

Fire Test Report

ANSI/API Standard 607, 6th Edition, 2010

ISO 10497: 2010

Performed for

Valvtechnologies, Inc.

www.valv.com



4 inch Class 150 Ball Valve
V3C4-RF-FP-B040-012EM-001

Project Number: 213120

Test Date: July 3, 2013



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: 7/3/2013

Specification: ANSI/API Standard 607, 6th Edition, 2010

ISO 10497: 2010

Product Description: 4 inch Class 150 Ball Valve

Project Number: PN213120

Product Code: V3C4-RF-FP-B040-012EM-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:	14:19:00	
Average Pressure During Burn:	214	psig
Seat Leak Rate During Burn:	60	ml/min
Allowable Seat Leak Rate:	1600	ml/min
External Leak Rate During Burn/Cool Down:	0	ml/min
Allowable External Leak Rate:	400	ml/min
Amount of Time of Avg. Cal. Blocks > 650 deg. C:	22.0	minutes
Were Test Conditions Within Compliance?	Yes	
Were the Valve Leakages Below the Allowables?	Yes	

Post-burn Test

Average Pressure During Test:	30	psig
Seat Leak Rate:	0	ml/min
Allowable Seat Leak Rate:	160	ml/min
Was the Leakage Below the Allowable?	Yes	

Operational Test

Did Valve Unseat and Open Fully?:	Yes	
Average Pressure During Test:	214	psig
External Leak Rate After Operating:	92	ml/min
Allowable External Leak Rate:	100	ml/min

