Plate 1

Comparison of Geophysical Logging, Lithology, and

Well Completion Information for 13P

Depth
1in:50ft

Natural Gamma (Drill-string, GLS)
0 counts per second 300

Natural Gamma (Open-hole, GLS)
0 counts per second 300

Gamma (Drill-string, Century)
0 American Petroleum Institute - Gamma Ray 300

Caliper
0 inches 30

Spectral Gamma (counts per second)
Thorium 0 400
Potassium 0 200
Uranium 0 400

Lithology
Unit Description
Unit Name

Resistivity (8-inch)
0.5 ohm-meters (log scale, 2 decades) 50

Resistivity (16-inch)
0.5 ohm-meters (log scale, 2 decades) 50

Resistivity (32-inch)
0.5 ohm-meters (log scale, 2 decades) 50

Resistivity (64-inch)
0.5 ohm-meters (log scale, 2 decades) 50

Induction Resistivity
0.5 ohm-meters (log scale, 2 decades) 50

Compensated Density (Drill-string, long-spaced)
0 grams per cubic centimeter 4

Compensated Density (Drill-string, short-spaced)
0 grams per cubic centimeter 4

Compensated Neutron (Drill-string, near)
0 counts per second 8000

Compensated Neutron (Drill-string, far)
0 counts per second 1000

Spontaneous Potential
625 millivolts 725

Fluid Temperature (Drill-string)
25 degrees centigrade 35

Fluid Temperature (Open-hole)
25 degrees centigrade 35

Fluid Resistivity
18 ohm-meters 21

Well Completion
Radius in inches 9

NOTE: DIFFERENT SCALES USED FOR NEAR AND FAR SPACING, FOR CLARITY.

Depth

0 50 100 150 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900 950 1000 1050 1100 1150 1200 1250 1300 1350 1400 1450 1500 1550

