Fire Test Report

ANSI/API Standard 607, 6th Edition, 2010
ISO 10497: 2010

Performed for

ValvTechnologies, Inc.

www.valv.com

8 inch Class 300 V-Series Ball Valve
Product Code: V5C4-RF-FP-B080-003AA-001

Project Number: 214349
Test Date: February 10, 2015

Performed by

YARMOUTH RESEARCH AND TECHNOLOGY, LLC

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

Customer:	ValvTechnologies, Inc.		
Specification:	ANSI/API Standard 607, 6th Edition, 2010	**Date:**	2/10/2015
	ISO 10497: 2010		
Product Description:	8 inch Class 300 V-Series Ball Valve		
Project Number:	214349		
Product Code:	V5C4-RF-FP-B080-003AA-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:	13:54:00	
Average Pressure During Burn:	555	psig
Seat Leak Rate During Burn:	23	ml/min
Allowable Seat Leak Rate:	3200	ml/min
External Leak Rate During Burn/Cool Down:	0	ml/min
Allowable External Leak Rate:	800	ml/min
Amount of Time of Avg. Cal. Blocks > 650 deg. C:	21.8	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:	320	ml/min
Was the Leakage Below the Allowable?	Yes	

Operational Test

Did Valve Unseat and Open Fully?:	Yes	
Average Pressure During Test:	552	psig
External Leak Rate After Operating:	0	ml/min
Allowable External Leak Rate:	200	ml/min
Was the Leakage Below the Allowable?	Yes	

