

COMPANY: Lamont Doherty

WELL: ODP Leg 193, Site 1188F (PCM-2A)

FIELD: Manus Basin, Snowcap

COUNTY: Offshore STATE: Bismarck Sea

HNGS
Natural Gamma Ray



| | | | |
|--|--------------------------|----------------------------|------------------------|
| COUNTY: Offshore | | Elev.: K.B. 11.3 m | |
| Field: Manus Basin, Snowcap | | G.L. -1653 m | |
| Location: ODP Leg 193, Site 1188F (PCM-2A) | | D.F. 11 m | |
| Company: Lamont Doherty | | Elev.: 0 m | |
| LOCATION | | | |
| Permanent Datum: | MSL | 11.0 m above Perm. Datum | |
| Log Measured From: | Drill Floor | | |
| Drilling Measured From: | Drill Floor | | |
| API Serial No. | LATITUDE: 03° 43.6850' S | LONGITUDE: 151° 40.1909' E | RIG: JOIDES Resolution |

Logging Date 21-DEC-2000

Run Number 1

Depth Driller 2039.7 m

Schlumberger Depth 2008 m

Bottom Log Interval 1993 m

Top Log Interval 1652 m

Casing Driller Size @ Depth 0.000 in @ 1843 m

Casing Schlumberger 1843 m

Bit Size 7.250 in

Type Fluid In Hole Seawater

Density Viscosity 1.1 g/cm3

Fluid Loss PH

Source Of Sample Seawater

RM @ Measured Temperature 0.180 ohm.m @ 30 degC

RMF @ Measured Temperature 0.235 ohm.m @ @

RMC @ Measured Temperature @ @ @

Source RMF RMC @ @ @

RM @ MRT RMF @ MRT 0.086 @ 86 @ 86 @ @

Maximum Recorded Temperatures 86 degC @ 86

Circulation Stopped Time 20-Dec-2000 22:00

Logger On Bottom Time 21-DEC-2000 10:00

Unit Number 99 Location Houston ODP

Recorded By Kerry M. Swain

Witnessed By Gerardo Iturrino, Anne Bartetzko

Logging Date

Run Number

Depth Driller

Schlumberger Depth

Bottom Log Interval

Top Log Interval

Casing Driller Size @ Depth @

Casing Schlumberger

Bit Size

Type Fluid In Hole

Density Viscosity

Fluid Loss PH

Source Of Sample

RM @ Measured Temperature @

RMF @ Measured Temperature @ @

RMC @ Measured Temperature @ @ @

Source RMF RMC @ @ @

RM @ MRT RMF @ MRT @ @ @ @

Maximum Recorded Temperatures @ @

Circulation Stopped Time @ @

Logger On Bottom Time @ @

Unit Number @ @

Recorded By @ @

Witnessed By @ @

Run 1

Run 2

Run

DISCLAIMER
 THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

| | |
|---|---|
| OTHER SERVICES1 OS1: FMS OS2: DITE OS3: APS/HLDS OS4: OS5: | OTHER SERVICES2 OS1: OS2: OS3: OS4: OS5: |
|---|---|

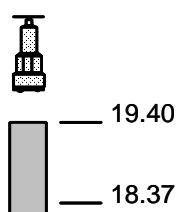
| | |
|---|-----------------------|
| REMARKS: RUN NUMBER 1 | REMARKS: RUN NUMBER 2 |
| HGTC (HighTemp/High Pressure Gamma Ray Telemetry Cartridge) used for Temperature with LEH-QO head and MTEM sensor. | |
| Log presented in meters below rig floor. Sea floor at 1652 mbrf. | |
| Wireline heave compensator used on all descents. | |
| Sea water used as mud in hole. | |
| Log TD at 2008 mbrf and tool could not reach drillers depth of 2039.7 mbrf. | |
| Maximum temperature recorded from MTEM sensor in head. | |
| Toolstring-HLDS/NPLC/APS/HNGS/HGTC/LEHQO | |
| Original log files are log19.dlis, log20.dlis. These files are played back as play58.dlis and play 64.dlis. Reprocessing was done for the HNGS to compensate for the correct mud density of 1.1 g/cc. Calibrations listed on HLDS/APS prints. | |

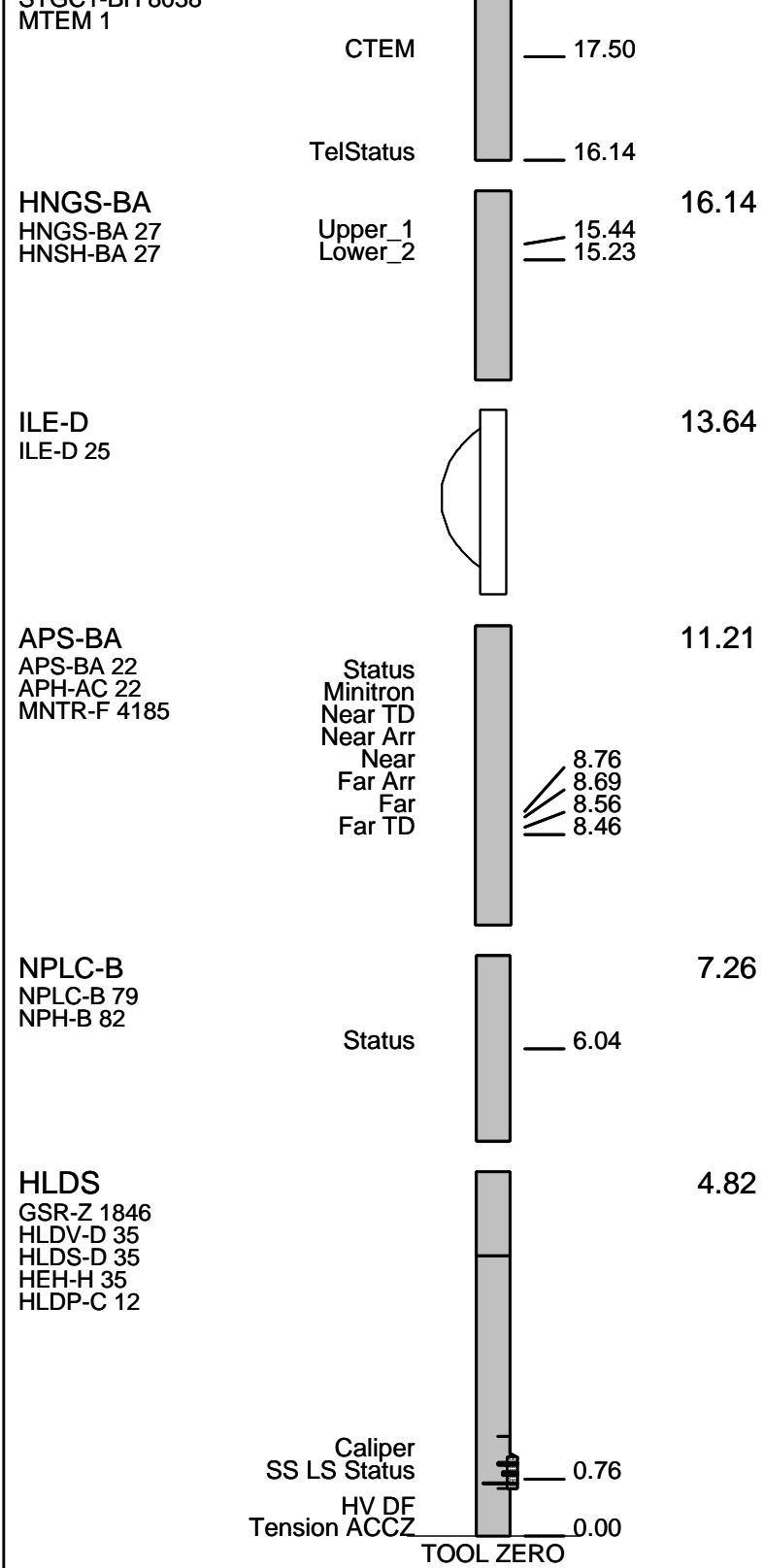
| | | | | | |
|------------------|---------|------|------------------|-------|------|
| RUN 1 | | | RUN 2 | | |
| SERVICE ORDER #: | | | SERVICE ORDER #: | | |
| PROGRAM VERSION: | 9C1-303 | | PROGRAM VERSION: | | |
| FLUID LEVEL: | 0 m | | FLUID LEVEL: | | |
| LOGGED INTERVAL | START | STOP | LOGGED INTERVAL | START | STOP |
| | | | | | |
| | | | | | |
| | | | | | |

EQUIPMENT DESCRIPTION

| | |
|---|-------|
| RUN 1 | RUN 2 |
| SURFACE EQUIPMENT | |
| SFT-281 24 SFT-178 4722 GSR-U 135 WITM (DTS)-A | |

| | |
|---|-------|
| DOWNHOLE EQUIPMENT | |
| LEH-MT LEH-MT 1 | 20.36 |
| Mud Tempe | 19.40 |
| HTGC-B UDFH-KL 1062 STGC0-A 8038 STGC1-BH 8038 | 19.40 |
| Gamma Ray | 18.37 |





MAXIMUM STRING DIAMETER 3.88 IN
 MEASUREMENTS RELATIVE TO TOOL ZERO
 ALL LENGTHS IN METERS

Input DLIS Files

| | | | | | |
|---------|-----------|----------------|-------------------|----------|----------|
| DEFAULT | HLDS .020 | FN:36 PRODUCER | 21-Dec-2000 11:41 | 2009.4 M | 1918.9 M |
|---------|-----------|----------------|-------------------|----------|----------|

