

Fire Test Report

API Standard 607, 4th Edition

Performed for

ValvTechnologies, Inc.

www.valv.com



1/2 inch Class 1500 Ball Valve
Product Code: V82J-RF-FP-L005-001DT-001

Project Number: 211088
Test Date: December 8, 2011

Performed by

YARMOUTH RESEARCH AND TECHNOLOGY, LLC

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

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www.yarmouthresearch.com

Yarmouth Research and Technology

Customer: ValvTechnologies, Inc.

Date: 12/8/2011

Specification: API 607, Fourth Edition, May 1993

Product Description: 1/2 inch Class 1500 Ball Valve

Project Number: PN211088

Comments: V82J-RF-FP-L005-001DT-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:	12:41:00	
Average Pressure During Burn:	2702	psig
Seat Leak Rate During Burn:	0.0	ml/min
Allowable Seat Leak Rate:	50	ml/min
External Leak Rate During Burn/Cool Down:	9.3	ml/min
Allowable External Leak Rate:	12.5	ml/min
Were the Valve Leakages Below the Allowables?	Yes	

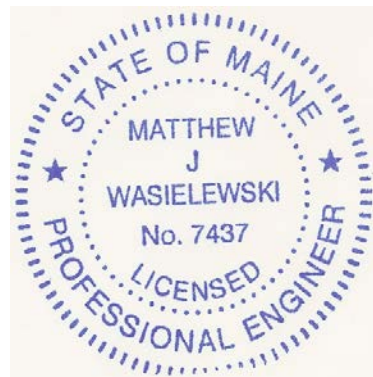
Operational Test

Average Pressure During Test:	2738	psig
Seat Leak Rate After Operating:	0	ml/min
Allowable Seat Leak Rate:	10	ml/min
External Leak Rate After Operating:	1.2	ml/min
Allowable External Leak Rate:	12.5	ml/min
Were the Valve Leakages Below the Allowables?	Yes	

Valve Pass or Fail the Test Standard?	PASS
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Witnesses

