



Real Time Log

Natural Formation Evaluation
Gamma Ray

Scale:

1:240
Measure Depth

Company: Kerr-McGee Oil & Gas Onshore LP

Well: Wirkner-Vance 34N-1HZ

Field: Weld County (Kerr-McGee)

Region: Continental US Country: United States

Status: Surface Location:

Final Print

Latitude: 40° 10' 29.802" N

Longitude: 104° 50' 42.785" W

Other Services:

Directional
VSS

API Number:
051233788200

Section 36

TWN: 3N

Range 67W

Permanent Datum (P.D.): Ground Level Elevation: 4822.00 ft.

Log Measured From: Kelly Bushing 13.00 ft. Above P.D.

Elevations:
KB: 4835.00 ft.
DF: n/a
GL: 4822.00 ft.

Depth Reference: Driller's Depth

Interval Logged

Top: 6550 ft. Date From: 28/Nov/13 Date To: 05/Dec/13 Dip Angle: 66.96 ° Az Reference North: True
Bottom: 12718 ft. Date To: 05/Dec/13 Total Mag to Reference
Spud Date: 28/Nov/13 Field Strength: 52789.0 nT North Correction: 8.62 °

Magnetic Field Reference

Borehole Record

Casing Record

| Hole Size | From | To | Size | Weight | From | To |
|-----------|----------|-----------|-----------|-------------|----------|----------|
| 8.750 in. | 1040 ft. | 7630 ft. | 9.625 in. | 36.00 lb/ft | Surface | 1040 ft. |
| 6.000 in. | 7630 ft. | 12771 ft. | 7.000 in. | 26.00 lb/ft | 1040 ft. | 7602 ft. |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Mud Record

Deviation Record

| Type | From | To | Hole Size | Interval | Inc / Az (Start) | Inc / Az (End) |
|---------------------|----------|-----------|-----------|----------|------------------|------------------|
| Water Based - Fresh | 1040 ft. | 12771 ft. | 8.750 in. | 6590 ft. | 0.5 ° / 284.4 ° | 86.3 ° / 180.0 ° |
| | | | 6.000 in. | 5141 ft. | 86.3 ° / 180.0 ° | 90.2 ° / 179.5 ° |
| | | | | | / | / |
| | | | | | / | / |
| | | | | | / | / |
| | | | | | / | / |

Acquisition System Software Version

Other

| | | | | |
|-----------|----------|--------------------|------------|-----------------------------------|
| Advantage | 2.20U4 | Rigi / Contractor: | Ensign 138 | / Kerr-McGee Oil & Gas Onshore LP |
| PATS | 6.4.1.34 | Job No: | 5856777 | / D & E |
| | | District / Unit: | RMD | |

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Log Run Summary

| LWD | BHA | Bit | Bit | Bit | Bit | Assembly | Logged Interval | | Bit Depth Interval | | Date / Time | | | | Circ. |
|-----|-----|-----|-------|------|--------|-----------|-----------------|--------|--------------------|-------|-------------|-------|------------|-------|--------|
| Run | Run | Run | Size | Type | Gauge | Type | Top | Bottom | From | To | Start | | End | | Time |
| No. | No. | No. | (in.) | | Lenath | | (ft.) | (ft.) | (ft.) | (ft.) | | | | | (hrs.) |
| 1 | 1 | 2 | 8.750 | PDC | 3.000 | Steerable | 6550 | 6900 | 1040 | 6947 | 29/Nov/2013 | 8:30 | 1/Dec/2013 | 13:45 | 27.6 |
| 2 | 2 | 3 | 8.750 | PDC | 3.000 | Steerable | 6900 | 7577 | 6947 | 7630 | 1/Dec/2013 | 2:15 | 2/Dec/2013 | 04:00 | 13:00 |
| 3 | 3 | 4 | 6.000 | PDC | 6.000 | Steerable | 7577 | 12718 | 7630 | 12771 | 2/Dec/2013 | 11:45 | 4/Dec/2013 | 15:11 | 32.5 |

