

Fire Test Report

ANSI/API Standard 607, 6th Edition, 2010

ISO 10497: 2010

Performed for

Valvtechnologies, Inc.

www.valv.com



8 inch Class 900 Ball Valve

Product Code: V72R-RF-RP-B080-005EM-001

Project Number: 212312

Test Date: May 3, 2013

Performed by

YARMOUTH RESEARCH AND TECHNOLOGY, LLC

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Yarmouth Research and Technology, LLC

Customer: ValvTechnologies, Inc.

Date: 5/3/2013

Specification: API Standard 607, 6th Edition, ISO 10497: 2010

Product Description: 8 inch Class 900 Ball Valve

Project Number: PN212312

Product Code: V72R-RF-RP-B080-005EM-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:	16:06:00	
Average Pressure During Burn:	1613	psig
Seat Leak Rate During Burn:	118	ml/min
Allowable Seat Leak Rate:	3200	ml/min
External Leak Rate During Burn/Cool Down:	0.0	ml/min
Allowable External Leak Rate:	800	ml/min
Amount of Time of Avg. Cal. Blocks > 650 deg. C:	22.3	minutes
Were Test Conditions Within Compliance?	Yes	
Were the Valve Leakages Below the Allowables?	Yes	

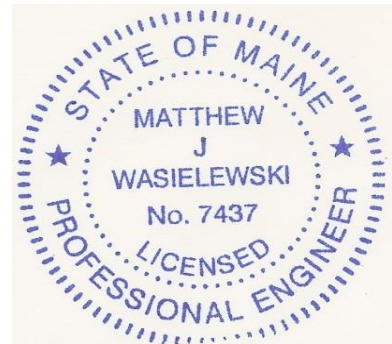
Operational Test

Did Valve Unseat and Open Fully?:	Yes	
Average Pressure During Test:	1613	psig
External Leak Rate After Operating:	2.0	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
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Witnesses