Was the Leakage Below the Allowable? Yes

Valve Pass or Fail the Test Standard? PASS

Witnesses

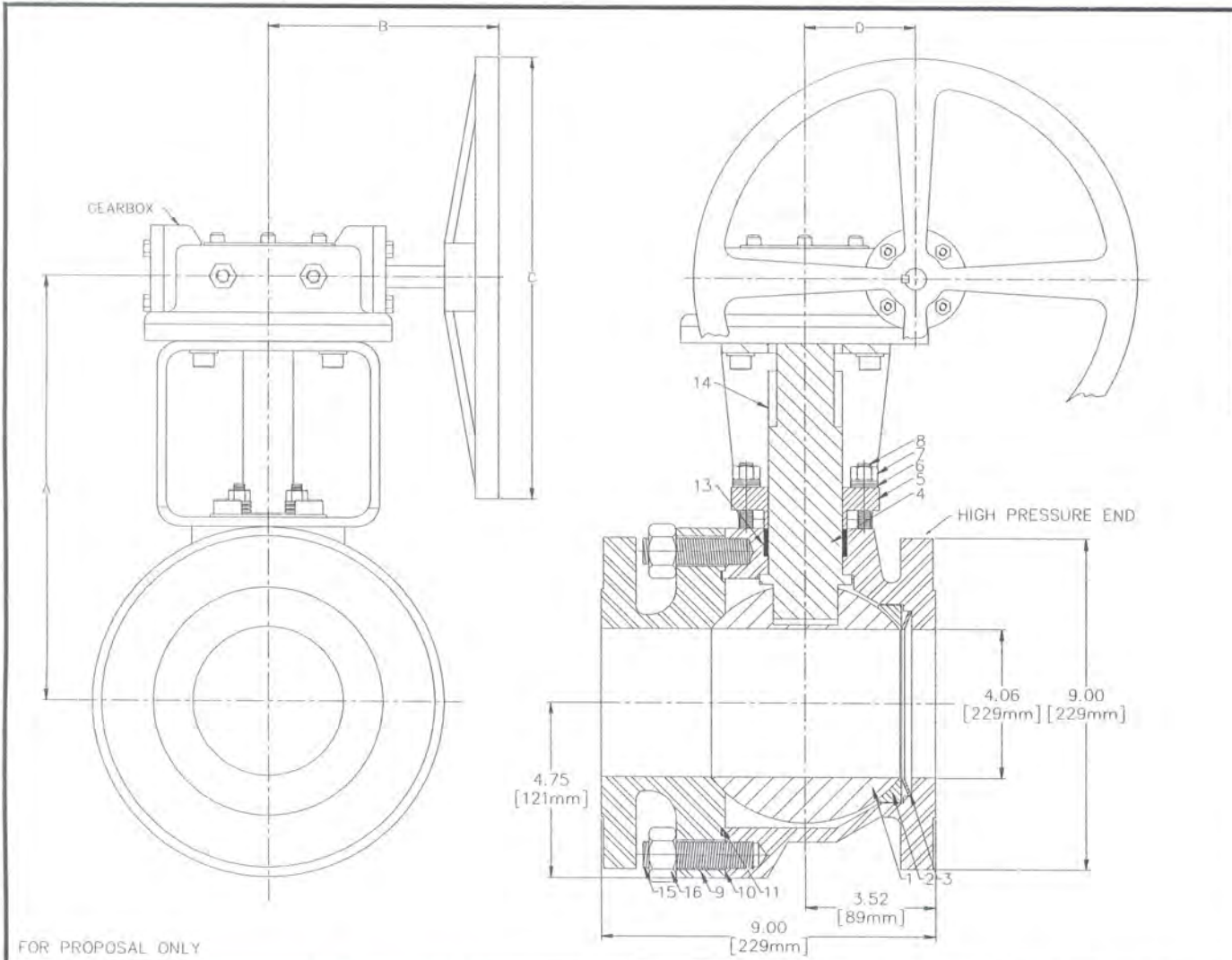
Matthew J. Wasielewski



YARMOUTH RESEARCH AND TECHNOLOGY

Fire Test Information Sheet

Valve Manufacturer's Name:	ValvTechnologies, Inc.
Valve Manufacturer's Address:	5904 Bingle Road Houston,Tx 77092
Did valve meet all required hydrostatic, leakage and other production pressure tests?	Yes
Valve Product Code:	V3C4-RF-FP-B040-012EM-001
Valve Description	Size: 4" Pressure Rating: 150# Pressure Rating at 100F: 285 psig Type: Ball Valve Weight: 194 lbs. Reduced or Full Bore: Full Port Body/Bonnet Material: WCB Trim Material: 316SS Seat Material: 316SS/QPQ Stem / Body Seal Material: 316SS/QPQ / Grafoil Bolting Material: B7/2H Is valve considered "Soft-Seated"? No
Valve Markings	Nameplate Information: Size, Pressure Class Casting Markings: N/A
Assembly Drawing Number / Revision / Date of Issue:	130660-001 / Rev. 0 04/26/2013
Assembly Drawing sent to Yarmouth:	Yes
If valve is fitted with gearbox, state gearbox manufacturer, model number and mechanical advantage:	Exeeco IW-4 70/1 Mech. Adv. 23
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:	German Colin / 713-860-0428

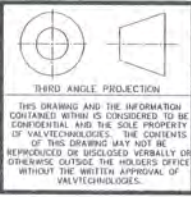


BILL OF MATERIALS		
ITM	DESCRIPTION	MATERIALS
1	RAI	
2	SEAL	
3	SPRING	
4	STEM	
5	GLAND	
7	GLAND NUT	
8	GLAND STUD	
9	ENDCAP	
10	BODY	
11	BODY SEAL	
13	PACKING	
15	BODY STUD	
19	BODY NUT	

GEARBOX	IW-3/40	IW-4/70
DIMENSION A	11.52 [293mm]	11.72 [298mm]
DIMENSION B	7.22 [183mm]	8.17 [208mm]
DIMENSION C	12.00 [305mm]	16.00 [406mm]
DIMENSION D	3.00 [76mm]	4.00 [102mm]
TOTAL WEIGHT	161lbs [73kg]	172lbs [78kg]