| Unit Description | Unit Name |
|---|---|
| Silty sand with gravel. | (0 to 87 ft) WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM) |
| Sediments uncemented. Gravel clasts volcanic in origin. | |
| Silty sand with gravel. | |
| Upper flow massive core. | (87 to 132.5 ft) BASALT (YOUNGER TERTIARY BASALT OF CRATER FLAT [Tby]) |
| Lower flow massive core. | |
| | (132.5 to 162.5 ft) NO RECOVERY<br>132.5 TO 140 ft (BASALT) Interpreted from natural gamma and density logs.<br>140 TO 162.5 ft (ALLUVIUM) Interpreted from natural gamma and density logs. |
| Gravel clasts predominantly weakly cemented reactive sandstone, and lesser clasts from welded tuff lithologies. Sediments noncemented. | (162.5 to 180 ft) SILTY SAND WITH GRAVEL (SM) |
| Becomes more clay-rich and gravel-poor with depth. Sediments noncemented. | (180 to 202.5 ft) SANDY LEAN CLAY (CL) |
| Well-graded sand with silt and gravel. Sediments noncemented. | (202.5 to 260 ft) SILTY SAND WITH GRAVEL (SM) |
| Gravel clasts predominantly volcanic. Sediments noncemented. | |
| Poorly graded sand with silt and gravel. Sediments noncemented. | |
| Gravel clasts predominantly sandstone. Sediments noncemented. | (260 to 797 ft) REWORKED TUFFS AND RELATED VOLCANICLASTIC ROCKS (Tvy)<br>(260 to 297.5 ft) REWORKED TUFF |
| Devitrified, nonwelded, and highly weathered. Open/porous matrix. | |
| Faint, laminated, grayish orange claystone, probably ash-derived. | |
| Unit is devitrified, nonwelded, and has an open/porous matrix. Highly weathered. | (297.5 to 422 ft) REWORKED ASH-FALL TUFF |
| Moderately weathered. | |
| Weakly weathered. | |
| Moderately weathered. | |
| Devitrified and nonwelded. Open/porous matrix. | (422 to 550 ft) REWORKED TUFF |
| Less weathered ash-fall tuff with sucrosic texture. | |
| Devitrified and nonwelded. Open/porous matrix. | |
| Soft, finely bedded. | (550 to 600 ft) CLAYSTONE |
| Nonwelded and variably argillized. Highly weathered. | (600 to 740 ft) WEAKLY ARGILLIZED REWORKED TUFF |
| Nonwelded and variably argillized. Moderately weathered. | |
| Nonwelded and variably argillized. | |
| Upper basal subunit. Weakly cemented weathered sandstone. | |
| Middle basal subunit. Weathered reworked tuff with white zeolitized pumice. | (740 to 770 ft) CLAYSTONE AND SANDSTONE |
| Lower basal subunit. Highly weathered reworked tuff. | |
| Moderately weathered. Strong argillization. | (770 to 797 ft) REWORKED TUFF |
| Moderately weathered. | |
| Poorly graded sand, predominantly fine- to medium-grained. Material from interval contaminated many downhole samples. | (797 to 1550 ft) INTERBEDDED FLUVIAL SEDIMENTS AND TUFFS (Tpc)<br>(797 to 861 ft) SAND (SP) |
| 50% or more sand. | (861 to 950 ft) CLAYSTONE, SILTSTONE, AND UNCONSOLIDATED SAND |
| 50% or more sand. | |
| 50% or more sand. | |
| Matrix sand has volcaniclastic textures and tuffaceous components. Highly weathered. | (950 to 1,035 ft) SANDSTONE/CONGLOMERATE |
| Deeply weathered or tuffaceous. | (1,035 to 1,140 ft) ARGILLIZED TUFF |
| Deeply weathered or tuffaceous. Intensely argillized. | (1,140 to 1,315 ft) ARKOSIC SAND/SANDSTONE AND CONGLOMERATE |
| Weakly consolidated conglomeratic sandstone. Contains 30 to 60% rounded clasts of welded tuff in a matrix of feldspar-rich sand. Samples significantly disturbed (ground up) by drill bit. | |
| Claystone bed. Intensely argillized lithic tuff. | (1,315 to 1,410 ft) CONGLOMERATIC SANDSTONE AND CONGLOMERATE |
| Moderately cemented volcaniclastic sandstone. | |
| Intensely argillized lithic tuff. | |
| Moderately cemented volcaniclastic sandstone. | |
| Claystone bed. | |
| Claystone bed. Intensely argillized lithic tuff. | |
| Moderately cemented volcaniclastic sandstone. | |
| Claystone bed. Intensely argillized lithic tuff. | (1,410 to 1,500 ft) CONGLOMERATIC ARKOSIC SANDSTONE |
| Unit is weakly to moderately cemented sandstone derived from volcanics. Highly weathered (disaggregated). | |
| Weakly to moderately cemented sandstone derived from volcanics. | |
| Slightly weathered. | |
| Moderately to highly weathered. | |
| Angular fragments of welded tuff in a matrix of clay-altered ash. | (1,500 to 1,522 ft) ARGILLIZED TUFF |
| Tuff clasts are moderately to densely welded. | (1,522 to 1,550 ft) VOLCANIC CONGLOMERATE |
| Devitrified and moderately welded. | (1,550 to 1,569 ft (Total Depth)) LITHIC ASH-FLOW TUFF (POSSIBLY BULLFROG TUFF [Tcb]) |

Drafted By LK, JMK, JS Checked By LK, JMK, JSW, JS, JRW Approved By KJG

Data Sources: Geophysical logs run by Century Geophysical Corporation and Geophysical Logging Services Inc. Some geophysical logs may have been censored for this report. Refer to Table 6.2-1 for details. Geologic logging and interpretations performed by Nye County staff and contract geologists.

October 01, 2007

Plate 2

Comparison of Geophysical Logging, Lithology, and

Well Completion Information for 22PC

Depth
1in:35ft

Natural Gamma (Drill-string, GLS)
0 counts per second 125

Gamma (Drill-string, Century)
0 American Petroleum Institute - Gamma Ray 200

Spectral Gamma (counts per second)
Thorium 0 400
Potassium 0 400
Uranium 0 400

Lithology
Unit Description
Unit Name

(0 to 460.0 ft) FOR SUMMARY LITHOLOGIC INFORMATION, SEE RID 5472 (SUMMARY LITHOLOGIC LOG FOR NC-EWDP-22SA), DRILLED AT THE SAME SITE.

