

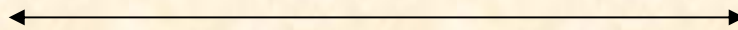
Fire Test Report

API Standard 607, 4th Edition

Performed for

ValvTechnologies, Inc.

www.valv.com



2 inch Class 1500 Ball Valve

Product Code: V82J-RF-FP-B020-001DT-001

Project Number: 211088

Test Date: August 4, 2011

Performed by

YARMOUTH RESEARCH AND TECHNOLOGY, LLC

434 Walnut Hill Road
North Yarmouth, ME 04097 USA
(207) 829-5359

info@yarmouthresearch.com

www.yarmouthresearch.com

Yarmouth Research and Technology

Customer: ValvTechnologies, Inc.

Date: 8/4/2011

Specification: API 607, Fourth Edition, May 1993

Product Description: 2 inch Class 1500 Ball Valve

Project Number: PN211088

Comments: Product Code: V82J-RF-FP-B020-001DT-001

Yarmouth Engineer: Matthew J. Wasielewski, P.E.

Equipment Confirmed to be in Calibration to NIST Standards: Yes

Burn and Cool Down Test

Burn Start Time:	10:55:00	
Average Pressure During Burn:	2770	psig
Seat Leak Rate During Burn:	8.3	ml/min
Allowable Seat Leak Rate:	200	ml/min
External Leak Rate During Burn/Cool Down:	7.7	ml/min
Allowable External Leak Rate:	50	ml/min
Were the Valve Leakages Below the Allowables?	Yes	

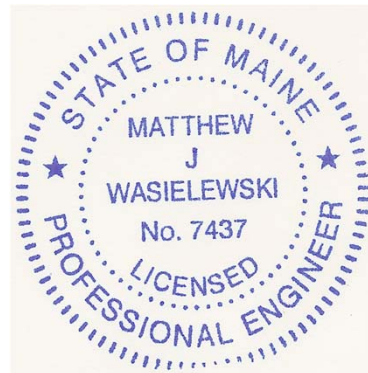
Operational Test

Average Pressure During Test:	2762	psig
Seat Leak Rate After Operating:	0	ml/min
Allowable Seat Leak Rate:	40	ml/min
External Leak Rate After Operating:	0	ml/min
Allowable External Leak Rate:	50	ml/min
Were the Valve Leakages Below the Allowables?	Yes	

Valve Pass or Fail the Test Standard?	PASS
---------------------------------------	------