Crew

| Name | Arrive | Depart | Name | Arrive | Depart | Name | Arrive | Depart |
|-----------------|------------|-------------|----------------|-----------|-------------|------------------|-----------|-------------|
| | Wellsite | Wellsite | | Wellsite | Wellsite | | Wellsite | Wellsite |
| Robert Bartlett | 28/Nov/13 | 05/Dec/2013 | William Drake | 28/Nov/13 | 05/Dec/2013 | Tyler Wall | 28/Nov/13 | 05/Dec/2013 |
| David Browning | 1/Dec/2013 | 05/Dec/2013 | Andrew Overbey | 28/Nov/13 | 1/Dec/2013 | Stephan Martinez | 28/Nov/13 | 05/Dec/2013 |

Mud Properties Record

| Date / Time | LWD Run No. | Measured Depth (ft.) | Mud Type | Density (ppg) | Viscosity (cp) | pH | Fluid Loss (cc) | Oil / Water | Source | Total Chlorides (ppm) | K+ (%) |
|-------------------|----------------|----------------------------|---------------------|------------------|-------------------|------|-----------------------|----------------|----------------|-----------------------------|-----------|
| 28/Nov/2013 11:57 | 1 | 0 | Water Based - Fresh | 8.6 | 29 | 8.8 | N/A | 0 / 98 | Active Mud Pit | 800 | 0.0 |
| 29/Nov/2013 21:00 | 1 | 1019 | Water Based - Fresh | 8.6 | 29 | 8.5 | N/A | 0 / 98 | Active Mud Pit | 800 | 0.0 |
| 30/Nov/2013 21:00 | 2 | 6096 | Water Based - Fresh | 9.7 | 35 | 8.3 | N/A | 0 / 93 | Active Mud Pit | 600 | 0.0 |
| 01/Dec/2013 21:00 | 2 | 6708 | Water Based - Fresh | 9.8 | 36 | 9.5 | N/A | 0 / 92 | Active Mud Pit | 900 | 0.0 |
| 02/Dec/2013 11:42 | 2 | 7647 | Water Based - Fresh | 9.9 | 34 | 9.5 | N/A | 0 / 92 | Active Mud Pit | 800 | 0.0 |
| 03/Dec/2013 21:00 | 3 | 7800 | Water Based - Fresh | 9.2 | 37 | 10.4 | N/A | 0/94.5 | Active Mud Pit | 1000 | 0.0 |
| 04/Dec/2013 21:00 | 3 | 11950 | Water Based - Fresh | 9.3 | 37 | 8.9 | N/A | 0/94 | Active Mud Pit | 1000 | 0.0 |

Mnemonics

| Curve | Description | Units |
|-------|-------------------------------------|----------|
| GRAX | Gamma Ray Apparent, 0.5 ft. Avg. | API |
| GRIX | Gamma Ray Data Density | Points |
| GRSI | Gamma Ray Sliding Indicator | Unitless |
| GRTX | Gamma Ray Time Since Drilled | min |
| ROPA | Rate of Penetration, 3.0 ft. Avg. | ft/hr |
| TCDX | Downhole Temperature | degF |
| TVD | True Vertical Depth | ft. |
| WOBA | Surface Weight on Bit, 1.0 ft. Avg. | klbf |

Equipment and Service Data

| LWD Run No. | Tool | Serial Number | Measurement | Bit Offset (ft.) | Max O.D. (in.) | Min I.D. (in.) |
|-------------------|------|------------------|-------------|------------------------|----------------------|----------------------|
| 1 | DIR | 11730418 | Directional | 56.92 | 6.750 | 3.313 |
| 1 | SRIG | 5324 | Gamma | 53.55 | 6.750 | 3.313 |
| 2 | DIR | 11730418 | Directional | 53.69 | 6.750 | 3.313 |
| 2 | SRIG | 5324 | Gamma | 50.32 | 6.750 | 3.313 |
| 3 | DIR | 13134419 | Directional | 56.19 | 4.750 | 2.250 |
| 3 | SRIG | 11801241 | Gamma | 52.81 | 4.750 | 2.250 |

