

Company: Essential Petroleum Resources Limited

Well: Findra-1

Field: PEP 159

Rig: Hunt Rig #2

Country: Australia

HALS-BHC-PEX-HNG.
HNGS Print
Scale 1:200

Field: PEP 159
Location: Otway Basin PEP 159
Well: Findra-1
Company: Essential Petroleum Resources Limited

| LOCATION | | | |
|-------------------------|------------------------------|--------------------------------|------------------------------|
| Otway Basin PEP 159 | | Elev.: | K.B. 60.95 m |
| 602241.4 E | | G.L. | 57 m |
| 5768896.5 N | | D.F. | 60.95 m |
| Permanent Datum: | MEAN SEA LEVEL | Elev.: | 0 m |
| Log Measured From: | DRILL FLOOR | | 61.0 m above Perm. Datum |
| Drilling Measured From: | DRILL FLOOR | | |
| State: Victoria | Max. Well Deviation 2 deg | Longitude 142° 10' 04.90" E | Latitude 38° 13' 19.58" S |

| | |
|-------------------------------|--------------------------|
| Logging Date | 30-Jun-2004 |
| Run Number | 1 |
| Depth Driller | 889 m |
| Schlumberger Depth | 879 m |
| Bottom Log Interval | 876.71 m |
| Top Log Interval | 150 m |
| Casing Driller Size @ Depth | 9.625 in @ 150 m |
| Casing Schlumberger | 150 m |
| Bit Size | 8.500 in |
| Type Fluid In Hole | KCl-Polymer-PHPA |
| Density | 1.1 g/cm3 39 s |
| Fluid Loss | 6.8 cm3 8.8 |
| Source Of Sample | PIT |
| RM @ Measured Temperature | 0.254 ohm.m @ 12 degC |
| RMF @ Measured Temperature | 0.205 ohm.m @ 12 degC |
| RMC @ Measured Temperature | 0.281 ohm.m @ 12 degC |
| Source RMF | PRESS |
| RM @ MRT | 0.123 @ 48 0.099 @ 48 |
| Maximum Recorded Temperatures | 48 degC 48 48 |
| Circulation Stopped | 30-Jun-2004 6:00 |
| Logger On Bottom | 30-Jun-2004 17:50 |
| Unit Number | 3170 QEA |
| Recorded By | Herdy Nizar / G. Jonsson |
| Witnessed By | G. Wakelin-King |

| | Run 1 | Run 2 | Run 3 |
|-------------------------------|-------|-------|-------|
| 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 | | | |
| Fluid Loss | | | |
| Source Of Sample | | | |
| RM @ Measured Temperature | | | |
| RMF @ Measured Temperature | | | |
| RMC @ Measured Temperature | | | |
| Source RMF | | | |
| RM @ MRT | | | |
| Maximum Recorded Temperatures | | | |
| Circulation Stopped | | | |
| Logger On Bottom | | | |
| Unit Number | | | |
| Recorded By | | | |
| Witnessed By | | | |

DEPTH SUMMARY LISTING

Date Created: 30-JUN-2004 20:20:16

Depth System Equipment

| Depth Measuring Device | Tension Device | Logging Cable |
|--------------------------------|--------------------------------|---|
| Type: IDW-B | Type: CMTD-B/A | Type: 7-42V-XS |
| Serial Number: -999 | Serial Number: 2268 | Serial Number: 78197 |
| Calibration Date: dd-Mmm-yyyy | Calibration Date: 13-Feb-2004 | Length: 4500.07 M |
| Calibrator Serial Number: -999 | Calibrator Serial Number: 1050 | Conveyance Method: Wireline Rig Type: LAND |
| Calibration Cable Type: 7-46P | Calibration Gain: 0.89 | |
| Wheel Correction 1: -2 | Calibration Offset: 56.00 | |
| Wheel Correction 2: -2 | | |

Depth Control Parameters

| | |
|-----------------------------|-----------------------|
| Log Sequence: | First Log In the Well |
| Rig Up Length At Surface: | 60.39 M |
| Rig Up Length At Bottom: | 60.32 M |
| Rig Up Length Correction: | 0.07 M |
| Stretch Correction: | 0.20 M |
| Tool Zero Check At Surface: | 0.50 M |

Depth Control Remarks

| |
|--|
| 1. This is first run in hole |
| 2. Schlumberger depth control procedures were followed |
| 3. IDW is the primary depth control |
| 4. Z chart is the secondary depth control |
| 5. |
| 6. |

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 | OTHER SERVICES2 |
|-----------------|-----------------|
| OS1: MDT-GR | OS1: |
| OS2: | OS2: |
| OS3: | OS3: |
| OS4: | OS4: |
| OS5: | OS5: |

| |
|---|
| REMARKS: RUN NUMBER 1 |
| This is first run in hole. Full SLB ceptth control procedure followed. |
| Tool run with 1.5 inch standoffs as per tool sketch. HGNS eccentralized using bowspring |
| CNL, TDL, HALS and MCFL loffed to casing shoe. |
| GR logged to surface |
| HNGS and Hi-Res data logged to 450m as per client request |
| Neutron corrected for borehole salinity, hole size, mud weight and mud cake |
| Density corrected for bit size and mud weight |

Maximum recorded temperature of 48 degC from thermometers in LEH-QT
 Caliper check in casing reads 8.83 from ASCII and 8.834 expected.

Additional mud information:

Chloride: 19000 mg/L, Calcium: 40mg/L, Potassium: 21,076 mg/L, KCL: 3.9%

Barite present in mud

| RUN 1 | | | RUN 2 | | |
|--|-------|------|--|-------|------|
| SERVICE ORDER #: PROGRAM VERSION: FLUID LEVEL: | | | SERVICE ORDER #: PROGRAM VERSION: FLUID LEVEL: | | |
| 10C0-306 | | | | | |
| LOGGED INTERVAL | START | STOP | LOGGED INTERVAL | START | STOP |
| | | | | | |
| | | | | | |
| | | | | | |

EQUIPMENT DESCRIPTION

| RUN 1 | | RUN 2 | |
|---|---|--|-------|
| SURFACE EQUIPMENT | | | |
| LCM-AA 2747 GSR-U/Y NCT-B CNB-AB | NCS-VB GSR-U WITM (DTS)-A | | |
| DOWNHOLE EQUIPMENT | | | |
| BSP BRT-S 22 | | | 40.84 |
| | SP SPARC | | 28.73 |
| LEH-QT 1570 LEH-QT 1570 | | | 22.56 |
| DTC-H ECH-KC | CTEM TelStatus ToolStatu | 21.39 20.75 | 21.67 |
| HNGS-BA HNGS-BA 129 HNSH-BA 3 | Upper_1 Lower_2 | 20.05 19.84 | 20.75 |
| HNGC-A HNGH-A HNGC-A 10 | HNGC Stat HGNS HTEM HMCA | 17.72 17.19 | 18.25 |
| HILTB-FTB HGNSD-B 1751 HMCA HGNS-H 1775 NLS-KL NSR-F 2111 HACCZ HCNT HGR HRCC-B 1769 HRMS-B 1765 HRGD-B 1760 GLS-VJ 3739 MCFL Device HILT Nucl. LS HILT Nucl. SS HILT Nucl. BS BOW-SPR | Gamma-Ray Neutron F Neutron N HGNS sens HRCC cart MCFL HILT cali HRDD-LS HRDD-SS HRDD-BS | 16.96 15.18 15.03 14.32 13.10 11.44 11.30 11.18 | 17.19 |
| DSLTH-H DSLCH-HA 8223 | | | 10.59 |

USF 7.85
LSF USN 7.55
LSN 7.24

DSLTL Aux. 4.88

HALS-B 4.88
HALS-B 769

HALS-B 2.29

DF
HTEN HMAS HV
Accelerom
Tension
TOOL ZERO 0.00

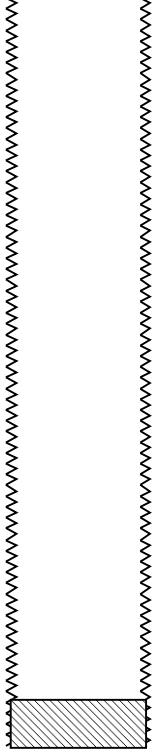
MAXIMUM STRING DIAMETER 4.63 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN METERS

Client: Essential Petroleum Resources Limited
Well: Findra-1
Field: PRP 159
State: Victoria
Country: Australia

6/30/2004

Rig Name: Hunt Rig # 2
Elevation: 61.0 m

| Production String | (in) | | (m) | Well Schematic | | | (m) | (in) | | Casing String |
|-------------------|------|----|-----|----------------|----|----|-------|--------|----|------------------|
| | OD | ID | MD | MD | OD | ID | MD | OD | ID | |
| | | | | | | | 0.0 | 17.500 | | Borehole Segment |
| | | | | | | | 61.0 | 13.375 | | Casing Shoe |
| | | | | | | | 150.0 | 9.625 | | Casing Shoe |



889.0

PBTD, Total Depth

Schlumberger

**HGNS
1:200 Scale**

MAXIS Field Log

Company: Essential Petroleum Resources Limited

Well: Findra-1

Input DLIS Files

| | | | | | |
|---------|----------------------------------|----------|-------------------|---------|--------|
| DEFAULT | HALS_SONIC_TLD_MCFL_007LUP FN:11 | PRODUCER | 30-Jun-2004 17:55 | 880.1 M | 28.4 M |
|---------|----------------------------------|----------|-------------------|---------|--------|

Output DLIS Files

| | | | | | |
|---------|----------------------------------|----------|-------------------|---------|---------|
| DEFAULT | HALS_SONIC_TLD_MCFL_008PUP FN:13 | PRODUCER | 30-Jun-2004 19:55 | 880.3 M | 454.6 M |
|---------|----------------------------------|----------|-------------------|---------|---------|

OP System Version: 12C0-301

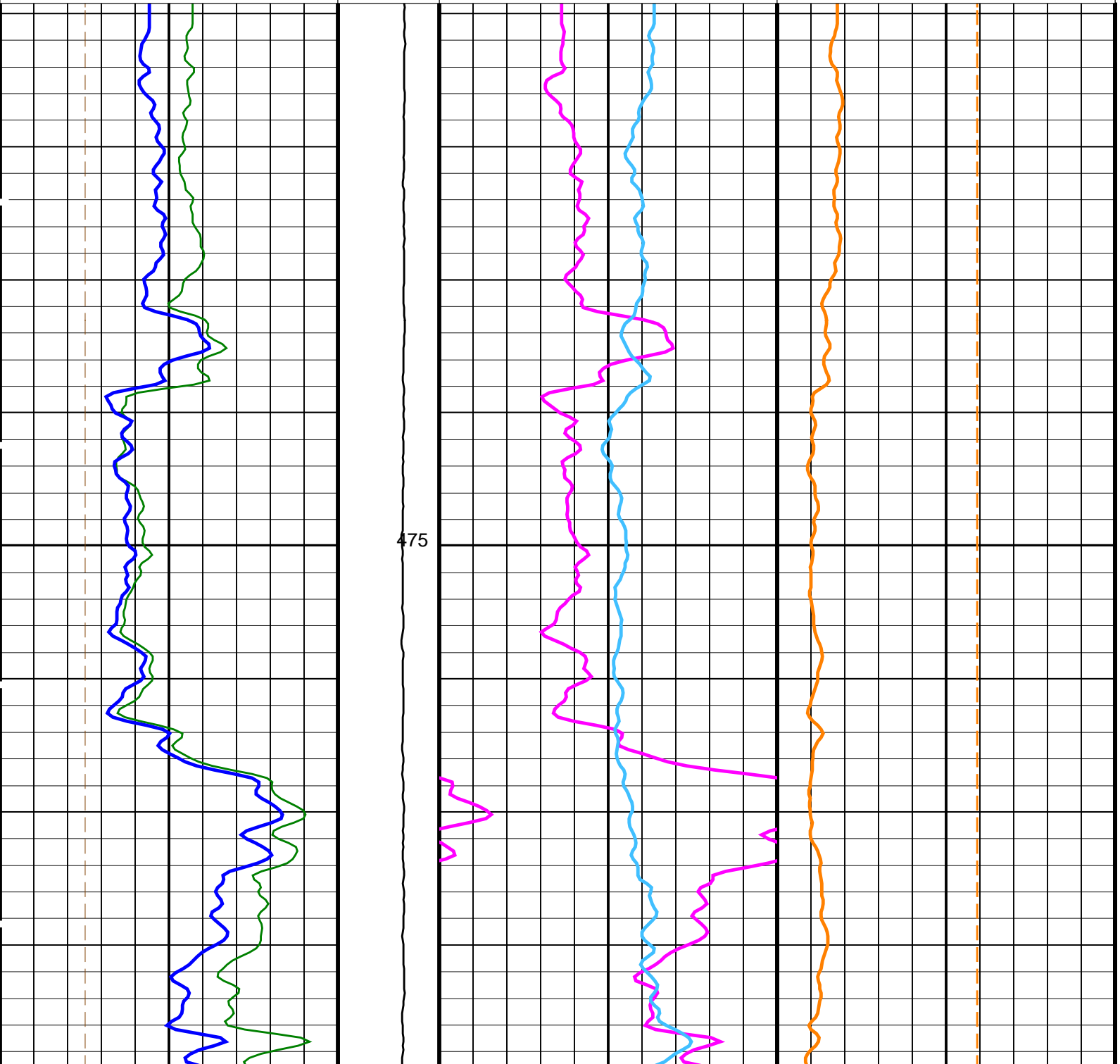
MCM

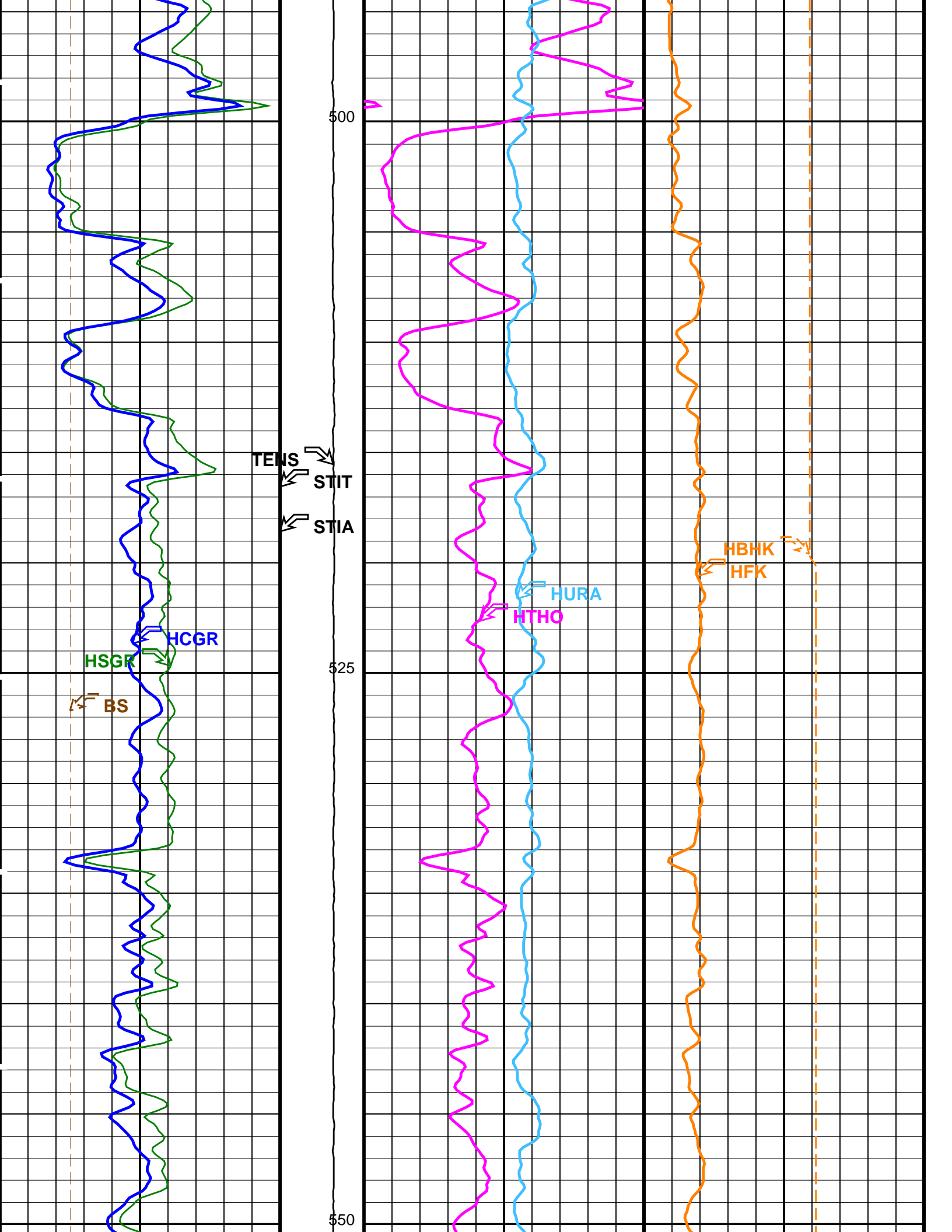
| | | | |
|-----------|----------|--------|----------|
| HALS-B | 12C0-301 | DSLT-H | 12C0-301 |
| HILTB-FTB | 12C0-301 | HNGC-A | 12C0-301 |
| HNGS-BA | 12C0-301 | DTC-H | 12C0-301 |
| BSP | 12C0-301 | | |