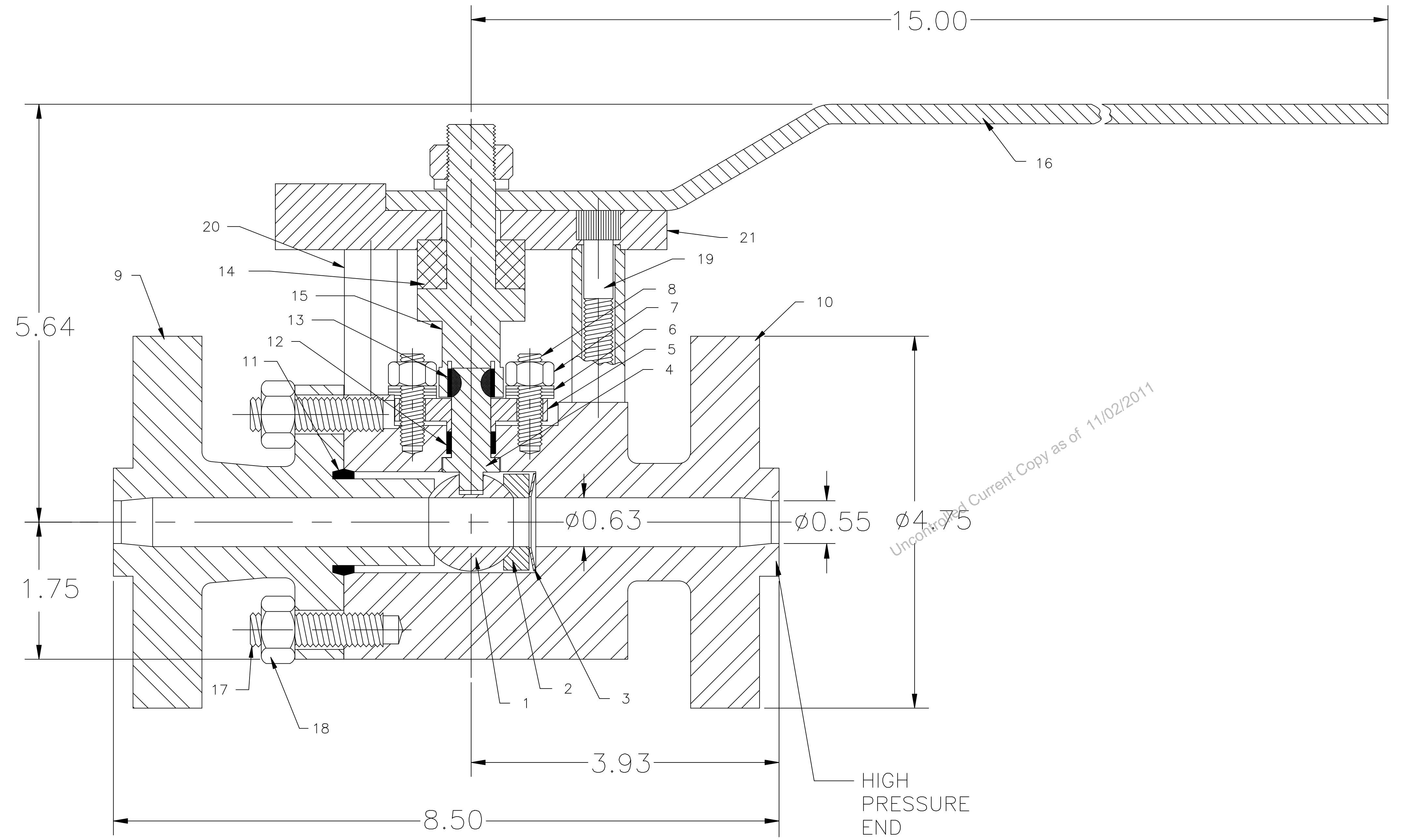
Matthew J. Wasielewski



Customer: VTI
 Project Name: FIRE SAFE

BILL OF MATERIAL			
ITEM	DESCRIPTION	MATERIAL	QTY.
1	BALL	Inc 718/RAM21	1*
2	UPSTREAM SEAT	316H/QPQ	1*
3	BELLEVILLE SPRING	Inc 718	1*
4	STEM	A286/QPQ	1
5	GLAND	316H/QPQ	1
6	GLAND LOAD SPRING	Inc 718	24
7	GLAND STUD	A193 Gr. B8M	4
8	GLAND NUT	A194 Gr. 8M	4
9	END CAP	316H/RAM21	1*
10	BODY	316H	1
11	BODY GASKET	Inc 718/PT24	1*
12	GLAND PACKING	316 S.S./GRAFOIL	3*
13	KEY	1018	2
14	THRUST BEARING	1020/QPQ	1
15	DRIVE SLEEVE	4130	1
16	HANDLE	STEEL	1
17	BODY STUD	SA-453 660	6
18	BODY NUT	SA-453 660	6
19	YOKE CAP SCREW	A574	4
20	YOKE POST	STEEL	4
21	YOKE PLATE	STEEL	1