Service and Tool Mnemonics

| Mnemonic | Name | Description |
|----------|-----------------------|--|
| DIR | Directional | Wellbore directional survey |
| SRIG | Inclination and Gamma | Probe based gamma ray and inclination module |

Comments

- 1.) Depth measurements obtained from a depth control system not supplied or operated by Baker Hughes. Due to the lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified.
- 2.) Baker Hughes run 1 utilized 6 3/4 inch NaviTrak services (Directional only) behind an 8 3/4 inch bit and steerable assembly from 1040 to 6620 feet MD (1040 to 6517 feet TVD).

3.) Baker Hughes run 2 utilized 6 3/4 inch NaviGamma services (Gamma Ray and Directional) behind an 8 3/4 inch bit and steerable assembly from 6620 to 7630 feet MD (6517 to 7150 feet TVD).

4.) The interval from 1040 to 6620 feet MD (1040 to 6517 feet TVD) was not logged due to directional only services being provided through the straight-hole and nudge section for Baker Hughes run 1.

5.) Baker Hughes run 4 utilized 4 3/4 inch NaviGamma services (Gamma Ray and Directional) behind an 6 inch bit and steerable assembly from 7630 to 12771 feet MD (7150 to 7150 feet TVD).

6.) The interval from 12718 to 12771 feet MD (7150 to 7150 feet TVD) was not logged due gamma ray sensor to bit offset.

Curve Mnemonics

| Curve | Description | Units |
|-------|--|----------|
| GRAX | Gamma Ray - Apparent | API |
| GRIX | Gamma Ray - Data Point Indicator | unitless |
| GRSIM | Gamma Ray Sliding Indicator | unitless |
| GRTX | Gamma Ray Time Since Drilled | min |
| ROPA | AVERAGE Instantaneous ROP - 5 second ROP | ft/hr |
| TCDX | Downhole Temperature | degF |
| TVD | True Vertical Depth | ft |
| WOBA | AVERAGE Weight On Bit | klbf |

