

Fire Test Report

ANSI/API Standard 607, Sixth Edition, 2010

ISO 10497:2010

Performed for

ValvTechnologies, Inc.

www.valv.com



6 inch Class 300 Metal-Seated Ball Valve
Product Code: V523-RF-FP-B060-004DB-001

Project Number: 211088
Test Date: August 31, 2011

Performed by

YARMOUTH RESEARCH AND TECHNOLOGY, LLC

434 Walnut Hill Road
North Yarmouth, ME 04097 USA
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Yarmouth Research and Technology, LLC

Customer: ValvTechnologies Inc.

Date: 8/31/2011

Specification: ANSI/API Standard 607, Sixth Edition, 2010

ISO 10497: 2010

Product Description: 6 inch Class 300 Full Port Ball Valve

Project Number: PN211088

Comments: Product Code: V523-RF-FP-B060-004DB-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:	8:26:00	
Average Pressure During Burn:	559	psig
Seat Leak Rate During Burn:	73	ml/min
Allowable Seat Leak Rate:	2400	ml/min
External Leak Rate During Burn/Cool Down:	337	ml/min
Allowable External Leak Rate:	800	ml/min
Amount of Time of Avg. Cal. Blocks > 650 deg. C:	18.5	minutes
Were Test Conditions Within Compliance?	Yes	
Were the Valve Leakages Below the Allowables?	Yes	

Post-burn Test

Average Pressure During Test:	29	psig
Seat Leak Rate:	0	ml/min
Allowable Seat Leak Rate:	320	ml/min
Was the Leakage Below the Allowable?	Yes	

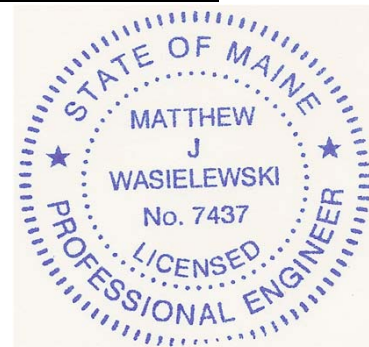
Operational Test

Did Valve Unseat and Open Fully?:	Yes	
Average Pressure During Test:	557	psig
External Leak Rate After Operating:	0	ml/min
Allowable External Leak Rate:	200	ml/min
Was the Leakage Below the Allowable?	Yes	

Valve Pass or Fail the Test Standard?	PASS
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Witnesses

