

Fire Test Report

ANSI/API Standard 607, Sixth Edition, 2010

ISO 10497:2010

Performed for

ValvTechnologies, Inc.

www.valv.com



2 inch Class 600 Metal-Seated Ball Valve
Product Code: V6CC-RF-FP-B020-010DB-001

Project Number: 211088

Test Date: July 22, 2011

Performed by

YARMOUTH RESEARCH AND TECHNOLOGY, LLC

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Yarmouth Research and Technology, LLC

Customer: ValvTechnologies Inc.

Date: 7/22/2011

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

ISO 10497: 2010

Product Description: 2 inch Class 600 Full Port Ball Valve

Project Number: PN211088

Comments: Product Code: V6CC-RF-FP-B020-010DB-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:	10:43:00	
Average Pressure During Burn:	1127	psig
Seat Leak Rate During Burn:	0	ml/min
Allowable Seat Leak Rate:	800	ml/min
External Leak Rate During Burn/Cool Down:	6	ml/min
Allowable External Leak Rate:	200	ml/min
Amount of Time of Avg. Cal. Blocks > 650 deg. C:	24.0	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:	80	ml/min
Was the Leakage Below the Allowable?	Yes	

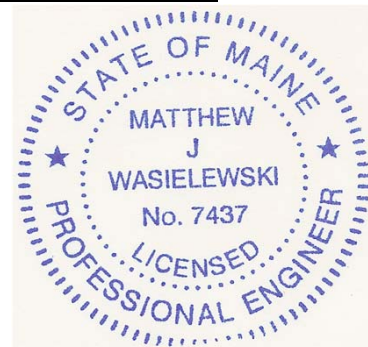
Operational Test

Did Valve Unseat and Open Fully?:	Yes	
Average Pressure During Test:	1106	psig
External Leak Rate After Operating:	0	ml/min
Allowable External Leak Rate:	50	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