FOR PROPOSAL ONLY

APPROVED	
DATE	
BY	
FOR PROPOSAL ONLY	
REVISIONS	
NO. 1	
DATE	
BY	



REV	DATE	DESCRIPTION	ECN	BY	CHK	APR

DIMENSIONS ARE IN INCHES
REMOVE BURRS AND BREAK EDGES
UNLESS OTHERWISE SPECIFIED

CORNER RADII .03 MAX
X= ±.030
XX= ±.015
XXX= ±.005
CONCENTRICITY .010
ANGULAR= ±1/2"
SURFACE TEXTURE 125 RMS
MIN. INTERNAL FILLETS 015

SCALE	NTS	MODEL FILE	SIZE
MATERIAL			B
COATING			
DRAWN BY	RJL	DATE	10/05/10
CHECKED BY	RJL	DATE	10/05/10
ENGINEER		DATE	
APPROVED BY		DATE	

VALVETECHNOLOGIES

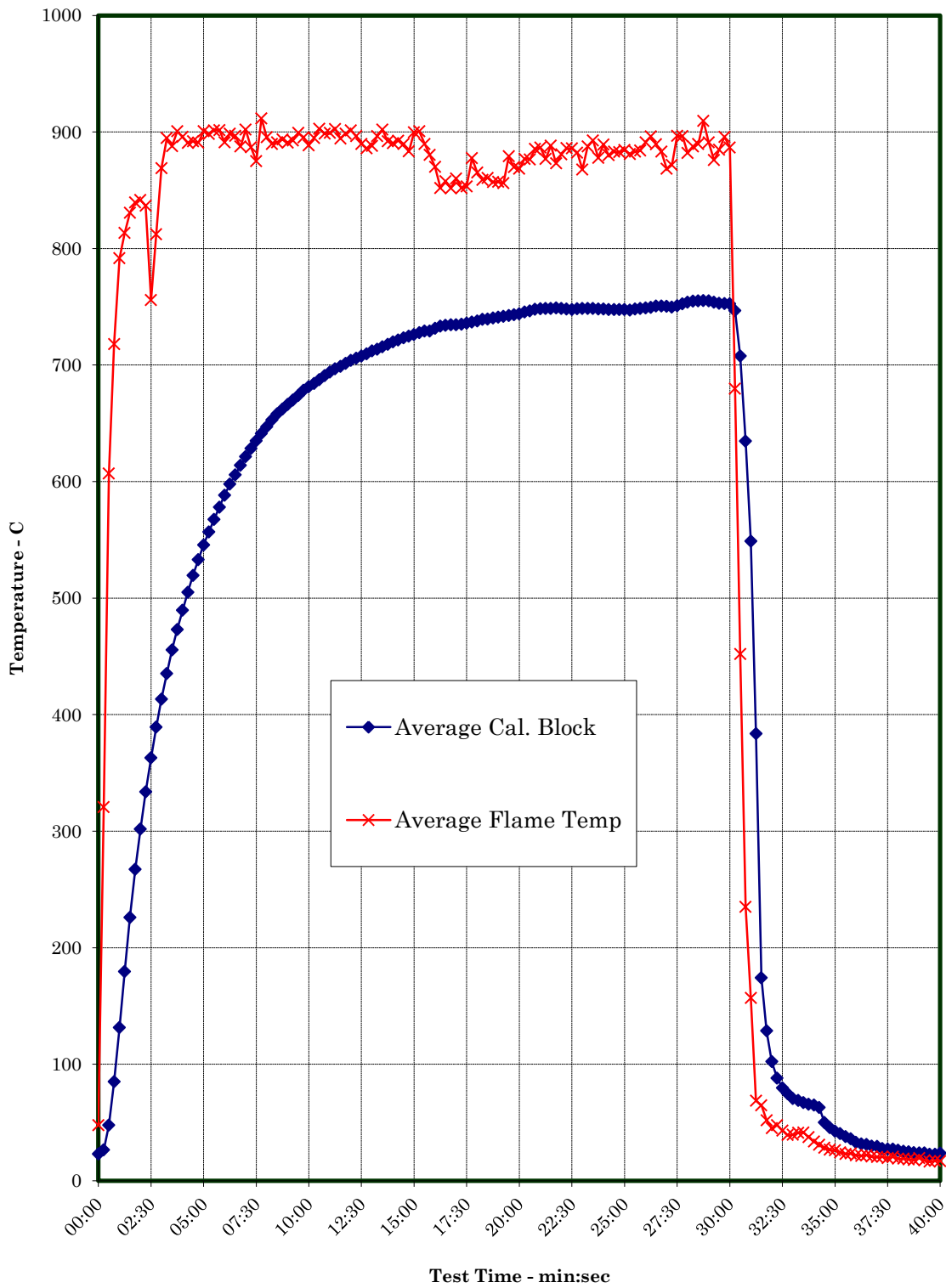
5904 BINGLE ROAD, HOUSTON, TEXAS 77052
PH: (713) 860-0400 FAX: (713) 860-0499