Output DLIS Files

| | | | | | |
|---------|-----------|----------------|-------------------|----------|----------|
| DEFAULT | HLDS .064 | FN:97 PRODUCER | 31-Dec-2000 10:57 | 2009.4 M | 1918.9 M |
| LAMONT | HLDS .064 | FN:98 PRODUCER | 31-Dec-2000 10:57 | 2009.4 M | 1918.9 M |

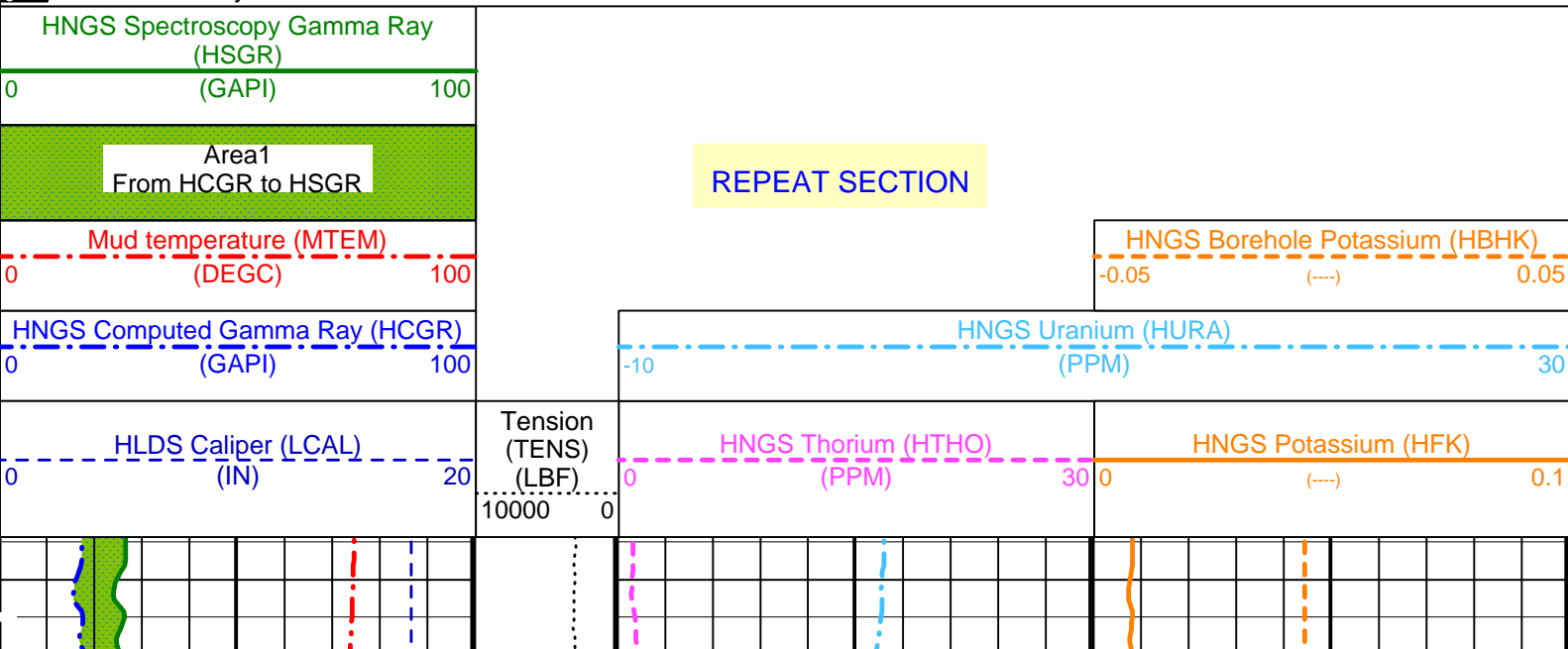
OP System Version: 9C1-303

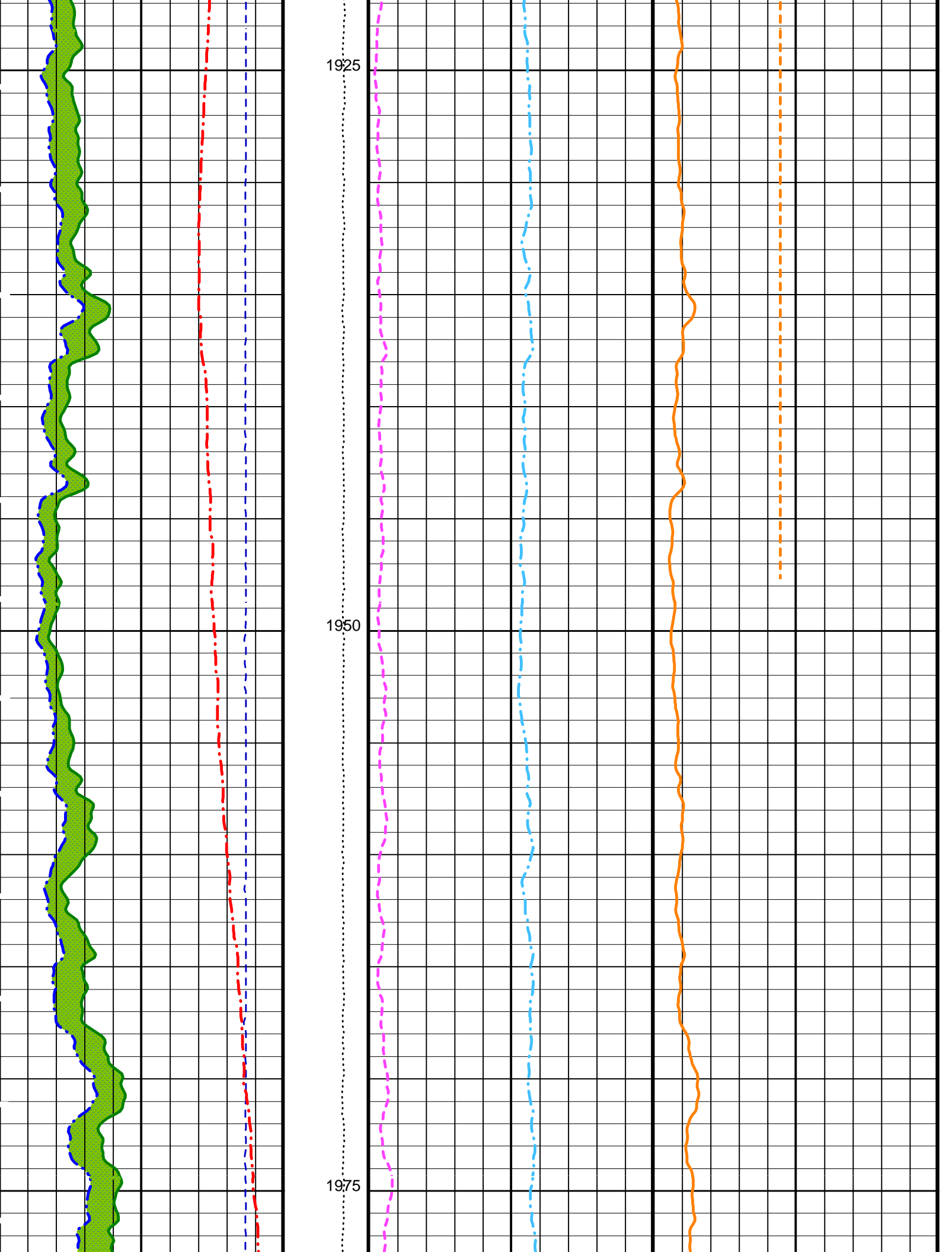
MCM

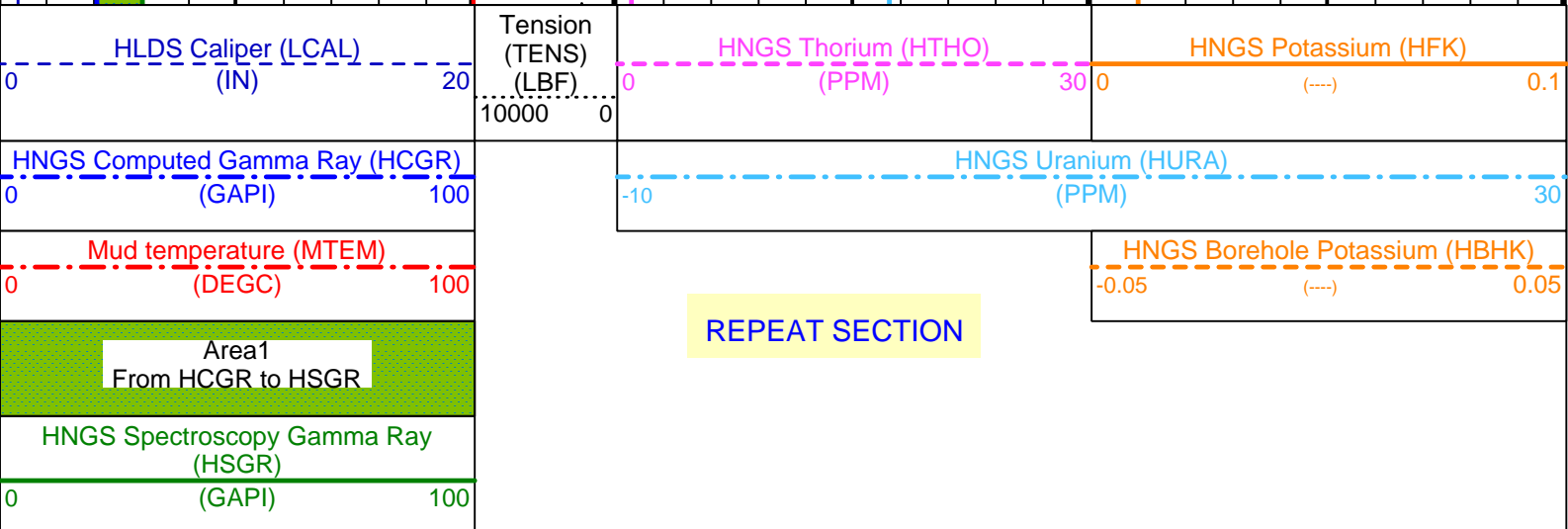
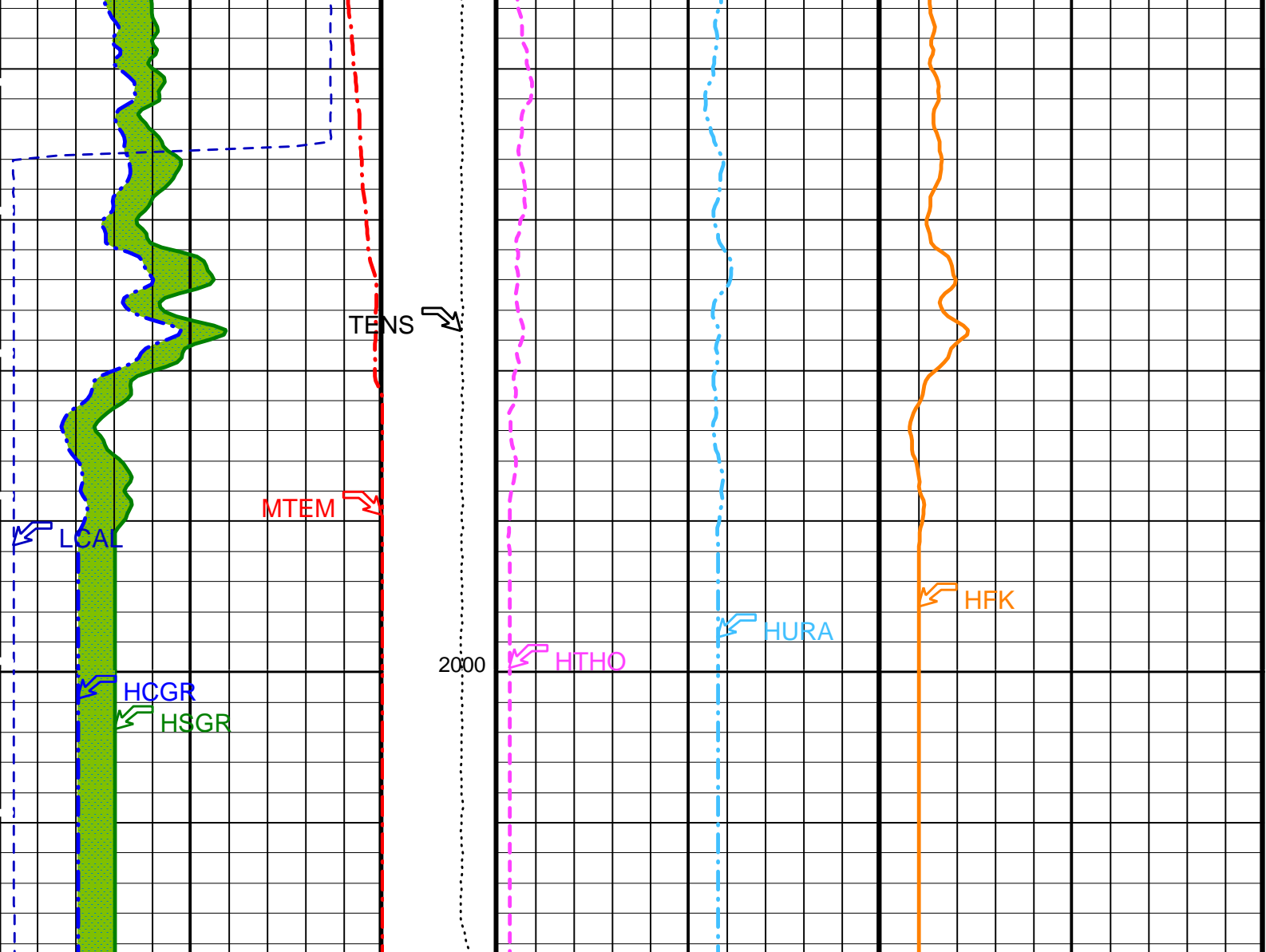
| | | | |
|--------|----------|---------|----------|
| HLDS | OP91-kp2 | NPLC-B | OP91-kp2 |
| APS-BA | OP91-kp2 | HNGS-BA | OP91-kp2 |
| HTGC-B | OP91-kp2 | | |

PIP SUMMARY

Time Mark Every 60 S







REPEAT SECTION

PIP SUMMARY

Time Mark Every 60 S

Parameters

| DLIS Name | Description | Value |
|-----------|--|-------|
| BAR1 | HNGS Detector 1 Barite Constant | 1 |
| BAR2 | HNGS Detector 2 Barite Constant | 1 |
| BHK | HNGS Borehole Potassium Correction Concentration | 0 |
| BHS | Borehole Status | OPEN |
| BKSF | HNGS Borehole Fluid Excluder Sleeve Algorithm Factor | 1 |
| BKSH | HNGS Borehole Fluid Excluder Sleeve Algorithm High Channel | 245 |
| BKSL | HNGS Borehole Fluid Excluder Sleeve Algorithm Low Channel | 17 |

| | | | |
|------------|--|--------------|------|
| BKSL | HNGS Borehole Fluid Excluder Sleeve Algorithm Low Channel | 17 | |
| BS | Bit Size | 7.250 | IN |
| CSD1 | Inner Casing Outer Diameter | 0 | IN |
| CSD2 | Outer Casing Outer Diameter | 0 | IN |
| CSW1 | Inner Casing Weight | 0 | LB/F |
| CSW2 | Outer Casing Weight | 0 | LB/F |
| D1PR | HNGS Detector 1 Calibration Thorium Peak Resolution | 7.69015 | % |
| D1TC | HNGS Detector 1 Calibration Temperature | 28.359 | DEGC |
| D1TL | HNGS Detector 1 Calibration Thorium Peak Location | 209.757 | |
| D2PR | HNGS Detector 2 Calibration Thorium Peak Resolution | 7.03497 | % |
| D2TC | HNGS Detector 2 Calibration Temperature | 27.467 | DEGC |
