

|   |             |      |       |                       |
|---|-------------|------|-------|-----------------------|
| 6   | INCHES      | 16   | 5 cm  |                       |
| 6   | CALIPER     | TENS |       |                       |
| 6   | INCHES      | 16   | +KKG  |                       |
|   | GAMMA * KUT |      | DLOG  | PE                    |
| 0   | API         | 150  | +KKG  | 0                     |
|   | GAMMA * KT  |      | BHV   | BULK DENSITY          |
| 0   | API         | 150  | >BHV  | 1.95                  |
|   | GAMMA * T   |      | RAHV  | GM/CC                 |
| 0   | API         | 150  | <RAHV | 45                    |
|   |             |      |       | NEU POROSITY          |
|   |             |      |       | PERCENT               |
|   |             |      |       | NEUTRON MATRIX * LIME |
| UPLUG # 1 Depth: 2229.00 Service:none. Unit:10598 |             |      |       |                       |
| Replay Log Date: Time: Vers:2.24                  |             |      |       |                       |

GAMMA RAY TOOL SHOP CALIBRATION SUMMARY  
 PERFORMED: 22:25:22 11/3/92 LAST SHOP CALIBRATION: 17:37:39 08/ 0/92  
 SERIAL NUMBER: 114481 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: 14:22:31 11/17/92 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: 14:16:02 11/19/92 LAST SHOP CALIBRATION: 22:22:30 11/ 3/92

|                       | BEFORE | AFTER | UNITS |
|-----------------------|--------|-------|-------|
| BACKGROUND            | 5      | 7     | GAPI  |
| BACKGROUND+CALIBRATOR | 227    | 231   | GAPI  |
| CALIBRATOR            | 212    | 223   | GAPI  |

DITS SPECTRAL GAMMA - TITANIUM SHOP CALIBRATION SUMMARY  
 PERFORMED: 01:41:06 11/11/92 LAST SHOP CALIBRATION: 01:16:42 11/11/92  
 SERIAL NUMBER: 113028 MODEL: CSNGT-A  
 CALIBR NUM: 313 PROGRAM VERSION: 2.24  
 TRUCK UNIT NUMBER: 10598  
 PERFORMED BY: L. JONES

| TITANIUM CASE    | MEASURED | CALIBRATED | UNITS    |
|------------------|----------|------------|----------|
| 60KEV PEAK CH#   | 47       | 47         | CHANNELS |
| 239KEV PEAK CH#  | 176      | 175        | CHANNELS |
| 583KEV PEAK CH#  | 49       | 49         | CHANNELS |
| 2614KEV PEAK CH# | 213      | 212        | CHANNELS |
| CALIBRATOR VALUE | 248      | 248        | GAPI     |

DITS SPECTRAL GAMMA - TITANIUM BEFORE SURVEY FIELD CHECK SUMMARY  
 PERFORMED: 01:56:17 11/11/92 LAST SHOP CALIBRATION: 01:16:42 11/11/92

|                  | SHOP | FIELD | UNITS    |
|------------------|------|-------|----------|
| 60KEV PEAK CH#   | 47   | 47    | CHANNELS |
| 239KEV PEAK CH#  | 175  | 177   | CHANNELS |
| 583KEV PEAK CH#  | 49   | 49    | CHANNELS |
| 2614KEV PEAK CH# | 212  | 213   | CHANNELS |
| CALIBRATOR VALUE | 248  | 251   | GAPI     |

DITS SPECTRAL GAMMA - TITANIUM AFTER SURVEY FIELD CHECK SUMMARY  
 PERFORMED: 14:31:35 11/19/92 LAST SHOP CALIBRATION: 01:41:06 11/11/92

|                  | BEFORE | AFTER | UNITS    |
|------------------|--------|-------|----------|
| 60KEV PEAK CH#   | 47     | 47    | CHANNELS |
| 239KEV PEAK CH#  | 177    | 175   | CHANNELS |
| 583KEV PEAK CH#  | 49     | 50    | CHANNELS |
| 2614KEV PEAK CH# | 213    | 213   | CHANNELS |
| CALIBRATOR VALUE | 251    | 248   | GAPI     |