Matthew J. Wasielewski



YARMOUTH RESEARCH AND TECHNOLOGY

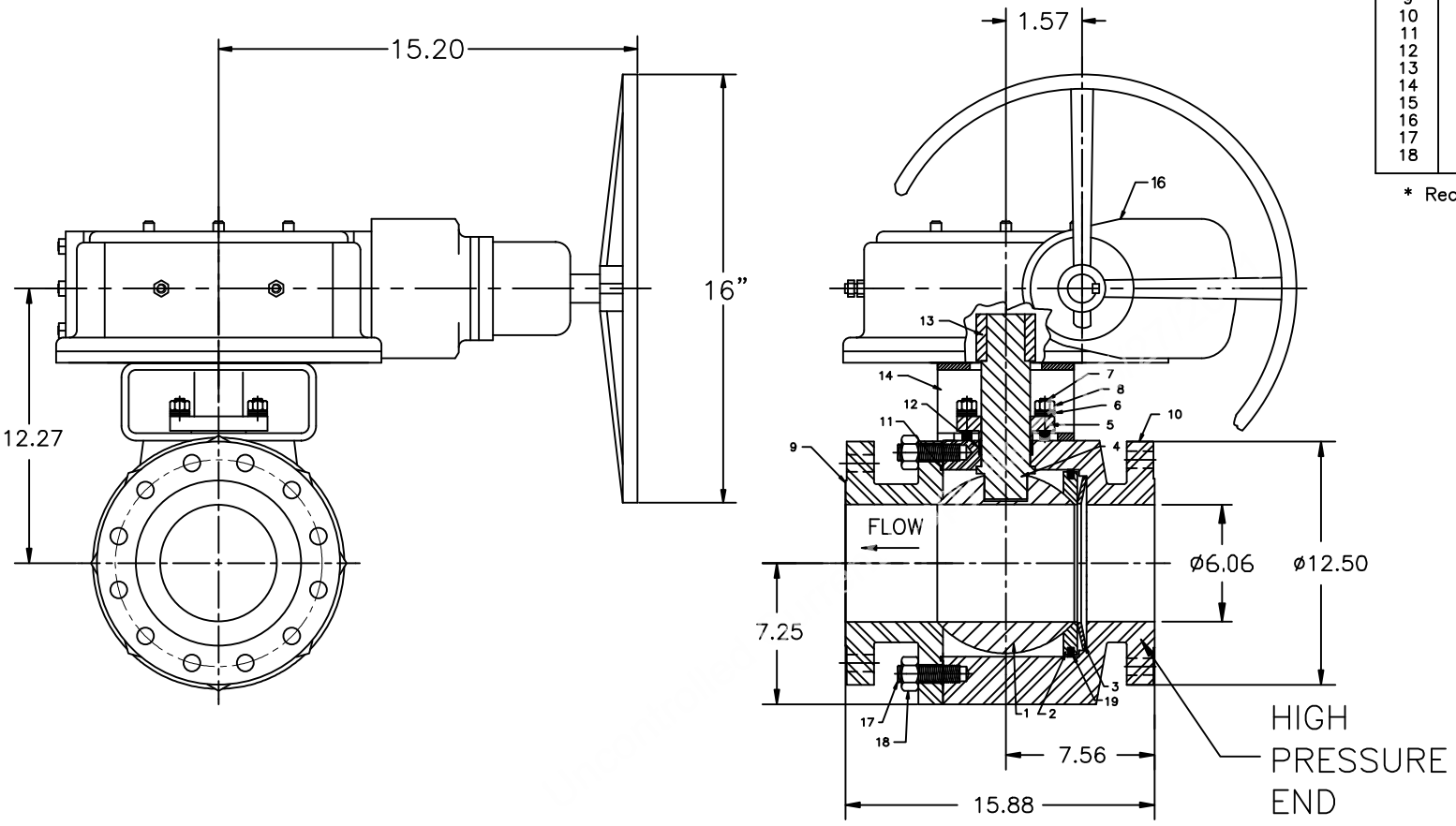
Fire Test Information Sheet

Valve Manufacturer's Name:	ValvTechnologies, Inc.
Valve Manufacturer's Address:	5904 Bingle Road Houston, Texas 77092
Did valve meet all required hydrostatic, leakage and other production pressure tests?	Yes
Valve Product Code:	V523-RF-FP-B060-004DB-001
Valve Description	Size: 6" Pressure Rating: 300# Pressure Rating at 100F: 720 psig Type: Ball Valve Weight: 598 lbs. Reduced or Full Bore: Full Port Body/Bonnet Material: 316H Trim Material: 316SS/QPQ Seat Material: 316SS/QPQ Stem / Body Seal Material: 316SS/QPQ / Grafoil Bolting Material: B8M/8M Is valve considered "Soft-Seated"? No
Valve Markings	Nameplate Information: Size, Pressure Class Casting Markings: N/A
Assembly Drawing Number / Revision / Date of Issue:	110585-2 / Rev. 1 05/25/11
Assembly Drawing sent to Yarmouth:	Yes
If valve is fitted with gearbox, state gearbox manufacturer, model number and mechanical advantage:	Exeeco IW-5R/240 Mech. Adv. 97
If valve is non-symmetric, state direction of flow for test:	See flow direction as indicated on drawing.
For double-seated valves, state maximum allowable cavity pressure:	N/A
Manufacturer's Contact Name /Date:	Becky Kowen / 07/21/11