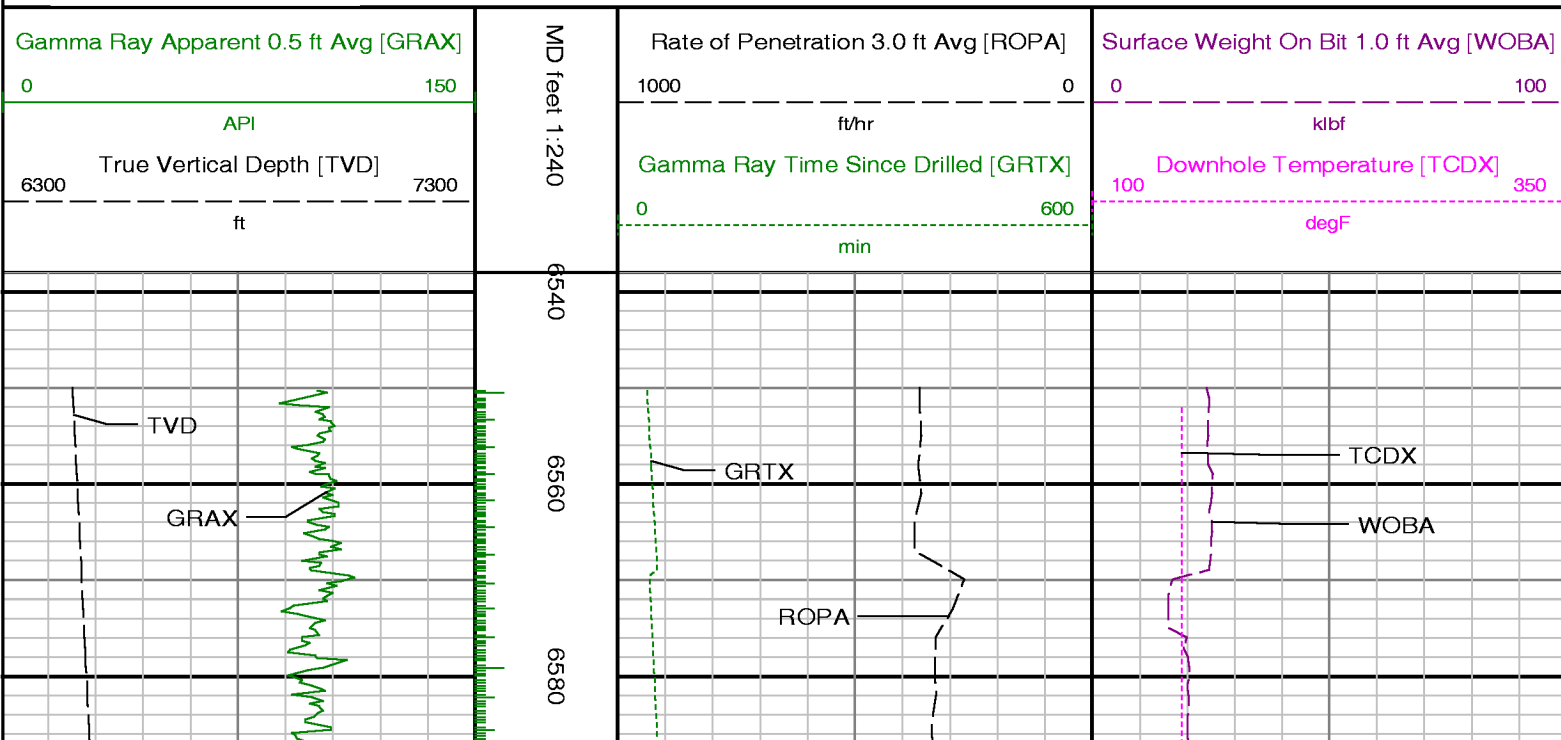


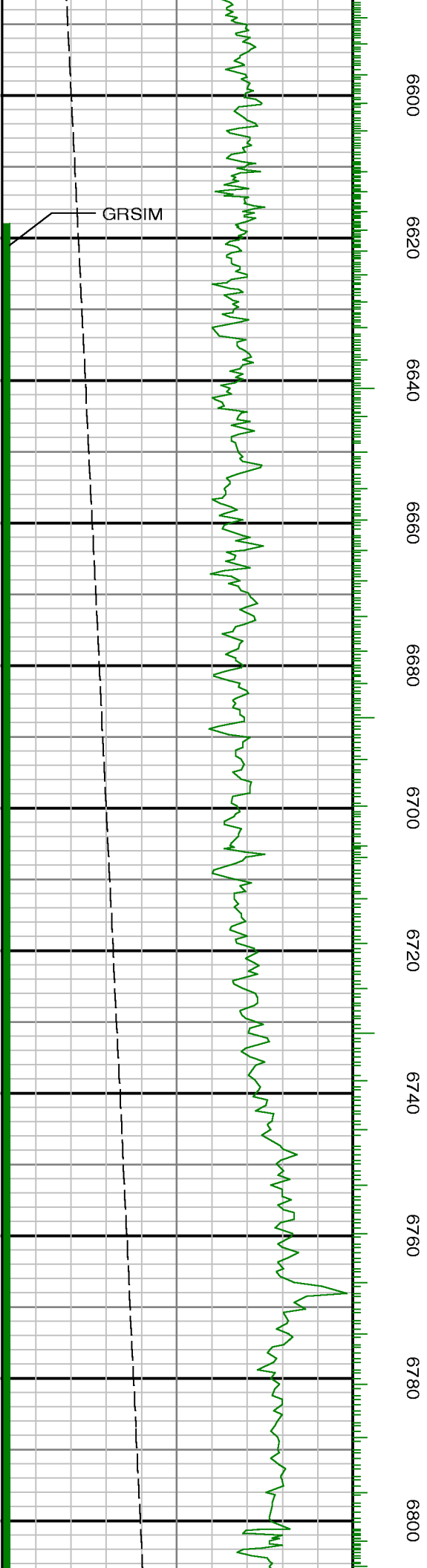
