Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/21/11

Project/Site: KAFB	**Casing:** PVC	**Shaw QC GP:** D. Castañeda
Location: BFF	**Diameter:** 5"	**Logging Firm:** Jet West
Hole ID: KAFB-106045	**Well Depth:** 548 ft	**Screen Type/ Size:** PVC

Tool 1 - Induction and Natural Gamma Ray Logs — PM check

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log 56
2) Induction Cal. Coil Test (cps)	Pre-log (D) n/a	Post-log (D) 4555
	Pre-log (M) n/a	Post-log (M) 7094
3) Induction Zero Test (cps)	Pre-log (D) n/a	Post-log (D) 912
	Pre-log (M) n/a	Post-log (M) 1095

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: n/a
Total Depth (ft): 548.15	Repeat Interval (ft): 548 - 448
Log Survey Information	**Repeat Log Survey Information**
Start Time: 1538	Start Time: 1529
Logging Speed (ft/min): 30	Logging Speed (ft/min): 30
End Time: 1555	End Time: 1532
Depth Error (ft): 0.4	Depth Error (ft): n/a

Comments:

Tool 2 - Neutron and Natural Gamma Ray Logs — PM check

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log 52
2) Neutron Attached Source (cps)	Pre-log n/a	Post-log 348
3) Neutron Removed Source (cps)	Pre-log n/a	Post-log 0.9

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: n/a
Total Depth (ft): 548	Repeat Interval (ft): 548 - 444
Log Survey Information	**Repeat Log Survey Information**
Start Time: 1630	Start Time: 1624
Logging Speed (ft/min): 30	Logging Speed (ft/min): 30
End Time: 1648	End Time: 1628
Depth Error (ft): 0.2	Depth Error (ft): n/a

Comments:

Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/22/11

Project/Site: KAFB | Casing: PVC | Shaw QC GP: D. Castañeda
Location: BFF | Diameter: 3" | Logging Firm: Jet West
Hole ID: KAFB-106140 | Well Depth: 450ft | Screen Type/ Size: PVC

Tool 1 - Induction and Natural Gamma Ray Logs

Instrument Operational Checks AM

1) Gamma Ray Count Rate (cps)	Pre-log 54	Post-log n/a
2) Induction Cal. Coil Test (mS/m)	Pre-log (D) 4675	Post-log (D) n/a
	Pre-log (M) 7130	Post-log (M) n/a
3) Induction Zero Test (mS/m)	Pre-log (D) 943	Post-log (D) n/a
	Pre-log (M) 1121	Post-log (M) n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: n/a
Total Depth (ft): 450.4	Repeat Interval (ft): 450 → 350
Log Survey Information	**Repeat Log Survey Information**
Start Time: 0816	Start Time: 0811
Logging Speed (ft/s): 30	Logging Speed (ft/s): 30
End Time: 0832	End Time: 0814
Depth Error (ft): 0.44	Depth Error (ft): n/a

Comments: first well of the day, AM check only

Tool 2 - Neutron and Natural Gamma Ray Logs

Instrument Operational Checks AM

1) Gamma Ray Count Rate (cps)	Pre-log 58	Post-log n/a
2) Neutron Attached Source (cps)	Pre-log 345.6	Post-log n/a
3) Neutron ~~Ground~~ removed Source (cps)	Pre-log 0.48	Post-log n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: n/a
Total Depth (ft): 450.38	Repeat Interval (ft): 450 → 350
Log Survey Information	**Repeat Log Survey Information**
Start Time: 0901	Start Time: 0855
Logging Speed (ft/s): 30	Logging Speed (ft/s): 30
End Time: 0917	End Time: 0859
Depth Error (ft): 0.4	Depth Error (ft): n/a

Comments:

Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/22/11

Project/Site: KAFB
Location: BFF
Hole ID: KAFB - 10611

Casing: PVC
Diameter: 3"
Well Depth: 450ft

Shaw QC GP: D. Castaneda
Logging Firm: Jet West
Screen Type/ Size: PVC

Tool 1 - Induction and Natural Gamma Ray Logs

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log n/a
2) Induction Cal. Coil Test (mS/m)	Pre-log (D) n/a	Post-log (D) n/a
	Pre-log (M) n/a	Post-log (M) n/a
3) Induction Zero Test (mS/m)	Pre-log (D) n/a	Post-log (D) n/a
	Pre-log (M) n/a	Post-log (M) n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: n/a
Total Depth (ft): 450.4	Repeat Interval (ft): 450 → 350
Log Survey Information	**Repeat Log Survey Information**
Start Time: ~~1350 3/22~~ 1352	Start Time: 1347
Logging Speed (ft/min): 30	Logging Speed (ft/min): 30
End Time: 1407	End Time: 1351
Depth Error (ft): 0.36	Depth Error (ft): n/a

Comments:

Tool 2 - Neutron and Natural Gamma Ray Logs

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log n/a
2) Neutron Attached Source (cps)	Pre-log n/a	Post-log n/a
3) Neutron Ground Source (cps)	Pre-log n/a	Post-log n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: n/a
Total Depth (ft): 450	Repeat Interval (ft): 450 → 350
Log Survey Information	**Repeat Log Survey Information**
Start Time: 1428	Start Time: 1420
Logging Speed (ft/min): 30	Logging Speed (ft/min): 30
End Time: 1443	End Time: 1424
Depth Error (ft): 0.4	Depth Error (ft): n/a

Comments:

Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/22/11

Project/Site: KAFB
Location: BFF
Hole ID: KAFB-106119

Casing: PVC
Diameter: 3"
Well Depth: 460ft → 450ft (bottom of screen)

Shaw QC GP: D. Castaneda
Logging Firm: Jet West
Screen Type/ Size: PVC

Tool 1 - Induction and Natural Gamma Ray Logs

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log n/a
2) Induction Cal. Coil Test (mS/m)	Pre-log (D) n/a	Post-log (D) n/a
	Pre-log (M) n/a	Post-log (M) n/a
3) Induction Zero Test (mS/m)	Pre-log (D) n/a	Post-log (D) n/a
	Pre-log (M) n/a	Post-log (M) n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: n/a
Total Depth (ft): 450	Repeat Interval (ft): 450 → 350
Log Survey Information	**Repeat Log Survey Information**
Start Time: ~~1153~~ DC 3/22 1158	Start Time: 1153
Logging Speed (ft/s): 30	Logging Speed (ft/s): 30
End Time: 1214	End Time: 1156
Depth Error (ft): ~~0.17~~ DC 3/22 0.45	Depth Error (ft): n/a

