Fire Test Report

API Standard 607, 4th Edition

Performed for

ValvTechnologies, Inc.

www.valv.com

2 inch Class 600 Plug Valve
Product Code: V628-RF-FP-B020-001DT-001

Project Number: 211088
Test Date: August 3, 2011

Performed by

YARMOUTH RESEARCH AND TECHNOLOGY, LLC

434 Walnut Hill Road
North Yarmouth, ME 04097 USA
(207) 829-5359
info@yarmouthresearch.com
www.yarmouthresearch.com

Yarmouth Research and Technology

Customer:	ValvTechnologies, Inc.	Date:	8/3/2011
Specification:	API 607, Fourth Edition, May 1993		
Product Description:	2 inch Class 600 Ball Valve		
Project Number:	PN211088		
Comments:	Product Code: V628-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:	11:22:00	
Average Pressure During Burn:	31	psig
Seat Leak Rate During Burn:	0.0	ml/min
Allowable Seat Leak Rate:	200	ml/min
External Leak Rate During Burn/Cool Down:	0.8	ml/min
Allowable External Leak Rate:	50	ml/min
Were the Valve Leakages Below the Allowables?	Yes	

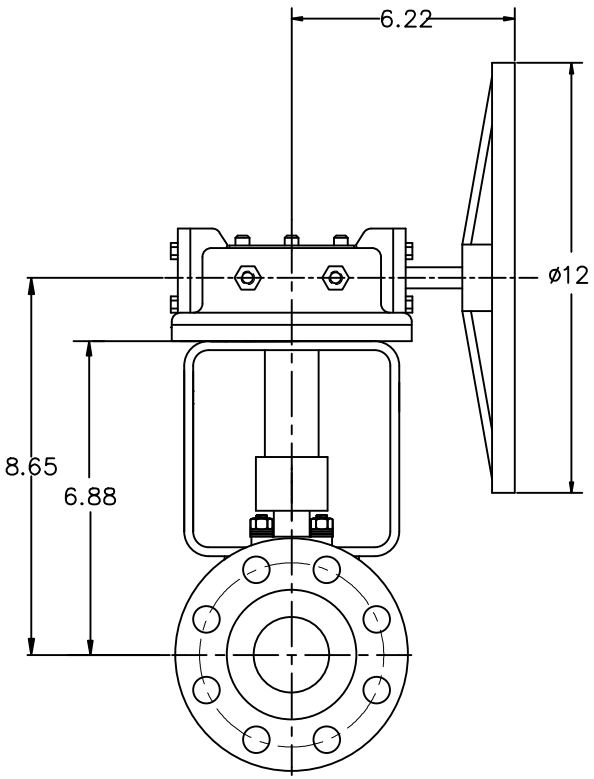
Operational Test

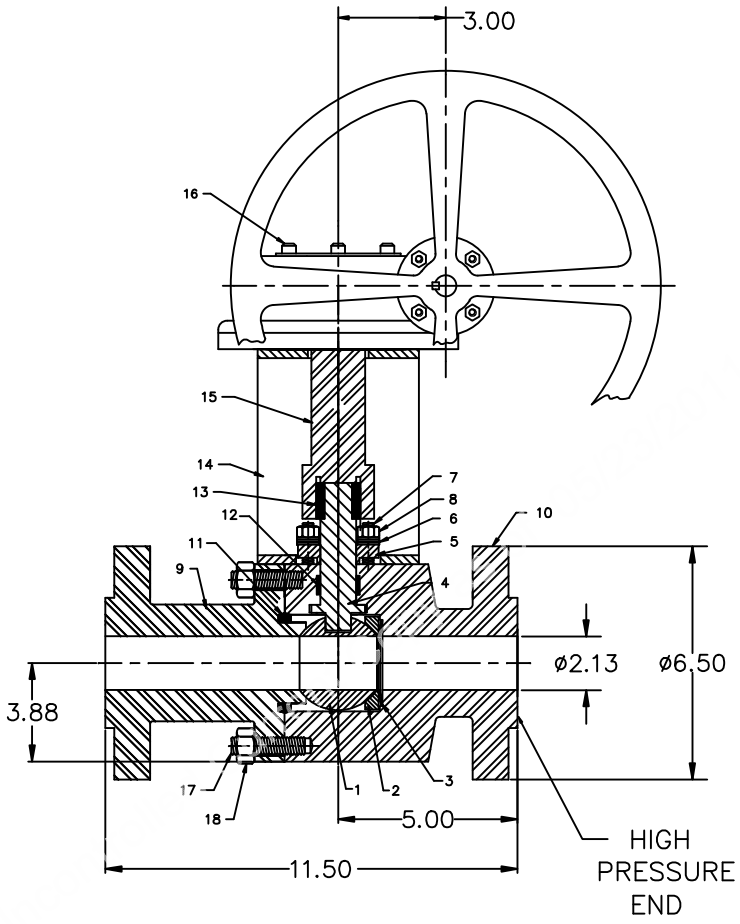
Average Pressure During Test:	30	psig
