BAKER HUGHES

Baker Atlas

MicroVertilog

Magnetic Flux Leakage Inspection

Company	US Salt Company
Well	52
Field	Watkins Glenn
County	Shuyler
State	New York
Location:	

Section	Township	Range	

Date	Nov. 14, 2008
Service Order	584714
Recorded by	Wilson
Witnessed by	R Tune
API Serial No.	31-097-61200

Permanent Datum:	GL	Elevation: 687.000 ft.	Depth	2675.000
Log Measured From:	MG	3.000 ft. above Perm. Datum	Btm. Log Interval	2670.700
Drilling Measured From:	KB	10.000 ft. above Perm. Datum	Top Log Interval	-0.500
			Fluid Type	WATER

Casing Data

Size	Weight	Grade	From	To
8 5/8 inch	32.0 lb/ft	H40	0	2697
13 3/8 inch	43.0 lb/ft	NA	0	44

Equipment Data

Tool	8-5/8 Inch 14 FL + 14 DIS Channel Tool
Magnetizer	369250mb
Telemetry	
Processor	
Software Version	MV 903 MV32 3.8.6.0

In making interpretations of logs our employees will give customer the benefit of their best judgement. But since all interpretations are opinions based on inferences from electrical or other measurements, we cannot, and we do not guarantee the accuracy or correctness of any interpretation. We shall not be liable or responsible for any loss, cost, damages, or expenses whatsoever incurred or sustained by the customer resulting from any interpretation made by any of our employees.

Interpretation Summary

INTERPRETATION ALGORITHM USED: 8 5/8" 32.0 LB/FT H40.

LOG DEPTH OF BOTTOM OF 13 3/8" CASING: APPEARS TO BE 28.4 FT.

THE FEATURE AT 2668.3 FT. IS BELOW THE FIRST READING OF THE DISCRIMINATOR SECTION AND CAN NOT BE CLASSIFIED AS INTERNAL OR EXTERNAL.

THE INTERNAL FEATURES AT 2041.2 AND 2010.5 ARE VERY UNIFORM AND BE BE MECHANICAL IN ORIGIN.

RESPONSES WHICH ARE THE RESULT OF MILLING / MANUFACTURING ARTIFACTS WERE EXCLUDED FROM THE JOINT SUMMARY. IN ADDITION, THE CLASS 1 / CLASS 2 CUT OFF WAS INCREASED FROM THE DEFAULT VALUE TO MINIMIZE THE CLASSIFICATION AS CORROSION OF MANUFACTURING ARTIFACTS.

SEE BELOW FOR ENGINEER'S REMARKS AND HARDWARE EXCLUSION DEPTHS. THE HARDWARE EXCLUDED ARE CENTRALIZERS.

Remarks

Rig had b.o.p. stack on top of well.

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Hardware found:

From	To
2526.30	2525.13
2523.87	2522.69
2361.53	2360.35
2359.04	2357.87
2111.76	2110.59
2109.31	2108.14
1939.20	1938.03
1936.77	1935.59
1896.37	1895.20
1691.93	1690.75
1689.70	1688.53
1435.40	1434.23
1433.23	1432.06
1392.80	1391.63
938.44	937.27
936.00	934.83
474.90	473.73
472.47	471.29
432.80	431.63

Joint Interpretation Summary

Joint	From	To	Length	Class	Max Depth	Position	Type	ID/OD
1	-0.50	36.11	36.61	Class 4	87%	13.00	GEN	OD
2	36.11	72.25	36.14	Class 1	-	-	-	-
3	72.25	109.08	36.83	Class 3	57%	101.67	GEN	OD
4	109.08	144.89	35.81	Class 1	-	-	-	-
5	144.89	185.71	40.82	Class 1	-	-	-	-
6	185.71	225.15	39.45	Class 1	-	-	-	-
7	225.15	266.54	41.39	Class 1	-	-	-	-
8	266.54	305.10	38.55	Class 2	22%	290.49	ISO	ID
9	305.10	346.89	41.79	Class 1	-	-	-	-
10	346.89	389.43	42.54	Class 1	-	-	-	-
11	389.43	431.23	41.80	Class 2	29%	430.48	GEN	ID
12	431.23	473.32	42.09	Class 1	-	-	-	-
13	473.32	515.30	41.98	Class 1	-	-	-	-
14	515.30	552.44	37.14	Class 2	37%	542.97	ISO	ID
15	552.44	594.06	41.63	Class 1	-	-	-	-
16	594.06	633.78	39.72	Class 1	-	-	-	-
17	633.78	669.34	35.57	Class 1	-	-	-	-
18	669.34	706.94	37.59	Class 1	-	-	-	-
19	706.94	743.02	36.08	Class 1	-	-	-	-
20	743.02	784.97	41.95	Class 1	-	-	-	-
21	784.97	819.39	34.42	Class 1	-	-	-	-
22	819.39	858.62	39.23	Class 1	-	-	-	-
23	858.62	899.44	40.82	Class 1	-	-	-	-
24	899.44	936.86	37.42	Class 1	-	-	-	-
25	936.86	979.25	42.39	Class 1	-	-	-	-
26	979.25	1022.43	43.18	Class 2	22%	1006.08	GEN	ID
27	1022.43	1062.22	39.79	Class 3	44%	1033.99	ISO	ID
28	1062.22	1104.39	42.18	Class 1	20%	1100.27	GEN	-
29	1104.39	1143.03	38.64	Class 1	-	-	-	-
30	1143.03	1187.40	44.37	Class 1	-	-	-	-
31	1187.40	1227.11	39.72	Class 1	-	-	-	-
32	1227.11	1270.25	43.14	Class 1	-	-	-	-
33	1270.25	1303.90	33.66	Class 1	-	-	-	-
34	1303.90	1347.92	44.02	Class 1	-	-	-	-
35	1347.92	1391.23	43.31	Class 1	-	-	-	-
36	1391.23	1433.89	42.66	Class 1	-	-	-	-
37	1433.89	1476.28	42.39	Class 1	-	-	-	-
38	1476.28	1518.24	41.97	Class 3	47%	1496.36	GEN	ID
39	1518.24	1560.74	42.50	Class 1	-	-	-	-
40	1560.74	1604.87	44.12	Class 1	-	-	-	-
41	1604.87	1647.73	42.87	Class 1	-	-	-	-
42	1647.73	1690.12	42.39	Class 1	-	-	-	-
43	1690.12	1730.37	40.25	Class 1	-	-	-	-
44	1730.37	1772.83	42.46	Class 1	-	-	-	-
45	1772.83	1815.72	42.89	Class 1	-	-	-	-
46	1815.72	1851.87	36.15	Class 1	-	-	-	-
47	1851.87	1894.78	42.90	Class 1	-	-	-	-
48	1894.78	1937.48	42.70	Class 1	-	-	-	-
49	1937.48	1980.49	43.01	Class 1	-	-	-	-
50	1980.49	2023.56	43.07	Class 4	61%	2010.46	GEN	ID
51	2023.56	2066.66	43.10	Class 3	57%	2041.18	GEN	ID
52	2066.66	2110.18	43.52	Class 1	-	-	-	-
53	2110.18	2153.38	43.20	Class 1	-	-	-	-
54	2153.38	2196.31	42.94	Class 1	-	-	-	-
55	2196.31	2238.45	42.14	Class 1	-	-	-	-
56	2238.45	2281.33	42.88	Class 1	-	-	-	-
57	2281.33	2324.63	43.30	Class 1	-	-	-	-
58	2324.63	2359.78	35.14	Class 1	-	-	-	-
59	2359.78	2395.31	35.53	Class 1	-	-	-	-
60	2395.31	2437.89	42.57	Class 3	50%	2410.32	ISO	ID
61	2437.89	2481.47	43.58	Class 3	50%	2455.64	ISO	ID
62	2481.47	2524.63	43.16	Class 3	43%	2520.49	GEN	ID
63	2524.63	2560.63	36.00	Class 1	-	-	-	-
64	2560.63	2603.79	43.16	Class 1	-	-	-	-
65	2603.79	2647.09	43.30	Class 1	-	-	-	-
66	2647.09	2670.69	23.60	Class 2	24%	2668.32	GEN	-

Damage Classification Summary

	Class	Defect Range	Joints	Total Length	Percentage
	1	0 - 20	52	2116.24	79.2
	2	20 - 40	5	184.28	6.9
	3	40 - 60	7	291.00	10.9
	4	60 - 100	2	79.68	3.0
Total			66	2671.19	100.0

Joint Summary based on the following settings:

Joint analysis sensors:
FL_1 FL_2 FL_3 FL_4 FL_5 FL_6 FL_7 FL_8 FL_9 FL_10 FL_11 FL_12 FL_13 FL_14
DIS_1 DIS_2 DIS_3 DIS_4 DIS_5 DIS_6 DIS_7 DIS_8 DIS_9 DIS_10 DIS_11 DIS_12 DIS_13 DIS_14

Joint detection parameters:
Correlation step: 4
Floating correlation threshold: 10.0
Disturbed zone lead / lag: 8.00 in / 8.00 in

Hardware analyisis: No
Fixed hardware threshold: 0.8
Hardware width: 14.0 in

Classification parameters:
FL Activity threshold: 80.0
Sensor percentage: 40
Window width: 6.0 in
Generalized corrosion FL reduction factor: 50.0%
Internal corrosion threshold: 300.0

Zoned parameters:

From	Surface	-0.500	28.400
To	-0.500	28.400	Bottom
Weight	Unknown	32.0 lb/ft	32.0 lb/ft
Grade	Unknown	H40	H40
A Factor	0.40000	0.13483	0.13483
B Factor	2.00000	1.98982	1.98982
Class 1	0.0	0.0	0.0
Class 2	250.0	155.0	155.0
Class 3	1000.0	207.8	207.8
Class 4	2250.0	465.6	465.6
Model	Auto	Auto	Auto
External string correction	1.00	1.10	1.00

MAIN LOG

US Salt Company 52
File 20081114.0F1

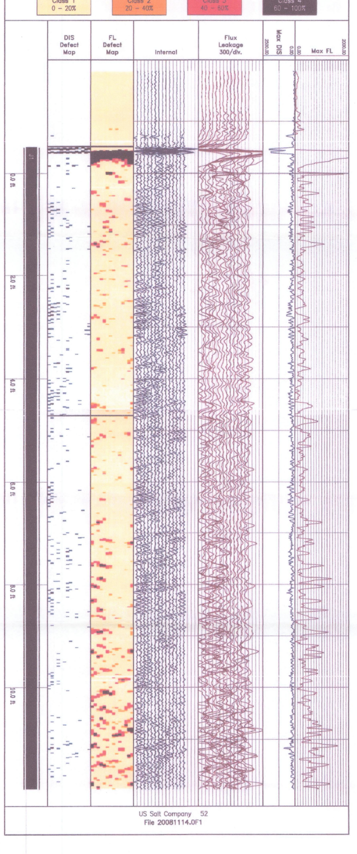
Class 1 0 - 20% | Class 2 20 - 40% | Class 3 40 - 60% | Class 4 60 - 100%

US Salt Company 52
File 20081114.0F1

EXPANDED SCALE – TOP OF WELL

US Salt Company 52
File 20081114.0F1

Class 1 0 - 20% | Class 2 20 - 40% | Class 3 40 - 60% | Class 4 60 - 100%



US Salt Company 52
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