Witnesses

Matthew J. Wasielewski

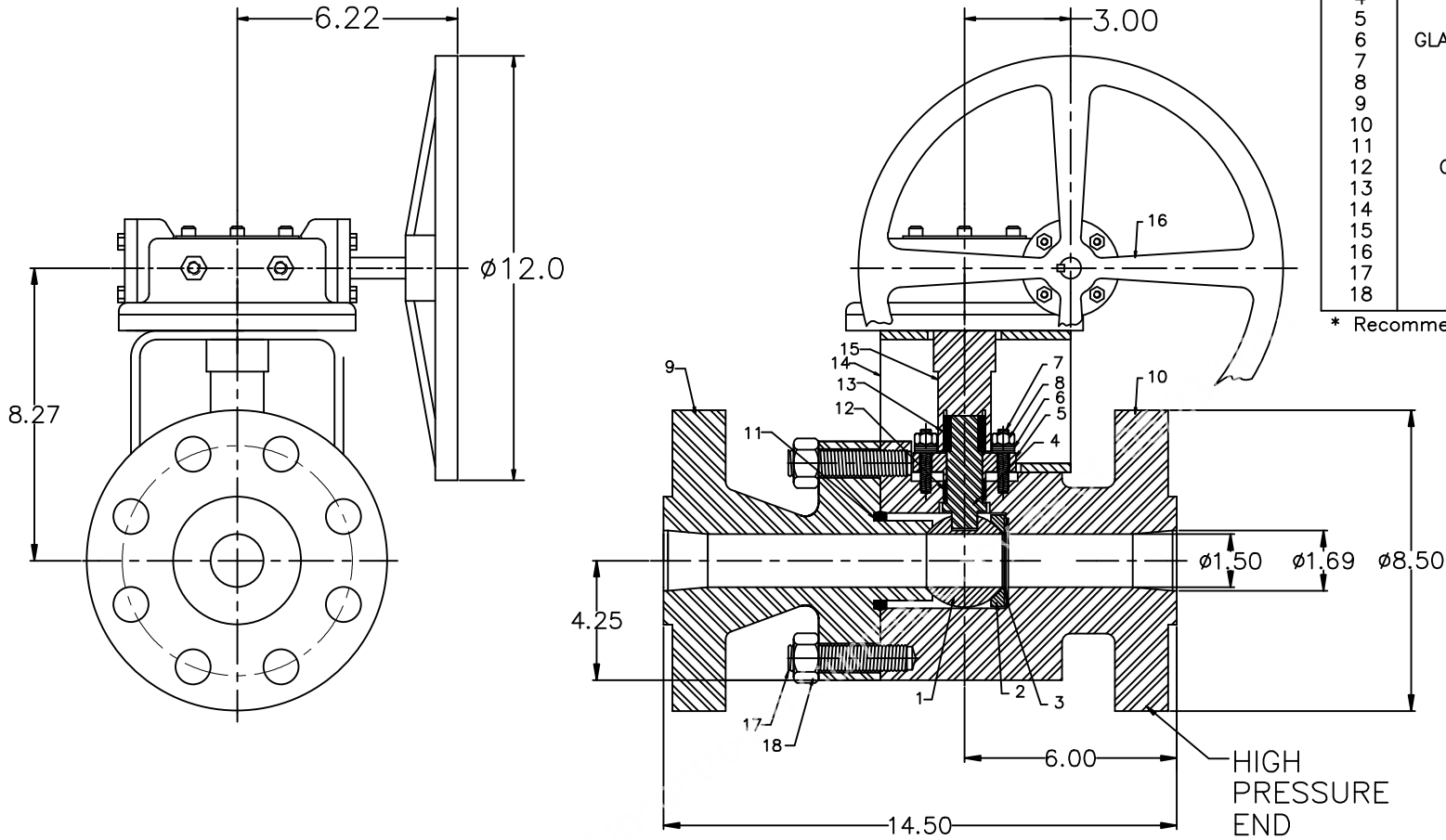


Customer: Valvtechnologies
 Project Name: Fire Safe Certification For 110455

BILL OF MATERIAL

ITEM	DESCRIPTION	MATERIAL	QTY.
1	BALL	Inc 718/RAM21	1*
2	UPSTREAM SEAT	316 S.S./QPQ	1*
3	BELLEVILLE SPRING	Inc. 718	1*
4	STEM	A286/QPQ	1
5	GLAND	316 S.S./QPQ	1
6	GLAND LOAD SPRING	Inc. 718	24
7	GLAND NUT	A194 Gr. 8M	4
8	GLAND STUD	A193 Gr. B8M	4
9	END CAP	316 S.S./RAM21	1*
10	BODY	316 S.S.	1
11	BODY GASKET	Inc 718	1*
12	GLAND PACKING	316 S.S./GRAFOIL	1*
13	KEY	1018	2
14	STOP PLATE	STEEL	1
15	DRIVE SLEEVE	4130	1
16	OPERATOR	STEEL	1
17	BODY STUD	SA-453 660	8
18	BODY NUT	SA-453 660	8

