**Century WIRELINE SERVICES**

# GAMMA - CALIPER
# THRU PIPE DENSITY
# DHGH-14-14

| | |
|---|---|
| COMPANY | ATRUM COAL |
| WELL | DHGH-14-14 |
| FIELD | GROUNDHOG |
| COUNTRY | CANADA |
| PROVINCE | BRITISH COLUMBIA |

OTHER SERVICES:
NEUTRON

| | |
|---|---|
| LSD | GROUNDHOG |
| SECTION | N/A |
| TOWNSHIP | N/A |
| RANGE | N/A |
| LICENSE NO. | N/A |
| UNIQUE WELL ID. | N/A |

| | | | |
|---|---|---|---|
| PERMANENT DATUM | GL | ELEVATION KB | N/A |
| LOG MEASURED FROM | GL | ELEVATION DF | N/A |
| DRL MEASURED FROM | GL | ELEVATION GL | N/A |

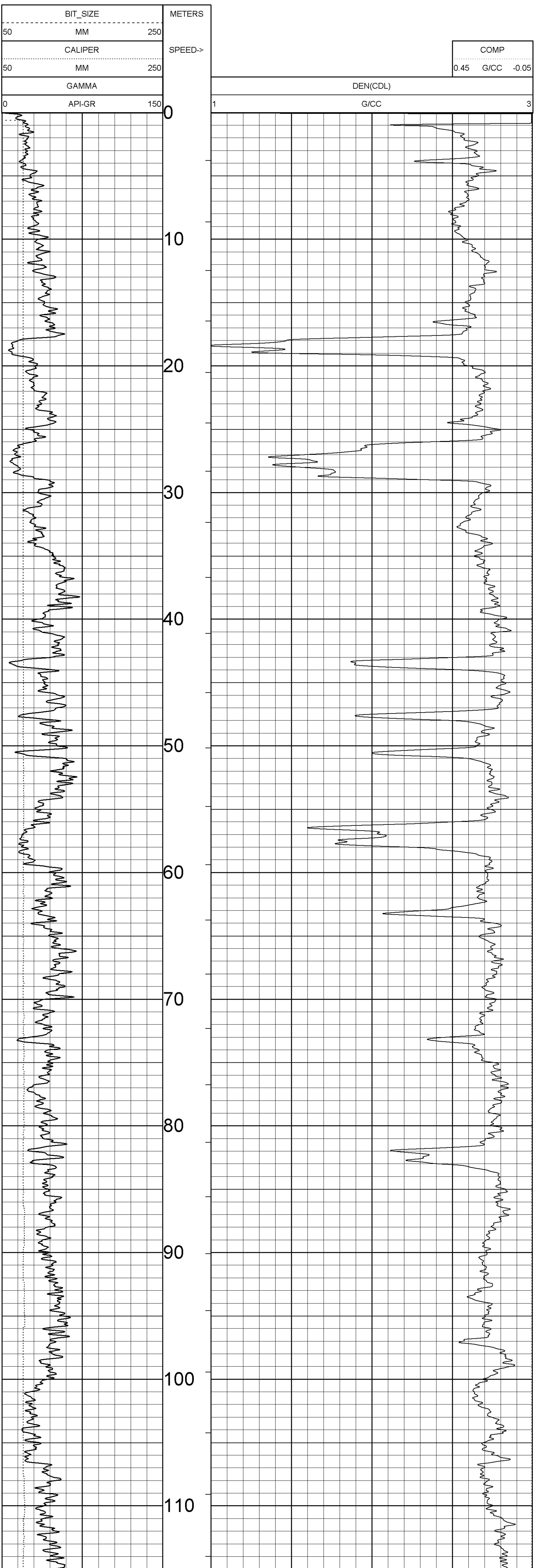
| | | | |
|---|---|---|---|
| DATE | 06/15/14 | RIG NUMBER | 2 |
| DEPTH DRILLER | 152.09 | LOGGER TD | |
| BIT SIZE | 9.80 | ARRIVAL TIME | 7:30 |
| LOG TOP | -1.40 | DEPARTURE TIME | |
| LOG BOTTOM | 151.39 | CIRC STOPPED | N/A |
| CASING LOGGER | 4.57 | | |
| CASING DRILLER | 4.57 | | |
| CASING TYPE | STEEL | | |
| BOREHOLE FLUID | WATER | | |
| RM TEMPERATURE | N/A | | |
| MUD RES | N/A | | |
| MUD WEIGHT | 1.00 | | |
| WITNESSED BY | N/A | | |
| RECORDED BY | T. NEAL | | |
| REMARKS 1 | VERTICAL | | |
| REMARKS 2 | IN-PIPE | | |