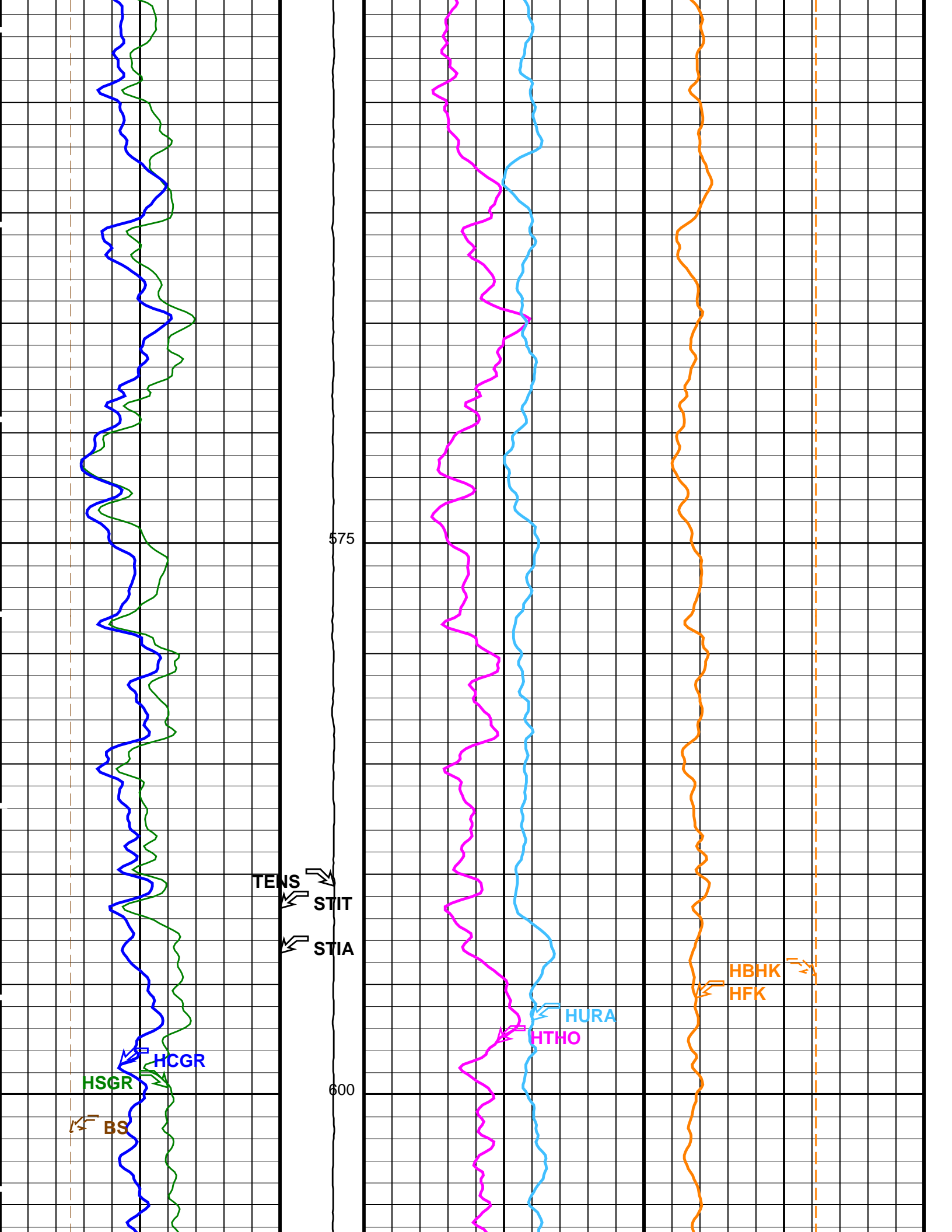
PIP SUMMARY

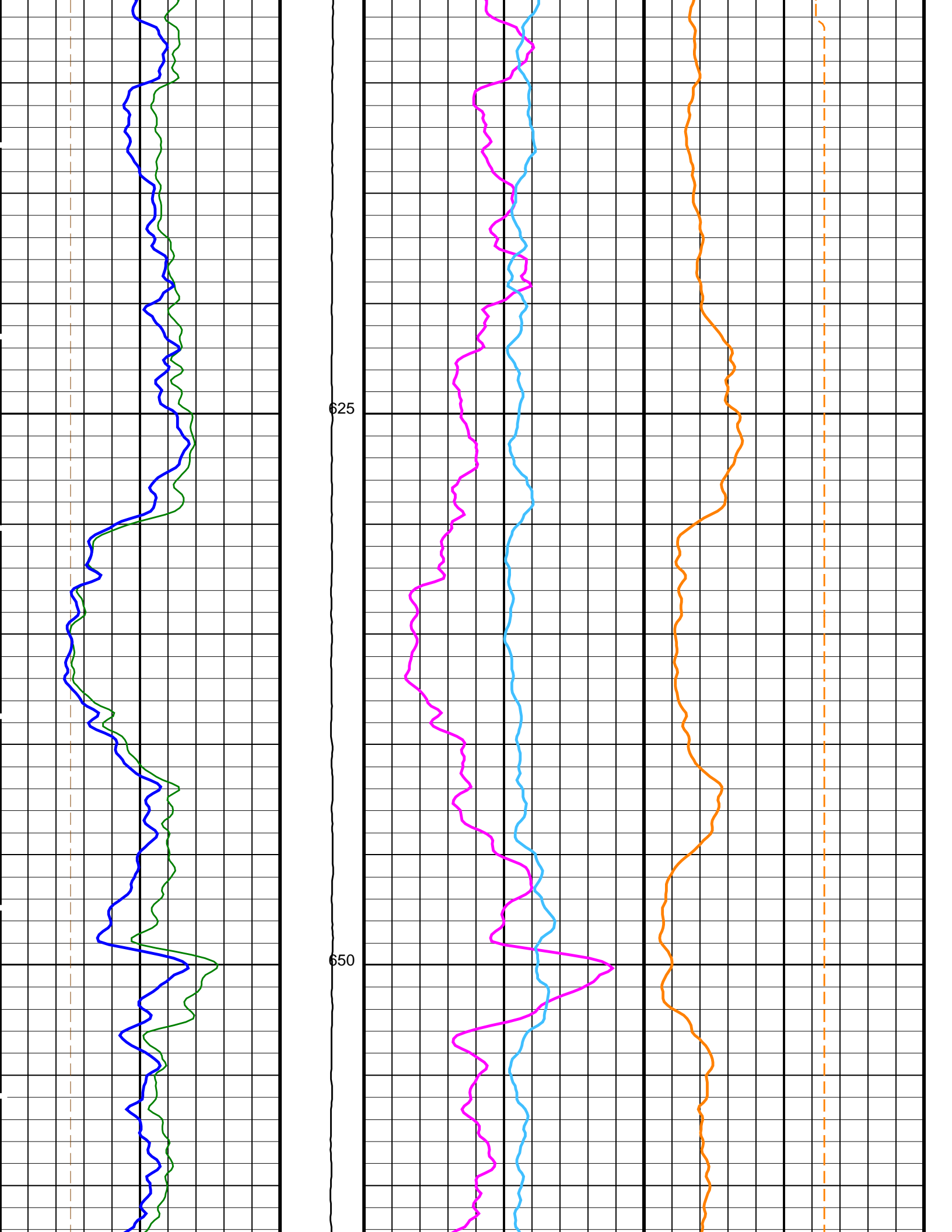
Time Mark Every 60 S

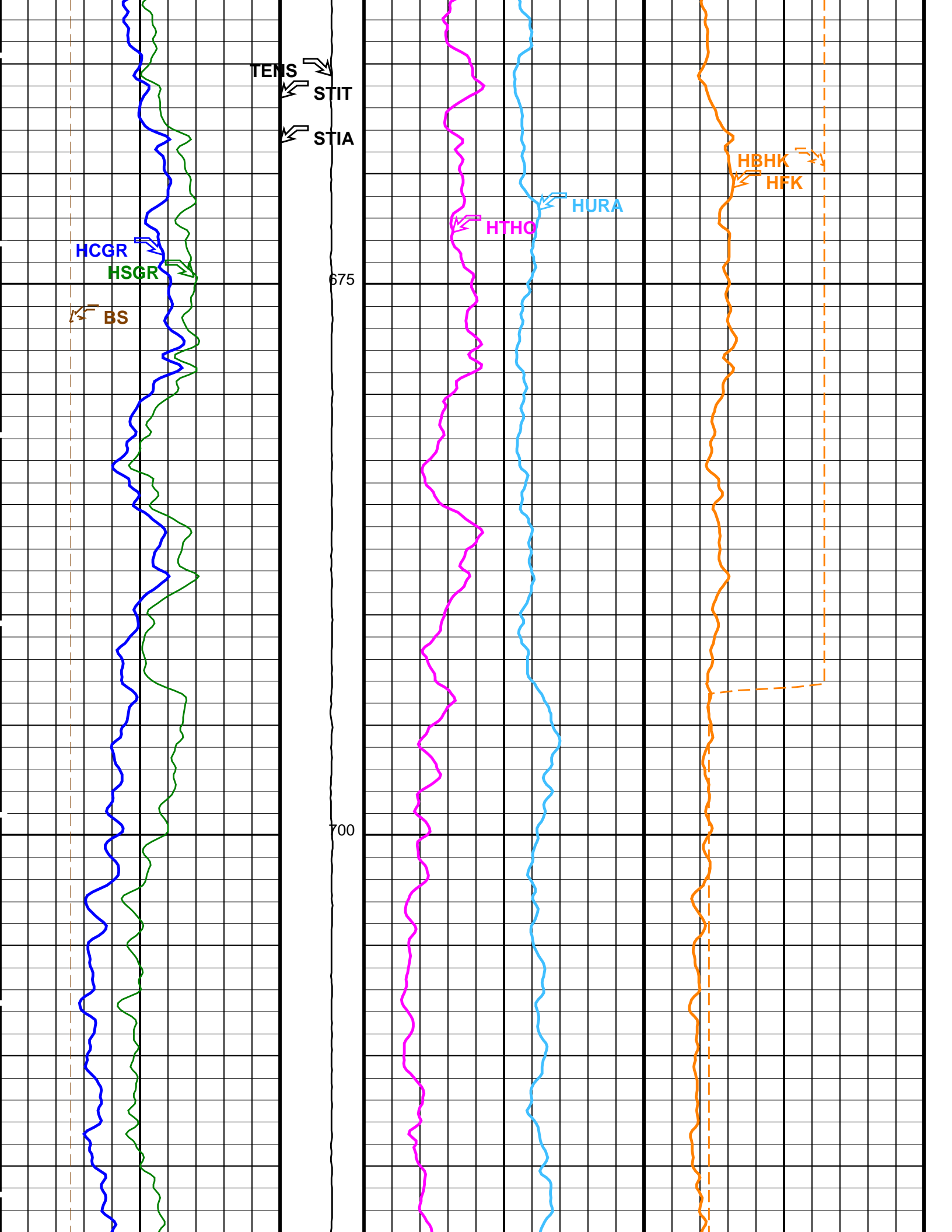
| | | | |
|---|--|---|--|
| | Tool/Tot. Drag From D3T to STIA | | |
| HNGS Spectroscopy Gamma Ray (HSGR) (GAPI) 0 150 | Cable Drag From STIA to STIT | HNGS Borehole Potassium (HBHK) -0.05 (V/V) 0.05 | |
| HNGS Computed Gamma Ray (HCGR) (GAPI) 0 150 | Stuck Stretch (STIT) 0 (M) 20 | HNGS Uranium (HURA) -10 (PPM) 30 | |
| Bit Size (BS) (IN) 6 16 | Tension (TENS) (LBF) 5000 0 | HNGS Thorium (HTHO) 0 (PPM) 30 | HNGS Potassium (HFK) 0 (V/V) 0.1 |

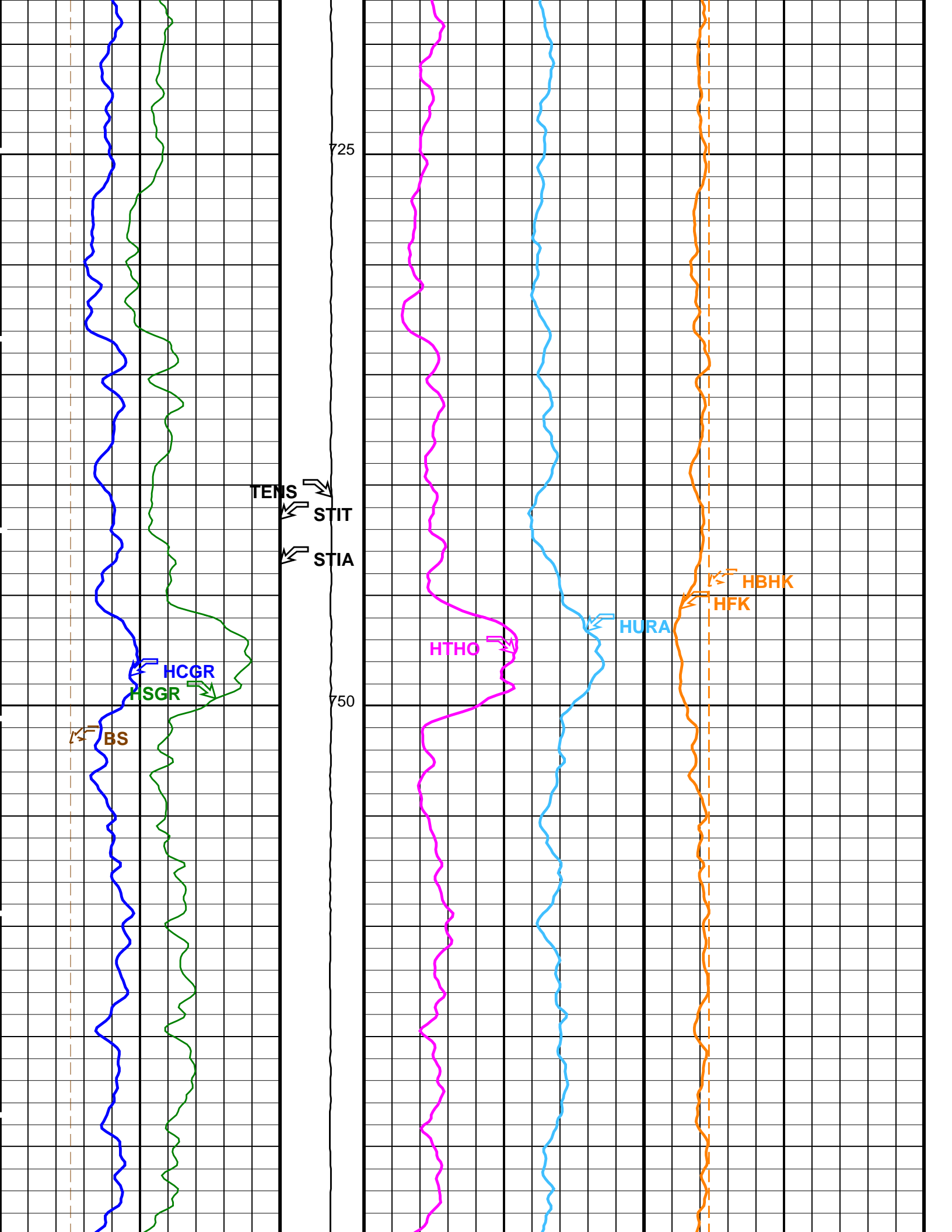


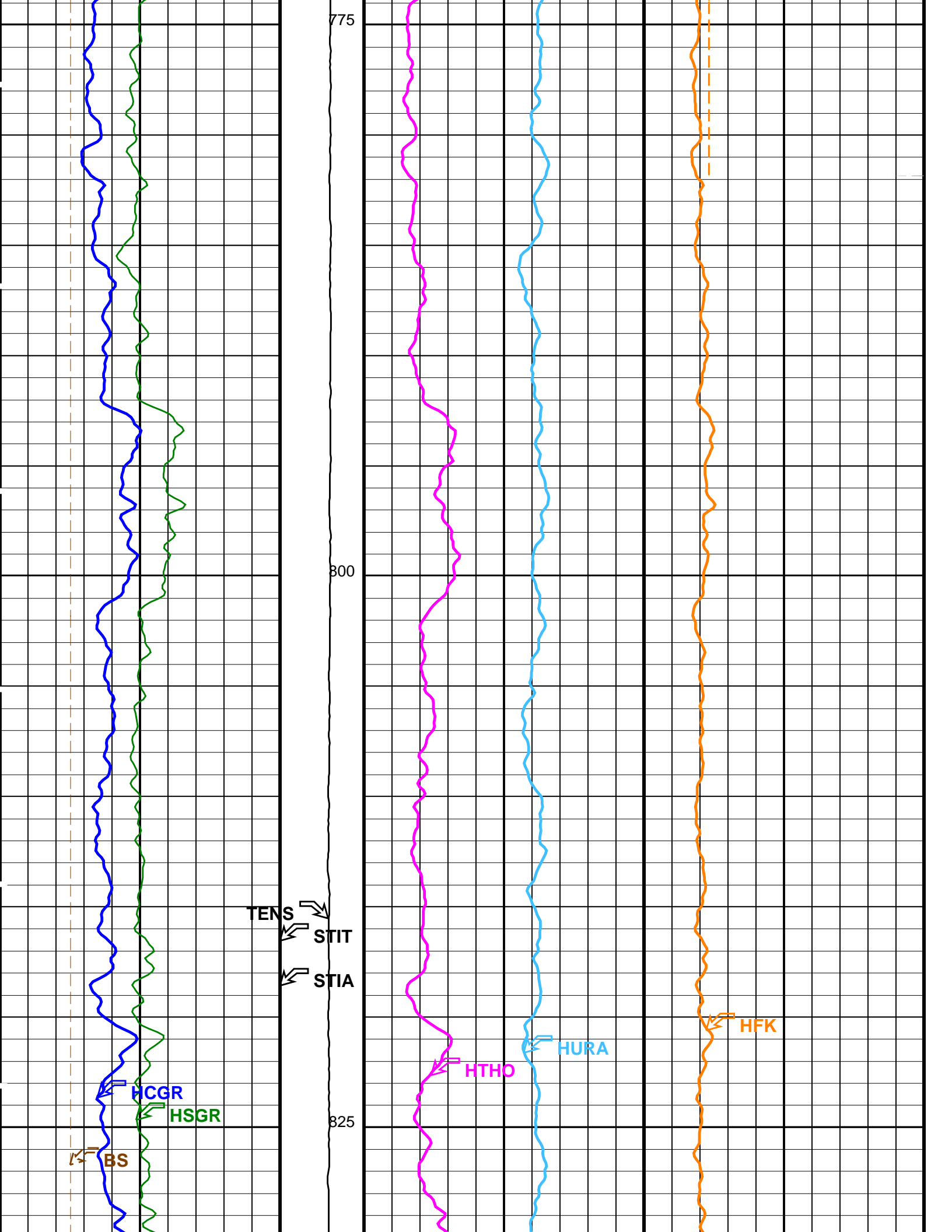


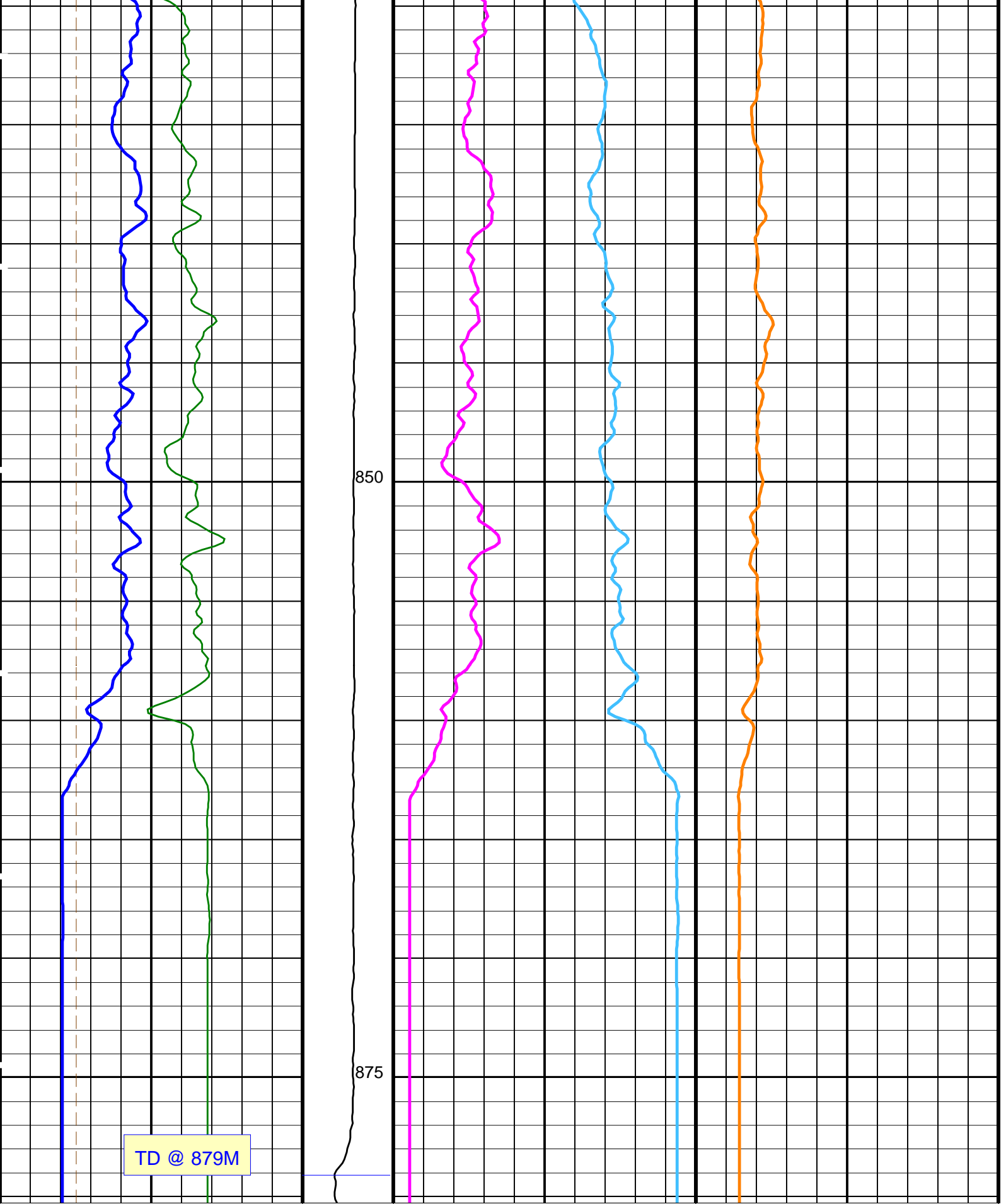












| | | | |
|---|---|--|--|
| <p>Bit Size (BS) (IN)</p> <p>6 16</p> | <p>Tension (TENS) (LBF)</p> <p>5000 0</p> | <p>HNGS Thorium (HTHO) (PPM)</p> <p>0 30</p> | <p>HNGS Potassium (HFK) (V/V)</p> <p>0 0.1</p> |
|---|---|--|--|

| | | |
|---------------------------------------|--------------------------|----------------------------|
| <p>HNGS Computed Gamma Ray (HCGR)</p> | <p>Stuck Stretch</p> | <p>HNGS Uranium (HURA)</p> |
|---------------------------------------|--------------------------|----------------------------|

| | | | | | | |
|------------------------------------|--------|-----|---------------------------------|--------------------------------|-------|------|
| 0 | (GAPI) | 150 | (STIT) | -10 | (PPM) | 30 |
| 0 | (GAPI) | 150 | 0 (M) 20 | | | |
| HNGS Spectroscopy Gamma Ray (HSGR) | | | Cable Drag From STIA to STIT | HNGS Borehole Potassium (HBHK) | | |
| 0 | (GAPI) | 150 | | -0.05 | (V/V) | 0.05 |
| | | | Tool/Tot. Drag From D3T to STIA | | | |

PIP SUMMARY

Time Mark Every 60 S

Parameters

| DLIS Name | Description | Value | |
|-----------|--|-----------|------|
| BHS | HALS-B: HILT Azimuthal Laterolog Sonde B Borehole Status | OPEN | |
| GCSE | Generalized Caliper Selection | HCAL | |
| BHS | HILTB-FTB: High resolution Integrated Logging Tool-DTS Borehole Status | OPEN | |
| GCSE | Generalized Caliper Selection | HCAL | |
| BAR1 | HNGS-BA: Hostile Natural Gamma Ray Sonde HNGS Detector 1 Barite Constant | 0.949873 | |
| BAR2 | HNGS Detector 2 Barite Constant | 0.954316 | |
| BHK | HNGS Borehole Potassium Correction Concentration | 0 | |
| BHS | Borehole Status | OPEN | |
| 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 |
| DBCC | HNGS Barite Constant Correction Flag | USER | |
| GCSE | Generalized Caliper Selection | HCAL | |
| H1P | HNGS Detector 1 Allow/Disallow In Processing | ALLOW | |
| H2P | HNGS Detector 2 Allow/Disallow In Processing | ALLOW | |
| HABK | HNGS Borehole Potassium Running Average | 0.0097197 | |
| HALF | HNGS Alpha Filter Length | 60 | IN |
| HCRB | HNGS Apply Borehole Potassium Correction | NONE | |
| HMWM | Mud Weighting Material | NATU | |
| HNPE | HNGS Processing Enable | YES | |
| S1BI | HNGS Detector 1 Calibration Bismuth Count Rate | -999.25 | CPS |
| S2BI | HNGS Detector 2 Calibration Bismuth Count Rate | -999.25 | CPS |
| SGRC | HNGS Standard Gamma-Ray Correction Flag | YES | |
| TPOS | Tool Position | ECCE | |
| VBA1 | HNGS Detector 1 Variable Barite Factor Running Average | 0.96566 | |
| VBA2 | HNGS Detector 2 Variable Barite Factor Running Average | 0.978595 | |
| BHS | HOLEV: Integrated Hole/Cement Volume Borehole Status | OPEN | |
| GCSE | Generalized Caliper Selection | HCAL | |
| LBFR | STI: Stuck Tool Indicator Trigger for MAXIS First Reading Label | TDL | |
| STKT | STI Stuck Threshold | 0.762 | M |
| TDD | Total Depth - Driller | 889.00 | M |
| TDL | Total Depth - Logger | 879.00 | M |
| BS | System and Miscellaneous Bit Size | 8.500 | IN |
| DO | Depth Offset for Playback | 0.2 | M |
| DORL | Depth Offset for Repeat Analysis | 0.1 | M |
| PP | Playback Processing | RECOMPUTE | |