* Recommended Spare Parts



Uncontrolled Current Copy as of 11/02/2011

**Release For Customer Approval

Approx Valve Weight: 35 lbs

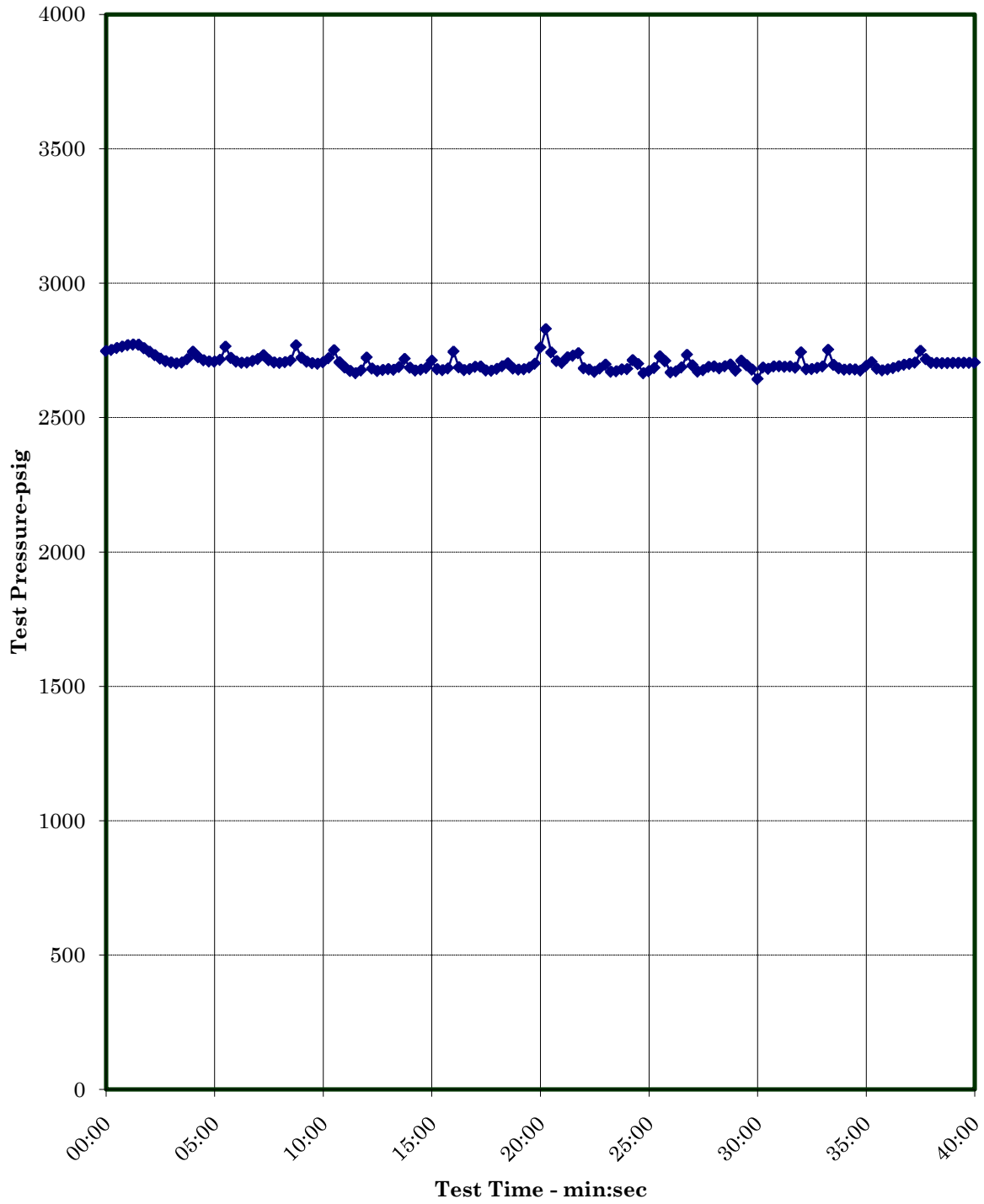
<p>THIRD ANGLE PROJECTION</p>	-	-	-	-	-	-	-	DIMENSIONS ARE IN INCHES REMOVE BURRS AND BREAK EDGES UNLESS OTHERWISE SPECIFIED	SCALE NTS	MODEL FILE	SIZE B		
	-	-	-	-	-	-	-		CORNER RADII - .X= ± - .XX= ± - .XXX= ± - CONCENTRICITY - ANGULAR= ± - SURFACE TEXTURE - MIN. INTERNAL FILLETS -	COATING	-		-
THIS 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.	1	08/15/11	REVISED PART NUMBER	-	PN	RSL	SS		DRAWN BY	PN	DATE	06/27/11	TITLE V82J-RF-FP-L005-001DT-001, ANSI 1500# WITH LEVER OPERATOR SCH 80
	REV	DATE	DESCRIPTION	ECN	BY	CHK	APR		CHECKED BY	RSL	DATE	06/30/11	
									ENGINEER	SS	DATE	07/01/11	SH 1 OF 1
									APPROVED BY	SS	DATE	07/01/11	