Comments:

Tool 2 - Neutron and Natural Gamma Ray Logs

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log n/a
2) Neutron Attached Source (cps)	Pre-log n/a	Post-log n/a
3) Neutron Ground Source (cps)	Pre-log n/a	Post-log n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: n/a
Total Depth (ft): 450.98	Repeat Interval (ft): 450 → 350
Log Survey Information	**Repeat Log Survey Information**
Start Time: 1235	Start Time: 1229
Logging Speed (ft/s): 30	Logging Speed (ft/s): 30
End Time: 1249	End Time: 1233
Depth Error (ft): 0.52	Depth Error (ft): n/a

Comments:

Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/22/11

Project/Site: KAFB
Location: BFF
Hole ID: KAFB-~~0106F~~ DC 3/22 10624

Casing: PVC
Diameter: 4"
Well Depth: ~~508~~ DC 3/22 → 511 ft

Shaw QC GP: D. Castañeda
Logging Firm: Jet West
Screen Type/ Size: Stainless Steel / 25 ft ☆ Stainless Steel centralizers

Tool 1 - Induction and Natural Gamma Ray Logs

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log n/a
2) Induction Cal. Coil Test (mS/m)	Pre-log (D) n/a	Post-log (D) n/a
	Pre-log (M) n/a	Post-log (M) n/a
3) Induction Zero Test (mS/m)	Pre-log (D) n/a	Post-log (D) n/a
	Pre-log (M) n/a	Post-log (M) n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: n/a
Total Depth (ft): 511.58	Repeat Interval (ft): 511 → 411
Log Survey Information	**Repeat Log Survey Information**
Start Time: ~~1025~~ DC 3/22 1030	Start Time: 1025
Logging Speed (ft/s): 30	Logging Speed (ft/s): 30
End Time: 1047	End Time: 1029
Depth Error (ft): ~~0.26~~ DC 3/22 0.4	Depth Error (ft): n/a

Comments:

Tool 2 - Neutron and Natural Gamma Ray Logs

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log n/a
2) Neutron Attached Source (cps)	Pre-log n/a	Post-log n/a
3) Neutron Ground Source (cps)	Pre-log n/a	Post-log n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: n/a
Total Depth (ft): 511.6	Repeat Interval (ft): 511 → 411
Log Survey Information	**Repeat Log Survey Information**
Start Time: ~~1105~~ DC 3/22 1108	Start Time: 1104
Logging Speed (ft/s): 30	Logging Speed (ft/s): 30
End Time: 1125	End Time: 1107
Depth Error (ft): 0.39	Depth Error (ft): n/a

Comments:

Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/22/11

Project/Site: KAFB
Location: BFF
Hole ID: KAFB-106110

Casing: PVC
Diameter: 3"
Well Depth: 450 ft

Shaw QC GP: D. Castañeda
Logging Firm: Jet West
Screen Type/ Size: PVC

Tool 1 - Induction and Natural Gamma Ray Logs — PM

Instrument Operational Checks

1) Gamma Ray Count Rate (cps) — Pre-log: n/a — Post-log: 59

2) Induction Cal. Coil Test ~~(mS/m)~~ cps — Pre-log (D): n/a — Post-log (D): ~~4675~~ DC 3/22 — 4444
Pre-log (M): n/a — Post-log (M): ~~7130~~ DC 3/22 — 7031

3) Induction Zero Test ~~(mS/m)~~ cps — Pre-log (D): n/a — Post-log (D): ~~943~~ DC 3/22 — 889
Pre-log (M): n/a — Post-log (M): ~~1127~~ DC 3/22 — 1055

Survey Depth Information		Repeat Log Depth Information	
Reference:	ground surface	Reference:	n/a
Total Depth (ft):	450.3	Repeat Interval (ft):	450 → 350
Log Survey Information		**Repeat Log Survey Information**	
Start Time:	1520	Start Time:	1514
Logging Speed (ft/~~s~~ min):	30	Logging Speed (ft/~~s~~ min):	30
End Time:	1535	End Time:	1518
Depth Error (ft):	0.34	Depth Error (ft):	n/a

Comments: last well of day, only post-log calibration

Tool 2 - Neutron and Natural Gamma Ray Logs — PM

Instrument Operational Checks

1) Gamma Ray Count Rate (cps) — Pre-log: n/a — Post-log: 56

2) Neutron Attached Source (cps) — Pre-log: n/a — Post-log: 336.64

3) Neutron ~~Ground~~ removed Source (cps) — Pre-log: n/a — Post-log: 0.54

Survey Depth Information		Repeat Log Depth Information	
Reference:	ground surface	Reference:	n/a
Total Depth (ft):	450.54	Repeat Interval (ft):	450 → 350
Log Survey Information		**Repeat Log Survey Information**	
Start Time:	1605	Start Time:	1600
Logging Speed (ft/~~s~~ min):	30	Logging Speed (ft/~~s~~ min):	30
End Time:	1620	End Time:	1604
Depth Error (ft):	0.26	Depth Error (ft):	n/a

Comments: last well of day, only post-log calibration

Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/23/11

Project/Site: KAFB	**Casing:** PVC	**Shaw QC GP:** D. Castaneda	
Location: BFF	**Diameter:** 3"	**Logging Firm:** Jet West	
Hole ID: KAFB-106116	**Well Depth:** 456 ft	**Screen Type/ Size:** PVC	

Tool 1 - Induction and Natural Gamma Ray Logs — AM check

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log 54	Post-log n/a
2) Induction Cal. Coil Test (cps)	Pre-log (D) 4674	Post-log (D) n/a
	Pre-log (M) 7087	Post-log (M) n/a
3) Induction Zero Test (cps)	Pre-log (D) 963	Post-log (D) n/a
	Pre-log (M) 1115	Post-log (M) n/a

Survey Depth Information	**Repeat Log Depth Information**	
Reference: ground surface	Reference: n/a	ground surface
Total Depth (ft): 450.84	Repeat Interval (ft): 450 → 350	350 → 300
Log Survey Information	**Repeat Log Survey Information**	
Start Time: 0848	Start Time: 0842	0908
Logging Speed (ft/min): 29	Logging Speed (ft/min): 29	29
End Time: 0903	End Time: 0846	0910
Depth Error (ft): 0.5	Depth Error (ft): n/a	0.4