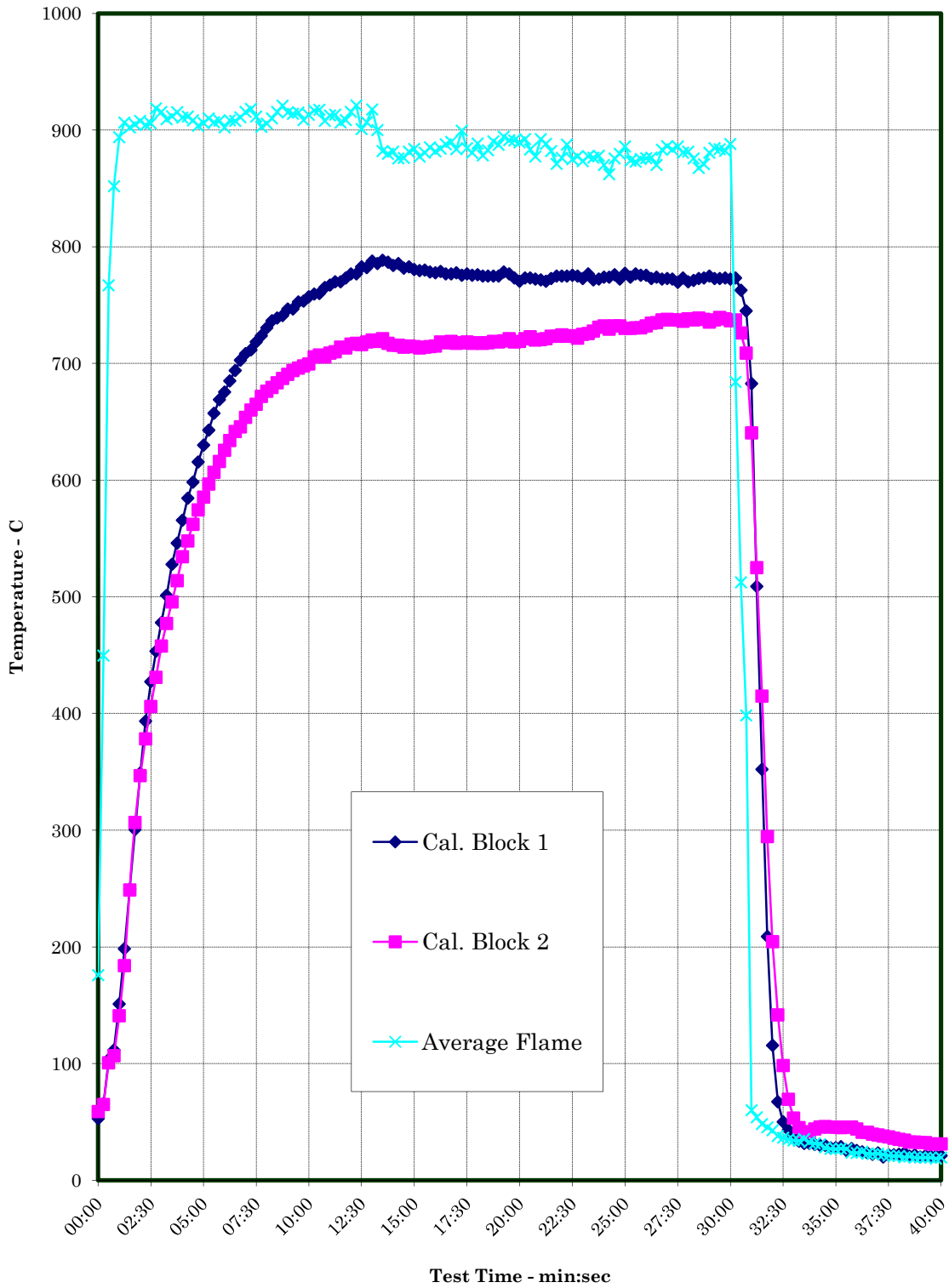


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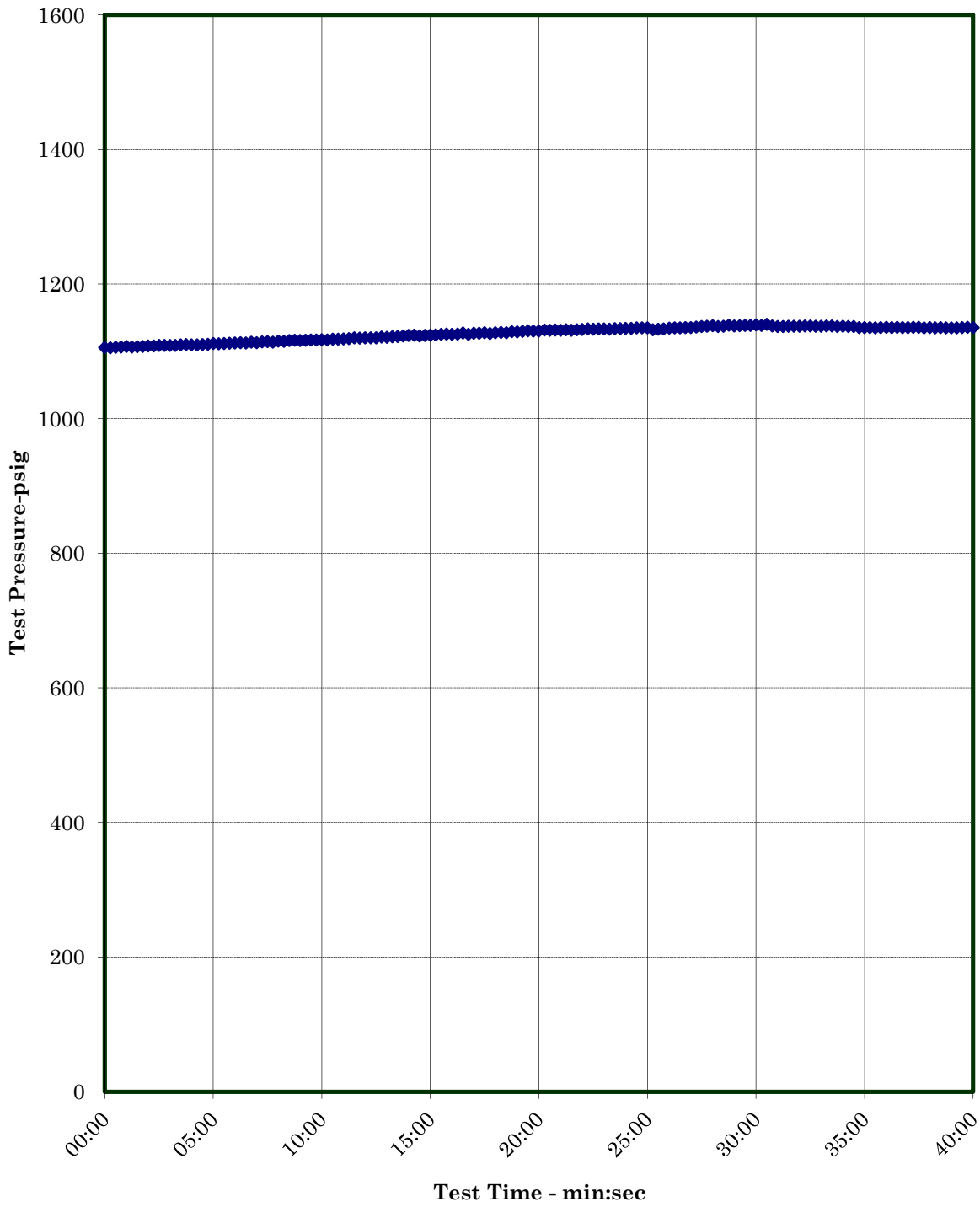
Fire Test Information Sheet