Matthew J. Wasielewski

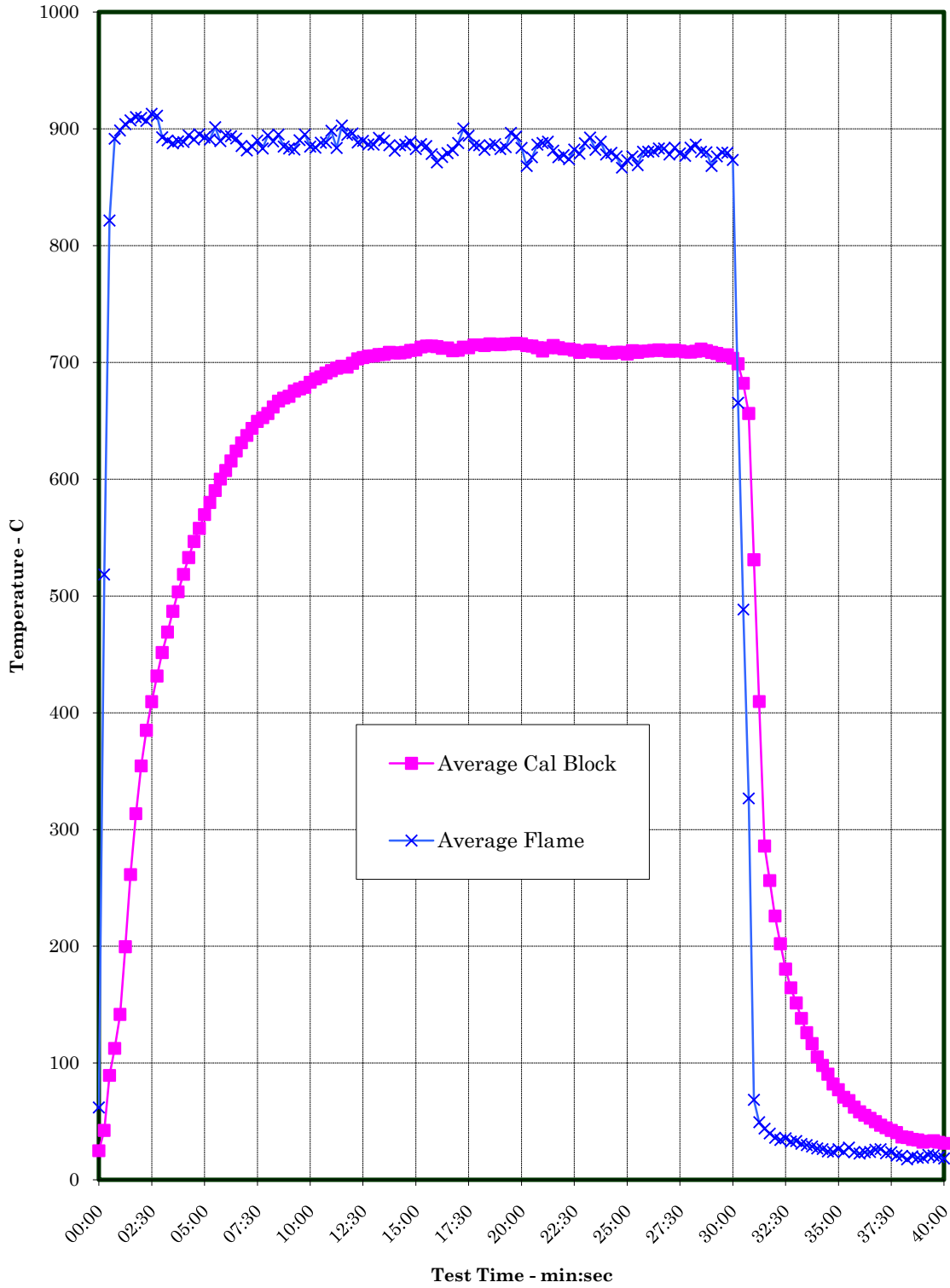


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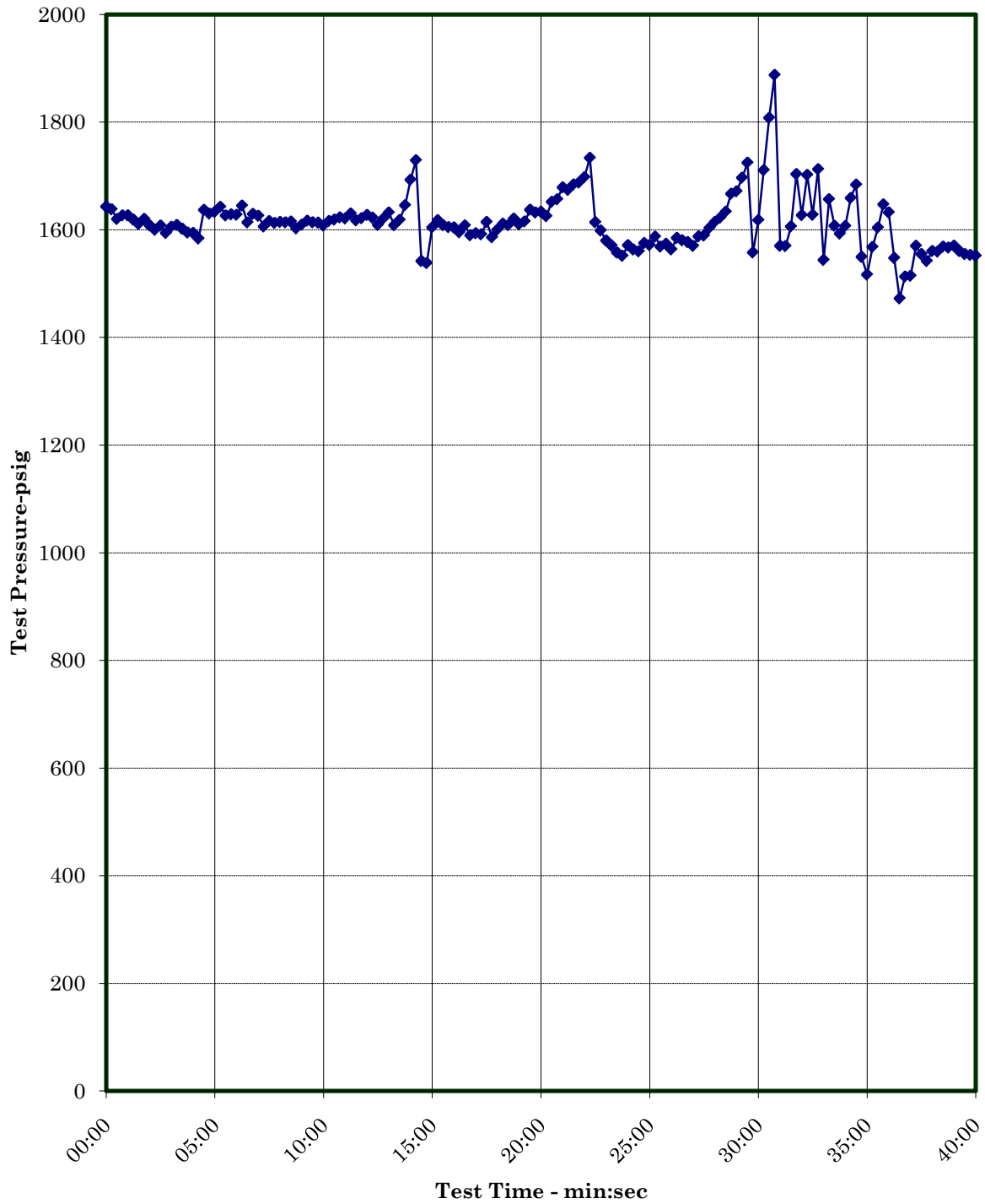
Fire Test Information Sheet