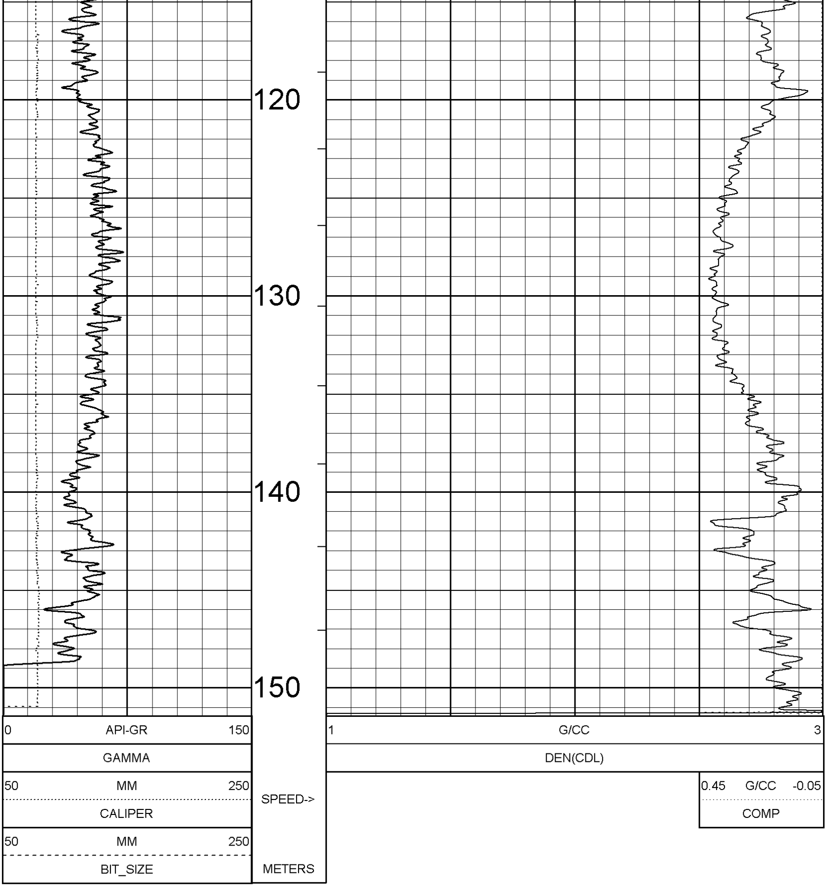
ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

## DENSITY LOG 1:200 (THRU-PIPE) DHGH-14-14 06/15/14

### LOG PARAMETERS

| | | |
|---|---|---|
| MATRIX DENSITY : 2.65 | NEUTRON MATRIX : SANDSTONE | MATRIX DELTA T : 177 |
| MAGNETIC DECL : 19.5 | ELECT. CUTOFF : 75000 | BIT SIZE : 9.80 |
| PRESENTATION NAME/DATE = Atrum_9239_(IN-PIPE)_(200scale).0 06/12/2014 | | VERSION = 3.64KX |