| D2TL | HNGS Detector 2 Calibration Thorium Peak Location | 209.443 | |
| DBCC | HNGS Barite Constant Correction Flag | NONE | |
| DFD | Drilling Fluid Density | 1.10 | G/C3 |
| DO | Depth Offset for Logical Unit 1 | 0.0 | M |
| GCF1_START | HNGS Detector 1 GCF Constant | 1 | |
| GCF2_START | HNGS Detector 2 GCF Constant | 1 | |
| GCSE | Generalized Caliper Selection | BS | |
| H1P | HNGS Detector 1 Allow/Disallow In Processing | ALLOW | |
| H2P | HNGS Detector 2 Allow/Disallow In Processing | ALLOW | |
| HABK | HNGS Borehole Potassium Running Average | -0.0141356 | |
| HALF | HNGS Alpha Filter Length | 60 | IN |
| HATIM | HNGS Marquardt Accumulation Time | 600 | S |
| HCRB | HNGS Apply Borehole Potassium Correction | NONE | |
| HMWM | Mud Weighting Material | NATU | |
| HNPE | HNGS Processing Enable | YES | |
| HSLV | HNGS Borehole Fluid Excluder Sleeve Status | NO | |
| HSVN | HNGS Spectral Standards Version Number | 8.13477e-030 | |
| MARQ_START | HNGS Marquardt Start-up Mode | INTERNAL | |
| PP | Playback Processing | RECOMPUTE | |
| RDF1_START | HNGS Detector 1 RDF Constant | 0 | |
| RDF2_START | HNGS Detector 2 RDF Constant | 0 | |
| S1BI | HNGS Detector 1 Calibration Bismuth Count Rate | 1.3 | CPS |
| S1NA | HNGS Detector 1 Calibration Sodium Count Rate | 24.2212 | CPS |
| S1NG | HNGS Detector 1 Calibration End-On / Side-On Gain Ratio | 0.984113 | |
| S2BI | HNGS Detector 2 Calibration Bismuth Count Rate | 1.3 | CPS |
| S2NA | HNGS Detector 2 Calibration Sodium Count Rate | 24.6034 | CPS |
| S2NG | HNGS Detector 2 Calibration End-On / Side-On Gain Ratio | 0.982439 | |
| SABK | HNGS Statistical Uncertainty in Borehole Potassium Running Average | 0.00251546 | |
| SGRC | HNGS Standard Gamma-Ray Correction Flag | YES | |
| TPOS | Tool Position | ECCE | |
| VBA1 | HNGS Detector 1 Variable Barite Factor Running Average | 1.00227 | |
| VBA2 | HNGS Detector 2 Variable Barite Factor Running Average | 0.975309 | |

