**HALLIBURTON**

# CEMENT BOND LOG

| | | | |
|---|---|---|---|
| Company | KPK | | |
| Well | AMEN 1 | | |
| Field | WTENBERG | | |
| County | WELD | State | COLORADO |

Company KPK
Well AMEN 1
Field WTENBERG
County WELD
State COLORADO

API No.: 05-123-10773
Serv #:
Location: SHL: 610 FWL 610' FSL
Other Services
N/A

Sec: 18 Twp: 5N Rge: 67W

| | | | | | |
|---|---|---|---|---|---|
| Permanent Datum | GL | Elevation | 4884' | Elevation | |
| Log Measured From | KB , 11 Ft. above perm. datum | | | K.B.<br>D.F.<br>G.L. | 4895'<br>4894'<br>4884' |
| Drilling Measured From | KB | | | | |

| | | | |
|---|---|---|---|
| Date @ Time Logged | 22-FEB-2013 | Type Fluid in Hole | FRESH WATER |
| Run No. | ONE | Density of Fluid | 8.33 |
| Depth - Driller | 7349 | Fluid Level | SURFACE |
| Depth - Logger | 851 | Cement Top Est. Logged | 200 |
| Bottom - Logged Interval | 838 | Equipment / Location | 11874896 / |
| Top - Log Interval | SURFACE | Recorded by | JOSHUA MCDANIEL |
| Max. Recorded Temp. | 100 | Witnessed by | PAUL ANDERSON |

| CEMENTING DATA | Surface String | Protection String | Production String | Liner |
|---|---|---|---|---|
| Date / Time Cemented | | | | |
| Primary / Squeeze | | | | |
| Expected Compressive Strength | psi@ hrs | psi@ hrs | psi@ hrs | psi@ hrs |
| Cement Volume | | | | |
| Cement Type / Weight | / | / | / | / |
| Formulation | | | | |
| Mud Type / Mud Wgt. | / | / | / | / |

| Run Number | Borehole Record | | | Casing & Tubing Record | | | |
|---|---|---|---|---|---|---|---|
| | Bit | From | To | Size | Weight | From | To |
| | 7 7/8 | 300 | 7354 | 4 1/2 | 11.6 | SURFACE | T.D. |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

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HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR RECOMMENDATIONS AGREES THAT HALLIBURTON IS NOT RESPONSIBLE EXCEPT WHERE DUE TO GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, FOR ANY LOSS, DAMAGES, OR EXPENSES RESULTING FROM THE USE THEREOF.

## Comments

LOG CORRELATED TO OPEN HOLE LOG DATED 30-AUG-82
GAMMA RAY CALLIBRATED TO BLANKET VALUE 241 GAPI
ESTIMATED TOP OF CEMENT @ 200

THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES!
YOUR CREW TODAY: JOSHUA MCDANIEL, NOLAN RADFORD,

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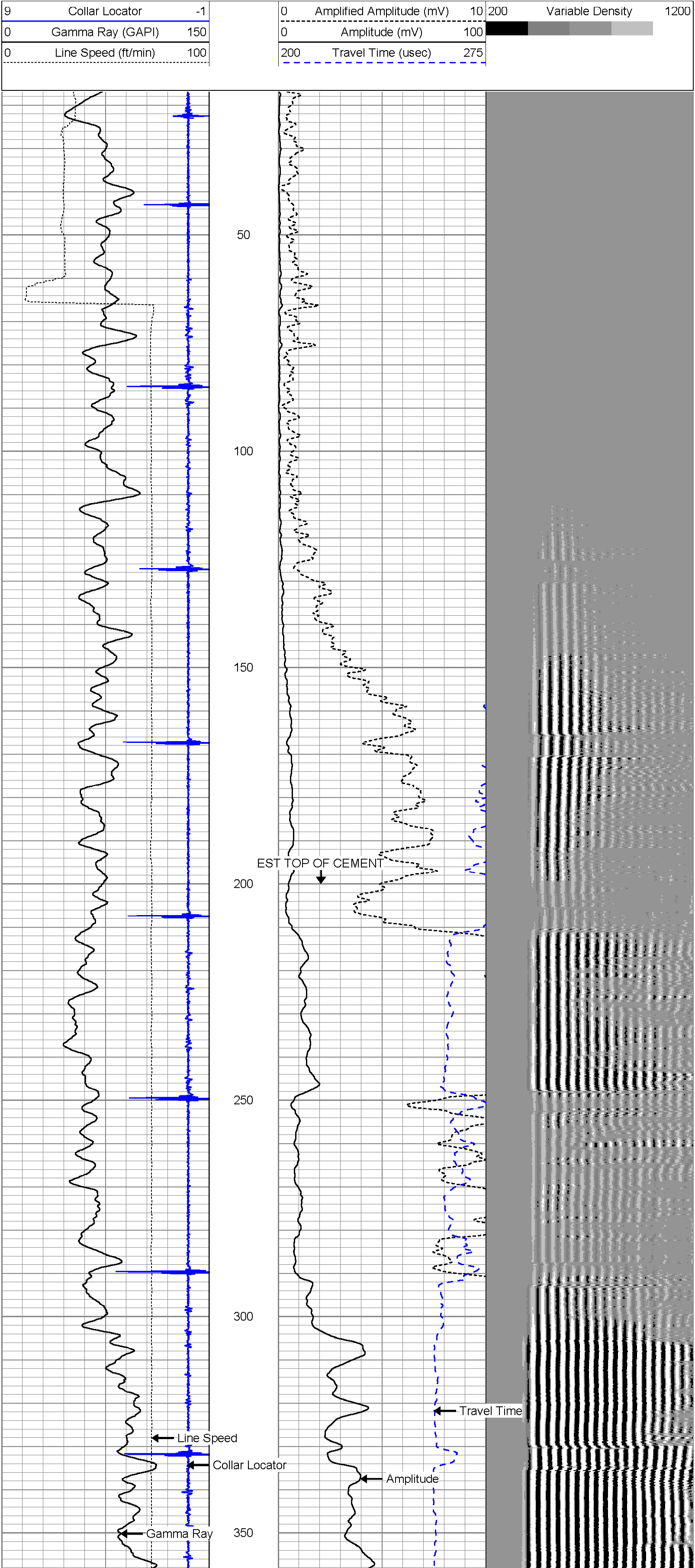
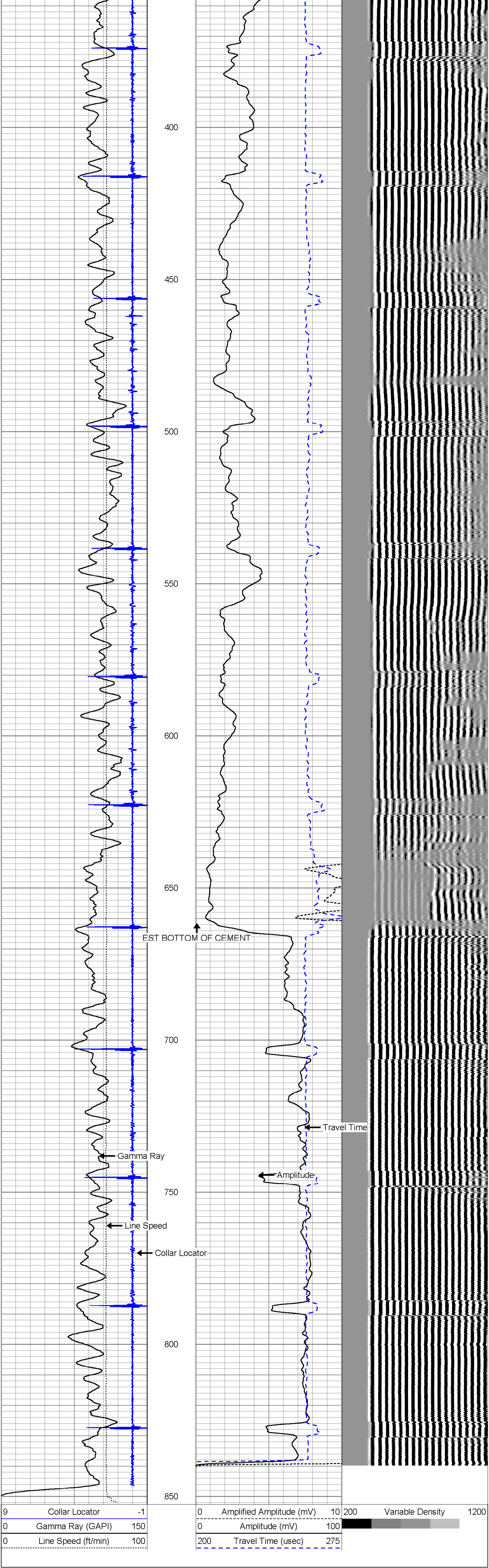
## MAIN PASS