## DENSITY LOG 1:200 (THRU-PIPE) DHGH-14-14 06/15/14

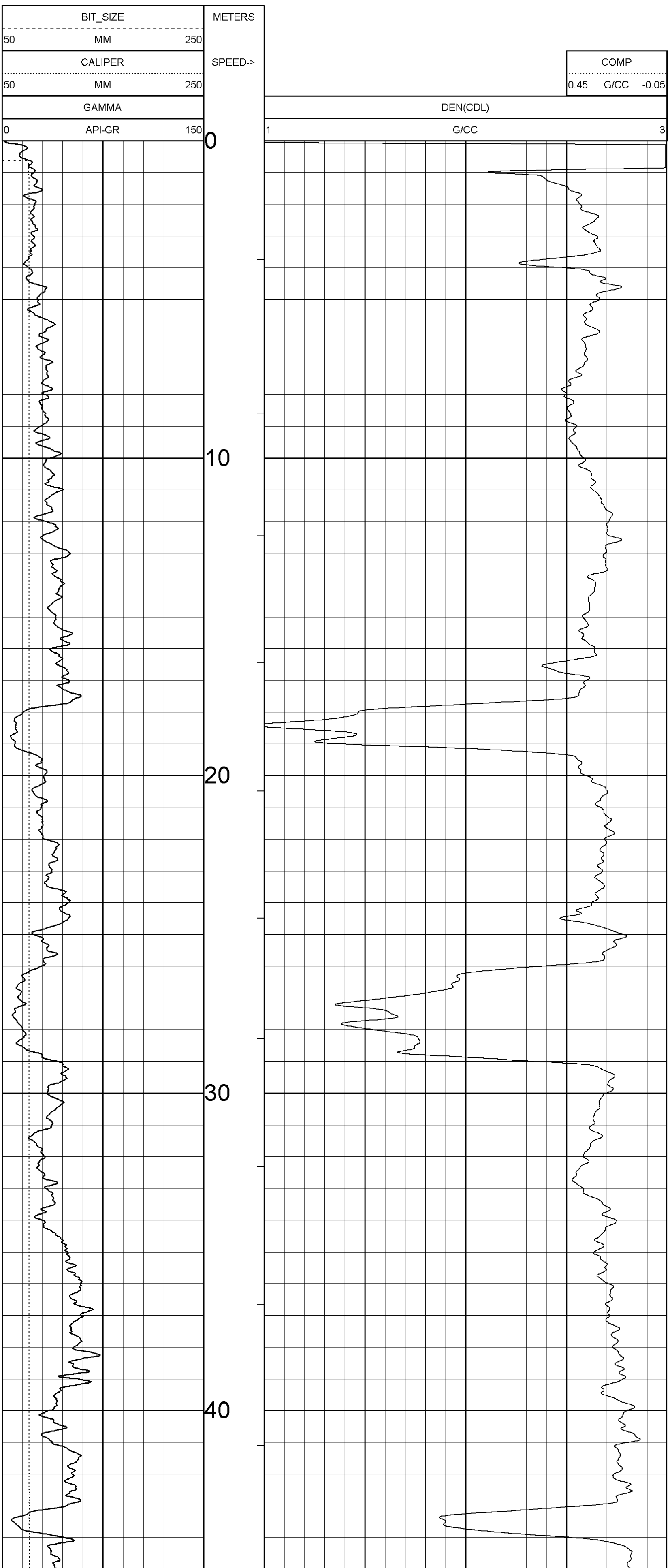
### LOG PARAMETERS

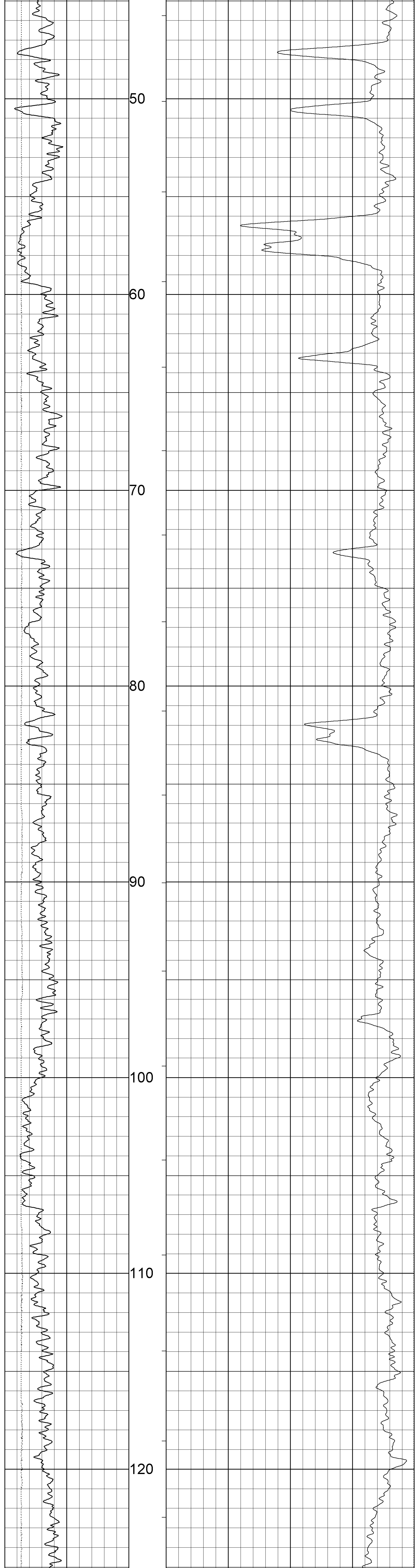
MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL : 19.5 