Valve Manufacturer's Name:	ValvTechnologies, Inc.
Valve Manufacturer's Address:	5904 Bingle Road Houston,Tx 77092
Did valve meet all required hydrostatic, leakage and other production pressure tests?	Yes
Valve Product Code:	V72R-RF-RP-B080-005EM-001
Valve Description	Size: 8" Pressure Rating: 900# Pressure Rating at 100F: 2160 psig Type: Ball Valve Weight: 1790 lbs. Reduced or Full Bore: Reduced Port Body/Bonnet Material: 316SS Trim Material: 316SS Seat Material: 316SS/QPQ Stem / Body Seal Material: A286/QPQ / 17-4 / Grafoil Bolting Material: B8M/8M Is valve considered "Soft-Seated"?
Valve Markings	No
Nameplate Information: Casting Markings:	Size, Pressure Class N/A
Assembly Drawing Number / Revision / Date of Issue:	122287 / Rev. 1 12/17/2012
Assembly Drawing sent to Yarmouth:	Yes
If valve is fitted with gearbox, state gearbox manufacturer, model number and mechanical advantage:	Exeeco IW-6 420/1 Mech. Adv. 132
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:	Freddie Gloria / 713-715-5620

Temperature verses Time Chart



Pressure verses Time Chart



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Test Setup Prior to Burn



Test Valve During Burn

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Fire Test Information

Customer: ValvTechnologies, Inc.