Noncemented.
Gravel clasts volcanic in origin to 763 ft.
Silty sand with gravel, and includes a bed of clayey sand with gravel.
Noncemented.
(460.0 to 501.4 ft) INTERBEDDED WELL-GRADED GRAVEL WITH SILT AND SAND (GW-GM), POORLY GRADED GRAVEL WITH SILT AND SAND (GP-GM) AND SILTY SAND WITH GRAVEL (SM)

Several thick interbeds of silty sand with gravel and poorly graded sand with silt and gravel.
Lesser beds of poorly graded gravels and sands with silt and clay.
Noncemented.
Weakly cemented.
(501.4 to 554.5 ft) CLAYEY GRAVEL WITH SAND (GC) GRADING TO CLAYEY SAND WITH GRAVEL (SC) CONTAINING THICK INTERBEDS OF SILTY SAND WITH GRAVEL (SM) AND POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM)

Interbeds of poorly graded gravel with silt and sand, well-graded sand with silt and gravel, well-graded gravel with silt and sand, and clayey gravel with sand.
Weakly cemented.
(554.5 to 571.3 ft) WELL-GRADED GRAVEL WITH CLAY AND SAND (GW-GC)

Silt predominates over clay in the fines fraction.
Cementation varies from weak to moderate, predominantly as thin cemented layers.
(571.3 to 623.0 ft) SILTY GRAVEL WITH SAND (GM) INTERBEDDED WITH SILTY SAND WITH GRAVEL (SM)

Weakly cemented.
Noncemented.
(623.0 to 632.1 ft) CLAYEY GRAVEL WITH SAND (GC)

Unit is predominantly clayey sand with gravel locally with beds of clayey gravel with sand.
Noncemented.
Weakly cemented.
Noncemented.
Weakly cemented.
Noncemented.
Layer of clayey and silty gravels with sand with lesser silty clayey sand with gravel.
Noncemented.
Noncemented.
(632.1 to 747.4 ft) CLAYEY SAND WITH GRAVEL (SC)

Beds of clayey gravel with sand and silty clayey sand with gravel.
Noncemented.
(747.4 to 763.0 ft [Total Depth]) SILTY SAND WITH GRAVEL (SM)

Compensated Density (Drill-string, long-spaced)
2 grams per cubic centimeter 5

Compensated Density (Drill-string, short-spaced)
2 grams per cubic centimeter 5

Compensated Neutron (Drill-string, near)
0 counts per second 3000

Compensated Neutron (Drill-string, far)
0 counts per second 3000

Fluid Temperature (Drill-string)
25 degrees centigrade 30

Well Completion
9 Radius in inches 9

Depth

Drafted By LK, JMK, JS Checked By LK, JMK, JSW, JS, JRW Approved By KJG

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August 10, 2007

Plate 3

Comparison of Geophysical Logging, Lithology, and

Well Completion Information for 24PB

Depth
1in:50ft

Natural Gamma (Open-hole)
0 American Petroleum Institute - Gamma Ray 200

Natural Gamma (Completion)
0 counts per second 200

Caliper
5 inches 13

Spectral Gamma (counts per second)
Thorium 0 1100
Potassium 0 200
Uranium 0 600

Lithology
Unit Description
Unit Name

Tuff Welding
0 5

Resistivity (8-inch)
0.3 ohm-meters (log scale, 4 decades) 3000

Resistivity (16-inch)
0.3 ohm-meters (log scale, 4 decades) 3000

Resistivity (32-inch)
0.3 ohm-meters (log scale, 4 decades) 3000

Resistivity (64-inch)
0.3 ohm-meters (log scale, 4 decades) 3000

Self Potential
400 millivolts 550

Sonic
180 microseconds per foot 60

Fluid Temperature (Completion)
24 degrees centigrade 34

Fluid Resistivity (Open-hole)
20 ohm-meters 30

Fluid Resistivity (Completion)
5 ohm-meters 30

Well Completion
9 Radius in inches 9

Depth

0 50 100 150 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900 950 1000 1050 1100 1150 1200 1250 1300 1350

First appearance of black vesicular gravel clasts.

Gravel content 16 to 79% from 0 to 220 ft, and 6 to 41% from 220 to 255 ft.
Gravels predominantly volcanic and sediments are noncemented.

Moisture noted (believed to be natural).

Rounded sandstone gravel clasts.

(0 to 255 ft) WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM)

Gravels of volcanic origin and sediments are noncemented.

(255 to 270 ft) SILTY SAND WITH GRAVEL (SM)

Gravels of volcanic origin and sediments are noncemented.
Gravels increase with depth from 12 to 33%.

(270 to 290 ft) CLAYEY SAND WITH GRAVEL (SC) AND WELL-GRADED SAND WITH CLAY AND GRAVEL (SW-SC)

Gravels of volcanic origin and sediments are noncemented.

