# Pulsed Neutron
# Gamma Ray
# Casing Collar Log

| | |
|---|---|
| Company | TEP Rocky Mountain LLC |
| Well | Ware SR 23-12 |
| Field | Rulison |
| County | Garfield |
| State | Colorado |
| Location: | API # : 05-045-23439 |
| | 1818' FSL & 2296' FWL NESW |
| | SEC 12 TWP 7S RGE 94W |
| Other Services | RBL |

| | | | |
|---|---|---|---|
| Permanent Datum | Ground Level | Elevation 7479' | Elevation |
| Log Measured From | Kelly Bushing | 24 FT | K.B. 7503'<br>D.F. 7502'<br>G.L. 7479' |
| Drilling Measured From | Kelly Bushing | | |

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Well Ware SR 23-12
Field Rulison
County Garfield
State Colorado

| | |
|---|---|
| Date | 14-DEC-2017 |
| Run Number | One |
| Depth Driller | 9591 FT |
| Depth Logger | 9522 FT |
| Bottom Logged Interval | 9516 FT |
| Top Log Interval | 5391 FT |
| Open Hole Size | 8.750" |
| Type Fluid | Fresh Water |
| Density / Viscosity | 8.34 lb/gal |
| Max. Recorded Temp. | -- |
| Estimated Cement Top | -- |
| Time Well Ready | -- |
| Time Logger on Bottom | -- |
| Equipment Number | -- |
| Location | Grand Junction, CO |
| Recorded By | Z. Fisher |
| Witnessed By | -- |

| Borehole Record | | | | Tubing Record | | | |
|---|---|---|---|---|---|---|---|
| Run Number | Bit | From | To | Size | Weight | From | To |
| | | | | | | | |

| Casing Record | Size (in) | Wgt (lbs/ft) | Grade | Top | Bottom |
|---|---|---|---|---|---|
| Surface Casing | 9 5/8 | 32.3 | H-40 | Surface | 1141 FT |
| Intermediate #1 | 4 1/2 | 11.6 | P-110 | Surface | 9548 FT |
| Intermediate #2 | | | | | |
| Liner | | | | | |