* Recommended Spare Parts



** Release For Cutomer Approval

Approx. Total Weight: 154 lbs

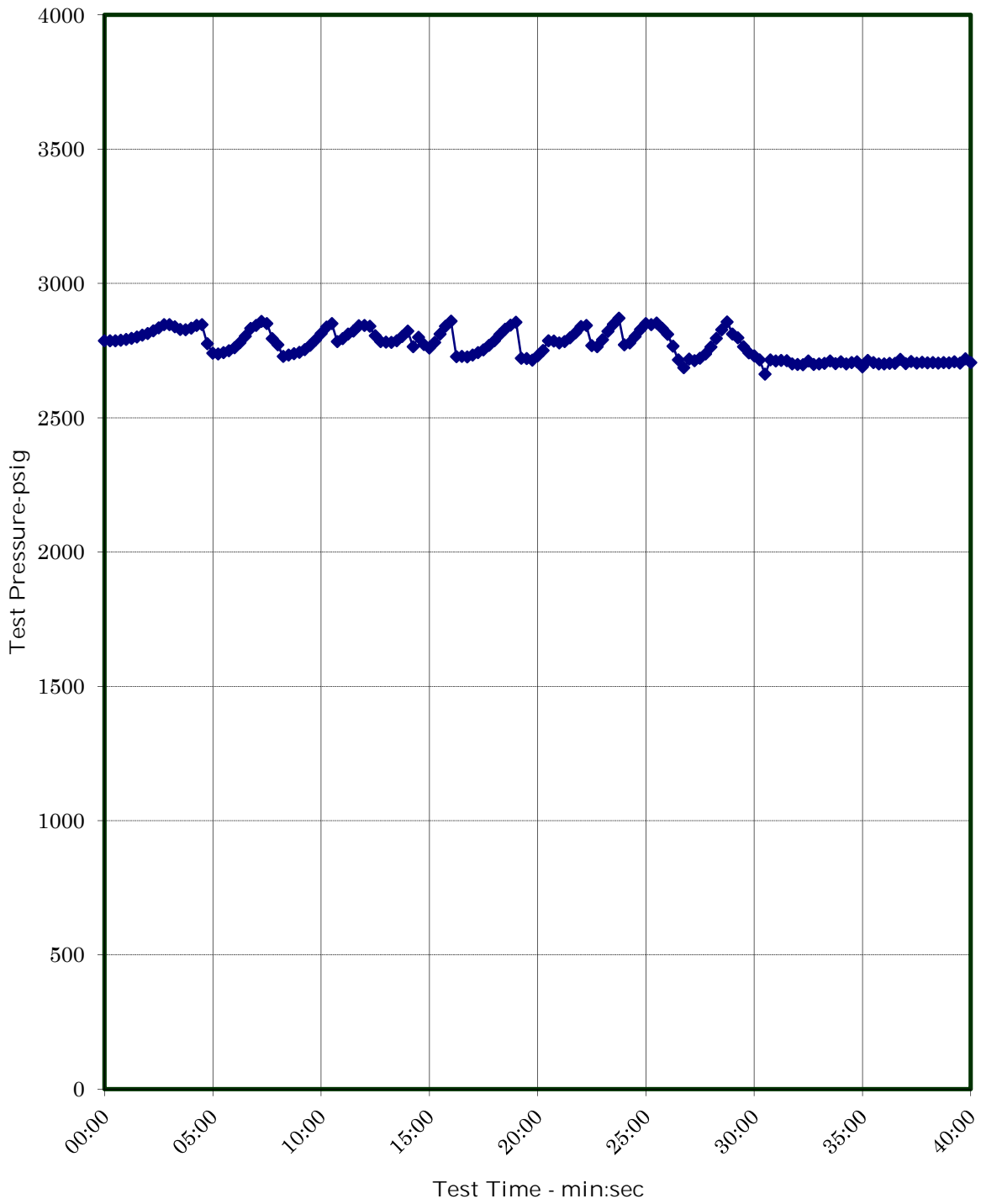
<p>THIRD ANGLE PROJECTION</p>	-	-	-	-	-	-	-	DIMENSIONS ARE IN INCHES REMOVE BURRS AND BREAK EDGES UNLESS OTHERWISE SPECIFIED	SCALE NTS	MODEL FILE	SIZE B	<p>5904 BINGLE ROAD, HOUSTON TEXAS 77092 PH: (713) 860-0400 FAX: (713) 860-0499</p>
	THIS DRAWING AND THE INFORMATION CONTAINED WITHIN IS CONSIDERED TO BE CONFIDENTIAL AND THE SOLE PROPERTY OF VALVTECHNOLOGIES. THE CONTENTS OF THIS DRAWING MAY NOT BE REPRODUCED OR DISCLOSED VERBALLY OR OTHERWISE OUTSIDE THE HOLDERS OFFICE WITHOUT THE WRITTEN APPROVAL OF VALVTECHNOLOGIES.	REV	DATE	DESCRIPTION	ECN	BY	CHK		APR	CORNER RADII - .X= ± .XX= ± .XXX= ± CONCENTRICITY - ANGULAR= ± SURFACE TEXTURE - MIN. INTERNAL FILLETS -	COATING - DRAWN BY PN DATE 05/20/11 CHECKED BY RSL DATE 05/20/11 ENGINEER SS DATE 05/21/11 APPROVED BY SS DATE 05/21/11	