(290 to 315 ft) WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM)

Clayey sand with gravel.

Clayey sand with gravel.

(315 to 405 ft) SILTY SAND WITH GRAVEL (SM) AND CLAYEY SAND WITH GRAVEL (SC)

Gravels of volcanic origin and consist of few lithic types below 350 ft.
Sediments are noncemented.

Clayey sand with gravel.

Devitrified and variably welded.
Open/porous matrix.

(405 to 900 ft) ASH-FLOW TUFF (BULLFROG TUFF [Tcb])

Devitrified and variably welded.
Dense/nonporous matrix.
Sharp contact with underlying sandstone.

Conglomeratic sandstone.

Fine volcaniclastic sandstone, argillic (or zeolitic).

(900 to 945 ft) SANDSTONE (PRE-BULLFROG SEDIMENTARY ROCKS)

Unit has reddish color and local softness of rock, due to weathering and possible iron oxide alteration.
Devitrified, nonwelded, and open/porous matrix.
Highly weathered.

(945 to 1,377 ft) ASH-FLOW TUFF (TRAM TUFF [Tct])

Devitrified, nonwelded, and open/porous matrix.
Unweathered.

Devitrified, nonwelded, and open/porous matrix.
Unweathered.
Argillization of pumice clasts appears to increase.
Yellowish green quartz becomes predominant fracture fill.
Sharp contact with underlying volcaniclastic sedimentary rock.

Interbedded calcareous volcaniclastic siltstone, claystone, and fine sandstone.
Sequence generally clayey and weathered.

(1,377 to 1,395 ft [Total Depth]) VOLCANICLASTIC SEDIMENTARY ROCK (PRE-TRAM SEDIMENTARY ROCKS)

Drafted By LK, JMK, JS Checked By LK, JMK, JSW, JS, JRW Approved By KJG

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August 10, 2007

Plate 4

Comparison of Geophysical Logging, Lithology, and

Well Completion Information for 32P

Depth
1in:50ft

Natural Gamma (Open-hole, GLS)
0 counts per second 250
Gamma (Drill-string, Century)
0 American Petroleum Institute - Gamma Ray 350

Caliper
0 inches 27

Lithology
Unit Description | Unit Name

Resistivity (8-inch)
0.3 ohm-meters (log scale, 3 decades) 300
Resistivity (16-inch)
0.3 ohm-meters (log scale, 3 decades) 300
Resistivity (32-inch)
0.3 ohm-meters (log scale, 3 decades) 300
Resistivity 64-inch)
0.3 ohm-meters (log scale, 3 decades) 300

Spontaneous Potential
-350 millivolts 250

Compensated Density (Drill-string, long-spaced)
1 grams per cubic centimeter 3

Compensated Neutron (Drill-string, near)
6000 counts per second 11000
Compensated Neutron (Drill-string, far)
300 counts per second 2000

Differential Temperature
-0.01 0.1

Fluid Temperature (Open-hole)
32 degrees centigrade 47
Fluid Resistivity (Open-hole)
10 ohm-meters 28

Well Completion
9 Radius in inches 9

NOTE: DIFFERENT SCALES USED FOR NEAR AND FAR SPACING, FOR CLARITY.

(0 to 396 ft) WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM) INTERBEDDED WITH WELL-GRADED SAND WITH GRAVEL (SW)

Gravels volcanic in origin.
Sediments noncemented.

Well-graded gravel with sand.

Gravels volcanic in origin.
Sediments noncemented.
Sharp contact with underlying basalt.

(396 to 496 ft) BASALT

Upper zone.

Middle zone.
Massive core.
Highly fractured.
Zeolite coating on fractures.

Basal zone.
Lithic fragments increase in abundance below 475 ft.

Basal zone.
Clay present at basal contact.
Sharp contact with underlying sandstone.

(496 to 550 ft) CONGLOMERATIC SANDSTONE

Conglomeratic sandstone comprised of strongly cemented matrix of green arkosic sand and large heterolithic clasts.
Volcanic clasts display flow banding.
Sharp contact with underlying sediments.

(550 to 752 ft) WELL-GRADED SAND WITH GRAVEL (SW)

Thin layers of clay 1 to 2 ft thick.
Gravels derived from tuff, quartzite, chert, and rare limestone.
Sediments noncemented.