<<< Fold Here >>>

All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

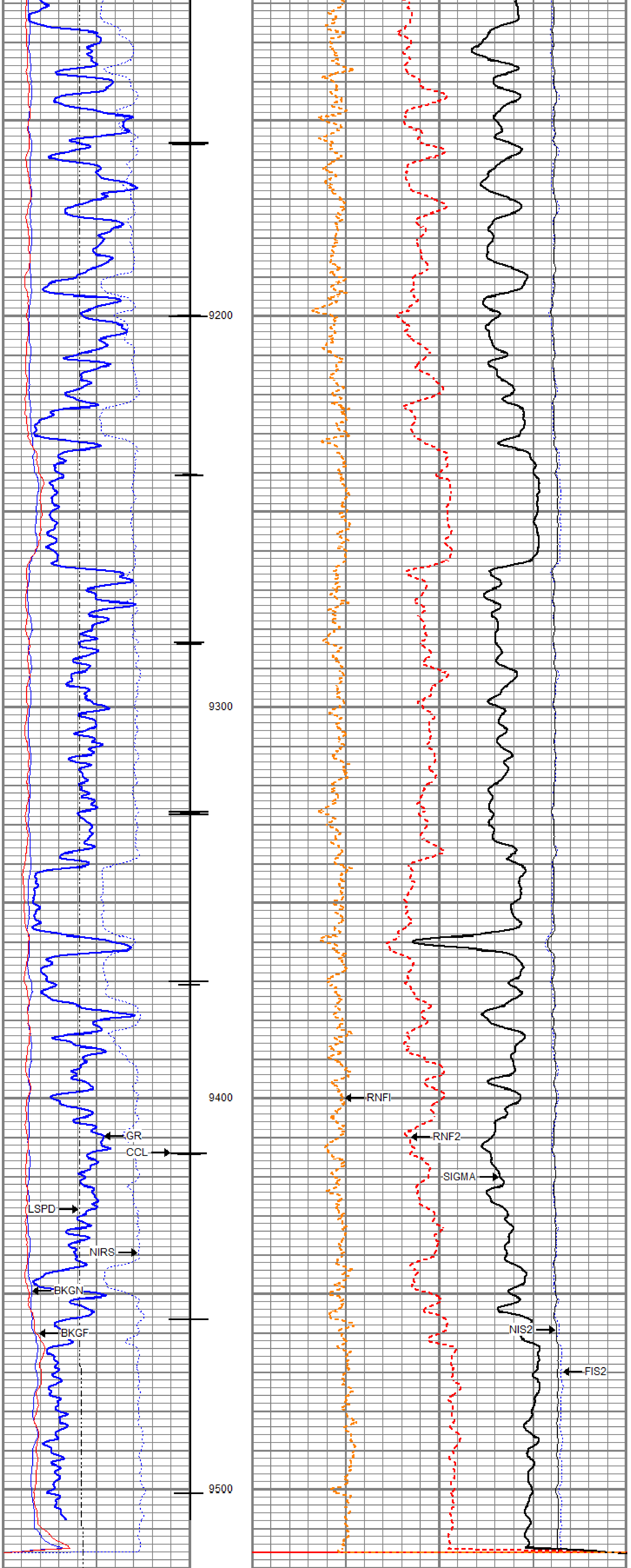
## Comments

Log ran as per customer request
Depth referenced to Reliance Bond Log dated 08-DEC-2017
Log ran from 9516 FT to 5391 FT
Pulsed Neutron Data logged with the Hunter RAS Tool

Thank you for choosing Reliance Oilfield Services, LLC!!

# Main Pass

| | |
|---|---|
| Database File | tep\sr 23-12\20171208\pn\tep_sr_23-12_pn_dec-14-17.db |
| Dataset Pathname | main1.2 |
| Presentation Format | ros_pdn_hunter |
| Dataset Creation | Fri Dec 15 17:02:10 2017 |
| Charted by | Depth in Feet scaled 1:240 |



| | | |
|---|---|---|
| 0 | Gamma Ray (GAPI) | 150 |
| | Casing Collar Locator | |
| -100 | Line Speed (ft/min) | 100 |
| 0 | NIRS (cps) | 400000 |
| 0 | BKGN (cps) | 4000 |
| 0 | BKGF (cps) | 2000 |

| | | |
|---|---|---|
| 4 | RNF2 | 0 |
| 60 | SIGMA (cu) | 0 |
| 4.5 | RNFI | 0 |
| | FIS2 | |
| 0 | (cps) | 45000 |
| | NIS2 | |
| 0 | (cps | 100000 |