4" ANSI 150#
RAISED FACE FULL PORT
GEARBOX

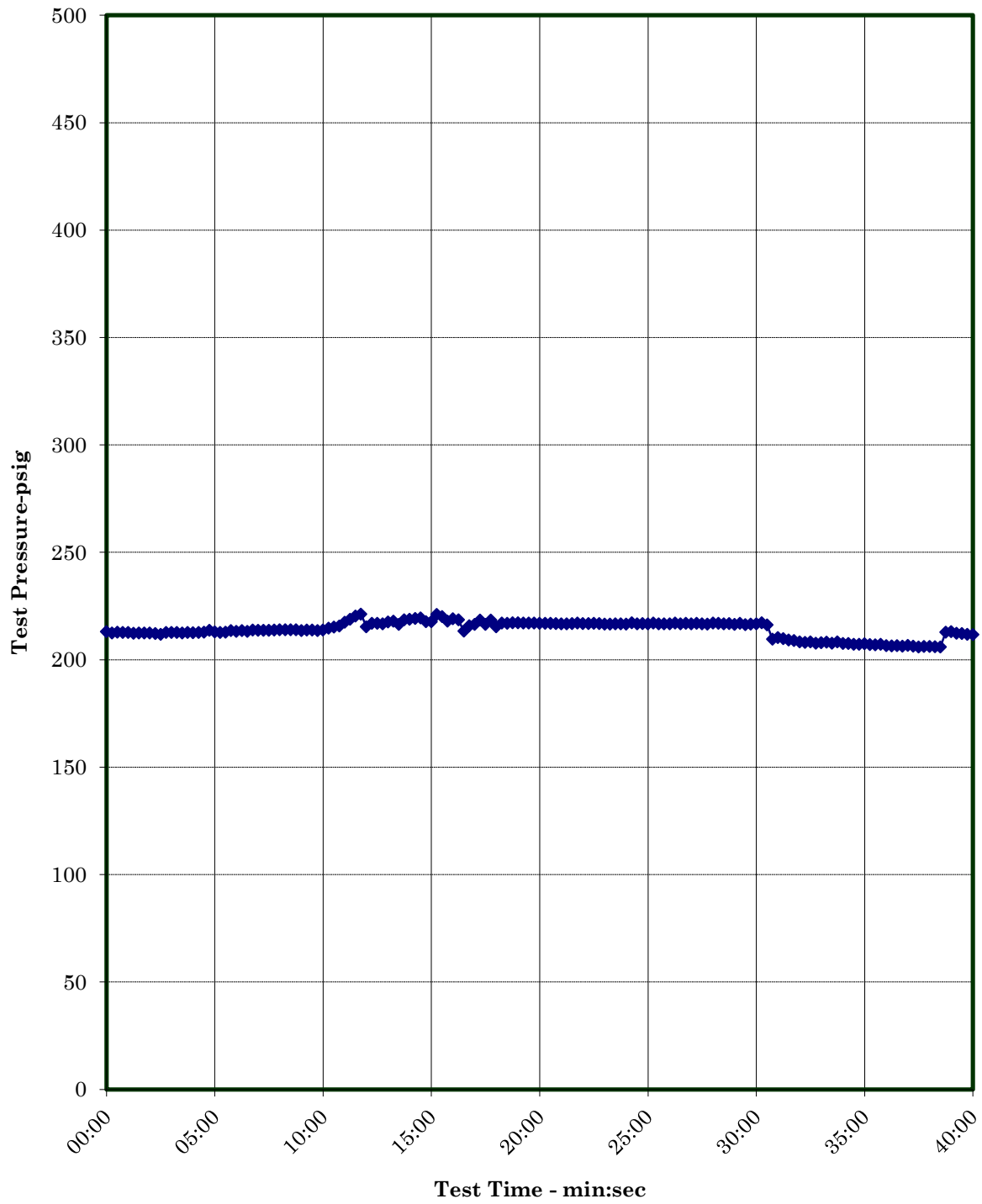
V2-3-RF-FP-G-040

REV 1 OF 1

Temperature verses Time Chart



Pressure verses Time Chart



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Test Valve Prior to Burn

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Test Valve during Burn

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Fire Test Information

Customer: Valvtechnologies, Inc.

Date: 7/3/2013

Product Code: 4 inch Class 150 Ball Valve

Project Number: PN213120

Fire Test Raw Data

Time (EST)	Pressure (psig)	Water Volume (mls)	Bonnet Temp-C	Body Temp-C	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
14:19:00	213	39354	21	19	23	23	23	47	49	48
14:19:15	212	39374	20	19	24	29	26	403	238	321
14:19:30	213	39369	19	19	34	61	48	719	495	607
14:19:45	213	39331	21	19	56	114	85	802	634	718
14:20:00	213	39353	21	19	86	177	131	818	766	792
14:20:15	212	39309	21	19	124	235	179	829	797	813
14:20:30	212	39342	20	20	162	290	226	829	832	831
14:20:45	212	39333	21	19	200	334	267	824	855	839
14:21:00	212	39317	21	20	234	369	302	829	854	842
14:21:15	212	39403	21	19	270	397	334	816	857	837