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:	V6CC-RF-FP-B020-010DB-001
Valve Description	Size: 2" Pressure Rating: 600# Pressure Rating at 100F: 1480 psig Type: Ball Valve Weight: 125 lbs. Reduced or Full Bore: Full Port Body/Bonnet Material: A105 Trim Material: 316SS/QPQ Seat Material: 316SS/QPQ Stem / Body Seal Material: 316SS/QPQ / H1150D 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:	110585-3 / 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-3/40 Mech. Adv. 18
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

Temperature verses Time Chart



Pressure verses Time Chart





Valve Prior to Test

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Valve During Burn

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Fire Test Information

Customer: ValvTechnologies Inc.

Date: 7/22/2011

Product Code: 2 inch Class 600 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
10:43:00	1106	23812	53	59	56	157	195	176
10:43:15	1106	23836	66	65	65	347	552	450
10:43:30	1106	23856	103	101	102	731	803	767
10:43:45	1107	23750	112	107	109	855	849	852
10:44:00	1107	23850	151	141	146	923	865	894
10:44:15	1107	23874	198	184	191	942	871	906
10:44:30	1107	23896	249	249	249	927	877	902
10:44:45	1107	23890	301	307	304	933	877	905
10:45:00	1108	23921	349	347	348	938	877	908
10:45:15	1108	23940	393	378	386	929	879	904
10:45:30	1109	23877	427	406	417	934	877	906
10:45:45	1109	23854	453	431	442	956	882	919
10:46:00	1109	23924	478	458	468	954	877	916
10:46:15	1109	23833	501	477	489	948	871	909
10:46:30	1110	23824	528	496	512	956	868	912
10:46:45	1110	23888	546	514	530	957	873	915
10:47:00	1110	23834	566	534	550	955	866	911
10:47:15	1110	23844	584	548	566	948	875	912
10:47:30	1110	23847	598	562	580	943	874	908
10:47:45	1111	23840	616	574	595	942	865	904
10:48:00	1112	24037	630	586	608	952	861	906
10:48:15	1111	23821	643	597	620	949	871	910
10:48:30	1112	23901	657	607	632	938	876	907
10:48:45	1112	23915	669	616	643	947	869	908
10:49:00	1113	23828	676	626	651	940	864	902
10:49:15	1113	23939	685	634	659	944	872	908
10:49:30	1112	23964	694	642	668	947	869	908
10:49:45	1114	23985	703	646	674	948	873	911
10:50:00	1113	23991	708	654	681	959	872	916
10:50:15	1114	23937	712	660	686	960	876	918
10:50:30	1114	23913	718	665	692	944	879	912
10:50:45	1114	23900	724	672	698	933	873	903
10:51:00	1115	23859	731	676	703	946	866	906

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Fire Test Data - continued

10:51:15	1115	23961	737	679	708	948	872	910
10:51:30	1116	23918	739	683	711	954	877	916
10:51:45	1116	23923	741	687	714	963	879	921
10:52:00	1116	23947	747	691	719	951	879	915
10:52:15	1116	23945	747	694	720	943	885	914
10:52:30	1117	23913	753	696	724	949	881	915
10:52:45	1117	24025	753	698	726	944	873	909
10:53:00	1117	24017	757	699	728	944	882	913
10:53:15	1117	23877	759	706	733	946	887	917
10:53:30	1118	24038	760	707	734	955	880	918
10:53:45	1118	24017	765	706	735	938	877	908
10:54:00	1119	23986	767	709	738	943	882	913
10:54:15	1119	24040	770	710	740	947	880	913
10:54:30	1120	23979	770	714	742	938	874	906
10:54:45	1120	24027	773	713	743	937	881	909
10:55:00	1120	24058	777	717	747	947	884	916
10:55:15	1120	24142	777	717	747	956	886	921
10:55:30	1120	24064	783	716	749	921	881	901
10:55:45	1122	24228	782	718	750	937	877	907
10:56:00	1121	24042	788	720	754	936	900	918
10:56:15	1122	24087	786	719	752	900	900	900
10:56:30	1122	24111	788	721	755	858	906	882
10:56:45	1123	24191	787	717	752	863	896	880
10:57:00	1124	24361	784	716	750	866	897	881
10:57:15	1124	24460	786	716	751	857	894	876
10:57:30	1123	24339	782	714	748	850	902	876
10:57:45	1124	23669	783	715	749	867	896	881
10:58:00	1124	25196	781	714	748	857	911	884
10:58:15	1125	25008	779	713	746	858	897	877
10:58:30	1126	24142	780	714	747	849	912	881
10:58:45	1126	23965	778	714	746	866	904	885
10:59:00	1125	24916	778	715	746	871	893	882
10:59:15	1126	24634	779	718	749	866	902	884
10:59:30	1127	25198	777	718	747	863	913	888
10:59:45	1126	25353	777	719	748	872	908	890
11:00:00	1127	26014	778	717	748	853	914	884
11:00:15	1127	23007	776	718	747	887	912	899
11:00:30	1128	23205	777	718	748	864	904	884
11:00:45	1127	24736	776	717	746	860	901	881
11:01:00	1128	22843	776	718	747	867	911	889
11:01:15	1128	25785	775	717	746	845	912	878
11:01:30	1128	23762	775	718	746	857	908	883
11:01:45	1129	26636	775	719	747	868	912	890