Customer: ValvTechnologies
 Project Name: Fire Safe Certification for 110204

BILL OF MATERIAL			
ITEM	DESCRIPTION	MATERIAL	QTY.
1	BALL	A182 316H/RAM31	1*
2	UPSTREAM SEAT	A182 316H/QPQ	1*
3	BELLEVILLE SPRING	Inc 718	1*
4	STEM	A182 316H/QPQ	1
5	GLAND	A182 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	A182 316H/RAM31	1*
10	BODY	A182 316H	1
11	BODY GASKET	GRAFOIL	1*
12	GLAND PACKING	316 S.S./GRAFOIL	3*
13	KEY	1018	2
14	MOUNTING BRACKET	STEEL	1
15			
16	OPERATOR	EXECCO IW-5R/240	1
17	BODY STUD	A193 B8M	8
18	BODY NUT	A194 8M	8

* Recommended Spare Parts

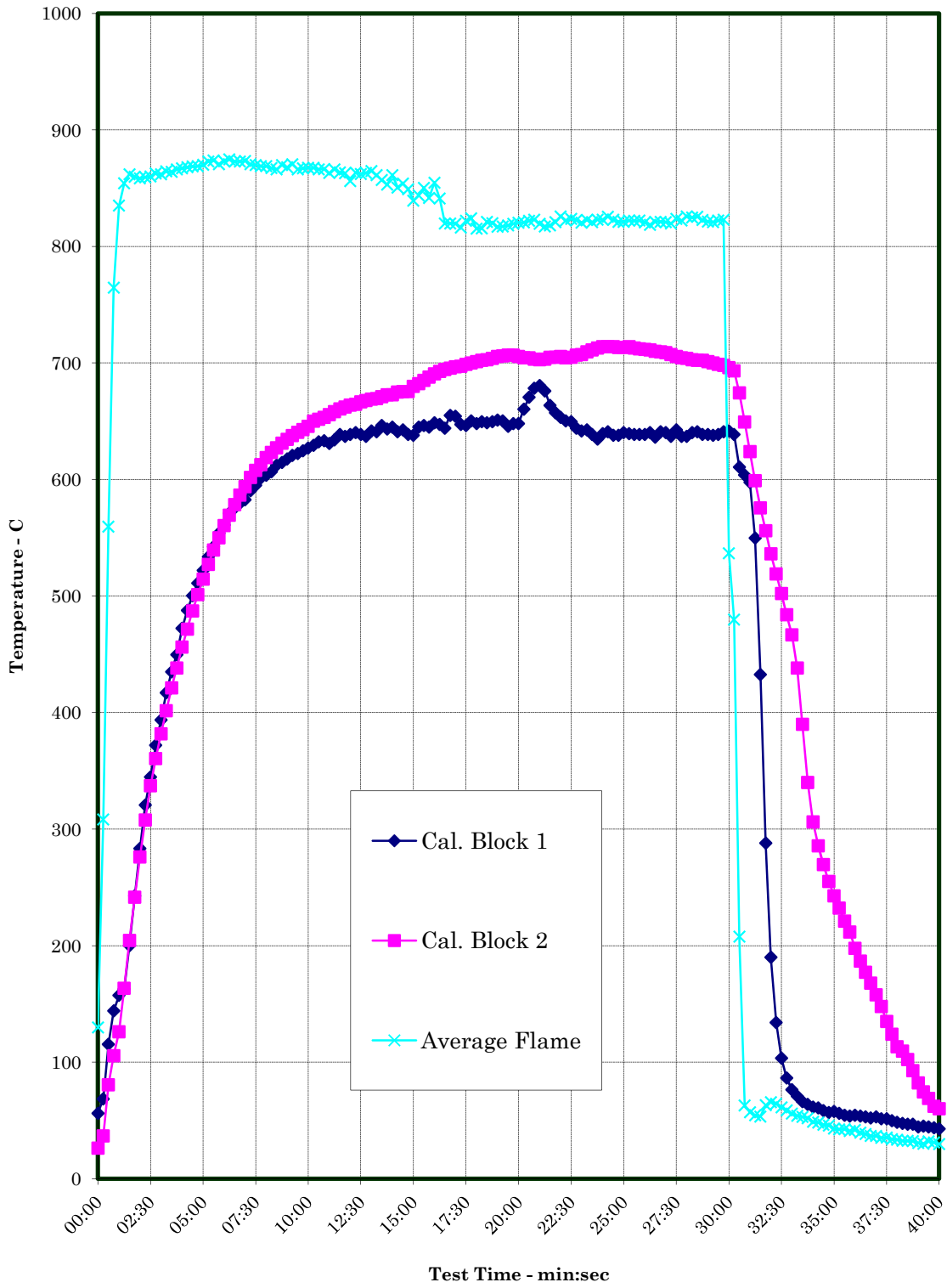


Approx. Valve Weight: 470 lbs
 Approx. Actuator Weight: 128 lbs
 Approx. Total Weight: 598 lbs