5"=100'

| | |
|---|---|
| Database File: | kpk amen 1.db |
| Dataset Pathname: | pass16 |
| Presentation Format: | cbl_dr |
| Dataset Creation: | Fri Feb 22 11:17:06 2013 by Log Halliburton Casedho |
| Charted by: | Depth in Feet scaled 1:240 |





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MAIN PASS

5"=100'

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CORRELATION PASS

5"=100'

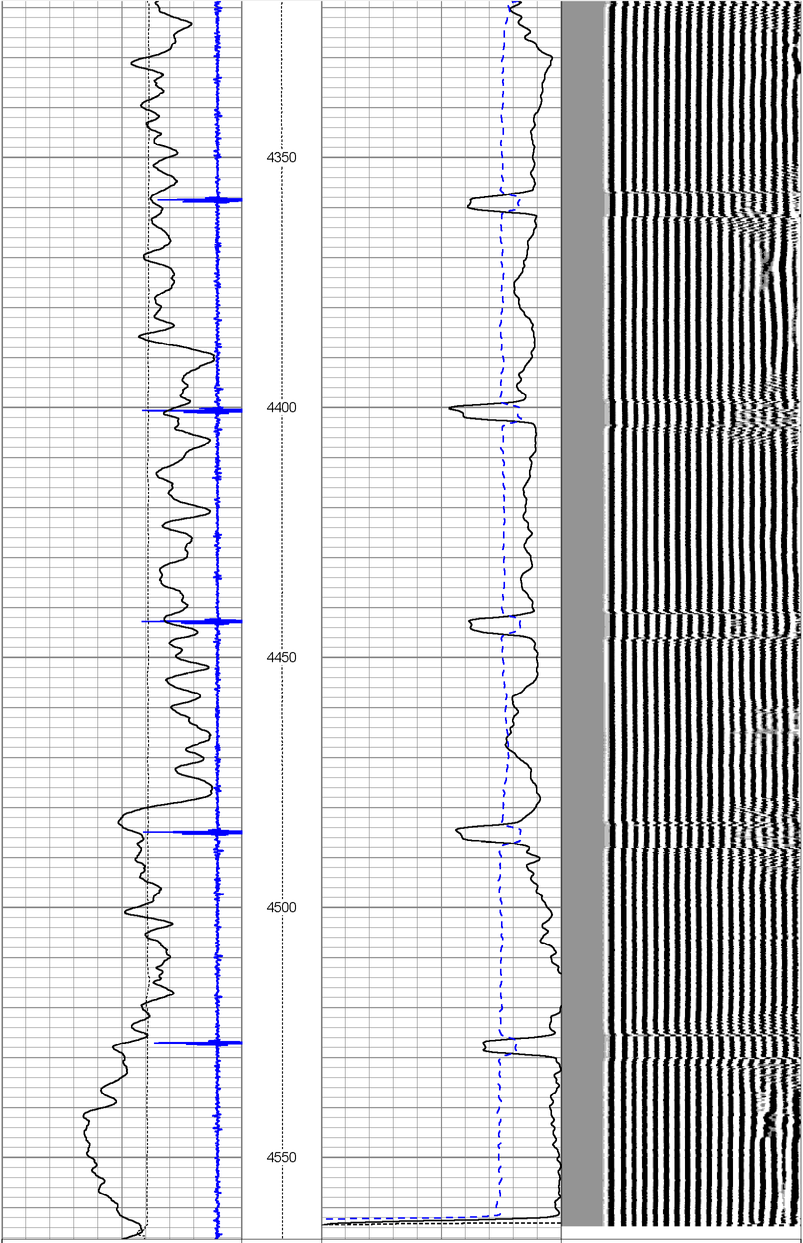
| | |
|---|---|
| Database File: | kpk amen 1.db |
| Dataset Pathname: | pass11 |
| Presentation Format: | cbl_dr |
| Dataset Creation: | Fri Feb 22 10:43:17 2013 by Log Halliburton Casedho |
| Charted by: | Depth in Feet scaled 1:240 |