YARMOUTH RESEARCH AND TECHNOLOGY, LLC

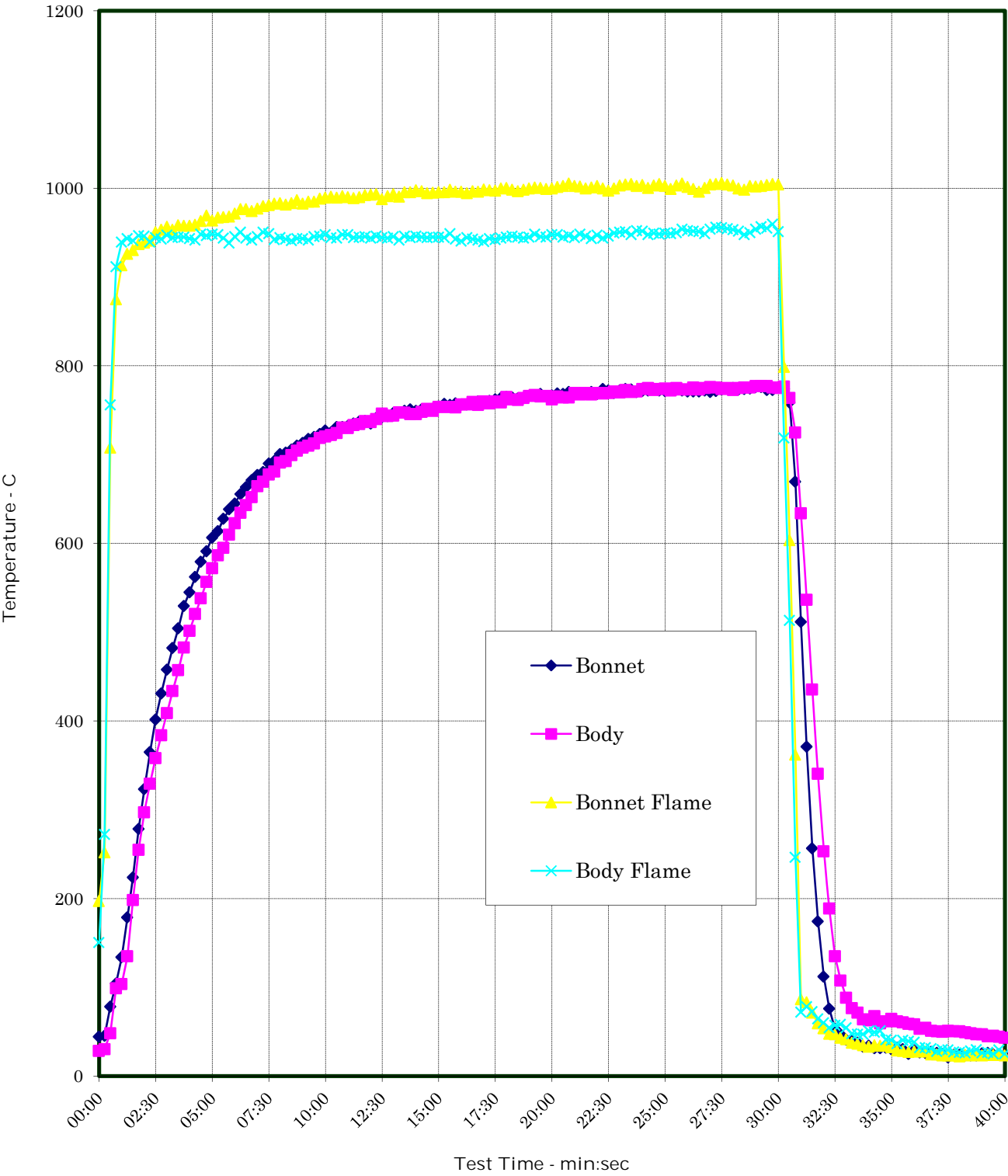
Fire Test Information Sheet

Valve Manufacturer's Name:	ValvTechnologies
Valve Manufacturer's Address:	5904 Bingle Rd Houston, TX 77066
Did valve meet all required hydrostatic, leakage and other production pressure tests?	YES
Valve Product Code:	V82J-RF-FP-B020-001DT-001
Valve Description Size: Pressure Rating: Pressure Rating at 100F: Type: Weight: Reduced or Full Bore: Body/Bonnet Material: Trim Material: Seat Material: Stem / Body Seal Material: Bolting Material: Is valve considered "Soft-Seated"?	1.5" 1500# 3750 PSI RF 154 LBS FP SA-182 316H 2J001 SA-182 316H/ RAM21 SA-638 gr660/ alloy 718 SA-453 GR.660 NO
Valve Markings Nameplate Information: Casting Markings:	V82J-RF-FP-B020-001DT-001 BODY = SA182-316H ASME B16.34 size = 1.5" Class = 1500# TRIM = 2J001
Assembly Drawing Number / Revision / Date of Issue:	110615-3 REV. 1 08/15/2011
Assembly Drawing sent to Yarmouth:	YES
If valve is fitted with gearbox, state gearbox manufacturer, model number and mechanical advantage:	EXEECO IW3/40
If valve is non-symmetric, state direction of flow for test:	SEE DRAWING
For double-seated valves, state maximum allowable cavity pressure:	N/A
Manufacturer's Contact Name /Date:	Erika Chavez 08/15/11

Pressure verses Time Chart



Temperature verses Time Chart





Valve Prior to Test



Valve During Burn

Yarmouth Research and Technology

Fire Test Information

Customer: ValvTechnologies, Inc.

