



REALTIME LOG

NATURAL FORMATION EVALUATION
GAMMA RAY

Scale:

1:240

MEASURED DEPTH

Company: Kerr-McGee Oil & Gas Onshore LP

Well: Jelts 37N-19HZ

Field: Weld County (Kerr McGee)

Region: Continental US Country: United States

Status:

FIELD PRINT

Surface Location:

Latitude: 40° 02' 35.264" N

Longitude: 104° 55' 50.311" W

Other Services:

DIRECTIONAL
VSSAPI Number:
05-123-36664

Section: 19 TOWN: 1N Range: 67W

Permanent Datum (P.D.): Ground Level

Elevation: 5147.00 ft.

Elevations: 5160.00 ft.

Log Measured From: Kelly Bushing

13.00 ft.

Above P.D.

KB: 5160.00 ft.

Depth Reference: Driller's Depth

GL: 5147.00 ft.

Interval Logged

Dates

Magnetic Field Reference

Top: 6983.0 ft. Date From: 08 Jul 2013

Dip Angle: 66.64°

Azi Reference North: True

Bottom: 12075.0 ft. Date To: 16 Jul 2013

Total

Mag to Reference

Spud Date: 07 Jul 2013 Field Strength: 52666.0 nT North Correction: 8.70°

Borehole Record

Casing Record

| Hole Size | From | To | Size | Weight | From | To |
|------------|------------|-------------|-----------|-------------|---------|------------|
| 13.500 in. | Surface | 924.0 ft. | 9.625 in. | 36.00 lb/ft | Surface | 914.0 ft. |
| 8.750 in. | 924.0 ft. | 8060.0 ft. | 7.000 in. | 26.00 lb/ft | Surface | 8046.0 ft. |
| 6.125 in. | 8060.0 ft. | 12122.0 ft. | | | | |
| | | | | | | |
| | | | | | | |
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| | | | | | | |

Mud Record

Deviation Record

| Type | From | To | Hole Size | Interval | Inc / Az (Start) | Inc / Az (End) |
|-------------|---------|-------------|-----------|--------------|------------------|----------------|
| Water Based | Surface | 12122.0 ft. | 8.750 in. | Intermediate | 0.3° / 21.2° | 89.4° / 178.5° |
| | | | 6.125 in. | Lateral | 89.4° / 178.5° | 89.0° / 175.7° |
| | | | | | / | / |
| | | | | | / | / |
| | | | | | / | / |
| | | | | | / | / |
| | | | | | / | / |

Acquisition System

Software Version

Other

Advantage 2.20U4 Rpt: / Contractor: Ensign 145 / Ensign Drilling

PATs

6.4.1.34

Job No: 5490835

District: / Unit: RMD

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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 (ft.) | Bottom (ft.) | From (ft.) | To (ft.) | Start | End | |
| 1 | 1 | 2 | 8.750 | PDC | 2.000 | Steerable | 6983.0 | 8010.0 | 915.0 | 8060.0 | 08 Jul 2013 17:48 | 10 Jul 2013 05:40 | 73.9 |
| 2 | 2 | 3 | 6.125 | PDC | 6.000 | Steerable | 8011.0 | 12075.0 | 8060.0 | 12122.0 | 14 Jul 2013 07:54 | 16 Jul 2013 04:36 | 43.9 |