9 Collar Locator -1
0 Gamma Ray (GAPI) 150
0 Line Speed (ft/min) 100

TEMP
(degF)
0 200

0 Amplitude (mV) 85
200 Travel Time (usec) 275

200 Variable Density 1200



9 Collar Locator -1
0 Gamma Ray (GAPI) 150
0 Line Speed (ft/min) 100

TEMP
(degF)
0 200

0 Amplitude (mV) 85
200 Travel Time (usec) 275

200 Variable Density 1200

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## CORRELATION PASS

5"=100'

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## REPEAT PASS

5"=100'

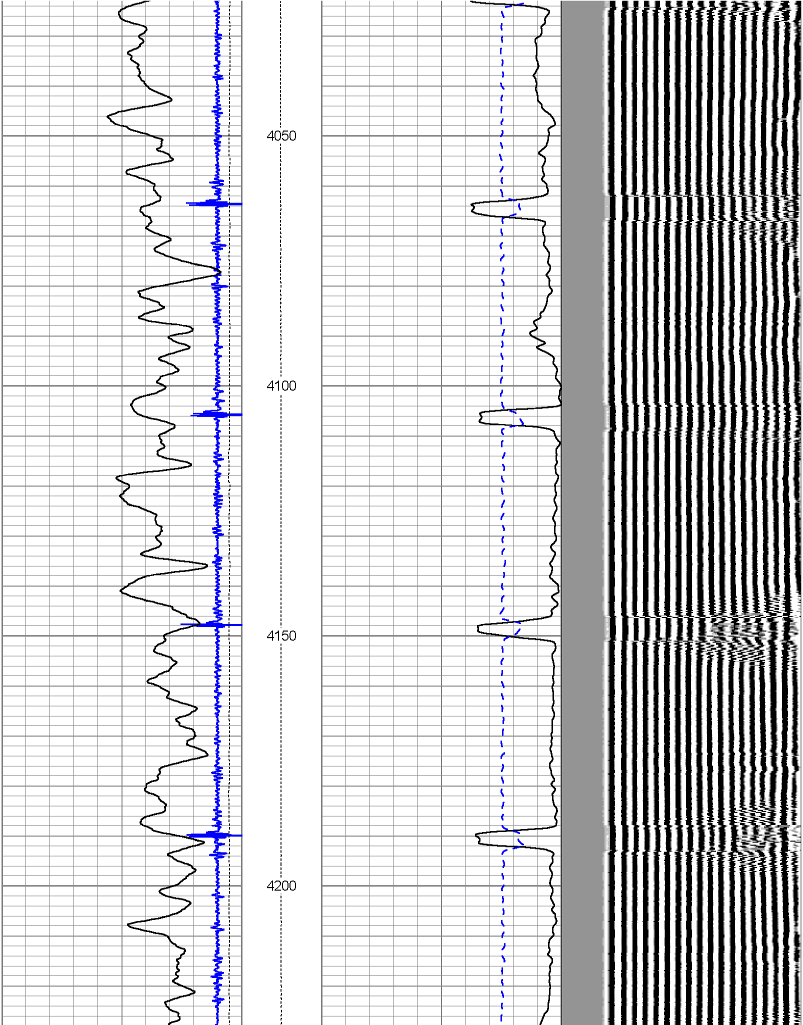
| | |
|---|---|
| Database File: | kpk amen 1.db |
| Dataset Pathname: | pass13 |
| Presentation Format: | cbl_dr |
| Dataset Creation: | Fri Feb 22 10:48:55 2013 by Log Halliburton Casedho |
| Charted by: | Depth in Feet scaled 1:240 |