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Fire Test Data - continued

11:02:00	1129	23286	775	718	747	857	918	887
11:02:15	1130	26034	778	719	749	869	920	894
11:02:30	1131	22608	777	721	749	861	922	891
11:02:45	1130	22439	773	718	746	868	914	891
11:03:00	1130	26597	771	719	745	877	902	889
11:03:15	1132	23436	773	721	747	878	906	892
11:03:30	1131	26128	773	723	748	862	905	883
11:03:45	1132	25925	772	720	746	849	906	877
11:04:00	1132	24384	772	721	746	876	908	892
11:04:15	1132	24809	771	721	746	876	901	888
11:04:30	1131	24769	773	723	748	857	907	882
11:04:45	1132	24761	775	723	749	838	904	871
11:05:00	1132	24809	775	724	750	834	918	876
11:05:15	1133	24727	775	723	749	859	916	888
11:05:30	1133	24711	776	724	750	842	908	875
11:05:45	1134	24735	775	722	748	851	904	878
11:06:00	1133	24796	773	725	749	855	892	873
11:06:15	1133	24735	777	726	751	861	894	878
11:06:30	1134	24739	772	728	750	858	894	876
11:06:45	1134	24745	772	731	752	852	904	878
11:07:00	1134	24731	774	732	753	838	902	870
11:07:15	1134	24742	774	729	752	827	897	862
11:07:30	1135	24724	776	732	754	846	905	876
11:07:45	1135	24731	772	732	752	849	911	880
11:08:00	1135	24723	777	730	754	857	915	886
11:08:15	1132	24242	774	730	752	841	907	874
11:08:30	1133	24254	777	731	754	842	903	873
11:08:45	1134	24266	776	731	753	847	903	875
11:09:00	1135	24407	776	732	754	853	899	876
11:09:15	1135	24445	773	734	754	849	903	876
11:09:30	1135	24514	774	735	754	835	905	870
11:09:45	1135	23621	772	737	755	868	898	883
11:10:00	1136	23429	773	738	755	868	904	886
11:10:15	1136	23050	772	737	755	864	902	883
11:10:30	1137	26170	769	737	753	866	906	886
11:10:45	1137	23492	773	736	755	868	893	881
11:11:00	1138	24180	770	738	754	863	900	881
11:11:15	1137	25109	771	737	754	849	902	876
11:11:30	1137	25076	773	739	756	824	911	868
11:11:45	1139	25015	773	738	756	835	907	871
11:12:00	1138	23663	775	736	755	859	902	881
11:12:15	1138	24671	773	737	755	858	911	884
11:12:30	1139	24641	773	739	756	852	916	884