Does Valve Pass or Fail the Test Standard?	**PASS**

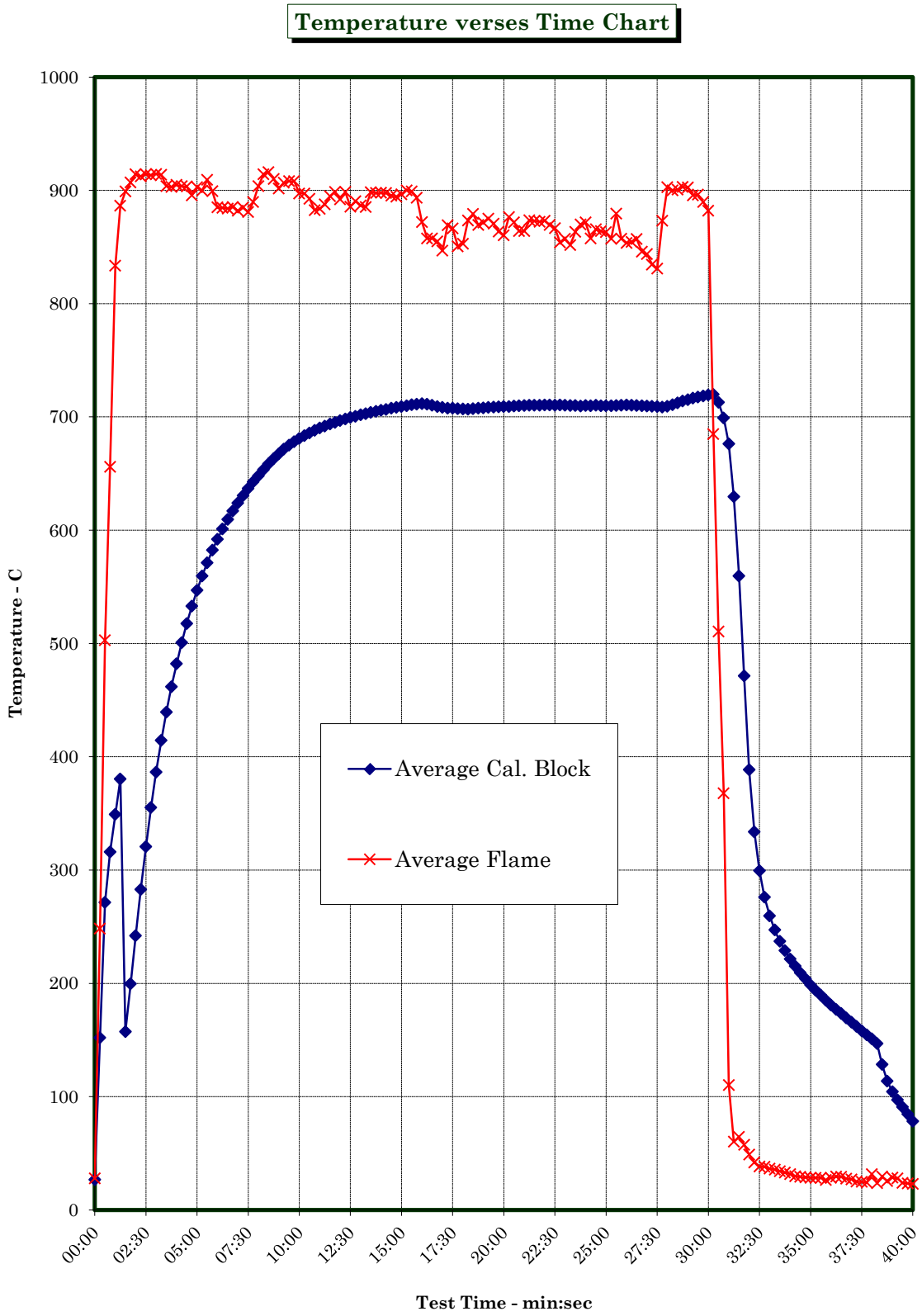
Certified by