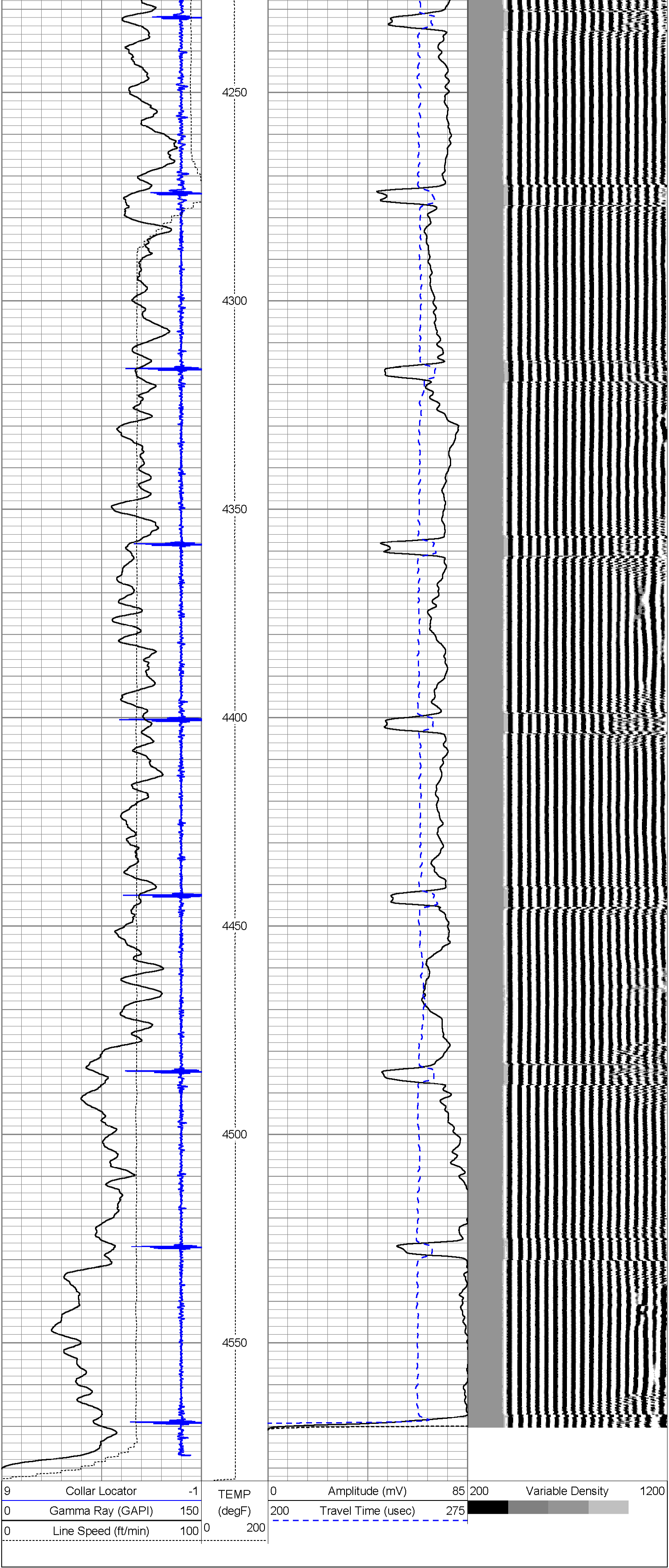
9 Collar Locator -1
0 Gamma Ray (GAPI) 150
0 Line Speed (ft/min) 100

TEMP
(degF)
0 200

0 Amplitude (mV) 85
200 Travel Time (usec) 275

200 Variable Density 1200





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# MAIN PASS

5"=100'

## Sensor Report

Database File: kpk amen 1.db
Dataset Pathname: pass17
Dataset Creation: Fri Feb 22 11:41:02 2013 by Log Halliburton Casedho

| Sensor Name | Offset<br>(ft) |
|---|---|
| WVF3 | 13.68 |
| WVF5 | 12.68 |
| CCL | 6.04 |
| GR | 4.75 |
| TEMP | 0.17 |
| LLMTEN | 0 |
| Telemetry | 0 |