Comments: ran a second repeat log after noticing large medium induction, kick @ 320ft, After doing repeat, spike was still there, no kick in deep induction

Tool 2 - Neutron and Natural Gamma Ray Logs — AM check

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log 61	Post-log n/a
2) Neutron Attached Source (cps)	Pre-log 342	Post-log n/a
3) Neutron Removed Source (cps)	Pre-log 0.9	Post-log n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: n/a
Total Depth (ft): 450.8	Repeat Interval (ft): 450 → 350
Log Survey Information	**Repeat Log Survey Information**
Start Time: 0946	Start Time: 0940
Logging Speed (ft/min): 29.2	Logging Speed (ft/min): 30
End Time: 1001	End Time: 0944
Depth Error (ft): 0.46	Depth Error (ft): n/a

Comments:

Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/23/11

Project/Site: KAFB	**Casing:** PVC	**Shaw QC GP:** D. Castañeda
Location: BFF	**Diameter:** 3"	**Logging Firm:** Jet West
Hole ID: KAFB-106115	**Well Depth:** 450 ft	**Screen Type/ Size:** PVC

Tool 1 - Induction and Natural Gamma Ray Logs

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log n/a
2) Induction Cal. Coil Test (cps)	Pre-log (D) n/a	Post-log (D) n/a
	Pre-log (M) n/a	Post-log (M) n/a
3) Induction Zero Test (cps)	Pre-log (D) n/a	Post-log (D) n/a
	Pre-log (M) n/a	Post-log (M) n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: n/a
Total Depth (ft): 450.04	Repeat Interval (ft): 450->350
Log Survey Information	**Repeat Log Survey Information**
Start Time: 1039	Start Time: 1033
Logging Speed (ft/min): 28.9	Logging Speed (ft/min): 30
End Time: 1054	End Time: 1037
Depth Error (ft): 0.38	Depth Error (ft): n/a

Comments:

Tool 2 - Neutron and Natural Gamma Ray Logs

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log n/a
2) Neutron Attached Source (cps)	Pre-log n/a	Post-log n/a
3) Neutron Removed Source (cps)	Pre-log n/a	Post-log n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: n/a
Total Depth (ft): 450	Repeat Interval (ft): 450->350
Log Survey Information	**Repeat Log Survey Information**
Start Time: 1114	Start Time: 1108
Logging Speed (ft/min): 30	Logging Speed (ft/min): 29
End Time: 1129	End Time: 1112
Depth Error (ft): 0.33	Depth Error (ft): n/a

Comments:

Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/23/11

Project/Site: KAFB	**Casing:** PVC	**Shaw QC GP:** D. Castaneda	
Location: BFF	**Diameter:** 3"	**Logging Firm:** Jet West	
Hole ID: KAFB-106113	**Well Depth:** 451.5 ft	**Screen Type/ Size:** PVC	

Tool 1 - Induction and Natural Gamma Ray Logs

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log n/a
2) Induction Cal. Coil Test (cps)	Pre-log (D) n/a	Post-log (D) n/a
	Pre-log (M) n/a	Post-log (M) n/a
3) Induction Zero Test (cps)	Pre-log (D) n/a	Post-log (D) n/a
	Pre-log (M) n/a	Post-log (M) n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: n/a
Total Depth (ft): 451.3	Repeat Interval (ft): 451 → 350
Log Survey Information	**Repeat Log Survey Information**
Start Time: 1217	Start Time: 1211
Logging Speed (ft/min): 29	Logging Speed (ft/min): 29
End Time: 1233	End Time: 1215
Depth Error (ft): 0.41	Depth Error (ft): n/a

Comments:

Tool 2 - Neutron and Natural Gamma Ray Logs

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log n/a
2) Neutron Attached Source (cps)	Pre-log n/a	Post-log n/a
3) Neutron Removed Source (cps)	Pre-log n/a	Post-log n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: n/a
Total Depth (ft): 451.3	Repeat Interval (ft): 451 → 350
Log Survey Information	**Repeat Log Survey Information**
Start Time: 1254	Start Time: 1248
Logging Speed (ft/min): 29	Logging Speed (ft/min): 28
End Time: 1309	End Time: 1252
Depth Error (ft): 0.41	Depth Error (ft): n/a

Comments:

Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/23/11

Project/Site: KAFB
Location: BFF
Hole ID: KAFB-106114

Casing: PVC
Diameter: 3"
Well Depth: 451 ft

Shaw QC GP: D. Castaneda
Logging Firm: Jet West
Screen Type/ Size: PVC

Tool 1 - Induction and Natural Gamma Ray Logs

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log	n/a	Post-log	
2) Induction Cal. Coil Test (cps)	Pre-log (D)	n/a	Post-log (D)	
	Pre-log (M)	n/a	Post-log (M)	
3) Induction Zero Test (cps)	Pre-log (D)	n/a	Post-log (D)	
	Pre-log (M)	n/a	Post-log (M)	

Survey Depth Information		Repeat Log Depth Information		2nd repeat
Reference:	ground surface	Reference:	n/a	ground surface
Total Depth (ft):	449.82	Repeat Interval (ft):	450 -> 350	350->300
Log Survey Information		**Repeat Log Survey Information**		
Start Time:	1357	Start Time:	1351	1416
Logging Speed (ft/min):	29	Logging Speed (ft/min):	29	28
End Time:	1412	End Time:	1355	1418
Depth Error (ft):	0.41	Depth Error (ft):	n/a	0.22

Comments: ☆ saw the kick in induction again @ 320 ft. ran 2nd repeat log again to verify signal

Tool 2 - Neutron and Natural Gamma Ray Logs

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log	n/a	Post-log	
2) Neutron Attached Source (cps)	Pre-log	n/a	Post-log	
3) Neutron Removed Source (cps)	Pre-log	n/a	Post-log	

Survey Depth Information		Repeat Log Depth Information	
Reference:	ground surface	Reference:	n/a
Total Depth (ft):	450.3	Repeat Interval (ft):	2 DC 3/23
Log Survey Information		**Repeat Log Survey Information**	
Start Time:	1443	Start Time:	1437
Logging Speed (ft/min):	29	Logging Speed (ft/min):	29
End Time:	1459	End Time:	1441
Depth Error (ft):	0.4	Depth Error (ft):	n/a

Comments:

Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/23/11

Project/Site: KAFB
Location: BFF
Hole ID: KAFB-106131

Casing: PVC
Diameter: 3"
Well Depth: ~~450 ft~~ → ★ bottom of screen @ 440 ft

Shaw QC GP: D. Castaneda
Logging Firm: Jet West
Screen Type/ Size: PVC

Tool 1 - Induction and Natural Gamma Ray Logs — PM check

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log: n/a	Post-log: 50
2) Induction Cal. Coil Test (cps)	Pre-log (D): n/a	Post-log (D): 4410
	Pre-log (M): n/a	Post-log (M): ~~7028~~ DC 3/23 7029
3) Induction Zero Test (cps)	Pre-log (D): n/a	Post-log (D): 910
	Pre-log (M): n/a	Post-log (M): 1071

Survey Depth Information	Repeat Log Depth Information
Reference: ground surface	Reference: n/a
Total Depth (ft): 439.16	Repeat Interval (ft): 440 → ~~340~~ DC 3/23 300

Log Survey Information	Repeat Log Survey Information
Start Time: 1545	Start Time: 1538
Logging Speed (ft/min): 29	Logging Speed (ft/min): 28
End Time: 1600	End Time: 1544
Depth Error (ft): 0.36	Depth Error (ft): n/a

Comments:

Tool 2 - Neutron and Natural Gamma Ray Logs — PM check

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log: n/a	Post-log: 47
2) Neutron Attached Source (cps)	Pre-log: n/a	Post-log: 337
3) Neutron Removed Source (cps)	Pre-log: n/a	Post-log: 0.14

Survey Depth Information	Repeat Log Depth Information
Reference: ground surface	Reference: n/a
Total Depth (ft): 439.3	Repeat Interval (ft): 440 → 340

Log Survey Information	Repeat Log Survey Information
Start Time: 1635	Start Time: 1629
Logging Speed (ft/min): 29	Logging Speed (ft/min): 30
End Time: 1650	End Time: 1635
Depth Error (ft): 0.35	Depth Error (ft): n/a

Comments:

Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/24/11

Project/Site: KAFB	**Casing:** PVC	**Shaw QC GP:** D. Castaneda	
Location: BFF	**Diameter:** 3"	**Logging Firm:** Jet West	
Hole ID: KAFB-106124	**Well Depth:** 457ft	**Screen Type/ Size:** PVC	

Tool 1 - Induction and Natural Gamma Ray Logs — AM check

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log 62	Post-log n/a
2) Induction Cal. Coil Test (cps)	Pre-log (D) 4678	Post-log (D) n/a
	Pre-log (M) 7136	Post-log (M) n/a
3) Induction Zero Test (cps)	Pre-log (D) 937	Post-log (D) n/a
	Pre-log (M) 1134	Post-log (M) n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: n/a
Total Depth (ft): 450.8	Repeat Interval (ft): 450 → 300
Log Survey Information	**Repeat Log Survey Information**
Start Time: 0822	Start Time: 0814
Logging Speed (ft/min): 29	Logging Speed (ft/min): 29
End Time: 0838	End Time: 0819
Depth Error (ft): 0.47	Depth Error (ft): n/a

Comments:

Tool 2 - Neutron and Natural Gamma Ray Logs — AM check

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log 55	Post-log n/a
2) Neutron Attached Source (cps)	Pre-log 340	Post-log n/a
3) Neutron Removed Source (cps)	Pre-log 0.2	Post-log n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: n/a
Total Depth (ft): 451.2	Repeat Interval (ft): 451 → 350
Log Survey Information	**Repeat Log Survey Information**
Start Time: 0921	Start Time: 0916
Logging Speed (ft/min): 28	Logging Speed (ft/min): 30
End Time: 0937	End Time: 0920
Depth Error (ft): 0.43	Depth Error (ft): n/a

Comments:

Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/24/11

Project/Site: KAFB
Location: BFF
Hole ID: KAFB-106112

Casing: PVC
Diameter: 3"
Well Depth: 460ft

Shaw QC GP: D. Castañeda
Logging Firm: Jet West
Screen Type/ Size:

Tool 1 - Induction and Natural Gamma Ray Logs → ☆ bottom of screen @ 449 ft

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log n/a
2) Induction Cal. Coil Test (cps)	Pre-log (D) n/a	Post-log (D) n/a
	Pre-log (M) n/a	Post-log (M) n/a
3) Induction Zero Test (cps)	Pre-log (D) n/a	Post-log (D) n/a
	Pre-log (M) n/a	Post-log (M) n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: n/a
Total Depth (ft): 449.12	Repeat Interval (ft): 450 → 290

Log Survey Information	**Repeat Log Survey Information**
Start Time: 1036	Start Time: 1026
Logging Speed (ft/min): 28	Logging Speed (ft/min): 29
End Time: 1051	End Time: 1031
Depth Error (ft): 0.52	Depth Error (ft): n/a

Comments:

Tool 2 - Neutron and Natural Gamma Ray Logs

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log n/a
2) Neutron Attached Source (cps)	Pre-log n/a	Post-log n/a
3) Neutron Removed Source (cps)	Pre-log n/a	Post-log n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: n/a
Total Depth (ft): 449.5	Repeat Interval (ft): 449 → 349

Log Survey Information	**Repeat Log Survey Information**
Start Time: 1121	Start Time: 1116
Logging Speed (ft/min): 29	Logging Speed (ft/min): 29
End Time: 1138	End Time: 1120
Depth Error (ft): 0.46	Depth Error (ft): n/a

Comments:

Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/29/11

Project/Site: KAFB	**Casing:** PVC	**Shaw QC GP:** D. Castañeda	
Location: BFF	**Diameter:** 3"	**Logging Firm:** Jet West	
Hole ID: KAFB-106117	**Well Depth:** 460 ft	**Screen Type/ Size:** PVC	

Tool 1 - Induction and Natural Gamma Ray Logs

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log n/a
2) Induction Cal. Coil Test (cps)	Pre-log (D) n/a	Post-log (D) n/a
	Pre-log (M) n/a	Post-log (M) n/a
3) Induction Zero Test (cps)	Pre-log (D) n/a	Post-log (D) n/a
	Pre-log (M) n/a	Post-log (M) n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: n/a
Total Depth (ft): 455.11	Repeat Interval (ft): 455 → ~~355~~ DG 3/29 298

