

Fire Test Report

API Standard 607, 4th Edition

Performed for

ValvTechnologies, Inc.

www.valv.com



2 inch Class 1500 Ball Valve

Product Code: N826-RF-FP-B020-001DT-001

Project Number: 211088

Test Date: January 11, 2012

Performed by

YARMOUTH RESEARCH AND TECHNOLOGY, LLC

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Yarmouth Research and Technology

Customer: ValvTechnologies, Inc.

Date: 1/11/2012

Specification: API 607, Fourth Edition, May 1993

Product Description: 2 inch Class 1500 Ball Valve

Project Number: PN211088

Comments: Product Code: N826-RF-FP-B020-001DT-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:	10:24:00	
Average Pressure During Burn:	2695	psig
Seat Leak Rate During Burn:	0.0	ml/min
Allowable Seat Leak Rate:	200	ml/min
External Leak Rate During Burn/Cool Down:	0.7	ml/min
Allowable External Leak Rate:	50	ml/min
Were the Valve Leakages Below the Allowables?	Yes	

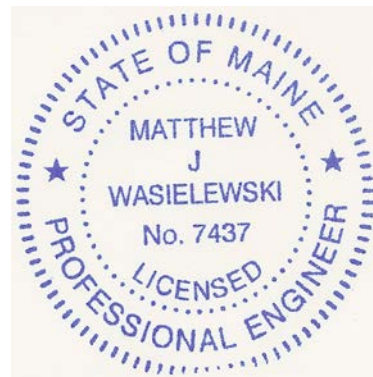
Operational Test

Average Pressure During Test:	2661	psig
Seat Leak Rate After Operating:	0	ml/min
Allowable Seat Leak Rate:	40	ml/min
External Leak Rate After Operating:	0	ml/min
Allowable External Leak Rate:	50	ml/min
Were the Valve Leakages Below the Allowables?	Yes	

Valve Pass or Fail the Test Standard?	PASS
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Witnesses