White limestone layer.

(752 to 845 ft) SILTY SAND (SM) WITH A LAYER OF SANDY SILT (ML)

Sandy silt layer.

All gravels of volcanic origin to 845 ft.

Silty gravel with sand.

Silty gravel with sand.

Weak cementation.

(845 to 940 ft) POORLY GRADED SAND WITH SILT (SP-SM)

Sediments are noncemented and gravels volcanic in origin to 940 ft.

Gravel content 15% or greater.

Silty sand.

Gravel content 15% or greater.

(940 to 1,000 ft [Total Depth]) SILTSTONE

Thick, massive, moderately well-indurated siltstone.

Laminated.

Thick, massive, moderately well-indurated siltstone.

Drafted By LK, JMK, JS Checked By LK, JMK, JSW, JS, JRW Approved By KJG

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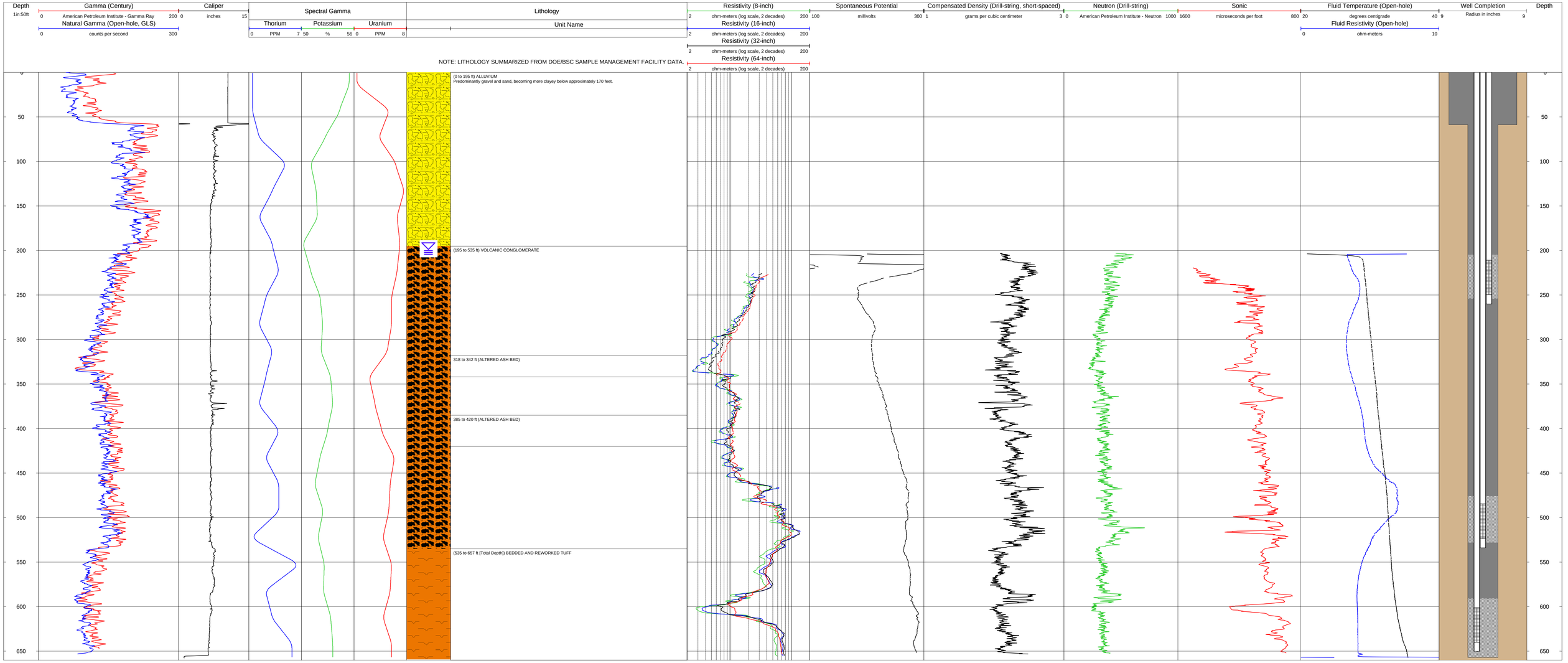
August 10, 2007

Plate 5

Comparison of Geophysical Logging, Lithology, and

Well Completion Information for 33P

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August 10, 2007