Format: HNGSNGT Vertical Scale: 1:200

Graphics File Created: 30-Jun-2004 19:55

OP System Version: 12C0-301

MCM

| | | | |
|-----------|----------|---------|----------|
| HALS-B | 12C0-301 | DSL-T-H | 12C0-301 |
| HILTB-FTB | 12C0-301 | HNGC-A | 12C0-301 |
| HNGS-BA | 12C0-301 | DTC-H | 12C0-301 |
| BSP | 12C0-301 | | |

Input DLIS Files

| | | | | | |
|---------|----------------------------------|----------|-------------------|---------|--------|
| DEFAULT | HALS_SONIC_TLD_MCFL_007LUP FN:11 | PRODUCER | 30-Jun-2004 17:55 | 880.1 M | 28.4 M |
|---------|----------------------------------|----------|-------------------|---------|--------|

Output DLIS Files

DEFAULT

HALS_SONIC_TLD_MCFL_008PUP FN:13

PRODUCER

30-Jun-2004 19:55

HNGS Ratio 1:200 Scale

MAXIS Field Log

Company: Essential Petroleum Resources Limited

Well: Findra-1

Input DLIS Files

| | | | | | |
|---------|----------------------------------|----------|-------------------|---------|--------|
| DEFAULT | HALS_SONIC_TLD_MCFL_007LUP FN:11 | PRODUCER | 30-Jun-2004 17:55 | 880.1 M | 28.4 M |
|---------|----------------------------------|----------|-------------------|---------|--------|

Output DLIS Files

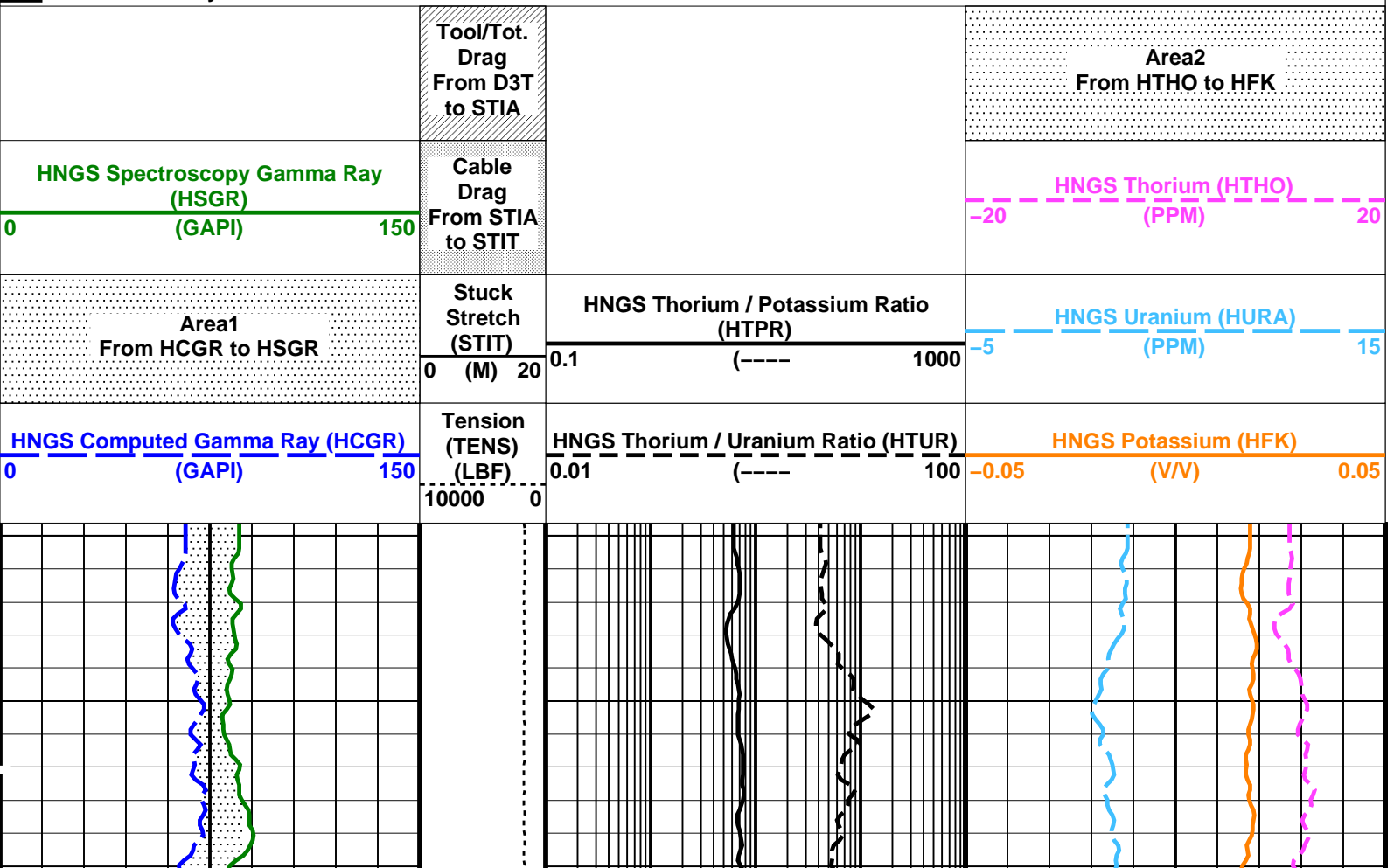
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|---------|----------------------------------|----------|-------------------|---------|---------|
| DEFAULT | HALS_SONIC_TLD_MCFL_008PUP FN:13 | PRODUCER | 30-Jun-2004 19:55 | 880.3 M | 454.6 M |
|---------|----------------------------------|----------|-------------------|---------|---------|

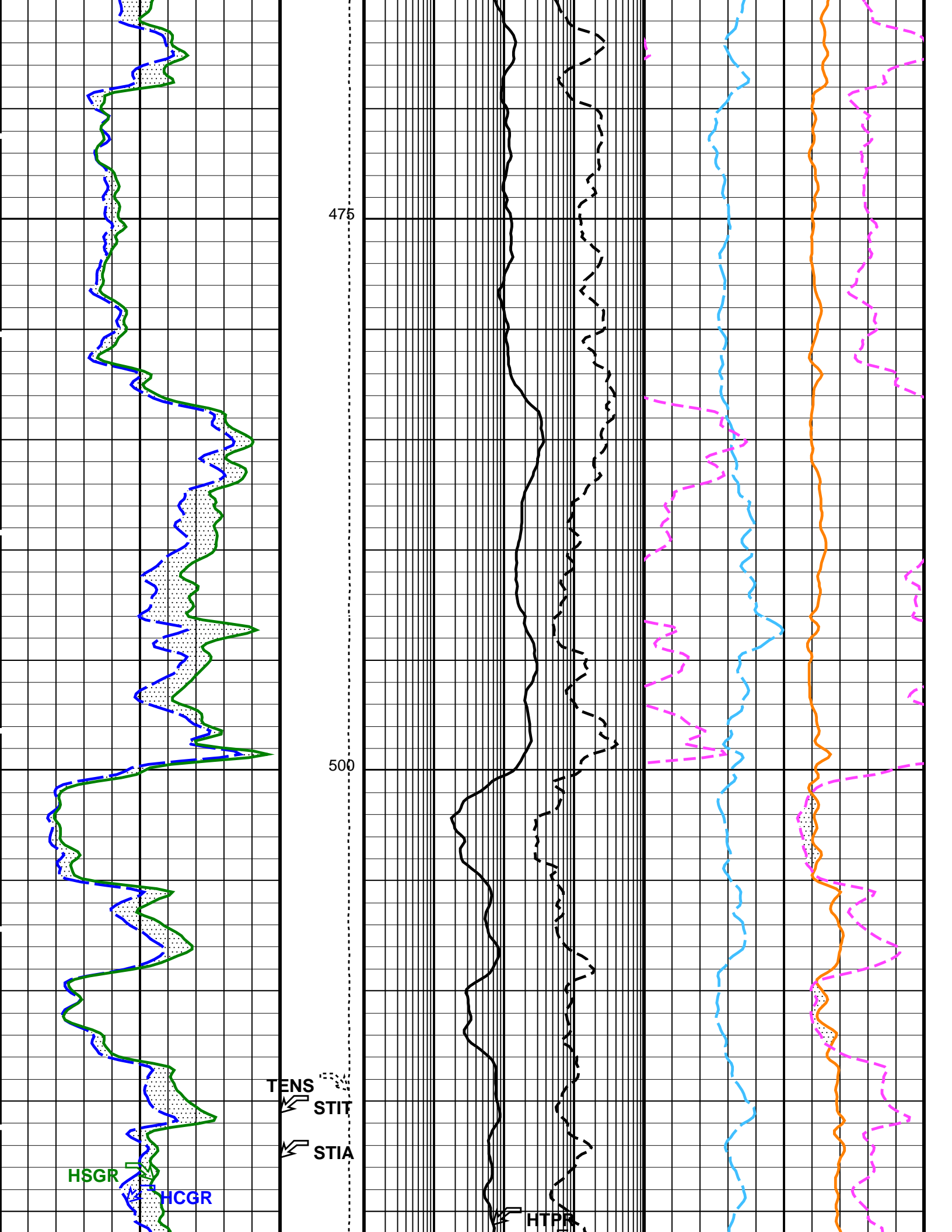
OP System Version: 12C0-301 MCM

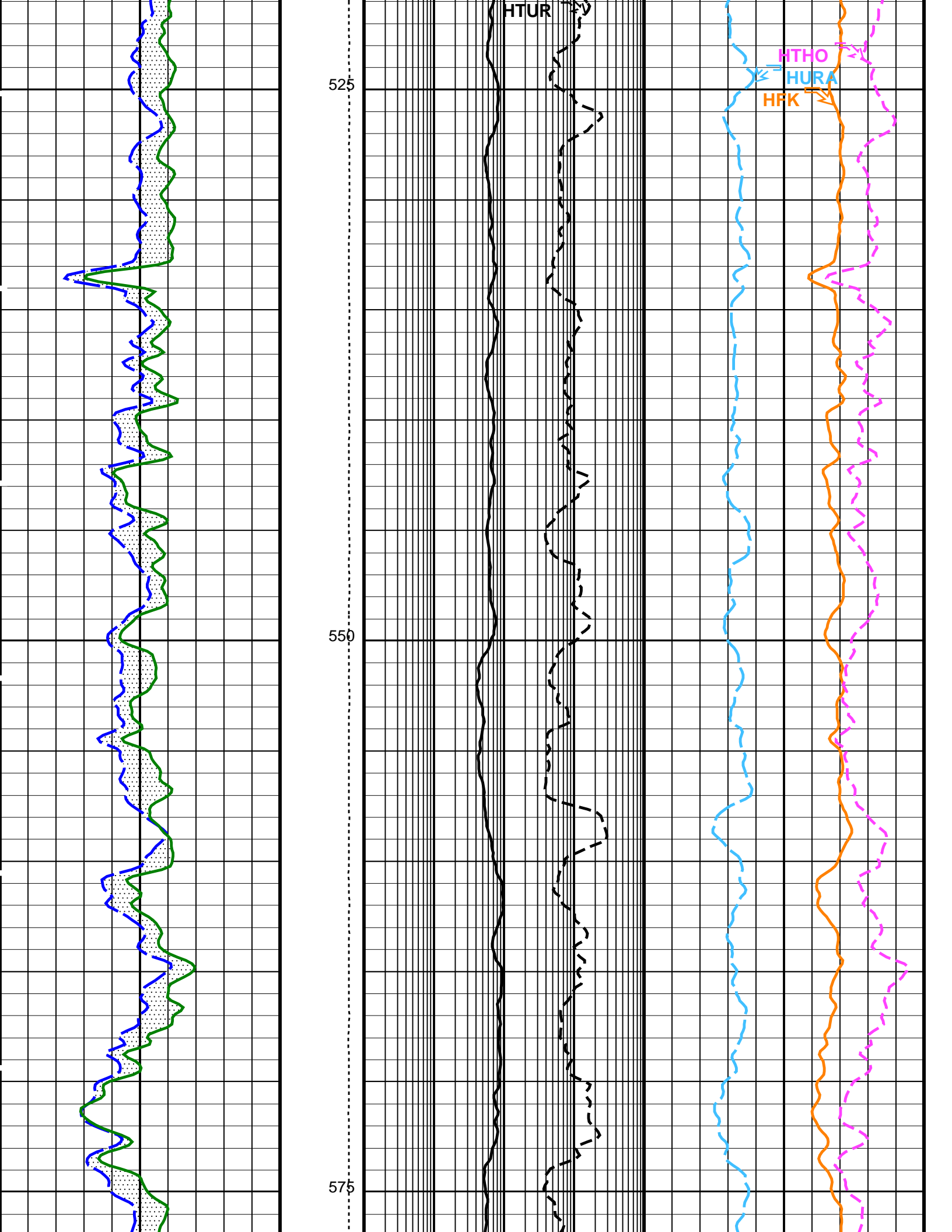
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|-----------|----------|--------|----------|
| HALS-B | 12C0-301 | DSLT-H | 12C0-301 |
| HILTB-FTB | 12C0-301 | HNGC-A | 12C0-301 |
| HNGS-BA | 12C0-301 | DTC-H | 12C0-301 |
| BSP | 12C0-301 | | |