Matthew J. Wasielewski

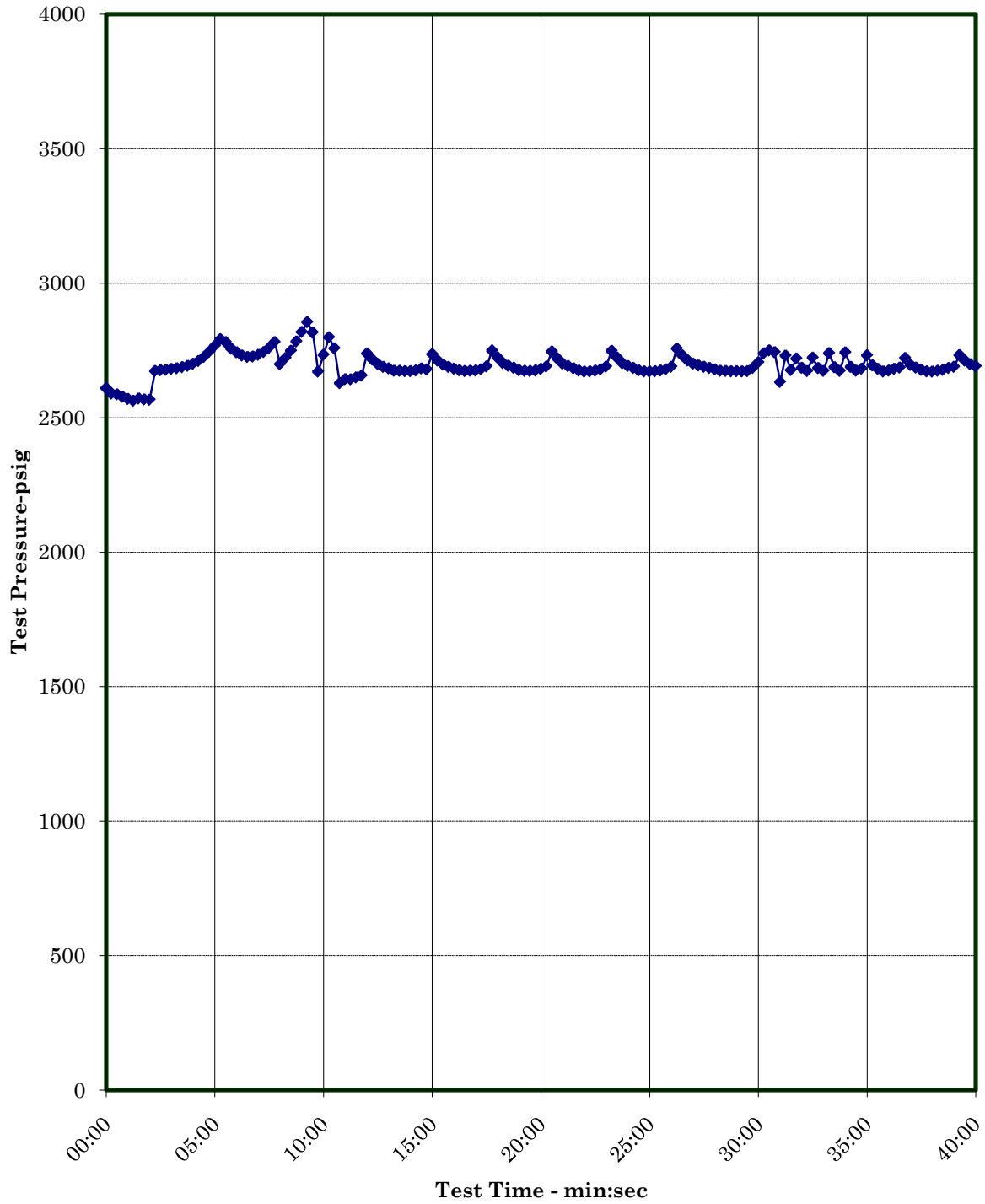


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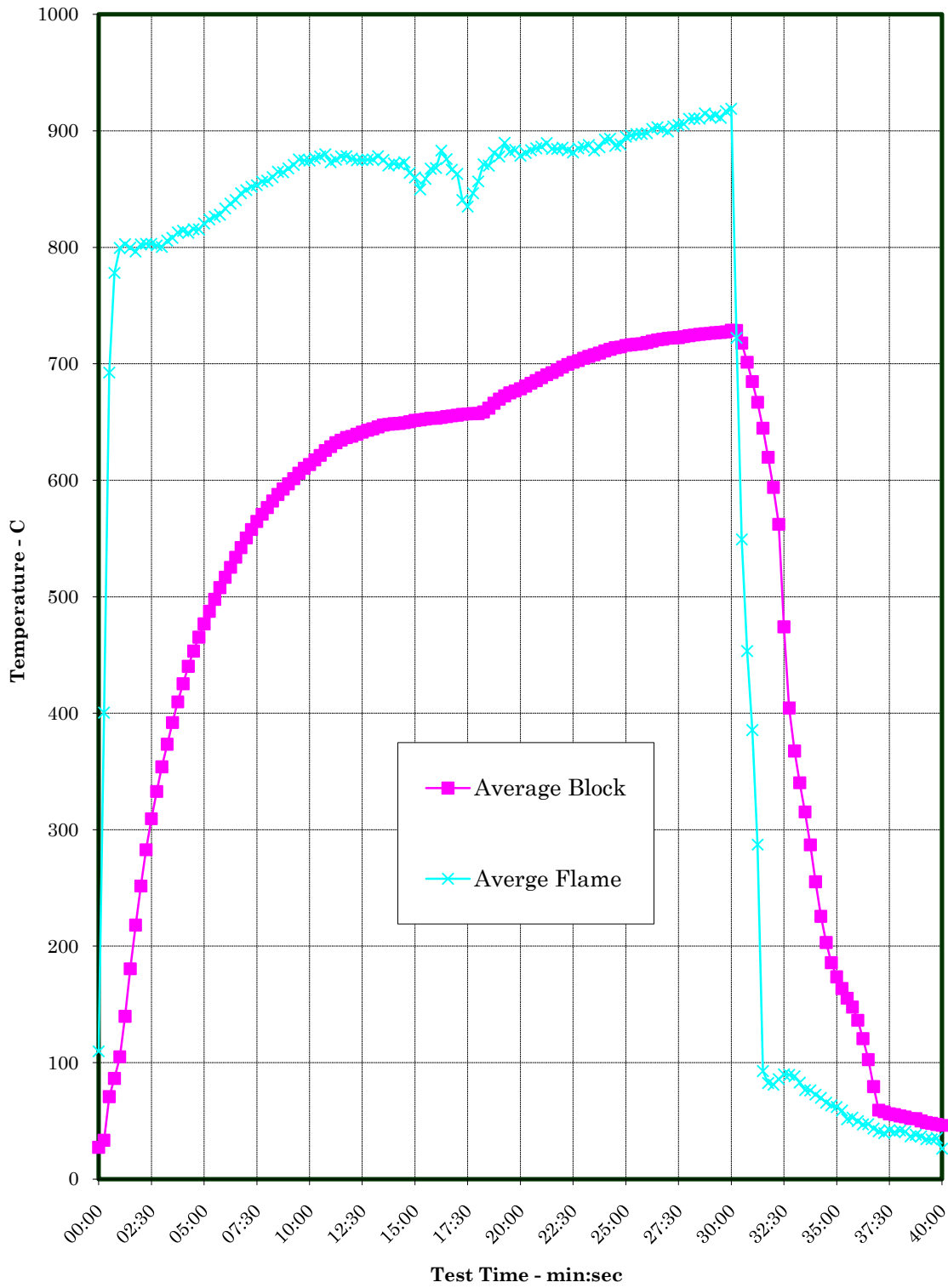
Fire Test Information Sheet

Valve Manufacturer's Name:	Valvtechnologies
Valve Manufacturer's Address:	5904 Bingle Road Houston, Texas 77095
Did valve meet all required hydrostatic, leakage and other production pressure tests?	Yes
Valve Product Code:	N826-RF-FP-B020-001DT-001
Valve Description	Size: 2" Pressure Rating: 1500# Pressure Rating at 100F: 3750 psig Type: Trunnion Weight: 140 lbs Reduced or Full Bore: Full Bore Body/Bonnet Material: SA 182 Gr. 316 Trim Material: Stainless Seat Material: SA-564 Type 630 Stem / Body Seal Material: SA-564 Type 630 Bolting Material: SA-193 Gr. B8M/ SA-194 Gr. 8M Is valve considered "Soft-Seated"? No
Valve Markings	Nameplate Information: N826-RF-FP-B020-001DT-001 Casting Markings: NA
Assembly Drawing Number / Revision / Date of Issue:	111034-1 Rev. 1 / 07-19-2011
Assembly Drawing sent to Yarmouth:	Yes
If valve is fitted with gearbox, state gearbox manufacturer, model number and mechanical advantage:	Yes, Exeeco IW-3/40 ME: 15
If valve is non-symmetric, state direction of flow for test:	Symmetric
For double-seated valves, state maximum allowable cavity pressure:	
Manufacturer's Contact Name /Date:	Jonathan Jones / 01/16/2012

Pressure verses Time Chart



Temperature verses Time Chart



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Test Valve During Burn

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Test Valve During Burn

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Fire Test Information

Customer: ValvTechnologies, Inc.