DUAL SPACED NEUTRON II SHOP CALIBRATION SUMMARY  
 PERFORMED: 16:09:00 11/ 9/92 LAST SHOP CALIBRATION: 15:29:41 08/ 0/92  
 SERIAL NUMBER: 8009 MODEL: DSNT-A  
 SOURCE NUM: DSN 103 CALIBR NUM: 4912 NE  
 TRUCK UNIT NUMBER: 10598 PROGRAM VERSION: 2.24  
 PERFORMED BY: L. JONES

| PRIMARY CALIBRATOR | MEASURED | CALIBRATED | UNITS |
|--------------------|----------|------------|-------|
| RATIO:             | 6.528    | 6.527      |       |
| POROSITY:          | 24.688   | 24.685     | x     |

FIELD CHECK BLOCK

| CHECK RATIO:    | 5.339  | 5.338  |   |
|-----------------|--------|--------|---|
| CHECK POROSITY: | 19.130 | 19.127 | x |

DUAL SPACED NEUTRON II BEFORE SURVEY FIELD CHECK SUMMARY  
 PERFORMED: 13:22:37 11/14/92 LAST SHOP CALIBRATION: 16:09:00 11/ 9/92

|                | SHOP   | FIELD  | UNITS |
|----------------|--------|--------|-------|
| CHECK RATIO    | 5.338  | 5.318  |       |
| CHECK POROSITY | 19.127 | 18.995 | x     |

DUAL SPACED NEUTRON II AFTER SURVEY FIELD CHECK SUMMARY  
 PERFORMED: 14:56:34 11/19/92 LAST SHOP CALIBRATION: 16:09:00 11/ 9/92

|                | BEFORE | AFTER  | UNITS |
|----------------|--------|--------|-------|
| CHECK RATIO    | 5.310  | 5.376  |       |
| CHECK POROSITY | 18.995 | 19.308 | x     |

SPECTRAL DENSITY (8 BIT) SHOP CALIBRATION SUMMARY  
 PERFORMED: 18:00:35 11/10/92 LAST SHOP CALIBRATION: 17:01:54 11/10/92  
 SERIAL NUMBER: PAL145 MODEL: SDLT-A  
 SOURCE NUM: 1488G4 CALIBR NUM: SDL  
 TRUCK UNIT NUMBER: 10598 PROGRAM VERSION: 2.24  
 PERFORMED BY: L. JONES

| MAGNESIUM BLOCK | MEASURED | CALIBRATED | UNITS |
|-----------------|----------|------------|-------|
| DENSITY         | 1.688    | 1.687      | GM/CC |
| CORRECTION      | 0.023    | 0.021      | GM/CC |
| Pe SHORT        | 3.253    | 3.219      |       |
| Pe LONG         | 2.978    | 2.977      |       |

| ALUMINUM BLOCK | MEASURED | CALIBRATED | UNITS |
|----------------|----------|------------|-------|
| DENSITY        | 2.608    | 2.597      | GM/CC |
| CORRECTION     | 0.057    | 0.047      | GM/CC |
| Pe SHORT       | 3.224    | 3.190      |       |
| Pe LONG        | 3.205    | 3.200      |       |

| ALUMINUM BLOCK W/SLEEVE | MEASURED | CALIBRATED | UNITS |
|-------------------------|----------|------------|-------|
| DENSITY                 | 2.601    | 2.598      | GM/CC |
| CORRECTION              | -0.059   | -0.064     | GM/CC |
| Pe SHORT                | 6.285    | 6.246      |       |
| Pe LONG                 | 6.076    | 5.927      |       |

|                   | EXPECTED RANGE | CALIBRATED | UNITS |
|-------------------|----------------|------------|-------|
| SHORT SPACE       |                |            |       |
| DENSITY SLOPE     | -6.48 -> -7.60 | -7.000     | GM/CC |
| DENSITY INTERCEPT | 27.00 -> 37.00 | 32.152     | GM/CC |
| PE SLOPE          | 1.20 -> 2.30   | 1.688      | GM/CC |
| PE INTERCEPT      | -2.28 -> -4.00 | -2.710     |       |