Format: HNGSYields Vertical Scale: 1:200 Graphics File Created: 31-Dec-2000 10:57

| | | | |
|-----------------------------------|----------|---------|----------|
| OP System Version: 9C1-303 | | | |
| MCM | | | |
| HLDS | OP91-kp2 | NPLC-B | OP91-kp2 |
| APS-BA | OP91-kp2 | HNGS-BA | OP91-kp2 |
| HTGC-B | OP91-kp2 | | |

| | | | | | | |
|--------------------------|-----------|-------|----------|-------------------|----------|----------|
| Input DLIS Files | | | | | | |
| DEFAULT | HLDS .020 | FN:36 | PRODUCER | 21-Dec-2000 11:41 | 2009.4 M | 1918.9 M |
| Output DLIS Files | | | | | | |
| DEFAULT | HLDS .064 | FN:97 | PRODUCER | 31-Dec-2000 10:57 | | |
| LAMONT | HLDS .064 | FN:98 | PRODUCER | 31-Dec-2000 10:57 | | |

| | | | | | | |
|--------------------------|-----------|-------|----------|-------------------|----------|----------|
| Input DLIS Files | | | | | | |
| DEFAULT | HLDS .019 | FN:34 | PRODUCER | 21-Dec-2000 10:06 | 2009.4 M | 1623.5 M |
| Output DLIS Files | | | | | | |
| DEFAULT | HLDS .058 | FN:89 | PRODUCER | 31-Dec-2000 10:12 | 2009.4 M | 1623.5 M |
| LAMONT | HLDS .058 | FN:90 | PRODUCER | 31-Dec-2000 10:12 | 2009.4 M | 1623.5 M |

| | | | |
|-----------------------------------|----------|---------|----------|
| OP System Version: 9C1-303 | | | |
| MCM | | | |
| HLDS | OP91-kp2 | NPLC-B | OP91-kp2 |
| APS-BA | OP91-kp2 | HNGS-BA | OP91-kp2 |
| HTGC-B | OP91-kp2 | | |

PIP SUMMARY

Time Mark Every 60 S

HNGS Spectroscopy Gamma Ray (HSGR)
(GAPI) 0 100

Area1
From HCGR to HSGR

Mud temperature (MTEM)
(DEGC) 0 100

HNGS Computed Gamma Ray (HCGR)
(GAPI) 0 100

MAIN UPLOG

HNGS Borehole Potassium (HBHK)
-0.05 (---) 0.05

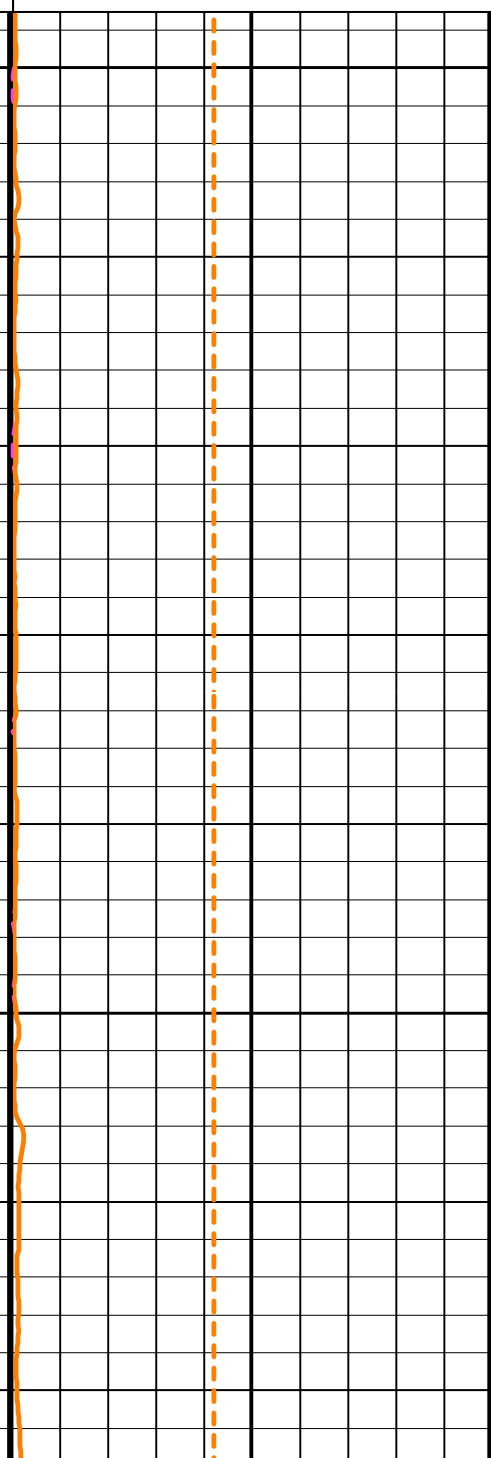
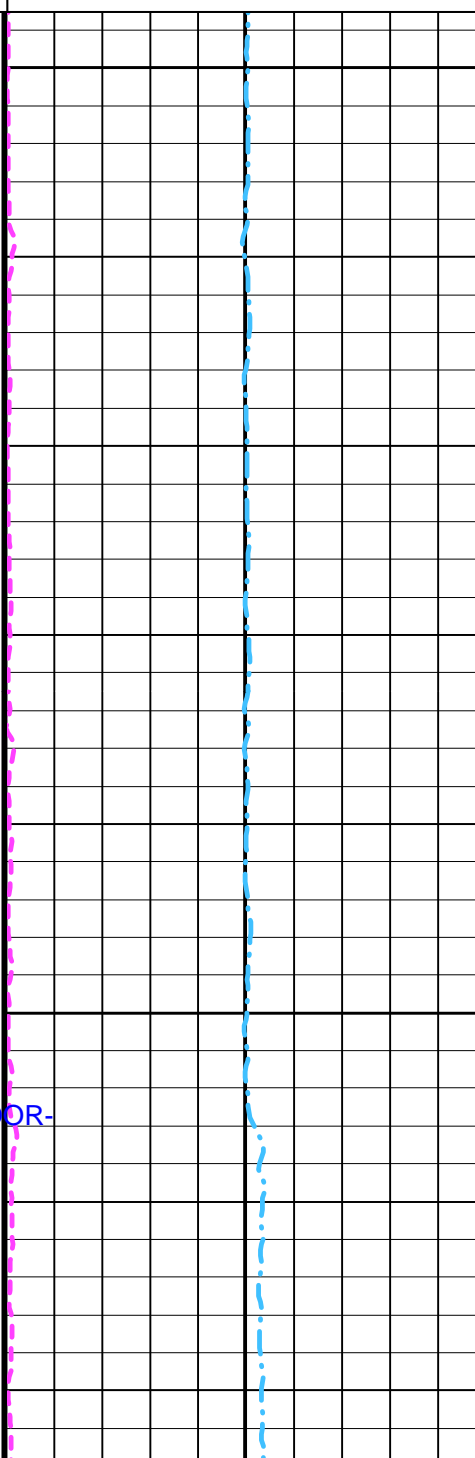
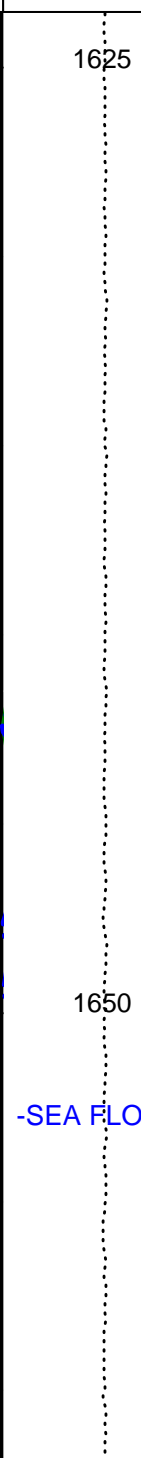
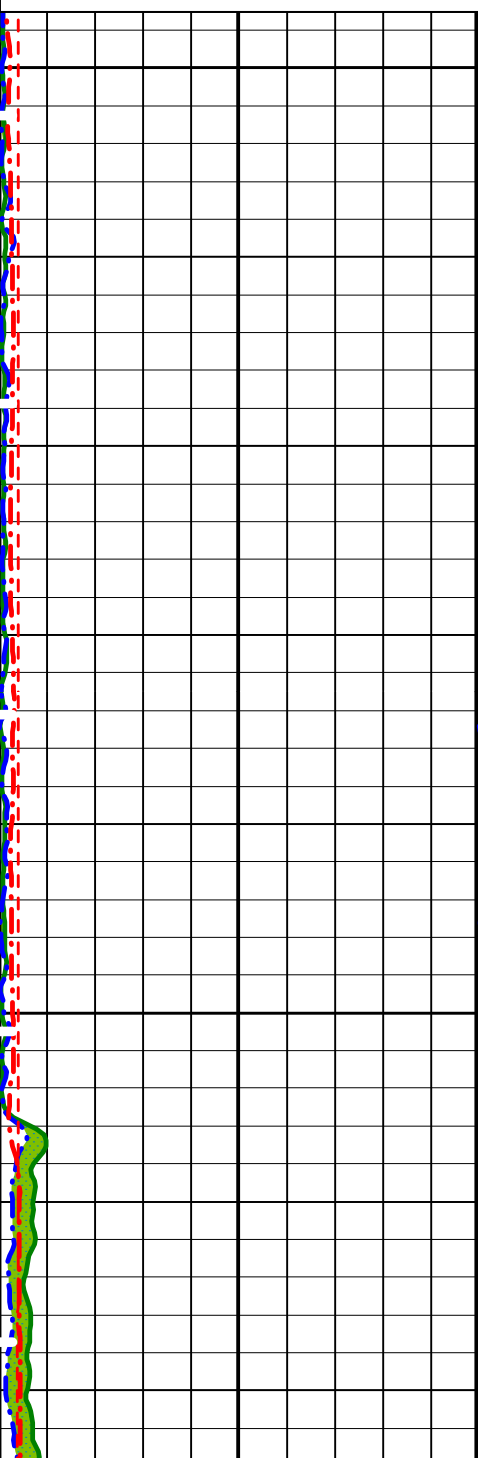
HNGS Uranium (HURA)
(PPM) -10 30

