



Realtime Log

Natural Formation Evaluation
Gamma Ray

Scale: Company: Anadarko Petroleum

1:240 Well: Benson Farms 13N-23HZ

Measured Depth Field: Weld County

County: Weld County State: Colorado

Status: Surface Location: Other Services:

Final Print

Latitude: 40° 12' 22.097" N

Longitude: 104° 57' 39.240" W

API Number: 05-123-39341-0000

SEC: 23 TWP: 3N RNG: 68W

Permanent Datum (P.D.): Mean Sea Level Elevation: 4960.00 ft.

Log Measured From: Rig Floor 4977.00 ft. Above P.D.

Depth Reference: Driller's Depth Elevations: KB: N/A DF: 4977.00 ft. GL: 4960.00 ft.

Interval Logged

Dates

Magnetic Field Reference

Top: 6600.0 ft. Date From: 30/Jul/14 Dip Angle: 66.90° Azi Reference North: True

Bottom: 12534.0 ft. Date To: 03/Aug/14 Total Mag to Reference

Spud Date: 29/Jul/14 Field Strength: 526347.0 nT North Correction: 8.69°

Borehole Record

Casing Record

| Hole Size | From | To | Size | Weight | From | To |
|------------|------------|-------------|-----------|-------------|---------|------------|
| 13.500 in. | Surface | 1240.0 ft. | 9.600 in. | 51.00 lb/ft | Surface | 1230.0 ft. |
| 8.750 in. | 1240.0 ft. | 7611.0 ft. | 7.000 in. | 26.00 lb/ft | Surface | 7601.0 ft. |
| 6.125 in. | 7611.0 ft. | 12599.0 ft. | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Mud Record

Deviation Record

| Type | From | To | Hole Size | Interval | Inc / Az (Start) | Inc / Az (End) |
|-------------|------------|-------------|-----------|------------|------------------|----------------|
| Fresh Water | 1245.0 ft. | 6600.0 ft. | 8.750 in. | 6371.0 ft. | 0.2° / 225.9° | 85.4° / 271.8° |
| Polymer Mud | 6600.0 ft. | 12599.0 ft. | 6.125 in. | 5999.0 ft. | 85.4° / 271.8° | 90.5° / 269.9° |
| | | | | | / | / |
| | | | | | / | / |
| | | | | | / | / |
| | | | | | / | / |

Acquisition System

Software Version

Other

| | | | |
|-----------|----------|----------------------|----------|
| Advantage | 2.20U4 | Rig: Xtreme 23 | / Xtreme |
| PATS | 6.4.1.34 | Job No: 65-43905 | / D&E |
| | | 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 | | |
| 2 | 2 | 2 | 8.750 | PDC | 3.000 | Steerable | 6600.0 | 7553.0 | 1240.0 | 7611.0 | 30/Jul/2014 | 21:15 | 31/Jul/2014 | 07:45 | 34.85 |
| 3 | 3 | 3 | 6.125 | PDC | 6.000 | Steerable | 7553.0 | 12534.0 | 7611.0 | 12599.0 | 01/Aug/14 | 20:30 | 03/Aug/14 | 06:03 | 31.3 |

Crew

| Name | Arrive | Depart | Name | Arrive | Depart | Name | Arrive | Depart |
|----------------|-------------|-----------|-----------|-------------|-----------|------------|-------------|-----------|
| | Wellsite | Wellsite | | Wellsite | Wellsite | | Wellsite | Wellsite |
| Steve Martinez | 29/Jul/2014 | 03/Aug/14 | Troy Clay | 29/Jul/2014 | 03/Aug/14 | Will Drake | 29/Jul/2014 | 03/Aug/14 |
| Shirley Arimah | 29/Jul/2014 | 03/Aug/14 | | | | | | |

Mud Properties Record

| Date / Time | LWD | Measured | Mud | Density | Viscosity | pH | Fluid | Oil / | Source | Total | K+ |
|-------------------|---------|----------------|-------------|---------|-----------|-----|--------------|----------|-----------------|--------------------|-----|
| | Run No. | Depth (ft.) | Type | (ppg) | (cp) | | Loss (cc) | Water | | Chlorides (ppm) | |
| 30/Jul/2014 20:00 | 2 | 6605.0 | Polymer Mud | 9.7 | 9 | 9.0 | 6.8 | 0.5/92.0 | Active Mud Pits | 1900 | N/A |
| 01/Aug/14 20:00 | 3 | 7555.0 | Polymer Mud | 9.8 | 8 | 9.0 | 6.5 | 0.1/95.0 | Active Mud Pits | 2100 | N/A |
| 02/Aug/14 20:00 | 3 | 11377.0 | Polymer Mud | 10.0 | 9 | 9.1 | 6.7 | 0.5/93.0 | Active Mud Pits | 1800 | N/A |

Mnemonics

| Curve | Description | Units |
|-------|-------------------------------------|----------|
| GRAX | Gamma Ray Apparent, 0.5 ft Avg. | API |
| GRIX | Gamma Ray Data Density | points |
| GRSI | Gamma Ray Slide Indicator | unitless |
| GRTX | Gamma Ray Time Since Drilled | min. |
| 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.) |
|-------------|------|---------------|-------------|-----------------|----------------|----------------|
| 2 | DIR | 100734015 | Directional | 61.69 | 6.750 | 3.250 |
| 2 | SRIG | 12600745 | Gamma | 58.31 | 6.750 | 3.250 |
| 3 | DIR | 12617359 | Directional | 65.56 | 4.750 | 2.750 |
| 3 | SRIG | 12131401 | Gamma | 62.14 | 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 Run 2 utilized a 6 3/4 inch NaviGamma (Gamma Ray and Directional) tool behind a 8 3/4 inch bit and steerable assembly from 1240 to 7611feet MD (1240 to 7191 feet TVD).</p> <p>2. Baker Hughes Run 3 utilized a 4 3/4 inch NaviGamma (Gamma Ray and Directional) tool behind a 6 1/8 inch bit and steerable assembly from 7611 to 12599 feet MD (7191to 7173 feet TVD).</p> <p>3. A sliding indicator is shown on the left side of track 1 as a heavy line. This indicator has been depth shifted to the gamma ray sensor offset to correspond with gamma ray data acquired while sliding.</p> <p>4. Depth measurements were obtained from a depth tracking system not supplied or operated by Baker Hughes. Due to lack of control by Baker Hughes LWD logging engineers, depth calibrations could not be independently verified and the unverified depths as supplied to Baker Hughes are being used to present logging data.</p> |
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Remarks

| Number | Measured | Hole | LWD | Remark |
|--------|----------|------|-----|--------|
|--------|----------|------|-----|--------|

| | Depth (ft) | Section (in.) | Run No. | |
|---|---------------|------------------|---------|---|
| 2 | 7553 | 8.750 | 2 | The interval from 7553 to 7611 feet MD (7290 to 7191feet TVD) was logged up to 38 hours after being drilled due to casing operations. |
| 3 | 12534 | 6.125 | 3 | The interval from 12534 to 12599 feet MD (7174 to 7173 feet TVD) was not logged due to sensor offset at TD. |



Company : Anadarko Petroleum Corporation

Well : Benson Farms 13N-23HZ

Interval : 6590.00 - 12605.00 feet

Created : 03/Aug/2014 10:14:24 AM























