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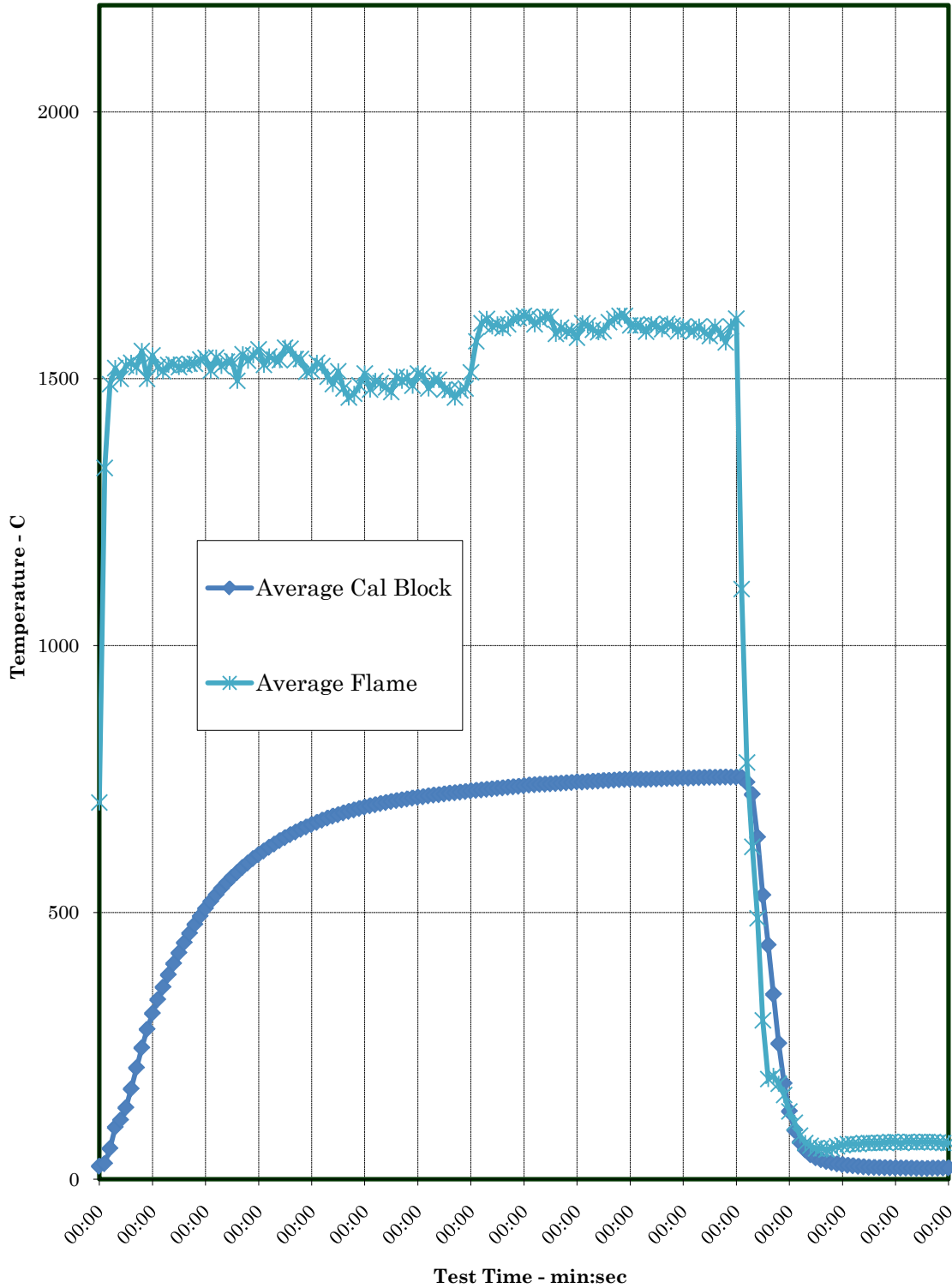
Fire Test Information Sheet