Date: 1/11/2012

Product Code: 2 inch Class 1500 Ball Valve

Project Number: PN211088

Fire Test Raw Data

Time	Pressure (psig)	Water Volume (mls)	Block 1 Temp-C	Block 2 Temp-C	Average Block Temp-C	Bonnet Flame Temp-C	Body Flame Temp-C	Average Flame Temp-C
10:24:00	2610	37130	37	18	27	156	64	110
10:24:15	2590	37126	47	20	33	433	368	401
10:24:30	2587	37139	103	38	71	724	661	693
10:24:45	2578	37140	107	66	86	811	746	778
10:25:00	2570	37132	119	91	105	832	767	799
10:25:15	2563	37150	162	118	140	837	769	803
10:25:30	2571	37147	215	146	181	838	762	800
10:25:45	2568	37139	264	172	218	838	755	796
10:26:00	2567	37148	307	196	252	845	760	803
10:26:15	2674	37147	346	219	283	842	764	803
10:26:30	2677	37143	377	242	309	844	762	803
10:26:45	2678	37145	405	261	333	849	754	802
10:27:00	2681	37135	430	278	354	844	757	800
10:27:15	2684	37138	453	294	373	846	766	806
10:27:30	2688	37140	473	311	392	849	767	808
10:27:45	2693	37139	493	326	410	853	772	813
10:28:00	2701	37150	511	339	425	854	774	814
10:28:15	2711	37144	528	352	440	851	774	813
10:28:30	2726	37144	544	363	453	855	776	816
10:28:45	2745	37143	558	372	465	856	774	815
10:29:00	2767	37132	572	381	477	860	781	821
10:29:15	2792	37135	584	391	488	863	784	824
10:29:30	2781	37155	596	400	498	866	787	826
10:29:45	2757	37139	607	409	508	868	788	828
10:30:00	2743	37130	616	417	517	871	796	833
10:30:15	2731	37141	626	425	525	871	804	838
10:30:30	2726	37140	634	433	534	871	810	841
10:30:45	2727	37159	642	442	542	874	818	846
10:31:00	2734	37131	651	451	551	876	823	849
10:31:15	2744	37138	658	457	558	877	827	852
10:31:30	2760	37122	666	464	565	878	828	853
10:31:45	2781	37129	672	470	571	878	835	856
10:32:00	2699	37123	677	476	577	874	840	857

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Fire Test Data - continued

10:32:15	2722	37115	683	482	582	875	846	860
10:32:30	2749	37123	688	487	588	874	856	865
10:32:45	2783	37120	693	492	593	876	853	864
10:33:00	2819	37125	698	496	597	873	862	868
10:33:15	2855	37120	703	500	601	872	870	871
10:33:30	2817	37127	707	505	606	877	874	876
10:33:45	2671	37123	712	509	610	873	876	874
10:34:00	2734	37113	716	512	614	869	879	874
10:34:15	2799	37102	719	516	618	871	882	876
10:34:30	2758	37108	723	519	621	871	886	878
10:34:45	2629	37117	727	524	626	874	886	880
10:35:00	2643	37115	731	527	629	862	884	873
10:35:15	2643	37115	734	531	632	868	882	875
10:35:30	2650	37114	736	533	634	871	885	878
10:35:45	2656	37110	738	535	637	874	883	878
10:36:00	2739	37097	740	536	638	880	872	876
10:36:15	2716	37063	742	537	639	876	874	875
10:36:30	2700	37067	743	539	641	873	877	875
10:36:45	2689	37075	745	541	643	872	878	875
10:37:00	2684	37102	746	542	644	872	879	876
10:37:15	2675	37082	748	544	646	876	881	878
10:37:30	2675	37090	750	545	648	875	875	875
10:37:45	2673	37081	752	544	648	875	866	870
10:38:00	2673	37068	753	544	649	876	868	872
10:38:15	2676	37087	755	543	649	879	863	871
10:38:30	2683	37079	757	542	649	885	861	873
10:38:45	2679	37087	759	542	650	872	856	864
10:39:00	2736	37046	761	542	651	876	844	860
10:39:15	2713	37047	762	542	652	859	841	850
10:39:30	2698	37064	763	542	653	874	843	859
10:39:45	2689	37051	764	542	653	877	858	868
10:40:00	2682	37050	766	541	653	877	859	868
10:40:15	2676	37061	767	541	654	896	870	883
10:40:30	2674	37045	768	542	655	894	857	876
10:40:45	2675	37062	769	541	655	897	837	867
10:41:00	2676	37050	771	541	656	881	845	863
10:41:15	2680	37054	772	541	657	836	845	841
10:41:30	2691	37059	773	541	657	833	837	835
10:41:45	2750	37040	774	540	657	846	847	846
10:42:00	2725	37046	776	539	657	859	854	857
10:42:15	2703	37041	776	541	659	852	891	871
10:42:30	2693	37045	777	547	662	848	892	870
10:42:45	2686	37046	779	553	666	871	892	881