Log Survey Information	**Repeat Log Survey Information**
Start Time: 1311	Start Time: 1307
Logging Speed (ft/min): 29	Logging Speed (ft/min): 30
End Time: 1326	End Time: 1307
Depth Error (ft): 0.47	Depth Error (ft): n/a

Comments:

Tool 2 - Neutron and Natural Gamma Ray Logs

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log n/a
2) Neutron Attached Source (cps)	Pre-log n/a	Post-log n/a
3) Neutron Removed Source (cps)	Pre-log n/a	Post-log n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: n/a
Total Depth (ft): 455.3	Repeat Interval (ft): 455 → ~~340~~ DG 3/29 327

Log Survey Information	**Repeat Log Survey Information**
Start Time: 1351	Start Time: 1344
Logging Speed (ft/min): 30	Logging Speed (ft/min): 29
End Time: 1406	End Time: 1348
Depth Error (ft): 0.5	Depth Error (ft): n/a

Comments:

Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/24/11

Project/Site: KAFB	**Casing:** PVC	**Shaw QC GP:** D. Castañeda	
Location: BFF	**Diameter:** 3"	**Logging Firm:** Jet West	
Hole ID: KAFB-106128	**Well Depth:** 457.9ft	**Screen Type/ Size:** PVC	

Tool 1 - Induction and Natural Gamma Ray Logs ↳ bottom of screen @ 450 ft. PM check

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log 53
2) Induction Cal. Coil Test (cps)	Pre-log (D) n/a	Post-log (D) 4519
	Pre-log (M) n/a	Post-log (M) 7074
3) Induction Zero Test (cps)	Pre-log (D) n/a	Post-log (D) 918
	Pre-log (M) n/a	Post-log (M) 1127

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: ground surface
Total Depth (ft): 450.23	Repeat Interval (ft): 167 → 10
Log Survey Information	**Repeat Log Survey Information**
Start Time: 1502	Start Time: 1521
Logging Speed (ft/min): 29	Logging Speed (ft/min): 29
End Time: 1517	End Time: 1526
Depth Error (ft): 0.47	Depth Error (ft): 0.13

Comments:

Tool 2 - Neutron and Natural Gamma Ray Logs PM check

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log 48.7
2) Neutron Attached Source (cps)	Pre-log n/a	Post-log 334
3) Neutron Removed Source (cps)	Pre-log n/a	Post-log 0.68

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: ground surface
Total Depth (ft): 450.44	Repeat Interval (ft): 150 → 10
Log Survey Information	**Repeat Log Survey Information**
Start Time: 1547	Start Time: 1605
Logging Speed (ft/min): 28.9	Logging Speed (ft/min): 30
End Time: 1602	End Time: 1610
Depth Error (ft): 0.33	Depth Error (ft): 0.08

Comments:

Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/25/11

Project/Site: KAFB	**Casing:** PVC	**Shaw QC GP:** D. Castaneda
Location: BFF	**Diameter:** 3"	**Logging Firm:** Jet West
Hole ID: KAFB-~~106117~~ DC 3/25 106128	**Well Depth:** 450	**Screen Type/ Size:** PVC

Tool 1 - Induction and Natural Gamma Ray Logs — AM check

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log 55	Post-log n/a
2) Induction Cal. Coil Test (cps)	Pre-log (D) 4643	Post-log (D) n/a
	Pre-log (M) 7116	Post-log (M) n/a
3) Induction Zero Test (cps)	Pre-log (D) 941	Post-log (D) n/a
	Pre-log (M) 1126	Post-log (M) n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference:	Reference:
Total Depth (ft):	Repeat Interval (ft):
Log Survey Information	**Repeat Log Survey Information**
Start Time:	Start Time:
Logging Speed (ft/min):	Logging Speed (ft/min):
End Time:	End Time:
Depth Error (ft):	Depth Error (ft):

Comments: ☆ ~~Ass~~ no induction log b/c just have to repeat neutron induction completed yesterday

Tool 2 - Neutron and Natural Gamma Ray Logs — AM check

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log 51.1	Post-log n/a
2) Neutron Attached Source (cps)	Pre-log DC 3/26 ~~150~~ 336	Post-log n/a
3) Neutron Removed Source (cps)	Pre-log 0.44	Post-log n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference:	Reference: ground surface
Total Depth (ft): ~~TD (ft)~~ = DC 3/25	Repeat Interval (ft): 150 → 10
Log Survey Information	**Repeat Log Survey Information**
Start Time:	Start Time: 0847
Logging Speed (ft/min):	Logging Speed (ft/min): 27
End Time:	End Time: 0852
Depth Error (ft):	Depth Error (ft): 0.06

Comments: ☆ had to redo neutron tool repeat log b/c file was empty when checked for processing @ end of day yesterday 3/24

Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/25/11

Project/Site: KAFB
Location: BFF
Hole ID: KAFB-106118

Casing: PVC
Diameter: 3"
Well Depth: 479

Shaw QC GP: D. Castaneda
Logging Firm: Jet West
Screen Type/ Size: PVC

Tool 1 - Induction and Natural Gamma Ray Logs L> bottom of screen @ 450ft

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log n/a
2) Induction Cal. Coil Test (cps)	Pre-log (D) n/a	Post-log (D) n/a
	Pre-log (M) n/a	Post-log (M) n/a
3) Induction Zero Test (cps)	Pre-log (D) n/a	Post-log (D) n/a
	Pre-log (M) n/a	Post-log (M) n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: ground surface
Total Depth (ft): 450.5	Repeat Interval (ft): 150 → 10
Log Survey Information	**Repeat Log Survey Information**
Start Time: 0937	Start Time: 0957
Logging Speed (ft/min): 30	Logging Speed (ft/min): 28
End Time: 0953	End Time: 1002
Depth Error (ft): 0.34	Depth Error (ft): 0.11

Comments:

Tool 2 - Neutron and Natural Gamma Ray Logs

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log n/a
2) Neutron Attached Source (cps)	Pre-log n/a	Post-log n/a
3) Neutron Removed Source (cps)	Pre-log n/a	Post-log n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: ground surface
Total Depth (ft): 450.69	Repeat Interval (ft): 150 → 10
Log Survey Information	**Repeat Log Survey Information**
Start Time: 1025	Start Time: 1047
Logging Speed (ft/min): 28	Logging Speed (ft/min): 29
End Time: 1041	End Time: 1052
Depth Error (ft): 0.39	Depth Error (ft): 0.11