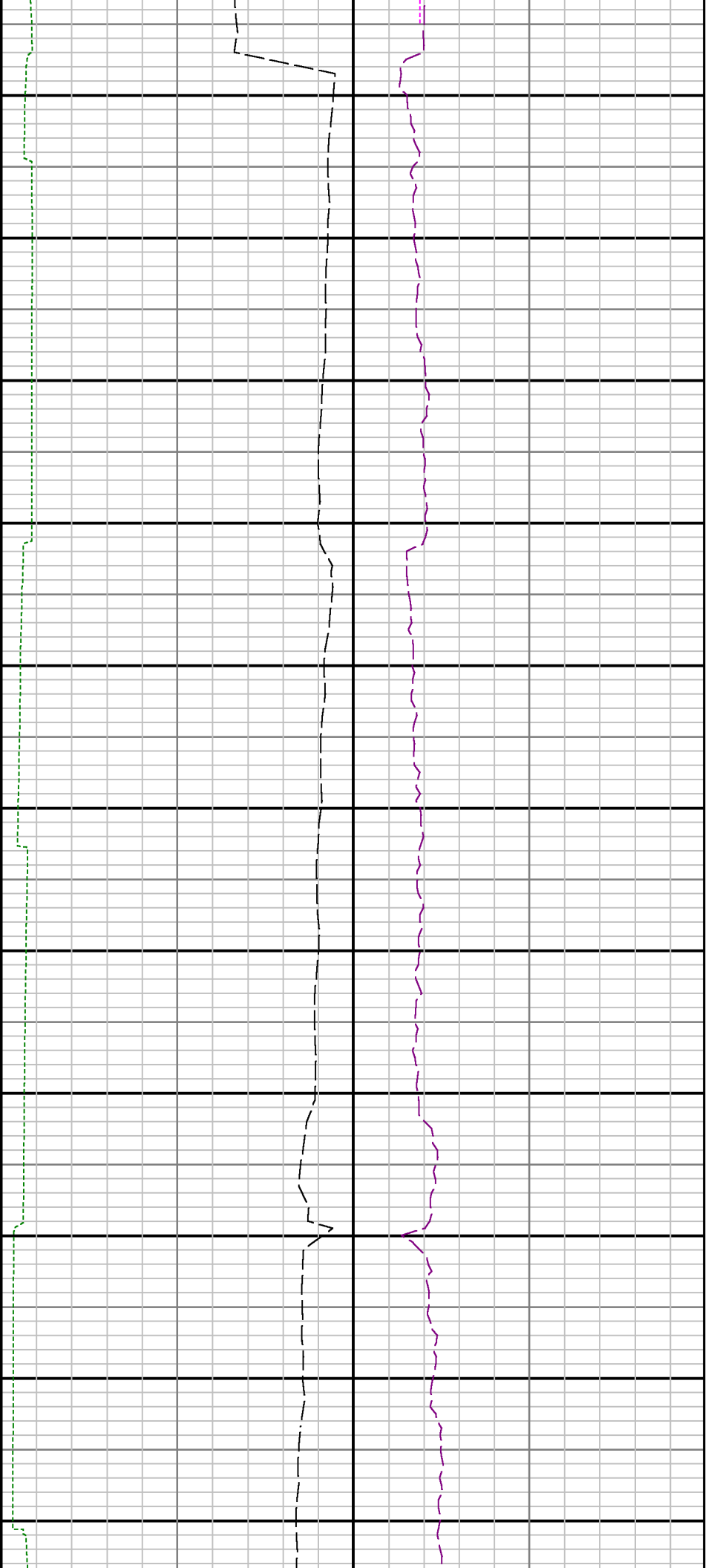
Company : Kerr-McGee Oil & Gas LP