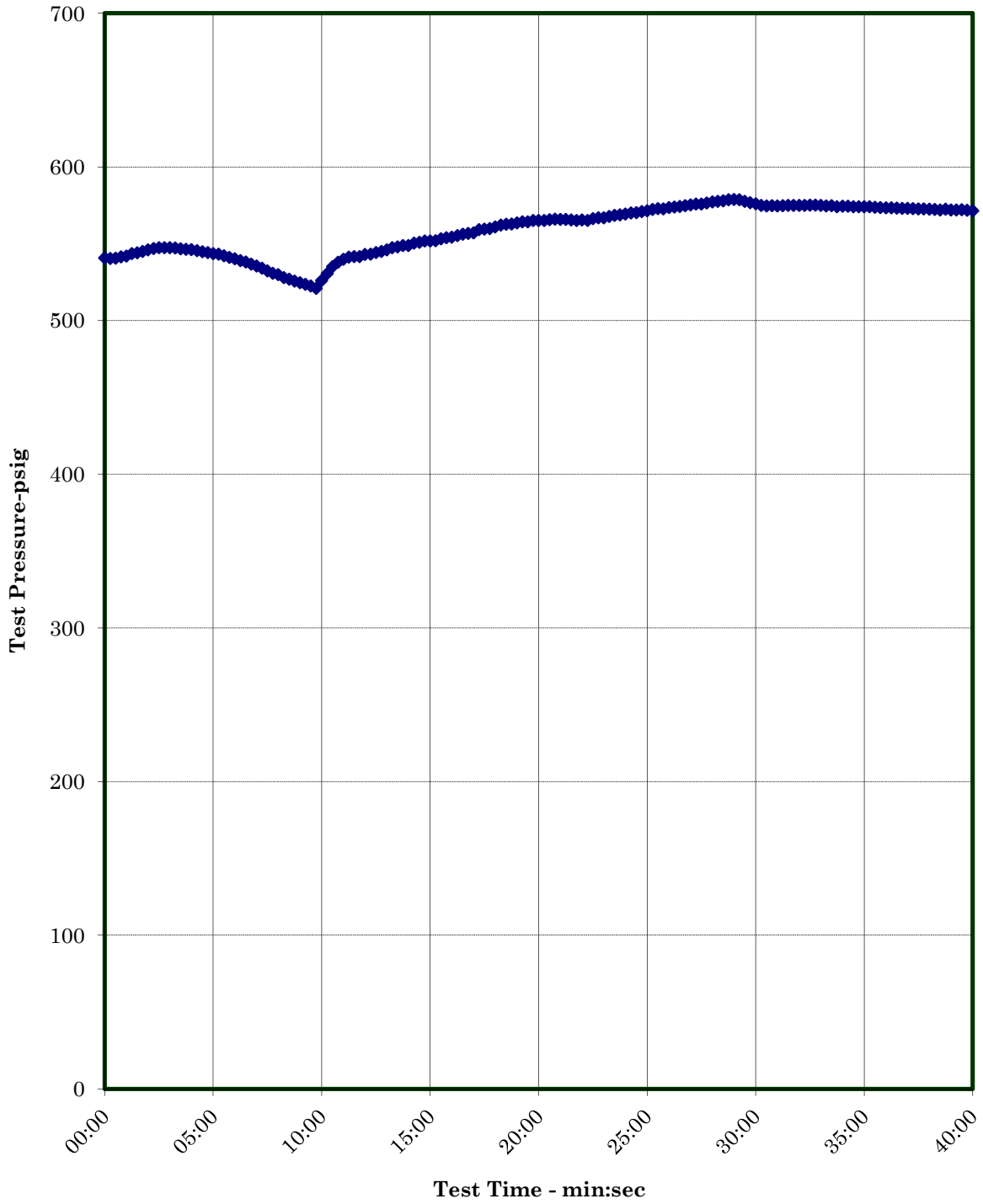
**Release For Customer Approval

REV	DATE	DESCRIPTION	ECN	BY	CHK	APR	DIMENSIONS ARE IN INCHES REMOVE BURRS AND BREAK EDGES UNLESS OTHERWISE SPECIFIED	SCALE NTS MATERIAL	MODEL FILE	SIZE B	VALVTECHNOLOGIES 5904 BINGLE ROAD, HOUSTON TEXAS 77092 PH: (713) 860-0400 FAX: (713) 860-0499	
1	05/25/11	ADDED WEIGHTS	-	PN	RSL	CWF	CORNER RADII - .X= ± .XX= ± .XXX= ± CONCENTRICITY - ANGULAR= ± SURFACE TEXTURE - MIN. INTERNAL FILLETS -	DRAWN BY MS DATE 05/18/11 CHECKED BY RSL DATE 05/18/11 ENGINEER CWF DATE 05/18/11 APPROVED BY CWF DATE 05/18/11			TITLE V523-RF-FP-B060-004DB-001, 300# ANS W/ EXECCO IW-5R/240 W/ 16 INCH HW	
											110585-2	REV. 1
											SH 1 OF 1	1

Temperature verses Time Chart



Pressure verses Time Chart





Test Valve Before Burn

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Test Valve During Burn

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Fire Test Information

Customer: ValvTechnologies Inc.

Date: 8/31/2011

Product Code: 6 inch Class 300 Full Port Ball Valve

Project Number: PN211088

Fire Test Raw Data

Time (EST)	Pressure (psig)	Water Volume (mls)	Cal. Block 1 Temp-C	Cal. Block 2 Temp-C	Avg. Cal Block Temp-C	Bonnet Flame Temp-C	Body Flame Temp-C	Average Flame Temp-C
8:26:00	541	32290	56	26	41	142	117	130