14:21:30	212	39393	21	19	303	422	363	667	844	756
14:21:45	213	39331	21	20	333	445	389	783	841	812
14:22:00	213	39343	21	20	362	465	413	887	851	869
14:22:15	213	39399	21	20	387	483	435	906	884	895
14:22:30	212	39401	21	20	411	500	456	914	861	888
14:22:45	213	39364	21	20	433	513	473	923	878	901
14:23:00	213	39398	21	19	453	526	489	923	869	896
14:23:15	213	39404	21	20	471	539	505	912	869	891
14:23:30	213	39378	21	19	488	551	519	911	873	892
14:23:45	214	39400	20	20	504	562	533	914	867	891
14:24:00	213	39400	21	19	519	572	546	921	881	901
14:24:15	213	39433	21	20	532	581	557	928	868	898
14:24:30	213	39431	21	19	545	590	568	927	876	901
14:24:45	214	39452	21	20	557	599	578	924	879	902
14:25:00	213	39492	21	19	568	609	588	927	856	891
14:25:15	214	39535	21	19	579	617	598	930	867	899
14:25:30	213	39469	21	20	588	623	606	934	859	897
14:25:45	214	39448	21	20	598	630	614	929	846	888
14:26:00	214	39446	21	20	607	636	621	943	861	902
14:26:15	214	39506	21	20	614	642	628	941	833	887
14:26:30	214	39523	20	20	623	647	635	928	822	875
14:26:45	214	39547	21	20	630	652	641	940	883	912
14:27:00	214	39536	21	20	636	658	647	942	849	896