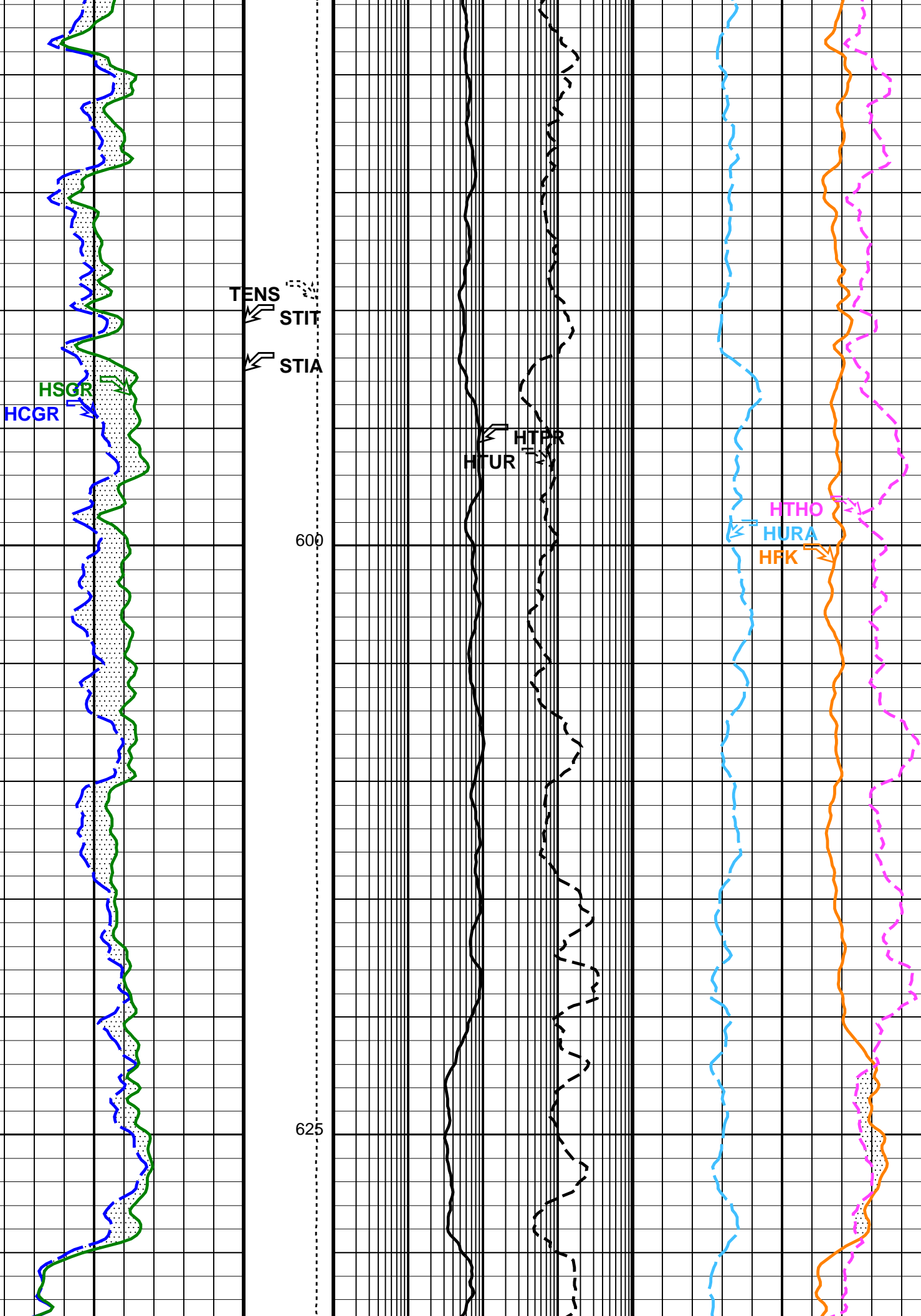
PIP SUMMARY

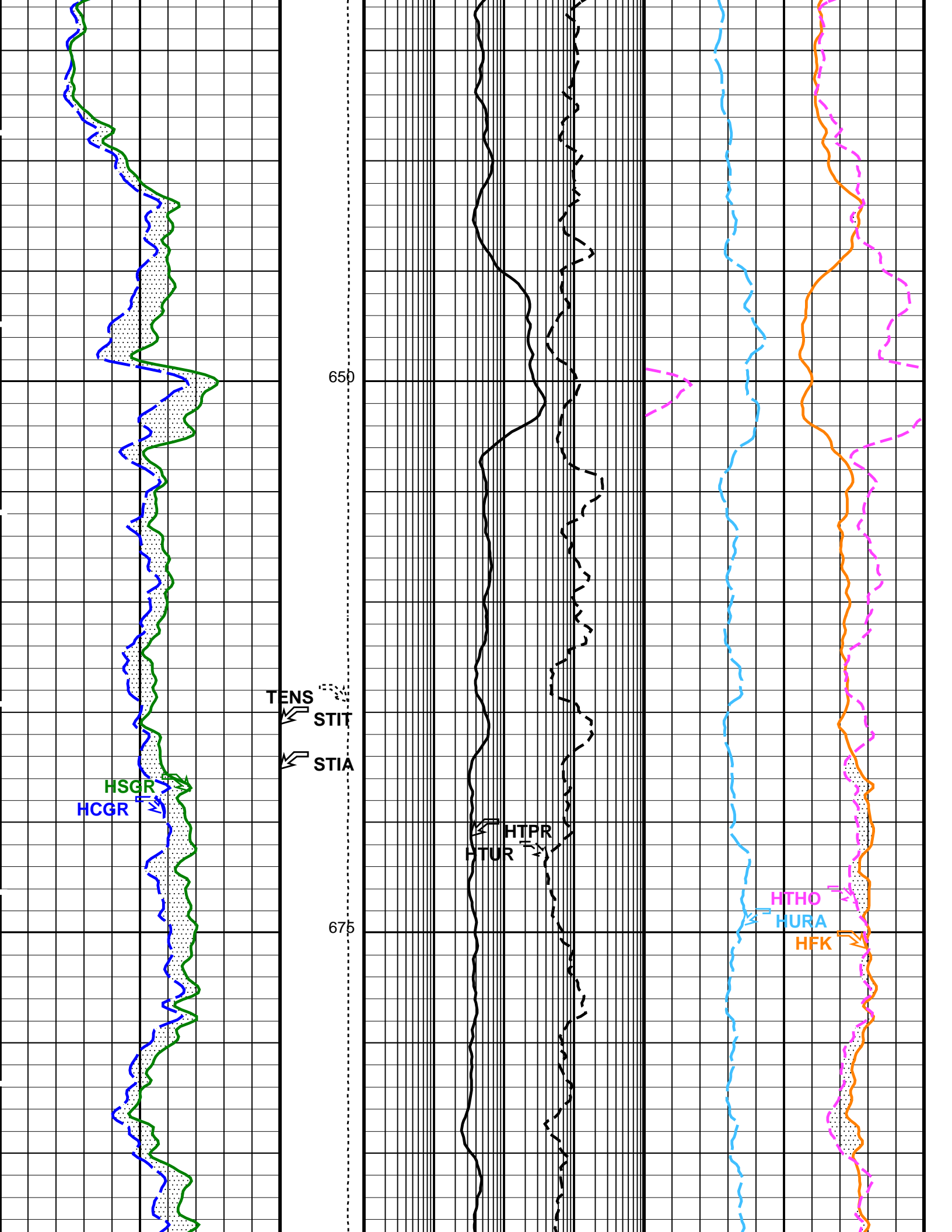
Time Mark Every 60 S

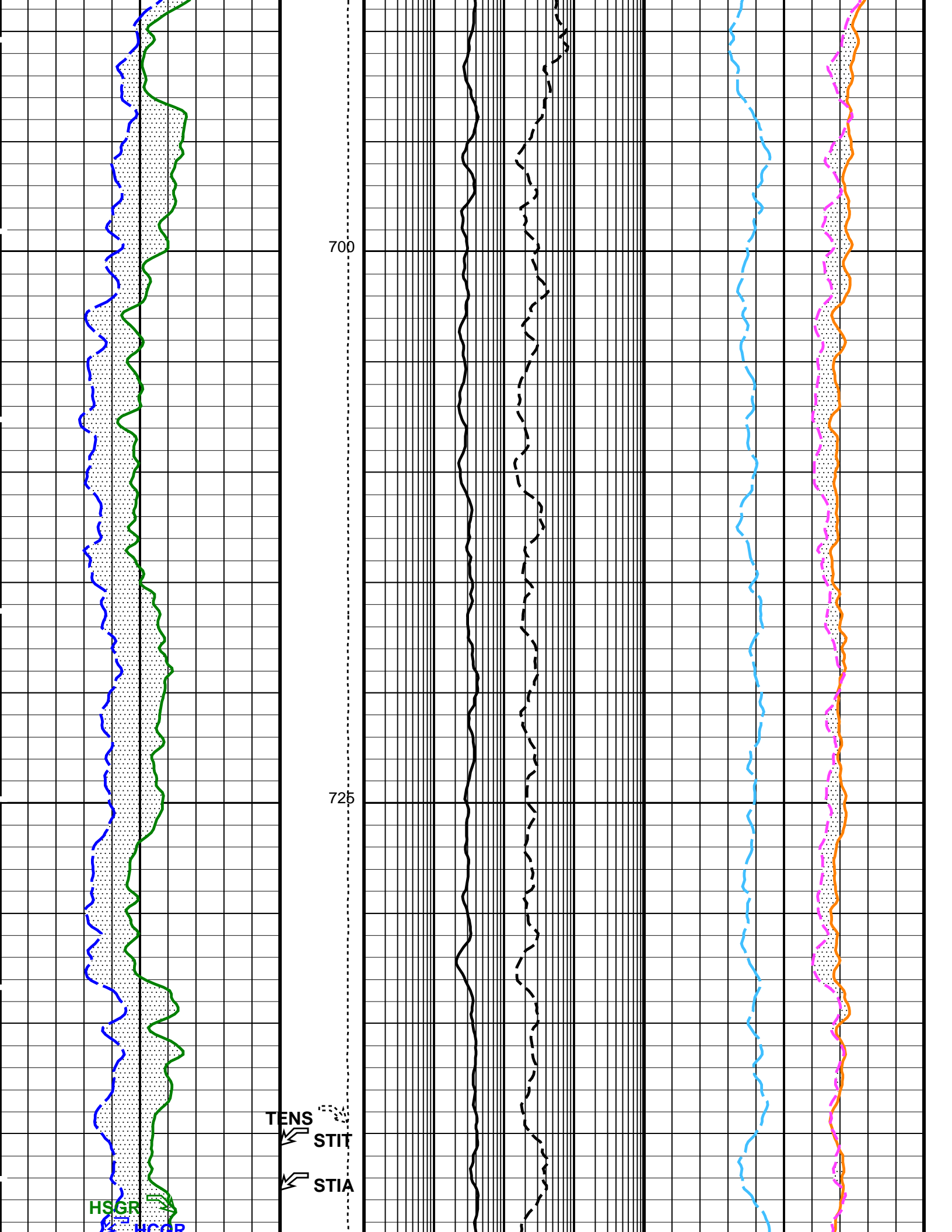


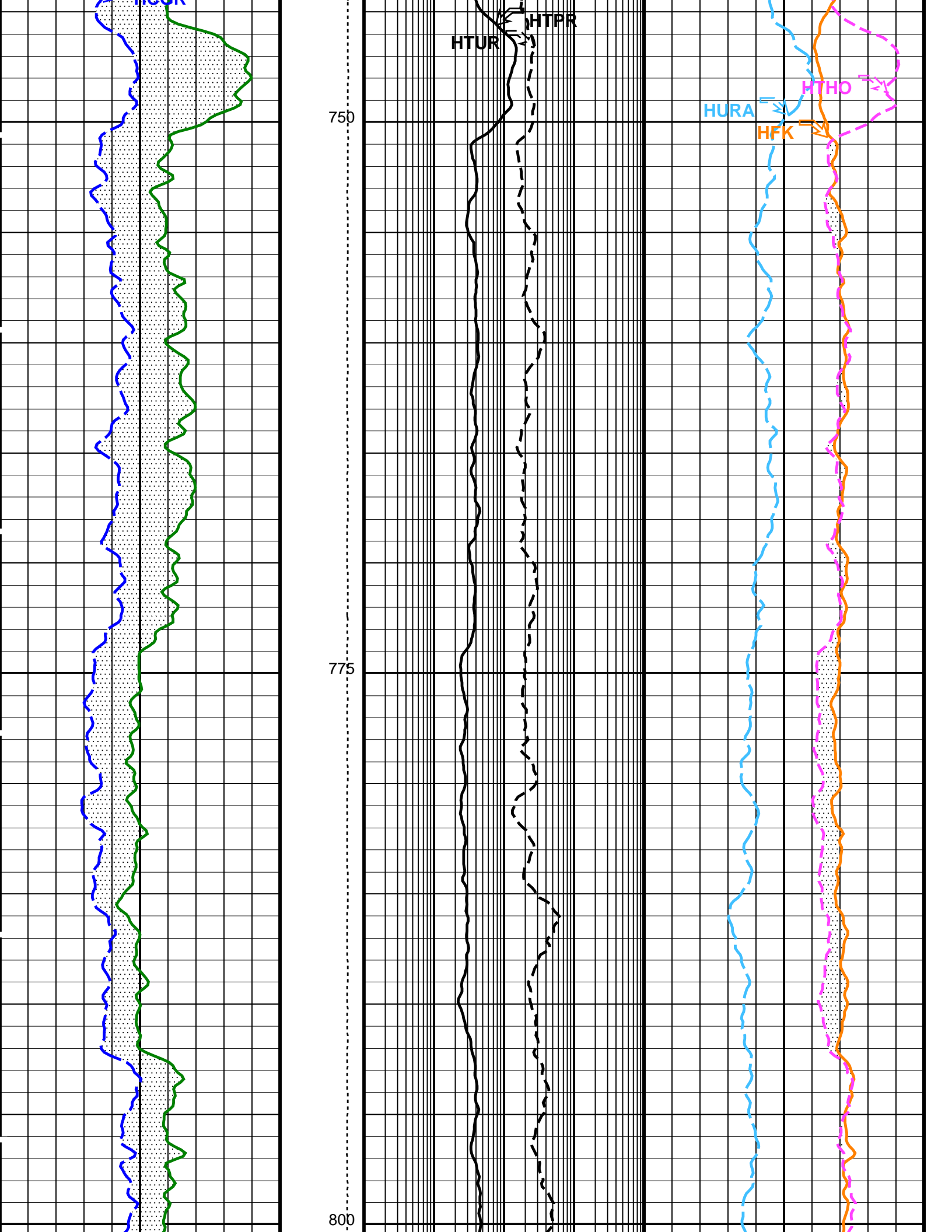


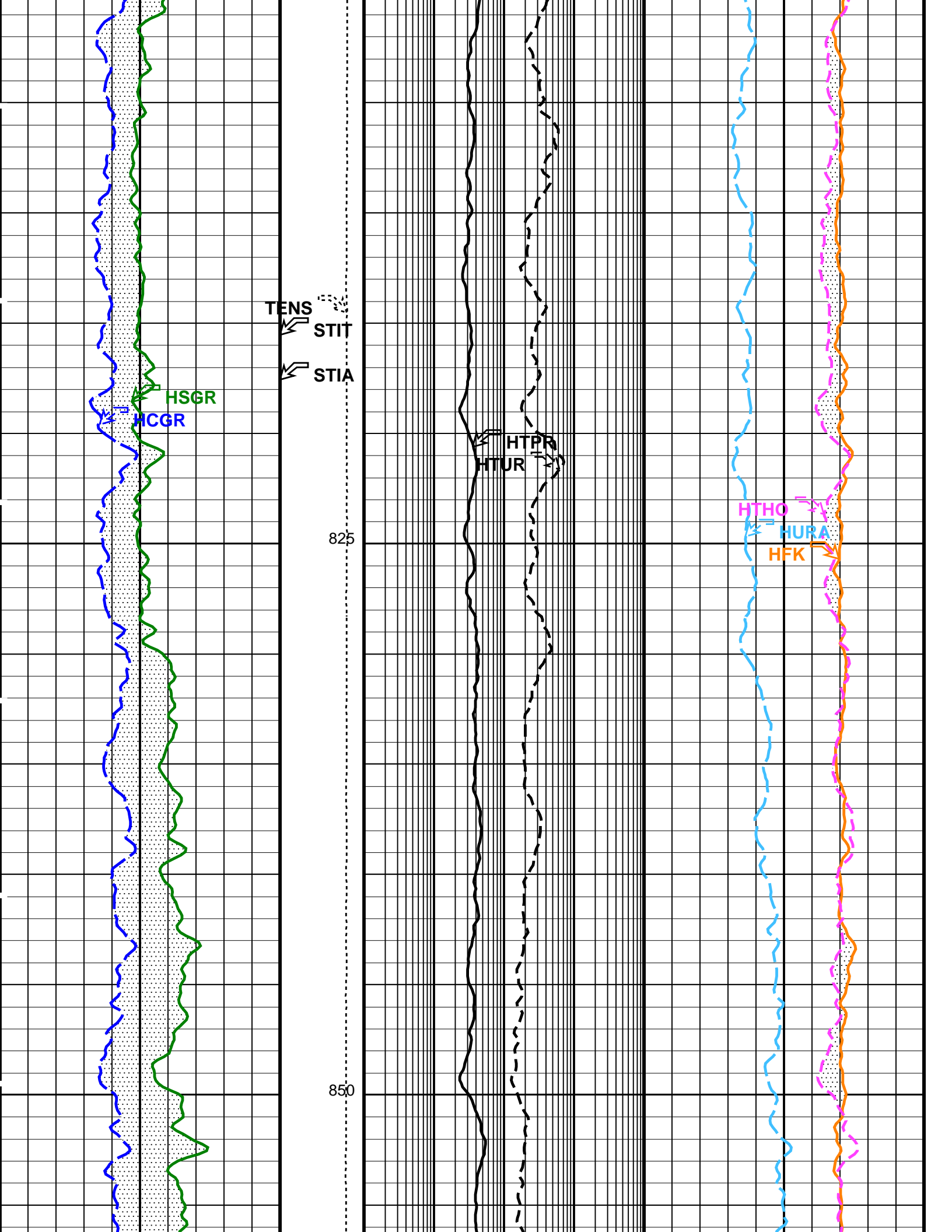


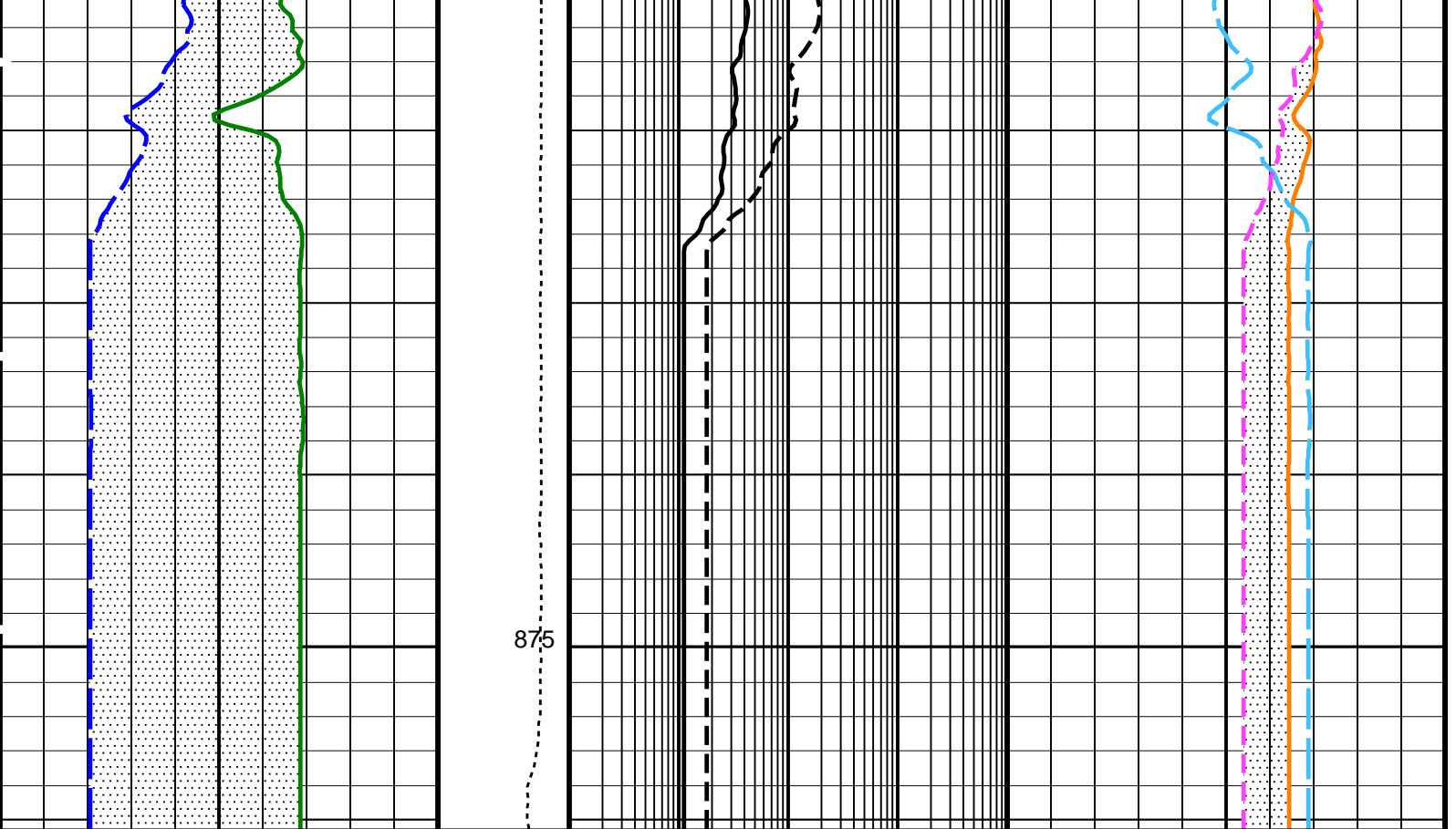












| | | | |
|---|---|---|---|
| HNGS Computed Gamma Ray (HCGR) (GAPI) 0 150 | Tension (TENS) (LBF) 10000 0 | HNGS Thorium / Uranium Ratio (HTUR) 0.01 (----) 100 | HNGS Potassium (HFK) (-0.05 (V/V) 0.05) |
| Area1 From HCGR to HSGR | Stuck Stretch (STIT) 0 (M) 20 | HNGS Thorium / Potassium Ratio (HTPR) 0.1 (----) 1000 | HNGS Uranium (HURA) (-5 (PPM) 15) |
| HNGS Spectroscopy Gamma Ray (HSGR) (GAPI) 0 150 | Cable Drag From STIA to STIT | | HNGS Thorium (HTHO) (-20 (PPM) 20) |
| | Tool/Tot. Drag From D3T to STIA | | Area2 From HTHO to HFK |

PIP SUMMARY

Time Mark Every 60 S

Parameters

| DLIS Name | Description | Value |
|-----------|--|----------|
| BHS | HALS-B: HILT Azimuthal Laterolog Sonde B | OPEN |
| GCSE | Borehole Status | HCAL |
| BHS | HILTB-FTB: High resolution Integrated Logging Tool-DTS | OPEN |
| GCSE | Borehole Status | HCAL |
| BAR1 | HNGS-BA: Hostile Natural Gamma Ray Sonde | 0.949873 |
| BAR2 | HNGS Detector 1 Barite Constant | 0.954316 |
| BHK | HNGS Detector 2 Barite Constant | 0 |
| BHS | HNGS Borehole Potassium Correction Concentration | 0 |
| CSD1 | Borehole Status | OPEN |
| CSD2 | Inner Casing Outer Diameter | 0 IN |
| CSW1 | Outer Casing Outer Diameter | 0 IN |
| CSW2 | Inner Casing Weight | 0 LB/F |
| DBCC | Outer Casing Weight | 0 LB/F |
| | HNGS Barite Constant Correction Flag | USER |

| | | | |
|---|--|-----------|-----|
| GCSE | Generalized Caliper Selection | HCAL | |
| H1P | HNGS Detector 1 Allow/Disallow In Processing | ALLOW | |
| H2P | HNGS Detector 2 Allow/Disallow In Processing | ALLOW | |
| HABK | HNGS Borehole Potassium Running Average | 0.0097197 | |
| HALF | HNGS Alpha Filter Length | 60 | IN |
| HCRB | HNGS Apply Borehole Potassium Correction | NONE | |
| HMWM | Mud Weighting Material | NATU | |
| HNPE | HNGS Processing Enable | YES | |
| S1BI | HNGS Detector 1 Calibration Bismuth Count Rate | -999.25 | CPS |
| S2BI | HNGS Detector 2 Calibration Bismuth Count Rate | -999.25 | CPS |
| SGRC | HNGS Standard Gamma-Ray Correction Flag | YES | |
| TPOS | Tool Position | ECCE | |
| VBA1 | HNGS Detector 1 Variable Barite Factor Running Average | 0.96566 | |
| VBA2 | HNGS Detector 2 Variable Barite Factor Running Average | 0.978595 | |
| HOLEV: Integrated Hole/Cement Volume | | | |
| BHS | Borehole Status | OPEN | |
| GCSE | Generalized Caliper Selection | HCAL | |
| STI: Stuck Tool Indicator | | | |
| LBFR | Trigger for MAXIS First Reading Label | TDL | |
| STKT | STI Stuck Threshold | 0.762 | M |
| TDD | Total Depth - Driller | 889.00 | M |
| TDL | Total Depth - Logger | 879.00 | M |
| System and Miscellaneous | | | |
| BS | Bit Size | 8.500 | IN |
| DO | Depth Offset for Playback | 0.2 | M |
| DORL | Depth Offset for Repeat Analysis | 0.1 | M |
| PP | Playback Processing | RECOMPUTE | |

Format: HNGSRatios Vertical Scale: 1:200 Graphics File Created: 30-Jun-2004 19:55

OP System Version: 12C0-301

MCM

| | | | |
|-----------|----------|--------|----------|
| HALS-B | 12C0-301 | DSLT-H | 12C0-301 |
| HILTB-FTB | 12C0-301 | HNGC-A | 12C0-301 |
| HNGS-BA | 12C0-301 | DTC-H | 12C0-301 |
| BSP | 12C0-301 | | |

Input DLIS Files

| | | | | | |
|---------|----------------------------------|----------|-------------------|---------|--------|
| DEFAULT | HALS_SONIC_TLD_MCFL_007LUP FN:11 | PRODUCER | 30-Jun-2004 17:55 | 880.1 M | 28.4 M |
|---------|----------------------------------|----------|-------------------|---------|--------|

Output DLIS Files

| | | | | | |
|---------|----------------------------------|----------|-------------------|--|--|
| DEFAULT | HALS_SONIC_TLD_MCFL_008PUP FN:13 | PRODUCER | 30-Jun-2004 19:55 | | |
|---------|----------------------------------|----------|-------------------|--|--|

**Repeat Analysis
1:200 Scale**

MAXIS Field Log

Company: Essential Petroleum Resources Limited

Well: Findra-1

Input DLIS Files

| | | | | | |
|---------|----------------------------------|----------|-------------------|---------|---------|
| DEFAULT | HALS_SONIC_TLD_MCFL_006LUP FN:9 | PRODUCER | 30-Jun-2004 17:21 | 745.2 M | 597.3 M |
| DEFAULT | HALS_SONIC_TLD_MCFL_007LUP FN:11 | PRODUCER | 30-Jun-2004 17:55 | 880.1 M | 28.4 M |

Output DLIS Files

| | | | | | |
|---------|----------------------------------|----------|-------------------|--|--|
| DEFAULT | HALS_SONIC_TLD_MCFL_008PUP FN:13 | PRODUCER | 30-Jun-2004 19:55 | | |
|---------|----------------------------------|----------|-------------------|--|--|

OP System Version: 12C0-301

MCM

| | | | |
|-----------|----------|--------|----------|
| HALS-B | 12C0-301 | DSLT-H | 12C0-301 |
| HILTB-FTB | 12C0-301 | HNGC-A | 12C0-301 |
| HNGS-BA | 12C0-301 | DTC-H | 12C0-301 |
| BSP | 12C0-301 | | |