Crew

| Name | Arrive | Depart | Name | Arrive | Depart | Name | Arrive | Depart |
|---------------|-------------|-------------|----------------|-------------|-------------|-------------|-------------|-------------|
| | Wellsite | Wellsite | | Wellsite | Wellsite | | Wellsite | Wellsite |
| Ian McCarrell | 07 Jul 2013 | 17 Jul 2013 | Matthew Dickey | 07 Jul 2013 | 12 Jul 2013 | Steven Cano | 12 Jul 2013 | 17 Jul 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 mg/l | K+ mg/l |
|-------------|-------|----------------|----------------------------|-------------|------------------|-------------------|-----|-----------------------|----------------|----------|----------------------------|------------|
| 07 Jul 2013 | 20:00 | 1 | 1207.0 | Water Based | 8.5 | 26 | 7.0 | N/A | 0.0 / 100.0 | Flowline | 1500 | N/A |
| 08 Jul 2013 | 18:00 | 1 | 6305.0 | Water Based | 9.0 | 35 | 9.5 | N/A | 0.0 / 100.0 | Flowline | 600 | N/A |
| 12 Jul 2013 | 08:00 | 1 | 7665.0 | Water Based | 10.5 | 43 | 8.5 | N/A | 1.0 / 99.0 | Flowline | 1500 | N/A |
| 13 Jul 2013 | 13:30 | 1 | 7665.0 | Water Based | 10.2 | 40 | 8.5 | N/A | 1.0 / 99.0 | Flowline | 1900 | N/A |
| 14 Jul 2013 | 07:00 | 2 | 8060.0 | Water Based | 10.2 | 44 | 7.5 | N/A | 1.0 / 99.0 | Flowline | 1900 | N/A |
| 15 Jul 2013 | 07:00 | 2 | 10204.0 | Water Based | 10.7 | 44 | 9.0 | N/A | 1.0 / 99.0 | Flowline | 1900 | N/A |
| 15 Jul 2013 | 15:00 | 2 | 10773.0 | Water Based | 10.2 | 42 | 9.0 | N/A | 0.0 / 100.0 | Flowline | 1900 | N/A |
| 16 Jul 2013 | 07:00 | 2 | 12122.0 | Water Based | 10.6 | 45 | 9.0 | N/A | 1.0 / 99.0 | Flowline | 2200 | N/A |

Mnemonics

| Curve | Description | Units |
|-------|-------------------------------------|--------|
| GRAX | Gamma Ray – Apparent, 0.5 ft. Avg. | API |
| GRIX | Gamma Ray Density | points |
| ROPA | Rate of Penetration, 3.0 ft. Avg. | ft/hr |
| TCDX | Downhole Temperature | deg F |
| 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 | 10170879 | Directional | 56.24 | 6.750 | 3.250 |
| 1 | SRIG | 12600744 | Gamma | 52.86 | 6.750 | 3.250 |
| 2 | DIR | 12188475 | Directional | 52.50 | 4.750 | 2.750 |
| 2 | SRIG | 12131407 | Gamma | 49.12 | 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) Baker Hughes INTEQ run 1 utilized 6 1/2 inch NaviGamma services (Directional, Gamma Ray, and VSS) behind an 8 3/4 inch bit and steerable assembly from 924 to 8060 feet MD (924 to 7610 feet TVD).</p> <p>2) Baker Hughes INTEQ run 2 utilized 4 3/4 inch NaviGamma services (Directional, Gamma Ray, and VSS) behind a 6 1/8 inch bit and steerable assembly from 8060 to 12122 feet MD (7610 to 7663 feet TVD).</p> |
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Remarks

| Number | Measured Depth (ft.) | Hole Section (ft.) | LWD Run No. | Remark |
|--------|----------------------------|--------------------------|----------------|--------|
|--------|----------------------------|--------------------------|----------------|--------|

| | | | | |
|---|-------|-------|---|--|
| | ft) | (in.) | | |
| 1 | 6990 | 8.750 | 1 | The interval from 6983 to 7037 feet MD (6955 to 7009 feet TVD) is missing ROPA, WOBA, GRTX, and TCDX due to the sensor to bit offset at curve kick off point. |
| 2 | 8020 | 6.125 | 2 | The interval from 8010 to 8060 feet MD (7608 to 7610 feet TVD) was logged up to 99.7 hours after being drilled due to a trip out of hole to run casing, cement, and pick up lateral tools. |
| 3 | 12085 | 6.125 | 2 | The interval from 12075 to 12122 feet MD (7662 to 7663 feet TVD) was not logged due to sensor to bit offset at well TD. |















