8:26:15	540	32320	69	37	53	229	387	308
8:26:30	541	32331	115	81	98	485	634	559
8:26:45	541	32312	144	106	125	739	791	765
8:27:00	542	32307	157	126	142	864	806	835
8:27:15	544	32337	163	163	163	912	797	854
8:27:30	544	32285	200	204	202	933	791	862
8:27:45	545	32304	243	242	242	938	782	860
8:28:00	546	32306	283	276	280	934	782	858
8:28:15	547	32300	321	308	314	937	782	859
8:28:30	547	32295	345	337	341	941	779	860
8:28:45	547	32307	372	361	366	944	781	863
8:29:00	547	32280	394	382	388	946	778	862
8:29:15	547	32258	417	402	409	949	780	864
8:29:30	547	32260	435	421	428	948	780	864
8:29:45	546	32255	450	438	444	951	782	866
8:30:00	546	32228	472	456	464	951	783	867
8:30:15	545	32224	488	472	480	951	785	868
8:30:30	545	32172	500	487	494	951	786	869
8:30:45	544	32157	511	501	506	952	786	869
8:31:00	544	32095	522	514	518	956	784	870
8:31:15	543	32063	534	527	530	959	786	873
8:31:30	542	31981	542	539	541	963	784	874
8:31:45	541	31935	554	550	552	960	781	871
8:32:00	540	31852	561	561	561	962	784	873
8:32:15	539	31805	571	569	570	961	788	875
8:32:30	538	31725	576	578	577	960	786	873
8:32:45	537	31595	580	587	583	961	784	873
8:33:00	535	31472	583	594	588	962	785	873
8:33:15	534	31335	590	602	596	958	783	871
8:33:30	532	31185	595	608	601	959	781	870
8:33:45	531	31040	601	613	607	962	776	869
8:34:00	530	30924	604	619	611	960	778	869