HLDS Caliper (LCAL)
(IN) 0 20

Tension (TENS)
(LBF) 10000 0

HNGS Thorium (HTHO)
(PPM) 0 30

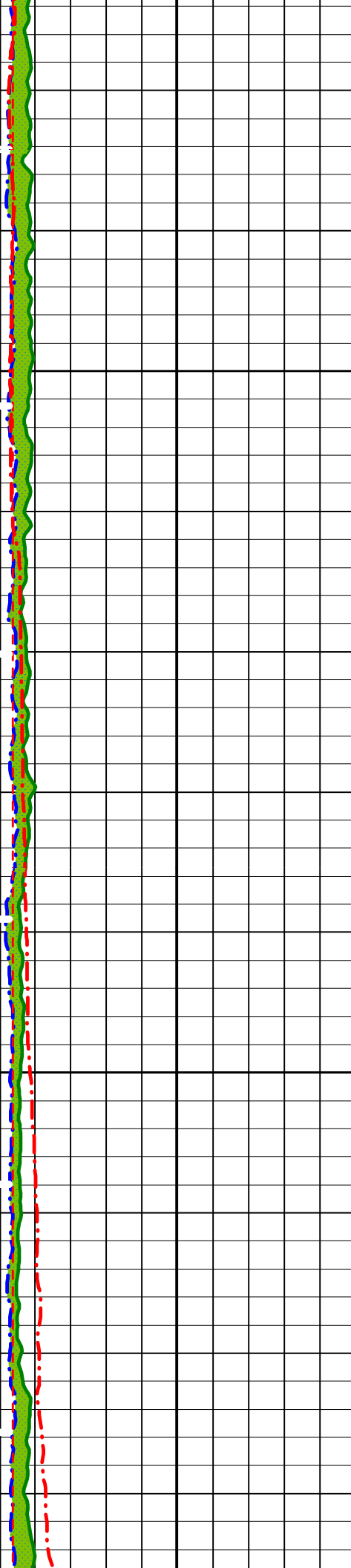
HNGS Potassium (HFK)
(---) 0 0.1



-SEA FLOOR-

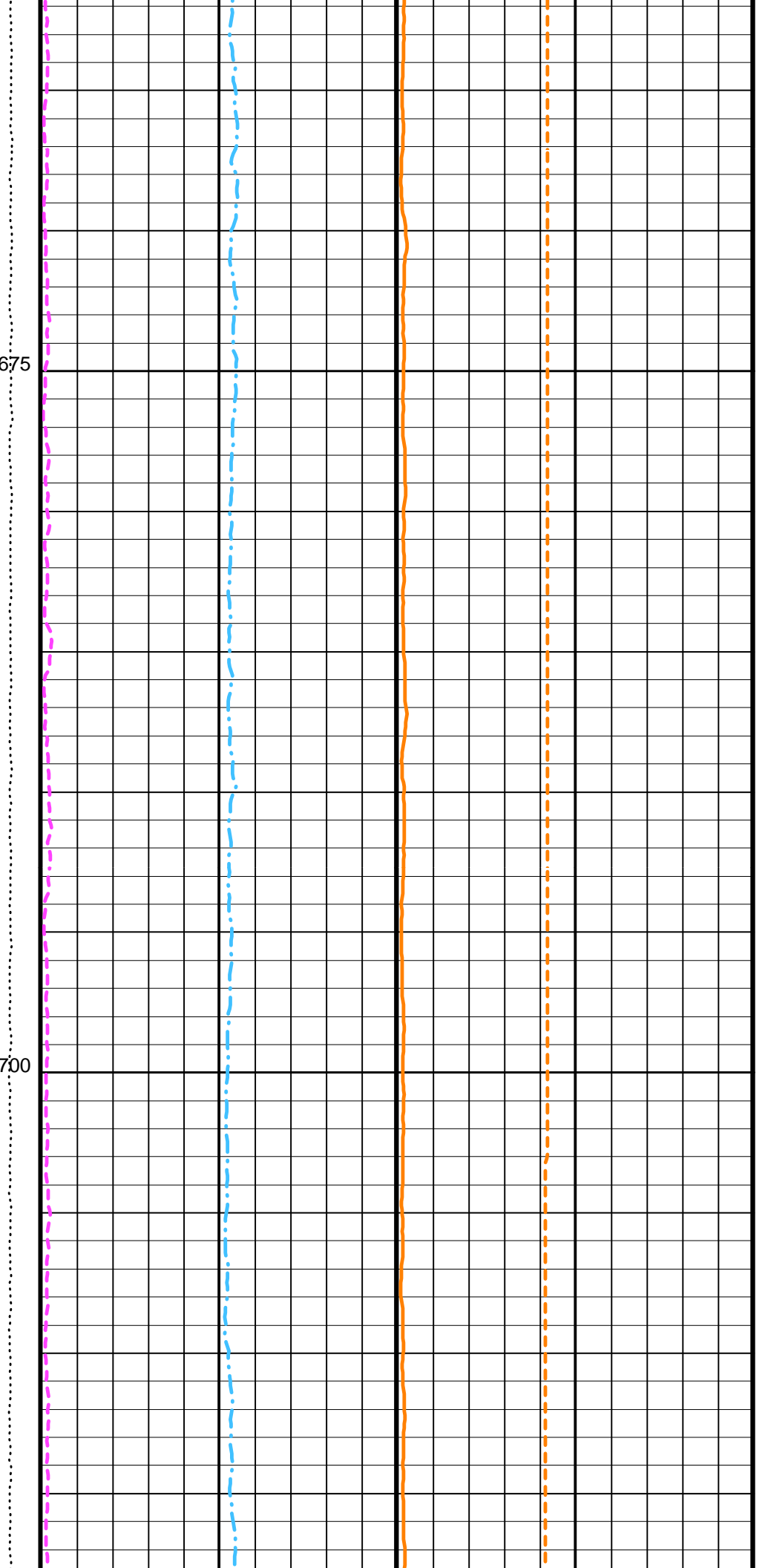
1625

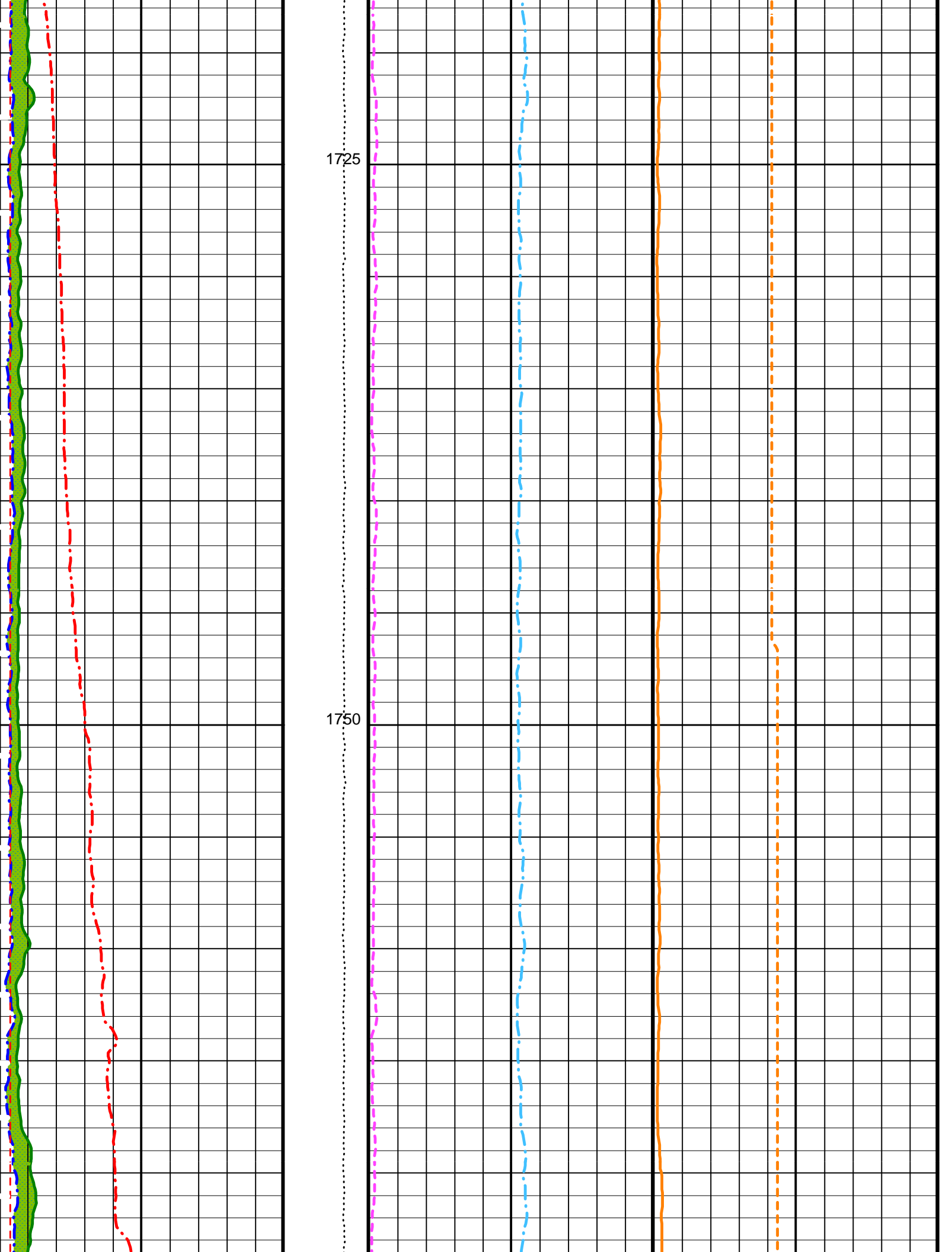
1650

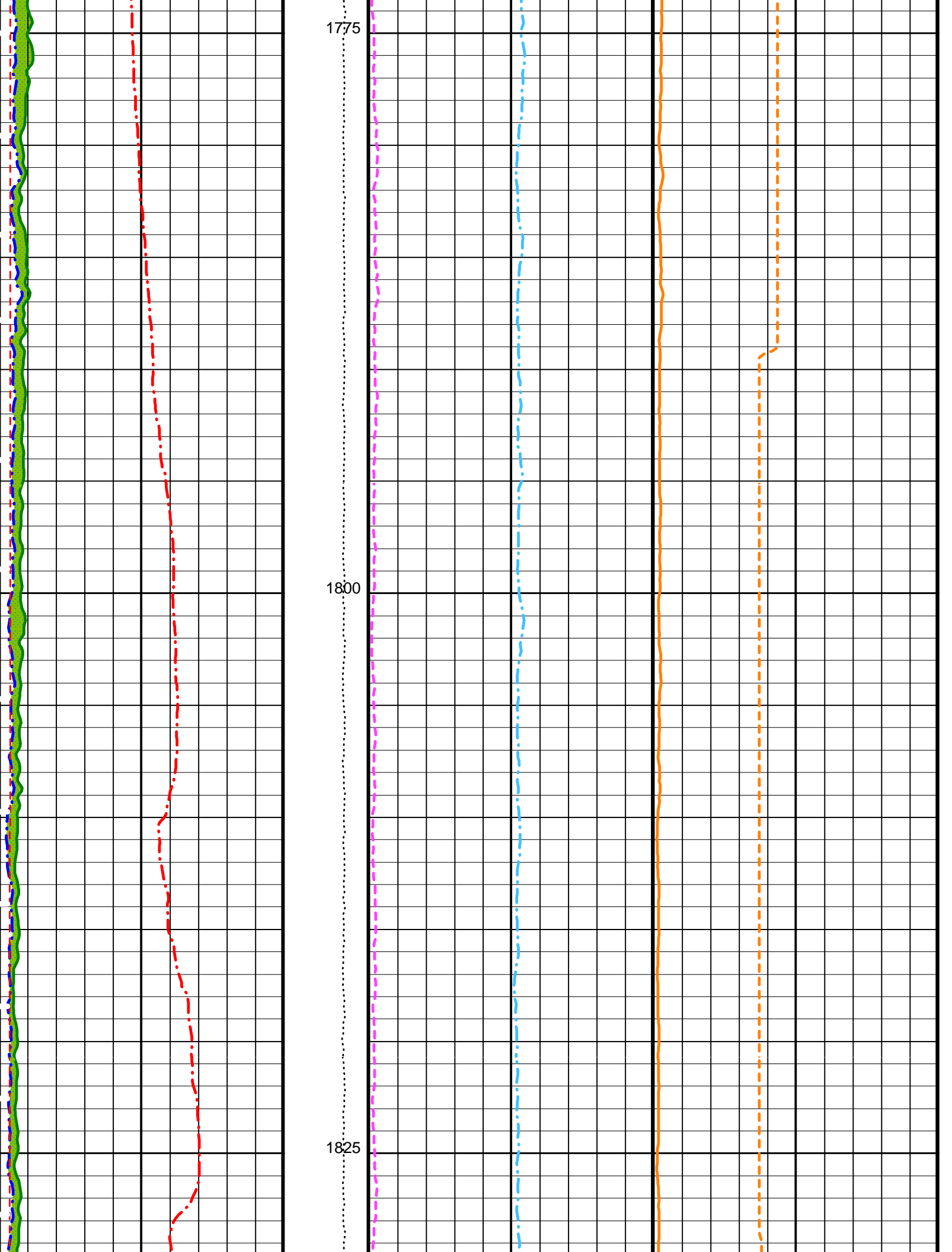


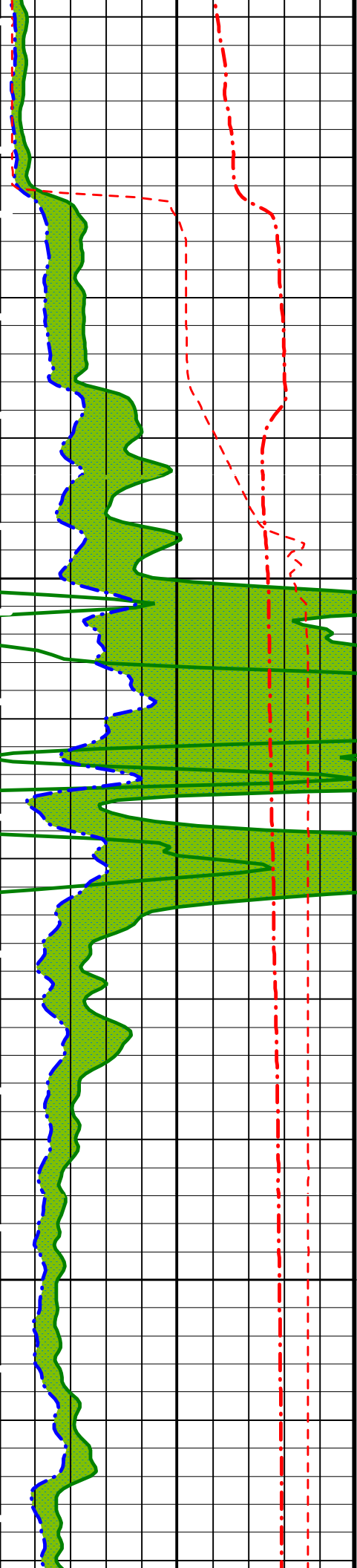
1675

1700







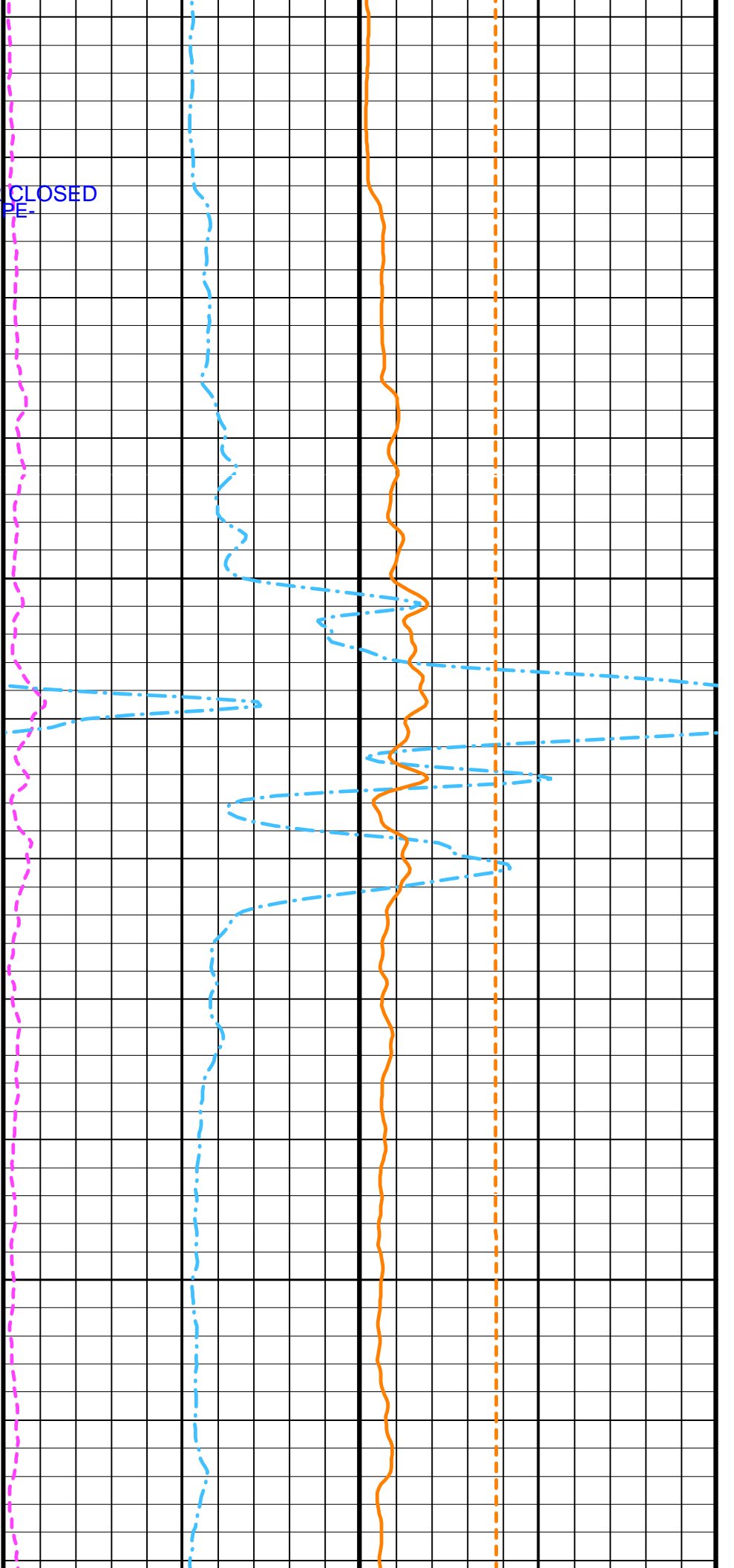


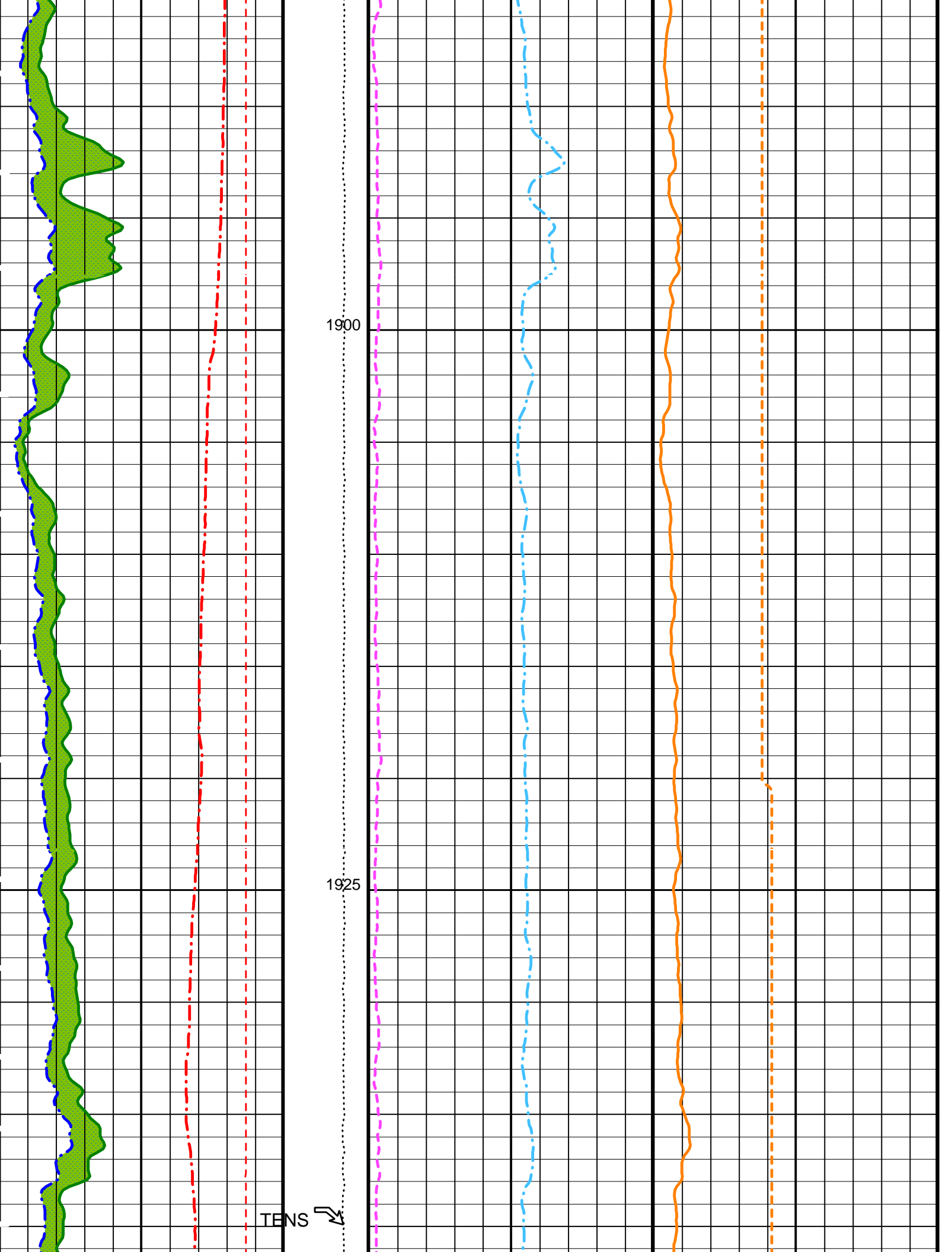
-CALIPER CLOSED
-DRILL PIPE-

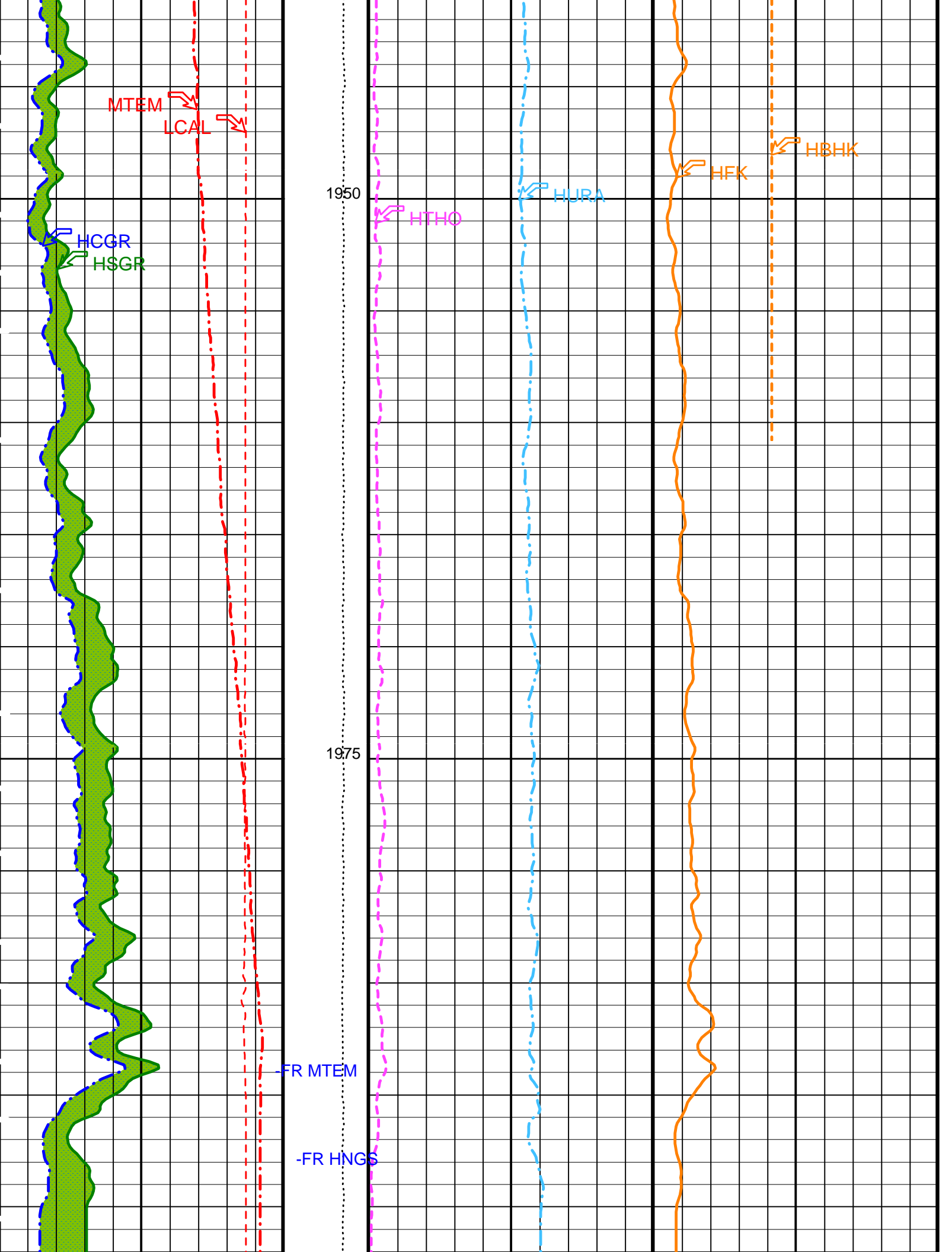
-CSG-

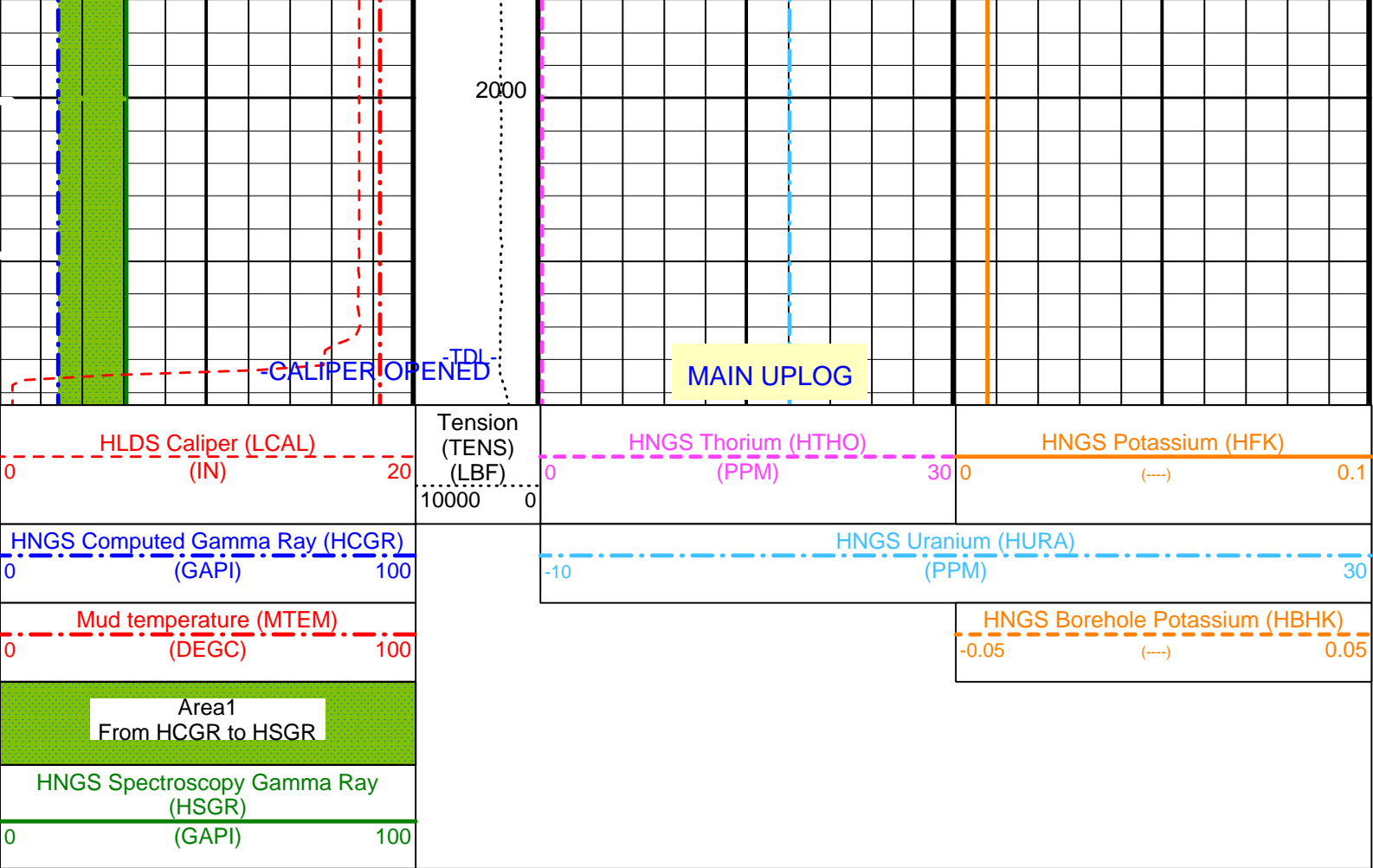
1850

1875









PIP SUMMARY

Time Mark Every 60 S

Parameters

| DLIS Name | Description | Value | |
|------------|--|--------------|------|
| BAR1 | HNGS Detector 1 Barite Constant | 1 | |
| BAR2 | HNGS Detector 2 Barite Constant | 1 | |
| BHK | HNGS Borehole Potassium Correction Concentration | 0 | |
| BHS | Borehole Status | OPEN | |
| BKSF | HNGS Borehole Fluid Excluder Sleeve Algorithm Factor | 1 | |
| BKSH | HNGS Borehole Fluid Excluder Sleeve Algorithm High Channel | 245 | |
| BKSL | HNGS Borehole Fluid Excluder Sleeve Algorithm Low Channel | 17 | |
| BS | Bit Size | 7.250 | IN |
| CSD1 | Inner Casing Outer Diameter | 0 | IN |