Date: 5/3/2013

Product Code: 8 inch Class 900 Ball Valve

Project Number: PN212312

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
16:06:00	1643	43308	26	26	24	25	68	56	62
16:06:15	1638	43324	55	44	28	42	521	516	518
16:06:30	1620	43414	106	102	61	89	857	786	821
16:06:45	1627	43288	113	122	103	113	956	827	891
16:07:00	1627	43323	161	153	111	142	987	810	899
16:07:15	1619	43441	236	194	168	200	986	822	904
16:07:30	1611	43373	320	239	226	261	988	826	907
16:07:45	1620	43247	387	281	273	314	986	834	910
16:08:00	1608	43451	434	319	310	354	984	835	909
16:08:15	1600	43405	466	349	340	385	983	830	907
16:08:30	1608	43349	489	373	366	409	984	841	913
16:08:45	1594	43461	508	396	391	431	937	886	911
16:09:00	1606	43426	522	419	413	451	910	876	893
16:09:15	1609	43309	533	439	436	469	912	868	890
16:09:30	1602	43328	546	459	456	487	909	866	888
16:09:45	1595	43392	557	477	477	504	917	862	889
16:10:00	1594	43370	569	493	494	519	916	861	889
16:10:15	1584	43422	579	508	511	533	924	865	894
16:10:30	1637	43391	591	522	527	547	913	869	891
16:10:45	1630	43418	598	534	542	558	918	872	895
16:11:00	1633	43393	607	547	555	570	916	869	893
16:11:15	1642	43356	616	558	566	580	909	872	891
16:11:30	1626	43316	624	568	578	590	928	874	901
16:11:45	1629	43382	632	578	589	600	906	873	889
16:12:00	1628	43401	637	588	598	607	920	869	894
16:12:15	1645	43410	643	596	608	616	918	869	894
16:12:30	1614	43321	651	604	618	624	918	866	892
16:12:45	1629	43419	657	612	624	631	916	855	885
16:13:00	1626	43326	662	618	632	637	906	857	881
16:13:15	1606	43297	667	624	639	644	908	862	885
16:13:30	1616	43305	673	630	646	649	913	867	890
16:13:45	1613	43423	673	635	650	653	903	863	883
16:14:00	1614	43387	670	641	658	656	911	878	894

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Fire Test Data - continued

16:14:15	1614	43338	678	644	663	662	907	872	889
16:14:30	1615	43396	682	649	669	667	909	881	895
16:14:45	1602	43408	682	653	673	669	891	878	885
16:15:00	1609	43362	680	657	676	671	892	874	883
16:15:15	1617	43423	686	662	679	675	894	870	882
16:15:30	1614	43398	683	665	683	677	898	883	890
16:15:45	1613	43306	684	668	684	679	904	886	895
16:16:00	1608	43433	688	672	689	683	898	872	885
16:16:15	1616	43362	691	674	692	686	900	868	884
16:16:30	1619	43340	694	677	692	688	893	883	888
16:16:45	1623	43316	696	679	697	691	907	869	888
16:17:00	1621	43410	701	681	697	693	932	864	898
16:17:15	1630	43406	704	683	698	695	896	872	884
16:17:30	1617	43307	703	684	703	697	893	912	903
16:17:45	1621	43370	700	686	702	696	899	891	895
16:18:00	1627	43357	703	688	707	699	913	879	896
16:18:15	1622	43365	709	691	708	703	902	875	888
16:18:30	1609	43336	711	693	708	704	899	880	890
16:18:45	1620	43298	712	695	709	705	900	873	887
16:19:00	1632	43356	712	696	709	706	898	875	886
16:19:15	1608	43413	712	697	711	707	894	890	892
16:19:30	1618	43323	711	698	712	707	889	891	890
16:19:45	1645	43416	713	699	714	709	886	886	886
16:20:00	1693	43359	711	700	713	708	876	886	881
16:20:15	1729	43315	711	701	713	708	889	883	886
16:20:30	1542	43407	712	701	713	709	887	886	886
16:20:45	1538	43402	713	702	716	710	909	868	889
16:21:00	1604	43350	715	702	714	711	899	866	883
16:21:15	1618	43358	719	703	718	713	906	868	887
16:21:30	1608	43463	721	703	718	714	908	862	885
16:21:45	1605	43391	721	703	718	714	890	867	878
16:22:00	1604	43330	719	703	718	714	874	868	871
16:22:15	1595	43340	713	704	719	712	876	876	876
16:22:30	1608	43343	712	705	720	712	866	892	879
16:22:45	1590	43377	710	704	716	710	874	889	882
16:23:00	1593	43360	709	705	717	710	881	894	888
16:23:15	1591	43369	715	705	719	713	887	913	900
16:23:30	1614	43331	717	704	716	713	904	884	894
16:23:45	1586	43323	725	705	715	715	909	862	886
16:24:00	1600	43354	724	706	715	715	902	869	886
16:24:15	1611	43322	724	705	714	714	880	884	882
16:24:30	1608	43364	726	705	716	716	904	868	886
16:24:45	1621	43376	726	706	715	715	912	862	887