## Calibration Report

Database File: kpk amen 1.db
Dataset Pathname: pass17
Dataset Creation: Fri Feb 22 11:41:02 2013 by Log Halliburton Casedho

### Temperature Calibration Report

Serial Number: Tit1.3_02
Tool Model: Titan
Performed: Sun Jan 20 14:20:13 2013

| | Reference | Reading |
|---|---|---|
| Low Reference: | 61.00 degF | 558.10 cps |
| High Reference: | 120.00 degF | 1975.90cps |

Gain: 0.04
Offset: 37.78
Delta Spacing 2

### Gamma Ray Calibration Report

Type / Serial: Probe / 275

| SHOP CALIBRATION | Tue Jan 22 09:17:27 2013 | | | |
|---|---|---|---|---|
| | Counts/Sec. | Gain | Offset | Jig | Units |
| Background | 47.3 | | | | cps |
| Calibrator | 185.8 | | | | cps |
| | | 1.7403 | | | GAPI/cps |

| PRIMARY VERIFICATION | Tue Jan 22 09:21:13 2013 | | |
|---|---|---|---|
| Background | 83.0 | | cps |
| Calibrator | 332.1 | | cps |
| Difference | | 249.1 | GAPI |

| BEFORE SURVEY VERIFICATION | Tue Jan 22 09:25:05 2013 | | |
|---|---|---|---|
| Background | 84.8 | | cps |
| Calibrator | 327.2 | | cps |
| Difference | | 242.4 | GAPI |

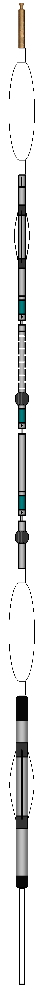
| AFTER SURVEY VERIFICATION | Fri Feb 22 11:40:44 2013 | | |
|---|---|---|---|
| Background | 117.0 | | cps |
| Calibrator | 449.1 | | cps |
| Difference | | 332.1 | GAPI |

### Cement Bond Log Calibration Report

Serial Number: 275
Tool Model: Probe
Performed: Fri Feb 22 10:41:04 2013

Depth: 4121.76 ft
Casing Diameter: 4.5 in

| | 3' Spacing | 5' Spacing | |
|---|---|---|---|
| Signal Zero: | 0.15 | 0.15 | mV |
| Calibrated Amplitude: | 82 | 82 | mV |
| Reading at Signal Zero: | 0.00202637 | 0.00251465 | V |
| Reading in Free Pipe: | 0.588623 | 0.56355 | V |
| Gain: | 139.534 | 145.891 | |
| Offset: | -0.132746 | -0.216865 | |



| Sensor | Offset (ft) | Schematic | Description | Len (ft) | OD (in) | Wt (lb) |
|---|---|---|---|---|---|---|
| | | | 1_CABLEHEAD<br>1"OD CABLE HEAD | 1.02 | 1.44 | 3.00 |
| | | | CENT-Probe (PT_MONO2)<br>Probe 2 3/4 Centralizer | 2.88 | 2.75 | 35.00 |
| WVF3 | 13.68 | | CBL-Probe (275)<br>Probe 2.75" Dual Receiver Bond | 8.92 | 2.75 | 60.00 |
| WVF5 | 12.68 | | | | | |
| | | | CENT-Probe (PT_MONO2)<br>Probe 2 3/4 Centralizer | 2.88 | 2.75 | 35.00 |
| CCL | 6.04 | | | | | |
| GR | 4.75 | | GR-Probe (275)<br>Probe 2.75" 4 Channel Pulse | 4.33 | 2.75 | 30.00 |
| | | | TEMP-Titan (Tit1.3_02)<br>Titan Temp 1.3875 | 2.21 | 1.39 | 10.00 |
| TEMP | 0.17 | | | | | |
| LLMTEN | 0.00 | | | | | |

| | |
|---|---|
| Dataset: | kpk amen 1.db: field/well/run1/pass17 |
| Total Length: | 22.25 ft |
| Total Weight: | 173.00 lb |
| O.D. | 2.75 in |

| | |
|---|---|
| Company | KPK |
| Well | AMEN 1 |
| Field | WTENBERG |
| County | WELD |
| State | COLORADO |

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# CEMENT BOND LOG