HILTB-FTB 12C0-301
HNGS-BA 12C0-301
BSP 12C0-301

HNGC-A
DTC-H

12C0-301
12C0-301

PIP SUMMARY

Time Mark Every 60 S

HCGR_REP Curve (HCGR_REP)
0 (GAPI) 150

HSGR_REP Curve (HSGR_REP)
0 (GAPI) 150

BS_REP Curve (BS_REP)
6 (IN) 16

TENS_REP Curve (TENS_REP)
(LBF)

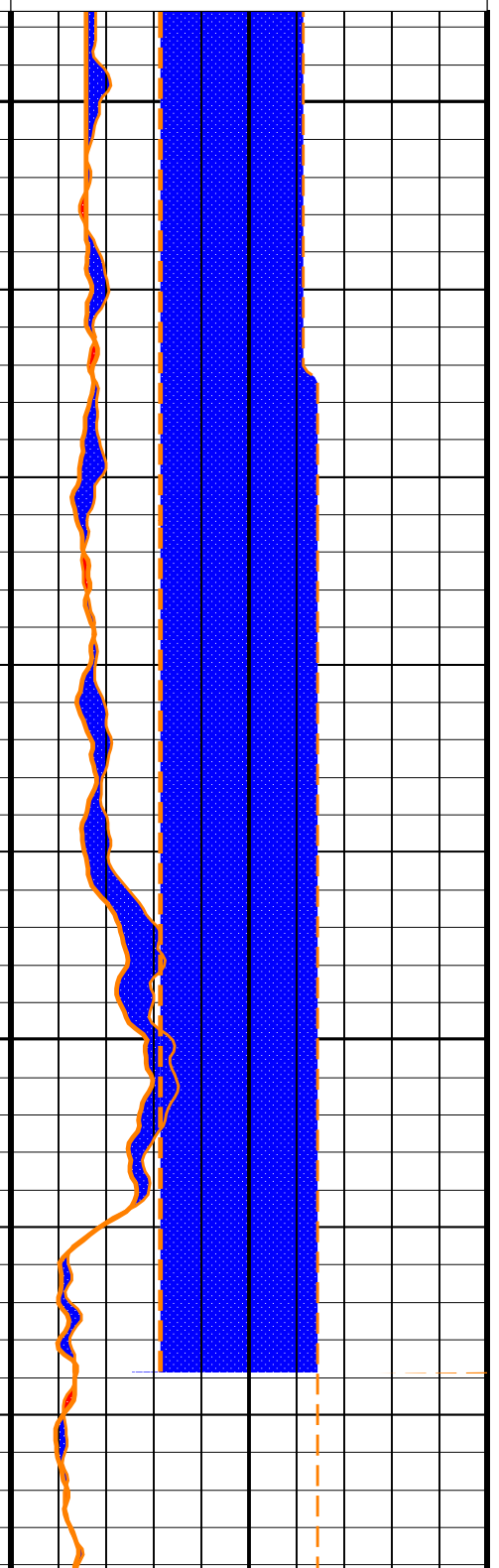
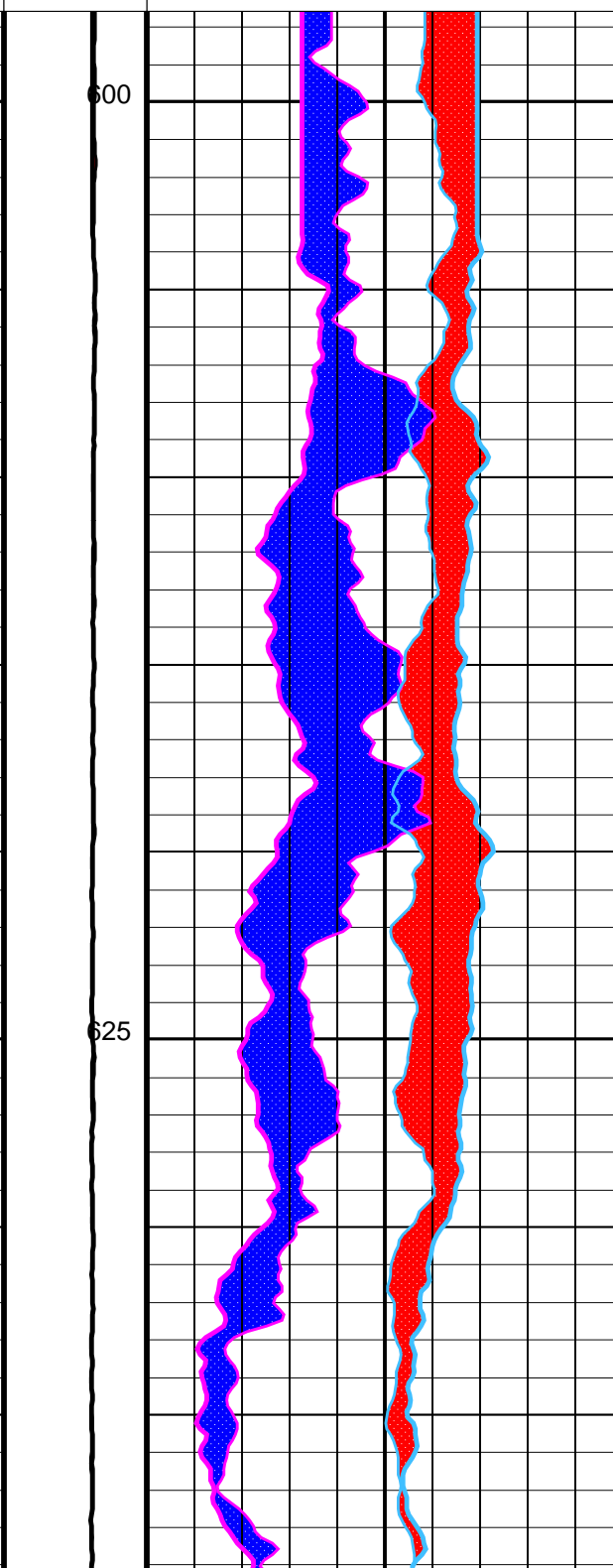
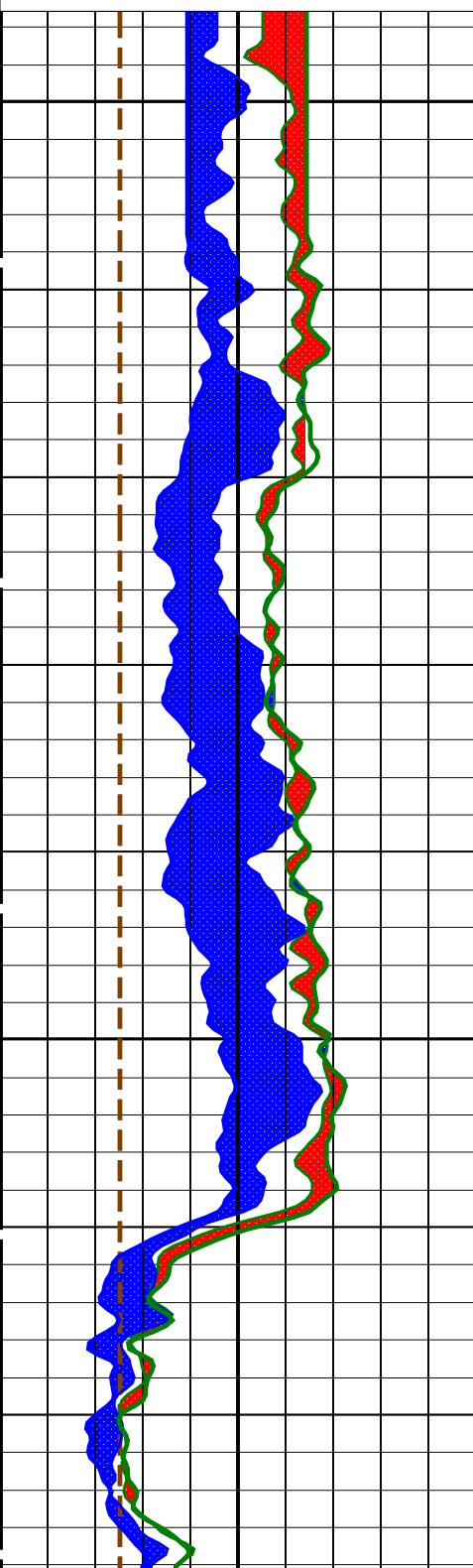
5000 0

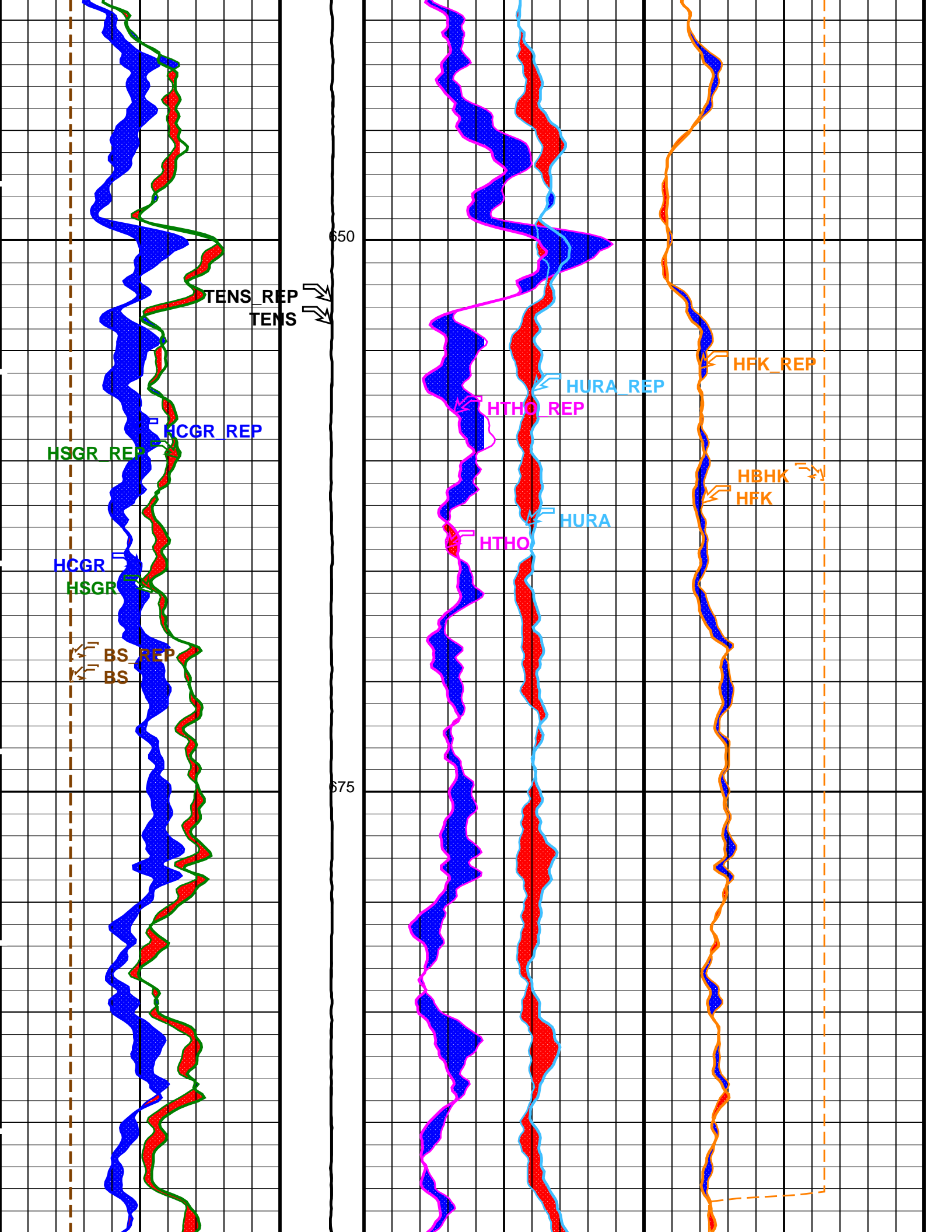
HBHK_REP Curve (HBHK_REP)
-0.05 (V/V) 0.05

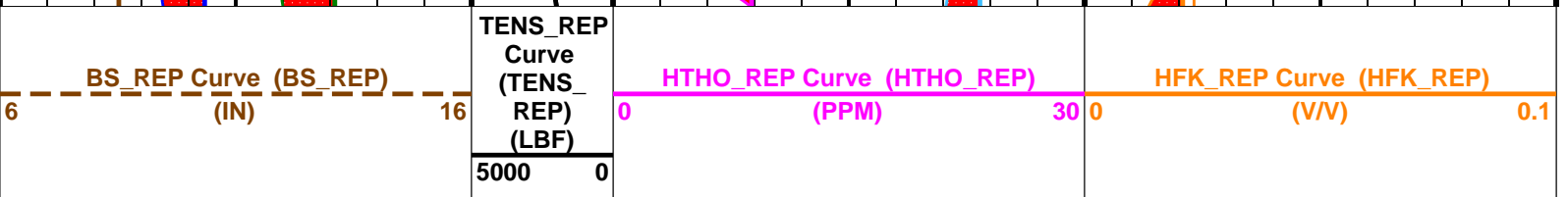
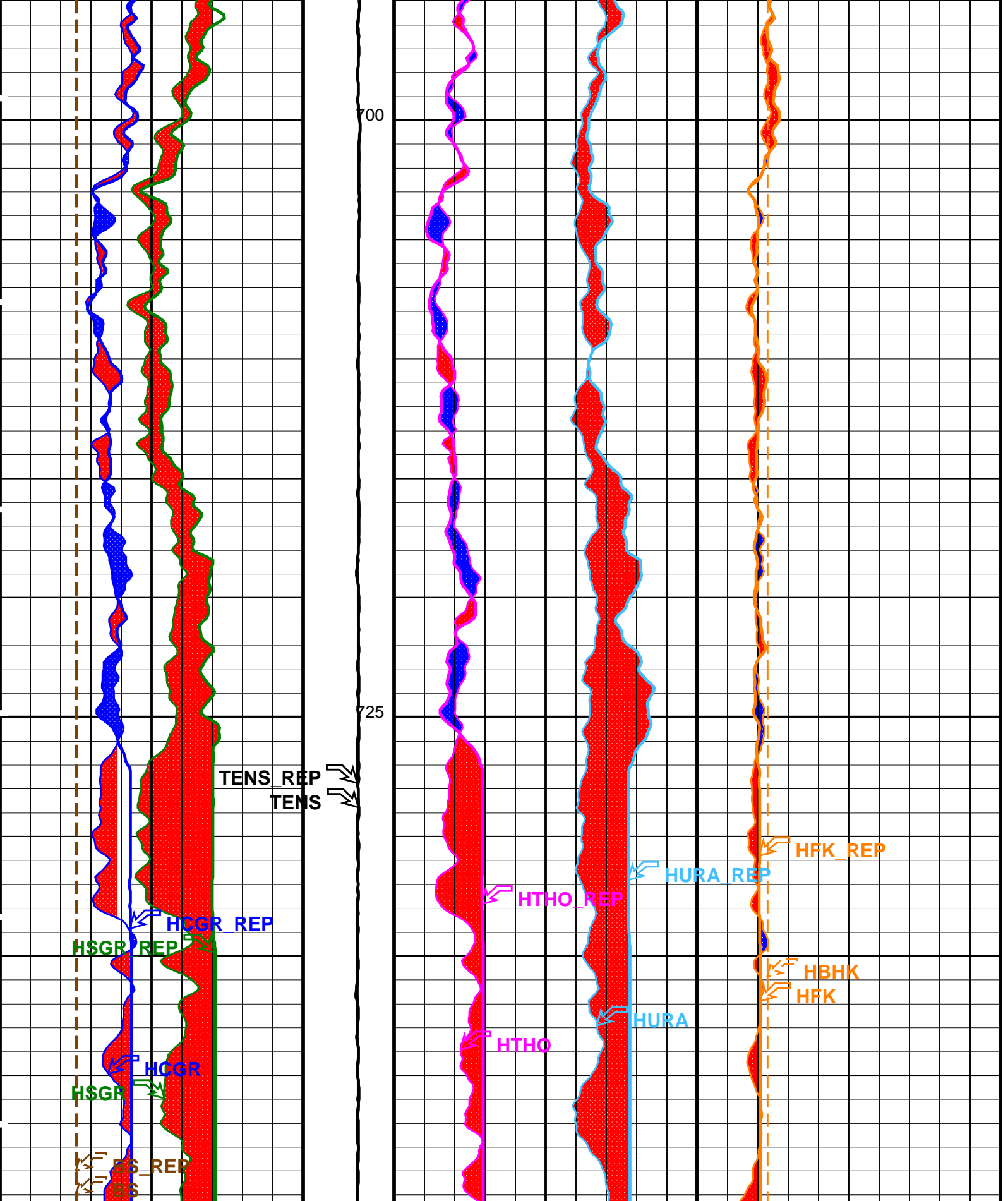
HURA_REP Curve (HURA_REP)
-10 (PPM) 30

HTHO_REP Curve (HTHO_REP)
0 (PPM) 30

HFK_REP Curve (HFK_REP)
0 (V/V) 0.1







| | | | |
|----------------------------------|------------|----------------------------------|------------|
| HSGR_REP Curve (HSGR_REP) | | HURA_REP Curve (HURA_REP) | |
| 0 | (GAPI) 150 | -10 | (PPM) 30 |
| HCGR_REP Curve (HCGR_REP) | | HBHK_REP Curve (HBHK_REP) | |
| 0 | (GAPI) 150 | -0.05 | (V/V) 0.05 |

PIP SUMMARY

Time Mark Every 60 S

Format: HNGSNGT_REP Vertical Scale: 1:200 Graphics File Created: 30-Jun-2004 19:55

OP System Version: 12C0-301

MCM

| | | | |
|-----------|----------|---------|----------|
| HALS-B | 12C0-301 | DSL-T-H | 12C0-301 |
| HILTB-FTB | 12C0-301 | HNGC-A | 12C0-301 |
| HNGS-BA | 12C0-301 | DTC-H | 12C0-301 |
| BSP | 12C0-301 | | |

Input DLIS Files

| | | | | | |
|---------|----------------------------------|----------|-------------------|---------|---------|
| DEFAULT | HALS_SONIC_TLD_MCFL_006LUP FN:9 | PRODUCER | 30-Jun-2004 17:21 | 745.2 M | 597.3 M |
| DEFAULT | HALS_SONIC_TLD_MCFL_007LUP FN:11 | PRODUCER | 30-Jun-2004 17:55 | 880.1 M | 28.4 M |

Output DLIS Files

| | | | |
|---------|----------------------------------|----------|-------------------|
| DEFAULT | HALS_SONIC_TLD_MCFL_008PUP FN:13 | PRODUCER | 30-Jun-2004 19:55 |
|---------|----------------------------------|----------|-------------------|



Calibrations

MAXIS Field Log

Calibration and Check Summary

| Measurement | Nominal | Master | Before | After | Change | Limit | Units |
|---|---------|--------|--------|-------|--------|-------|-------|
| HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB Total current mode 1 | | | | | | | |
| Before: 30-Jun-2004 16:22 | | | | | | | |
| Itot 1 Gain | 1.000 | N/A | 0.998 | N/A | N/A | 0.026 | MA |
| Itot 1 Phase | 0.000 | N/A | -0.000 | N/A | N/A | 0.100 | DEG |
| HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB Aux current mode 1 | | | | | | | |
| Before: 30-Jun-2004 16:22 | | | | | | | |
| Iaux 1 Gain | 1.000 | N/A | 0.994 | N/A | N/A | 0.035 | MA |
| Iaux 1 Phase | 0.000 | N/A | -0.123 | N/A | N/A | 1.900 | DEG |
| HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB Aux current mode 2 | | | | | | | |
| Before: 30-Jun-2004 16:22 | | | | | | | |
| Iaux 2 Gain | 1.000 | N/A | 0.974 | N/A | N/A | 0.048 | MA |
| Iaux 2 Phase | 0.000 | N/A | 0.000 | N/A | N/A | 0.100 | DEG |
| HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB A0 current mode 3A | | | | | | | |
| Before: 30-Jun-2004 16:22 | | | | | | | |
| I0 3A Gain | 1.000 | N/A | 0.983 | N/A | N/A | 0.036 | UA |
| I0 3A Phase | 0.000 | N/A | -0.000 | N/A | N/A | 0.100 | DEG |
| HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB A0 current mode 3B | | | | | | | |
| Before: 30-Jun-2004 16:22 | | | | | | | |
| I0 3B Gain | 1.000 | N/A | 0.980 | N/A | N/A | 0.036 | UA |
| I0 3B Phase | 0.000 | N/A | -0.000 | N/A | N/A | 0.100 | DEG |

HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB Tornado Voltage gains

Before: 30-Jun-2004 16:22

| | | | | | | | |
|------------|-------|-----|-------|-----|-----|-------|----|
| Zvt 1 Gain | 1.000 | N/A | 0.994 | N/A | N/A | 0.025 | MV |
| Zvt 2 Gain | 1.000 | N/A | 0.997 | N/A | N/A | 0.045 | MV |
| Zvt 3 Gain | 1.000 | N/A | 1.004 | N/A | N/A | 0.045 | MV |

HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB Torpedo Voltage Phases

Before: 30-Jun-2004 16:22

| | | | | | | | |
|-------------|-------|-----|--------|-----|-----|-------|-----|
| Zvt 1 Phase | 0.000 | N/A | -0.102 | N/A | N/A | 2.300 | DEG |
| Zvt 2 Phase | 0.000 | N/A | 0.006 | N/A | N/A | 0.800 | DEG |
| Zvt 3 Phase | 0.000 | N/A | -0.172 | N/A | N/A | 0.500 | DEG |

HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB Upper Bridle Voltage mode 1

Before: 30-Jun-2004 16:22

| | | | | | | | |
|-------------|-------|-----|--------|-----|-----|-------|-----|
| Zvb 1 Gain | 1.000 | N/A | 0.994 | N/A | N/A | 0.025 | MV |
| Zvb 1 Phase | 0.000 | N/A | -0.132 | N/A | N/A | 2.300 | DEG |

HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB M1-M2 Voltage gains

Before: 30-Jun-2004 16:22

| | | | | | | | |
|------------|-------|-----|-------|-----|-----|-------|----|
| ZVM 1 Gain | 1.000 | N/A | 0.996 | N/A | N/A | 0.039 | UV |
| ZVM 2 Gain | 1.000 | N/A | 0.993 | N/A | N/A | 0.019 | UV |
| ZVM 3 Gain | 1.000 | N/A | 0.991 | N/A | N/A | 0.019 | UV |

HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB M1-M2 Voltage Phases

Before: 30-Jun-2004 16:22

| | | | | | | | |
|-------------|-------|-----|-------|-----|-----|-------|-----|
| ZVM 1 Phase | 0.000 | N/A | 0.224 | N/A | N/A | 3.800 | DEG |
| ZVM 2 Phase | 0.000 | N/A | 1.871 | N/A | N/A | 1.300 | DEG |
| ZVM 3 Phase | 0.000 | N/A | 1.002 | N/A | N/A | 1.000 | DEG |

HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB M1-A0* Voltage gains

Before: 30-Jun-2004 16:22

| | | | | | | | |
|------------|-------|-----|-------|-----|-----|-------|----|
| ZVH 1 Gain | 1.000 | N/A | 0.997 | N/A | N/A | 0.013 | UV |
| ZVH 2 Gain | 1.000 | N/A | 0.990 | N/A | N/A | 0.046 | UV |
| ZVH 3 Gain | 1.000 | N/A | 0.990 | N/A | N/A | 0.046 | UV |

HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB M1-A0* Voltage Phases

Before: 30-Jun-2004 16:22

| | | | | | | | |
|-------------|-------|-----|-------|-----|-----|-------|-----|
| ZVH 1 Phase | 0.000 | N/A | 0.109 | N/A | N/A | 3.800 | DEG |
| ZVH 2 Phase | 0.000 | N/A | 1.992 | N/A | N/A | 1.300 | DEG |
| ZVH 3 Phase | 0.000 | N/A | 0.993 | N/A | N/A | 1.000 | DEG |

HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB Aux Voltage gains

Before: 30-Jun-2004 16:22

| | | | | | | | |
|------------|-------|-----|-------|-----|-----|-------|----|
| ZVA 1 Gain | 1.000 | N/A | 1.070 | N/A | N/A | 0.032 | MV |
| ZVA 2 Gain | 1.000 | N/A | 1.063 | N/A | N/A | 0.045 | MV |
| ZVA 3 Gain | 1.000 | N/A | 1.013 | N/A | N/A | 0.045 | MV |

HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB Aux Voltage Phases

Before: 30-Jun-2004 16:22

| | | | | | | | |
|-------------|-------|-----|-------|-----|-----|-------|-----|
| ZVA 1 Phase | 0.000 | N/A | 1.005 | N/A | N/A | 2.300 | DEG |
| ZVA 2 Phase | 0.000 | N/A | 0.153 | N/A | N/A | 0.800 | DEG |
| ZVA 3 Phase | 0.000 | N/A | 0.162 | N/A | N/A | 0.500 | DEG |

HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB A0*-A0** Diff. Voltage mode 1

Before: 30-Jun-2004 16:22

| | | | | | | | |
|-------------|-------|-----|-------|-----|-----|-------|-----|
| ZVD 1 Gain | 1.000 | N/A | 0.997 | N/A | N/A | 0.047 | UV |
| ZVD 1 Phase | 0.000 | N/A | 0.096 | N/A | N/A | 3.800 | DEG |

HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB A0*-A0** Diff. Voltage mode 2

Before: 30-Jun-2004 16:22

| | | | | | | | |
|-------------|-------|-----|-------|-----|-----|-------|-----|
| ZVD 2 Gain | 1.000 | N/A | 0.982 | N/A | N/A | 0.056 | UV |
| ZVD 2 Phase | 0.000 | N/A | 1.287 | N/A | N/A | 1.300 | DEG |

HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB A0*-A0** Diff. Voltage mode 3A

Before: 30-Jun-2004 16:22

| | | | | | | | |
|--------------|-------|-----|-------|-----|-----|-------|-----|
| ZVD 3A Gain | 1.000 | N/A | 0.988 | N/A | N/A | 0.056 | UV |
| ZVD 3A Phase | 0.000 | N/A | 0.566 | N/A | N/A | 1.000 | DEG |

HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB A0*-A0** Diff. Voltage mode 3B

Before: 30-Jun-2004 16:22

| | | | | | | | |
|--------------|-------|-----|--------|-----|-----|-------|-----|
| ZVD 3B Gain | 1.000 | N/A | 1.000 | N/A | N/A | 0.054 | UV |
| ZVD 3B Phase | 0.000 | N/A | -0.039 | N/A | N/A | 1.000 | DEG |

HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB vertical Voltage mode 1

Before: 30-Jun-2004 16:22

| | | | | | | | |
|-------------|-------|-----|-------|-----|-----|-------|-----|
| ZVV 1 Gain | 1.000 | N/A | 0.997 | N/A | N/A | 0.022 | UV |
| ZVV 1 Phase | 0.000 | N/A | 0.163 | N/A | N/A | 2.800 | DEG |

HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB vertical Voltage mode 2

Before: 30-Jun-2004 16:22

| | | | | | | | |
|-------------|-------|-----|-------|-----|-----|-------|-----|
| ZVV 2 Gain | 1.000 | N/A | 0.985 | N/A | N/A | 0.036 | UV |
| ZVV 2 Phase | 0.000 | N/A | 2.626 | N/A | N/A | 1.300 | DEG |

HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB Azimuthal Voltages mode 1

Before: 30-Jun-2004 16:22

| | | | | | | | |
|-----------------|-------|-----|--------|-----|-----|-------|-----|
| Az 1 Gain – 0 | 1.000 | N/A | 0.999 | N/A | N/A | 0.047 | UV |
| Az 1 Gain – 1 | 1.000 | N/A | 0.998 | N/A | N/A | 0.047 | UV |
| Az 1 Gain – 2 | 1.000 | N/A | 0.999 | N/A | N/A | 0.047 | UV |
| Az 1 Gain – 3 | 1.000 | N/A | 0.994 | N/A | N/A | 0.047 | UV |
| Az 1 Gain – 4 | 1.000 | N/A | 0.999 | N/A | N/A | 0.047 | UV |
| Az 1 Gain – 5 | 1.000 | N/A | 0.999 | N/A | N/A | 0.047 | UV |
| Az 1 Gain – 6 | 1.000 | N/A | 0.997 | N/A | N/A | 0.047 | UV |
| Az 1 Gain – 7 | 1.000 | N/A | 0.998 | N/A | N/A | 0.047 | UV |
| Az 1 Gain – 8 | 1.000 | N/A | 0.997 | N/A | N/A | 0.047 | UV |
| Az 1 Gain – 9 | 1.000 | N/A | 0.997 | N/A | N/A | 0.047 | UV |
| Az 1 Gain – 10 | 1.000 | N/A | 1.001 | N/A | N/A | 0.047 | UV |
| Az 1 Gain – 11 | 1.000 | N/A | 0.996 | N/A | N/A | 0.047 | UV |
| AZ 1 Phase – 0 | 0.000 | N/A | -0.001 | N/A | N/A | 3.800 | DEG |
| AZ 1 Phase – 1 | 0.000 | N/A | 0.135 | N/A | N/A | 3.800 | DEG |
| AZ 1 Phase – 2 | 0.000 | N/A | 0.098 | N/A | N/A | 3.800 | DEG |
| AZ 1 Phase – 3 | 0.000 | N/A | 0.102 | N/A | N/A | 3.800 | DEG |
| AZ 1 Phase – 4 | 0.000 | N/A | 0.211 | N/A | N/A | 3.800 | DEG |
| AZ 1 Phase – 5 | 0.000 | N/A | 0.094 | N/A | N/A | 3.800 | DEG |
| AZ 1 Phase – 6 | 0.000 | N/A | 0.065 | N/A | N/A | 3.800 | DEG |
| AZ 1 Phase – 7 | 0.000 | N/A | 0.015 | N/A | N/A | 3.800 | DEG |
| AZ 1 Phase – 8 | 0.000 | N/A | 0.129 | N/A | N/A | 3.800 | DEG |
| AZ 1 Phase – 9 | 0.000 | N/A | 0.021 | N/A | N/A | 3.800 | DEG |
| AZ 1 Phase – 10 | 0.000 | N/A | 0.126 | N/A | N/A | 3.800 | DEG |
| AZ 1 Phase – 11 | 0.000 | N/A | 0.106 | N/A | N/A | 3.800 | DEG |

HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB Azimuthal Voltages mode 2

Before: 30-Jun-2004 16:22

| | | | | | | | |
|-----------------|-------|-----|-------|-----|-----|-------|-----|
| Az 2 Gain – 0 | 1.000 | N/A | 0.984 | N/A | N/A | 0.056 | UV |
| Az 2 Gain – 1 | 1.000 | N/A | 0.983 | N/A | N/A | 0.056 | UV |
| Az 2 Gain – 2 | 1.000 | N/A | 0.984 | N/A | N/A | 0.056 | UV |
| Az 2 Gain – 3 | 1.000 | N/A | 0.979 | N/A | N/A | 0.056 | UV |
| Az 2 Gain – 4 | 1.000 | N/A | 0.985 | N/A | N/A | 0.056 | UV |
| Az 2 Gain – 5 | 1.000 | N/A | 0.984 | N/A | N/A | 0.056 | UV |
| Az 2 Gain – 6 | 1.000 | N/A | 0.982 | N/A | N/A | 0.056 | UV |
| Az 2 Gain – 7 | 1.000 | N/A | 0.983 | N/A | N/A | 0.056 | UV |
| Az 2 Gain – 8 | 1.000 | N/A | 0.983 | N/A | N/A | 0.056 | UV |
| Az 2 Gain – 9 | 1.000 | N/A | 0.982 | N/A | N/A | 0.056 | UV |
| Az 2 Gain – 10 | 1.000 | N/A | 0.987 | N/A | N/A | 0.056 | UV |
| Az 2 Gain – 11 | 1.000 | N/A | 0.981 | N/A | N/A | 0.056 | UV |
| Az 2 Phase – 0 | 0.000 | N/A | 1.350 | N/A | N/A | 1.300 | DEG |
| Az 2 Phase – 1 | 0.000 | N/A | 1.308 | N/A | N/A | 1.300 | DEG |
| Az 2 Phase – 2 | 0.000 | N/A | 1.317 | N/A | N/A | 1.300 | DEG |
| Az 2 Phase – 3 | 0.000 | N/A | 1.304 | N/A | N/A | 1.300 | DEG |
| Az 2 Phase – 4 | 0.000 | N/A | 1.333 | N/A | N/A | 1.300 | DEG |
| Az 2 Phase – 5 | 0.000 | N/A | 1.344 | N/A | N/A | 1.300 | DEG |
| Az 2 Phase – 6 | 0.000 | N/A | 1.368 | N/A | N/A | 1.300 | DEG |
| Az 2 Phase – 7 | 0.000 | N/A | 1.363 | N/A | N/A | 1.300 | DEG |
| Az 2 Phase – 8 | 0.000 | N/A | 1.382 | N/A | N/A | 1.300 | DEG |
| Az 2 Phase – 9 | 0.000 | N/A | 1.336 | N/A | N/A | 1.300 | DEG |
| Az 2 Phase – 10 | 0.000 | N/A | 1.398 | N/A | N/A | 1.300 | DEG |
| Az 2 Phase – 11 | 0.000 | N/A | 1.280 | N/A | N/A | 1.300 | DEG |

HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB Azimuthal Voltages mode 3A

Before: 30-Jun-2004 16:22

| | | | | | | | |
|------------------|-------|-----|-------|-----|-----|-------|-----|
| Az 3A Gain – 0 | 1.000 | N/A | 0.989 | N/A | N/A | 0.056 | UV |
| Az 3A Gain – 1 | 1.000 | N/A | 0.988 | N/A | N/A | 0.056 | UV |
| Az 3A Gain – 2 | 1.000 | N/A | 0.990 | N/A | N/A | 0.056 | UV |
| Az 3A Gain – 3 | 1.000 | N/A | 0.984 | N/A | N/A | 0.056 | UV |
| Az 3A Gain – 4 | 1.000 | N/A | 0.990 | N/A | N/A | 0.056 | UV |
| Az 3A Gain – 5 | 1.000 | N/A | 0.989 | N/A | N/A | 0.056 | UV |
| Az 3A Gain – 6 | 1.000 | N/A | 0.987 | N/A | N/A | 0.056 | UV |
| Az 3A Gain – 7 | 1.000 | N/A | 0.989 | N/A | N/A | 0.056 | UV |
| Az 3A Gain – 8 | 1.000 | N/A | 0.988 | N/A | N/A | 0.056 | UV |
| Az 3A Gain – 9 | 1.000 | N/A | 0.987 | N/A | N/A | 0.056 | UV |
| Az 3A Gain – 10 | 1.000 | N/A | 0.992 | N/A | N/A | 0.056 | UV |
| Az 3A Gain – 11 | 1.000 | N/A | 0.987 | N/A | N/A | 0.056 | UV |
| Az 3A Phase – 0 | 0.000 | N/A | 0.602 | N/A | N/A | 1.000 | DEG |
| Az 3A Phase – 1 | 0.000 | N/A | 0.598 | N/A | N/A | 1.000 | DEG |
| Az 3A Phase – 2 | 0.000 | N/A | 0.599 | N/A | N/A | 1.000 | DEG |
| Az 3A Phase – 3 | 0.000 | N/A | 0.585 | N/A | N/A | 1.000 | DEG |
| Az 3A Phase – 4 | 0.000 | N/A | 0.613 | N/A | N/A | 1.000 | DEG |
| Az 3A Phase – 5 | 0.000 | N/A | 0.599 | N/A | N/A | 1.000 | DEG |
| Az 3A Phase – 6 | 0.000 | N/A | 0.609 | N/A | N/A | 1.000 | DEG |
| Az 3A Phase – 7 | 0.000 | N/A | 0.610 | N/A | N/A | 1.000 | DEG |
| Az 3A Phase – 8 | 0.000 | N/A | 0.647 | N/A | N/A | 1.000 | DEG |
| Az 3A Phase – 9 | 0.000 | N/A | 0.595 | N/A | N/A | 1.000 | DEG |
| Az 3A Phase – 10 | 0.000 | N/A | 0.639 | N/A | N/A | 1.000 | DEG |
| Az 3A Phase – 11 | 0.000 | N/A | 0.565 | N/A | N/A | 1.000 | DEG |

HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB Azimuthal Voltages mode 3B

Before: 30–Jun–2004 16:22

| | | | | | | | |
|------------------|-------|-----|--------|-----|-----|-------|-----|
| Az 3B Gain – 0 | 1.000 | N/A | 1.007 | N/A | N/A | 0.054 | UV |
| Az 3B Gain – 1 | 1.000 | N/A | 1.002 | N/A | N/A | 0.054 | UV |
| Az 3B Gain – 2 | 1.000 | N/A | 1.006 | N/A | N/A | 0.054 | UV |
| Az 3B Gain – 3 | 1.000 | N/A | 0.999 | N/A | N/A | 0.054 | UV |
| Az 3B Gain – 4 | 1.000 | N/A | 1.006 | N/A | N/A | 0.054 | UV |
| Az 3B Gain – 5 | 1.000 | N/A | 1.006 | N/A | N/A | 0.054 | UV |
| Az 3B Gain – 6 | 1.000 | N/A | 1.005 | N/A | N/A | 0.054 | UV |
| Az 3B Gain – 7 | 1.000 | N/A | 1.006 | N/A | N/A | 0.054 | UV |
| Az 3B Gain – 8 | 1.000 | N/A | 1.006 | N/A | N/A | 0.054 | UV |
| Az 3B Gain – 9 | 1.000 | N/A | 1.003 | N/A | N/A | 0.054 | UV |
| Az 3B Gain – 10 | 1.000 | N/A | 1.010 | N/A | N/A | 0.054 | UV |
| Az 3B Gain – 11 | 1.000 | N/A | 0.997 | N/A | N/A | 0.054 | UV |
| Az 3B Phase – 0 | 0.000 | N/A | 0.232 | N/A | N/A | 1.000 | DEG |
| Az 3B Phase – 1 | 0.000 | N/A | 0.167 | N/A | N/A | 1.000 | DEG |
| Az 3B Phase – 2 | 0.000 | N/A | 0.106 | N/A | N/A | 1.000 | DEG |
| Az 3B Phase – 3 | 0.000 | N/A | 0.121 | N/A | N/A | 1.000 | DEG |
| Az 3B Phase – 4 | 0.000 | N/A | 0.061 | N/A | N/A | 1.000 | DEG |
| Az 3B Phase – 5 | 0.000 | N/A | 0.181 | N/A | N/A | 1.000 | DEG |
| Az 3B Phase – 6 | 0.000 | N/A | 0.111 | N/A | N/A | 1.000 | DEG |
| Az 3B Phase – 7 | 0.000 | N/A | 0.192 | N/A | N/A | 1.000 | DEG |
| Az 3B Phase – 8 | 0.000 | N/A | 0.136 | N/A | N/A | 1.000 | DEG |
| Az 3B Phase – 9 | 0.000 | N/A | 0.131 | N/A | N/A | 1.000 | DEG |
| Az 3B Phase – 10 | 0.000 | N/A | 0.190 | N/A | N/A | 1.000 | DEG |
| Az 3B Phase – 11 | 0.000 | N/A | -0.014 | N/A | N/A | 1.000 | DEG |

High resolution Integrated Logging Tool–DTS Wellsite Calibration – Stab Measurement Summary

Before: 30–Jun–2004 16:18

| | | | | | | | |
|-----------------|--------|-----|--------|-----|-----|-----|-----|
| BS Window Ratio | 1.011 | N/A | 1.012 | N/A | N/A | N/A | |
| BS Window Sum | 16100 | N/A | 16060 | N/A | N/A | N/A | CPS |
| SS Window Ratio | 0.4808 | N/A | 0.4806 | N/A | N/A | N/A | |
| SS Window Sum | 10970 | N/A | 10980 | N/A | N/A | N/A | CPS |
| LS Window Ratio | 0.2955 | N/A | 0.2944 | N/A | N/A | N/A | |
| LS Window Sum | 1160 | N/A | 1164 | N/A | N/A | N/A | CPS |

High resolution Integrated Logging Tool–DTS Wellsite Calibration – Photo–multiplier High Voltages Calibrations

Before: 30–Jun–2004 16:18

| | | | | | | | |
|------------------------------|------|-----|------|-----|-----|-----|---|
| BS PM High Voltage (Command) | 1495 | N/A | 1468 | N/A | N/A | N/A | V |
| SS PM High Voltage (Command) | 1944 | N/A | 1923 | N/A | N/A | N/A | V |
| LS PM High Voltage (Command) | 1839 | N/A | 1832 | N/A | N/A | N/A | V |

High resolution Integrated Logging Tool–DTS Wellsite Calibration – Crystal Quality Resolutions Calibration

Before: 30–Jun–2004 16:18

| | | | | | | | |
|-----------------------|-------|-----|-------|-----|-----|-----|---|
| BS Crystal Resolution | 12.17 | N/A | 12.12 | N/A | N/A | N/A | % |
| SS Crystal Resolution | 11.48 | N/A | 11.55 | N/A | N/A | N/A | % |
| LS Crystal Resolution | 9.283 | N/A | 9.483 | N/A | N/A | N/A | % |

High resolution Integrated Logging Tool–DTS Wellsite Calibration – MCFL Calibration

Before: 30–Jun–2004 16:19

| | | | | | | | |
|--------------------|------|-----|------|-----|-----|-----|------|
| Raw B0 Resistivity | 3875 | N/A | 3799 | N/A | N/A | N/A | OHMM |
| Raw B1 Resistivity | 3830 | N/A | 3768 | N/A | N/A | N/A | OHMM |
| Raw B2 Resistivity | 3830 | N/A | 3798 | N/A | N/A | N/A | OHMM |

High resolution Integrated Logging Tool–DTS Wellsite Calibration – HILT Caliper Calibration

Before: 30–Jun–2004 16:15

| | | | | | | | |
|-------------------------------|-------|-----|-------|-----|-----|-----|----|
| HILT Caliper Zero Measurement | 8.000 | N/A | 8.215 | N/A | N/A | N/A | IN |
| HILT Caliper Plus Measurement | 12.00 | N/A | 12.39 | N/A | N/A | N/A | IN |