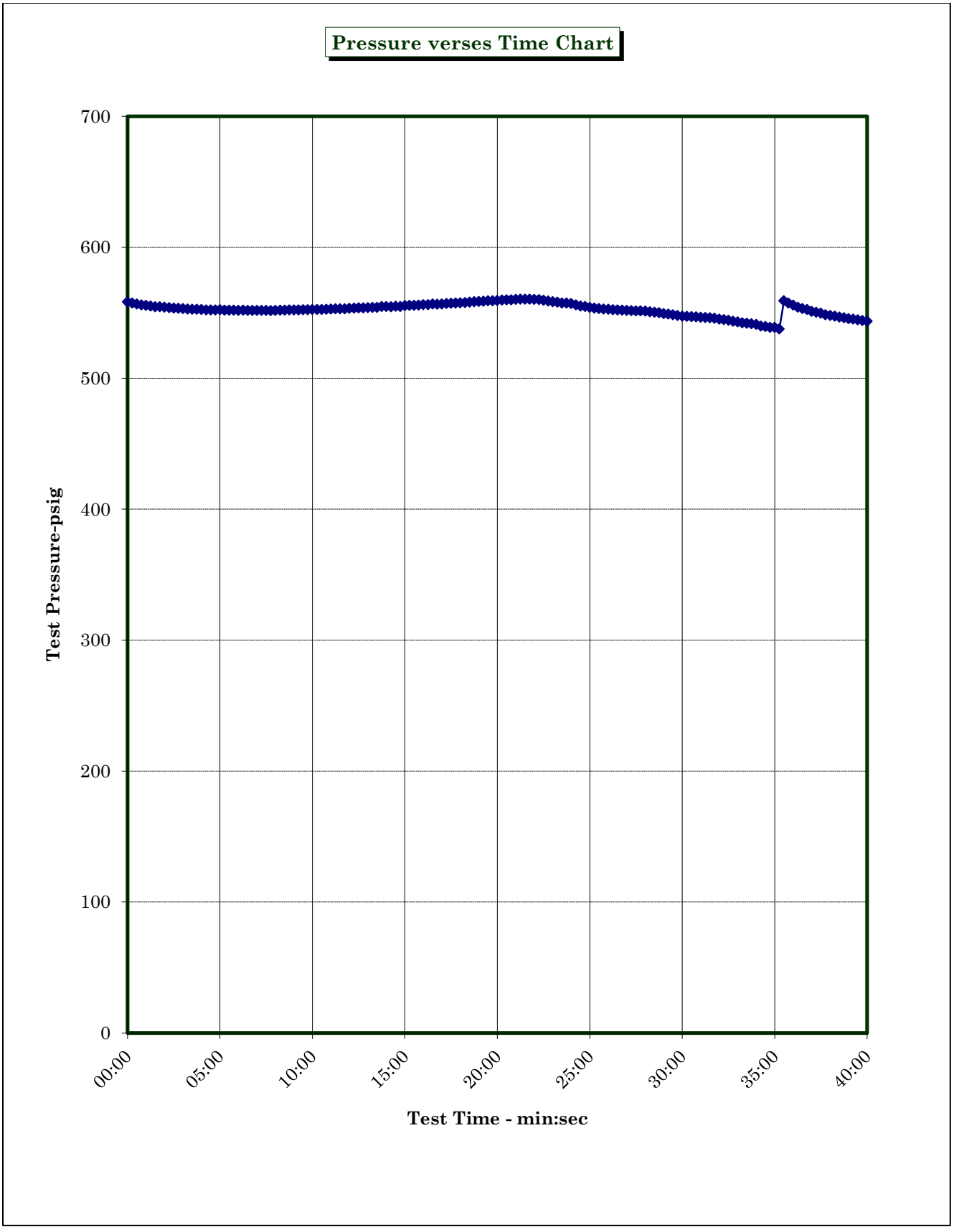
Matthew J. Wasielewski, PE
President and Manager
Yarmouth Research and Technology, LLC