Valve Manufacturer's Name:	ValvTechnologies
Valve Manufacturer's Address:	5904 Bingle Road Houston, TX 77092
Did valve meet all required hydrostatic, leakage and other production pressure tests?	Yes
Valve Product Code:	V82J-RF-FP-L005-001DT-001
Valve Description	Size: 1/2" Pressure Rating: 1500# Pressure Rating at 100F: 3600 psig Type: Seat-Supported Ball Valve Weight: 35 Lbs. Reduced or Full Bore: Full Bore Body/Bonnet Material: SA-182 316H Trim Material: Inconel 718 Seat Material: SA-182 316H w/ RAM 31 coat Stem / Body Seal Material: A286/Inc 718 Bolting Material: SA-453 660 Is valve considered "Soft-Seated"? No
Valve Markings	Nameplate Information: Size, Pressure Class Casting Markings: N/A
Assembly Drawing Number / Revision / Date of Issue:	111034 / Rev. 1 / 06/15/11
Assembly Drawing sent to Yarmouth:	Yes
If valve is fitted with gearbox, state gearbox manufacturer, model number and mechanical advantage:	N/A
If valve is non-symmetric, state direction of flow for test:	Flow to enter High Pressure End as indicated by tag on valve
For double-seated valves, state maximum allowable cavity pressure:	N/A
Manufacturer's Contact Name /Date:	Becky Kowen/ 10/25/11

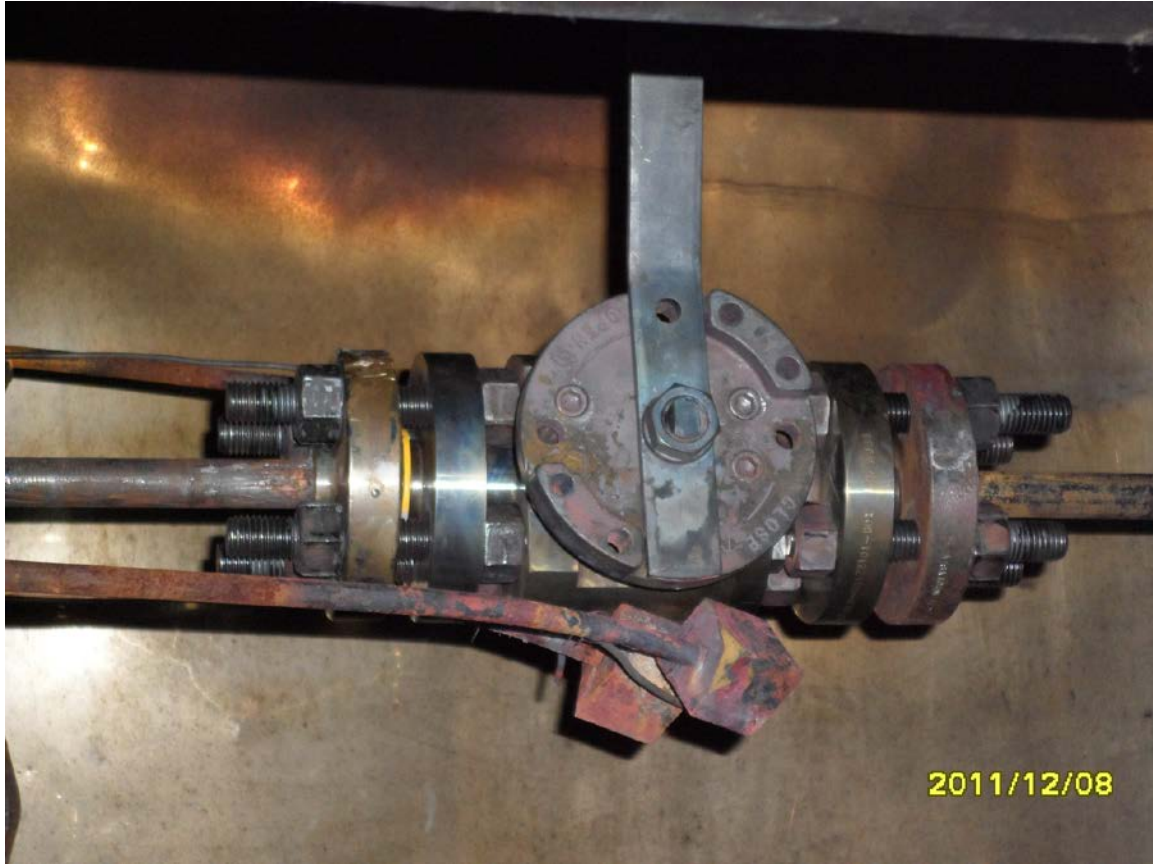
Pressure verses Time Chart



Temperature verses Time Chart



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Test Valve Prior to Burn



Test Valve During Burn

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Fire Test Information

Customer: ValvTechnologies, Inc.