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Fire Test Data - continued

16:25:00	1610	43439	724	706	716	715	896	869	883
16:25:15	1615	43356	724	706	717	716	897	872	884
16:25:30	1637	43437	724	706	718	716	921	872	896
16:25:45	1632	43374	727	706	716	716	918	868	893
16:26:00	1633	43381	728	705	715	716	898	869	884
16:26:15	1625	43214	726	706	712	714	872	864	868
16:26:30	1652	43288	722	704	716	714	868	883	876
16:26:45	1657	43413	721	703	714	713	886	887	886
16:27:00	1679	43227	717	703	709	710	874	901	888
16:27:15	1674	43272	720	703	714	712	907	871	889
16:27:30	1684	43440	726	704	713	714	894	869	881
16:27:45	1688	43331	721	704	713	713	875	876	876
16:28:00	1697	43285	719	704	711	711	869	886	878
16:28:15	1733	43337	718	705	711	711	868	880	874
16:28:30	1614	43474	718	704	709	710	876	889	882
16:28:45	1599	43287	715	703	707	709	878	879	879
16:29:00	1580	43322	719	703	707	710	889	886	888
16:29:15	1571	43333	721	703	707	711	882	903	893
16:29:30	1558	43374	718	703	706	709	866	898	882
16:29:45	1551	43374	717	703	708	709	874	904	889
16:30:00	1571	43327	716	702	706	708	866	890	878
16:30:15	1563	43371	716	703	704	708	877	882	879
16:30:30	1560	43335	717	703	705	709	872	881	876
16:30:45	1575	43330	717	703	705	709	859	874	867
16:31:00	1572	43354	717	704	701	707	869	877	873
16:31:15	1587	43264	723	704	703	710	879	873	876
16:31:30	1569	43384	718	705	702	709	862	876	869
16:31:45	1574	43264	722	705	702	710	890	871	880
16:32:00	1563	43364	723	705	701	710	886	875	880
16:32:15	1585	43398	724	705	701	710	899	863	881
16:32:30	1580	43265	724	704	703	711	882	884	883
16:32:45	1577	43303	723	704	703	710	883	883	883
16:33:00	1570	43226	723	705	701	709	879	877	878
16:33:15	1588	43314	725	705	702	711	893	875	884
16:33:30	1589	43300	724	706	699	710	884	874	879
16:33:45	1603	43357	723	706	698	709	887	866	877
16:34:00	1614	43262	725	705	696	709	899	869	884
16:34:15	1622	43351	726	705	698	709	909	864	886
16:34:30	1633	43383	732	706	697	711	899	861	880
16:34:45	1667	43299	729	705	696	710	888	872	880
16:35:00	1671	43264	728	704	693	709	867	869	868
16:35:15	1697	43365	727	704	692	708	883	870	876
16:35:30	1724	43322	724	703	691	706	879	881	880