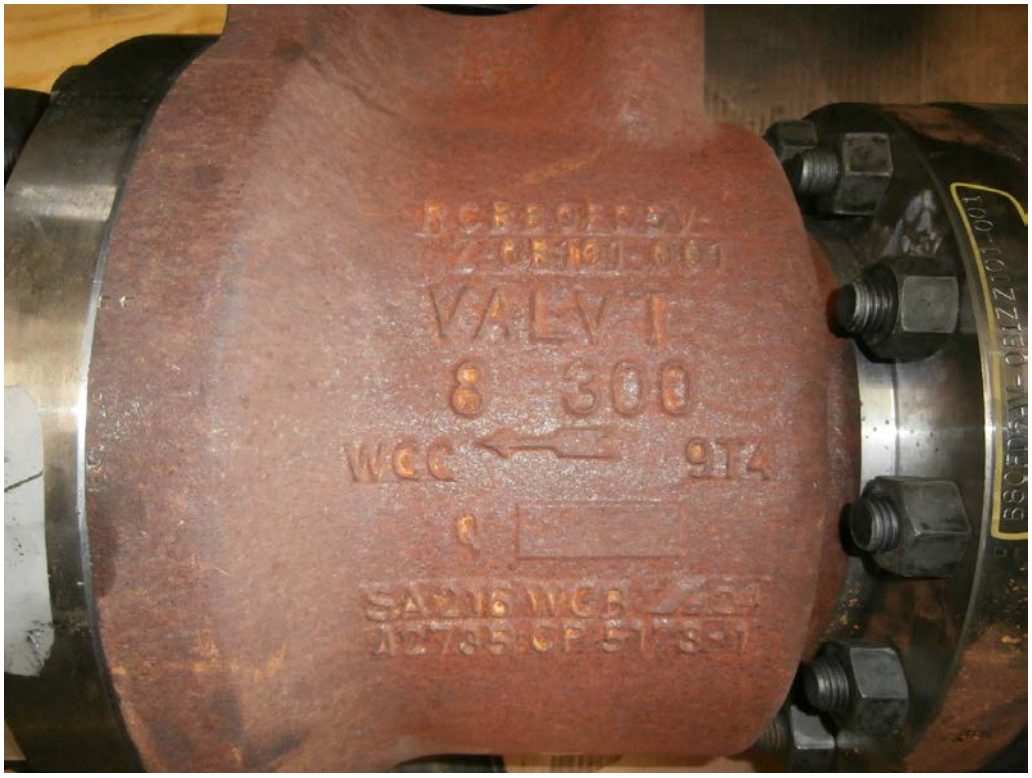
YARMOUTH RESEARCH AND TECHNOLOGY, LLC

Fire Test Information Sheet

Fire Test Specification and Revision: (ie. API 607 6th, API 6FA 3rd, etc)	API 607 6th Ed.
Yarmouth Proposal Number:	214349A
Customer Purchase Order Number:	S70514
Customer's Contact Name:	
Valve Manufacturer's Name (used in test report as specified):	ValvTechnologies, Inc.
Company Web Address for Report Cover:	www.valv.com
Valve Manufacturer's Address:	5904 Bingle Rd. Houston, TX 77092
Did valve meet all required hydrostatic, leakage and other production pressure tests?	Yes
Valve Description for Report Cover:	8" 300# V-Series Ball Valve
Valve Product Code:	V-Series
Valve Description	
Size:	8"
Pressure Rating/Class:	300#
Pressure Rating at 100F (psig):	740
Type:	Ball Valve
Weight:	929
Reduced or Full Bore:	Full
Body/Bonnet Material:	WCB Carbon Steel
Trim Material:	SA-487 Grade CA6NM
Seat Material:	SA-182 Grade F316
Stem Seal Material:	SA-182 Grade F316
Body Seal Material:	Grafoil
Bolting Material:	B8M / 8M
Is valve considered "Soft-Seated"?	Metal Seated
Valve Markings	
Nameplate Information:	
Casting Markings:	
Assembly Drawing Number / Revision / Date of Issue:	
Emailed (PDF) to Yarmouth: Date:	
If valve is fitted with gearbox, state gearbox manufacturer, model number and mechanical advantage:	Exeeco IW-6R/420
If valve is non-symmetric, state direction of flow for test:	
For double-seated valves, state maximum allowable cavity pressure:	
Form Submission Date:	


Temperature verses Time Chart
1000
900
800
700
600
500
400
300
200
100
0
Temperature - C
Average Cal. Block
Average Flame
00:00
02:30
05:00
07:30
10:00
12:30
15:00
17:30
20:00
22:30
25:00
27:30
30:00
32:30
35:00
37:30
40:00
Test Time - min:sec


Pressure verses Time Chart
700
600
500
400
300
200
100
0
Test Pressure-psig
00:00
05:00
10:00
15:00
20:00
25:00
30:00
35:00
40:00
Test Time - min:sec



Valve Markings

Test Valve Prior to Burn

Test Valve During Burn

Yarmouth Research and Technology, LLC

Fire Test Information

Customer: ValvTechnologies, Inc. **Date:** 2/10/2015

Product Code: 8 inch Class 300 V-Series Ball Valve

Project Number: 214349

Fire Test Raw Data

Time (EST)	Pressure (psig)	Water Volume (mls)	Cal. Block 1 Temp-C	Cal. Block 2 Temp-C	Cal. Block 3 Temp-C	Avg. Cal Block Temp-C	Bonnet Flame Temp-C	Body Flame Temp-C	Average Flame Temp-C
13:54:00	558	42783	24	24	31	27	31	24	28
13:54:15	557	42735	25	26	406	152	164	333	248
13:54:30	557	42731	32	36	747	271	378	627	503
13:54:45	556	42713	46	59	843	316	538	774	656
13:55:00	556	42685	67	90	890	349	819	847	833
13:55:15	555	42751	102	127	912	380	903	869	886
13:55:30	555	42754	145	166	162	157	923	875	899
13:55:45	555	42723	193	203	203	200	949	865	907
13:56:00	554	42727	242	239	245	242	965	863	914
13:56:15	554	42746	289	272	287	283	957	867	912
13:56:30	554	42732	334	303	325	321	962	866	914
13:56:45	553	42737	373	332	361	355	960	867	913
13:57:00	553	42743	409	358	393	386	967	862	914
13:57:15	553	42760	441	381	422	414	958	869	914
13:57:30	553	42782	468	403	447	439	954	853	904
13:57:45	553	42749	493	422	470	462	952	854	903
13:58:00	553	42758	516	441	490	482	956	853	905
13:58:15	552	42789	536	458	508	501	956	851	904
13:58:30	552	42790	555	473	525	518	954	852	903
13:58:45	552	42779	572	487	540	533	938	853	896
13:59:00	552	42838	587	500	553	547	956	850	903
13:59:15	552	42840	601	512	566	559	956	843	900
13:59:30	552	42788	614	523	577	571	963	855	909
13:59:45	552	42824	627	533	587	582	954	844	899
14:00:00	552	42827	638	542	596	592	940	830	885
14:00:15	552	42858	647	551	605	601	932	837	884
14:00:30	552	42882	656	559	613	609	927	841	884
14:00:45	552	42820	664	567	619	617	921	849	885
14:01:00	552	42852	671	574	626	624	926	838	882
14:01:15	552	42863	678	581	632	631	932	838	885
14:01:30	552	42928	685	587	638	637	932	829	881
14:01:45	552	42864	692	593	643	643	956	823	890
14:02:00	552	42952	698	598	648	648	977	831	904