Date: 8/4/2011

Product Code: 2 inch Class 1500 Ball Valve

Project Number: PN211088

Fire Test Raw Data

Time	Pressure (psig)	Water Volume (mls)	Bonnet Temp-C	Body Temp-C	Bonnet Flame Temp-C	Body Flame Temp-C	Average Flame Temp-C
10:55:00	2787	33301	44	28	197	151	174
10:55:15	2787	33230	46	31	252	272	262
10:55:30	2787	33258	78	48	708	756	732
10:55:45	2789	33275	104	99	875	912	893
10:56:00	2792	33248	134	104	913	939	926
10:56:15	2796	33243	179	135	926	943	935
10:56:30	2801	33286	224	198	931	941	936
10:56:45	2808	33237	278	255	937	947	942
10:57:00	2813	33270	323	297	939	946	943
10:57:15	2823	33286	365	329	941	939	940
10:57:30	2834	33291	402	358	951	944	948
10:57:45	2847	33244	431	384	953	943	948
10:58:00	2847	33247	458	409	957	947	952
10:58:15	2839	33278	482	434	953	944	949
10:58:30	2828	33296	504	457	958	945	952
10:58:45	2828	33268	529	483	958	945	951
10:59:00	2833	33256	545	502	958	943	951
10:59:15	2844	33265	562	521	959	942	950
10:59:30	2847	33272	579	538	963	948	956
10:59:45	2775	33280	591	557	969	947	958
11:00:00	2740	33244	607	572	964	948	956
11:00:15	2738	33237	614	587	967	948	958
11:00:30	2743	33253	628	595	968	944	956
11:00:45	2749	33264	638	610	968	938	953
11:01:00	2761	33223	645	623	972	946	959
11:01:15	2779	33239	656	634	977	951	964
11:01:30	2804	33256	663	643	977	944	960
11:01:45	2833	33225	671	652	974	942	958
11:02:00	2844	33246	677	664	977	946	961
11:02:15	2859	33250	681	669	980	951	965
11:02:30	2851	33234	690	678	981	949	965
11:02:45	2795	33256	693	681	983	942	963
11:03:00	2772	33210	701	691	983	944	964

Yarmouth Research and Technology

Fire Test Data - continued

11:03:15	2728	33276	702	693	982	943	962
11:03:30	2733	33245	706	699	983	941	962
11:03:45	2738	33253	710	704	987	943	965
11:04:00	2744	33239	713	708	983	943	963
11:04:15	2754	33252	718	710	985	942	963
11:04:30	2769	33238	720	713	985	946	965
11:04:45	2790	33254	723	719	988	946	967
11:05:00	2813	33237	727	721	989	948	969
11:05:15	2838	33244	725	722	991	944	968
11:05:30	2851	33244	731	724	989	944	967
11:05:45	2784	33249	731	731	991	948	969
11:06:00	2795	33245	732	730	990	948	969
11:06:15	2811	33216	735	733	989	944	967
11:06:30	2823	33228	737	734	990	945	968
11:06:45	2843	33230	738	738	992	946	969
11:07:00	2844	33251	735	737	993	944	968
11:07:15	2840	33264	741	740	993	946	970
11:07:30	2805	33199	742	746	988	944	966
11:07:45	2784	33220	743	743	991	944	968
11:08:00	2781	33249	747	744	993	946	969
11:08:15	2781	33222	747	748	991	942	966
11:08:30	2787	33210	749	747	996	946	971
11:08:45	2802	33242	751	746	996	944	970
11:09:00	2823	33227	749	746	998	946	972
11:09:15	2765	33227	751	748	997	945	971
11:09:30	2800	33218	751	752	994	944	969
11:09:45	2773	33227	752	749	995	945	970
11:10:00	2759	33226	754	754	996	945	970
11:10:15	2780	33232	757	754	996	944	970
11:10:30	2812	33214	756	754	998	949	974
11:10:45	2840	33247	758	753	996	943	969
11:11:00	2860	33225	757	757	996	941	968
11:11:15	2728	33252	757	757	994	944	969
11:11:30	2728	33263	759	759	997	943	970
11:11:45	2726	33205	760	756	996	942	969
11:12:00	2734	33263	760	760	999	940	969
11:12:15	2742	33247	761	758	998	943	971
11:12:30	2753	33248	762	760	997	942	970
11:12:45	2769	33291	764	759	1000	944	972
11:13:00	2787	33228	765	765	1001	945	973
11:13:15	2809	33219	764	762	998	946	972
11:13:30	2830	33238	763	762	997	945	971
11:13:45	2844	33256	764	764	998	944	971

