSION: 2.24
PERFORMED BY: L. JONES

                              HLS DLLT SHOP REPORT CALIBRATION SUMMARY

                      DEEP        DEEP       SHALLOW     SHALLOW
                    MEASURED   CALIBRATED   MEASURED   CALIBRATED  UNITS
                    --------   ----------   --------   ----------  ------
EXT. CAL POINT #1       1.04        1.04        1.01        1.00   OHM-M
EXT. CAL POINT #2     119.40      119.47       99.65       99.63   OHM-M
EXT. CAL POINT #3 21580.29    20936.04    10008.16    10395.71     OHM-M
EXT. CAL POINT #4   1571.05     1567.00     1023.14     1026.70    OHM-M
INTERNAL REFERENC     19.50       19.53       19.62       19.60    OHM-M

          DITS DUAL LATEROLOG BEFORE SURVEY FIELD CHECK SUMMARY
PERFORMED:  15:37:19  12/ 6/92    LAST SHOP CALIBRATION:    22:45:54  11/ 5/92

                       DEEP LATEROLOG          SHALLOW LATEROLOG
                     SHOP        FIELD        SHOP       FIELD        UNITS
                     ----        -----        ----       -----        -----
INTERNAL:            19.53       19.53        19.60       19.58       OHM-M

          DITS DUAL LATEROLOG AFTER SURVEY FIELD CHECK SUMMARY
PERFORMED:  18:27:38  12/ 6/92    LAST SHOP CALIBRATION:    22:45:54  11/ 5/92

                       DEEP LATEROLOG          SHALLOW LATEROLOG
                     AFTER       BEFORE       AFTER      BEFORE       UNITS
                     -----       ------       -----      ------       -----
INTERNAL             19.51       19.53        19.55       19.58       OHM-M


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                  MICRO GUARD SHOP CALIBRATION SUMMARY
PERFORMED:  23:39:20  11/ 5/92    LAST SHOP CALIBRATION:    23:35:50  11/ 5/92
SERIAL NUMBER: A006               MODEL: M320
TRUCK UNIT NUMBER: 10598          PROGRAM VERSION: 2.24
PERFORMED BY: L. JONES

                      MEASURED    CALIBRATED     UNITS
                      --------    ----------     -----
EXT. CAL. POINT #1      0.20        0.20         OHM-M
EXT. CAL. POINT #2     19.93       20.00         OHM-M
EXT. CAL. POINT #3 1973.90       2000.00         OHM-M
INTERNAL REFERENCE     18.12       18.18         OHM-M


             MICRO GUARD BEFORE SURVEY FIELD CHECK SUMMARY
PERFORMED:  15:38:21  12/ 6/92    LAST SHOP CALIBRATION:    23:39:20  11/ 5/92

                         SHOP            FIELD   UNITS
                         ----            -----   -----
INT REF                  18.18           18.18   OHM-M

             MICRO GUARD AFTER SURVEY FIELD CHECK SUMMARY
PERFORMED:  18:28:50  12/ 6/92    LAST SHOP CALIBRATION:    23:39:20  11/ 5/92

                        BEFORE           AFTER   UNITS
                        ------           -----   -----
INT REF.                 18.18           18.18   OHM-M


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                MSFL/MEL CALIPER SHOP CALIBRATION SUMMARY
PERFORMED:  00:00:15  11/ 6/92    LAST SHOP CALIBRATION:    23:57:01  11/ 5/92
SERIAL NUMBER: A006               MODEL: M320
TRUCK UNIT NUMBER: 10598          PROGRAM VERSION: 2.24
PERFORMED BY: L. JONES

                        MEASURED         CALIBRATED           UNITS
                        --------         ----------           -----
VALUE 1                   7.838             8.000             INCH
VALUE 2                  15.027            15.000             INCH

             MSFL/MEL CALIPER BEFORE SURVEY FIELD CHECK SUMMARY
PERFORMED:  13:47:03  12/ 6/92    LAST SHOP CALIBRATION:    00:00:15  11/ 6/92

                          SHOP             FIELD              UNITS
                        -------           -------             -----
VALUE  1                 8.000             7.978              INCH

             MSFL/MEL CALIPER AFTER SURVEY FIELD CHECK SUMMARY
PERFORMED:  18:33:09  12/ 6/92    LAST SHOP CALIBRATION:    00:00:15  11/ 6/92

                         BEFORE            AFTER              UNITS
                        -------           -------             -----
VALUE  1                 7.978             7.651              INCH

                      PLS-II CALIBRATION SUMMARY TABLE
                      ---------------------------------

  SERVICE or SIGNAL        SHOP      BEFORE      AFTER     CHANGE   TOLERANCE
------------------------ ---------- --------- ---------- --------- ---------
 GAMMA                     221       217        220        -2      +/- 9.0
 DEEP LATEROLOG:           19.526     19.526     19.514     0.013  +/- 0.8
 SHALLOW LATEROLOG:        19.600     19.579     19.548     0.030  +/- 0.8
 MICROGUARD                18.183     18.185     18.178     0.006  +/- 0.8
 CALIPER VALUE 1            8.000      7.978      7.651     0.327  +/-0.5
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PLS-II FILTER & DELAY SUMMARY

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                      FILTER & DELAY SUMMARY