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Fire Test Data - continued

8:34:15	528	30796	607	623	615	957	777	867
8:34:30	527	30666	612	627	620	955	777	866
8:34:45	526	30538	615	631	623	958	782	870
8:35:00	525	30402	618	634	626	954	782	868
8:35:15	524	30311	621	638	629	957	784	871
8:35:30	523	30173	622	641	631	951	781	866
8:35:45	521	30024	625	643	634	956	778	867
8:36:00	526	29860	627	646	636	958	777	868
8:36:15	531	29690	629	650	640	959	776	868
8:36:30	535	29531	632	652	642	948	784	866
8:36:45	538	29372	633	653	643	952	781	866
8:37:00	540	29207	631	656	643	948	778	863
8:37:15	541	28985	634	658	646	955	777	866
8:37:30	542	28829	639	661	650	951	776	864
8:37:45	542	28604	637	662	650	949	777	863
8:38:00	543	28466	639	664	651	943	769	856
8:38:15	543	28218	640	664	652	951	776	863
8:38:30	544	28090	639	667	653	944	780	862
8:38:45	545	27866	637	668	652	949	777	863
8:39:00	546	27716	642	669	655	952	778	865
8:39:15	547	27575	641	669	655	946	776	861
8:39:30	548	27391	646	671	659	948	766	857
8:39:45	549	27196	643	673	658	943	763	853
8:40:00	549	26987	645	673	659	951	772	861
8:40:15	550	26864	641	675	658	936	765	851
8:40:30	551	26667	643	676	659	939	768	854
8:40:45	552	26466	639	676	657	913	785	849
8:41:00	552	26230	638	680	659	888	790	839
8:41:15	552	26046	645	682	664	896	792	844
8:41:30	553	25888	646	685	666	908	792	850
8:41:45	554	25665	645	688	666	893	790	842
8:42:00	554	25429	649	691	670	913	796	855
8:42:15	555	25342	647	693	670	888	794	841
8:42:30	556	25196	644	694	669	845	794	820
8:42:45	557	24933	655	696	675	841	798	820
8:43:00	557	24837	654	697	675	840	799	819
8:43:15	559	24715	647	697	672	836	797	816
8:43:30	559	24502	646	699	673	845	799	822
8:43:45	560	24368	650	700	675	846	802	824
8:44:00	561	24131	648	701	675	834	797	815
8:44:15	562	23966	650	702	676	838	793	816
8:44:30	563	23911	649	703	676	841	802	821
8:44:45	563	23749	650	704	677	840	800	820