Date: 12/8/2011

Product Code: 1/2 inch Class 1500 Ball Valve

Project Number: PN211088

Fire Test Raw Data

Time	Pressure (psig)	Water Volume (mls)	Cal. Block 1 Temp-C	Cal. Block 2 Temp-C	Bonnet Flame Temp-C	Body Flame Temp-C	Average Flame Temp-C
12:41:00	2747	40961	26	23	146	62	104
12:41:15	2751	40957	31	28	503	301	402
12:41:30	2758	40962	57	59	754	737	746
12:41:45	2763	40949	92	103	842	863	853
12:42:00	2769	40942	112	110	871	898	884
12:42:15	2771	40946	133	136	886	891	888
12:42:30	2771	40946	162	177	888	908	898
12:42:45	2758	40962	194	223	889	904	897
12:43:00	2744	40922	227	266	898	900	899
12:43:15	2732	40937	259	303	898	903	901
12:43:30	2719	40956	289	333	906	908	907
12:43:45	2709	40942	313	360	908	906	907
12:44:00	2704	40936	335	385	908	902	905
12:44:15	2701	40941	357	409	910	902	906
12:44:30	2704	40947	378	431	912	907	909
12:44:45	2717	40952	397	451	916	914	915
12:45:00	2744	40940	416	471	918	923	920
12:45:15	2724	40949	434	488	919	922	921
12:45:30	2713	40944	451	504	926	915	920
12:45:45	2708	40936	466	519	928	914	921
12:46:00	2707	40949	481	533	929	919	924
12:46:15	2714	40945	494	547	931	927	929
12:46:30	2763	40934	506	559	932	928	930
12:46:45	2721	40919	518	571	933	924	928
12:47:00	2708	40944	529	582	933	924	929
12:47:15	2703	40932	539	592	932	921	926
12:47:30	2704	40916	548	602	934	909	922
12:47:45	2710	40924	558	611	938	932	935
12:48:00	2717	40931	566	619	934	929	932
12:48:15	2732	40901	574	628	933	935	934
12:48:30	2713	40893	581	636	925	937	931
12:48:45	2704	40903	588	643	926	933	929
12:49:00	2703	40916	594	650	928	936	932

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Fire Test Data - continued

12:49:15	2706	40900	601	656	930	941	935
12:49:30	2711	40931	607	663	934	946	940
12:49:45	2768	40886	612	668	936	942	939
12:50:00	2722	40889	618	674	934	942	938
12:50:15	2707	40900	623	679	930	939	935
12:50:30	2702	40879	627	684	933	937	935
12:50:45	2700	40874	632	689	932	938	935
12:51:00	2705	40869	636	693	937	944	941
12:51:15	2720	40890	640	698	939	948	943
12:51:30	2750	40855	644	702	944	946	945
12:51:45	2705	40843	648	706	941	942	941
12:52:00	2686	40848	652	709	934	942	938
12:52:15	2673	40845	654	713	931	947	939
12:52:30	2665	40858	657	717	936	942	939
12:52:45	2675	40862	659	719	938	947	943
12:53:00	2723	40840	662	722	940	949	944
12:53:15	2682	40832	665	725	943	950	946
12:53:30	2673	40831	667	728	943	947	945
12:53:45	2676	40839	670	730	941	950	945
12:54:00	2680	40840	672	732	941	949	945
12:54:15	2677	40827	674	734	948	948	948
12:54:30	2688	40835	676	736	941	953	947
12:54:45	2717	40816	678	738	944	948	946
12:55:00	2685	40809	679	740	937	949	943
12:55:15	2674	40804	681	742	941	953	947
12:55:30	2678	40792	682	743	945	952	949
12:55:45	2684	40797	684	745	937	945	941
12:56:00	2711	40787	685	747	938	945	942
12:56:15	2679	40781	686	748	932	949	940
12:56:30	2676	40782	687	750	922	937	929
12:56:45	2682	40773	688	752	939	946	943
12:57:00	2744	40754	689	753	943	948	946
12:57:15	2687	40765	690	754	945	952	948
12:57:30	2676	40751	691	756	936	946	941
12:57:45	2680	40750	692	757	933	947	940
12:58:00	2688	40753	692	759	945	952	948
12:58:15	2689	40735	693	761	948	952	950
12:58:30	2675	40729	694	762	936	948	942
12:58:45	2674	40726	695	763	924	943	934
12:59:00	2680	40735	695	764	915	940	928
12:59:15	2691	40722	696	766	933	942	937
12:59:30	2701	40721	696	767	916	950	933
12:59:45	2682	40701	697	769	917	947	932