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Fire Test Data - continued

16:35:45	1558	43319	722	703	695	706	883	876	879
16:36:00	1618	43385	717	702	692	704	866	881	873
16:36:15	1711	43318	704	701	692	699	670	661	665
16:36:30	1808	43379	675	690	681	682	498	479	488
16:36:45	1887	43203	632	673	664	656	277	376	327
16:37:00	1570	42915	386	566	641	531	59	78	69
16:37:15	1570	42656	240	372	617	410	44	55	49
16:37:30	1606	42481	153	109	596	286	37	51	44
16:37:45	1703	42284	102	109	558	256	34	46	40
16:38:00	1627	42109	68	107	503	226	34	38	36
16:38:15	1702	41881	52	92	463	202	27	41	34
16:38:30	1628	41663	43	68	430	181	29	42	36
16:38:45	1712	41492	35	58	400	164	26	40	33
16:39:00	1544	41239	36	49	370	151	27	39	33
16:39:15	1657	41076	34	43	338	138	27	34	31
16:39:30	1607	40843	29	40	309	126	26	34	30
16:39:45	1593	40685	31	36	283	117	25	32	29
16:40:00	1607	40410	26	32	258	105	24	30	27
16:40:15	1659	40334	30	29	234	98	24	29	26
16:40:30	1684	39967	29	31	212	91	21	28	24
16:40:45	1550	39881	24	29	193	82	18	29	24
16:41:00	1517	39652	27	29	175	77	26	27	26
16:41:15	1568	39507	26	28	159	71	19	28	24
16:41:30	1604	39195	30	27	146	68	26	29	28
16:41:45	1647	39352	23	29	134	62	19	28	24
16:42:00	1632	39243	26	27	123	58	17	28	23
16:42:15	1548	39205	25	27	114	55	21	27	24
16:42:30	1472	39208	24	28	106	53	22	26	24
16:42:45	1513	39226	23	28	98	50	24	27	26
16:43:00	1514	39120	24	27	89	47	25	28	26
16:43:15	1570	39062	23	26	85	45	23	22	23
16:43:30	1555	39123	24	26	77	42	22	25	24
16:43:45	1542	39075	23	25	73	41	19	23	21
16:44:00	1560	39028	20	23	68	37	22	19	21
16:44:15	1559	39084	23	22	64	36	17	18	18
16:44:30	1569	39076	20	21	63	35	18	22	20
16:44:45	1567	39049	22	21	59	34	16	22	19
16:45:00	1570	39108	19	21	57	32	17	21	19
16:45:15	1560	39020	19	21	58	33	22	21	21
16:45:30	1555	39020	23	21	57	34	21	21	21
16:45:45	1553	39091	20	21	56	32	21	18	19
16:46:00	1551	39101	21	19	54	31	18	19	18

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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:	3550	mls
Average Leak Rate Over 30 Minute Duration:	118	ml/min
Allowable Leak Rate:	3200	ml/min
Total Through Seat Leakage Collected Over 10 Minute Cool Down:	145	mls
Total Water Volume Lost Over 40 Minute Burn and Cool Down:	4207	mls
Water Collected in System Relief Valve:	600	mls
Calculated External Leakage During 40 Minute Duration:	-88	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
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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:	1887	psig
Average Pressure During Burn/Cool Down:	1613	psig
Minimum Pressure During Burn/Cool Down:	1472	psig
Amount of Time of Avg. Cal Block > 650 deg.C:	22.3	minutes
Minimum Allowable Time at Temperature:	15.0	minutes
Maximum Avg Cal Block Temperature:	716	deg. C
Average Cal Block Temperature:	516	deg. C
Lowest Avg Cal. Block Temperature:	25	deg. C
Maximum Body Flame Temperature During Burn:	913	deg. C
Average Body Flame Temperature During Burn:	864	deg. C
Maximum Bonnet Flame Temperature During Burn:	988	deg. C
Average Bonnet Flame Temperature During Burn:	892	deg. C
Average of Both Flame Temperatures During Burn:	878	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: 5/3/2013

Product Code: 8 inch Class 900 Ball Valve

Project Number: PN212312

This test not required for Pressure Class 900.

Yarmouth Research and Technology, LLC

Operational Test Information

Customer: ValvTechnologies, Inc.

Date: 5/3/2013

Product Code: 8 inch Class 900 Ball Valve

Project Number: PN212312

Valve operated from closed to open.

Test Data

Time	Pressure (psig)	Cal Block Temp - C
16:57:33	1559	27
16:57:48	1568	27
16:58:03	1585	25
16:58:18	1593	26
16:58:33	1591	26
16:58:48	1600	26
16:59:03	1600	24
16:59:18	1610	27
16:59:33	1600	28
16:59:48	1611	27
17:00:03	1613	26
17:00:18	1628	26
17:00:33	1629	27
17:00:48	1627	27
17:01:03	1640	26
17:01:18	1634	28
17:01:33	1635	25
17:01:48	1638	27
17:02:03	1630	26
17:02:18	1647	28
17:02:33	1634	27

Leakages were collected manually.

Total External Leakage Collected Over 5 Minute Duration:	10	mls
Average Leak Rate Over 5 Minute Duration:	2.0	ml/min
Allowable Leak Rate:	200	ml/min

Was the Valve Leakage Below the Allowable?	Yes
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