Fire Test Data - continued

14:02:15	552	42943	704	602	653	653	988	841	914
14:02:30	552	42976	711	607	658	659	987	845	916
14:02:45	552	42931	717	611	662	663	986	834	910
14:03:00	552	42944	722	614	666	667	979	824	902
14:03:15	552	42972	727	618	669	671	981	832	907
14:03:30	552	43005	732	621	672	675	974	842	908
14:03:45	552	43011	734	624	676	678	969	847	908
14:04:00	553	43020	737	627	678	681	962	833	897
14:04:15	552	43028	739	630	681	684	961	834	897
14:04:30	553	43030	742	632	683	686	959	826	893
14:04:45	553	43062	744	634	686	688	942	823	883
14:05:00	553	43065	746	637	688	690	949	818	884
14:05:15	553	43084	747	639	690	692	950	825	888
14:05:30	553	43100	748	641	692	694	959	831	895
14:05:45	553	43116	749	642	694	695	963	834	899
14:06:00	553	43114	751	644	696	697	957	827	892
14:06:15	553	43168	752	646	697	698	962	835	899
14:06:30	554	43187	753	647	699	699	948	823	886
14:06:45	554	43203	754	648	700	701	953	828	890
14:07:00	554	43211	754	649	702	702	950	823	887
14:07:15	554	43206	755	651	703	703	950	821	885
14:07:30	554	43220	756	652	704	704	957	839	898
14:07:45	555	43249	757	653	705	705	955	840	898
14:08:00	555	43265	757	654	706	706	957	839	898
14:08:15	555	43327	758	654	707	706	964	831	898
14:08:30	555	43289	759	656	708	708	954	836	895
14:08:45	555	43322	759	656	709	708	957	832	894
14:09:00	556	43354	760	657	710	709	953	840	896
14:09:15	556	43363	761	658	711	710	947	853	900
14:09:30	556	43390	761	659	712	711	949	848	899
14:09:45	556	43405	761	659	713	711	942	845	893
14:10:00	556	43436	761	660	714	712	902	842	872
14:10:15	556	43463	758	661	714	711	883	832	858
14:10:30	557	43462	755	661	716	710	888	827	858
14:10:45	557	43448	751	661	716	709	887	823	855
14:11:00	557	43484	747	661	717	708	882	811	847
14:11:15	557	43510	744	661	718	708	911	828	869
14:11:30	557	43550	743	661	719	708	907	826	866
14:11:45	557	43564	741	662	719	707	901	800	851
14:12:00	558	43573	740	662	719	707	908	798	853
14:12:15	558	43586	739	662	719	707	916	831	873
14:12:30	558	43624	739	662	721	707	922	837	879
14:12:45	558	43642	738	663	722	708	916	823	869