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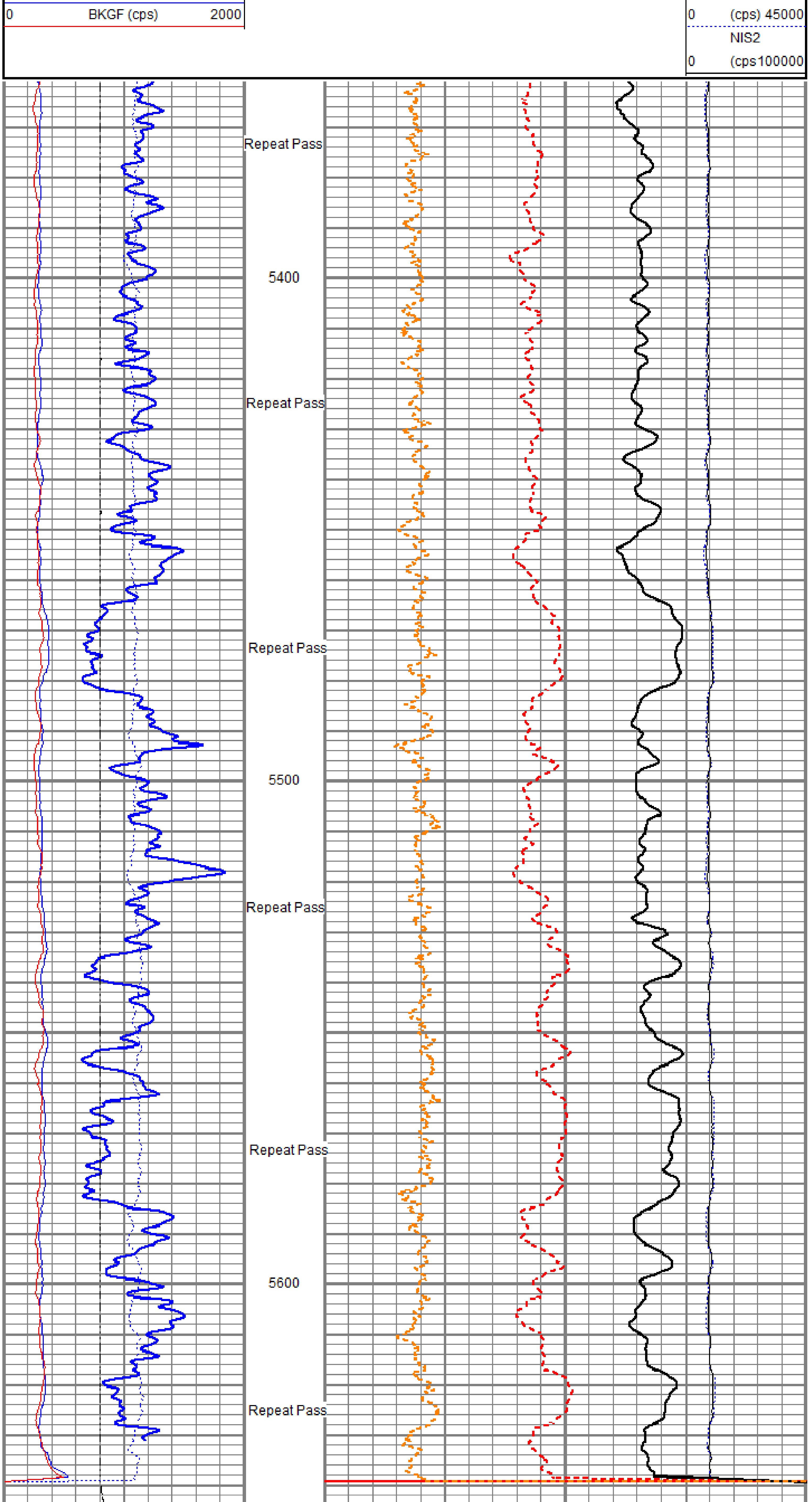
# Repeat Pass

| | |
|---|---|
| Database File | tep\sr 23-12\20171208\pn\tep_sr_23-12_pn_dec-14-17.db |
| Dataset Pathname | Repeat.2 |
| Presentation Format | ros_pdn_hunter |
| Dataset Creation | Fri Dec 15 17:03:24 2017 |
| Charted by | Depth in Feet scaled 1:240 |