Seat Leak Rate After Operating:	0	ml/min
Allowable Seat Leak Rate:	40	ml/min
External Leak Rate After Operating:	0	ml/min
Allowable External Leak Rate:	50.0	ml/min
Were the Valve Leakages Below the Allowables?	Yes	

Valve Pass or Fail the Test Standard?	PASS

Witnesses

Customer: Valvtechnologies
Project Name: Fire Safe Certification For 110455





BILL OF MATERIAL

ITEM	DESCRIPTION	MATERIAL	QTY.
1	BALL	316 S.S./RAM21	1*
2	UPSTREAM SEAT	316 S.S./QPQ	1*
3	BELLEVILLE SPRING	Inc. 718	1*
4	STEM	316 S.S./QPQ	1
5	GLAND	316 S.S/QPQ	1
6	GLAND LOAD SPRING	Inc. 718	24
7	GLAND NUT	A194 Gr. 8M	4
8	GLAND STUD	A193 Gr. B8M	4
9	END CAP	316 S.S/RAM21	1*
10	BODY	316 S.S	1
11	BODY GASKET	A286	1*
12	GLAND PACKING	316 S.S./GRAFOIL	1*
13	KEY	1018	2
14	STOP PLATE	STEEL	1
15	DRIVE SLEEVE	4130	1
16	OPERATOR	STEEL	1
17	BODY STUD	SA-453 Grade 660	8
18	BODY NUT	SA-453 Grade 660	8

* Recommended Spare Parts

Release For Cutomer Approval

Approx. Total Weight: 125 lbs

THIRD ANGLE PROJECTION

REV	DATE	DESCRIPTION	ECN	BY	CHK	APR
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–