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Fire Test Data - continued

13:00:00	2678	40698	697	771	919	954	936
13:00:15	2679	40693	697	772	922	941	932
13:00:30	2686	40712	697	774	943	938	941
13:00:45	2700	40698	697	776	924	944	934
13:01:00	2759	40700	698	777	912	941	926
13:01:15	2828	40689	699	779	903	942	923
13:01:30	2742	40693	698	781	903	937	920
13:01:45	2710	40694	698	782	904	924	914
13:02:00	2703	40686	698	783	898	934	916
13:02:15	2724	40680	697	785	907	944	926
13:02:30	2729	40693	697	787	904	947	926
13:02:45	2739	40680	697	788	908	950	929
13:03:00	2683	40677	697	789	907	937	922
13:03:15	2678	40675	697	790	912	939	926
13:03:30	2669	40666	698	792	917	937	927
13:03:45	2682	40680	697	792	903	924	914
13:04:00	2696	40639	697	794	903	923	913
13:04:15	2670	40653	697	794	909	936	923
13:04:30	2672	40650	697	796	922	941	932
13:04:45	2679	40643	698	797	922	919	921
13:05:00	2680	40645	698	797	915	941	928
13:05:15	2713	40616	698	798	922	949	936
13:05:30	2698	40624	699	799	910	941	925
13:05:45	2664	40602	699	800	919	944	931
13:06:00	2672	40625	699	801	876	927	902
13:06:15	2684	40626	698	802	892	911	902
13:06:30	2727	40601	697	802	909	922	916
13:06:45	2709	40597	697	802	902	931	916
13:07:00	2667	40586	697	803	903	947	925
13:07:15	2672	40594	697	804	902	931	917
13:07:30	2686	40590	697	804	913	931	922
13:07:45	2732	40564	697	805	919	938	929
13:08:00	2694	40568	698	805	923	949	936
13:08:15	2670	40575	698	806	909	936	923
13:08:30	2676	40551	698	807	911	935	923
13:08:45	2688	40572	697	807	921	946	933
13:09:00	2690	40573	698	807	923	940	931
13:09:15	2683	40559	698	808	912	921	917
13:09:30	2690	40553	698	808	908	931	920
13:09:45	2697	40550	698	808	911	924	918
13:10:00	2674	40562	698	808	910	935	923
13:10:15	2711	40538	698	809	917	942	929
13:10:30	2694	40529	698	809	921	946	933