| CSD2 | Outer Casing Outer Diameter | 0 | IN |
| CSW1 | Inner Casing Weight | 0 | LB/F |
| CSW2 | Outer Casing Weight | 0 | LB/F |
| D1PR | HNGS Detector 1 Calibration Thorium Peak Resolution | 7.69015 | % |
| D1TC | HNGS Detector 1 Calibration Temperature | 28.359 | DEGC |
| D1TL | HNGS Detector 1 Calibration Thorium Peak Location | 209.757 | |
| D2PR | HNGS Detector 2 Calibration Thorium Peak Resolution | 7.03497 | % |
| D2TC | HNGS Detector 2 Calibration Temperature | 27.467 | DEGC |
| D2TL | HNGS Detector 2 Calibration Thorium Peak Location | 209.443 | |
| DBCC | HNGS Barite Constant Correction Flag | NONE | |
| DFD | Drilling Fluid Density | 1.10 | G/C3 |
| DO | Depth Offset for Logical Unit 1 | 0.0 | M |
| GCF1_START | HNGS Detector 1 GCF Constant | 1 | |
| GCF2_START | HNGS Detector 2 GCF Constant | 1 | |
| GCSE | Generalized Caliper Selection | BS | |
| H1P | HNGS Detector 1 Allow/Disallow In Processing | ALLOW | |
| H2P | HNGS Detector 2 Allow/Disallow In Processing | ALLOW | |
| HABK | HNGS Borehole Potassium Running Average | 0 | |
| HALF | HNGS Alpha Filter Length | 60 | IN |
| HATIM | HNGS Marquardt Accumulation Time | 600 | S |
| HCRB | HNGS Apply Borehole Potassium Correction | NONE | |