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Fire Test Data - continued

10:43:00	2676	37049	780	559	670	864	892	878
10:43:15	2674	37035	781	564	673	888	892	890
10:43:30	2674	37048	782	568	675	881	883	882
10:43:45	2676	37029	783	571	677	886	881	884
10:44:00	2681	37040	784	573	679	882	875	879
10:44:15	2690	37041	786	576	681	876	886	881
10:44:30	2746	37007	787	579	683	874	892	883
10:44:45	2721	37013	788	583	686	879	891	885
10:45:00	2701	37019	789	587	688	886	887	886
10:45:15	2692	37013	791	591	691	891	888	889
10:45:30	2684	37018	792	593	693	886	883	884
10:45:45	2675	37016	793	597	695	888	881	884
10:46:00	2671	37014	793	601	697	887	884	886
10:46:15	2672	37019	794	604	699	884	882	883
10:46:30	2675	37013	796	607	701	881	882	881
10:46:45	2680	37022	796	609	703	887	883	885
10:47:00	2690	37034	797	612	705	892	880	886
10:47:15	2749	36986	798	615	706	900	876	888
10:47:30	2724	36987	798	617	708	887	879	883
10:47:45	2702	36984	799	619	709	887	885	886
10:48:00	2692	37004	800	622	711	900	885	893
10:48:15	2685	37011	801	624	713	901	886	893
10:48:30	2676	37006	801	627	714	894	881	887
10:48:45	2672	36989	801	628	714	894	883	888
10:49:00	2672	37001	802	629	716	911	879	895
10:49:15	2673	36983	802	631	716	911	882	896
10:49:30	2676	37003	802	632	717	908	886	897
10:49:45	2680	37001	802	633	717	909	886	898
10:50:00	2690	36994	802	635	718	907	889	898
10:50:15	2757	36854	801	638	719	911	892	902
10:50:30	2732	36972	801	640	721	912	894	903
10:50:45	2713	36969	801	641	721	908	895	902
10:51:00	2701	36964	801	643	722	909	890	899
10:51:15	2694	36963	801	643	722	913	894	904
10:51:30	2689	36963	801	644	723	913	897	905
10:51:45	2685	36959	801	646	723	914	897	906
10:52:00	2680	36961	802	647	724	916	904	910
10:52:15	2675	36967	802	648	725	915	906	911
10:52:30	2674	36968	802	648	725	918	903	911
10:52:45	2672	36981	803	649	726	920	910	915
10:53:00	2673	36973	803	649	726	914	910	912
10:53:15	2672	36971	803	650	727	915	912	913
10:53:30	2673	36969	803	651	727	912	911	911