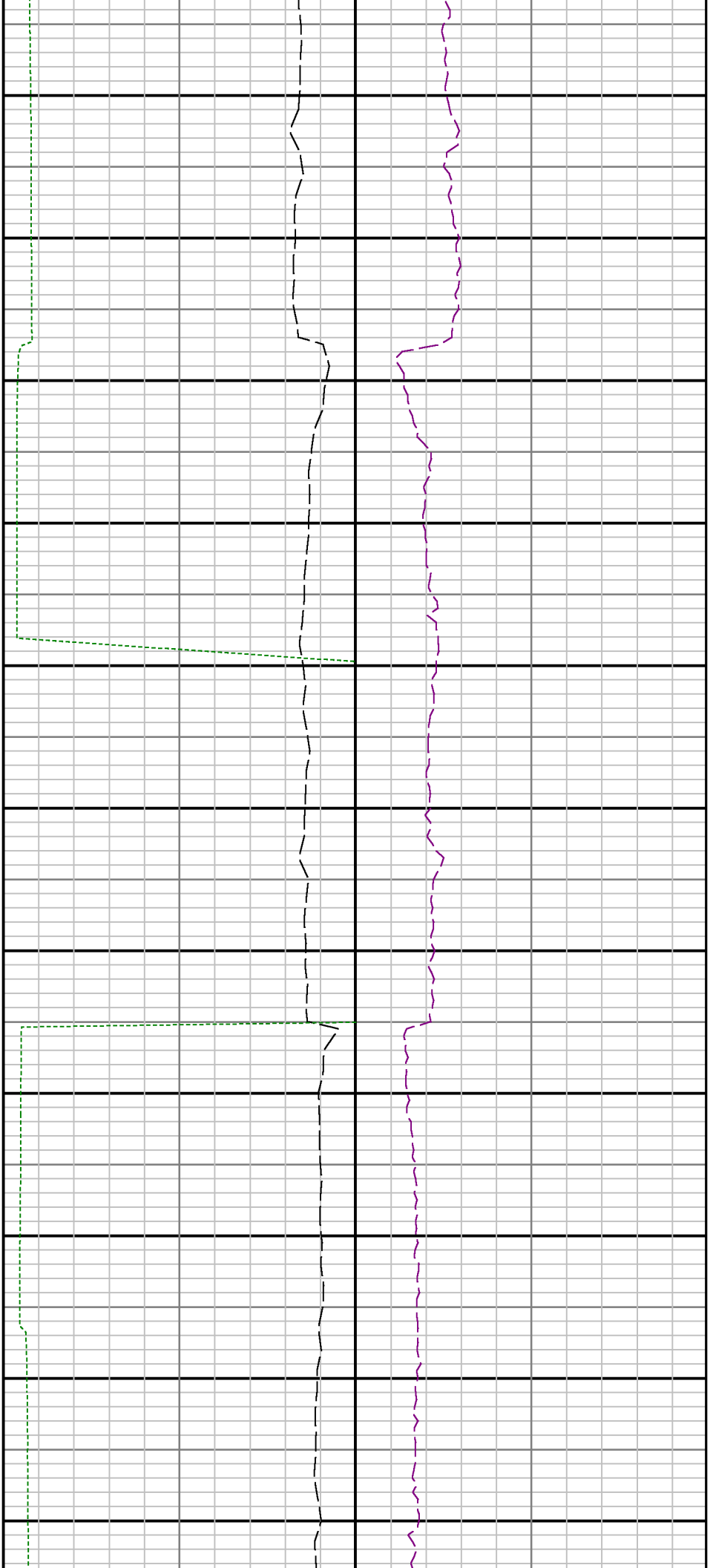
Well : Wirkner-Vance 34N-1HZ

Interval : 6538.00 - 12780.00 feet

Created : 04/Dec/2013 1:29:08 PM







Run 1 <> Run 2