| HMWM | Mud Weighting Material | NATU | |
| HNPE | HNGS Processing Enable | YES | |
| HSLV | HNGS Borehole Fluid Excluder Sleeve Status | NO | |
| HSVN | HNGS Spectral Standards Version Number | 3.31246e-032 | |
| MARQ_START | HNGS Marquardt Start-up Mode | INTERNAL | |
| PP | Playback Processing | RECOMPILE | |

| | | | |
|------------|--|----------|-----|
| RDF1_START | HNGS Detector 1 RDF Constant | 0 | |
| RDF2_START | HNGS Detector 2 RDF Constant | 0 | |
| S1BI | HNGS Detector 1 Calibration Bismuth Count Rate | 1.3 | CPS |
| S1NA | HNGS Detector 1 Calibration Sodium Count Rate | 24.2212 | CPS |
| S1NG | HNGS Detector 1 Calibration End-On / Side-On Gain Ratio | 0.984113 | |
| S2BI | HNGS Detector 2 Calibration Bismuth Count Rate | 1.3 | CPS |
| S2NA | HNGS Detector 2 Calibration Sodium Count Rate | 24.6034 | CPS |
| S2NG | HNGS Detector 2 Calibration End-On / Side-On Gain Ratio | 0.982439 | |
| SABK | HNGS Statistical Uncertainty in Borehole Potassium Running Average | 0 | |
| SGRC | HNGS Standard Gamma-Ray Correction Flag | YES | |
| TPOS | Tool Position | ECCE | |
| VBA1 | HNGS Detector 1 Variable Barite Factor Running Average | 0 | |
| VBA2 | HNGS Detector 2 Variable Barite Factor Running Average | 0 | |