Fire Test Data - continued

14:13:00	559	43647	738	664	722	708	916	827	871
14:13:15	559	43679	737	664	723	708	923	827	875
14:13:30	559	43702	737	665	724	709	915	826	871
14:13:45	559	43709	737	666	724	709	918	809	864
14:14:00	559	43723	736	666	726	709	908	812	860
14:14:15	560	43731	736	666	726	709	913	840	876
14:14:30	560	43757	736	666	727	709	909	834	872
14:14:45	560	43772	735	667	727	710	897	831	864
14:15:00	560	43817	734	667	728	710	903	825	864
14:15:15	560	43798	734	668	729	710	911	837	874
14:15:30	560	43828	733	668	729	710	900	846	873
14:15:45	560	43865	733	668	730	710	901	844	872
14:16:00	560	43867	732	669	731	711	908	838	873
14:16:15	560	43822	732	669	731	711	906	833	869
14:16:30	560	43817	731	669	731	710	902	831	867
14:16:45	559	43803	730	669	732	711	890	818	854
14:17:00	558	43814	729	669	732	710	892	822	857
14:17:15	558	43792	727	670	733	710	887	817	852
14:17:30	557	43779	726	671	733	710	886	841	863
14:17:45	558	43778	725	671	733	710	895	844	870
14:18:00	557	43741	724	672	734	710	887	856	872
14:18:15	556	43704	723	672	734	710	876	839	858
14:18:30	555	43689	722	673	735	710	877	854	866
14:18:45	555	43664	721	673	736	710	874	853	864
14:19:00	554	43637	719	674	736	710	879	847	863
14:19:15	554	43612	719	674	736	710	881	833	857
14:19:30	553	43605	718	675	737	710	905	854	879
14:19:45	553	43599	718	676	737	710	867	847	857
14:20:00	553	43568	718	676	738	711	863	844	854
14:20:15	552	43573	716	676	738	710	858	851	854
14:20:30	552	43577	714	677	739	710	854	860	857
14:20:45	552	43534	713	677	739	710	843	849	846
14:21:00	552	43555	711	678	739	709	837	851	844
14:21:15	552	43531	709	678	740	709	836	833	834
14:21:30	552	43538	708	679	741	709	832	830	831
14:21:45	551	43543	706	679	741	709	883	863	873
14:22:00	551	43506	707	680	741	709	918	887	903
14:22:15	551	43474	710	681	742	711	925	875	900
14:22:30	550	43471	713	682	742	712	926	875	901
14:22:45	550	43425	717	683	742	714	924	882	903
14:23:00	549	43399	719	683	743	715	924	881	903
14:23:15	549	43373	722	684	743	717	922	869	896
14:23:30	548	43314	724	685	743	717	926	866	896

Fire Test Data - continued

14:23:45	548	43287	726	685	744	718	919	860	890
14:24:00	547	43278	728	686	744	719	919	844	882
14:24:15	547	43239	729	686	744	720	705	664	685
14:24:30	547	43231	721	680	738	713	524	497	511
14:24:45	547	43232	706	667	724	699	351	384	368
14:25:00	547	43223	683	637	708	676	62	159	110
14:25:15	546	43191	630	568	691	630	57	63	60
14:25:30	546	43184	541	463	674	559	57	72	64
14:25:45	546	43191	421	336	657	471	57	58	58
14:26:00	545	43128	283	243	640	389	51	47	49
14:26:15	545	43122	193	184	624	334	40	44	42
14:26:30	544	43094	145	146	608	299	36	41	38
14:26:45	544	43086	117	119	592	276	37	39	38
14:27:00	543	43033	101	101	577	260	36	37	36
14:27:15	542	42977	91	87	563	247	35	36	36
14:27:30	542	42996	84	78	549	237	33	35	34
14:27:45	542	42952	80	71	536	229	32	34	33
14:28:00	541	42959	77	66	522	221	31	32	32
14:28:15	540	42892	74	62	509	215	29	30	30
14:28:30	540	42886	72	59	497	209	28	30	29
14:28:45	539	42865	71	56	485	204	28	29	29
14:29:00	539	42853	69	54	473	199	28	29	28
14:29:15	538	42783	68	52	462	194	29	28	28
14:29:30	559	42645	67	51	451	190	29	28	28
14:29:45	557	42628	66	49	439	185	27	26	26
14:30:00	556	42616	65	48	429	181	30	27	28
14:30:15	554	42568	64	48	419	177	32	27	29
14:30:30	553	42560	63	47	409	173	31	28	29
14:30:45	553	42524	62	47	399	169	27	28	28
14:31:00	551	42482	61	47	390	166	27	27	27
14:31:15	550	42488	59	46	381	162	23	27	25
14:31:30	550	42448	58	46	371	158	23	26	25
14:31:45	549	42406	56	45	362	154	22	26	24
14:32:00	548	42385	55	44	354	151	40	23	32
14:32:15	547	42379	55	44	342	147	29	18	24
14:32:30	547	42344	56	44	285	128	34	25	29
14:32:45	546	42315	54	45	242	114	26	25	26
14:33:00	546	42318	52	47	214	104	32	26	29
14:33:15	545	42267	51	48	193	97	30	26	28
14:33:30	545	42233	49	49	175	91	25	23	24
14:33:45	544	42239	46	48	159	84	23	23	23
14:34:00	544	42187	43	47	144	78	23	23	23

