HALLIBURTON

iCem® Service

# ANADARKO PETROLEUM CORP - EBUS

**For: Randy Case**
Date: Thursday, July 19, 2014

**Roberts 13N-22HZ Surface**

Case 1

Sincerely,
**Derek Trier**

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## 1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Roberts 13N-22HZ** cement **Surface** casing job. A pre-job safety meeting was held before the job where details of the job were discussed, potential safety hazards were reviewed, and environmental compliance procedures were outlined.

Halliburton maintains a continuous quality improvement process and appreciates any comments or suggestions that you may have. Halliburton again thanks you for the opportunity to perform service work on this well. We hope to be your solutions provider for future projects.

Respectfully,

**Halliburton [Brighton]**

**Job Times**

| | Date | Time | Time Zone |
|---|---|---|---|
| **Called Out** | 06/13 | 0700 | MST |
| **On Location** | | 1200 | |
| **Job Started** | | 1351 | |
| **Job Completed** | | 1541 | |
| **Departed Location** | | 1700 | |

## 1.2 Cementing Job Summary

*The Road to Excellence Starts with Safety*

| | | | |
|---|---|---|---|
| **Sold To #:** 300466 | **Ship To #:** 3117112 | **Quote #:** | **Sales Order #:** 0901428712 |
| **Customer:** ANADARKO PETROLEUM CORP - EBUS | | **Customer Rep:** RANDY CASE | |
| **Well Name:** ROBERTS | **Well #:** 13N-22 HZ | | **API/UWI #:** 05-123-36313-00 |
| **Field:** WATTENBERG | **City (SAP):** PLATTEVILLE | **County/Parish:** WELD | **State:** COLORADO |
| **Legal Description:** NW NW-22-3N-66W-511FNL-485FWL | | | |
| **Contractor:** | | **Rig/Platform Name/Num:** Majors 29 | |
| **Job BOM:** 7521 | | | |
| **Well Type:** HORIZONTAL GAS | | | |
| **Sales Person:** HALAMERICA\HX23209 | | **Srvc Supervisor:** Eric Fuchs | |

**Job**

| | | | | |
|---|---|---|---|---|
| Formation Name | | | | |
| Formation Depth (MD) | Top | | Bottom | |
| Form Type | | | BHST | |
| Job depth MD | 1224ft | | Job Depth TVD | |
| Water Depth | | | Wk Ht Above Floor | |
| Perforation Depth (MD) | From | | To | |

**Well Data**

| Description | New / Used | Size in | ID in | Weight lbm/ft | Thread | Grade | Top MD ft | Bottom MD ft | Top TVD ft | Bottom TVD ft |
|---|---|---|---|---|---|---|---|---|---|---|
| Casing | | 9.625 | 8.921 | 36 | | J-55 | 0 | 1224 | | 0 |
| Open Hole Section | | | 13.5 | | | | 0 | 1224 | | 0 |

**Tools and Accessories**

| Type | Size in | Qty | Make | Depth ft | | Type | Size in | Qty | Make |
|---|---|---|---|---|---|---|---|---|---|
| Guide Shoe | 9.625 | | | 1224 | | Top Plug | 9.625 | 1 | HES |
| Float Shoe | 9.625 | | | | | Bottom Plug | 9.625 | | HES |
| Float Collar | 9.625 | 1 | | | | SSR plug set | 9.625 | | HES |
| Insert Float | 9.625 | | | | | Plug Container | 9.625 | 1 | HES |
| Stage Tool | 9.625 | | | | | Centralizers | 9.625 | | HES |

**Miscellaneous Materials**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gelling Agt | | Conc | | Surfactant | | Conc | | Acid Type | | Qty | Conc |
| Treatment Fld | | Conc | | Inhibitor | | Conc | | Sand Type | | Size | Qty |

**Fluid Data**

**Stage/Plug #: 1**

| Fluid # | Stage Type | Fluid Name | Qty | Qty UoM | Mixing Density lbm/gal | Yield ft3/sack | Mix Fluid Gal | Rate bbl/min | Total Mix Fluid Gal |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Mud Flush III (Powder) | Mud Flush III | 12 | bbl | 8.4 | | | | |
| 42 gal/bbl | | FRESH WATER | | | | | | | |

| Fluid # | Stage Type | Fluid Name | Qty | Qty UoM | Mixing Density lbm/gal | Yield ft3/sack | Mix Fluid Gal | Rate bbl/min | Total Mix Fluid Gal |
|---|---|---|---|---|---|---|---|---|---|
| 2 | Lead Cement | SWIFTCEM (TM) SYSTEM | 462 | sack | 14.2 | 1.54 | | 6 | 7.64 |

| Fluid # | Stage Type | Fluid Name | Qty | Qty UoM | Mixing Density lbm/gal | Yield ft3/sack | Mix Fluid Gal | Rate bbl/min | Total Mix Fluid Gal |
|---|---|---|---|---|---|---|---|---|---|
| 3 | Displacement | Displacement | 92 | bbl | 8.33 | | | | |

| Cement Left In Pipe | Amount | 42 ft | Reason | Shoe Joint |
|---|---|---|---|---|
| Comment | | | | |