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Fire Test Data - continued

8:45:00	564	23562	651	706	678	838	796	817
8:45:15	564	23371	650	706	678	838	796	817
8:45:30	564	23236	646	707	676	839	797	818
8:45:45	565	22981	648	707	677	838	801	819
8:46:00	565	22898	648	706	677	843	798	820
8:46:15	565	22632	660	704	682	842	799	821
8:46:30	566	22422	671	704	688	844	800	822
8:46:45	566	22260	678	703	691	844	802	823
8:47:00	566	22022	681	703	692	843	796	819
8:47:15	566	21796	676	703	690	838	797	817
8:47:30	565	21601	664	705	684	843	793	818
8:47:45	565	21416	657	705	681	844	798	821
8:48:00	566	21195	653	706	680	846	806	826
8:48:15	565	21055	650	704	677	847	797	822
8:48:30	566	20857	650	705	677	844	803	824
8:48:45	567	20668	644	707	675	844	801	823
8:49:00	567	20535	642	707	675	841	800	820
8:49:15	568	20299	643	709	676	844	801	823
8:49:30	568	20121	639	711	675	842	800	821
8:49:45	569	20034	635	713	674	846	801	823
8:50:00	569	19907	639	714	677	845	801	823
8:50:15	570	19700	641	714	677	848	803	826
8:50:30	570	19641	638	714	676	845	801	823
8:50:45	571	19438	638	713	676	841	801	821
8:51:00	571	19326	640	713	677	843	799	821
8:51:15	572	19210	639	714	677	843	801	822
8:51:30	573	18994	639	713	676	843	801	822
8:51:45	573	18901	639	712	675	842	802	822
8:52:00	574	18791	639	712	675	845	796	821
8:52:15	574	18702	640	711	676	838	799	819
8:52:30	574	18529	636	710	673	842	800	821
8:52:45	575	18394	641	709	675	844	798	821
8:53:00	575	18262	640	709	675	843	798	821
8:53:15	576	18144	637	707	672	842	798	820
8:53:30	576	18052	643	706	674	845	802	824
8:53:45	577	17938	637	704	671	843	801	822
8:54:00	577	17800	637	704	671	848	804	826
8:54:15	578	17693	640	703	672	847	802	825
8:54:30	578	17591	641	702	672	848	803	826
8:54:45	579	17494	639	702	670	845	801	823
8:55:00	579	17347	639	701	670	843	799	821
8:55:15	579	17244	638	700	669	842	800	821
8:55:30	577	17157	639	699	669	843	802	822

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Fire Test Data - continued

8:55:45	577	17017	641	698	669	844	802	823
8:56:00	576	16982	642	696	669	271	803	537
8:56:15	575	16930	639	693	666	250	709	480
8:56:30	575	16914	611	674	643	115	301	208
8:56:45	575	16881	604	649	627	52	74	63
8:57:00	575	16930	598	624	611	47	67	57
8:57:15	575	16896	550	599	574	44	65	54
8:57:30	575	16900	433	576	504	42	65	53
8:57:45	575	16889	288	556	422	39	87	63
8:58:00	575	16916	190	536	363	37	94	66
8:58:15	575	16912	134	519	326	35	93	64
8:58:30	575	16884	104	502	303	33	89	61
8:58:45	575	16870	86	484	285	34	83	59
8:59:00	575	16891	76	467	272	31	81	56
8:59:15	575	16872	71	438	255	31	77	54
8:59:30	575	16866	66	390	228	29	77	53
8:59:45	574	16871	64	340	202	30	74	52
9:00:00	575	16851	62	306	184	27	71	49
9:00:15	574	16904	61	286	173	27	69	48
9:00:30	574	16806	58	269	164	27	66	46
9:00:45	574	16821	57	255	156	27	64	46
9:01:00	574	16806	58	243	150	24	62	43
9:01:15	574	16886	56	232	144	25	59	42
9:01:30	574	16847	55	221	138	26	59	43
9:01:45	574	16760	54	212	133	24	57	41
9:02:00	573	16855	55	198	126	27	57	42
9:02:15	573	16795	54	187	120	24	54	39
9:02:30	573	16736	53	177	115	24	53	38
9:02:45	573	16766	52	168	110	23	51	37
9:03:00	573	16786	53	158	105	23	51	37
9:03:15	573	16793	51	148	100	22	48	35
9:03:30	573	16685	51	135	93	23	48	35
9:03:45	573	16725	50	124	87	22	46	34
9:04:00	573	16733	48	113	81	22	45	33
9:04:15	572	16708	48	109	79	21	44	33
9:04:30	572	16726	47	102	75	22	43	33
9:04:45	572	16717	47	93	70	22	43	32
9:05:00	572	16664	44	82	63	20	41	31
9:05:15	572	16652	45	74	60	19	41	30
9:05:30	572	16664	44	69	57	23	41	32
9:05:45	572	16667	44	62	53	22	40	31
9:06:00	571	16650	43	60	51	21	39	30