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Fire Test Data - continued

14:27:15	214	39544	21	20	642	663	653	939	840	890
14:27:30	214	39542	21	20	649	667	658	941	842	891
14:27:45	214	39526	21	20	654	670	662	945	842	894
14:28:00	214	39505	21	20	659	673	666	941	841	891
14:28:15	214	39525	21	19	665	675	670	937	849	893
14:28:30	214	39552	21	20	669	679	674	944	854	899
14:28:45	214	39547	21	20	674	683	678	948	842	895
14:29:00	214	39563	21	20	678	685	681	944	833	889
14:29:15	215	39630	21	20	681	687	684	943	846	895
14:29:30	215	39676	21	20	685	690	688	950	856	903
14:29:45	216	39753	21	20	688	693	691	947	851	899
14:30:00	217	39906	21	19	692	696	694	948	851	899
14:30:15	219	40097	21	20	695	698	697	949	856	903
14:30:30	220	40295	21	20	697	701	699	947	842	894
14:30:45	221	40430	21	20	701	702	701	948	849	899
14:31:00	215	40034	21	20	703	704	704	953	850	901
14:31:15	217	41300	21	20	706	706	706	949	843	896
14:31:30	217	41249	21	20	708	707	708	949	831	890
14:31:45	217	39545	21	20	710	709	709	947	824	886
14:32:00	218	41528	21	20	713	711	712	947	829	888
14:32:15	218	40524	21	20	715	712	714	951	842	896
14:32:30	216	39835	21	20	717	714	716	945	859	902
14:32:45	219	41770	21	20	719	716	718	952	832	892
14:33:00	219	41351	21	20	721	718	720	951	829	890
14:33:15	219	40910	21	20	723	720	721	951	834	893
14:33:30	219	42126	21	20	725	722	723	948	831	890
14:33:45	218	39397	21	20	726	723	725	941	826	883
14:34:00	218	40741	21	20	727	725	726	951	848	900
14:34:15	221	42310	21	20	729	727	728	947	854	901
14:34:30	220	39660	21	20	730	728	729	949	830	890
14:34:45	218	39244	21	20	731	728	729	933	828	880
14:35:00	219	39708	21	20	732	731	731	930	810	870
14:35:15	219	39209	21	20	733	733	733	921	783	852
14:35:30	213	38930	21	20	734	734	734	921	795	858
14:35:45	216	39393	21	20	734	735	734	923	780	852
14:36:00	216	41640	21	20	733	736	734	936	784	860
14:36:15	218	42698	21	20	733	737	735	938	766	852
14:36:30	216	42260	21	20	733	739	736	926	781	853
14:36:45	218	40994	21	20	733	741	737	933	822	878
14:37:00	215	38860	21	20	734	742	738	935	796	865
14:37:15	217	40657	21	20	735	743	739	932	786	859
14:37:30	217	41124	21	20	734	744	739	922	799	861
14:37:45	217	41084	21	20	734	747	740	933	781	857