High resolution Integrated Logging Tool–DTS Wellsite Calibration – Detector Calibration

Before: 30–Jun–2004 16:14

| | | | | | | | |
|------------------------|-------|-----|-------|-----|-----|-------|------|
| Gamma Ray Background | 30.00 | N/A | 26.47 | N/A | N/A | N/A | GAPI |
| Gamma Ray (Jig – Bkg) | 174.8 | N/A | 174.8 | N/A | N/A | 15.89 | GAPI |
| Gamma Ray (Calibrated) | 160.0 | N/A | 160.0 | N/A | N/A | 15.00 | GAPI |

High resolution Integrated Logging Tool–DTS Wellsite Calibration – Zero Measurement

Master: 15–Jun–2004 17:21 Before: 30–Jun–2004 16:15

| | | | | | | | |
|-----------------|-------|-------|-------|-----|-----|-------|-----|
| CNTC Background | 32.30 | 32.30 | 30.57 | N/A | N/A | 4.845 | CPS |
| CFTC Background | 29.13 | 29.13 | 29.39 | N/A | N/A | 4.370 | CPS |

High resolution Integrated Logging Tool–DTS Wellsite Calibration – Accelerometer Calibration

Before: 30–Jun–2004 16:17

| | | | | | | | |
|---------------------|-------|-----|-------|-----|-----|-----|------|
| Z–Axis Acceleration | 9.810 | N/A | 9.802 | N/A | N/A | N/A | M/S2 |
|---------------------|-------|-----|-------|-----|-----|-----|------|

High resolution Integrated Logging Tool–DTS Master Calibration – Inversion results

Master: 15–Jun–2004 11:26

| | | | | | | | |
|---------------|-------|-------|----|----|----|----|------|
| Rho Aluminum | 2.596 | 2.599 | -- | -- | -- | -- | G/C3 |
| Rho Magnesium | 1.686 | 1.688 | -- | -- | -- | -- | G/C3 |
| Pe Aluminum | 2.570 | 2.561 | -- | -- | -- | -- | |
| Pe Magnesium | 2.650 | 2.615 | -- | -- | -- | -- | |

High resolution Integrated Logging Tool-DTS Master Calibration - Deviation Summary

Master: 15-Jun-2004 11:26

| | | | | | | | |
|----------------------|---|--------|----|----|----|----|---|
| BS Average Deviation | 0 | 0.4141 | -- | -- | -- | -- | % |
| BS Max Deviation | 0 | 0.9721 | -- | -- | -- | -- | % |
| SS Average Deviation | 0 | 0.2442 | -- | -- | -- | -- | % |
| SS Max Deviation | 0 | 1.285 | -- | -- | -- | -- | % |
| LS Average Deviation | 0 | 0.4543 | -- | -- | -- | -- | % |
| LS Max Deviation | 0 | 0.9733 | -- | -- | -- | -- | % |

High resolution Integrated Logging Tool-DTS Master Calibration - Tank Measurement

Master: 15-Jun-2004 17:21

| | | | | | | | |
|---------------------------|-------|-------|----|----|----|----|-----|
| Thermal Near Corr. (Tank) | 6031 | 5825 | -- | -- | -- | -- | CPS |
| Thermal Far Corr. (Tank) | 2793 | 2452 | -- | -- | -- | -- | CPS |
| CNTC/CFTC (Tank) | 2.159 | 2.376 | -- | -- | -- | -- | |

High resolution Integrated Logging Tool-DTS Master Calibration - Tank Measurement

Master: 15-Jun-2004 17:21

| | | | | | | | |
|---------------------------|-------|-------|----|----|----|----|-----|
| Thermal Near Corr. (Tank) | 6031 | 5825 | -- | -- | -- | -- | CPS |
| Thermal Far Corr. (Tank) | 2793 | 2452 | -- | -- | -- | -- | CPS |
| CNTC/CFTC (Tank) | 2.159 | 2.376 | -- | -- | -- | -- | |

Hostile Natural Gamma Ray Sonde Wellsite Calibration - Detector 1 Check

Master: 17-Jun-2004 21:58 Before: 30-Jun-2004 16:27

| | | | | | | | |
|------------------|-------|-------|-------|-----|-----|-------|------|
| Na 511 Peak Loc | 40.00 | 40.64 | 39.64 | N/A | N/A | 1.000 | |
| Na 511 Peak Res | 15.50 | 16.25 | 15.10 | N/A | N/A | 2.000 | % |
| High Voltage | 1150 | 1159 | 1163 | N/A | N/A | N/A | V |
| Na 1785 Peak Loc | 142.6 | 145.9 | 143.2 | N/A | N/A | 7.000 | |
| Na 1785 Peak Res | 8.500 | 8.737 | 8.315 | N/A | N/A | 2.000 | % |
| Temperature | 15.50 | 13.72 | 16.29 | N/A | N/A | N/A | DEGC |
| Na Count Rate | 45.00 | 42.07 | 43.16 | N/A | N/A | 8.000 | CPS |

Hostile Natural Gamma Ray Sonde Wellsite Calibration - Detector 2 Check

Master: 17-Jun-2004 21:58 Before: 30-Jun-2004 16:27

| | | | | | | | |
|------------------|-------|-------|-------|-----|-----|-------|------|
| Na 511 Peak Loc | 40.00 | 39.68 | 39.72 | N/A | N/A | 1.000 | |
| Na 511 Peak Res | 15.50 | 14.94 | 14.70 | N/A | N/A | 2.000 | % |
| High Voltage | 1150 | 1080 | 1085 | N/A | N/A | N/A | V |
| Na 1785 Peak Loc | 142.6 | 143.0 | 141.9 | N/A | N/A | 7.000 | |
| Na 1785 Peak Res | 8.500 | 8.683 | 8.147 | N/A | N/A | 2.000 | % |
| Temperature | 15.50 | 14.40 | 15.55 | N/A | N/A | N/A | DEGC |
| Na Count Rate | 45.00 | 41.97 | 42.72 | N/A | N/A | 8.000 | CPS |

Hostile Natural Gamma Ray Sonde Wellsite Calibration - Ratio Of Detector 1 To Detector 2

Master: 17-Jun-2004 21:58 Before: 30-Jun-2004 16:27

| | | | | | | | |
|------------------------------|-------|-------|-------|-----|-----|---------|--|
| Coincidence Count Rate Ratio | 1.000 | 1.006 | 1.012 | N/A | N/A | 0.05000 | |
|------------------------------|-------|-------|-------|-----|-----|---------|--|

Hostile Natural Gamma Ray Sonde Master Calibration - Detector 1 Calibration

Master: 17-Jun-2004 21:53

| | | | | | | | |
|-----------------------|-------|--------|----|----|----|----|-----|
| Na 511 Peak Set Point | 40.00 | 42.00 | -- | -- | -- | -- | |
| Th Peak Loc | 209.6 | 211.5 | -- | -- | -- | -- | |
| Th Peak Res | 7.000 | 7.826 | -- | -- | -- | -- | % |
| Background Count Rate | 142.5 | 140.0 | -- | -- | -- | -- | CPS |
| Gain Ratio | 1.000 | 0.9901 | -- | -- | -- | -- | |

Hostile Natural Gamma Ray Sonde Master Calibration - Detector 2 Calibration

Master: 17-Jun-2004 21:53

| | | | | | | | |
|-----------------------|-------|--------|----|----|----|----|-----|
| Na 511 Peak Set Point | 40.00 | 41.00 | -- | -- | -- | -- | |
| Th Peak Loc | 209.6 | 207.7 | -- | -- | -- | -- | |
| Th Peak Res | 7.000 | 7.127 | -- | -- | -- | -- | % |
| Background Count Rate | 142.5 | 133.6 | -- | -- | -- | -- | CPS |
| Gain Ratio | 1.000 | 0.9954 | -- | -- | -- | -- | |

The GLS-VJ source activity is acceptable.

The HGNS Neutron Master Calibration was done with the following parameters :

NCT-B Water Temperature 11.1 DEGC.
Thermal Housing Size 3.369 IN.

HILT Azimuthal Laterolog Sonde B / Equipment Identification

Primary Equipment:

Auxiliary Equipment:

Laterolog Control Module

LCM - AA

2747

| HILT Azimuthal Laterolog Sonde B Wellsite Calibration | | | | | |
|---|--------------------|--------------------|---------------------|--------------------|--------------------|
| HALSB Total current mode 1 | | | | | |
| Itot 1 Gain MA | | Value | Itot 1 Phase DEG | | Value |
| | | 0.998 | | | -0.000 |
| 0.926 (Minimum) | 1.000 (Nominal) | 1.081 (Maximum) | -0.100 (Minimum) | 0.000 (Nominal) | 0.100 (Maximum) |

Before: 30-Jun-2004 16:22

| HILT Azimuthal Laterolog Sonde B Wellsite Calibration | | | | | |
|---|--------------------|--------------------|---------------------|--------------------|--------------------|
| HALSB Aux current mode 1 | | | | | |
| Iaux 1 Gain MA | | Value | Iaux 1 Phase DEG | | Value |
| | | 0.994 | | | -0.123 |
| 0.854 (Minimum) | 1.000 (Nominal) | 1.180 (Maximum) | -4.600 (Minimum) | 0.000 (Nominal) | 4.600 (Maximum) |

Before: 30-Jun-2004 16:22

| HILT Azimuthal Laterolog Sonde B Wellsite Calibration | | | | | |
|---|--------------------|--------------------|---------------------|--------------------|--------------------|
| HALSB Aux current mode 2 | | | | | |
| Iaux 2 Gain MA | | Value | Iaux 2 Phase DEG | | Value |
| | | 0.974 | | | 0.000 |
| 0.816 (Minimum) | 1.000 (Nominal) | 1.232 (Maximum) | -1.000 (Minimum) | 0.000 (Nominal) | 0.100 (Maximum) |

Before: 30-Jun-2004 16:22

| HILT Azimuthal Laterolog Sonde B Wellsite Calibration | | | | | |
|---|--------------------|--------------------|---------------------|--------------------|--------------------|
| HALSB A0 current mode 3A | | | | | |
| I0 3A Gain UA | | Value | I0 3A Phase DEG | | Value |
| | | 0.983 | | | -0.000 |
| 0.893 (Minimum) | 1.000 (Nominal) | 1.114 (Maximum) | -1.000 (Minimum) | 0.000 (Nominal) | 0.100 (Maximum) |

Before: 30-Jun-2004 16:22

| HILT Azimuthal Laterolog Sonde B Wellsite Calibration | | | | | |
|---|--------------------|--------------------|---------------------|--------------------|--------------------|
| HALSB A0 current mode 3B | | | | | |
| I0 3B Gain UA | | Value | I0 3B Phase DEG | | Value |
| | | 0.980 | | | -0.000 |
| 0.893 (Minimum) | 1.000 (Nominal) | 1.114 (Maximum) | -1.000 (Minimum) | 0.000 (Nominal) | 0.100 (Maximum) |

Before: 30-Jun-2004 16:22

| HILT Azimuthal Laterolog Sonde B Wellsite Calibration | | | | | |
|---|--------------------|--------------------|--------------------|--------------------|--------------------|
| HALSB Torpedo Voltage gains | | | | | |
| Zvt 1 Gain MV | | Value | Zvt 2 Gain MV | | Value |
| | | 0.994 | | | 0.997 |
| 0.925 (Minimum) | 1.000 (Nominal) | 1.078 (Maximum) | 0.865 (Minimum) | 1.000 (Nominal) | 1.153 (Maximum) |

Before: 30-Jun-2004 16:22

| Zvt 3 Gain MV | | Value |
|--------------------|--------------------|-------|
| | 1.004 | |
| 0.865 (Minimum) | 1.153 (Maximum) | |

| HILT Azimuthal Laterolog Sonde B Wellsite Calibration | | | | | |
|---|--------------------|--------------------|---------------------|--------------------|--------------------|
| HALSB Torpedo Voltage Phases | | | | | |
| Zvt 1 Phase DEG | | Value | Zvt 2 Phase DEG | | Value |
| | | -0.102 | | | 0.006 |
| -4.400 (Minimum) | 0.000 (Nominal) | 4.400 (Maximum) | -2.800 (Minimum) | 0.000 (Nominal) | 2.800 (Maximum) |

Before: 30-Jun-2004 16:22

| Zvt 3 Phase DEG | | Value |
|---------------------|--------------------|-------|
| | -0.172 | |
| -1.400 (Minimum) | 1.400 (Maximum) | |

| HILT Azimuthal Laterolog Sonde B Wellsite Calibration | | | | | |
|---|--------------------|--------------------|---------------------|--------------------|--------------------|
| HALSB Upper Bridle Voltage mode 1 | | | | | |
| Zvb 1 Gain MV | | Value | Zvb 1 Phase DEG | | Value |
| | | 0.994 | | | -0.132 |
| 0.925 (Minimum) | 1.000 (Nominal) | 1.078 (Maximum) | -4.400 (Minimum) | 0.000 (Nominal) | 4.400 (Maximum) |

Before: 30-Jun-2004 16:22

| HILT Azimuthal Laterolog Sonde B Wellsite Calibration | | | | | |
|---|--------------------|--------------------|--------------------|--------------------|--------------------|
| HALSB M1-M2 Voltage gains | | | | | |
| ZVM 1 Gain UV | | Value | ZVM 2 Gain UV | | Value |
| | | 0.996 | | | 0.993 |
| 0.895 (Minimum) | 1.000 (Nominal) | 1.117 (Maximum) | 0.943 (Minimum) | 1.000 (Nominal) | 1.056 (Maximum) |

Before: 30-Jun-2004 16:22

| ZVM 3 Gain UV | | Value |
|--------------------|--------------------|-------|
| | 0.991 | |
| 0.943 (Minimum) | 1.056 (Maximum) | |

| HILT Azimuthal Laterolog Sonde B Wellsite Calibration | | | | | |
|---|--------------------|--------------------|---------------------|--------------------|--------------------|
| HALSB M1-M2 Voltage Phases | | | | | |
| ZVM 1 Phase DEG | | Value | ZVM 2 Phase DEG | | Value |
| | | 0.224 | | | 1.871 |
| -6.500 (Minimum) | 0.000 (Nominal) | 6.500 (Maximum) | -3.300 (Minimum) | 0.000 (Nominal) | 3.300 (Maximum) |

Before: 30-Jun-2004 16:22

| ZVM 3 Phase DEG | | Value |
|---------------------|--------------------|-------|
| | 1.002 | |
| -2.000 (Minimum) | 2.000 (Maximum) | |

| HILT Azimuthal Laterolog Sonde B Wellsite Calibration | | | | | |
|---|--------------------|--------------------|--------------------|--------------------|--------------------|
| HALSB M1-A0* Voltage gains | | | | | |
| ZVH 1 Gain UV | | Value | ZVH 2 Gain UV | | Value |
| | | 0.997 | | | 0.990 |
| 0.962 (Minimum) | 1.000 (Nominal) | 1.039 (Maximum) | 0.864 (Minimum) | 1.000 (Nominal) | 1.154 (Maximum) |

Before: 30-Jun-2004 16:22

| ZVH 3 Gain UV | | Value |
|--------------------|--------------------|-------|
| | 0.990 | |
| 0.864 (Minimum) | 1.154 (Maximum) | |

| HILT Azimuthal Laterolog Sonde B Wellsite Calibration | | | | | |
|---|--------------------|--------------------|---------------------|--------------------|--------------------|
| HALSB M1-A0* Voltage Phases | | | | | |
| ZVH 1 Phase DEG | Value | ZVH 2 Phase DEG | Value | ZVH 3 Phase DEG | Value |
| | 0.109 | | 1.992 | | 0.993 |
| -6.500 (Minimum) | 0.000 (Nominal) | 6.500 (Maximum) | -3.300 (Minimum) | 0.000 (Nominal) | 3.300 (Maximum) |
| -2.000 (Minimum) | 0.000 (Nominal) | 2.000 (Maximum) | | | |

| HILT Azimuthal Laterolog Sonde B Wellsite Calibration | | | | | |
|---|--------------------|--------------------|--------------------|--------------------|--------------------|
| HALSB Aux Voltage gains | | | | | |
| ZVA 1 Gain MV | Value | ZVA 2 Gain MV | Value | ZVA 3 Gain MV | Value |
| | 1.070 | | 1.063 | | 1.013 |
| 0.905 (Minimum) | 1.000 (Nominal) | 1.103 (Maximum) | 0.866 (Minimum) | 1.000 (Nominal) | 1.151 (Maximum) |
| 0.866 (Minimum) | 1.000 (Nominal) | 1.151 (Maximum) | | | |

| HILT Azimuthal Laterolog Sonde B Wellsite Calibration | | | | | |
|---|--------------------|--------------------|---------------------|--------------------|--------------------|
| HALSB Aux Voltage Phases | | | | | |
| ZVA 1 Phase DEG | Value | ZVA 2 Phase DEG | Value | ZVA 3 Phase DEG | Value |
| | 1.005 | | 0.153 | | 0.162 |
| -4.100 (Minimum) | 0.000 (Nominal) | 4.100 (Maximum) | -2.300 (Minimum) | 0.000 (Nominal) | 2.300 (Maximum) |
| -1.000 (Minimum) | 0.000 (Nominal) | 1.000 (Maximum) | | | |

| HILT Azimuthal Laterolog Sonde B Wellsite Calibration | | | |
|---|--------------------|--------------------|---------------------|
| HALSB A0*-A0** Diff. Voltage mode 1 | | | |
| ZVD 1 Gain UV | Value | ZVD 1 Phase DEG | Value |
| | 0.997 | | 0.096 |
| 0.874 (Minimum) | 1.000 (Nominal) | 1.147 (Maximum) | -6.300 (Minimum) |
| | | 0.000 (Nominal) | 6.300 (Maximum) |

| HILT Azimuthal Laterolog Sonde B Wellsite Calibration | | | |
|---|--------------------|--------------------|---------------------|
| HALSB A0*-A0** Diff. Voltage mode 2 | | | |
| ZVD 2 Gain UV | Value | ZVD 2 Phase DEG | Value |
| | 0.982 | | 1.287 |
| 0.842 (Minimum) | 1.000 (Nominal) | 1.187 (Maximum) | -3.300 (Minimum) |
| | | 0.000 (Nominal) | 3.300 (Maximum) |

| HILT Azimuthal Laterolog Sonde B Wellsite Calibration | | | |
|---|--------------------|--------------------|---------------------|
| HALSB A0*-A0** Diff. Voltage mode 3A | | | |
| ZVD 3A Gain UV | Value | ZVD 3A Phase DEG | Value |
| | 0.988 | | 0.566 |
| 0.842 (Minimum) | 1.000 (Nominal) | 1.187 (Maximum) | -2.000 (Minimum) |
| | | 0.000 (Nominal) | 2.000 (Maximum) |

| HILT Azimuthal Laterolog Sonde B Wellsite Calibration | | | |
|---|--------------------|--------------------|---------------------|
| HALSB A0*-A0** Diff. Voltage mode 3B | | | |
| ZVD 3B Gain UV | Value | ZVD 3B Phase DEG | Value |
| | 1.000 | | -0.039 |
| 0.845 (Minimum) | 1.000 (Nominal) | 1.183 (Maximum) | -2.000 (Minimum) |
| | | 0.000 (Nominal) | 2.000 (Maximum) |

| HILT Azimuthal Laterolog Sonde B Wellsite Calibration | | | |
|---|--------------------|--------------------|---------------------|
| HALSB vertical Voltage mode 1 | | | |
| ZVV 1 Gain UV | Value | ZVV 1 Phase DEG | Value |
| | 0.997 | | 0.163 |
| 0.936 (Minimum) | 1.000 (Nominal) | 1.065 (Maximum) | -4.600 (Minimum) |
| | | 0.000 (Nominal) | 4.600 (Maximum) |

| HILT Azimuthal Laterolog Sonde B Wellsite Calibration | | | |
|---|--------------------|--------------------|---------------------|
| HALSB vertical Voltage mode 2 | | | |
| ZVV 2 Gain UV | Value | ZVV 2 Phase DEG | Value |
| | 0.985 | | 2.626 |
| 0.895 (Minimum) | 1.000 (Nominal) | 1.112 (Maximum) | -2.800 (Minimum) |
| | | 0.000 (Nominal) | 2.800 (Maximum) |

| HILT Azimuthal Laterolog Sonde B Wellsite Calibration | | | | | |
|---|--------------|-------|-----|----------------|--------|
| HALSB Azimuthal Voltages mode 1 | | | | | |
| Idx | Az 1 Gain UV | Value | Idx | Az 1 Phase DEG | Value |
| 0 | | 0.999 | 0 | | -0.001 |
| 1 | | 0.998 | 1 | | 0.135 |
| 2 | | 0.999 | 2 | | 0.098 |
| 3 | | 0.994 | 3 | | 0.102 |
| 4 | | 0.999 | 4 | | 0.211 |
| 5 | | 0.999 | 5 | | 0.094 |
| 6 | | 0.997 | 6 | | 0.065 |
| 7 | | 0.998 | 7 | | 0.015 |
| 8 | | 0.997 | 8 | | 0.129 |
| 9 | | 0.997 | 9 | | 0.021 |