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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:	2180	mls
Average Leak Rate Over 30 Minute Duration:	73	ml/min
Allowable Leak Rate:	2400	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:	15640	mls
Water Collected in System Relief Valve:	0	mls
Calculated External Leakage During 40 Minute Duration:	13460	mls
Average Leak Rate Over 40 Minute Duration:	337	ml/min
Allowable Leak Rate:	800	ml/min

Were the Valve Leakages Below the Allowables?	Yes
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Yarmouth Research and Technology, LLC

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:	579	psig
Average Pressure During Burn/Cool Down:	559	psig
Minimum Pressure During Burn/Cool Down:	521	psig
<hr/>		
Amount of Time of Avg. Cal Block > 650 deg.C:	18.5	minutes
Minimum Allowable Time at Temperature:	15.0	minutes
Maximum Avg Cal Block Temperature:	692	deg. C
Average Cal Block Temperature:	503	deg. C
Lowest Avg Cal. Block Temperature:	41	deg. C
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Maximum Body Flame Temperature During Burn:	806	deg. C
Average Body Flame Temperature During Burn:	781	deg. C
<hr/>		
Maximum Bonnet Flame Temperature During Burn:	963	deg. C
Average Bonnet Flame Temperature During Burn:	870	deg. C
<hr/>		
Average of Both Flame Temperatures During Burn:	825	deg. C

Note

Were Test Conditions Within Compliance?	Yes
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Yarmouth Research and Technology, LLC

Post-Burn Seat Test Information

Customer: ValvTechnologies Inc.

Date: 8/31/2011

Product Code: 6 inch Class 300 Full Port Ball Valve

Project Number: PN211088

Test Data

Time	Pressure (psig)	Cal Block Temp - C
10:24:15	30	33
10:24:30	30	33
10:24:45	30	33
10:25:00	29	33
10:25:15	29	33
10:25:30	29	33
10:25:45	29	33
10:26:00	29	33
10:26:15	29	33
10:26:30	29	33
10:26:45	29	33
10:27:00	28	33
10:27:15	29	33
10:27:30	30	33
10:27:45	30	33
10:28:00	30	33
10:28:15	30	33
10:28:30	30	33
10:28:45	29	33
10:29:00	29	33
10:29:15	30	33

Total Seat Leakage Collected Over 5 Minute Duration:	0	mls
Average Leak Rate Over 5 Minute Duration:	0	ml/min
Allowable Leak Rate:	320	ml/min

Was the Valve Leakage Below the Allowable?	Yes
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Yarmouth Research and Technology, LLC

Operational Test Information

Customer: ValvTechnologies Inc.

Date: 8/31/2011

Product Code: 6 inch Class 300 Full Port Ball Valve

Project Number: PN211088

Test Data

Time	Pressure (psig)	Cal Block Temp - C
10:33:12	558	33
10:33:27	558	33
10:33:42	558	33
10:33:57	558	33
10:34:12	558	33
10:34:27	558	33
10:34:42	558	33
10:34:57	558	33
10:35:12	558	33
10:35:27	557	33
10:35:42	557	33
10:35:57	558	33
10:36:12	557	33
10:36:27	557	33
10:36:42	557	33
10:36:57	557	33
10:37:12	557	33
10:37:27	557	33
10:37:42	557	33
10:37:57	557	33
10:38:12	557	33

Leakages were collected manually.

Total External Leakage Collected Over 5 Minute Duration:	0	mls
Average Leak Rate Over 5 Minute Duration:	0	ml/min
Allowable Leak Rate:	200	ml/min

Was the Valve Leakage Below the Allowable?	Yes
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