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Fire Test Data - continued

11:12:45	1139	24708	773	738	756	854	911	882
11:13:00	1140	24703	772	737	754	864	912	888
11:13:15	1139	24700	773	737	755	681	688	684
11:13:30	1140	24663	763	726	744	517	508	513
11:13:45	1138	24120	745	709	727	416	381	398
11:14:00	1137	24135	683	641	662	59	61	60
11:14:15	1137	24162	509	525	517	51	57	54
11:14:30	1137	24128	352	415	384	43	53	48
11:14:45	1138	24083	209	294	252	39	51	45
11:15:00	1138	24078	116	204	160	38	47	43
11:15:15	1138	24023	67	142	104	34	41	38
11:15:30	1138	24014	50	98	74	33	39	36
11:15:45	1137	23994	43	69	56	31	39	35
11:16:00	1137	24015	38	53	46	28	40	34
11:16:15	1138	24003	33	45	39	28	39	34
11:16:30	1138	24008	32	42	37	28	43	35
11:16:45	1137	23996	32	41	36	27	39	33
11:17:00	1137	23980	31	44	37	28	36	32
11:17:15	1137	23985	30	46	38	27	34	31
11:17:30	1137	23929	30	46	38	26	30	28
11:17:45	1135	23655	28	46	37	26	28	27
11:18:00	1135	23642	28	46	37	26	27	27
11:18:15	1135	23639	29	45	37	26	29	27
11:18:30	1135	23624	26	46	36	24	29	27
11:18:45	1136	23653	27	46	36	23	24	24
11:19:00	1136	23636	26	44	35	23	24	23
11:19:15	1136	23630	24	41	33	23	26	24
11:19:30	1136	23623	23	41	32	22	24	23
11:19:45	1136	23634	22	39	31	22	23	23
11:20:00	1136	23631	23	39	31	22	24	23
11:20:15	1136	23612	20	38	29	22	22	22
11:20:30	1136	23616	22	37	29	21	22	21
11:20:45	1135	23627	22	36	29	19	22	21
11:21:00	1135	23599	22	35	29	21	21	21
11:21:15	1135	23599	23	34	29	19	21	20
11:21:30	1135	23616	21	33	27	19	21	20
11:21:45	1135	23572	22	33	27	19	20	19
11:22:00	1135	23600	20	32	26	19	20	19
11:22:15	1135	23585	21	32	27	19	20	19
11:22:30	1135	23597	21	31	26	18	21	19
11:22:45	1136	23612	21	31	26	18	19	19
11:23:00	1135	23578	21	31	26	19	20	19

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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	ml/min
Allowable Leak Rate:	800	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:	234	mls
Water Collected in System Relief Valve:	0	mls
Calculated External Leakage During 40 Minute Duration:	234	mls
Average Leak Rate Over 40 Minute Duration:	6	ml/min
Allowable Leak Rate:	200	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:	1140	psig
Average Pressure During Burn/Cool Down:	1127	psig
Minimum Pressure During Burn/Cool Down:	1106	psig
Amount of Time of Avg. Cal Block > 650 deg.C:	24.0	minutes
Minimum Allowable Time at Temperature:	15.0	minutes
Maximum Avg Cal Block Temperature:	756	deg. C
Average Cal Block Temperature:	539	deg. C
Lowest Avg Cal. Block Temperature:	26	deg. C
Maximum Body Flame Temperature During Burn:	922	deg. C
Average Body Flame Temperature During Burn:	884	deg. C
Maximum Bonnet Flame Temperature During Burn:	963	deg. C
Average Bonnet Flame Temperature During Burn:	883	deg. C
Average of Both Flame Temperatures During Burn:	884	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: 7/22/2011

Product Code: 2 inch Class 600 Full Port Ball Valve

Project Number: PN211088

Test Data

Time	Pressure (psig)	Cal Block Temp - C
11:29:36	30	29
11:29:51	30	27
11:30:06	30	27
11:30:21	30	28
11:30:36	30	27
11:30:51	30	28
11:31:06	30	29
11:31:21	30	28
11:31:36	30	28
11:31:51	30	28
11:32:06	30	28
11:32:21	30	29
11:32:36	30	29
11:32:51	30	29
11:33:06	30	29
11:33:21	30	28
11:33:36	30	29
11:33:51	30	28
11:34:06	30	29
11:34:21	30	29
11:34:36	30	30

Total Seat Leakage Collected Over 5 Minute Duration:	0	mls
Average Leak Rate Over 5 Minute Duration:	0	ml/min
Allowable Leak Rate:	80	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: 7/22/2011

Product Code: 2 inch Class 600 Full Port Ball Valve

Project Number: PN211088

Test Data

Time	Pressure (psig)	Cal Block Temp - C
11:39:57	1107	30
11:40:12	1105	30
11:40:27	1107	29
11:40:42	1108	30
11:40:57	1106	30
11:41:12	1107	30
11:41:27	1106	29
11:41:42	1108	29
11:41:57	1107	29
11:42:12	1108	29
11:42:27	1108	29
11:42:42	1107	30
11:42:57	1105	30
11:43:12	1106	29
11:43:27	1105	29
11:43:42	1106	28
11:43:57	1106	30
11:44:12	1103	30
11:44:27	1106	28
11:44:42	1106	30
11:44:57	1108	29

Leakages were collected manually.

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
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