


| Real Time Log | | | | | | | | | | | |
|---|--|---|--|---|--|---|--|-------------------|--|--|--|
| <div></div> | | | | Natural Formation Evaluation Gamma Ray | | | | | | | |
| Scale: 1:240 | | | | Company: Kerr-McGee Oil & Gas Onshore LP | | | | | | | |
| Measured Depth | | | | Well: Elliott 26C-17HZ | | | | | | | |
| | | | | Field: Weld County | | | | | | | |
| | | | | Region: Continental US | | Country: United States | | | | | |
| Status: Final Print | | Surface Location: Latitude: 40° 13' 43.896" N Longitude: 104° 55' 12.288" W | | | | Other Services: Directional VSS | | | | | |
| API Number: 051233862900 | | Section: 17 | | TWN: 3N | | Range67W | | | | | |
| Permanent Datum (P.D.): Ground Level | | | | Elevation: 4849.00 ft. | | Elevations: 4862.00 ft. N/A | | | | | |
| Log Measured From: Kelly Bushing | | | | 13.00 ft. | | Above P.D. | | | | | |
| Depth Reference: Driller's Depth | | | | | | KB: 4862.00 ft. DF: N/A GL: 4849.00 ft. | | | | | |
| Interval Logged | | | | Dates | | Magnetic Field Reference | | | | | |
| Top: 6733 ft. | | Date From: 27/Apr/14 | | Dip Angle: 66.88 ° | | Azi Reference North: True | | | | | |
| Bottom: 12451 ft. | | Date To: 21/May/14 | | Total | | Mag to Reference | | | | | |
| | | Spud Date: 25/Apr/14 | | Field Strength: 52581.0 nT | | North Correction: 8.57 ° | | | | | |
| Borehole Record | | | | | | | | | | | |
| Hole Size | | From | | To | | Size | | Weight | | | |
| 13.500 in. | | Surface | | 1240 ft. | | 9.625 in. | | 36.00 lb/ft | | | |
| 8.750 in. | | 1240 ft. | | 7655 ft. | | 7.000 in. | | 26.00 lb/ft | | | |
| 6.125 in. | | 7655 ft. | | 12512 ft. | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| Casing Record | | | | | | | | | | | |
| Type | | From | | To | | Hole Size | | Interval | | | |
| LSND | | Surface | | 12512 ft. | | 13.500 in. | | 1240 ft. | | | |
| | | | | | | 8.750 in. | | 6415 ft. | | | |
| | | | | | | 6.125 in. | | 4857 ft. | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| Mud Record | | | | | | | | | | | |
| Type | | From | | To | | Hole Size | | Interval | | | |
| LSND | | Surface | | 12512 ft. | | 13.500 in. | | 1240 ft. | | | |
| | | | | | | 8.750 in. | | 6415 ft. | | | |
| | | | | | | 6.125 in. | | 4857 ft. | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| Deviation Record | | | | | | | | | | | |
| Type | | From | | To | | Hole Size | | Interval | | | |
| LSND | | Surface | | 12512 ft. | | 13.500 in. | | 1240 ft. | | | |
| | | | | | | 8.750 in. | | 6415 ft. | | | |
| | | | | | | 6.125 in. | | 4857 ft. | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| Acquisition System | | | | | | | | | | | |
| Advantage | | 2.20U4 | | Rig: Contractor: | | Ensign 138 | | Other | | | |
| PATS | | 6.4.1.34 | | Job No: | | 6296208 | | / Ensign Drilling | | | |
| | | | | District: / Unit: | | RMD | | / D&E | | | |

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| Log Run Summary | | | | | | | | | | | | | | | |
|-----------------|-------------|-------------|----------------|----------|------------------------|---------------|-----------------|--------|--------------------|-------|-------------------|-------------------|------|--|-------------------|
| LWD Run No. | BHA Run No. | Bit Run No. | Bit Size (in.) | Bit Type | Bit Gauge Length (in.) | Assembly Type | Logged Interval | | Bit Depth Interval | | Date / Time | | | | Circ. Time (hrs.) |
| | | | | | | | Top | Bottom | From | To | Start | | End | | |
| | | | | | | | (ft.) | (ft.) | (ft.) | (ft.) | | | | | |
| 1 | 1 | 1 | 8.750 | PDC | 3.000 | Steerable | 6733 | 7594 | 1240 | 7655 | 27/Apr/2014 01:44 | 27/Apr/2014 12:29 | 44.8 | | |
| 2 | 2 | 2 | 8.750 | PDC | 3.000 | Steerable | N/A | N/A | 7655 | 7655 | 28/Apr/2014 05:11 | 28/Apr/2014 19:46 | 39.3 | | |
| 3 | 3 | 3 | 6.125 | PDC | 6.000 | Steerable | 7594 | 12451 | 7655 | 12512 | 30/Apr/2014 05:26 | 2/May/2014 17:05 | 59.4 | | |

| Crew | | | | | | | | |
|---------------|-------------|-------------|------|----------|----------|-----------------|-------------|-------------|
| Name | Arrive | Depart | Name | Arrive | Depart | Name | Arrive | Depart |
| | Wellsite | Wellsite | | Wellsite | Wellsite | | Wellsite | Wellsite |
| Justin Foster | 13/Apr/2014 | 3/May/2014 | | | | William Drake | 06/Apr/2014 | 12/Apr/2014 |
| Daniel Lee | 13/Apr/2014 | 17/Apr/2014 | | | | Robert Bartlett | 06/Apr/2014 | 10/Apr/2014 |

| | | | | | | | | |
|-------------|-------------|-------------|--|--|--|------------------|-------------|-------------|
| Tyler Wall | 18/Apr/2014 | 3/May/2014 | | | | Stephen Martinez | 06/Apr/2014 | 12/Apr/2014 |
| Robert Klos | 25/Apr/2014 | 29/Apr/2014 | | | | | | |