Comments:

Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/25/11

Project/Site: KAFB	**Casing:** PVC	**Shaw QC GP:** D. Castaneda	
Location: BFF	**Diameter:** 3"	**Logging Firm:** Jet West	
Hole ID: KAFB-106132	**Well Depth:** 459.5ft	**Screen Type/ Size:** PVC	

Tool 1 - Induction and Natural Gamma Ray Logs ↳ Depth of casing = 450ft

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log n/a
2) Induction Cal. Coil Test (cps)	Pre-log (D) n/a	Post-log (D) n/a
	Pre-log (M) n/a	Post-log (M) n/a
3) Induction Zero Test (cps)	Pre-log (D) n/a	Post-log (D) n/a
	Pre-log (M) n/a	Post-log (M) n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: ground surface
Total Depth (ft): 450.47	Repeat Interval (ft): 150-710
Log Survey Information	**Repeat Log Survey Information**
Start Time: 1150	Start Time: 1210
Logging Speed (ft/min): 30	Logging Speed (ft/min): 29
End Time: 1206	End Time: 1215
Depth Error (ft): 0.29	Depth Error (ft): 0.12

Comments:

Tool 2 - Neutron and Natural Gamma Ray Logs

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log n/a
2) Neutron Attached Source (cps)	Pre-log n/a	Post-log n/a
3) Neutron Removed Source (cps)	Pre-log n/a	Post-log n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: ground surface
Total Depth (ft): 450.81	Repeat Interval (ft): 150->10
Log Survey Information	**Repeat Log Survey Information**
Start Time: 1240	Start Time: 1259
Logging Speed (ft/min): 29	Logging Speed (ft/min): 30
End Time: 1255	End Time: 1304
Depth Error (ft): 0.34	Depth Error (ft): 0.11

Comments:

Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/25/11

Project/Site: KAFB | Casing: PVC | Shaw QC GP: D. Castaneda
Location: BFF | Diameter: 3" | Logging Firm: Jet West
Hole ID: KAFB-106133 | Well Depth: 460Ft | Screen Type/ Size: PVC

Tool 1 - Induction and Natural Gamma Ray Logs ↳ bottom of casing @ 449 ft

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log n/a
2) Induction Cal. Coil Test (cps)	Pre-log (D) n/a	Post-log (D) n/a
	Pre-log (M) n/a	Post-log (M) n/a
3) Induction Zero Test (cps)	Pre-log (D) n/a	Post-log (D) n/a
	Pre-log (M) n/a	Post-log (M) n/a

Survey Depth Information		Repeat Log Depth Information	
Reference:	ground surface	Reference:	ground surface
Total Depth (ft):	447.44	Repeat Interval (ft):	260 → 160
Log Survey Information		**Repeat Log Survey Information**	
Start Time:	~~1347~~ DC 1409	Start Time:	1428
Logging Speed (ft/min):	~~28.6~~ 29	Logging Speed (ft/min):	29
End Time:	1424	End Time:	1433
Depth Error (ft):	0.4	Depth Error (ft):	0.15

Comments: ★ bottom of hole was "soft" according to logger thinks something is at bottom of hole
★ had to redo main log b/c data was not recorded

Tool 2 - Neutron and Natural Gamma Ray Logs

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log n/a
2) Neutron Attached Source (cps)	Pre-log n/a	Post-log n/a
3) Neutron Removed Source (cps)	Pre-log n/a	Post-log n/a

Survey Depth Information		Repeat Log Depth Information	
Reference:	ground surface	Reference:	ground surface
Total Depth (ft):	447.84	Repeat Interval (ft):	150 - 710
Log Survey Information		**Repeat Log Survey Information**	
Start Time:	1447	Start Time:	1506
Logging Speed (ft/min):	30	Logging Speed (ft/min):	30
End Time:	1502	End Time:	1511
Depth Error (ft):	0.4	Depth Error (ft):	0.09

Comments:

Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/25/11

Project/Site: KAFB	**Casing:** PVC	**Shaw QC GP:** D. Castañeda	
Location: BFF	**Diameter:** 3"	**Logging Firm:** Jet West	
Hole ID: KAFB-106134	**Well Depth:** ~460ft	**Screen Type/ Size:** PVC	

Tool 1 - Induction and Natural Gamma Ray Logs ↳ bottom of casing @ 450ft

PM check

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log 53
2) Induction Cal. Coil Test (cps)	Pre-log (D) n/a	Post-log (D) 4478
	Pre-log (M) n/a	Post-log (M) 7043
3) Induction Zero Test (cps)	Pre-log (D) n/a	Post-log (D) 918
	Pre-log (M) n/a	Post-log (M) 1066

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: ground surface
Total Depth (ft): 450.62	Repeat Interval (ft): 160 → 10

Log Survey Information	**Repeat Log Survey Information**
Start Time: 1541	Start Time: 1559
Logging Speed (ft/min): 29	Logging Speed (ft/min): 30
End Time: 1556	End Time: 1604
Depth Error (ft): 0.34	Depth Error (ft): 0.2

Comments:

Tool 2 - Neutron and Natural Gamma Ray Logs

PM check DC 3/25

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log ~~53~~ 62
2) Neutron Attached Source (cps)	Pre-log n/a	Post-log 340
3) Neutron Removed Source (cps)	Pre-log n/a	Post-log 0.96

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: ground surface
Total Depth (ft): ~~463~~ DC 3/25 450.7	Repeat Interval (ft): 160 → 10

Log Survey Information	**Repeat Log Survey Information**
Start Time: 1630	Start Time: 1648
Logging Speed (ft/min): 29	Logging Speed (ft/min): 30
End Time: 1645	End Time: 1653
Depth Error (ft): 0.31	Depth Error (ft): 0.09

Comments:

Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/28/11

Project/Site: KAFB	**Casing:** PVC	**Shaw QC GP:** D. Castaneda	
Location: BFF	**Diameter:** 3"	**Logging Firm:** Jet West	
Hole ID: KAFB-106130	**Well Depth:** 455ft → bottom of screen @ 450ft	**Screen Type/ Size:** PVC	