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Fire Test Data - continued

14:38:00	217	41075	21	21	734	748	741	933	781	857
14:38:15	217	41074	21	20	734	749	742	937	775	856
14:38:30	217	41064	21	20	734	751	743	939	819	879
14:38:45	217	41043	21	20	734	752	743	938	802	870
14:39:00	217	41050	21	20	735	753	744	946	791	868
14:39:15	217	41050	21	20	737	754	746	944	809	877
14:39:30	217	41057	21	20	737	756	746	942	811	876
14:39:45	217	41033	21	20	739	757	748	945	826	886
14:40:00	217	41046	21	20	739	757	748	937	836	887
14:40:15	217	41060	22	20	739	758	749	928	826	877
14:40:30	217	41049	21	20	738	759	749	927	849	888
14:40:45	217	41032	21	21	737	761	749	922	824	873
14:41:00	217	41001	21	20	735	762	749	923	838	881
14:41:15	217	41042	21	20	733	763	748	941	832	886
14:41:30	217	41055	21	20	733	762	748	937	834	886
14:41:45	217	41007	21	20	733	763	748	939	826	882
14:42:00	217	40986	21	20	733	764	749	940	796	868
14:42:15	217	40991	21	20	733	764	749	926	849	888
14:42:30	217	41008	21	20	732	766	749	936	850	893
14:42:45	217	41033	22	19	731	766	748	941	814	878
14:43:00	217	41069	21	20	729	767	748	942	836	889
14:43:15	217	41041	22	20	728	767	748	933	827	880
14:43:30	217	40951	21	20	727	768	748	932	834	883
14:43:45	217	41027	21	20	726	769	748	934	832	883
14:44:00	217	41017	21	20	726	769	748	949	820	884
14:44:15	217	41033	22	20	726	768	747	958	804	881
14:44:30	217	41025	21	20	728	768	748	954	812	883
14:44:45	217	41044	21	20	729	768	749	952	817	884
14:45:00	217	41031	21	20	729	768	749	943	839	891
14:45:15	217	41058	21	20	730	769	749	954	838	896
14:45:30	217	41009	21	20	731	770	751	959	819	889
14:45:45	217	41050	21	20	733	768	751	952	814	883
14:46:00	217	41037	21	20	734	767	750	952	785	868
14:46:15	217	41045	21	20	734	766	750	959	784	872
14:46:30	217	41045	21	20	735	767	751	956	837	897
14:46:45	217	41031	21	19	736	769	753	957	836	896
14:47:00	217	41042	21	20	736	772	754	957	807	882
14:47:15	217	41021	21	20	736	773	755	952	823	888
14:47:30	217	40997	21	20	735	775	755	956	824	890
14:47:45	217	41057	21	20	733	777	755	956	863	909
14:48:00	216	41013	21	20	732	778	755	947	835	891
14:48:15	217	41003	21	21	731	777	754	951	801	876
14:48:30	216	41038	21	20	729	777	753	949	821	885

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Fire Test Data - continued

14:48:45	217	41034	21	20	728	778	753	956	836	896
14:49:00	217	41054	21	20	727	778	753	958	816	887
14:49:15	217	42148	22	20	726	767	747	729	630	680
14:49:30	216	40455	22	20	713	703	708	422	482	452
14:49:45	210	40252	21	20	648	621	635	81	389	235
14:50:00	210	40531	21	19	552	546	549	66	248	157
14:50:15	210	40185	21	19	391	377	384	71	67	69
14:50:30	209	40133	21	19	244	104	174	66	63	65
14:50:45	209	40072	21	19	153	104	129	41	63	52
14:51:00	208	40096	21	19	101	104	102	29	61	45
14:51:15	208	40032	20	19	72	104	88	36	60	48
14:51:30	208	40008	21	19	56	104	80	29	57	43
14:51:45	208	39959	20	19	46	104	75	25	53	39
14:52:00	208	39942	20	18	38	103	71	23	56	39
14:52:15	208	39906	19	18	35	103	69	24	58	41
14:52:30	208	39907	19	19	31	103	67	22	61	41
14:52:45	208	39873	19	19	29	102	66	23	52	38
14:53:00	208	39846	19	19	29	101	65	21	47	34
14:53:15	208	39837	19	18	26	99	63	21	41	31
14:53:30	207	39820	19	18	28	72	50	22	35	28
14:53:45	207	39825	19	18	27	64	46	20	33	27
14:54:00	207	39815	19	19	26	59	43	19	33	26
14:54:15	207	39798	19	18	27	54	41	18	31	24
14:54:30	207	39747	19	18	27	49	38	18	28	23
14:54:45	207	39772	19	19	27	46	36	19	28	23
14:55:00	207	39727	20	18	24	42	33	17	26	22
14:55:15	206	39745	20	19	23	40	32	17	26	21
14:55:30	207	39724	19	18	24	38	31	18	26	22
14:55:45	206	39719	19	19	23	37	30	17	24	21
14:56:00	207	39746	19	18	23	36	29	16	24	20
14:56:15	206	39706	19	18	21	34	28	17	24	21
14:56:30	206	39686	19	19	22	33	27	16	23	19
14:56:45	206	39681	19	18	22	33	27	18	23	21
14:57:00	206	39652	19	18	21	32	26	15	23	19
14:57:15	206	39618	19	19	19	31	25	16	22	19
14:57:30	206	39638	20	18	19	30	25	15	22	18
14:57:45	213	39297	19	18	19	29	24	14	21	18
14:58:00	213	39598	19	19	18	29	24	17	22	19
14:58:15	212	39639	20	19	19	28	24	14	21	18
14:58:30	212	39652	19	18	18	28	23	13	20	16
14:58:45	212	39631	20	18	18	27	23	14	21	17
14:59:00	212	39602	20	21	20	27	24	14	20	17