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Fire Test Data - continued

10:53:45	2685	36968	803	652	728	921	913	917
10:54:00	2705	36970	804	653	729	918	919	919
10:54:15	2739	36947	803	654	729	724	721	722
10:54:30	2750	36947	790	646	718	576	523	549
10:54:45	2744	36949	772	631	701	489	417	453
10:55:00	2633	36932	755	614	685	427	344	386
10:55:15	2731	37561	738	596	667	294	281	287
10:55:30	2677	36914	716	573	645	83	102	93
10:55:45	2720	36904	691	549	620	77	88	83
10:56:00	2685	36908	663	524	594	75	87	81
10:56:15	2674	36944	637	487	562	78	94	86
10:56:30	2723	36873	537	411	474	88	92	90
10:56:45	2685	36892	443	366	404	90	89	89
10:57:00	2674	36859	392	343	368	87	89	88
10:57:15	2740	36977	351	330	340	78	88	83
10:57:30	2688	36845	311	320	315	62	91	76
10:57:45	2674	36830	262	312	287	59	93	76
10:58:00	2743	36302	205	306	255	58	87	73
10:58:15	2689	36832	153	298	226	56	83	70
10:58:30	2675	36814	114	292	203	54	77	66
10:58:45	2682	36824	87	285	186	50	77	63
10:59:00	2732	36792	68	279	174	47	77	62
10:59:15	2695	36828	56	272	164	44	74	59
10:59:30	2682	36771	47	263	155	40	63	51
10:59:45	2672	36838	41	254	148	39	66	53
11:00:00	2675	36814	37	236	136	36	64	50
11:00:15	2682	36771	34	207	121	34	60	47
11:00:30	2686	36807	32	173	103	31	63	47
11:00:45	2722	36776	29	129	79	28	58	43
11:01:00	2696	36780	28	90	59	29	53	41
11:01:15	2686	36780	27	89	58	29	50	39
11:01:30	2678	36775	26	86	56	28	56	42
11:01:45	2672	36758	25	86	55	28	52	40
11:02:00	2671	36782	25	83	54	29	54	42
11:02:15	2675	36767	24	82	53	26	55	41
11:02:30	2678	36770	24	80	52	27	47	37
11:02:45	2685	36768	24	80	52	25	51	38
11:03:00	2689	36791	23	77	50	24	49	37
11:03:15	2733	36742	23	74	49	23	45	34
11:03:30	2712	36704	22	73	48	23	45	34
11:03:45	2699	36714	22	72	47	23	47	35
11:04:00	2691	36752	22	71	46	21	31	26

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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:	0.0	ml/min
Allowable Leak Rate:	200	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:	378	mls
Water Collected in System Relief Valve:	350	mls
Calculated External Leakage During 40 Minute Duration:	28	mls
Average Leak Rate Over 40 Minute Duration:	0.7	ml/min
Allowable Leak Rate:	50	ml/min

Were the Valve Leakages Below the Allowables?	Yes
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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:	2855	psig
Average Pressure During Burn/Cool Down:	2695	psig
Minimum Pressure During Burn/Cool Down:	2563	psig

Maximum Body Flame Temperature During Burn:	919	deg. C
Average Body Flame Temperature During Burn:	845	deg. C

Maximum Bonnet Flame Temperature During Burn:	921	deg. C
Average Bonnet Flame Temperature During Burn:	869	deg. C

Average of Both Flame Temperatures During Burn:	857	deg. C
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Note

Were Test Conditions Within Compliance?	Yes
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Post-Burn Seat Test Information

Customer: ValvTechnologies, Inc.

Date: 1/11/2012

Product Code: 2 inch Class 1500 Ball Valve

Project Number: PN211088

Test Data

Time	Pressure (psig)	Cal Block Temp - C
11:09:04	2664	19
11:09:19	2715	20
11:09:34	2698	20
11:09:49	2686	20
11:10:04	2679	20
11:10:19	2674	20
11:10:34	2669	20
11:10:49	2664	20
11:11:04	2658	20
11:11:19	2655	20
11:11:34	2650	20
11:11:49	2648	20
11:12:04	2648	21
11:12:19	2647	21
11:12:34	2647	21
11:12:49	2647	21
11:13:04	2646	21
11:13:19	2644	21
11:13:34	2644	21
11:13:49	2644	21
11:14:04	2644	21

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:	40	ml/min
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	