|                   | EXPECTED RANGE | CALIBRATED | UNITS |
|-------------------|----------------|------------|-------|
| LONG SPACE        |                |            |       |
| DENSITY SLOPE     | -1.29 -> -1.39 | -1.321     | GM/CC |
| DENSITY INTERCEPT | 7.00 -> 8.10   | 7.482      | GM/CC |
| PE SLOPE          | 1.30 -> 2.50   | 1.741      | GM/CC |
| PE INTERCEPT      | -0.70 -> -2.10 | -0.755     |       |

| ALUMINUM SLIDE | MEASURED | CALIBRATED | UNITS |
|----------------|----------|------------|-------|
| DENSITY        | 1.656    | 1.656      | GM/CC |
| CORRECTION     | -0.040   | -0.041     | GM/CC |
| Pe SHORT       | 4.622    | 4.588      |       |
| Pe LONG        | 4.050    | 4.041      |       |

| ALUMINUM SLIDE IN | MEASURED | CALIBRATED | UNITS |
|-------------------|----------|------------|-------|
| DENSITY           | 2.172    | 2.159      | GM/CC |
| CORRECTION        | 0.030    | 0.025      | GM/CC |
| Pe SHORT          | 4.030    | 4.793      |       |
| Pe LONG           | 3.755    | 3.722      |       |

| BRASS SLIDE | MEASURED | CALIBRATED | UNITS |
|-------------|----------|------------|-------|
| DENSITY     | 2.380    | 2.368      | GM/CC |
| CORRECTION  | -0.329   | -0.336     | GM/CC |
| Pe SHORT    | 6.387    | 6.268      |       |
| Pe LONG     | 3.394    | 3.388      |       |

SPECTRAL DENSITY (8 BIT) BEFORE SURVEY FIELD CHECK SUMMARY  
 PERFORMED: 20:19:30 11/10/92 LAST SHOP CALIBRATION: 18:00:35 11/10/92

| ALUMINUM SLIDE IN   | SHOP  | FIELD | UNITS |
|---------------------|-------|-------|-------|
| ALUMINUM DENSITY    | 2.159 | 2.159 | GM/CC |
| ALUMINUM CORRECTION | 0.025 | 0.025 | GM/CC |
| ALUMINUM PE SHORT   | 4.793 | 4.844 |       |
| ALUMINUM PE LONG    | 3.722 | 3.749 |       |

SPECTRAL DENSITY (8 BIT) AFTER SURVEY FIELD CHECK SUMMARY  
 PERFORMED: 14:42:18 11/19/92 LAST SHOP CALIBRATION: 18:00:35 11/10/92

| ALUMINUM SLIDE IN   | BEFORE | AFTER | UNITS |
|---------------------|--------|-------|-------|
| ALUMINUM DENSITY    | 2.159  | 2.170 | GM/CC |
| ALUMINUM CORRECTION | 0.025  | 0.024 | GM/CC |
| ALUMINUM PE SHORT   | 4.844  | 4.730 |       |
| ALUMINUM PE LONG    | 3.749  | 3.631 |       |

SDL CALIPER SHOP CALIBRATION SUMMARY  
 PERFORMED: 18:17:48 11/10/92 LAST SHOP CALIBRATION: 18:16:14 11/10/92  
 SERIAL NUMBER: 112632 MODEL: SDLT-A  
 TRUCK UNIT NUMBER: 10598 PROGRAM VERSION: 2.24  
 PERFORMED BY: L. JONES

|         | MEASURED | CALIBRATED | UNITS |
|---------|----------|------------|-------|
| VALUE 1 | 7.965    | 8.000      | INCH  |
| VALUE 2 | 14.999   | 15.000     | INCH  |