Tool 1 - Induction and Natural Gamma Ray Logs — AM check

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log 58	Post-log n/a
2) Induction Cal. Coil Test (cps)	Pre-log (D) 4663	Post-log (D) n/a
	Pre-log (M) 7122	Post-log (M) n/a
3) Induction Zero Test (cps)	Pre-log (D) 928	Post-log (D) n/a
	Pre-log (M) 1124	Post-log (M) n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: ground surface
Total Depth (ft): 450.3	Repeat Interval (ft): 150 → 10
Log Survey Information	**Repeat Log Survey Information**
Start Time: 0805	Start Time: 0823
Logging Speed (ft/min): 29	Logging Speed (ft/min): 30
End Time: 0820	End Time: 0828
Depth Error (ft): 0.38	Depth Error (ft): 0.16

Comments:

Tool 2 - Neutron and Natural Gamma Ray Logs — AM check

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log 55	Post-log n/a
2) Neutron Attached Source (cps)	Pre-log 337	Post-log n/a
3) Neutron Removed Source (cps)	Pre-log 0.6	Post-log n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: ground surface
Total Depth (ft): 450.46	Repeat Interval (ft): 150 → 10
Log Survey Information	**Repeat Log Survey Information**
Start Time: 0847	Start Time: 0906
Logging Speed (ft/min): 30	Logging Speed (ft/min): 29
End Time: 0902	End Time: 0914
Depth Error (ft): 0.31	Depth Error (ft): 0.05

Comments:

Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/28/11

Project/Site: KAFB	**Casing:** PVC	**Shaw QC GP:** D. Castañeda	
Location: BIF	**Diameter:** 3"	**Logging Firm:** Jet West	
Hole ID: KAFB-106108	**Well Depth:** 458ft	**Screen Type/ Size:** PVC	

Tool 1 - Induction and Natural Gamma Ray Logs ↳ bottom of casing @ 450 ft

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log n/a
2) Induction Cal. Coil Test (cps)	Pre-log (D) n/a	Post-log (D) n/a
	Pre-log (M) n/a	Post-log (M) n/a
3) Induction Zero Test (cps)	Pre-log (D) n/a	Post-log (D) n/a
	Pre-log (M) n/a	Post-log (M) n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: ground surface
Total Depth (ft): 450.25	Repeat Interval (ft): 180 → 10
Log Survey Information	**Repeat Log Survey Information**
Start Time: 0941	Start Time: 1002
Logging Speed (ft/min): 30	Logging Speed (ft/min): 30
End Time: 0956	End Time: 1008
Depth Error (ft): 0.31	Depth Error (ft): 0.11

Comments:

Tool 2 - Neutron and Natural Gamma Ray Logs

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log n/a
2) Neutron Attached Source (cps)	Pre-log n/a	Post-log n/a
3) Neutron Removed Source (cps)	Pre-log n/a	Post-log n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: ground surface
Total Depth (ft): 450.53	Repeat Interval (ft): 150 → 10
Log Survey Information	**Repeat Log Survey Information**
Start Time: 1022	Start Time: 1042
Logging Speed (ft/min): 29	Logging Speed (ft/min): 30
End Time: 1037	End Time: 1047
Depth Error (ft): 0.96	Depth Error (ft): 0.07

Comments:

Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/28/11

Project/Site: KAFB	**Casing:** PVC	**Shaw QC GP:** D. Castaneda
Location: BFF	**Diameter:** 3"	**Logging Firm:** Jet West
Hole ID: KAFB-106109	**Well Depth:** 458.2ft	**Screen Type/ Size:** PVC

↳ bottom of screen @ 450ft

Tool 1 - Induction and Natural Gamma Ray Logs

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log N/a	Post-log N/a
2) Induction Cal. Coil Test (cps)	Pre-log (D) N/a	Post-log (D) N/a
	Pre-log (M) N/a	Post-log (M) N/a
3) Induction Zero Test (cps)	Pre-log (D) N/a	Post-log (D) N/a
	Pre-log (M) N/a	Post-log (M) N/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: ground surface
Total Depth (ft): 450.66	Repeat Interval (ft): 150→10
Log Survey Information	**Repeat Log Survey Information**
Start Time: 1117	Start Time: 1136
Logging Speed (ft/min): 29	Logging Speed (ft/min): 29
End Time: 1132	End Time: 1141
Depth Error (ft): 0.27	Depth Error (ft): 0.12

Comments:

Tool 2 - Neutron and Natural Gamma Ray Logs

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log N/a	Post-log N/a
2) Neutron Attached Source (cps)	Pre-log N/a	Post-log N/a
3) Neutron Removed Source (cps)	Pre-log N/a	Post-log N/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: ground surface
Total Depth (ft): 450.66	Repeat Interval (ft): 150→10
Log Survey Information	**Repeat Log Survey Information**
Start Time: 1155	Start Time: 1214
Logging Speed (ft/min): 30	Logging Speed (ft/min): 30
End Time: 1210	End Time: 1218
Depth Error (ft): 0.25	Depth Error (ft): 0.08

Comments:

Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/28/11

Project/Site: KAFB	**Casing:** PVC	**Shaw QC GP:** D. Castaneda	
Location: BFF	**Diameter:** 3"	**Logging Firm:** Jet West	
Hole ID: KAFB-106137	**Well Depth:** 460 ft ↳ bottom of screen @ 450 ft	**Screen Type/ Size:** PVC	

Tool 1 - Induction and Natural Gamma Ray Logs

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log n/a
2) Induction Cal. Coil Test (cps)	Pre-log (D) n/a	Post-log (D) n/a
	Pre-log (M) n/a	Post-log (M) n/a
3) Induction Zero Test (cps)	Pre-log (D) n/a	Post-log (D) n/a
	Pre-log (M) n/a	Post-log (M) n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: ground surface
Total Depth (ft): 449.6	Repeat Interval (ft): 150 → 10
Log Survey Information	**Repeat Log Survey Information**
Start Time: 1257	Start Time: 1316
Logging Speed (ft/min): 30	Logging Speed (ft/min): 30
End Time: 1312	End Time: 1321
Depth Error (ft): 0.28	Depth Error (ft): 0.07

Comments:

Tool 2 - Neutron and Natural Gamma Ray Logs

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log n/a
2) Neutron Attached Source (cps)	Pre-log n/a	Post-log n/a
3) Neutron Removed Source (cps)	Pre-log n/a	Post-log n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: ground surface
Total Depth (ft): 449.72	Repeat Interval (ft): 150 → 10
Log Survey Information	**Repeat Log Survey Information**
Start Time: 1334	Start Time: 1353
Logging Speed (ft/min): 29	Logging Speed (ft/min): 28
End Time: 1349	End Time: 1358
Depth Error (ft): 0.31	Depth Error (ft): 0.13