ELECT. CUTOFF : 75000 BIT SIZE : 9.80
PRESENTATION NAME/DATE = Atrum_9239_(IN-PIPE)_(200scale).0 06/12/2014 VERSION = 3.64KX

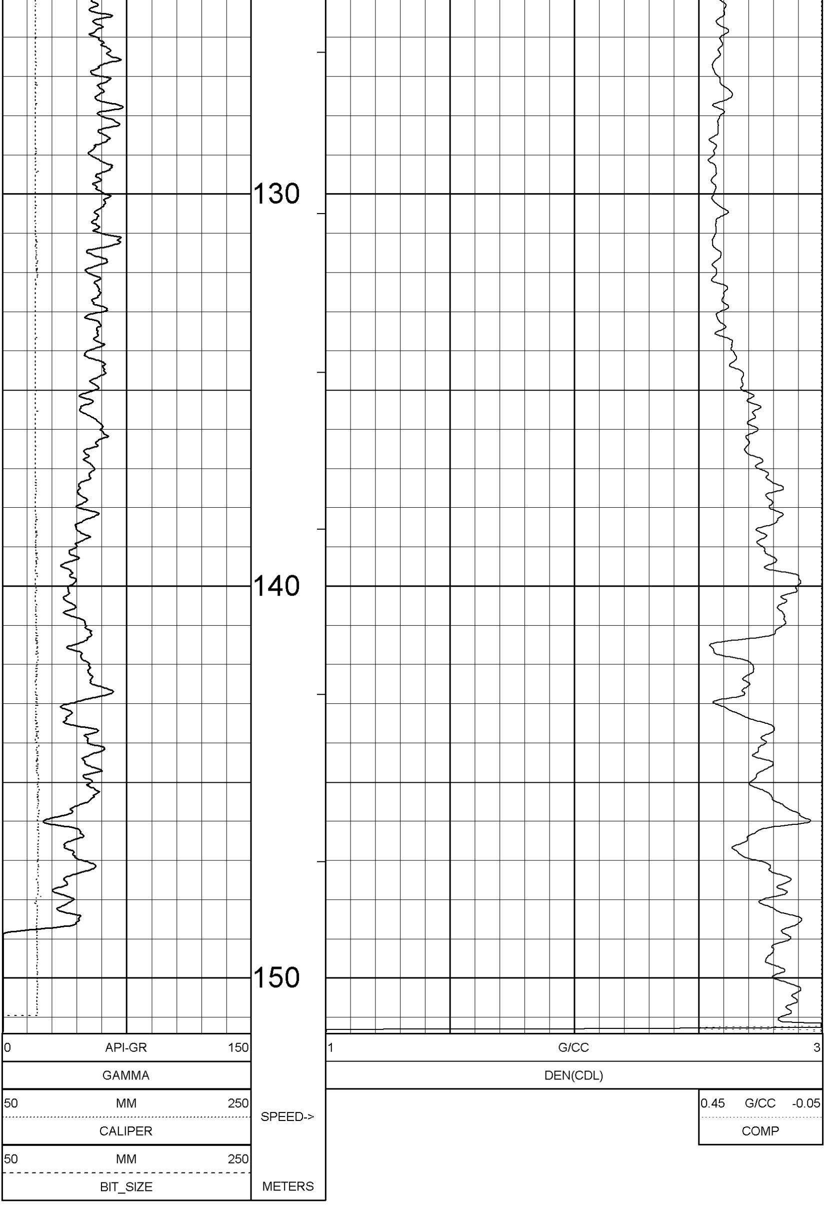
## DENSITY LOG 1:100 (THRU-PIPE) DHGH-14-14 06/15/14

### LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL : 19.5 ELECT. CUTOFF : 75000 BIT SIZE : 9.80
PRESENTATION NAME/DATE = Atrum_9239_(IN-PIPE)_(100scale).0 06/12/2014 VERSION = 3.64KX







# DENSITY LOG 1:100 (THRU-PIPE) DHGH-14-14 06/15/14

## LOG PARAMETERS

| | | |
|---|---|---|
| MATRIX DENSITY : 2.65 | NEUTRON MATRIX : SANDSTONE | MATRIX DELTA T : 177 |
| MAGNETIC DECL : 19.5 | ELECT. CUTOFF : 75000 | BIT SIZE : 9.80 |
| PRESENTATION NAME/DATE = | Atrum_9239_(IN-PIPE)_(100scale).0 06/12/2014 | VERSION = 3.64KX |

TOOL CALIBRATION DHGH-14-14 06/15/14 09:15
TOOL 9239C TM VERSION 2025
SERIAL NUMBER 2477

| | DATE | TIME | SENSOR | STANDARD | | RESPONSE | |
|---|---|---|---|---|---|---|---|
| 1 | Mar21,14 | 14:16:58 | GAMMA | 0.100 | [API-GR ] | 4.000 | [CPS] |
| | Mar21,14 | 14:16:58 | GAMMA | 545.000 | [API-GR ] | 589.000 | [CPS] |
| 2 | Jun14,13 | 08:36:44 | VOLTAGE | 26.400 | [MV ] | 8050.000 | [CPS] |
| | Jun14,13 | 08:36:44 | VOLTAGE | 229.200 | [MV ] | 35258.000 | [CPS] |
| 3 | Mar21,14 | 13:07:48 | CALIPER | 100.000 | [MM ] | 168300.000 | [CPS] |
| | Mar21,14 | 13:07:48 | CALIPER | 200.000 | [MM ] | 423180.000 | [CPS] |
| 4 | Mar21,14 | 13:58:29 | DEN(LS) | 1.620 | [G/CC ] | 8686.000 | [CPS] |
| | Mar21,14 | 13:58:29 | DEN(LS) | 2.612 | [G/CC ] | 1205.000 | [CPS] |
| 5 | Mar21,14 | 13:59:03 | DEN(SS) | 1.590 | [G/CC ] | 31905.000 | [CPS] |
| | Mar21,14 | 13:59:03 | DEN(SS) | 2.580 | [G/CC ] | 14021.000 | [CPS] |
| 6 | Jun14,13 | 07:59:07 | CALIPERL | Default | [CPS] | Default | [CPS] |
| | Jun14,13 | 07:59:07 | CALIPERL | Default | [CPS] | Default | [CPS] |
| 7 | Mar21,14 | 13:27:18 | CURRENT | 26.400 | [UA ] | 6623.000 | [CPS] |
| | Mar21,14 | 13:27:18 | CURRENT | 229.200 | [UA ] | 23884.000 | [CPS] |
| 8 | Jun14,13 | 07:59:07 | F | Default | [CPS] | | |
| 9 | Jun14,13 | 07:59:07 | X | Default | [CPS] | | |