Yarmouth Research and Technology

Fire Test Data - continued

11:14:00	2856	33277	766	766	1000	945	973
11:14:15	2722	33230	767	767	1001	948	975
11:14:30	2720	33160	768	766	1001	946	973
11:14:45	2715	33202	766	766	999	945	972
11:15:00	2730	33160	767	762	1000	948	974
11:15:15	2751	33150	769	766	1002	948	975
11:15:30	2787	33131	768	764	1003	945	974
11:15:45	2786	33151	771	764	1006	947	976
11:16:00	2778	33128	768	769	1003	944	974
11:16:15	2784	33115	769	768	1002	948	975
11:16:30	2798	33152	769	769	1000	946	973
11:16:45	2817	33158	771	768	1001	943	972
11:17:00	2840	33149	768	769	1003	947	975
11:17:15	2844	33233	774	769	1000	944	972
11:17:30	2769	33152	772	769	997	946	972
11:17:45	2764	33188	769	771	1000	949	975
11:18:00	2791	33149	772	770	1003	951	977
11:18:15	2821	33145	774	773	1004	951	978
11:18:30	2848	33123	773	771	1005	948	976
11:18:45	2871	33161	771	771	1003	952	978
11:19:00	2771	33137	772	774	1004	952	978
11:19:15	2779	33158	772	775	1001	948	974
11:19:30	2803	33175	774	773	1003	949	976
11:19:45	2829	33130	772	774	1005	948	977
11:20:00	2851	33160	772	774	1003	949	976
11:20:15	2847	33100	773	772	999	949	974
11:20:30	2853	33131	773	775	1003	950	977
11:20:45	2832	33141	772	773	1006	954	980
11:21:00	2811	33142	771	773	1002	952	977
11:21:15	2766	33153	771	776	999	952	976
11:21:30	2715	33116	771	773	996	951	974
11:21:45	2686	31678	772	775	1001	949	975
11:22:00	2718	32939	771	776	1004	954	979
11:22:15	2712	32882	772	776	1005	956	981
11:22:30	2721	32911	773	774	1006	956	981
11:22:45	2738	32920	774	775	1004	954	979
11:23:00	2764	32917	775	773	1003	953	978
11:23:15	2795	32951	773	775	1000	952	976
11:23:30	2827	32943	774	776	998	948	973
11:23:45	2857	32934	774	776	1003	950	976
11:24:00	2811	32905	776	777	1002	954	978
11:24:15	2798	32892	776	777	1003	957	980
11:24:30	2764	32887	773	777	1004	955	979

Yarmouth Research and Technology

Fire Test Data - continued

11:24:45	2741	32964	773	776	1005	959	982
11:25:00	2730	32914	776	775	1004	951	978
11:25:15	2716	32880	774	777	799	719	759
11:25:30	2662	32865	759	764	604	513	559
11:25:45	2716	32512	669	725	362	247	304
11:26:00	2712	32488	512	634	87	72	79
11:26:15	2714	32463	371	537	83	78	81
11:26:30	2712	32426	257	436	72	73	72
11:26:45	2700	32394	174	341	59	64	62
11:27:00	2698	32341	112	253	54	60	57
11:27:15	2698	32360	76	189	48	54	51
11:27:30	2712	32578	53	135	47	57	52
11:27:45	2698	32300	47	108	43	58	51
11:28:00	2700	32271	41	88	42	54	48
11:28:15	2703	32215	39	77	38	48	43
11:28:30	2711	32224	38	72	37	47	42
11:28:45	2702	32211	33	64	35	47	41
11:29:00	2708	32187	34	63	33	51	42
11:29:15	2700	32160	32	68	35	49	42
11:29:30	2706	32168	32	59	34	51	43
11:29:45	2708	32153	32	62	34	41	38
11:30:00	2690	32783	31	64	33	41	37
11:30:15	2713	32074	32	62	29	37	33
11:30:30	2705	31989	31	61	28	41	34
11:30:45	2701	31970	25	59	27	39	33
11:31:00	2701	31948	29	58	28	38	33
11:31:15	2702	31913	27	53	28	32	30
11:31:30	2702	31881	26	54	28	32	30
11:31:45	2717	31857	27	51	24	31	28
11:32:00	2701	31846	26	51	24	28	26
11:32:15	2709	31824	25	50	23	30	27
11:32:30	2703	31841	21	51	23	29	26
11:32:45	2706	31810	24	51	23	27	25
11:33:00	2704	31824	24	51	22	27	24
11:33:15	2705	31760	23	49	24	26	25
11:33:30	2704	31765	23	48	23	28	26
11:33:45	2705	31751	23	47	24	30	27
11:34:00	2704	31737	26	47	23	26	25
11:34:15	2708	31723	26	45	24	27	25
11:34:30	2704	31725	24	46	24	25	24
11:34:45	2719	31704	24	44	24	29	27
11:35:00	2705	31724	23	43	23	25	24