| HILT Azimuthal Laterolog Sonde B Wellsite Calibration | | | | | |
|---|--------------|-------|-----|----------------|-------|
| HALSB Azimuthal Voltages mode 2 | | | | | |
| Idx | Az 2 Gain UV | Value | Idx | Az 2 Phase DEG | Value |
| 0 | | 0.984 | 0 | | 1.350 |
| 1 | | 0.983 | 1 | | 1.308 |
| 2 | | 0.984 | 2 | | 1.317 |
| 3 | | 0.979 | 3 | | 1.304 |
| 4 | | 0.985 | 4 | | 1.333 |
| 5 | | 0.984 | 5 | | 1.344 |
| 6 | | 0.982 | 6 | | 1.368 |
| 7 | | 0.983 | 7 | | 1.363 |
| 8 | | 0.983 | 8 | | 1.382 |
| 9 | | 0.982 | 9 | | 1.336 |

| | | | | | |
|---------------------------|--|-----------------|-----------------|--|-------|
| 10 | | 1.001 | 10 | | 0.126 |
| 11 | | 0.996 | 11 | | 0.106 |
| 0.874 (Minimum) | | 1.000 (Nominal) | 1.147 (Maximum) | | |
| -6.300 (Minimum) | | 0.000 (Nominal) | 6.300 (Maximum) | | |
| Before: 30-Jun-2004 16:22 | | | | | |

| | | | | | |
|---------------------------|--|-----------------|-----------------|--|-------|
| 10 | | 0.987 | 10 | | 1.398 |
| 11 | | 0.981 | 11 | | 1.280 |
| 0.842 (Minimum) | | 1.000 (Nominal) | 1.187 (Maximum) | | |
| -3.300 (Minimum) | | 0.000 (Nominal) | 3.300 (Maximum) | | |
| Before: 30-Jun-2004 16:22 | | | | | |

| HILT Azimuthal Laterolog Sonde B Wellsite Calibration | | | | | |
|---|---------------|-----------------|-----------------|-----------------|-------|
| HALSB Azimuthal Voltages mode 3A | | | | | |
| Idx | Az 3A Gain UV | Value | Idx | Az 3A Phase DEG | Value |
| 0 | | 0.989 | 0 | | 0.602 |
| 1 | | 0.988 | 1 | | 0.598 |
| 2 | | 0.990 | 2 | | 0.599 |
| 3 | | 0.984 | 3 | | 0.585 |
| 4 | | 0.990 | 4 | | 0.613 |
| 5 | | 0.989 | 5 | | 0.599 |
| 6 | | 0.987 | 6 | | 0.609 |
| 7 | | 0.989 | 7 | | 0.610 |
| 8 | | 0.988 | 8 | | 0.647 |
| 9 | | 0.987 | 9 | | 0.595 |
| 10 | | 0.992 | 10 | | 0.639 |
| 11 | | 0.987 | 11 | | 0.565 |
| 0.842 (Minimum) | | 1.000 (Nominal) | 1.187 (Maximum) | | |
| -2.000 (Minimum) | | 0.000 (Nominal) | 2.000 (Maximum) | | |
| Before: 30-Jun-2004 16:22 | | | | | |

| HILT Azimuthal Laterolog Sonde B Wellsite Calibration | | | | | |
|---|---------------|-----------------|-----------------|-----------------|--------|
| HALSB Azimuthal Voltages mode 3B | | | | | |
| Idx | Az 3B Gain UV | Value | Idx | Az 3B Phase DEG | Value |
| 0 | | 1.007 | 0 | | 0.232 |
| 1 | | 1.002 | 1 | | 0.167 |
| 2 | | 1.006 | 2 | | 0.106 |
| 3 | | 0.999 | 3 | | 0.121 |
| 4 | | 1.006 | 4 | | 0.061 |
| 5 | | 1.006 | 5 | | 0.181 |
| 6 | | 1.005 | 6 | | 0.111 |
| 7 | | 1.006 | 7 | | 0.192 |
| 8 | | 1.006 | 8 | | 0.136 |
| 9 | | 1.003 | 9 | | 0.131 |
| 10 | | 1.010 | 10 | | 0.190 |
| 11 | | 0.997 | 11 | | -0.014 |
| 0.845 (Minimum) | | 1.000 (Nominal) | 1.183 (Maximum) | | |
| -2.000 (Minimum) | | 0.000 (Nominal) | 2.000 (Maximum) | | |
| Before: 30-Jun-2004 16:22 | | | | | |

High resolution Integrated Logging Tool-DTS / Equipment Identification

Primary Equipment:

- HILT high-Resolution Mechanical Sonde
- HILT Rxo Gamma-ray Device
- HILT Nuclear Back-Scatter Detector
- HILT Nuclear Short-Spacing Detector
- HILT Nuclear Long-Spacing Detector
- Micro Cylindrically Focused Log Device
- GR Logging Source
- HILT High Res. Control Cartridge

- HRMS - B 1765
- HRGD - B 1760
- HILT -
- HILT -
- HILT -
- MCFL -
- GLS - VJ 3739
- HRCC - B 1769

Auxiliary Equipment:

| High resolution Integrated Logging Tool-DTS Wellsite Calibration | | | | | | | | | | | | |
|--|-------------------|--|------------------|------------------|-------------------|--|--------|------------------|-------------------|--|------------------|------------------|
| Stab Measurement Summary | | | | | | | | | | | | |
| Phase | BS Window Ratio | | Value | Phase | SS Window Ratio | | Value | Phase | LS Window Ratio | | Value | |
| Before | | | 1.012 | Before | | | 0.4806 | Before | | | 0.2944 | |
| 0.9600 (Minimum) | | | 1.011 (Nominal) | 1.061 (Maximum) | | | | 0.4567 (Minimum) | | | 0.4808 (Nominal) | 0.5048 (Maximum) |
| 0.2808 (Minimum) | | | 0.2955 (Nominal) | 0.3103 (Maximum) | | | | | | | | |
| Phase | BS Window Sum CPS | | Value | Phase | SS Window Sum CPS | | Value | Phase | LS Window Sum CPS | | Value | |
| Before | | | 16060 | Before | | | 10980 | Before | | | 1164 | |
| 15290 (Minimum) | | | 16100 (Nominal) | 16900 (Maximum) | | | | 10420 (Minimum) | | | 10970 (Nominal) | 11520 (Maximum) |
| 1102 (Minimum) | | | 1160 (Nominal) | 1218 (Maximum) | | | | | | | | |
| Before: 30-Jun-2004 16:18 | | | | | | | | | | | | |

| High resolution Integrated Logging Tool-DTS Wellsite Calibration | | | | | | | | | | | | |
|--|--------------------------------|--|----------------|----------------|--------------------------------|--|-------|----------------|--------------------------------|--|----------------|----------------|
| Photo-multiplier High Voltages Calibrations | | | | | | | | | | | | |
| Phase | BS PM High Voltage (Command) V | | Value | Phase | SS PM High Voltage (Command) V | | Value | Phase | LS PM High Voltage (Command) V | | Value | |
| Before | | | 1468 | Before | | | 1923 | Before | | | 1832 | |
| 1395 (Minimum) | | | 1495 (Nominal) | 1595 (Maximum) | | | | 1739 (Minimum) | | | 1839 (Nominal) | 1939 (Maximum) |
| | | | | | | | | | | | | |
| Before: 30-Jun-2004 16:18 | | | | | | | | | | | | |

High resolution Integrated Logging Tool-DTS Wellsite Calibration

Crystal Quality Resolutions Calibration

| Phase | BS Crystal Resolution % | Value | Phase | SS Crystal Resolution % | Value | Phase | LS Crystal Resolution % | Value |
|--------|---|-------|--------|---|-------|--------|---|-------|
| Before | | 12.12 | Before | | 11.55 | Before | | 9.483 |
| | 11.17 (Minimum) 12.17 (Nominal) 13.17 (Maximum) | | | 10.48 (Minimum) 11.48 (Nominal) 12.48 (Maximum) | | | 8.283 (Minimum) 9.283 (Nominal) 10.28 (Maximum) | |

Before: 30-Jun-2004 16:18

High resolution Integrated Logging Tool-DTS Wellsite Calibration

MCFL Calibration

| Phase | Raw B0 Resistivity OHMM | Value | Phase | Raw B1 Resistivity OHMM | Value | Phase | Raw B2 Resistivity OHMM | Value |
|--------|--|-------|--------|--|-------|--------|--|-------|
| Before | | 3799 | Before | | 3768 | Before | | 3798 |
| | 3565 (Minimum) 3875 (Nominal) 4185 (Maximum) | | | 3524 (Minimum) 3830 (Nominal) 4136 (Maximum) | | | 3524 (Minimum) 3830 (Nominal) 4136 (Maximum) | |

Before: 30-Jun-2004 16:19

High resolution Integrated Logging Tool-DTS Wellsite Calibration

HILT Caliper Calibration

| Phase | HILT Caliper Zero Measurement IN | Value | Phase | HILT Caliper Plus Measurement IN | Value |
|--------|---|-------|--------|---|-------|
| Before | | 8.215 | Before | | 12.39 |
| | 6.000 (Minimum) 8.000 (Nominal) 10.00 (Maximum) | | | 9.000 (Minimum) 12.00 (Nominal) 15.00 (Maximum) | |

Before: 30-Jun-2004 16:15

High resolution Integrated Logging Tool-DTS Wellsite Calibration

Detector Calibration

| Phase | Gamma Ray Background GAPI | Value | Phase | Gamma Ray (Jig - Bkg) GAPI | Value | Phase | Gamma Ray (Calibrated) GAPI | Value |
|--------|---|-------|--------|---|-------|--------|---|-------|
| Before | | 26.47 | Before | | 174.8 | Before | | 160.0 |
| | 0 (Minimum) 30.00 (Nominal) 120.0 (Maximum) | | | 158.9 (Minimum) 174.8 (Nominal) 190.7 (Maximum) | | | 145.0 (Minimum) 160.0 (Nominal) 175.0 (Maximum) | |

Before: 30-Jun-2004 16:14

High resolution Integrated Logging Tool-DTS Wellsite Calibration

Zero Measurement

| Phase | CNTC Background CPS | Value | Phase | CFTC Background CPS | Value |
|--------|---|-------|--------|---|-------|
| Master | | 32.30 | Master | | 29.13 |
| Before | | 30.57 | Before | | 29.39 |
| | 5.000 (Minimum) 32.30 (Nominal) 40.00 (Maximum) | | | 5.000 (Minimum) 29.13 (Nominal) 40.00 (Maximum) | |

Master: 15-Jun-2004 17:21

Before: 30-Jun-2004 16:15

High resolution Integrated Logging Tool-DTS

Wellsite Calibration

Accelerometer Calibration

| Phase | Z-Axis Acceleration M/S2 | Value |
|--------|---|-------|
| Before | | 9.802 |
| | 9.610 (Minimum) 9.810 (Nominal) 10.01 (Maximum) | |

Before: 30-Jun-2004 16:17

High resolution Integrated Logging Tool-DTS Master Calibration

Inversion results

| Phase | Rho Aluminum G/C3 | Value | Phase | Rho Magnesium G/C3 | Value |
|--------|---|-------|--------|---|-------|
| Master | | 2.599 | Master | | 1.688 |
| | 2.586 (Minimum) 2.596 (Nominal) 2.606 (Maximum) | | | 1.676 (Minimum) 1.686 (Nominal) 1.696 (Maximum) | |
| Phase | Pe Aluminum | Value | Phase | Pe Magnesium | Value |
| Master | | 2.561 | Master | | 2.615 |
| | 2.470 (Minimum) 2.570 (Nominal) 2.670 (Maximum) | | | 2.550 (Minimum) 2.650 (Nominal) 2.750 (Maximum) | |

Master: 15-Jun-2004 11:26

High resolution Integrated Logging Tool-DTS Master Calibration

Deviation Summary

| Phase | BS Average Deviation % | Value | Phase | SS Average Deviation % | Value | Phase | LS Average Deviation % | Value |
|-------|------------------------|-------|-------|------------------------|-------|-------|------------------------|-------|
| | | | | | | | | |

| | | | | | | | | | | | |
|--------|----------------------|----------------|---------------------|---------------------|--------------------|--------------------|---------------------|----------------|--------------------|--|--------|
| Master | 0.4141 | | Master | 0.2442 | | Master | 0.4543 | | | | |
| | -0.6000 (Minimum) | 0 (Nominal) | 0.6000 (Maximum) | -1.000 (Minimum) | 0 (Nominal) | 1.000 (Maximum) | -1.500 (Minimum) | 0 (Nominal) | 1.500 (Maximum) | | |
| Phase | BS Max Deviation % | | Value | Phase | SS Max Deviation % | | Value | Phase | LS Max Deviation % | | Value |
| Master | | | 0.9721 | Master | | | 1.285 | Master | | | 0.9733 |
| | -1.600 (Minimum) | 0 (Nominal) | 1.600 (Maximum) | -2.500 (Minimum) | 0 (Nominal) | 2.500 (Maximum) | -3.500 (Minimum) | 0 (Nominal) | 3.500 (Maximum) | | |

Master: 15-Jun-2004 11:26

| High resolution Integrated Logging Tool-DTS Master Calibration | | | | | | | | | | | | | |
|--|-------------------------------|-------------------|-------------------|-------|-------------------|------------------------------|-------------------|--|--------------------|--------------------|--------------------|--|-------|
| Tank Measurement | | | | | | | | | | | | | |
| Phase | Thermal Near Corr. (Tank) CPS | | | Value | Phase | Thermal Far Corr. (Tank) CPS | | | Value | Phase | CNTC/CFTC (Tank) | | Value |
| Master | | | | 5825 | Master | | | | 2452 | Master | | | 2.376 |
| | 5000 (Minimum) | 6031 (Nominal) | 7200 (Maximum) | | 2075 (Minimum) | 2793 (Nominal) | 3125 (Maximum) | | 2.120 (Minimum) | 2.159 (Nominal) | 2.540 (Maximum) | | |

Master: 15-Jun-2004 17:21

| High resolution Integrated Logging Tool-DTS Master Calibration | | | | | | | | | | | | | |
|--|-------------------------------|-------------------|-------------------|-------|-------------------|------------------------------|-------------------|--|--------------------|--------------------|--------------------|--|-------|
| Tank Measurement | | | | | | | | | | | | | |
| Phase | Thermal Near Corr. (Tank) CPS | | | Value | Phase | Thermal Far Corr. (Tank) CPS | | | Value | Phase | CNTC/CFTC (Tank) | | Value |
| Master | | | | 5825 | Master | | | | 2452 | Master | | | 2.376 |
| | 5000 (Minimum) | 6031 (Nominal) | 7200 (Maximum) | | 2075 (Minimum) | 2793 (Nominal) | 3125 (Maximum) | | 2.120 (Minimum) | 2.159 (Nominal) | 2.540 (Maximum) | | |

Master: 15-Jun-2004 17:21

| Hostile Natural Gamma Ray Cartridge - A / Equipment Identification | | | |
|--|----------------|----------|----|
| Primary Equipment: | HNGC Cartridge | HNGC - A | 10 |
| Auxiliary Equipment: | HNGC Housing | HNGH - A | |

| Hostile Natural Gamma Ray Sonde / Equipment Identification | | | |
|--|--------------------------|-----------|-----|
| Primary Equipment: | HNGS Sonde | HNGS - BA | 129 |
| Auxiliary Equipment: | HNGS Sonde Housing | HNSH - BA | 3 |
| | Gamma Source Radioactive | GSR - U | |

| Hostile Natural Gamma Ray Sonde Wellsite Calibration | | | | | | | | | | | | | |
|--|--------------------|--------------------|--------------------|-------|--------------------|--------------------|--------------------|--|---------------------|--------------------|--------------------|--|-------|
| Detector 1 Check | | | | | | | | | | | | | |
| Phase | Na 511 Peak Loc | | | Value | Phase | Na 511 Peak Res % | | | Value | Phase | High Voltage V | | Value |
| Master | | | | 40.64 | Master | | | | 16.25 | Master | | | 1159 |
| Before | | | | 39.64 | Before | | | | 15.10 | Before | | | 1163 |
| | 37.50 (Minimum) | 40.00 (Nominal) | 42.50 (Maximum) | | 12.00 (Minimum) | 15.50 (Nominal) | 19.00 (Maximum) | | 900.0 (Minimum) | 1150 (Nominal) | 1600 (Maximum) | | |
| Phase | Na 1785 Peak Loc | | | Value | Phase | Na 1785 Peak Res % | | | Value | Phase | Temperature DEGC | | Value |
| Master | | | | 145.9 | Master | | | | 8.737 | Master | | | 13.72 |
| Before | | | | 143.2 | Before | | | | 8.315 | Before | | | 16.29 |
| | 135.0 (Minimum) | 142.6 (Nominal) | 150.3 (Maximum) | | 7.000 (Minimum) | 8.500 (Nominal) | 11.00 (Maximum) | | -28.89 (Minimum) | 15.50 (Nominal) | 60.00 (Maximum) | | |
| Phase | Na Count Rate CPS | | | Value | | | | | | | | | |
| Master | | | | 42.07 | | | | | | | | | |
| Before | | | | 43.16 | | | | | | | | | |
| | 10.00 (Minimum) | 45.00 (Nominal) | 100.0 (Maximum) | | | | | | | | | | |

Master: 17-Jun-2004 21:58

Before: 30-Jun-2004 16:27

| Hostile Natural Gamma Ray Sonde Wellsite Calibration | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| Detector 2 Check | | | | | | | | | |

Detector 2 Check

| Phase | Na 511 Peak Loc | Value | Phase | Na 511 Peak Res % | Value | Phase | High Voltage V | Value |
|---------------------------|--|-------|---------------------------|--|-------|--------|---|-------|
| Master | | 39.68 | Master | | 14.94 | Master | | 1080 |
| Before | | 39.72 | Before | | 14.70 | Before | | 1085 |
| | 37.50 (Minimum) 40.00 (Nominal) 42.50 (Maximum) | | | 12.00 (Minimum) 15.50 (Nominal) 19.00 (Maximum) | | | 900.0 (Minimum) 1150 (Nominal) 1600 (Maximum) | |
| Phase | Na 1785 Peak Loc | Value | Phase | Na 1785 Peak Res % | Value | Phase | Temperature DEGC | Value |
| Master | | 143.0 | Master | | 8.683 | Master | | 14.40 |
| Before | | 141.9 | Before | | 8.147 | Before | | 15.55 |
| | 135.0 (Minimum) 142.6 (Nominal) 150.3 (Maximum) | | | 7.000 (Minimum) 8.500 (Nominal) 11.00 (Maximum) | | | -28.89 (Minimum) 15.50 (Nominal) 60.00 (Maximum) | |
| Phase | Na Count Rate CPS | Value | | | | | | |
| Master | | 41.97 | | | | | | |
| Before | | 42.72 | | | | | | |
| | 10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum) | | | | | | | |
| Master: 17-Jun-2004 21:58 | | | Before: 30-Jun-2004 16:27 | | | | | |

| Hostile Natural Gamma Ray Sonde Wellsite Calibration | | |
|--|---|-------|
| Ratio Of Detector 1 To Detector 2 | | |
| Phase | Coincidence Count Rate Ratio | Value |
| Master | | 1.006 |
| Before | | 1.012 |
| | 0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum) | |
| Master: 17-Jun-2004 21:58 | | |
| Before: 30-Jun-2004 16:27 | | |

| Hostile Natural Gamma Ray Sonde Master Calibration | | | | | | | | |
|--|--|-------|--------|---|--------|--------|--|-------|
| Detector 1 Calibration | | | | | | | | |
| Phase | Na 511 Peak Set Point | Value | Phase | Th Peak Loc | Value | Phase | Th Peak Res % | Value |
| Master | | 42.00 | Master | | 211.5 | Master | | 7.826 |
| | 38.00 (Minimum) 40.00 (Nominal) 42.00 (Maximum) | | | 201.0 (Minimum) 209.6 (Nominal) 218.3 (Maximum) | | | 5.000 (Minimum) 7.000 (Nominal) 9.000 (Maximum) | |
| Phase | Background Count Rate CPS | Value | Phase | Gain Ratio | Value | | | |
| Master | | 140.0 | Master | | 0.9901 | | | |
| | 20.00 (Minimum) 142.5 (Nominal) 265.0 (Maximum) | | | 0.9400 (Minimum) 1.000 (Nominal) 1.060 (Maximum) | | | | |
| Master: 17-Jun-2004 21:53 | | | | | | | | |

| Hostile Natural Gamma Ray Sonde Master Calibration | | | | | | | | |
|--|--|-------|--------|---|--------|--------|--|-------|
| Detector 2 Calibration | | | | | | | | |
| Phase | Na 511 Peak Set Point | Value | Phase | Th Peak Loc | Value | Phase | Th Peak Res % | Value |
| Master | | 41.00 | Master | | 207.7 | Master | | 7.127 |
| | 38.00 (Minimum) 40.00 (Nominal) 42.00 (Maximum) | | | 201.0 (Minimum) 209.6 (Nominal) 218.3 (Maximum) | | | 5.000 (Minimum) 7.000 (Nominal) 9.000 (Maximum) | |
| Phase | Background Count Rate CPS | Value | Phase | Gain Ratio | Value | | | |
| Master | | 133.6 | Master | | 0.9954 | | | |
| | 20.00 (Minimum) 142.5 (Nominal) 265.0 (Maximum) | | | 0.9400 (Minimum) 1.000 (Nominal) 1.060 (Maximum) | | | | |
| Master: 17-Jun-2004 21:53 | | | | | | | | |

Well: Findra-1
Field: PEP 159
Rig: Hunt Rig #2
Country: Australia

HALS-BHC-PEX-HNG:
HNGS Print
Scale 1:200