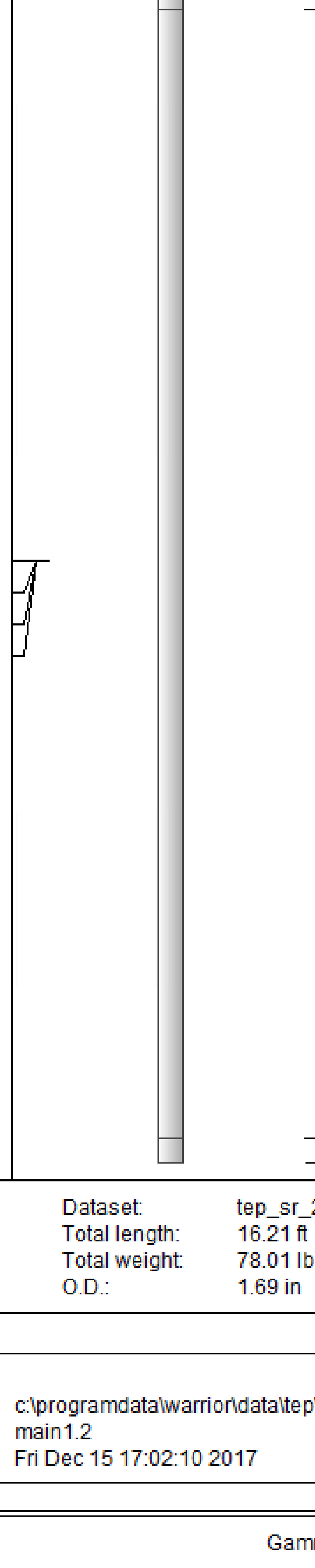
| | | |
|---|---|---|
| 0 | Gamma Ray (GAPI) | 150 |
| -100 | Line Speed (ft/min) | 100 |
| 0 | NIRS (cps) | 400000 |
| 0 | BKGN (cps) | 4000 |
| 0 | BKGF (cps) | 2000 |

| | | |
|---|---|---|
| 4 | RNF2 | 0 |
| 60 | SIGMA (cu) | 0 |
| 4.5 | RNFI | 0 |
| | FIS2 | |
| 0 | (cps) | 45000 |
| | NIS2 | |
| 0 | (cps | 100000 |



| | | |
|---|---|---|
| 0 | Gamma Ray (GAPI) | 150 |
| -100 | Line Speed (ft/min) | 100 |
| 0 | NIRS (cps) | 400000 |
| 0 | BKGN (cps) | 4000 |
| 0 | BKGF (cps) | 2000 |

| | | |
|---|---|---|
| 4 | RNF2 | 0 |
| 60 | SIGMA (cu) | 0 |
| 4.5 | RNFI | 0 |
| | FIS2 | |
| 0 | (cps) | 45000 |
| | NIS2 | |
| 0 | (cps | 100000 |

| Sensor | Offset (ft) | Schematic | Description | Length (ft) | O.D. (in) | Weight (lb) |
|---|---|---|---|---|---|---|
| TCUTEMP<br>TCUVOLT<br>GCL_CCL | 14.69<br>14.69<br>13.97 |  | HWS_TCU-001 (001704)<br>HWS Telemetry Control Unit | 1.52 | 1.69 | 7.80 |
| GCL_GR<br>GCL_GR | 12.50<br>12.50 | | HWS_GCL-001 (001475)<br>HWS Gamma Ray Collar Locator (1.6875") | 2.69 | 1.69 | 13.40 |
| Long<br>Far<br>Near<br>Anci | 6.25<br>6.25<br>6.25<br>6.25 | | HWS_RAS-RAS001 (003040)<br>Hunter Well Science Pulsed Neutron Tool | 11.75 | 1.69 | 55.82 |
| | | | HWS_TBN-001 (000001)<br>HWS Terminator Bull Nose (1.6875") | 0.25 | 1.69 | 0.99 |

| | |
|---|---|
| Dataset: | tep_sr_23-12_pn_dec-14-17.db: field/well/run1/main1.2 |
| Total length: | 16.21 ft |
| Total weight: | 78.01 lb |
| O.D.: | 1.69 in |

## Calibration Report

| | |
|---|---|
| Database File | c:\programdata\warrior\data\tep\sr 23-12\20171208\pn\tep_sr_23-12_pn_dec-14-17.db |
| Dataset Pathname | main1.2 |
| Dataset Creation | Fri Dec 15 17:02:10 2017 |

## Gamma Ray Calibration Report

| | | |
|---|---|---|
| Serial Number: | 001475 | |
| Tool Model: | 001 | |
| Performed: | (Not Performed) | |
| Calibrator Value: | 1.0 | GAPI |
| Background Reading: | 0.0 | |
| Calibrator Reading: | 1.0 | |
| Sensitivity: | 1.0000 | GAPI/ |

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