Format: HNGSYields Vertical Scale: 1:200 Graphics File Created: 31-Dec-2000 10:12

OP System Version: 9C1-303
MCM

| | | | |
|--------|----------|---------|----------|
| HLDS | OP91-kp2 | NPLC-B | OP91-kp2 |
| APS-BA | OP91-kp2 | HNGS-BA | OP91-kp2 |
| HTGC-B | OP91-kp2 | | |

Input DLIS Files

| | | | | | |
|---------|-----------|----------------|-------------------|----------|----------|
| DEFAULT | HLDS .019 | FN:34 PRODUCER | 21-Dec-2000 10:06 | 2009.4 M | 1623.5 M |
|---------|-----------|----------------|-------------------|----------|----------|

Output DLIS Files

| | | | | | |
|---------|-----------|----------------|-------------------|--|--|
| DEFAULT | HLDS .058 | FN:89 PRODUCER | 31-Dec-2000 10:12 | | |
| LAMONT | HLDS .058 | FN:90 PRODUCER | 31-Dec-2000 10:12 | | |

| | | | |
|-----------------|---|----------------------------|----------|
| COMPANY: | Lamont Doherty | BOTTOM LOG INTERVAL | 1993 m |
| WELL: | ODP Leg 193, Site 1188F (PCM-2A) | SCHLUMBERGER DEPTH | 2008 m |
| FIELD: | Manus Basin, Snowcap | DEPTH DRILLER | 2039.7 m |
| COUNTY: | Offshore | KELLY BUSHING | 11.3 m |
| STATE: | Bismarck Sea | DRILL FLOOR | 11 m |
| | | GROUND LEVEL | -1653 m |



HNGS
Natural Gamma Ray