                    DATE:  6-DEC-1992 20:03:32

               FILTER LENGTH AND DELAY ARE IN METERS

                                                    FILTER            FILTER
  MNEM    TOOL          DESCRIPTION                 LENGTH    DELAY    TYPE
  ------  ------  --------------------------------  -------  -------  --------
  TENS    DITSHD  CABLE TENSION                      0.000    0.000  BLOCK
  MAGMRK  DITSHD  DEPTH PANEL MAGNETIC MARK          0.000    0.000  NONE
  DLOD    CH_TEN  CABLE HEAD TENSION                 0.000    0.000  BLOCK
  BHTEMP  CH_TEN  CH BORE HOLE TEMPERATURE           0.000    0.000  BLOCK
  PLOC    CH_TEN  CABLE HEAD PAD LOCATOR             0.000    0.000  BLOCK
  SP      BRID_R  SPONTANEOUS POTENTIAL              0.600   31.086  BLOCK
  W2_V    DSTU    AUXILLARY POWER VOLTAGE            0.000    0.000  NONE
  W5_V    DSTU    INSTRUMENT POWER VOLTAGE           0.000    0.000  NONE
  DSTEMP  DSTU    DSTU TEMPERATURE (F)               1.200   30.035  BLOCK
  RGR     GAMMA   NATURAL GAMMA RAY                  0.500   26.175  BLOCK
  NNOISE  FWST2   NEAR RECEIVER NOISE                0.000   17.305  NONE
  FNOISE  FWST2   FAR RECEIVER NOISE                 0.000   17.305  NONE
  TT_N    FWST2   NEAR TRAVEL TIME                   0.000   19.058  NONE
  TT_F    FWST2   FAR TRAVEL TIME                    0.000   18.905  NONE
  GAIN_N  FWST2   NEAR RECEIVER GAIN                 0.000   17.305  NONE
  GAIN_F  FWST2   FAR RECEIVER GAIN                  0.000   17.305  NONE
  DT      FWST2   DELTA T COMPRESSIVE                0.400   16.924  TRIANGLE
  DT_UNF  FWST2   DELTA T UNFILTERD                  0.000   16.924  NONE
  DT_2FT  FWST2   DELTA T SIM 2 FT SPACING           0.700   16.924  TRIANGLE
  DT_RCV  FWST2   DELTA T AT RECEIVER                0.000   17.381  NONE
  DT_XMT  FWST2   DELTA T AT TRANSMITTER             0.000   17.381  NONE
  DT_Q    FWST2   DELTA T QUALITY                    0.000   17.305  NONE
  PKCODE  FWST2   PICK CODE                          0.000   17.305  NONE
  ALPHA   FWST2   ALPHA                              0.000   17.305  NONE
  ERROR   FWST2   ERROR                              0.000   17.305  NONE
  DTS     FWST2   DELTA T SHEAR                      0.400   16.924  TRIANGLE
  MSG_SG  FWST2   MSG SHEAR GAIN                     0.000   15.991  NONE
  MSGGAI  FWST2   MSG GAIN                           0.000   16.924  NONE
  MSGRCV  FWST2   MSG RECEIVER                       0.000   16.924  NONE
  AMPL    FWST2   AMPLITUDE                          0.533   17.034  BLOCK
  WF1A    FWST2   FWST RECEIVER 1 WAVEFORM           0.000   17.287  BLOCK
  WF2A    FWST2   FWST RECEIVER 2 WAVEFORM           0.000   17.287  NONE
  SHVE    DLLT    LATEROLOG SHALLOW VE               0.500    6.330  BLOCK
  SHIA    DLLT    LATEROLOG SHALLOW IA               0.500    6.330  BLOCK
  DPVE    DLLT    LATEROLOG DEEP VE                  0.500    6.330  BLOCK
  DPIA    DLLT    DUAL LATEROLOG                     0.500    6.330  BLOCK
  VODCDT  DLLT    VODC DEEP TOTAL                    0.500    6.330  BLOCK
  MCVE    MCGRD   MICRO GUARD VE                     0.200    1.340  BLOCK
  MCVEUF  MCGRD   MICRO GUARD VE UNFILTERED          0.000    1.340  NONE
  MCIA    MCGRD   MICRO GUARD IA                     0.200    1.340  BLOCK
  MCIAUF  MCGRD   MICRO GUARD IA UNFILTERED          0.000    1.340  NONE
  CALIP   CALI_2  MSFL CALIPER                       0.300    1.340  BLOCK
```

HLS

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                    PLS-II TOOL STRING DIAGRAM

                     6-DEC-1992 20:02:07

     :
    /=\  <----  52.1664 = DITS CABLE HEAD LOAD CELL
   /   \
   :   :
     +   <----  50.6264 = TOP OF TOOL
     :
     :
     :
     +   <----  31.0864 = SP
     :
     :
     :
     :
     :
     :
     :
    / \
  +===+ <----  30.1864 = TELEMETRY SUB
  :   :
  :   :
  :   :
  :   :
  +===+ <----  28.2052 = GAMMA SUB
  :   :
  :   :
  :   :
  :   : <----  26.1752 = GAMMA RAY
  +===+  <---  25.7652 = IN-LINE CENTRALIZER
 / : : \
/  : :  \
\  : :  /
 \ : : /
  +===+ <----  24.2452 = ACOUSTIC VELOCITY SUB
  :   :
  :   :
  :   :
  :   :
  :   :
  :   :
  :   :
  :   : <----  16.9240 = DELTA-T
  :   : <----  17.0336 = AMPLITUDE
  :   :
  :   :
  +===+  <---  15.5340 = IN-LINE CENTRALIZER
 / : : \
/  : :  \
\  : :  /
 \ : : /
  +===+ <----  14.0100 = DUAL LATEROLOG SUB
  :   :
  :   :
  :   :
  :   :
  :   :
  :   :
  :   : <----  6.33000  = DEEP RESISTIVITY
  :   : <----  6.33000  = SHALLOW RESISTIVITY
  :   :
  :   :
  :   :
  +===+ <----  3.74000 = MICROGUARD SUB
  :   :
  :   :
```