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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:	1785	mls
Average Leak Rate Over 30 Minute Duration:	60	ml/min
Allowable Leak Rate:	1600	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:	-248	mls
Water Collected in System Relief Valve:	0	mls
Calculated External Leakage During 40 Minute Duration:	-2033	mls
Average Leak Rate Over 40 Minute Duration:	0	ml/min
Allowable Leak Rate:	400	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:	221.2	psig
Average Pressure During Burn/Cool Down:	214.0	psig
Minimum Pressure During Burn/Cool Down:	205.9	psig
<hr/>		
Amount of Time of Avg. Cal Block > 650 deg.C:	22.0	minutes
Minimum Allowable Time at Temperature:	15.0	minutes
Maximum Avg Cal Block Temperature:	22	deg. C
Average Cal Block Temperature:	21	deg. C
Lowest Avg Cal. Block Temperature:	19	deg. C
<hr/>		
Maximum Body Flame Temperature During Burn:	884	deg. C
Average Body Flame Temperature During Burn:	818	deg. C
<hr/>		
Maximum Bonnet Flame Temperature During Burn:	959	deg. C
Average Bonnet Flame Temperature During Burn:	917	deg. C
<hr/>		
Average of Both Flame Temperatures During Burn:	867	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: 7/3/2013

Product Code: 4 inch Class 150 Ball Valve

Project Number: PN213120

Test Data

Time	Pressure (psig)	Cal Block Temp - C
15:07:15	30	26
15:07:30	30	27
15:07:45	30	27
15:08:00	30	26
15:08:15	30	27
15:08:30	30	27
15:08:45	30	27
15:09:00	30	28
15:09:15	30	28
15:09:30	30	27
15:09:45	30	27
15:10:00	30	27
15:10:15	30	28
15:10:30	29	27
15:10:45	30	28
15:11:00	30	27
15:11:15	30	28
15:11:30	30	27
15:11:45	30	28
15:12:00	30	27
15:12:15	30	27

Total Seat Leakage Collected Over 5 Minute Duration:	0	mls
Average Leak Rate Over 5 Minute Duration:	0	ml/min
Allowable Leak Rate:	160	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: 7/3/2013

Product Code: 4 inch Class 150 Ball Valve

Project Number: PN213120

Test Data

Time	Pressure (psig)	Cal Block Temp - C
15:19:33	214	28
15:19:48	214	28
15:20:03	214	28
15:20:18	215	28
15:20:33	215	28
15:20:48	215	29
15:21:03	212	29
15:21:18	216	29
15:21:33	213	28
15:21:48	217	28
15:22:03	217	28
15:22:33	212	28
15:22:48	213	29
15:23:03	213	29
15:23:18	212	28
15:23:33	213	28
15:23:48	212	28
15:24:03	212	29
15:24:18	213	29
15:24:33	217	29

Leakages were collected manually.

Total External Leakage Collected Over 5 Minute Duration:	460	mls
Average Leak Rate Over 5 Minute Duration:	92	ml/min
Allowable Leak Rate:	100	ml/min

Was the Valve Leakage Below the Allowable?	Yes
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