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Fire Test Data - continued

13:10:45	2678	40532	698	809	907	923	915
13:11:00	2642	39123	697	810	909	932	920
13:11:15	2685	40509	696	809	728	697	713
13:11:30	2681	40479	688	799	540	497	518
13:11:45	2690	40401	659	783	396	238	317
13:12:00	2690	40382	537	744	83	73	78
13:12:15	2688	40348	378	687	83	79	81
13:12:30	2689	40329	257	621	68	85	77
13:12:45	2685	40317	170	523	53	79	66
13:13:00	2742	40297	111	398	51	67	59
13:13:15	2679	40311	75	284	54	53	54
13:13:30	2680	40291	57	198	49	42	45
13:13:45	2684	40290	45	139	39	35	37
13:14:00	2690	40288	38	102	34	33	34
13:14:15	2751	40285	32	79	31	36	33
13:14:30	2696	40278	29	64	29	34	32
13:14:45	2683	40273	27	54	27	33	30
13:15:00	2678	40267	26	48	26	30	28
13:15:15	2679	40270	24	43	24	29	27
13:15:30	2679	40277	23	39	24	27	26
13:15:45	2674	40271	22	36	22	26	24
13:16:00	2691	40270	22	33	22	24	23
13:16:15	2706	40245	22	31	22	23	23
13:16:30	2681	40240	22	29	21	22	21
13:16:45	2675	40264	21	28	21	22	21
13:17:00	2679	40264	21	27	19	22	21
13:17:15	2684	40270	20	26	19	22	20
13:17:30	2690	40265	21	24	18	21	20
13:17:45	2696	40257	20	24	18	21	19
13:18:00	2699	40254	20	24	18	21	19
13:18:15	2704	40268	20	23	18	21	20
13:18:30	2748	40236	20	23	18	21	19
13:18:45	2717	40235	20	23	18	20	19
13:19:00	2703	40234	20	23	18	21	19
13:19:15	2703	40230	20	22	18	19	19
13:19:30	2702	40233	19	22	17	19	18
13:19:45	2702	40239	19	22	18	21	19
13:20:00	2703	40239	19	22	19	21	20
13:20:15	2703	40232	20	22	19	22	21
13:20:30	2703	40230	20	22	19	21	20
13:20:45	2703	40239	21	22	20	22	21
13:21:00	2703	40240	21	22	21	22	21

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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:	0	mls
Average Leak Rate Over 30 Minute Duration:	0.0	ml/min
Allowable Leak Rate:	50	ml/min

Total Through Seat Leakage Collected Over 10 Minute Cool Down:	0	mls
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Total Water Volume Lost Over 40 Minute Burn and Cool Down:	721	mls
Water Collected in System Relief Valve:	350	mls
Calculated External Leakage During 40 Minute Duration:	371	mls
Average Leak Rate Over 40 Minute Duration:	9.3	ml/min
Allowable Leak Rate:	12.5	ml/min

Were the Valve Leakages Below the Allowables?	Yes
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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:	2828	psig
Average Pressure During Burn/Cool Down:	2702	psig
Minimum Pressure During Burn/Cool Down:	2642	psig

Maximum Body Flame Temperature During Burn:	954	deg. C
Average Body Flame Temperature During Burn:	922	deg. C

Maximum Bonnet Flame Temperature During Burn:	948	deg. C
Average Bonnet Flame Temperature During Burn:	912	deg. C

Average of Both Flame Temperatures During Burn:	917	deg. C
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Note

Were Test Conditions Within Compliance?	Yes
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Yarmouth Research and Technology

Post-Burn Seat Test Information

Customer: ValvTechnologies, Inc.

Date: 12/8/2011

Product Code: 1/2 inch Class 1500 Ball Valve

Project Number: PN211088

Test Data

Time	Pressure (psig)	Cal Block Temp - C
13:24:35	2760	24
13:24:50	2752	24
13:25:05	2745	24
13:25:20	2741	24
13:25:35	2738	24
13:25:50	2734	24
13:26:05	2733	24
13:26:20	2732	24
13:26:35	2732	26
13:26:50	2731	26
13:27:05	2732	26
13:27:20	2733	26
13:27:35	2732	26
13:27:50	2733	26
13:28:05	2734	26
13:28:20	2735	26
13:28:35	2735	26
13:28:50	2734	26
13:29:05	2720	27
13:29:20	2759	26
13:29:35	2754	27

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:	10	ml/min
Total External Leakage Collected Over 5 Minute Duration:	6	mls
Average Leak Rate Over 5 Minute Duration:	1.2	ml/min
Allowable Leak Rate:	12.5	ml/min
Was the Valve Leakage Below the Allowable?	Yes	