## 1.3 Planned Pumping Schedule

| Stage /Plug # | Fluid # | Fluid Type | Fluid Name | Surface Density lbm/gal | Avg Rate bbl/min | Surface Volume | Downhole Volume |
|---|---|---|---|---|---|---|---|
| 1 | 1 | Spacer | Fresh Water Spacer | 8.33 | 3.0 | 10.0 bbl | 10.0 bbl |
| 1 | 1 | Spacer | Mud Flush | 8.50 | 3.0 | 12.0 bbl | 12.0 bbl |
| 1 | 1 | Spacer | Fresh Water Spacer | 8.33 | 3.0 | 10.0 bbl | 10.0 bbl |
| 1 | 2 | Cement Slurry | SwiftCem B2 | 14.2 | 5.0 | 462.0 sacks | 462.0 sacks |

## 1.4 Job Overview

| | | Units | Description |
|---|---|---|---|
| **1** | Surface temperature at time of job | $^{o}$F | |
| **2** | Mud type (OBM, WBM, SBM, Water, Brine) | - | WBM |
| **3** | Actual mud density | lb/gal | |
| **4** | Time circulated before job | HH:MM | |
| **5** | Mud volume circulated | Bbls | |
| **6** | Rate at which well was circulated | Bpm | |
| **7** | Pipe movement during hole circulation | Y/N | N |
| **8** | Rig pressure while circulating | Psi | |
| **9** | Time from end mud circulation to start of job | HH:MM | |
| **10** | Pipe movement during cementing | Y/N | N |
| **11** | Calculated displacement | Bbls | 92 |
| **12** | Job displaced by | Rig/HES | HES |
| **13** | Annular before job)? | Y/N | N |
| **14** | Annular flow after job | Y/N | N |
| **15** | Length of rat hole | Ft | |
| **16** | Units of gas detected while circulating | Units | |
| **17** | Was lost circulation experienced at any time ? | Y/N | N |