SDL CALIPER BEFORE SURVEY FIELD CHECK SUMMARY  
 PERFORMED: 18:18:27 11/10/92 LAST SHOP CALIBRATION: 18:17:48 11/10/92

|         | SHOP  | FIELD | UNITS |
|---------|-------|-------|-------|
| VALUE 1 | 8.000 | 8.002 | INCH  |

SDL CALIPER AFTER SURVEY FIELD CHECK SUMMARY  
 PERFORMED: 15:06:37 11/19/92 LAST SHOP CALIBRATION: 18:17:48 11/10/92

|         | BEFORE | AFTER | UNITS |
|---------|--------|-------|-------|
| VALUE 1 | 8.002  | 7.880 | INCH  |

MICROLOG SHOP CALIBRATION SUMMARY  
 PERFORMED: 21:15:06 11/10/92 LAST SHOP CALIBRATION: 21:13:23 11/10/92  
 SERIAL NUMBER: 112632 MODEL: SDLT-A  
 TRUCK UNIT NUMBER: 10598 PROGRAM VERSION: 2.24  
 PERFORMED BY: L. JONES

|                    | MICROLOG NORMAL | MICROLOG LATERAL | UNITS |
|--------------------|-----------------|------------------|-------|
| TOOL ZERO          | 0.00            | 0.00             | 0.00  |
| CAL POINT #1       | 0.00            | 0.00             | 0.00  |
| CAL POINT #2       | 28.01           | 28.00            | 28.00 |
| INTERNAL REFERENCE | 28.27           | 28.26            | 21.77 |

MICROLOG BEFORE SURVEY FIELD CHECK SUMMARY  
 PERFORMED: 16:31:28 11/18/92 LAST SHOP CALIBRATION: 21:15:06 11/10/92

|                    | SHOP  | FIELD | MICROLOG LATERAL | UNIT  |
|--------------------|-------|-------|------------------|-------|
| TOOL ZERO          | 0.00  | 0.00  | 0.00             | OHM-M |
| INTERNAL REFERENCE | 28.26 | 28.26 | 21.76            | OHM-M |

MICROLOG AFTER SURVEY FIELD CHECK SUMMARY  
 PERFORMED: 15:16:50 11/19/92 LAST SHOP CALIBRATION: 21:15:06 11/10/92

|                    | BEFORE | AFTER | MICROLOG LATERAL | UNIT  |
|--------------------|--------|-------|------------------|-------|
| TOOL ZERO          | 0.00   | 0.00  | 0.00             | OHM-M |
| INTERNAL REFERENCE | 28.26  | 28.07 | 21.91            | 21.62 |

| SERVICE or SIGNAL  | SHOP   | BEFORE | AFTER  | CHANGE | TOLERANCE |
|--------------------|--------|--------|--------|--------|-----------|
| GAMMA              | 221    | 217    | 223    | -5     | +/- 9.0   |
| DSN                | 248.47 | 251.84 | 248.05 | -3.79  | +/- 9.0   |
| DSN POROSITY       | 19.127 | 18.995 | 19.308 | -0.313 | +/- 0.9   |
| BULK DENSITY       | 2.159  | 2.159  | 2.170  | -0.012 | +/- .015  |
| DENSITY CORRECTION | 0.025  | 0.025  | 0.024  | 0.001  | +/- .015  |
| DENSITY PE SHORT   | 4.793  | 4.844  | 4.730  | 0.106  | +/- .3    |
| DENSITY PE LONG    | 3.722  | 3.749  | 3.631  | -0.081 | +/- .3    |
| CALIPER VALUE 1    | 8.000  | 8.002  | 7.880  | 0.122  | +/- 0.5   |
| MICROG NORMAL      | 28.26  | 28.26  | 28.07  | 0.19   | +/- 0.8   |
| MICROG LATERAL     | 21.76  | 21.91  | 21.62  | 0.29   | +/- 0.8   |

PLS-II FILTER & DELAY SUMMARY

FILTER & DELAY SUMMARY

DATE: 21-NOV-1992 19:08:31

FILTER LENGTH AND DELAY ARE IN METERS

| MNEM   | TOOL   | DESCRIPTION               | FILTER LENGTH | DELAY  | FILTER TYPE |
|--------|--------|---------------------------|---------------|--------|-------------|
| TENS   | DITSHD | CABLE TENSION             | 0.000         | 0.000  | BLOCK       |
| MAGMRK | DITSHD | DEPTH PANEL MAGNETIC MARK | 0.000         | 0.000  | BLOCK       |
| BHTEP  | CH_TEN | CABLE HEAD TENSION        | 0.000         | 0.000  | BLOCK       |
| DLOD   | CH_TEN | CABLE HEAD TEMPERATURE    | 0.000         | 0.000  | BLOCK       |
| PLC    | CH_TEN | CABLE HEAD PAD LOCATOR    | 0.000         | 0.000  | BLOCK       |
| H2_V   | DSTU   | AUXILIARY POWER VOLTAGE   | 0.000         | 0.000  | NONE        |
| H5_V   | DSTU   | INSTRUMENT POWER VOLTAGE  | 0.000         | 0.000  | NONE        |
| ZRGR   | GAMMA  | NATURAL GAMMA RAY         | 0.492         | 22.335 | TRIANGLE    |
| DSTMP  | DSTU   | DSTU TEMPERATURE (F)      | 0.000         | 0.000  | NONE        |
| W1N1H  | CSNG_T | CSNG WINDOW HIGH 1        | 0.381         | 18.243 | BLOCK       |
| W1N2H  | CSNG_T | CSNG WINDOW HIGH 2        | 0.381         | 18.243 | BLOCK       |
| W1N3H  | CSNG_T | CSNG WINDOW HIGH 3        | 0.381         | 18.243 | BLOCK       |
| W1N4H  | CSNG_T | CSNG WINDOW HIGH 4        | 0.381         | 18.243 | BLOCK       |
| W1N5H  | CSNG_T | CSNG WINDOW HIGH 5        | 0.381         | 18.243 | BLOCK       |
| W1N6H  | CSNG_T | CSNG WINDOW HIGH 6        | 0.381         | 18.243 | BLOCK       |
| W1N7H  | CSNG_T | CSNG WINDOW HIGH 7        | 0.381         | 18.243 | BLOCK       |
| W1N8H  | CSNG_T | CSNG WINDOW HIGH 8        | 0.381         | 18.243 | BLOCK       |
| W1N9H  | CSNG_T | CSNG WINDOW HIGH 9        | 0.381         | 18.243 | BLOCK       |
| W1N10H | CSNG_T | CSNG WINDOW HIGH 10       | 0.381         | 18.243 | BLOCK       |
| W1N11H | CSNG_T | CSNG WINDOW HIGH 11       | 0.381         | 18.243 | BLOCK       |
| W1N12H | CSNG_T | CSNG WINDOW HIGH 12       | 0.381         | 18.243 | BLOCK       |
| W1N13H | CSNG_T | CSNG WINDOW HIGH 13       | 0.381         | 18.243 | BLOCK       |
| W1N1L1 | CSNG_T | CSNG WINDOW LITHOLOGY 1   | 0.381         | 18.243 | BLOCK       |
| W1N1L2 | CSNG_T | CSNG WINDOW LITHOLOGY 2   | 0.381         | 18.243 | BLOCK       |
| W1N1L3 | CSNG_T | CSNG WINDOW LITHOLOGY 3   | 0.381         | 18.243 | BLOCK       |
| W1N1CA | CSNG_T | CSNG WINDOW CASTING 1     | 0.381         | 18.243 | BLOCK       |
| W1N1CB | CSNG_T | CSNG WINDOW CASTING 2     | 0.381         | 18.243 | BLOCK       |
| W1N1CB | CSNG_T | CSNG WINDOW CASTING 3     | 0.381         | 18.243 | BLOCK       |
| W1N1CB | CSNG_T | CSNG WINDOW CASTING 4     | 0.381         | 18.243 | BLOCK       |
| W1N1CB | CSNG_T | CSNG WINDOW CASTING 5     | 0.381         | 18.243 | BLOCK       |
| W1N1CB | CSNG_T | CSNG WINDOW CASTING 6     | 0.381         | 18.243 | BLOCK       |
| W1N1CB | CSNG_T | CSNG WINDOW CASTING       |               |        |             |