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:	700	mls
Average Leak Rate Over 30 Minute Duration:	23	ml/min
Allowable Leak Rate:	3200	ml/min
Total Through Seat Leakage Collected Over 10 Minute Cool Down:	0	mls
Total Water Volume Lost Over 40 Minute Burn and Cool Down:	596	mls
Water Collected in System Relief Valve:	0	mls
Calculated External Leakage During 40 Minute Duration:	-104	mls
Average Leak Rate Over 40 Minute Duration:	0.0	ml/min
Allowable Leak Rate:	800	ml/min

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

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:	560	psig
Average Pressure During Burn/Cool Down:	552	psig
Minimum Pressure During Burn/Cool Down:	538	psig
Amount of Time of Avg. Cal Block > 650 deg.C:	21.8	minutes
Minimum Allowable Time at Temperature:	15.0	minutes
Maximum Avg Cal Block Temperature:	720	deg. C
Average Cal Block Temperature:	542	deg. C
Lowest Avg Cal. Block Temperature:	27	deg. C
Maximum Body Flame Temperature During Burn:	887	deg. C
Average Body Flame Temperature During Burn:	640	deg. C
Maximum Bonnet Flame Temperature During Burn:	988	deg. C
Average Bonnet Flame Temperature During Burn:	696	deg. C
Average of Both Flame Temperatures During Burn:	668	deg. C

Note

Were Test Conditions Within Compliance?	**Yes**

Yarmouth Research and Technology, LLC

Post-Burn Seat Test Information

Customer: ValvTechnologies, Inc. **Date:** 2/10/2015

Product Code: 8 inch Class 300 V-Series Ball Valve

Project Number: 214349

Test Data

Time	Pressure (psig)	Cal Block Temp - C
14:46:33	31	44
14:46:48	31	44
14:47:03	31	44
14:47:18	31	44
14:47:33	30	44
14:47:48	30	44
14:48:03	30	44
14:48:18	30	44
14:48:33	30	44
14:48:48	31	44
14:49:03	30	44
14:49:18	31	44
14:49:33	30	44
14:49:48	30	44
14:50:03	30	44
14:50:18	30	44
14:50:33	30	44
14:50:48	30	44
14:51:03	30	44
14:51:18	31	44
14:51:33	30	44

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:	320	ml/min

Was the Valve Leakage Below the Allowable?	Yes

Yarmouth Research and Technology, LLC

Operational Test Information

Customer: ValvTechnologies, Inc. **Date:** 2/10/2015

Product Code: 8 inch Class 300 V-Series Ball Valve

Project Number: 214349

Test Data

Time	Pressure (psig)	Cal Block Temp - C
15:00:59	553	45
15:01:14	553	45
15:01:29	553	45
15:01:44	553	46
15:01:59	553	45
15:02:14	553	46
15:02:29	553	46
15:02:44	553	46
15:02:59	552	46
15:03:14	552	46
15:03:29	552	46
15:03:59	552	46
15:04:14	552	46
15:04:29	552	46
15:04:44	552	46
15:04:59	552	46
15:05:14	551	46
15:05:29	551	46
15:05:44	551	46
15:05:59	551	46

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