Comments:

Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/28/11

Project/Site: KAFB	**Casing:** PVC	**Shaw QC GP:** D. Castaneda
Location: BIFF	**Diameter:** 3"	**Logging Firm:** Jet West
Hole ID: KAFB-106135	**Well Depth:** 460 Ft	**Screen Type/ Size:** PVC

Tool 1 - Induction and Natural Gamma Ray Logs ↳ bottom of screen @ 450 Ft PM check

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log 49
2) Induction Cal. Coil Test (cps)	Pre-log (D) n/a	Post-log (D) 4436
	Pre-log (M) n/a	Post-log (M) 7011
3) Induction Zero Test (cps)	Pre-log (D) n/a	Post-log (D) 876
	Pre-log (M) n/a	Post-log (M) 1043

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: ground surface
Total Depth (ft): 450.26	Repeat Interval (ft): 300 → 180
Log Survey Information	**Repeat Log Survey Information**
Start Time: 1427	Start Time: 1449
Logging Speed (ft/min): 28	Logging Speed (ft/min): 27
End Time: 1443	End Time: 1453
Depth Error (ft): 0.33	Depth Error (ft): 0.22

Comments:

Tool 2 - Neutron and Natural Gamma Ray Logs PM check

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log 51
2) Neutron Attached Source (cps)	Pre-log n/a	Post-log 336
3) Neutron Removed Source (cps)	Pre-log n/a	Post-log 0

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: ground surface
Total Depth (ft): 450.46	Repeat Interval (ft): 300 → 180
Log Survey Information	**Repeat Log Survey Information**
Start Time: 1526	Start Time: 1545
Logging Speed (ft/min): 28	Logging Speed (ft/min): 30
End Time: 1541	End Time: 1549
Depth Error (ft): 0.28	Depth Error (ft): 0.19

Comments:

Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/29/11

Project/Site: KAFB	**Casing:** PVC	**Shaw QC GP:** D. Castañeda	
Location: BFF	**Diameter:** 3"	**Logging Firm:** Jet West	
Hole ID: KAFB-106139	**Well Depth:** 460 ft	**Screen Type/ Size:** PVC	

Tool 1 - Induction and Natural Gamma Ray Logs

L7 bottom of screen @ 450 ft
" " casing @ 456 ft

Instrument Operational Checks AM check

1) Gamma Ray Count Rate (cps)	Pre-log 59	Post-log n/a
2) Induction Cal. Coil Test (cps)	Pre-log (D) 4715	Post-log (D) n/a
	Pre-log (M) 7144	Post-log (M) n/a
3) Induction Zero Test (cps)	Pre-log (D) 922	Post-log (D) n/a
	Pre-log (M) 1136	Post-log (M) n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: ground surface
Total Depth (ft): 449.7	Repeat Interval (ft): 150 → 10
Log Survey Information	**Repeat Log Survey Information**
Start Time: 0756	Start Time: 0813
Logging Speed (ft/min): 29	Logging Speed (ft/min): 29
End Time: 0811	End Time: 0818
Depth Error (ft): 0.32	Depth Error (ft): 0.14

Comments: ☆ interesting spike in signal @ ~50ft

Tool 2 - Neutron and Natural Gamma Ray Logs

Instrument Operational Checks AM check

1) Gamma Ray Count Rate (cps)	Pre-log 56	Post-log n/a
2) Neutron Attached Source (cps)	Pre-log 344	Post-log n/a
3) Neutron Removed Source (cps)	Pre-log 0.46	Post-log n/a

Survey Depth Information	**Repeat Log Depth Information**
Reference: ground surface	Reference: ground surface
Total Depth (ft): 449.83	Repeat Interval (ft): 180 → 10
Log Survey Information	**Repeat Log Survey Information**
Start Time: 0838	Start Time: 0856
Logging Speed (ft/min): 30	Logging Speed (ft/min): 29
End Time: 0853	End Time: 0902
Depth Error (ft): 0.31	Depth Error (ft): 0.08

Comments:

Shaw Group Inc.

KAFB Geophysical Logging QC Form

Date: 3/29/11

Project/Site: KAFB
Location: BFF
Hole ID: KAFB-106102

Casing: PVC
Diameter: 5"
Well Depth: 550 ft ↳ bottom of screen 535 ft

Shaw QC GP: D. Castaneda
Logging Firm: Jet West
Screen Type/ Size: PVC

Tool 1 - Induction and Natural Gamma Ray Logs

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log n/a
2) Induction Cal. Coil Test (cps)	Pre-log (D) n/a	Post-log (D) n/a
	Pre-log (M) n/a	Post-log (M) n/a
3) Induction Zero Test (cps)	Pre-log (D) n/a	Post-log (D) n/a
	Pre-log (M) n/a	Post-log (M) n/a

Survey Depth Information	Repeat Log Depth Information
Reference: ground surface	Reference: ground surface
Total Depth (ft): 538.06	Repeat Interval (ft): re-log entire hole TD = 536.95

Log Survey Information	Repeat Log Survey Information
Start Time: ~~0937~~ DC 3/24 0941	Start Time: 1009
Logging Speed (ft/min): 29	Logging Speed (ft/min): 28
End Time: 0959	End Time: 1027
Depth Error (ft): 1.3	Depth Error (ft): 0.3

★ cut out repeat section from 280-380 ft from original log

Comments: picked up some errors @ beginning of main log, re-booted system + re-did log, ★ depth error off by a higher than usual amount, re-log hole again ↳ error due to operator input error of start depth

Tool 2 - Neutron and Natural Gamma Ray Logs

Instrument Operational Checks

1) Gamma Ray Count Rate (cps)	Pre-log n/a	Post-log n/a
2) Neutron Attached Source (cps)	Pre-log n/a	Post-log n/a
3) Neutron Removed Source (cps)	Pre-log n/a	Post-log n/a

Survey Depth Information	Repeat Log Depth Information
Reference: ground surface	Reference: ground surface
Total Depth (ft): 537.3	Repeat Interval (ft): 150 → 10

Log Survey Information	Repeat Log Survey Information
Start Time: 1040	Start Time: 1100
Logging Speed (ft/min): 29	Logging Speed (ft/min): 29
End Time: 1058	End Time: 1105
Depth Error (ft): 0.23	Depth Error (ft): 0.09

Comments: