



URS Corporation
Texas City, Texas

Malone Services Corporation
Injection Well WDW-138

2006 Mechanical Integrity Test
&
Bottomhole Pressure Survey
Report

March 29, 2006
Sandia Project No. 839-URS-06



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WDW-138

EXECUTIVE SUMMARY

Annual mechanical integrity and ambient pressure testing was recently conducted on WDW-138, a Class I Hazardous Waste Injection Well at the Malone Service Company, Inc. (MSC) Superfund Site in Texas City, Texas. URS Corporation (URS), the agent for the Malone Cooperating Parties, managed the testing program. The fieldwork was performed on March 13, 2006 and consisted of a static bottomhole pressure survey, an Annulus Pressure Test (APT), and a Radioactive Tracer Survey (RTS). The well is completed in the Miocene Sand Interval and is utilized to dispose of storm water and liquids collected during site investigation and remediation at the Site.

The static bottomhole pressure survey was conducted to provide a historical reference point for the Miocene Sand Interval. The formation pressure is slightly higher than the measured pressure on March 15, 2005, but has decreased eight pounds per square inch (psi) since the October 21, 1999 survey.

The mechanical integrity test consisted of an APT and a RTS. The APT demonstrated the integrity of the wellhead, well casing, injection tubing, and injection packer. The RTS demonstrated that injected fluids are entering and remaining in the permitted injection interval. The Mechanical Integrity test conducted on WDW-138 successfully fulfilled the annual testing requirements for the well.

1.0 INTRODUCTION

The MSC Superfund Site is located south of Texas City, Texas, near the southwest shore of Swan Lake in Galveston County, Texas. Aqueous wastes have been disposed of on site by deep well injection into the Miocene Formation, as authorized by the United States Environmental Protection Agency (USEPA). The facility currently collects storm water from selected units on site. The waters are managed in separate above ground areas and disposed of, as needed, into WDW-138 (Plant Well No. 2). WDW-73 (Plant Well No. 1) is maintained in a mandatory shut in status. Both wells are permitted for injection into the Miocene Sand Formation. Please refer to Figure 1 for a map of the MSC disposal wells.

This report presents the results of the recent bottomhole pressure (BHP) survey and mechanical integrity testing operations on WDW-138. The tests were performed in accordance with the Code of Federal Regulations (CFR) Title 40, §146.68(d)(1), (d)(2), and (e)(1). The tests are also compliant with Texas Commission on Environmental Quality (TCEQ) Rule 31 TAC 331.64 (d) and (g)(2). This report includes a work summary, test data, and analysis.

On behalf of the Malone Cooperating Parties and at the request of URS Corporation (URS), Sandia Technologies, LLC (Sandia) planned the work, contracted necessary vendors, and supervised the required well tests on WDW-138. Field operations were performed on March 13, 2006.

1.1 Facility Information

Facility: Malone Service Company

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2.0 OPERATIONS SUMMARY

A bottomhole pressure (BHP) survey and a mechanical integrity test (MIT) were conducted through WDW-138 to satisfy annual testing requirements for the well. The testing operations were conducted on March 13, 2006. Appendix A contains a log of the daily operations during the testing period. The current completion schematic for WDW-138 is presented in Figure 2.

Gulf Coast Well Analysis, Pearland, Texas (GCWA), provided wireline, pressure gauges, and pressure control services for the BHP survey and RTS. A memory pressure probe and RTS tools were lowered into the wellbore. Appendix B contains pressure data collected by GCWA during the BHP survey. The RTS was completed by GCWA after recording the BHP survey. Roywell Services, Baytown, Texas (Roywell), provided pumping services and K-Mac Vacuum Services, Alvin, Texas (K-Mac), provided fluid (KCl alternative in water) for the RTS.

The reference depth for this, and subsequent sections of this report, is the kelly bushing (KB) reference, which is 8.0 feet above the lowermost wellhead flange in WDW-138. Table 2-1 presents the current well completion data.

Table 2-1
WDW-138 Well Completion Data

Completion Data	Depth (feet KB)
Injection Tubing, 2-7/8" O.D.	Surface to 3,552'
Production Packer Depth	3,552' to 3,560'
Protection Casing, 7", 20.0-ppf	3,560' to 3,854'
Abandoned Packer Assembly	3,840' to 3,891'
2-7/8" Stub	3,840' to 3,854'
Packer	3,854' to 3,860'
Tail Pipe	3,860' to 3,891'
Perforated Interval	4,162' to 4,237'
(7" Protective Casing)	4,242' to 4,260'
	4,272' to 4,306'
	4,318' to 4,323'
Top of Fill	4,271

March 13, 2006

A high-resolution pressure transducer was connected to the tubing-casing annulus of WDW-138, and an annulus pressure test was conducted with a differential pressure in excess of 1,000 pounds per square inch (psi). Details of the test are included in Section 3.1.

The wireline unit was mobilized to the site and rigged up on the well. A Spartek Systems memory pressure probe and RTS tools were lowered into the wellbore on the wireline. Centralizers were run on the top and bottom of the tool assembly to insure the tool string would enter the cutoff tubing above the lower packer. Pressure gradient stops were made at surface, 1,000 feet, 2,000 feet, 3,000 feet, and 4,000 feet. The pressure probe was set at a depth of 4,142 feet. The BHP and temperature were monitored and recorded for 66 minutes. Details of the BHP survey are included in Section 3.2.

A fluid pump was mobilized to the MSC site and rigged up to WDW-138. A vacuum transport loaded with fresh water was mobilized to the location. A potassium chloride substitute was then added to the fresh water and mixed to obtain a 3% equivalent solution. The vacuum transport was then rigged up to the fluid pump truck.

A RTS was then performed. Details of the RTS are included in Section 3.3. The RTS tools were retrieved from the wellbore and all equipment was rigged down and released. The location was cleaned and crews exited the location.

3.0 MECHANICAL INTEGRITY TEST

3.1 Annulus Pressure Test (APT)

Sandia conducted the APT on the morning of March 13, 2006. A Well Test Solutions SDS 3000 pressure probe (see Appendix C for pressure gauge documentation) was connected to the tubing-casing annulus of WDW-138, and the annular pressure was recorded for 55 minutes. An initial test pressure reading of 1,168.56 psia at 8:45 a.m. was recorded. During the thirty-minute APT, the annulus pressure dropped 6.14 pounds per square inch (psi) to an ending pressure of 1,162.42 psia at 9:15 a.m. The injection tubing was static throughout the test with an observed pressure of 76 psig. The 0.53 percent pressure change was within allowable limits for TCEQ approval (five-percent increase or decrease over the 30-minute the test duration). A record of the test data is included in Appendix D.

3.2 Bottomhole Pressure Survey

The well has been periodically used for fluid disposal since the last test on March 16, 2005. The well was shut in on March 6, 2006, at 5:10 P.M., and remained shut in until the testing operations were started. On the morning of March 13, 2006, a memory pressure probe (see Table 3-1 and Appendix C), RTS tools with casing collar locator, and two bow-spring centralizers were lowered into the well. As the tools were lowered into the wellbore, pressure gradient stops were conducted at surface and at 1,000-foot intervals. Following the 4,000-foot gradient stop, the pressure probe was positioned at 4,142 feet and allowed to stabilize for 66 minutes. Table 3-2 illustrates the hydrostatic measurements recorded during the survey. A graphic representation, printed data, and digital data disk are presented in Appendix B.

A review of the recorded memory gauge BHP data after removing the gauge from the wellbore indicated anomalous readings from the downhole gauge after 26 minutes of stabilized readings. It appears either the valve to the pump truck or the wing valve on the MSC flowline was momentarily opened and then immediately shut at 11:05:28 A.M. and at 11:35:58 A.M. This caused a minor pressure drawdown followed by a pressure buildup to be recorded. The total pressure drop was 17 psi and 16 psi at each respective occurrence. The pressure buildup returned to near the previous readings each time. The

recorded pressure at 11:04:58 A.M. of 1,870.56 psig at 4,142 feet is considered the static reservoir pressure.

**Table 3-1
Pressure Gauge Information**

Pressure Gauge	Property	Value
Gulf Coast Well Analysis Spartek Memory Gauge Serial No. 76390 Gauge Depth: 4,142 feet KB	Range	0 – 6,000 psia
	Accuracy	±(0.025% of full scale + 0.01% of reading)
	Manufacturer's Recommended Calibration Frequency	Annual
	Calibration Date	November 25, 2005

**Table 3-2
WDW-138 Gradient Survey Summary**

Depth (feet)	Measured Pressure (psig)	Density Gradient (psi/ft)
4,142	1,870.56	0.4119
4,000	1,812.07	0.4371
3,000	1,374.95	0.4327
2,000	942.28	0.4343
1,000	508.02	0.4324
Surface	90.30	N/A
	Average	0.4290

3.3 Radioactive Tracer Survey (RTS)

The RTS was conducted on March 13, 2006, by GCWA under the supervision of Sandia. A copy of the survey and an interpretation letter from Mr. Stoney Johnson of GCWA are included in Appendix E. Table 2-1 and Figure 2 present well completion data for the test.

The wireline tools were lowered to the bottom of the well, and a depth correlation was made referencing the GCWA Radioactive Tracer Survey, dated March 15, 2005. The top of fill was located at 4,271 feet (same depth as 2005 RTS), indicating that the lowermost 40 feet of the 134 feet of total perforated interval is covered with solids and/or sand.

After an initial baseline gamma ray logging run, statistical time drive checks were performed with the lower gamma detector positioned at 3,830 feet and at 4,142 feet. Two moving flow profile surveys were performed next while injection was held constant at 42 gpm. The tracer material was monitored between 3,350 feet and 4,265 feet, with the radioactive slugs exiting the wellbore through the perforations, into the injection interval. Two stationary time-drive surveys were performed at an injection rate of 63 gpm, both with the tool positioned at 4,142 feet. The surveys showed no evidence of upward fluid movement. A summary of the logging runs is included in Table 3-3.

Table 3-3
WDW-138 Radioactive Tracer Survey Logging Summary

RUN NO.	RATE (gal/min)	PRESSURE (psig)	OPERATION
1	0	76	Ran initial baseline gamma ray log from 4,265 feet to 3,350 feet.
2-3	0	100	Statistical background checks at 3,830 feet and 4,142 feet.
4-8	42	300	Ejected Slug 1 at 3,350 feet. Monitored flow profile with five passes
9-14	42	400	Ejected Slug 2 at 3,350 feet. Monitored flow profile with six passes
15	63	450	Ejected Slug 3 at 4,142 feet. Ran 16-minute time drive at 4,142 feet.
16	63	450	Ejected Slug 4 at 4,142 feet. Ran 16-minute time drive at 4,142 feet.
17	0	300	Ran final baseline gamma ray log from 4,265 feet to 3,350 feet.

Note: Upper detector is located 3.0 feet above radioactive source and lower detector is 5.0 feet below source.

The results of the moving and stationary surveys demonstrate that:

- All wellbore fluid is exiting through the perforated completion into the injection sand interval, and
- No fluid is flowing vertically out of the injection sand interval behind the casing.

4.0 BOTTOMHOLE PRESSURE COMPARISON

A comparison of static bottomhole pressures measured in the Miocene Sand Injection Interval is included in this section.

4.1 Static Bottomhole Pressure

A static BHP of 1,870.56 psig was measured in WDW-138, at a gauge depth of 4,142 feet. The measured pressure is adjusted to a reference depth in order to compare historical pressures. The reference datum used for historical static BHP comparisons is 4,162 feet, the top of the perforated injection interval. The average density gradient of the fluid in the wellbore, as calculated from gradient stops, is 0.4290 psi/foot. The pressure adjustment value is calculated in Equation 4-1, below.

$$P_{adj} = (P_{meas}) + [(D_{ref} - D_{gauge}) \times DG_{fluid}] \quad (4-1)$$

where,

$$\begin{aligned} P_{adj} &= \text{Depth adjusted pressure, psig} \\ P_{meas} &= \text{Measured pressure, psig} \\ D_{ref} &= \text{Reference depth, feet} \\ D_{gauge} &= \text{Gauge depth, feet} \\ DG_{fluid} &= \text{Density gradient of test fluid, psi/ft} \\ P_{adj} &= (1870.56) + [(4162 - 4142) \times 0.4290] \\ P_{adj} &= 1879.14 \text{ psig} \end{aligned}$$

Substituting the required data into Equation 4-1 (above) yields a static BHP of 1,879.14 psig at the reference depth of 4,162 feet. Table 4-1 below compares the current data to historical reservoir test data in the Miocene Sand Injection Interval, with the final bottomhole pressure corrected to the reference depth. The year 2006 test pressure value is approximately 8 psi lower than value presented in 1999.

Table 4-1
WDW-138 Historical Bottomhole Pressure Survey Comparison

Year	Static Pressure (psig)*
2006	1,879
2005	1,876
2004	1,877
2001	1,918
1999	1,887

* Corrected to the reference depth of 4,162 feet
Comparison is based on available test data.

5.0 CONCLUSIONS

The static pressure recorded in WDW-138 was 1,870.56 psig at a depth of 4,142 feet. The measured bottomhole pressure is similar to 1999 historical measurements.

The Mechanical Integrity test conducted on WDW-138 successfully fulfilled the annual testing requirements for the well. The test, consisting of an Annulus Pressure Test and a Radioactive Tracer Survey, demonstrated the integrity of the materials used for well construction.

The Annulus Pressure Test on the well demonstrated that no leaks exist in the injection tubing, protection casing, packer, seal assembly, and wellhead systems. The Radioactive Tracer Survey on WDW-138 demonstrated that all injected fluids enter and remain confined within the subsurface sand structures below 4,142 feet.

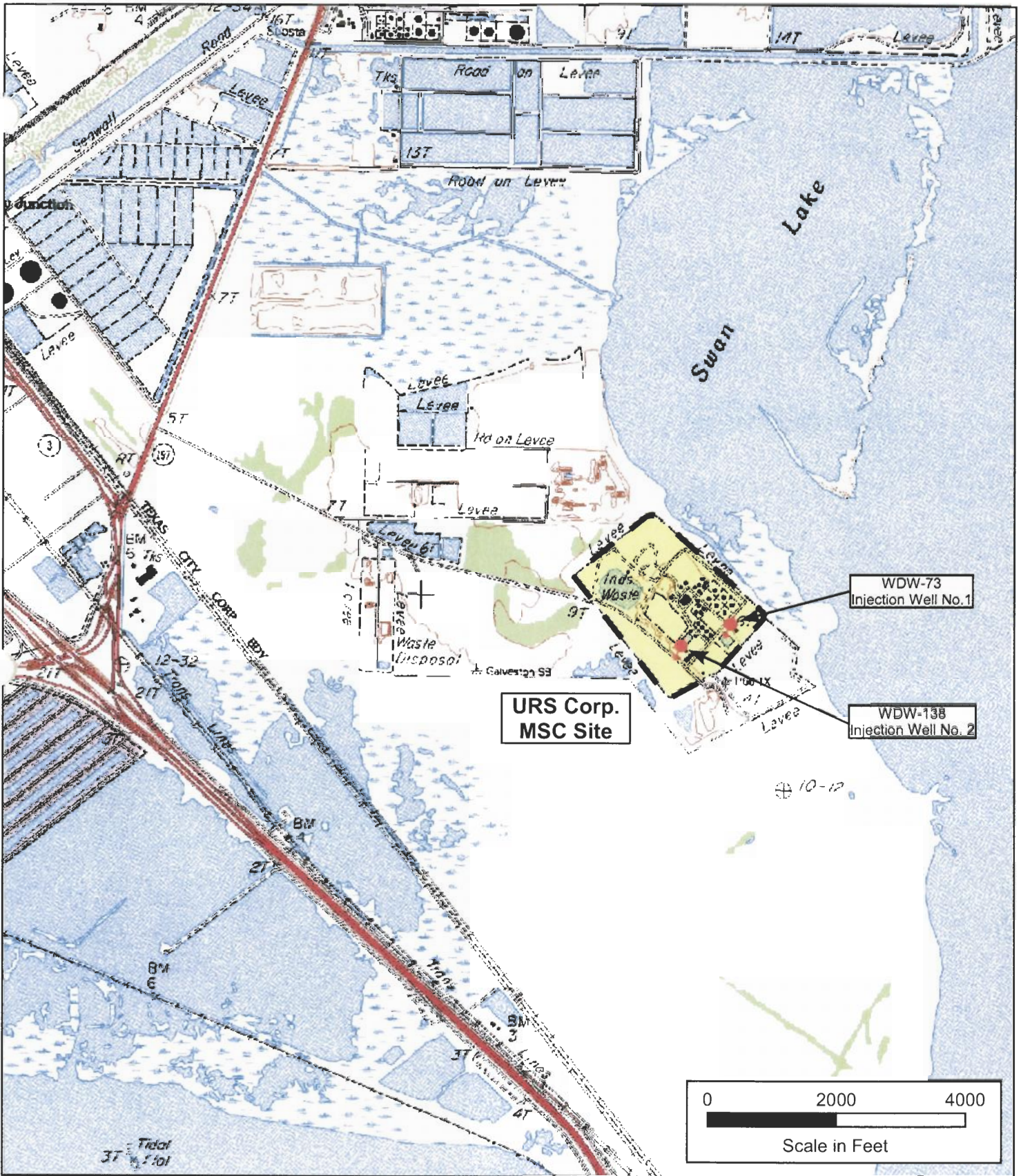


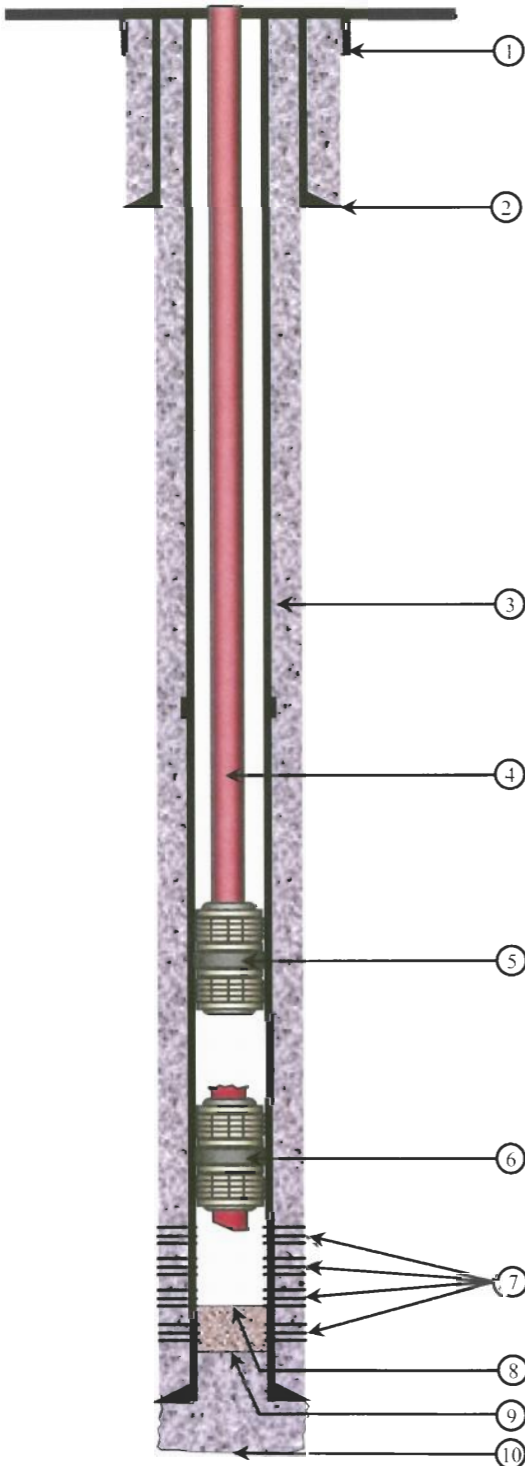
Figure 1: URS Corporation, Topographic Map of MSC Site



URS
MSC Site, Texas City, Texas
Plant Injection Well No. 2 (WDW-138)
Well Schematic
Status: Active

All depths reference RKB
KB = 8' above LMF

GROUND LEVEL



COMPLETION DETAIL

1. **Conductor Pipe:** 16", Driven from surface to 120'.
2. **Surface Casing:** 10-3/4", 45.5-ppf, K-55, ST&C. Set from surface to 1202'. Cemented to surface w/495 sxs Halliburton Lite and 3% salt; tailed by 220 sxs Class H and 2% CaCl2 and 3% salt..
3. **Protection Casing:** 7", 20.0-ppf, K-55. Set from surface to 4458'. Cement Stage Tool at 2195'. Cemented to Surface in two stages.
4. **Injection Tubing:** 2-7/8", 6.5-ppf, J-55, EUE, 8rd. Set from surface to 3552'
5. **Injection Packer:** Baker Model R, Double Grip Set from 3552' to 3560'.
6. **Abandoned Injection Packer:** Otis Packer (unknown model) Set from 3854' to 3860'. Tubing riser severed at 3840'(2001) with 2-7/8" tail pipe from 3860' to 3891'.
7. **Perforated Completion:** perforated with 4 shots per foot from:
 - 4162' to 4237'
 - 4240' to 4260'
 - 4272' to 4306'
 - 4318' to 4323'
8. **Fill tagged:**
 - RTS, 10/22/1999, Fill tagged at 4195'
 - RTS, 3/19/2004, Fill tagged at 4271'
 - RTS, 3/16/2005, Fill tagged at 4271'
 - RTS, 3/13/2006, Fill tagged at 4271'
9. **PBTD:** 4335' Top of cement.
10. **Drilled to** a total depth of 4510'

Figure 2. WDW-138 Completion Schematic

		
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Drawn by: WHA	Date: 04/07/05	Drawing not to scale
Rev. 3/24/06		

APPENDIX B

Gulf Coast Well Analysis Pressure Survey – WDW-138

Company: URS Corporation
 Well: WDW-138
 Field: Swan Lake, Texas City, Texas

Gauge Manufacturer: Spartek Systems
 Gauge Serial No.: 76390
 Calibration Date: 11/25/05

Survey Date(s): March 13, 2006

Record #	Actual Time	Elapsed Time	BHP (PSIG)	BHT (° F)	Comments	Record #	Actual Time	Elapsed Time	BHP (PSIG)	BHT (° F)	
1	8:37:00	0	3.114	73.3	Zero Time Reading	51	8:57:28	0.34111	75.082	72.9	
2	8:37:05	0.00139	2.673	73.3		52	8:57:58	0.34944	75.232	72.8	
3	8:37:10	0.00278	2.716	73.4		53	8:58:28	0.35778	75.603	72.6	Wellhead Pressure
4	8:37:15	0.00417	2.676	73.4		54	8:58:58	0.36611	84.651	72.6	
5	8:37:20	0.00556	2.676	73.4		55	8:59:28	0.37444	98.772	73.0	
6	8:37:25	0.00694	2.651	73.4		56	8:59:58	0.38278	120.364	73.1	
7	8:37:30	0.00833	2.606	73.4		57	9:00:28	0.39111	147.645	73.0	
8	8:37:35	0.00972	2.610	73.5		58	9:00:58	0.39944	174.851	73.2	
9	8:37:40	0.01111	2.609	73.5		59	9:01:28	0.40778	202.418	73.7	
10	8:37:45	0.01250	2.609	73.5		60	9:01:58	0.41611	230.972	74.3	
11	8:37:50	0.01389	2.609	73.5		61	9:02:28	0.42444	259.076	75.0	
12	8:37:55	0.01528	2.589	73.5		62	9:02:58	0.43278	287.491	75.7	
13	8:38:28	0.02444	2.578	73.5		63	9:03:28	0.44111	315.616	76.5	
14	8:38:58	0.03278	2.585	73.6		64	9:03:58	0.44944	343.860	77.4	
15	8:39:28	0.04111	2.664	73.7		65	9:04:28	0.45778	371.776	78.2	
16	8:39:58	0.04944	2.661	73.8		66	9:04:58	0.46611	400.114	79.0	
17	8:40:28	0.05778	2.662	73.9		67	9:05:28	0.47444	427.791	79.7	
18	8:40:58	0.06611	2.663	74.0		68	9:05:58	0.48278	455.546	80.6	
19	8:41:28	0.07444	2.710	74.2		69	9:06:28	0.49111	483.300	81.3	
20	8:41:58	0.08278	2.733	74.5		70	9:06:58	0.49944	510.234	82.1	
21	8:42:28	0.09111	2.729	74.6		71	9:07:28	0.50778	509.137	82.5	
22	8:42:58	0.09944	2.731	74.7		72	9:07:58	0.51611	508.822	82.6	
23	8:43:28	0.10778	2.728	74.8		73	9:08:28	0.52444	508.637	82.6	
24	8:43:58	0.11611	2.748	74.8		74	9:08:58	0.53278	508.483	82.6	
25	8:44:28	0.12444	2.779	74.9		75	9:09:28	0.54111	508.404	82.6	
26	8:44:58	0.13278	2.752	75.0		76	9:09:58	0.54944	508.305	82.7	
27	8:45:28	0.14111	2.756	75.0		77	9:10:28	0.55778	508.239	82.7	
28	8:45:58	0.14944	2.736	75.0		78	9:10:58	0.56611	508.175	82.7	
29	8:46:28	0.15778	2.750	75.0		79	9:11:28	0.57444	508.133	82.7	
30	8:46:58	0.16611	2.735	75.0		80	9:11:58	0.58278	508.064	82.7	
31	8:47:28	0.17444	2.798	75.1		81	9:12:28	0.59111	508.015	82.7	End Gradient Stop 1,000' (depth uncorrected)
32	8:47:58	0.18278	2.890	75.1		82	9:12:58	0.59944	528.887	82.9	
33	8:48:28	0.19111	87.031	74.2		83	9:13:28	0.60778	557.085	83.4	
34	8:48:58	0.19944	69.127	73.2		84	9:13:58	0.61611	585.978	83.8	
35	8:49:28	0.20778	67.821	73.1		85	9:14:28	0.62444	617.903	84.4	
36	8:49:58	0.21611	68.666	73.1		86	9:14:58	0.63278	649.609	85.3	
37	8:50:28	0.22444	69.633	73.1		87	9:15:28	0.64111	681.312	86.0	
38	8:50:58	0.23278	70.317	73.1		88	9:15:58	0.64944	712.780	86.6	
39	8:51:28	0.24111	70.850	73.2		89	9:16:28	0.65778	744.484	87.4	
40	8:51:58	0.24944	71.276	73.2		90	9:16:58	0.66611	775.734	88.2	
41	8:52:28	0.25778	71.639	73.2		91	9:17:28	0.67444	807.181	89.0	
42	8:52:58	0.26611	71.948	73.3		92	9:17:58	0.68278	838.251	89.8	
43	8:53:28	0.27444	72.236	73.3		93	9:18:28	0.69111	869.439	90.6	
44	8:53:58	0.28278	72.448	73.3		94	9:18:58	0.69944	900.512	91.3	
45	8:54:28	0.29111	72.663	73.3		95	9:19:28	0.70778	931.781	92.0	
46	8:54:58	0.29944	72.850	73.4		96	9:19:58	0.71611	944.625	92.7	
47	8:55:28	0.30778	73.017	73.4		97	9:20:28	0.72444	944.049	92.8	
48	8:55:58	0.31611	73.179	73.4		98	9:20:58	0.73278	943.713	92.8	
49	8:56:28	0.32444	73.317	73.4		99	9:21:28	0.74111	943.450	92.9	
50	8:56:58	0.33278	75.006	73.3		100	9:21:58	0.74944	943.211	92.9	

Company: URS Corporation
 Well: WDW-138
 Field: Swan Lake, Texas City, Texas

Gauge Manufacturer: Spartek Systems
 Gauge Serial No.: 76390
 Calibration Date: 11/25/05

Survey Date(s): March 13, 2006

Record #	Actual Time	Elapsed Time	BHP (PSIG)	BHT (° F)	Comments	Record #	Actual Time	Elapsed Time	BHP (PSIG)	BHT (° F)
101	9:22:28	0.75778	943.006	92.9		151	9:47:28	1.17444	1596.227	109.9
102	9:22:58	0.76611	942.860	92.9		152	9:47:58	1.18278	1615.726	110.6
103	9:23:28	0.77444	942.720	92.9		153	9:48:28	1.19111	1635.424	111.2
104	9:23:58	0.78278	942.600	92.9		154	9:48:58	1.19944	1654.938	111.6
105	9:24:28	0.79111	942.483	92.9		155	9:49:28	1.20778	1674.471	112.2
106	9:24:58	0.79944	942.380	92.9		156	9:49:58	1.21611	1694.024	112.7
107	9:25:28	0.80778	942.283	93.0	End Gradient Stop 2,000'	157	9:50:28	1.22444	1713.436	113.2
108	9:25:58	0.81611	954.925	93.1		158	9:50:58	1.23278	1732.876	113.7
109	9:26:28	0.82444	974.944	93.4		159	9:51:28	1.24111	1752.149	113.8
110	9:26:58	0.83278	999.131	93.9		160	9:51:58	1.24944	1771.382	112.9
111	9:27:28	0.84111	1022.883	94.3		161	9:52:28	1.25778	1790.732	109.6
112	9:27:58	0.84944	1046.659	94.9		162	9:52:58	1.26611	1810.226	105.4
113	9:28:28	0.85778	1070.526	95.4		163	9:53:28	1.27444	1813.572	101.7
114	9:28:58	0.86611	1094.162	96.1		164	9:53:58	1.28278	1813.438	101.0
115	9:29:28	0.87444	1117.561	96.7		165	9:54:28	1.29111	1813.239	100.8
116	9:29:58	0.88278	1141.223	97.3		166	9:54:58	1.29944	1813.054	100.6
117	9:30:28	0.89111	1164.666	97.9		167	9:55:28	1.30778	1812.887	100.5
118	9:30:58	0.89944	1196.255	98.6		168	9:55:58	1.31611	1812.753	100.4
119	9:31:28	0.90778	1229.045	99.3		169	9:56:28	1.32444	1812.623	100.3
120	9:31:58	0.91611	1261.538	100.1		170	9:56:58	1.33278	1812.511	100.2
121	9:32:28	0.92444	1293.936	101.1		171	9:57:28	1.34111	1812.400	100.1
122	9:32:58	0.93278	1326.599	102.1		172	9:57:58	1.34944	1812.318	100.1
123	9:33:28	0.94111	1358.945	103.0		173	9:58:28	1.35778	1812.229	100.0
124	9:33:58	0.94944	1377.818	103.9		174	9:58:58	1.36611	1812.142	100.0
125	9:34:28	0.95778	1377.229	104.2		175	9:59:28	1.37444	1812.068	100.0
126	9:34:58	0.96611	1376.848	104.2		176	9:59:58	1.38278	1825.208	99.3
127	9:35:28	0.97444	1376.566	104.3		177	10:00:28	1.39111	1842.304	96.0
128	9:35:58	0.98278	1376.344	104.3		178	10:00:58	1.39944	1859.539	90.9
129	9:36:28	0.99111	1376.123	104.3		179	10:01:28	1.40778	1876.988	87.6
130	9:36:58	0.99944	1375.940	104.3		180	10:01:58	1.41611	1894.599	86.7
131	9:37:28	1.00778	1375.785	104.4		181	10:02:28	1.42444	1912.329	88.2
132	9:37:58	1.01611	1375.625	104.4		182	10:02:58	1.43278	1931.907	91.0
133	9:38:28	1.02444	1375.495	104.4		183	10:03:28	1.44111	1929.703	93.1
134	9:38:58	1.03278	1375.376	104.4		184	10:03:58	1.44944	1923.592	93.6
135	9:39:28	1.04111	1375.249	104.4		185	10:04:28	1.45778	1916.506	93.6
136	9:39:58	1.04944	1375.178	104.4		186	10:04:58	1.46611	1909.579	93.1
137	9:40:28	1.05778	1375.089	104.4		187	10:05:28	1.47444	1902.711	92.3
138	9:40:58	1.06611	1375.014	104.4		188	10:05:58	1.48278	1895.883	91.4
139	9:41:28	1.07444	1374.951	104.4	End Gradient Stop 3,000'	189	10:06:28	1.49111	1889.074	90.5
140	9:41:58	1.08278	1381.498	104.5		190	10:06:58	1.49944	1882.335	89.6
141	9:42:28	1.09111	1398.458	104.8		191	10:07:28	1.50778	1875.690	88.6
142	9:42:58	1.09944	1418.461	105.2		192	10:07:58	1.51611	1868.927	87.6
143	9:43:28	1.10778	1438.430	105.6		193	10:08:28	1.52444	1862.578	87.0
144	9:43:58	1.11611	1458.249	106.3		194	10:08:58	1.53278	1856.455	86.7
145	9:44:28	1.12444	1478.172	106.9		195	10:09:28	1.54111	1850.282	86.8
146	9:44:58	1.13278	1497.956	107.4		196	10:09:58	1.54944	1844.199	87.0
147	9:45:28	1.14111	1517.657	107.9		197	10:10:28	1.55778	1838.047	87.7
148	9:45:58	1.14944	1537.460	108.4		198	10:10:58	1.56611	1827.829	89.2
149	9:46:28	1.15778	1557.066	109.0		199	10:11:28	1.57444	1816.340	91.6
150	9:46:58	1.16611	1576.693	109.4		200	10:11:58	1.58278	1804.847	94.4

Company: URS Corporation
 Well: WDW-138
 Field: Swan Lake, Texas City, Texas

Gauge Manufacturer: Spartek Systems
 Gauge Serial No.: 76390
 Calibration Date: 11/25/05

Survey Date(s): March 13, 2006

Record #	Actual Time	Elapsed Time	BHP (PSIG)	BHT (° F)	Comments	Record #	Actual Time	Elapsed Time	BHP (PSIG)	BHT (° F)	
1	8:37:00	0	3.114	73.3	Zero Time Reading	51	8:57:28	0.34111	75.082	72.9	
2	8:37:05	0.00139	2.673	73.3		52	8:57:58	0.34944	75.232	72.8	
3	8:37:10	0.00278	2.716	73.4		53	8:58:28	0.35778	75.603	72.6	Wellhead Pressure
4	8:37:15	0.00417	2.676	73.4		54	8:58:58	0.36611	84.651	72.6	
5	8:37:20	0.00556	2.676	73.4		55	8:59:28	0.37444	98.772	73.0	
6	8:37:25	0.00694	2.651	73.4		56	8:59:58	0.38278	120.364	73.1	
7	8:37:30	0.00833	2.606	73.4		57	9:00:28	0.39111	147.645	73.0	
8	8:37:35	0.00972	2.610	73.5		58	9:00:58	0.39944	174.851	73.2	
9	8:37:40	0.01111	2.609	73.5		59	9:01:28	0.40778	202.418	73.7	
10	8:37:45	0.01250	2.609	73.5		60	9:01:58	0.41611	230.972	74.3	
11	8:37:50	0.01389	2.609	73.5		61	9:02:28	0.42444	259.076	75.0	
12	8:37:55	0.01528	2.589	73.5		62	9:02:58	0.43278	287.491	75.7	
13	8:38:28	0.02444	2.578	73.5		63	9:03:28	0.44111	315.616	76.5	
14	8:38:58	0.03278	2.585	73.6		64	9:03:58	0.44944	343.860	77.4	
15	8:39:28	0.04111	2.664	73.7		65	9:04:28	0.45778	371.776	78.2	
16	8:39:58	0.04944	2.661	73.8		66	9:04:58	0.46611	400.114	79.0	
17	8:40:28	0.05778	2.662	73.9		67	9:05:28	0.47444	427.791	79.7	
18	8:40:58	0.06611	2.663	74.0		68	9:05:58	0.48278	455.546	80.6	
19	8:41:28	0.07444	2.710	74.2		69	9:06:28	0.49111	483.300	81.3	
20	8:41:58	0.08278	2.733	74.5		70	9:06:58	0.49944	510.234	82.1	
21	8:42:28	0.09111	2.729	74.6		71	9:07:28	0.50778	509.137	82.5	
22	8:42:58	0.09944	2.731	74.7		72	9:07:58	0.51611	508.822	82.6	
23	8:43:28	0.10778	2.728	74.8		73	9:08:28	0.52444	508.637	82.6	
24	8:43:58	0.11611	2.748	74.8		74	9:08:58	0.53278	508.483	82.6	
25	8:44:28	0.12444	2.779	74.9		75	9:09:28	0.54111	508.404	82.6	
26	8:44:58	0.13278	2.752	75.0		76	9:09:58	0.54944	508.305	82.7	
27	8:45:28	0.14111	2.756	75.0		77	9:10:28	0.55778	508.239	82.7	
28	8:45:58	0.14944	2.736	75.0		78	9:10:58	0.56611	508.175	82.7	
29	8:46:28	0.15778	2.750	75.0		79	9:11:28	0.57444	508.133	82.7	
30	8:46:58	0.16611	2.735	75.0		80	9:11:58	0.58278	508.064	82.7	
31	8:47:28	0.17444	2.798	75.1		81	9:12:28	0.59111	508.015	82.7	End Gradient Stop 1,000' (depth uncorrected)
32	8:47:58	0.18278	2.890	75.1		82	9:12:58	0.59944	528.887	82.9	
33	8:48:28	0.19111	87.031	74.2		83	9:13:28	0.60778	557.085	83.4	
34	8:48:58	0.19944	69.127	73.2		84	9:13:58	0.61611	585.978	83.8	
35	8:49:28	0.20778	67.821	73.1		85	9:14:28	0.62444	617.903	84.4	
36	8:49:58	0.21611	68.666	73.1		86	9:14:58	0.63278	649.609	85.3	
37	8:50:28	0.22444	69.633	73.1		87	9:15:28	0.64111	681.312	86.0	
38	8:50:58	0.23278	70.317	73.1		88	9:15:58	0.64944	712.780	86.6	
39	8:51:28	0.24111	70.850	73.2		89	9:16:28	0.65778	744.484	87.4	
40	8:51:58	0.24944	71.276	73.2		90	9:16:58	0.66611	775.734	88.2	
41	8:52:28	0.25778	71.639	73.2		91	9:17:28	0.67444	807.181	89.0	
42	8:52:58	0.26611	71.948	73.3		92	9:17:58	0.68278	838.251	89.8	
43	8:53:28	0.27444	72.236	73.3		93	9:18:28	0.69111	869.439	90.6	
44	8:53:58	0.28278	72.448	73.3		94	9:18:58	0.69944	900.512	91.3	
45	8:54:28	0.29111	72.663	73.3		95	9:19:28	0.70778	931.781	92.0	
46	8:54:58	0.29944	72.850	73.4		96	9:19:58	0.71611	944.625	92.7	
47	8:55:28	0.30778	73.017	73.4		97	9:20:28	0.72444	944.049	92.8	
48	8:55:58	0.31611	73.179	73.4		98	9:20:58	0.73278	943.713	92.8	
49	8:56:28	0.32444	73.317	73.4		99	9:21:28	0.74111	943.450	92.9	
50	8:56:58	0.33278	75.006	73.3		100	9:21:58	0.74944	943.211	92.9	

Company: URS Corporation
 Well: WDW-138
 Field: Swan Lake, Texas City, Texas

Gauge Manufacturer: Spartek Systems
 Gauge Serial No.: 76390
 Calibration Date: 11/25/05

Survey Date(s): March 13, 2006

Record #	Actual Time	Elapsed Time	BHP (PSIG)	BHT (° F)	Comments	Record #	Actual Time	Elapsed Time	BHP (PSIG)	BHT (° F)
301	11:02:28	2.42444	1870.578	85.1		351	11:27:28	2.84111	1867.629	85.1
302	11:02:58	2.43278	1870.575	85.1		352	11:27:58	2.84944	1867.667	85.1
303	11:03:28	2.44111	1870.567	85.1		353	11:28:28	2.85778	1867.735	85.1
304	11:03:58	2.44944	1870.567	85.1		354	11:28:58	2.86611	1867.769	85.1
305	11:04:28	2.45778	1870.567	85.1		355	11:29:28	2.87444	1867.831	85.1
306	11:04:58	2.46611	1870.557	85.1	BHP at 4,142	356	11:29:58	2.88278	1867.848	85.1
307	11:05:28	2.47444	1853.600	85.1		357	11:30:28	2.89111	1867.906	85.1
308	11:05:58	2.48278	1856.758	85.1		358	11:30:58	2.89944	1867.956	85.1
309	11:06:28	2.49111	1858.547	85.1		359	11:31:28	2.90778	1868.003	85.1
310	11:06:58	2.49944	1860.020	85.1		360	11:31:58	2.91611	1868.048	85.1
311	11:07:28	2.50778	1861.023	85.1		361	11:32:28	2.92444	1868.071	85.1
312	11:07:58	2.51611	1861.739	85.1		362	11:32:58	2.93278	1868.117	85.1
313	11:08:28	2.52444	1862.278	85.1		363	11:33:28	2.94111	1868.150	85.1
314	11:08:58	2.53278	1862.734	85.1		364	11:33:58	2.94944	1868.183	85.1
315	11:09:28	2.54111	1863.120	85.1		365	11:34:28	2.95778	1868.213	85.1
316	11:09:58	2.54944	1863.500	85.1		366	11:34:58	2.96611	1868.248	85.1
317	11:10:28	2.55778	1863.802	85.1		367	11:35:28	2.97444	1868.269	85.1
318	11:10:58	2.56611	1864.081	85.1		368	11:35:58	2.98278	1851.964	85.1
319	11:11:28	2.57444	1864.289	85.1		369	11:36:28	2.99111	1856.445	85.1
320	11:11:58	2.58278	1864.529	85.1		370	11:36:58	2.99944	1858.381	85.1
321	11:12:28	2.59111	1864.714	85.1		371	11:37:28	3.00778	1859.484	85.1
322	11:12:58	2.59944	1864.871	85.1		372	11:37:58	3.01611	1860.331	85.1
323	11:13:28	2.60778	1865.037	85.1		373	11:38:28	3.02444	1860.994	85.1
324	11:13:58	2.61611	1865.144	85.1		374	11:38:58	3.03278	1861.502	85.1
325	11:14:28	2.62444	1865.286	85.1		375	11:39:28	3.04111	1861.924	85.1
326	11:14:58	2.63278	1865.364	85.1		376	11:39:58	3.04944	1862.301	85.1
327	11:15:28	2.64111	1865.427	85.1		377	11:40:28	3.05778	1862.604	85.1
328	11:15:58	2.64944	1865.512	85.1		378	11:40:58	3.06611	1862.877	85.1
329	11:16:28	2.65778	1865.603	85.1		379	11:41:28	3.07444	1863.087	85.1
330	11:16:58	2.66611	1865.736	85.1		380	11:41:58	3.08278	1863.287	85.1
331	11:17:28	2.67444	1865.891	85.1		381	11:42:28	3.09111	1863.464	85.1
332	11:17:58	2.68278	1866.054	85.1		382	11:42:58	3.09944	1863.629	85.1
333	11:18:28	2.69111	1866.192	85.1		383	11:43:28	3.10778	1863.765	85.1
334	11:18:58	2.69944	1866.308	85.1		384	11:43:58	3.11611	1863.897	85.1
335	11:19:28	2.70778	1866.440	85.1		385	11:44:28	3.12444	1863.993	85.1
336	11:19:58	2.71611	1866.537	85.1		386	11:44:58	3.13278	1836.181	85.5
337	11:20:28	2.72444	1866.653	85.1		387	11:45:28	3.14111	1800.637	90.2
338	11:20:58	2.73278	1866.745	85.1		388	11:45:58	3.14944	1763.914	98.8
339	11:21:28	2.74111	1866.818	85.1		389	11:46:28	3.15778	1727.373	107.3
340	11:21:58	2.74944	1866.939	85.1		390	11:46:58	3.16611	1687.747	111.9
341	11:22:28	2.75778	1867.001	85.1		391	11:47:28	3.17444	1647.428	112.6
342	11:22:58	2.76611	1867.086	85.1		392	11:47:58	3.18278	1606.952	112.1
343	11:23:28	2.77444	1867.141	85.1		393	11:48:28	3.19111	1566.817	111.2
344	11:23:58	2.78278	1867.216	85.1		394	11:48:58	3.19944	1526.959	110.0
345	11:24:28	2.79111	1867.315	85.1		395	11:49:28	3.20778	1525.052	109.4
346	11:24:58	2.79944	1867.363	85.1		396	11:49:58	3.21611	1587.468	109.0
347	11:25:28	2.80778	1867.415	85.1		397	11:50:28	3.22444	1620.216	108.3
348	11:25:58	2.81611	1867.457	85.1		398	11:50:58	3.23278	1640.115	107.7
349	11:26:28	2.82444	1867.521	85.1		399	11:51:28	3.24111	1655.099	107.0
350	11:26:58	2.83278	1867.591	85.1		400	11:51:58	3.24944	1716.142	106.6

Company: URS Corporation
 Well: WDW-138
 Field: Swan Lake, Texas City, Texas

Gauge Manufacturer: Spartek Systems
 Gauge Serial No.: 76390
 Calibration Date: 11/25/05

Survey Date(s): March 13, 2006

Record #	Actual Time	Elapsed Time	BHP (PSIG)	BHT (° F)	Comments	Record #	Actual Time	Elapsed Time	BHP (PSIG)	BHT (° F)
401	11:52:28	3.25778	1712.277	106.8		451	12:17:28	3.67444	2186.564	103.5
402	11:52:58	3.26611	1702.000	106.0		452	12:17:58	3.68278	2172.259	106.4
403	11:53:28	3.27444	1693.860	105.0		453	12:18:28	3.69111	2158.270	106.9
404	11:53:58	3.28278	1766.893	104.9		454	12:18:58	3.69944	2144.391	106.8
405	11:54:28	3.29111	1838.011	106.1		455	12:19:28	3.70778	2130.798	106.6
406	11:54:58	3.29944	1867.856	109.6		456	12:19:58	3.71611	2114.933	106.2
407	11:55:28	3.30778	1860.571	110.2		457	12:20:28	3.72444	2101.820	105.7
408	11:55:58	3.31611	1852.006	108.9		458	12:20:58	3.73278	2087.791	105.2
409	11:56:28	3.32444	1842.140	107.3		459	12:21:28	3.74111	2072.985	104.6
410	11:56:58	3.33278	1832.376	105.8		460	12:21:58	3.74944	2060.781	104.1
411	11:57:28	3.34111	1823.674	104.8		461	12:22:28	3.75778	2086.614	104.0
412	11:57:58	3.34944	1812.756	104.1		462	12:22:58	3.76611	2112.330	104.3
413	11:58:28	3.35778	1803.488	103.4		463	12:23:28	3.77444	2138.022	104.8
414	11:58:58	3.36611	1791.877	102.8		464	12:23:58	3.78278	2163.480	105.2
415	11:59:28	3.37444	1805.323	102.3		465	12:24:28	3.79111	2188.874	105.5
416	11:59:58	3.38278	1842.520	102.6		466	12:24:58	3.79944	2214.195	105.0
417	12:00:28	3.39111	1879.205	103.2		467	12:25:28	3.80778	2239.020	94.9
418	12:00:58	3.39944	1915.665	104.1		468	12:25:58	3.81611	2229.089	94.5
419	12:01:28	3.40778	1952.526	105.5		469	12:26:28	3.82444	2216.203	93.7
420	12:01:58	3.41611	1988.602	107.4		470	12:26:58	3.83278	2204.277	93.4
421	12:02:28	3.42444	2016.299	109.5		471	12:27:28	3.84111	2191.523	97.3
422	12:02:58	3.43278	2040.225	110.5		472	12:27:58	3.84944	2178.895	100.4
423	12:03:28	3.44111	2065.232	111.1		473	12:28:28	3.85778	2166.365	102.3
424	12:03:58	3.44944	2093.176	111.7		474	12:28:58	3.86611	2149.754	103.3
425	12:04:28	3.45778	2085.685	111.9		475	12:29:28	3.87444	2118.066	103.8
426	12:04:58	3.46611	2077.424	111.7		476	12:29:58	3.88278	2080.280	103.5
427	12:05:28	3.47444	2070.578	111.3		477	12:30:28	3.89111	2030.593	102.3
428	12:05:58	3.48278	2063.176	110.7		478	12:30:58	3.89944	1983.198	100.7
429	12:06:28	3.49111	2053.518	109.9		479	12:31:28	3.90778	1929.679	99.0
430	12:06:58	3.49944	2045.834	109.0		480	12:31:58	3.91611	1880.084	97.4
431	12:07:28	3.50778	2037.751	108.4		481	12:32:28	3.92444	1854.211	96.1
432	12:07:58	3.51611	2028.844	108.0		482	12:32:58	3.93278	1903.248	95.8
433	12:08:28	3.52444	2020.508	107.3		483	12:33:28	3.94111	1896.004	96.3
434	12:08:58	3.53278	2010.951	106.5		484	12:33:58	3.94944	1878.190	96.1
435	12:09:28	3.54111	1996.166	105.7		485	12:34:28	3.95778	1862.691	95.6
436	12:09:58	3.54944	1982.308	105.0		486	12:34:58	3.96611	1868.870	95.1
437	12:10:28	3.55778	1973.656	104.4		487	12:35:28	3.97444	1917.192	95.5
438	12:10:58	3.56611	1964.518	103.8		488	12:35:58	3.98278	1964.691	96.4
439	12:11:28	3.57444	1953.549	103.3		489	12:36:28	3.99111	2008.271	97.7
440	12:11:58	3.58278	1945.079	102.7		490	12:36:58	3.99944	1996.353	98.4
441	12:12:28	3.59111	1936.321	102.2		491	12:37:28	4.00778	1982.881	98.3
442	12:12:58	3.59944	1940.241	101.7		492	12:37:58	4.01611	1972.409	97.9
443	12:13:28	3.60778	1975.300	101.9		493	12:38:28	4.02444	1957.874	97.4
444	12:13:58	3.61611	2013.445	102.9		494	12:38:58	4.03278	1946.507	97.0
445	12:14:28	3.62444	2050.887	104.2		495	12:39:28	4.04111	1933.062	96.5
446	12:14:58	3.63278	2080.959	105.2		496	12:39:58	4.04944	1920.687	96.1
447	12:15:28	3.64111	2122.764	106.3		497	12:40:28	4.05778	1910.238	95.7
448	12:15:58	3.64944	2163.142	107.3		498	12:40:58	4.06611	1897.060	95.3
449	12:16:28	3.65778	2202.006	107.7		499	12:41:28	4.07444	1897.095	94.9
450	12:16:58	3.66611	2199.322	99.8		500	12:41:58	4.08278	1935.951	95.1

Company: URS Corporation
 Well: WDW-138
 Field: Swan Lake, Texas City, Texas

Gauge Manufacturer: Spartek Systems
 Gauge Serial No.: 76390
 Calibration Date: 11/25/05

Survey Date(s): March 13, 2006

Record #	Actual Time	Elapsed Time	BHP (PSIG)	BHT (° F)	Comments	Record #	Actual Time	Elapsed Time	BHP (PSIG)	BHT (° F)	Comments
501	12:42:28	4.09111	1985.606	95.9		551	13:07:28	4.50778	2237.173	99.5	
502	12:42:58	4.09944	2034.414	97.2		552	13:07:58	4.51611	2256.982	97.8	
503	12:43:28	4.10778	2075.580	98.6		553	13:08:28	4.52444	2253.928	95.3	
504	12:43:58	4.11611	2110.706	99.6		554	13:08:58	4.53278	2240.989	93.9	
505	12:44:28	4.12444	2148.032	100.5		555	13:09:28	4.54111	2229.230	95.1	
506	12:44:58	4.13278	2139.679	101.0		556	13:09:58	4.54944	2216.377	97.5	
507	12:45:28	4.14111	2125.144	100.9		557	13:10:28	4.55778	2203.684	98.2	
508	12:45:58	4.14944	2109.483	100.6		558	13:10:58	4.56611	2182.698	98.2	
509	12:46:28	4.15778	2096.090	100.3		559	13:11:28	4.57444	2175.204	98.2	
510	12:46:58	4.16611	2081.977	99.8		560	13:11:58	4.58278	2178.490	98.2	
511	12:47:28	4.17444	2068.524	99.4		561	13:12:28	4.59111	2161.359	98.5	
512	12:47:58	4.18278	2054.838	99.0		562	13:12:58	4.59944	2149.629	98.5	
513	12:48:28	4.19111	2039.418	98.5		563	13:13:28	4.60778	2139.132	98.4	
514	12:48:58	4.19944	2026.562	98.0		564	13:13:58	4.61611	2129.243	98.4	
515	12:49:28	4.20778	2010.872	97.5		565	13:14:28	4.62444	2119.865	98.3	
516	12:49:58	4.21611	1996.449	96.9		566	13:14:58	4.63278	2110.914	98.3	
517	12:50:28	4.22444	1983.359	96.4		567	13:15:28	4.64111	2102.429	98.3	
518	12:50:58	4.23278	1972.905	95.9		568	13:15:58	4.64944	2094.312	98.3	
519	12:51:28	4.24111	2003.947	95.8		569	13:16:28	4.65778	2086.594	98.3	
520	12:51:58	4.24944	2050.153	96.5		570	13:16:58	4.66611	2114.913	98.2	
521	12:52:28	4.25778	2084.629	97.7		571	13:17:28	4.67444	2131.004	98.1	
522	12:52:58	4.26611	2129.961	98.6		572	13:17:58	4.68278	2142.905	98.0	
523	12:53:28	4.27444	2180.806	99.6		573	13:18:28	4.69111	2155.107	98.0	
524	12:53:58	4.28278	2222.040	100.3		574	13:18:58	4.69944	2165.034	98.0	
525	12:54:28	4.29111	2212.069	101.0		575	13:19:28	4.70778	2173.626	97.9	
526	12:54:58	4.29944	2198.884	100.6		576	13:19:58	4.71611	2181.316	97.9	
527	12:55:28	4.30778	2185.844	100.3		577	13:20:28	4.72444	2188.233	97.9	
528	12:55:58	4.31611	2172.768	100.1		578	13:20:58	4.73278	2194.501	97.9	
529	12:56:28	4.32444	2159.509	100.0		579	13:21:28	4.74111	2200.172	97.8	
530	12:56:58	4.33278	2146.402	99.7		580	13:21:58	4.74944	2205.539	97.8	
531	12:57:28	4.34111	2133.377	99.4		581	13:22:28	4.75778	2210.742	97.7	
532	12:57:58	4.34944	2122.155	99.1		582	13:22:58	4.76611	2215.471	97.7	
533	12:58:28	4.35778	2108.644	98.8		583	13:23:28	4.77444	2219.812	97.8	
534	12:58:58	4.36611	2095.457	98.4		584	13:23:58	4.78278	2223.728	97.7	
535	12:59:28	4.37444	2082.443	98.0		585	13:24:28	4.79111	2227.325	97.6	
536	12:59:58	4.38278	2104.501	97.8		586	13:24:58	4.79944	2230.677	97.5	
537	13:00:28	4.39111	2139.254	98.2		587	13:25:28	4.80778	2233.782	97.4	
538	13:00:58	4.39944	2176.070	98.8		588	13:25:58	4.81611	2236.561	97.3	
539	13:01:28	4.40778	2211.962	99.2		589	13:26:28	4.82444	2239.191	97.2	
540	13:01:58	4.41611	2247.670	100.3		590	13:26:58	4.83278	2241.689	97.1	
541	13:02:28	4.42444	2257.232	95.1		591	13:27:28	4.84111	2244.019	97.0	
542	13:02:58	4.43278	2245.849	94.2		592	13:27:58	4.84944	2246.002	96.9	
543	13:03:28	4.44111	2235.094	93.8		593	13:28:28	4.85778	2247.953	96.8	
544	13:03:58	4.44944	2224.171	96.3		594	13:28:58	4.86611	2249.654	96.7	
545	13:04:28	4.45778	2212.979	97.9		595	13:29:28	4.87444	2251.034	96.6	
546	13:04:58	4.46611	2202.019	98.5		596	13:29:58	4.88278	2252.443	96.5	
547	13:05:28	4.47444	2191.021	98.7		597	13:30:28	4.89111	2253.668	96.5	
548	13:05:58	4.48278	2198.885	98.8		598	13:30:58	4.89944	2255.035	96.4	
549	13:06:28	4.49111	2210.528	98.8		599	13:31:28	4.90778	2256.076	96.4	
550	13:06:58	4.49944	2221.751	98.9		600	13:31:58	4.91611	2257.153	96.4	

Company: URS Corporation
 Well: WDW-138
 Field: Swan Lake, Texas City, Texas

Gauge Manufacturer: Spartek Systems
 Gauge Serial No.: 76390
 Calibration Date: 11/25/05

Survey Date(s): March 13, 2006

Record #	Actual Time	Elapsed Time	BHP (PSIG)	BHT (° F)	Comments	Record #	Actual Time	Elapsed Time	BHP (PSIG)	BHT (° F)
601	13:32:28	4.92444	2258.848	96.4		651	13:57:28	5.34111	2333.807	90.8
602	13:32:58	4.93278	2260.387	96.3		652	13:57:58	5.34944	2336.238	90.7
603	13:33:28	4.94111	2261.768	96.3		653	13:58:28	5.35778	2338.512	90.5
604	13:33:58	4.94944	2263.035	96.2		654	13:58:58	5.36611	2340.723	90.4
605	13:34:28	4.95778	2263.839	96.0		655	13:59:28	5.37444	2352.736	90.3
606	13:34:58	4.96611	2264.611	95.9		656	13:59:58	5.38278	2381.757	91.4
607	13:35:28	4.97444	2265.405	95.7		657	14:00:28	5.39111	2401.041	93.3
608	13:35:58	4.98278	2266.305	95.6		658	14:00:58	5.39944	2403.429	93.4
609	13:36:28	4.99111	2267.153	95.4		659	14:01:28	5.40778	2405.535	93.6
610	13:36:58	4.99944	2268.047	95.3		660	14:01:58	5.41611	2404.642	93.8
611	13:37:28	5.00778	2268.749	95.1		661	14:02:28	5.42444	2390.499	93.9
612	13:37:58	5.01611	2269.497	94.9		662	14:02:58	5.43278	2364.327	93.7
613	13:38:28	5.02444	2270.216	94.8		663	14:03:28	5.44111	2339.318	94.2
614	13:38:58	5.03278	2270.827	94.6		664	14:03:58	5.44944	2314.703	94.6
615	13:39:28	5.04111	2271.375	94.5		665	14:04:28	5.45778	2289.127	93.6
616	13:39:58	5.04944	2271.933	94.4		666	14:04:58	5.46611	2266.328	92.3
617	13:40:28	5.05778	2272.557	94.2		667	14:05:28	5.47444	2242.604	91.2
618	13:40:58	5.06611	2273.152	94.1		668	14:05:58	5.48278	2218.761	90.4
619	13:41:28	5.07444	2273.796	94.0		669	14:06:28	5.49111	2194.968	89.9
620	13:41:58	5.08278	2274.546	93.9		670	14:06:58	5.49944	2171.388	89.6
621	13:42:28	5.09111	2275.148	93.7		671	14:07:28	5.50778	2148.200	89.3
622	13:42:58	5.09944	2275.662	93.6		672	14:07:58	5.51611	2125.654	89.1
623	13:43:28	5.10778	2276.293	93.5		673	14:08:28	5.52444	2103.275	88.9
624	13:43:58	5.11611	2276.977	93.4		674	14:08:58	5.53278	2081.265	88.8
625	13:44:28	5.12444	2277.619	93.3		675	14:09:28	5.54111	2059.611	88.6
626	13:44:58	5.13278	2278.230	93.2		676	14:09:58	5.54944	2038.463	88.7
627	13:45:28	5.14111	2278.933	93.1		677	14:10:28	5.55778	2017.707	90.3
628	13:45:58	5.14944	2279.742	93.0		678	14:10:58	5.56611	1997.018	90.1
629	13:46:28	5.15778	2280.572	93.0		679	14:11:28	5.57444	1976.899	89.2
630	13:46:58	5.16611	2281.383	92.9		680	14:11:58	5.58278	1957.198	88.5
631	13:47:28	5.17444	2282.178	92.8		681	14:12:28	5.59111	1937.876	88.1
632	13:47:58	5.18278	2282.910	92.7		682	14:12:58	5.59944	1918.802	87.8
633	13:48:28	5.19111	2283.505	92.6		683	14:13:28	5.60778	1900.028	87.6
634	13:48:58	5.19944	2284.155	92.5		684	14:13:58	5.61611	1881.486	87.4
635	13:49:28	5.20778	2284.850	92.4		685	14:14:28	5.62444	1863.250	87.2
636	13:49:58	5.21611	2285.524	92.3		686	14:14:58	5.63278	1845.330	87.0
637	13:50:28	5.22444	2286.157	92.3		687	14:15:28	5.64111	1827.709	86.9
638	13:50:58	5.23278	2286.769	92.2		688	14:15:58	5.64944	1810.354	86.7
639	13:51:28	5.24111	2287.359	92.1		689	14:16:28	5.65778	1793.420	87.5
640	13:51:58	5.24944	2287.939	92.0		690	14:16:58	5.66611	1776.723	89.2
641	13:52:28	5.25778	2293.627	91.9		691	14:17:28	5.67444	1760.070	90.0
642	13:52:58	5.26611	2300.856	91.8		692	14:17:58	5.68278	1743.489	90.4
643	13:53:28	5.27444	2306.026	91.7		693	14:18:28	5.69111	1727.145	90.6
644	13:53:58	5.28278	2310.427	91.6		694	14:18:58	5.69944	1710.984	90.5
645	13:54:28	5.29111	2314.787	91.5		695	14:19:28	5.70778	1694.948	90.5
646	13:54:58	5.29944	2318.932	91.4		696	14:19:58	5.71611	1679.015	90.4
647	13:55:28	5.30778	2322.371	91.3		697	14:20:28	5.72444	1697.541	90.4
648	13:55:58	5.31611	2325.691	91.2		698	14:20:58	5.73278	1719.107	90.5
649	13:56:28	5.32444	2328.397	91.0		699	14:21:28	5.74111	1740.769	90.9
650	13:56:58	5.33278	2331.184	90.9		700	14:21:58	5.74944	1762.200	91.1

Company: URS Corporation
 Well: WDW-138
 Field: Swan Lake, Texas City, Texas

Gauge Manufacturer: Spartek Systems
 Gauge Serial No.: 76390
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Survey Date(s): March 13, 2006

Record #	Actual Time	Elapsed Time	BHP (PSIG)	BHT (° F)	Comments	Record #	Actual Time	Elapsed Time	BHP (PSIG)	BHT (° F)
701	14:22:28	5.75778	1783.877	88.8		751	14:47:28	6.17444	3.551	76.4
702	14:22:58	5.76611	1805.819	88.1		752	14:47:58	6.18278	2.931	76.6
703	14:23:28	5.77444	1827.767	88.3		753	14:48:28	6.19111	2.952	76.6
704	14:23:58	5.78278	1849.598	88.7		754	14:48:58	6.19944	2.927	76.6
705	14:24:28	5.79111	1871.273	89.5		755	14:49:28	6.20778	2.916	76.7
706	14:24:58	5.79944	1892.539	92.2		756	14:49:58	6.21611	2.900	76.7
707	14:25:28	5.80778	1906.694	90.8		757	14:50:28	6.22444	2.733	76.7
708	14:25:58	5.81611	1903.924	90.4		758	14:50:58	6.23278	2.719	76.6
709	14:26:28	5.82444	1901.261	90.3		759	14:51:28	6.24111	2.704	76.5
710	14:26:58	5.83278	1898.715	90.3		760	14:51:58	6.24944	2.692	76.4
711	14:27:28	5.84111	1896.249	90.2		761	14:52:28	6.25778	2.688	76.4
712	14:27:58	5.84944	1893.899	90.2		762	14:52:58	6.26611	2.592	75.7
713	14:28:28	5.85778	1891.654	90.2		763	14:53:28	6.27444	2.527	75.2
714	14:28:58	5.86611	1864.728	90.3		764	14:53:58	6.28278	2.539	75.1
715	14:29:28	5.87444	1830.166	92.6		765	14:54:28	6.29111	2.551	74.9
716	14:29:58	5.88278	1790.965	91.1		766	14:54:58	6.29944	2.571	74.9
717	14:30:28	5.89111	1744.898	90.0		767	14:55:28	6.30778	2.601	75.0
718	14:30:58	5.89944	1697.512	89.2		768	14:55:58	6.31611	2.614	75.1
719	14:31:28	5.90778	1649.850	91.7		769	14:56:28	6.32444	2.628	75.3
720	14:31:58	5.91611	1601.695	91.9		770	14:56:58	6.33278	2.613	75.4
721	14:32:28	5.92444	1553.584	91.3		771	14:57:28	6.34111	2.623	75.5
722	14:32:58	5.93278	1505.401	90.5		772	14:57:58	6.34944	2.633	75.6
723	14:33:28	5.94111	1456.808	89.7		773	14:58:28	6.35778	2.642	75.7
724	14:33:58	5.94944	1408.392	89.0		774	14:58:58	6.36611	2.666	75.8
725	14:34:28	5.95778	1359.864	88.3		775	14:59:28	6.37444	2.655	76.0
726	14:34:58	5.96611	1320.444	87.5		776	14:59:58	6.38278	2.669	76.1
727	14:35:28	5.97444	1274.840	86.8		777	15:00:28	6.39111	2.692	76.2
728	14:35:58	5.98278	1213.411	86.1		778	15:00:58	6.39944	2.700	76.4
729	14:36:28	5.99111	1152.534	85.2		779	15:01:28	6.40778	2.715	76.6
730	14:36:58	5.99944	1086.209	84.3		780	15:01:58	6.41611	2.732	76.7
731	14:37:28	6.00778	1019.025	83.4		781	15:02:28	6.42444	2.758	76.9
732	14:37:58	6.01611	977.807	82.8		782	15:02:58	6.43278	2.750	77.0
733	14:38:28	6.02444	904.372	82.0		783	15:03:28	6.44111	2.763	77.2
734	14:38:58	6.03278	830.864	81.1		784	15:03:58	6.44944	2.780	77.3
735	14:39:28	6.04111	757.222	80.3		785	15:04:28	6.45778	2.799	77.4
736	14:39:58	6.04944	683.253	79.5		786	15:04:58	6.46611	2.797	77.6
737	14:40:28	6.05778	608.759	78.8		787	15:05:28	6.47444	2.815	77.7
738	14:40:58	6.06611	533.692	78.2		788	15:05:58	6.48278	2.808	77.8
739	14:41:28	6.07444	458.264	77.6		789	15:06:28	6.49111	2.821	77.9
740	14:41:58	6.08278	383.612	76.9		790	15:06:58	6.49944	2.820	78.1
741	14:42:28	6.09111	307.412	76.2		791	15:07:28	6.50778	2.825	78.1
742	14:42:58	6.09944	230.771	75.5		792	15:07:58	6.51611	2.819	78.2
743	14:43:28	6.10778	167.071	75.0		793	15:08:28	6.52444	2.845	78.2
744	14:43:58	6.11611	149.816	75.0		794	15:08:58	6.53278	2.853	78.4
745	14:44:28	6.12444	140.851	75.1		795	15:09:28	6.54111	2.857	78.5
746	14:44:58	6.13278	132.897	75.1		796	15:09:58	6.54944	2.867	78.7
747	14:45:28	6.14111	125.584	75.6		797	15:10:28	6.55778	2.888	78.9
748	14:45:58	6.14944	125.094	76.1		798	15:10:58	6.56611	2.913	79.1
749	14:46:28	6.15778	123.761	76.3		799	15:11:28	6.57444	2.943	79.4
750	14:46:58	6.16611	121.736	76.3		800	15:11:58	6.58278	2.968	79.7

Company: URS Corporation
 Well: WDW-138
 Field: Swan Lake, Texas City, Texas

Gauge Manufacturer: Spartek Systems
 Gauge Serial No.: 76390
 Calibration Date: 11/25/05

Survey Date(s): March 13, 2006

Record #	Actual Time	Elapsed Time	BHP (PSIG)	BHT (° F)	Comments	Record #	Actual Time	Elapsed Time	BHP (PSIG)	BHT (° F)
801	15:12:28	6.59111	2.971	79.8		851				
802	15:12:58	6.59944	3.004	80.0		852				
803	15:13:28	6.60778	3.040	80.3		853				
804	15:13:58	6.61611	3.043	80.5		854				
805	15:14:28	6.62444	3.039	80.7		855				
806	15:14:58	6.63278	3.083	81.1		856				
807	15:15:28	6.64111	3.135	81.8		857				
808						858				
809						859				
810						860				
811						861				
812						862				
813						863				
814						864				
815						865				
816						866				
817						867				
818						868				
819						869				
820						870				
821						871				
822						872				
823						873				
824						874				
825						875				
826						876				
827						877				
828						878				
829						879				
830						880				
831						881				
832						882				
833						883				
834						884				
835						885				
836						886				
837						887				
838						888				
839						889				
840						890				
841						891				
842						892				
843						893				
844						894				
845						895				
846						896				
847						897				
848						898				
849						899				
850						900				

APPENDIX C

Pressure Gauge Documentation



Spartek Systems
#1 Thevenaz Ind. Tr.
Sylvan Lake, AB, Ca, T4S 1P5
Phone (403) 887-2443
Fax (403) 887-4050
URL www.sparteksystems.com

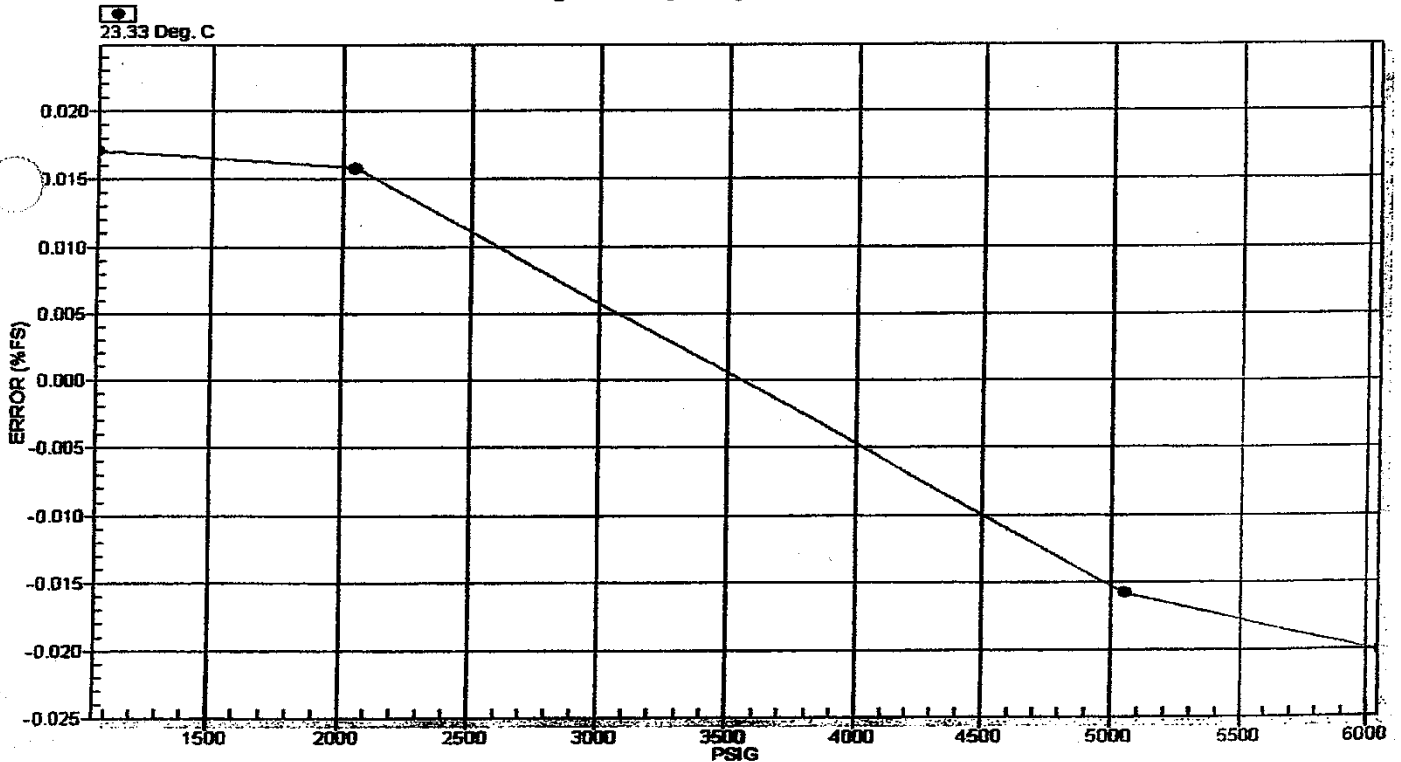
Pressure Gauge
Certificate of Conformance

MODEL	0	REVISION	9
SERIAL NUMBER	76390	DEADWEIGHT USED	
CALIBRATED	Nov 25/05	E.U.B. CERT. DATE	
PRESSURE RANGE	6000 psi		
TEMPERATURE RANGE	150 Deg. C		

ACCURACY

As shown in the graph below, this Spartek Gauge conformed to within +/- 0.025%F.S of the pressure standard used in calibration, which is accurate to within +/- 0.01% of reading. This gives an overall accuracy of +/- (0.025%F.S. + 0.01% of reading)

Spartek Quality Assurance



Accepted By: _____ Date: **Sep 19 2003**

Sandia Technologies, LLC
Well Test Solutions' SDS 3000 Gauge Calibration Sheet

Well Test Solutions LLC,
1416 North Sam Houston
Houston, TX 77032
Office (281)-987-2244
Fax (281)-987-7677



4/19/2005
1:52:40 PM
EMP0004

Calibration Certificate

Model: SDS3000

Cal. Date: Apr. 12/2005

Serial#: 6363

Certificate #: 188

Specifications

Calibration Pressure Range: 3,500 PSI

Pressure: Accuracy (0.8400 PSI (0.024)%FS)

Calibration Temperature Range: -40.00 to 60.00 (C)

Temperature: Accuracy (C) (0.15) %FS

Calibration Summary

Pressure: Accuracy (Maximum Error) 0.78PSI (0.0223) %FS

Temperature: Accuracy (Maximum Error) (C) 0.15

Traceability Statement

All working standards are traceable to national or internationally re

Calibrated with Well Test Solutions DWG # 1 : S/N 6465

Calibrated By:


Larry Bell

COPY

APPENDIX D

**Annulus Pressure Test Data -
WDW-138**



URS Corporation
MSC Texas City Site, Well No. 2 (WDW-138)
Annulus Pressure Test

Gauge: Well Test Solutions, LLC
Model: SDS 3000
Serial Number: 6363
Range: 0-3,500 psi
Calibration Date: 04/12/05

Note: Injection Tubing was static at 70 psig.

Date	Time	Pressure (psia)
3/13/2006	8:20:00	1179.21
3/13/2006	8:20:15	1178.99
3/13/2006	8:20:30	1178.82
3/13/2006	8:20:45	1178.61
3/13/2006	8:21:00	1178.41
3/13/2006	8:21:15	1178.27
3/13/2006	8:21:30	1178.13
3/13/2006	8:21:45	1177.97
3/13/2006	8:22:00	1177.86
3/13/2006	8:22:15	1177.62
3/13/2006	8:22:30	1177.43
3/13/2006	8:22:45	1177.30
3/13/2006	8:23:00	1177.13
3/13/2006	8:23:15	1176.99
3/13/2006	8:23:30	1176.82
3/13/2006	8:23:45	1176.73
3/13/2006	8:24:00	1176.56
3/13/2006	8:24:15	1176.39
3/13/2006	8:24:30	1176.25
3/13/2006	8:24:45	1176.16
3/13/2006	8:25:00	1175.99
3/13/2006	8:25:15	1175.89
3/13/2006	8:25:30	1175.73
3/13/2006	8:25:45	1175.56
3/13/2006	8:26:00	1175.45
3/13/2006	8:26:15	1175.34
3/13/2006	8:26:30	1175.19
3/13/2006	8:26:45	1175.06
3/13/2006	8:27:00	1174.93
3/13/2006	8:27:15	1174.82
3/13/2006	8:27:30	1174.71
3/13/2006	8:27:45	1174.57
3/13/2006	8:28:00	1174.40
3/13/2006	8:28:15	1174.31
3/13/2006	8:28:30	1174.15
3/13/2006	8:28:45	1174.03
3/13/2006	8:29:00	1173.93
3/13/2006	8:29:15	1173.82
3/13/2006	8:29:30	1173.69
3/13/2006	8:29:45	1173.61
3/13/2006	8:30:00	1173.54
3/13/2006	8:30:15	1173.42

Date	Time	Pressure (psia)
3/13/2006	8:30:30	1173.25
3/13/2006	8:30:45	1173.18
3/13/2006	8:31:00	1173.04
3/13/2006	8:31:15	1173.01
3/13/2006	8:31:30	1172.85
3/13/2006	8:31:45	1172.72
3/13/2006	8:32:00	1172.67
3/13/2006	8:32:15	1172.60
3/13/2006	8:32:30	1172.45
3/13/2006	8:32:45	1172.33
3/13/2006	8:33:00	1172.24
3/13/2006	8:33:15	1172.18
3/13/2006	8:33:30	1172.15
3/13/2006	8:33:45	1171.97
3/13/2006	8:34:00	1171.84
3/13/2006	8:34:15	1171.75
3/13/2006	8:34:30	1171.68
3/13/2006	8:34:45	1171.62
3/13/2006	8:35:00	1171.49
3/13/2006	8:35:15	1171.41
3/13/2006	8:35:30	1171.33
3/13/2006	8:35:45	1171.21
3/13/2006	8:36:00	1171.12
3/13/2006	8:36:15	1171.10
3/13/2006	8:36:30	1170.99
3/13/2006	8:36:45	1170.88
3/13/2006	8:37:00	1170.76
3/13/2006	8:37:15	1170.66
3/13/2006	8:37:30	1170.56
3/13/2006	8:37:45	1170.51
3/13/2006	8:38:00	1170.41
3/13/2006	8:38:15	1170.35
3/13/2006	8:38:30	1170.28
3/13/2006	8:38:45	1170.20
3/13/2006	8:39:00	1170.10
3/13/2006	8:39:15	1170.00
3/13/2006	8:39:30	1169.95
3/13/2006	8:39:45	1169.82
3/13/2006	8:40:00	1169.76
3/13/2006	8:40:15	1169.75
3/13/2006	8:40:30	1169.62
3/13/2006	8:40:45	1169.57



URS Corporation
MSC Texas City Site, Well No. 2 (WDW-138)
Annulus Pressure Test

Gauge: Well Test Solutions, LLC
Model: SDS 3000
Serial Number: 6363
Range: 0-3,500 psi
Calibration Date: 04/12/05

Note: Injection Tubing was static at 70 psig.

Date	Time	Pressure (psia)
3/13/2006	8:41:00	1169.50
3/13/2006	8:41:15	1169.35
3/13/2006	8:41:30	1169.34
3/13/2006	8:41:45	1169.26
3/13/2006	8:42:00	1169.16
3/13/2006	8:42:15	1169.09
3/13/2006	8:42:30	1169.03
3/13/2006	8:42:45	1168.94
3/13/2006	8:43:00	1169.53
3/13/2006	8:43:15	1168.71
3/13/2006	8:43:30	1168.46
3/13/2006	8:43:45	1168.64
3/13/2006	8:44:00	1168.64
3/13/2006	8:44:15	1168.59
3/13/2006	8:44:30	1168.60
3/13/2006	8:44:45	1168.56
Start Test 3/13/2006	8:45:00	1168.56
3/13/2006	8:45:15	1168.52
3/13/2006	8:45:30	1168.49
3/13/2006	8:45:45	1168.47
3/13/2006	8:46:00	1168.42
3/13/2006	8:46:15	1168.35
3/13/2006	8:46:30	1168.34
3/13/2006	8:46:45	1168.28
3/13/2006	8:47:00	1168.22
3/13/2006	8:47:15	1168.21
3/13/2006	8:47:30	1168.21
3/13/2006	8:47:45	1168.14
3/13/2006	8:48:00	1168.10
3/13/2006	8:48:15	1168.00
3/13/2006	8:48:30	1168.00
3/13/2006	8:48:45	1167.93
3/13/2006	8:49:00	1167.85
3/13/2006	8:49:15	1167.84
3/13/2006	8:49:30	1167.76
3/13/2006	8:49:45	1167.74
3/13/2006	8:50:00	1167.66
3/13/2006	8:50:15	1167.64
3/13/2006	8:50:30	1167.56
3/13/2006	8:50:45	1167.50
3/13/2006	8:51:00	1167.49
3/13/2006	8:51:15	1167.42

Date	Time	Pressure (psia)
3/13/2006	8:51:30	1167.39
3/13/2006	8:51:45	1167.39
3/13/2006	8:52:00	1167.28
3/13/2006	8:52:15	1167.24
3/13/2006	8:52:30	1167.17
3/13/2006	8:52:45	1167.04
3/13/2006	8:53:00	1167.02
3/13/2006	8:53:15	1167.03
3/13/2006	8:53:30	1167.02
3/13/2006	8:53:45	1166.96
3/13/2006	8:54:00	1166.79
3/13/2006	8:54:15	1166.78
3/13/2006	8:54:30	1166.77
3/13/2006	8:54:45	1166.75
3/13/2006	8:55:00	1166.69
3/13/2006	8:55:15	1166.60
3/13/2006	8:55:30	1166.60
3/13/2006	8:55:45	1166.59
3/13/2006	8:56:00	1166.53
3/13/2006	8:56:15	1166.53
3/13/2006	8:56:30	1166.45
3/13/2006	8:56:45	1166.42
3/13/2006	8:57:00	1166.38
3/13/2006	8:57:15	1166.33
3/13/2006	8:57:30	1166.30
3/13/2006	8:57:45	1166.27
3/13/2006	8:58:00	1166.22
3/13/2006	8:58:15	1166.10
3/13/2006	8:58:30	1166.07
3/13/2006	8:58:45	1166.04
3/13/2006	8:59:00	1166.02
3/13/2006	8:59:15	1165.99
3/13/2006	8:59:30	1165.93
3/13/2006	8:59:45	1165.77
3/13/2006	9:00:00	1165.76
3/13/2006	9:00:15	1165.75
3/13/2006	9:00:30	1165.68
3/13/2006	9:00:45	1165.63
3/13/2006	9:01:00	1165.58
3/13/2006	9:01:15	1165.53
3/13/2006	9:01:30	1165.46
3/13/2006	9:01:45	1165.45



URS Corporation
MSC Texas City Site, Well No. 2 (WDW-138)
Annulus Pressure Test

Gauge: Well Test Solutions, LLC
Model: SDS 3000
Serial Number: 6363
Range: 0-3,500 psi
Calibration Date: 04/12/05

Note: Injection Tubing was static at 70 psig.