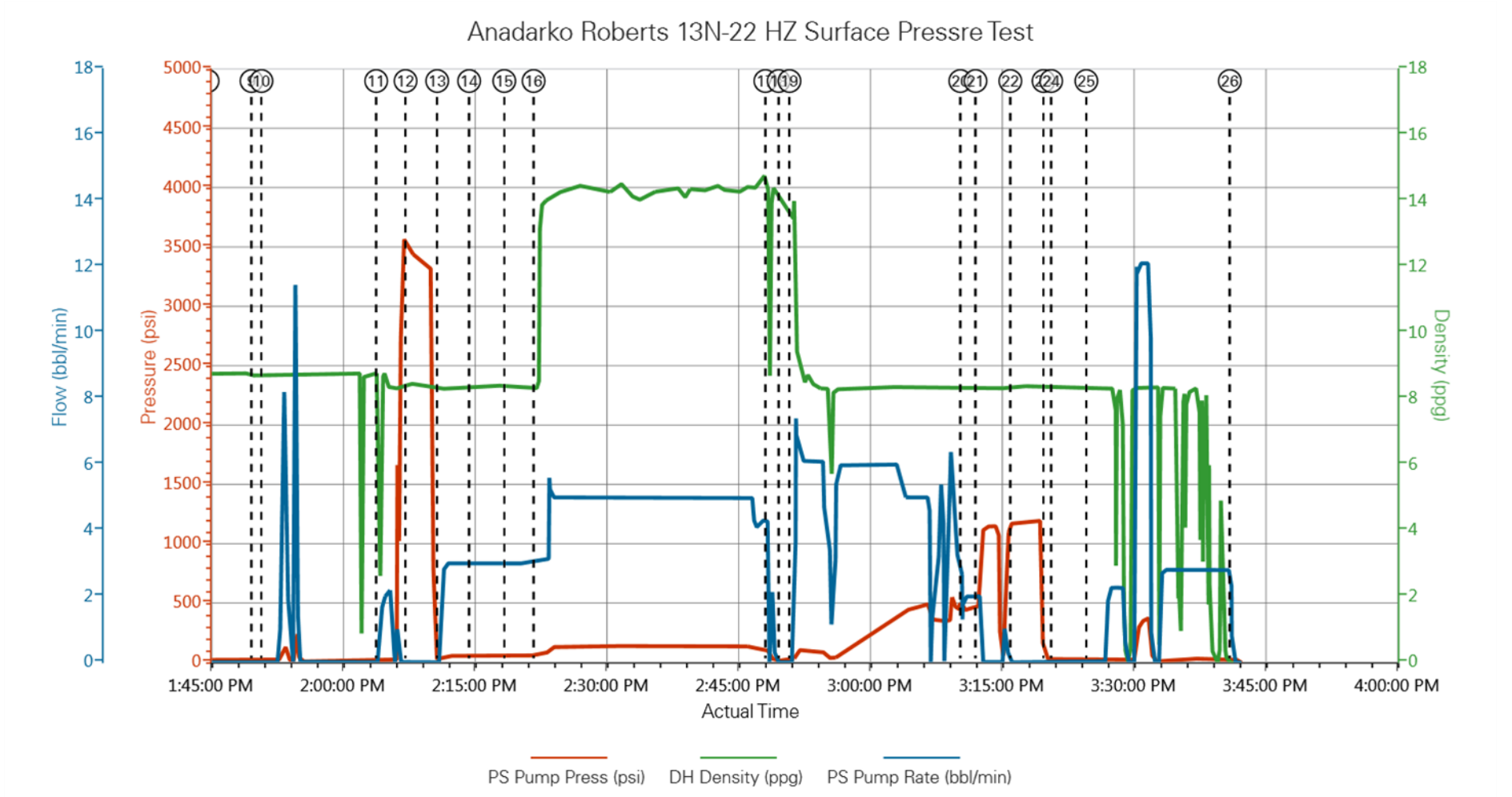
## 1.5 Job Event Log

| Type | Seq. No. | Activity | Graph Label | Date | Time | Source | Pass-Side Pump Pressure (psi) | Downhole Density (ppg) | Pass-Side Pump Rate (bbl/min) | Combined Pump Total (bbl) | Pump Stage Total (bbl) | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Event | 1 | Call Out | Call Out | 6/13/2014 | 07:00:00 | USER | | | | | | CREW IS CALLED OUT |
| Event | 2 | Pre-Convoy Safety Meeting | Pre-Convoy Safety Meeting | 6/13/2014 | 11:30:00 | USER | | | | | | CREW HAS PRE CONVOY SAFETY MEETING |
| Event | 3 | Depart from Service Center or Other Site | Depart from Service Center or Other Site | 6/13/2014 | 11:45:00 | USER | | | | | | CREW LEAVES THE YARD |
| Event | 4 | Arrive at Location from Service Center | Arrive at Location from Service Center | 6/13/2014 | 12:00:00 | USER | | | | | | CREW ARRIVES AT LOCAITON |
| Event | 5 | Assessment Of Location Safety Meeting | Assessment Of Location Safety Meeting | 6/13/2014 | 12:10:00 | USER | | | | | | CREW ASSESSES LOCATION |
| Event | 6 | Pre-Rig Up Safety Meeting | Pre-Rig Up Safety Meeting | 6/13/2014 | 12:20:00 | USER | | | | | | CREW HAS PRE RIG UP SAFETY MEETING |
| Event | 7 | Rig-Up Equipment | Rig-Up Equipment | 6/13/2014 | 12:30:00 | USER | | | | | | CREW RIGS UP |
| Event | 8 | Rig-Up Completed | Rig-Up Completed | 6/13/2014 | 13:45:00 | USER | 19.00 | 8.75 | 0.00 | 16.8 | 16.8 | CREW DONE RIGGING UP |
| Event | 9 | Pre-Job Safety Meeting | Pre-Job Safety Meeting | 6/13/2014 | 13:50:00 | USER | 19.00 | 8.72 | 0.00 | 16.8 | 16.8 | CREW HAS PRE JOB SAFETY MEETING WITH RIG CREW AND CO REP |
| Event | 10 | Start Job | Start Job | 6/13/2014 | 13:51:07 | COM14 | 19.00 | 8.75 | 0.00 | 16.8 | 16.8 | START JOB |
| Event | 11 | Pump Spacer 1 | Fill Lines | 6/13/2014 | 14:04:11 | COM14 | 17.00 | 3.11 | 1.10 | 0.0 | 0.0 | FILL LINES |
| Event | 12 | Test Lines | Test Lines | 6/13/2014 | 14:07:31 | COM14 | 3494.00 | 8.44 | 0.00 | 2.9 | 2.8 | TEST LINES TO 3000 PSI |
| Event | 13 | Pump Spacer 2 | Pump Water Spacer | 6/13/2014 | 14:11:07 | COM14 | 22.00 | 8.34 | 1.10 | 2.9 | 0.0 | PUMP 10 BBLS WATER |
| Event | 14 | Pump Spacer 1 | Pump Mud Flush | 6/13/2014 | 14:14:45 | COM14 | 53.00 | 8.36 | 3.00 | 13.6 | 0.1 | PUMP 12 BBLS MUD FLUSH |