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+ (%) |
|-------------|-------|----------------|----------------------------|-------------|----------------------|-----------------------|------|---------------------------|----------------|------------|---------------------------------|---------------|
| 25/Apr/2014 | 21:00 | 1 | 1354 | LSND | 8.4 | 29 | 10.9 | N/A | 0.0/98.9 | Active Pit | 2000 | N/A |
| 26/Apr/2014 | 21:00 | 1 | 6007 | LSND | 9.8 | 39 | 9.2 | N/A | 0.0/92.0 | Active Pit | 2600 | N/A |
| 27/Apr/2014 | 21:00 | 1 | 7655 | LSND | 10.2 | 41 | 9.1 | N/A | 0.6/89.6 | Active Pit | 2200 | N/A |
| 28/Apr/2014 | 21:00 | 3 | 7655 | LSND | 10.8 | 43 | 9.3 | N/A | 0.5/87.3 | Active Pit | 2100 | N/A |
| 29/Apr/2014 | 21:00 | 3 3 | 7655 | LSND | 10.4 | 36 | 9.3 | N/A | 0.4/89.2 | Active Pit | 2100 | N/A |
| 30/Apr/2014 | 21:00 | 3 | 8769 | LSND | 9.3 | 37 | 9.5 | N/A | 0.0/93.8 | Active Pit | 2300 | N/A |
| 01/May/2014 | 21:00 | 3 | 11300 | LSND | 9.1 | 38 | 9.3 | N/A | 0.0/94.5 | Active Pit | 2500 | N/A |

Mnemonics

| Curve | Description | Units |
|-------|-------------------------------------|----------|
| GRAX | Gamma Ray Apparent, 0.5 ft. Avg. | API |
| GRIX | Gamma Ray Data Density | point |
| 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. | klbs |

Equipment and Service Data

| LWD Run No. | Tool | Serial Number | Measurement | Bit Offset (ft.) | Max O.D. (in.) | Min I.D. (in.) |
|-------------------|------|------------------|-------------|----------------------------|--------------------------|--------------------------|
| 1 | DIR | 12546337 | Directional | 63.26 | 6.750 | 2.750 |
| 1 | SRIG | 5324 | Gamma | 58.89 | 6.750 | 2.750 |
| 2 | DIR | 12546337 | Directional | 63.26 | 6.750 | 2.750 |
| 2 | SRIG | 5324 | Gamma | 58.89 | 6.750 | 2.750 |
| 3 | DIR | 11801247 | Directional | 64.03 | 4.750 | 2.750 |
| 3 | SRIG | 12613296 | Gamma | 60.65 | 4.750 | 2.750 |

Service and Tool Mnemonics

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

Comments

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|---|
| <p>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.</p> |
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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 1240 to 6733 feet MD (1240 to 6567 feet TVD).

3.) Baker Hughes run 1 utilized 6 3/4 inch NaviGamma services (Gamma Ray and Directional) behind an 8 3/4 inch bit and steerable assembly from 6733 to 7655 feet MD (6567 to 7168 feet TVD).

4.) Baker Hughes run 2 has no logging data and utilized 6 3/4 inch NaviTrak services (Directional only) behind an 8 3/4 inch bit and steerable assembly to ream from 1240 to 7655 feet MD (1240 to 7167 feet TVD).

5.) Baker Hughes run 3 utilized 4 3/4 inch NaviGamma services (Gamma Ray and Directional) behind an 6 1/8 inch bit and steerable assembly from 7655 to 12512 feet MD (7157 to 7168 feet TVD).

6.) The interval from 1240 to 6733 feet MD (1240 to 6567 feet TVD) was not logged due to directional only services being provided through the straight-hole and nudge section for Baker Hughes run 1.

Remarks

| Number | Measured Depth (ft.) | Hole Section (in.) | LWD Run No. | Remark |
|--------|----------------------------|--------------------------|----------------|---|
| 1 | 7655 | 8.750 | 1 | The interval from 7594 to 7655 feet MD (7152 to 7157 feet TVD) was logged up to 65 hours after being drilled due to trip for casing |
| 2 | 12500 | 6.125 | 3 | The interval from 12451 to 12512 feet MD (7152 to 7157 feet TVD) was not logged due to sensor to bit offsets at well TD. |

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 Onshore LP

Well : Elliott State 26C-17HZ

Interval : 6720.00 - 12520.00 feet

Created : 02/May/2014 4:22:09 PM

Gamma Ray Apparent 0.5 ft Avg [GRAX]

0 150

API

True Vertical Depth [TVD]

7300 6300

ft

MD feet 1:240 6720

Rate of Penetration 3.0 ft Avg [ROPA]

1000 0

ft/hr

Gamma Ray Time Since Drilled [GRTX]

0 600

min

Surface Weight On Bit 1.0 ft Avg [WOBA]

0 100

klbf

Downhole Temperature [TCDX]

150 350

degF