Date	Time	Pressure (psia)		Date	Time	Pressure (psia)
3/13/2006	9:02:00	1165.33		3/13/2006	9:12:30	1163.03
3/13/2006	9:02:15	1165.28		3/13/2006	9:12:45	1163.00
3/13/2006	9:02:30	1165.19		3/13/2006	9:13:00	1162.88
3/13/2006	9:02:45	1165.18		3/13/2006	9:13:15	1162.88
3/13/2006	9:03:00	1165.11		3/13/2006	9:13:30	1162.88
3/13/2006	9:03:15	1165.03		3/13/2006	9:13:45	1162.72
3/13/2006	9:03:30	1164.97		3/13/2006	9:14:00	1162.66
3/13/2006	9:03:45	1164.92		3/13/2006	9:14:15	1162.62
3/13/2006	9:04:00	1164.82		3/13/2006	9:14:30	1162.60
3/13/2006	9:04:15	1164.79		3/13/2006	9:14:45	1162.50
3/13/2006	9:04:30	1164.73	End Test	3/13/2006	9:15:00	1162.42
3/13/2006	9:04:45	1164.65				
3/13/2006	9:05:00	1164.62				
3/13/2006	9:05:15	1164.54				
3/13/2006	9:05:30	1164.55				
3/13/2006	9:05:45	1164.44				
3/13/2006	9:06:00	1164.36				
3/13/2006	9:06:15	1164.35				
3/13/2006	9:06:30	1164.34				
3/13/2006	9:06:45	1164.25				
3/13/2006	9:07:00	1164.21				
3/13/2006	9:07:15	1164.18				
3/13/2006	9:07:30	1164.10				
3/13/2006	9:07:45	1163.98				
3/13/2006	9:08:00	1163.99				
3/13/2006	9:08:15	1163.90				
3/13/2006	9:08:30	1163.91				
3/13/2006	9:08:45	1163.83				
3/13/2006	9:09:00	1163.80				
3/13/2006	9:09:15	1163.77				
3/13/2006	9:09:30	1163.67				
3/13/2006	9:09:45	1163.65				
3/13/2006	9:10:00	1163.56				
3/13/2006	9:10:15	1163.46				
3/13/2006	9:10:30	1163.45				
3/13/2006	9:10:45	1163.41				
3/13/2006	9:11:00	1163.37				
3/13/2006	9:11:15	1163.25				
3/13/2006	9:11:30	1163.23				
3/13/2006	9:11:45	1163.19				
3/13/2006	9:12:00	1163.16				
3/13/2006	9:12:15	1163.03				

APPENDIX E

**GCWA Radioactive Tracer Survey Log and Interpretation Letter
WDW-138**

**GULF
COAST
WELL
ANALYSIS**

COASTAL WIRELINE SERVICES, INC.

**URS – Malone Service Company
Waste Disposal Well 138
Swan Lake Facility
Texas City, Texas
March 13, 2006**

RADIOACTIVE TRACER SURVEY

The two phases of this test included; 1) determining the flow through and from the tubing by ejecting a slug of radioactive material (Iodine-131 10mci) and monitoring the flow profile as it moves down the tubing and into the formation. 2) Testing the mechanical integrity of the casing, cement, and formation bond by positioning gamma-ray detector slightly above the point where the formation accepts fluid and monitoring the gamma radiation response from an ejected slug of radioactive material. A baseline gamma-ray log was run from 4,265 feet to 3,350 feet (202 feet above top of packer assembly). The injection rate was 42 gpm for the profile runs and 63 gpm time drive surveys.

The first phase of this test incorporates the injection of radioactive slug at 3,350 feet (202 feet above top of packer assembly) and passing the detector through the radioactive material until it passes from the tubing and into the formation. The first slug gave an indication of leaving the packer at 3,552 feet and going into the formation below 4,162 feet. Made five (5) passes and chased slug down to 4,180 feet. This portion of this test was repeated with six (6) passes and slug chased down to 4,183 feet. Profile survey indicates that all fluid is going into injection interval at this time. No indication of any fluid migrating up hole behind pipe above 4,162 feet.

The second phase of this test involved setting lower detector at 4,142 feet (20 feet above top of perms.) and ejecting a slug of radioactive material at 4,137 feet and recorded on time drive for sixteen (16) minutes with an injection rate of 63 gpm. This portion of this test was repeated at same depth and rate. Time drive survey indicates no fluid migrating up hole behind pipe at this time.

3909 Halik Road - Pearland, Texas 77581 - Office 281-485-6548 Fax 281-485-1954

RADIOACTIVE TRACER SURVEY CONTINUE

A Base after survey gamma ray log was ran from 4,265 feet to 3,350 feet and compared to original base gamma ray log which indicated no residue of radioactive material above 4,162 feet in formation, casing, tubing, or packer.

Radioactive Tracer Survey was conducted by Stoney Johnson (Gulf Coast Well Analysis) and witnessed by Mr. Mike Grant (Sandia Technologies).

Sincerely



Stoney Johnson
Engineer G.C.W.A.

Gulf Coast Well Analysis

3909 Halik Road - Pearland, Texas 77581 - Office 281-485-6548 Fax 281-485-1954

**2006 ANNUAL MECHANICAL INTEGRITY PROCEDURE
FOR
WDW-138**

**URS CORPORATION
TEXAS CITY, TEXAS**

SANDIA PROJECT No. 839-URS-06

The procedures to complete the 2006 Ambient Monitoring and Mechanical Integrity Testing (MIT) for WDW-138, as prescribed by the United States Environmental Protection Agency (USEPA), Region 6, are detailed below.

NOTIFICATION AND APPROVAL FROM THE TCEQ AND THE USEPA.

- | <u>STEP</u> | <u>Task</u> |
|-------------|---|
| 1. | URS will ensure that the well is placed out of service for a period of 48 hours prior to testing commencement. |
| 2. | URS will provide adequate access to wellhead. |
| 3. | Sandia Technologies, LLC and all third party vendors will complete URS orientation requirements prior to initiating on-site activities. |

Annulus Pressure Test Procedure

NOTE: The annulus pressure test will be conducted according to TCEQ's "Basic Guidelines for Mechanical Integrity Tests and Related Cased Hole Wireline Logging".

4. A calibrated test gauge or wireline pressure transducer will be installed on the annulus of WDW-138. A certificate of calibration will be provided for the gauge or transducer.
5. Utilizing the URS annulus pump, pressurize the 7-inch protection casing by 2-7/8-inch injection tubing annulus minimum of 1,000 psi above the static shut-in surface tubing pressure.
6. Monitor and record the annulus pressure of WDW-138 every five minutes for a minimum of thirty minutes. In accordance with the TCEQ guidelines for the APT, the annulus pressure test will be considered acceptable if the pressure loss or gain is less than 5% of the starting test pressure during the 30-minute test period. The test will also be recorded on a computer and pressure data will be supplied on a floppy disk. If the pressure loss or buildup is greater than 5% of the initial test pressure, the annulus pressure test will be repeated. The results of the annulus pressure test will be reported to the URS project manager.
7. Bleed down annulus pressure to normal operating range and remove surface pressure transducer from the annulus. Connect the monitoring system to the wells annulus and return the annulus pressure system to normal operating conditions.

Move-In and Rig Up Logging Unit On WDW-138

8. Move in and rig up a wireline logging unit, mast unit, and wireline lubricator with grease injector pressure control equipment. Logging unit must provide a line washer for pressure testing of lubricator and rinsing of electric-line, pump-in tee, and wing valve suitable for pump truck operations.
9. Following the successful completion of the Annulus Pressure Test, pick up a calibrated memory (battery operated) recording pressure probe and Radioactive Tracer Survey (RTS) tool string. The RTS tool string should consist of a bow spring centralizer, dual gamma ray detectors (upper and lower detectors), a collar locator, and a radioactive tracer ejector and will be configured to TCEQ guidelines.

Pressure Survey

10. Position the memory pressure gauge at or near the top of the wellhead. Collect 10 minutes of static wellhead pressure and temperature data (10-second data).
11. Continue in the wellbore in 1,000 feet increments taking pressure gradient stops, collecting 10 minutes of pressure data.
12. Correlate depth at the production packer of 3,552 feet to 3,560 feet, according to the Gulf Coast Well Analysis Radioactive Tracer Survey (RTS) dated March 16, 2005. Note depth correction. Continue with gradient stop at 4,000 feet.
13. Position pressure gauge at 4,142 feet (20-feet above the upper most perforation). Allow pressure gauge to stabilize at depth for a minimum of 1 hour.

Radioactive Tracer Survey

14. Move-in and rig up a fluid pump truck and a 130-barrel vacuum truck (fluid transport). Vacuum truck should be loaded with fresh water. Add liquid potassium chloride (KCl) substitute until obtaining a 3-percent equivalent KCl mixture. Attach vacuum truck to the low-pressure filter unit equipped with 5-micron filters. Attach a fluid discharge hose from filter unit to the fluid holding tank of the fluid pump truck. Attach a high-pressure fluid discharge hose to the wireline lubricator pump-in sub.
15. Following the completion of the Static Pressure Survey, run an RTS as follows:
 - a. Run gamma ray/casing collar locator (GR/CCL) initial base log from approximately 4,271 feet measured depth (**tagged fill during 2005 RTS**) to 3,350 feet (202 feet above log-indicated top of packer). Tie in depths with the Gulf Coast Well Analysis RAT log dated March 16, 2005. Note that reference KB elevation is 8.0 feet above the lowermost wellhead flange.
 - b. Position RTS lower detector at 4,142 feet (or 20 feet above top of perforations). Run log in statistical time drive for five minutes.

- c. Position RTS lower detector at 3,830 feet (or 10 feet above log-indicated abandoned top of packer). Run log in statistical time drive for five minutes.
 - d. Establish a constant injection rate of approximately 42 gallons per minute with the fluid pump truck.
 - e. Pick up RTS tool to 3,350 feet and eject a slug of Iodine-131. Verify ejection of isotope by monitoring the time it takes for the isotope to pass from ejector to lower detector.
 - f. Profile the movement of the isotope in the wellbore with over lapping logging passes until isotope enters the disposal interval or moves below the top of the fill at approximately 4,271 feet.
 - g. Repeat steps e and f for second slug chase survey.
 - h. Position RTS tool lower detector at 4,122 feet (40 feet above top of active perforations). Increase injection rate to approximately 60 gallons per minute.
 - i. Eject a slug of Iodine-131. Verify ejection of isotope by monitoring the time it takes for the isotope to pass from ejector to lower detector.
 - j. Hold RTS tool stationary with lower detector at 4,240 feet while logging in statistical time drive for 15 minutes.
 - k. Repeat step i and step j for the second time-drive survey.
 - l. Cease injection, rig down, and release the fluid pump truck and vacuum truck. Run final GR/CCL log from tagged fill at approximately 4,271 feet to 3,350 feet. Compare final log to initial base log.
 - m. Unload RTS tool and pull out of hole with RTS tools and pressure gauge.
16. Collect pressure data from memory pressure gauge. Rig down and release the wireline logging unit.

Prepare Report

17. Prepare the Mechanical Integrity and Bottomhole Pressure Falloff Test report in accordance with TCEQ and USEPA guidelines. URS will submit the final report to the TCEQ and USEPA within the thirty calendar days allowed for submittal to the TCEQ and USEPA following the completion of the field activities.