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

CORNER RADII –
.X= ±–
.XX= ±–
.XXX= ±–
CONCENTRICITY –
ANGULAR= ±–
SURFACE TEXTURE –
MIN. INTERNAL FILLETS –

SCALE: NTS | MODEL FILE | SIZE: B

MATERIAL: –
–

COATING: –
–

DRAWN BY	PN	DATE 05/20/11
CHECKED BY	RSL	DATE 05/20/11
ENGINEER	SS	DATE 05/21/11
APPROVED BY	SS	DATE 05/21/11

VALVTECHNOLOGIES
5904 BINGLE ROAD, HOUSTON TEXAS 77092
PH: (713) 860-0400 FAX: (713) 860-0499

TITLE: V628-RF-FP-B020-001DT-001
WITH EXEECO IW-3/40 W/12" HW
SCH. 40 STD ANSI 600#

110615-2

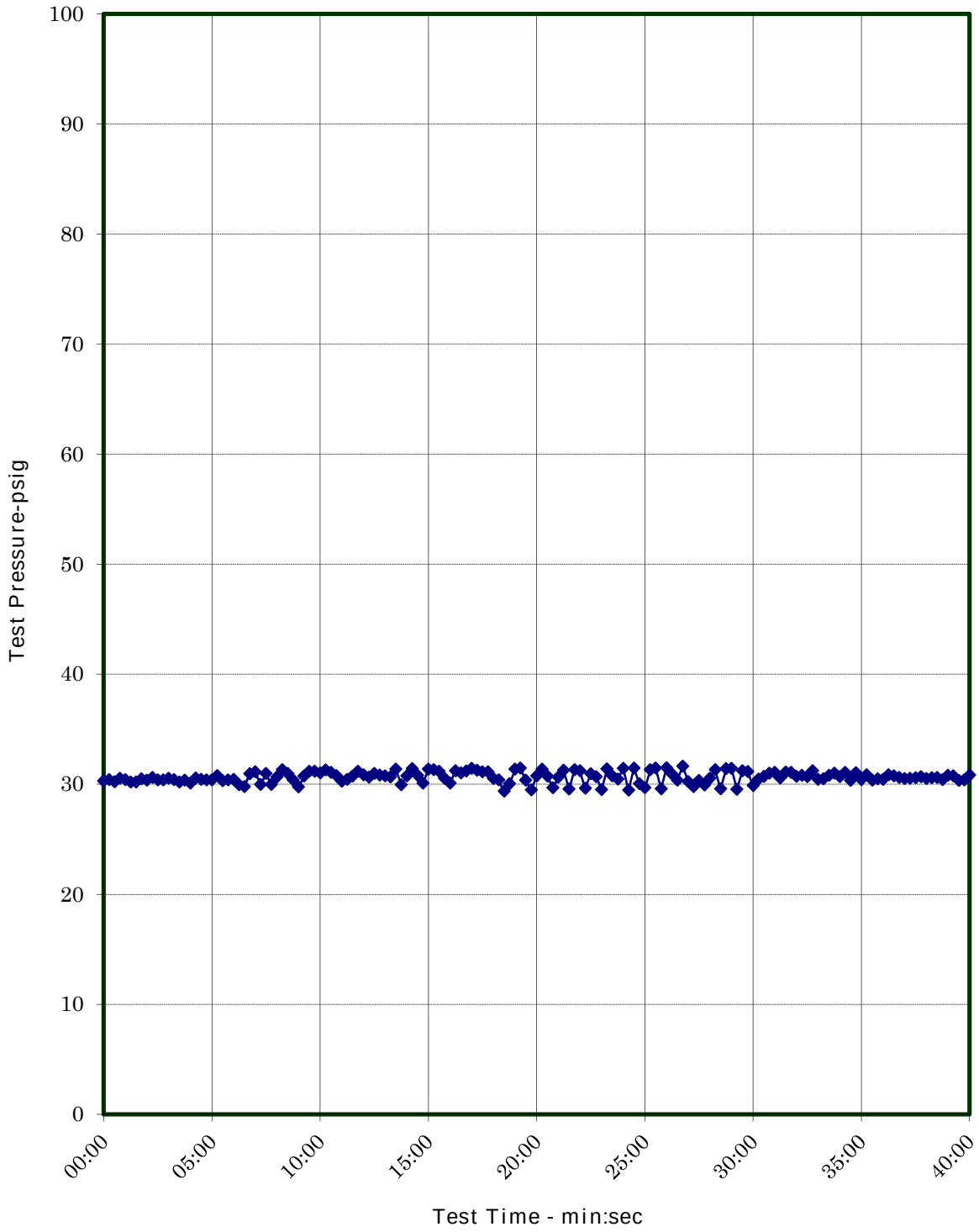
REV. 0

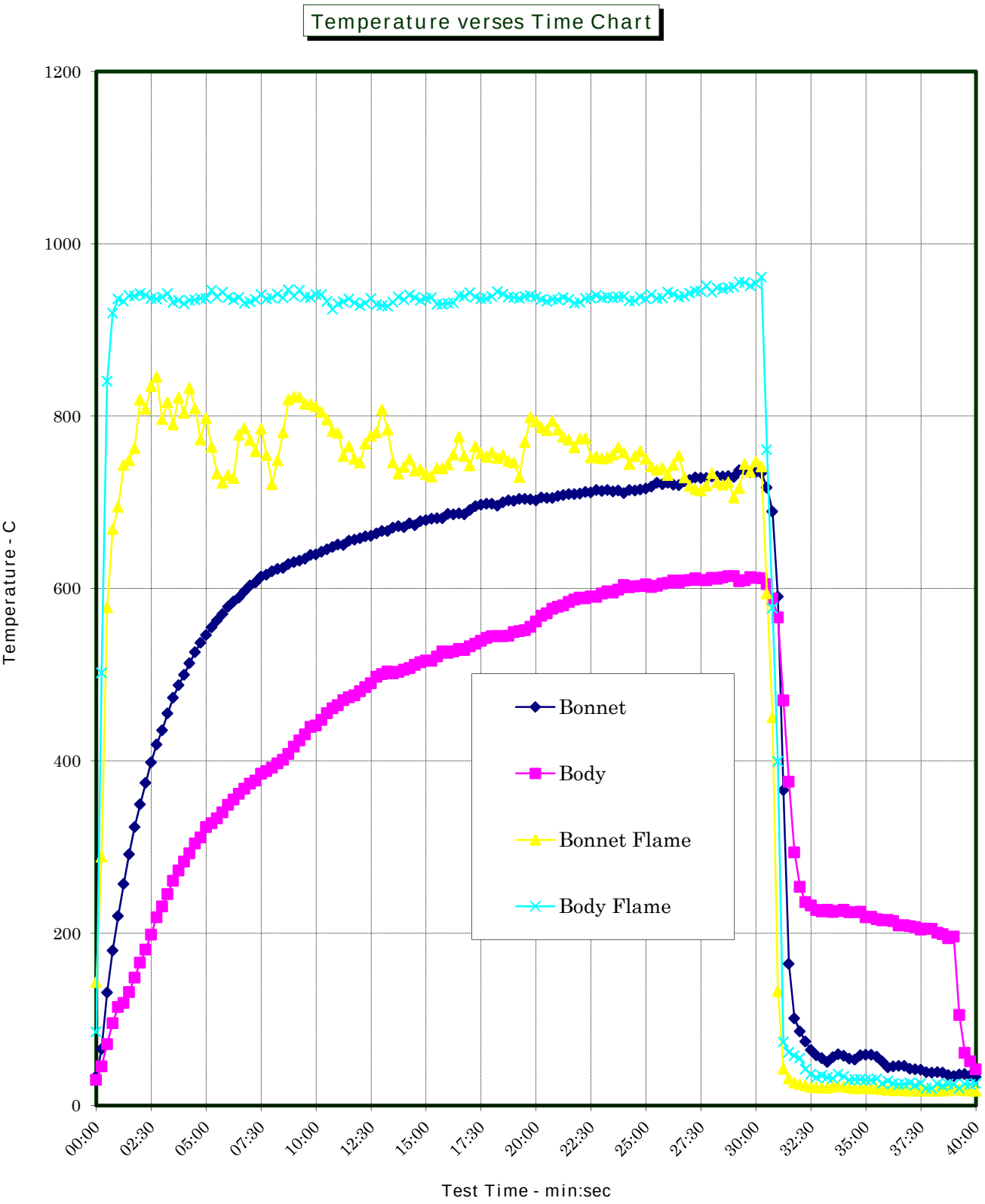
SH 1 OF 1

Fire Test Information Sheet

Valve Manufacturer's Name:	ValvTechnologies
Valve Manufacturer's Address:	5904 Bingle Rd Houston, TX 77066
Did valve meet all required hydrostatic, leakage and other production pressure tests?	YES
Valve Product Code:	V628-RF-FP-B020-001DT-001
Valve Description Size: Pressure Rating: Pressure Rating at 100F: Type: Weight: Reduced or Full Bore: Body/Bonnet Material: Trim Material: Seat Material: Stem / Body Seal Material: Bolting Material: Is valve considered "Soft-Seated"?	 2.13" 600# 1440 PSI RF 125 LBS FP SA-182 316H 28001 SA-182 316H/ RAM21 SA-182 316/H/ SA-638 GR.660 SA-453 GR.660 NO
Valve Markings Nameplate Information: Casting Markings:	V628-RF-FP-B020-001DT-001 BODY = A182-316H ASME B16.34 size = 2.13" Class = 600# TRIM = 28001
Assembly Drawing Number / Revision / Date of Issue:	110615-2 REV. 1 08/15/2011
Assembly Drawing sent to Yarmouth:	YES
If valve is fitted with gearbox, state gearbox manufacturer, model number and mechanical advantage:	EXEECO IW3/40
If valve is non-symmetric, state direction of flow for test:	SEE DRAWING
For double-seated valves, state maximum allowable cavity pressure:	N/A
Manufacturer's Contact Name /Date:	Erika Chavez 08/15/11

Pressure verses Time Chart




Temperature verses Time Chart
1200
1000
800
600
400
200
0
Temperature - C
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
Bonnet
Body
Bonnet Flame
Body Flame

Valve Prior to Test

Valve During Burn

Fire Test Information

Customer: ValvTechnologies, Inc. Date: 8/3/2011

Product Code: 2 inch Class 600 Ball Valve

Project Number: PN211088

Fire Test Raw Data

Time	Pressure (psig)	Water Volume (mls)	Bonnet Temp-C	Body Temp-C	Bonnet Flame Temp-C	Body Flame Temp-C	Average Flame Temp-C
11:22:00	30	27933	34	30	143	86	114
11:22:15	30	27942	66	46	289	502	396
11:22:30	30	27847	131	71	578	841	709
11:22:45	31	27922	180	96	669	919	794
11:23:00	30	27922	220	114	695	936	816
11:23:15	30	27869	257	119	743	933	838
11:23:30	30	27869	292	132	749	940	844
11:23:45	30	27936	323	149	763	939	851
11:24:00	30	27981	349	166	819	942	881
11:24:15	31	27958	374	181	808	941	874
11:24:30	30	27915	398	198	835	937	886
11:24:45	30	27862	419	218	846	936	891
11:25:00	31	27822	436	231	797	938	868
11:25:15	30	27854	455	245	816	942	879
11:25:30	30	27822	473	261	791	932	861
11:25:45	30	27712	488	273	822	934	878
11:26:00	30	27656	500	283	804	931	867
11:26:15	31	28079	513	293	833	934	884
11:26:30	30	27931	526	304	809	935	872
11:26:45	30	28370	537	311	773	937	855
11:27:00	30	28046	546	323	798	937	867
11:27:15	31	28326	555	328	764	946	855
11:27:30	30	28082	563	333	733	938	836
11:27:45	30	28563	571	340	723	944	833
11:28:00	30	28575	579	349	732	938	835
11:28:15	30	27546	585	355	728	935	832
11:28:30	30	27323	589	362	778	938	858
11:28:45	31	28165	597	368	786	931	859
11:29:00	31	29691	603	374	772	933	853
11:29:15	30	27615	607	377	759	936	848
11:29:30	31	29736	614	385	786	941	863
11:29:45	30	27146	616	388	755	936	846
11:30:00	31	29258	620	392	721	937	829

Fire Test Data - continued

11:30:15	31	29757	623	397	749	942	845
11:30:30	31	28669	624	401	781	937	859
11:30:45	30	27255	628	408	819	947	883
11:31:00	30	26888	631	416	823	939	881
11:31:15	31	27556	632	424	822	946	884
11:31:30	31	29327	634	431	814	938	876
11:31:45	31	29788	639	440	814	938	876
11:32:00	31	29884	639	441	811	941	876
11:32:15	31	29813	643	447	805	941	873
11:32:30	31	29100	646	455	796	933	865
11:32:45	31	28310	648	461	783	924	853
11:33:00	30	28194	651	465	781	931	856
11:33:15	30	28197	651	471	754	933	843
11:33:30	31	27856	656	474	765	936	851
11:33:45	31	29359	657	476	751	932	841
11:34:00	31	28793	658	481	746	928	837
11:34:15	31	28736	661	486	768	931	850
11:34:30	31	29011	661	490	777	937	857
11:34:45	31	28620	664	498	781	929	855
11:35:00	31	28498	667	501	808	928	868
11:35:15	31	28408	667	504	784	928	856
11:35:30	31	29743	671	502	746	932	839
11:35:45	30	27221	672	503	733	938	836
11:36:00	31	29859	671	506	741	935	838
11:36:15	31	29699	676	508	750	941	845
11:36:30	31	30121	673	511	737	938	837
11:36:45	30	26397	678	514	739	934	837
11:37:00	31	30173	679	516	733	937	835
11:37:15	31	30138	681	516	730	938	834
11:37:30	31	28486	682	521	739	930	835
11:37:45	31	27003	682	527	739	930	835
11:38:00	30	26638	687	525	744	931	838
11:38:15	31	27677	686	527	756	932	844
11:38:30	31	28120	687	530	776	940	858
11:38:45	31	28905	686	529	754	939	846
11:39:00	31	30022	691	533	743	943	843
11:39:15	31	30548	696	536	765	938	852
11:39:30	31	30420	697	539	757	936	847
11:39:45	31	30351	698	543	753	937	845
11:40:00	30	29992	698	545	758	939	849
11:40:15	30	29585	696	545	752	944	848
11:40:30	29	26533	700	545	755	942	848
11:40:45	30	26717	702	545	748	938	843

Fire Test Data - continued

11:41:00	31	29574	702	549	746	938	842
11:41:15	31	30394	704	551	729	937	833
11:41:30	30	29638	704	552	770	939	854
11:41:45	29	27845	703	556	799	940	869
11:42:00	31	27074	702	562	794	938	866
11:42:15	31	29922	706	568	787	936	861
11:42:30	31	29944	705	571	784	933	859
11:42:45	30	26802	705	577	794	936	865
11:43:00	31	27436	707	579	784	935	860
11:43:15	31	29749	708	580	776	938	857
11:43:30	30	26277	709	585	773	936	854
11:43:45	31	29117	709	587	764	931	848
11:44:00	31	29918	710	590	774	932	853
11:44:15	30	27945	712	589	774	937	856
11:44:30	31	27267	712	591	752	937	845
11:44:45	31	30497	714	590	753	940	847
11:45:00	29	26591	713	594	751	937	844
11:45:15	31	29705	714	597	752	938	845
11:45:30	31	30067	713	595	756	937	846
11:45:45	30	26624	714	599	764	938	851
11:46:00	31	30217	711	604	758	939	848
11:46:15	29	27140	714	602	744	934	839
11:46:30	31	29182	714	603	754	934	844
11:46:45	30	30671	715	603	759	938	849
11:47:00	30	26633	716	605	751	936	843
11:47:15	31	29412	718	602	742	941	841
11:47:30	31	30150	723	603	738	937	837
11:47:45	30	27161	721	606	740	937	839
11:48:00	31	28591	723	606	732	944	838
11:48:15	31	30484	721	609	743	942	843
11:48:30	30	26251	720	607	754	938	846
11:48:45	32	30128	724	609	729	939	834
11:49:00	30	29849	726	610	719	943	831
11:49:15	30	26711	729	612	716	945	830
11:49:30	30	30413	728	610	714	945	829
11:49:45	30	29032	728	610	719	951	835
11:50:00	31	28901	730	612	734	944	839
11:50:15	31	30597	730	611	723	949	836
11:50:30	30	27363	730	613	721	947	834
11:50:45	31	29320	731	614	723	949	836
11:51:00	31	30366	729	614	706	950	828
11:51:15	30	27256	737	609	717	956	836
11:51:30	31	28534	738	610	744	955	850

Fire Test Data - continued

11:51:45	31	30250	735	613	736	951	843
11:52:00	30	29149	735	612	747	954	851
11:52:15	30	26441	734	612	742	961	851
11:52:30	31	28535	717	605	594	761	678
11:52:45	31	30143	689	588	451	577	514
11:53:00	31	29530	591	566	133	399	266
11:53:15	31	28961	366	470	43	74	58
11:53:30	31	28593	164	376	32	62	47
11:53:45	31	29148	101	294	27	58	42
11:54:00	31	28724	86	254	25	55	40
11:54:15	31	28700	74	236	23	42	33
11:54:30	31	27957	64	232	22	37	29
11:54:45	31	28467	58	227	21	33	27
11:55:00	30	27875	55	225	21	35	28
11:55:15	30	28013	51	227	21	33	27
11:55:30	31	27627	56	225	23	32	27
11:55:45	31	28260	59	226	22	37	29
11:56:00	31	27693	58	227	22	34	28
11:56:15	31	28676	54	224	21	29	25
11:56:30	30	27647	53	224	20	31	25
11:56:45	31	27889	58	225	20	31	25
11:57:00	30	28005	59	218	21	29	25
11:57:15	31	27998	59	219	20	29	25
11:57:30	30	27979	57	216	20	31	26
11:57:45	30	27943	51	215	19	26	22
11:58:00	30	27922	44	216	18	28	23
11:58:15	31	27925	46	214	18	26	22
11:58:30	31	27947	46	209	18	24	21
11:58:45	31	27901	46	209	18	25	21
11:59:00	30	27933	43	208	17	26	22
11:59:15	31	27938	42	207	17	23	20
11:59:30	31	27926	42	204	18	26	22
11:59:45	31	27912	39	205	17	20	19
12:00:00	30	27899	38	205	17	20	19
12:00:15	31	27941	39	201	18	25	21
12:00:30	31	27920	38	199	17	23	20
12:00:45	30	27887	36	194	18	25	21
12:01:00	31	27899	34	196	18	24	21
12:01:15	31	27908	36	105	19	20	19
12:01:30	30	27874	37	61	18	25	21
12:01:45	30	27885	35	52	17	24	21
12:02:00	31	27901	33	42	17	26	21

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

Total Water Volume Lost Over 40 Minute Burn and Cool Down:	32	mls
Water Collected in System Relief Valve:	0	mls
Calculated External Leakage During 40 Minute Duration:	32	mls
Average Leak Rate Over 40 Minute Duration:	0.8	ml/min
Allowable Leak Rate:	50	ml/min

Were the Valve Leakages Below the Allowables?	Yes

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:	31.6	psig
Average Pressure During Burn/Cool Down:	30.6	psig
Minimum Pressure During Burn/Cool Down:	29.3	psig
Maximum Body Flame Temperature During Burn:	961.1	deg. C
Average Body Flame Temperature During Burn:	932.3	deg. C
Maximum Bonnet Flame Temperature During Burn:	845.6	deg. C
Average Bonnet Flame Temperature During Burn:	755.2	deg. C
Average of Both Flame Temperatures During Burn:	843.8	deg. C

Note

Were Test Conditions Within Compliance?	Yes

Post-Burn Seat Test Information

Customer: ValvTechnologies, Inc. Date: 8/3/2011

Product Code: 2 inch Class 600 Ball Valve

Project Number: PN211088

Test Data

Time	Pressure (psig)	Cal Block Temp - C
12:06:35	30	23
12:06:50	31	23
12:07:05	30	23
12:07:20	31	24
12:07:35	30	23
12:07:50	31	24
12:08:05	30	26
12:08:20	31	27
12:08:35	31	26
12:08:50	30	25
12:09:05	31	26
12:09:20	30	26
12:09:35	30	26
12:09:50	30	24
12:10:05	31	24
12:10:20	31	24
12:10:35	31	26
12:10:50	30	25
12:11:05	30	26
12:11:20	30	26
12:11:35	30	27

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