Yarmouth Research and Technology

Leakage Summary for Burn and Cool Down Periods

All pressure transducers and thermocouples are in calibration per YRT's QA program.

Seat leakages were collected manually. External leakage was collected electronically.

Total Through Seat Leakage Collected Over 30 Minute Duration:	250	mls
Average Leak Rate Over 30 Minute Duration:	8.3	ml/min
Allowable Leak Rate:	200	ml/min

Total Through Seat Leakage Collected Over 10 Minute Cool Down:	1020	mls
--	------	-----

Total Water Volume Lost Over 40 Minute Burn and Cool Down:	1577	mls
Water Collected in System Relief Valve:	0	mls
Calculated External Leakage During 40 Minute Duration:	307	mls
Average Leak Rate Over 40 Minute Duration:	7.7	ml/min
Allowable Leak Rate:	50	ml/min

Were the Valve Leakages Below the Allowables?	Yes
---	-----

Yarmouth Research and Technology

Summary of Test Parameters During Burn and Cool Down Periods

Amount of Time Pressure Dropped Below 50%:	0.0	minutes
Maximum Allowable Low Pressure Time:	2.0	minutes
Maximum Pressure During Burn/Cool Down:	2870.8	psig
Average Pressure During Burn/Cool Down:	2770.0	psig
Minimum Pressure During Burn/Cool Down:	2662.1	psig

Maximum Body Flame Temperature During Burn:	959.4	deg. C
Average Body Flame Temperature During Burn:	933.8	deg. C

Maximum Bonnet Flame Temperature During Burn:	1006.1	deg. C
Average Bonnet Flame Temperature During Burn:	974.3	deg. C

Average of Both Flame Temperatures During Burn:	954.0	deg. C
---	-------	--------

Note

Were Test Conditions Within Compliance?	Yes
---	-----

Yarmouth Research and Technology

Post-Burn Seat Test Information

Customer: ValvTechnologies, Inc.

Date: 8/4/2011

Product Code: 2 inch Class 1500 Ball Valve

Project Number: PN211088

Test Data

Time	Pressure (psig)	Cal Block Temp - C
11:44:43	2768	33
11:44:58	2763	32
11:45:13	2761	32
11:45:28	2758	33
11:45:43	2758	33
11:45:58	2755	32
11:46:13	2757	32
11:46:28	2757	31
11:46:43	2756	31
11:46:58	2761	32
11:47:13	2757	30
11:47:28	2790	30
11:47:43	2780	32
11:47:58	2774	31
11:48:13	2765	32
11:48:28	2761	32
11:48:43	2757	32
11:48:58	2757	30
11:49:13	2757	32
11:49:28	2755	32
11:49:43	2757	32

Leakages were collected manually.

Total Seat Leakage Collected Over 5 Minute Duration:	0	mls
Average Leak Rate Over 5 Minute Duration:	0	ml/min
Allowable Leak Rate:	40	ml/min

Total External Leakage Collected Over 5 Minute Duration:	0	mls
Average Leak Rate Over 5 Minute Duration:	0.0	ml/min
Allowable Leak Rate:	50	ml/min

Was the Valve Leakage Below the Allowable?	Yes
--	-----