| Event | 15 | Pump Spacer 2 | Pump Water Spacer | 6/13/2014 | 14:18:45 | COM14 | 55.00 | 8.34 | 3.00 | 25.6 | 0.1 | PUMP 10 BBLS WATER |
| Event | 16 | Pump Lead Cement | Pump Cement | 6/13/2014 | 14:22:05 | COM14 | 58.00 | 8.32 | 3.10 | 35.7 | 10.1 | PUMP 127 BBLS CEMENT 462 SKS 14.2 # 1.52 YEILD 7.64 GAL/SK |
| Event | 17 | Shutdown | Shutdown | 6/13/2014 | 14:48:28 | USER | 51.00 | 8.67 | 0.00 | 162.1 | 126.4 | SHUTDOWN / WASH UP ON PLUG |
| Event | 18 | Drop Top Plug | Drop Top Plug | 6/13/2014 | 14:49:59 | USER | 13.00 | 13.95 | 0.00 | 162.8 | 127.1 | DROP TOP PLUG |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Event | 19 | Pump Displacement | Pump Displacement | 6/13/2014 | 14:51:13 | COM14 | 22.00 | 13.29 | 1.70 | 162.9 | 127.2 | PUMP 92 BBLS WATER DISPLACEMENT |
| Event | 20 | Slow Rate | Slow Rate | 6/13/2014 | 15:10:39 | USER | 413.00 | 8.36 | 2.00 | 262.1 | 99.1 | SLOW RATE TO BUMMP THE PLUG |
| Event | 21 | Bump Plug | Bump Plug | 6/13/2014 | 15:12:23 | COM14 | 454.00 | 8.27 | 2.00 | 265.5 | 102.5 | BUMP PLUG |
| Event | 22 | Bump Plug | Bump Plug | 6/13/2014 | 15:16:21 | COM14 | 1183.00 | 8.38 | 0.00 | 266.3 | 103.3 | RE BUMP PLUG GOT 9 BBLS CEMENT TO SUREFACE |
| Event | 23 | Check Floats | Check Floats | 6/13/2014 | 15:20:07 | USER | 24.00 | 8.30 | 0.00 | 266.3 | 103.3 | CHECK FLOATS GOT 1 BBLS BACK |
| Event | 24 | Post-Job Safety Meeting (Pre Rig-Down) | Post-Job Safety Meeting (Pre Rig-Down) | 6/13/2014 | 15:21:00 | USER | 18.00 | 8.36 | 0.00 | 266.3 | 103.3 | CREW HAS POST JOB SAFETY MEETING AND TALKS ABOUT RIGGING DOWN |
| Event | 25 | Rig-Down Equipment | Rig-Down Equipment | 6/13/2014 | 15:25:00 | USER | 14.00 | 8.34 | 0.00 | 266.3 | 103.3 | CREW RIGS DOWN |
| Event | 26 | End Job | End Job | 6/13/2014 | 15:41:19 | COM14 | | | | | | |
| Event | 27 | Rig-Down Completed | Rig-Down Completed | 6/13/2014 | 16:30:00 | USER | | | | | | CREW DONE RIGGING DOWN |
| Event | 28 | Pre-Convoy Safety Meeting | Pre-Convoy Safety Meeting | 6/13/2014 | 16:45:00 | USER | | | | | | CREW HAS PRE CONVOY SAFETY MEETING |
| Event | 29 | Depart Location for Service Center or Other Site | Depart Location for Service Center or Other Site | 6/13/2014 | 17:00:00 | USER | | | | | | CREW LEAVES THE LOCATION |

## 2.0 Custom Graphs

### 2.1 Custom Graph



## 3.0 Appendix