ANSI/API Standard 607 Sixth Edition – 2010
ISO 10497: 2010
Fire Test Certificate

Name of Manufacturer:	**ValvTechnologies, Inc.**	Test Date:	4/12/2012
Designation of Valve:	Ball Valve – V1 Series V3CC-RF-ST-L020-014DB-001	Report/Certificate Number:	211088-2150
Size:	2 inch	Pressure Rating:	ANSI Class 150
Body Material:	Carbon Steel– SA-105	Seat Material:	SA-105 with QPQ coating
Trim Material:	316SS	Stem Seal / Body Seal:	Graphite

The above valve was tested in accordance with the above stated fire test procedure. All of the applicable test parameters were met and external and through leakage measurements were below the allowable limits. Other valves of the same construction may also be qualified according to the requirements of the test specification, Section 7.

This certificate refers to the above mentioned product. This is to certify that the test specimen provided is in conformity with the standard mentioned above. This certificate does not imply assessment of the production of the product.

Sizes Qualified:	1/2 thru 4 inch	Pressure Ranges Qualified:	150#, 300# & PN 150, 260

Laboratory Information

Name:	**Yarmouth Research and Technology, LLC**
Address:	434 Walnut Hill Road North Yarmouth, ME 04097 USA
Tester:	Matthew Wasielewski, PE info@yarmouthresearch.com www.yarmouthresearch.com (207) 829-5359

Fire Test Report

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

Performed for

Valvtechnologies Inc.

www.valv.com

2 inch Class 150 Ball Valve
Product Code: V3CC-RF-ST-L020-014DB-001

Project Number: 211088
April 12, 2012

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, LLC

Customer:	Valvetechnologies, Inc.	**Date:**	4/12/2012
Specification:	ANSI/API Standard 607, Sixth Edition, 2010		
	ISO 10497: 2010		
Product Description:	2 inch Class 150 Ball Valve		
Project Number:	PN211088		
Comments:	Product Code: V3CC-RF-ST-L020-014DB-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:	9:41:00	
Average Pressure During Burn:	222	psig
Seat Leak Rate During Burn:	29	ml/min
Allowable Seat Leak Rate:	800	ml/min
External Leak Rate During Burn/Cool Down:	190	ml/min
Allowable External Leak Rate:	200	ml/min
Amount of Time of Avg. Cal. Blocks > 650 deg. C:	21.0	minutes
Were Test Conditions Within Compliance?	Yes	
Were the Valve Leakages Below the Allowables?	Yes	

Post-burn Test

Average Pressure During Test:	25	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:	227	psig
External Leak Rate After Operating:	0	ml/min
Allowable External Leak Rate:	50	ml/min
Was the Leakage Below the Allowable?	Yes	

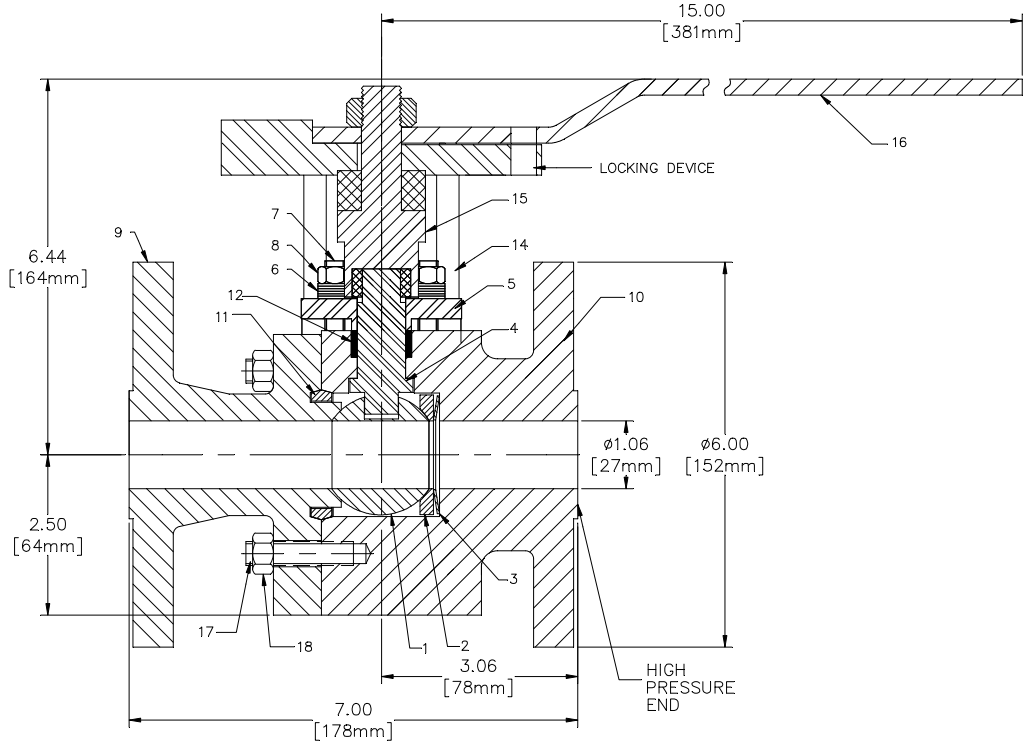
Valve Pass or Fail the Test Standard?	**PASS**

Witnesses

Fire Test Information Sheet

Valve Manufacturer's Name:	Valvtechnologies. Inc
Valve Manufacturer's Address:	5904 Bingle Rd. Houston Texas 77092
Did valve meet all required hydrostatic, leakage and other production pressure tests?	Air Test Nitrogen Hydrostatic test
Valve Product Code:	Ball Valve
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"?	1 1/16" 285 psig Ball valve 50lb Standerd A105 CC014 316 316 / I718 ASME SA-194 8M CLASS 1 NO
Valve Markings Nameplate Information: Casting Markings:	V3CC-RF-ST-L020-014DB-001 2.0" 150# A105 CC
Assembly Drawing Number / Revision / Date of Issue:	
Assembly Drawing sent to Yarmouth:	
If valve is fitted with gearbox, state gearbox manufacturer, model number and mechanical advantage:	NO
If valve is non-symmetric, state direction of flow for test:	NO , H.P END WILL BE TAGGED ON THE BODY
For double-seated valves, state maximum allowable cavity pressure:	N/A
Manufacturer's Contact Name /Date:	ANGELA HSU / 4/11/2012

CUSTOMER: VALVTECHNOLOGIES INC.
PROJECT NAME: FIRE SAFE FOR VTI SO # 120009
P.O. NUMBER: R&D FOR SO # 120009



BILL OF MATERIAL

ITEM	DESCRIPTION	MATERIAL	QTY.
1	BALL	316 S.S/RAM31	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 STUD	A193 Gr. B8M	4
8	GLAND NUT	A194 Gr. 8M	4
9	END CAP	A105/RAM31	1
10	BODY	A105	1
11	BODY GASKET	Inc 718	1
12	GLAND PACKING	316 S.S./GRAFOIL	3
13	KEY	1018	1
14	STOP PLATE	STEEL	2
15	DRIVE SLEEVE	1020	1
16	LEVER	STEEL	1
17	BODY STUD	A193 Gr. B8M	8
18	BODY NUT	A194 Gr. 8M	8

TAG NUMBER:

THE DRAWING REQUEST IS FOR FIRE SAFE TESTING VENDOR.

Release For Customer Approval

Dimensions Are In Millimeters and Inches

Approx. Valve Weight: 23 lbs [10 kgs]

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: 04/12/12
CHECKED BY: – DATE: –
ENGINEER: – DATE: –
APPROVED BY: RJL DATE: 04/12/12

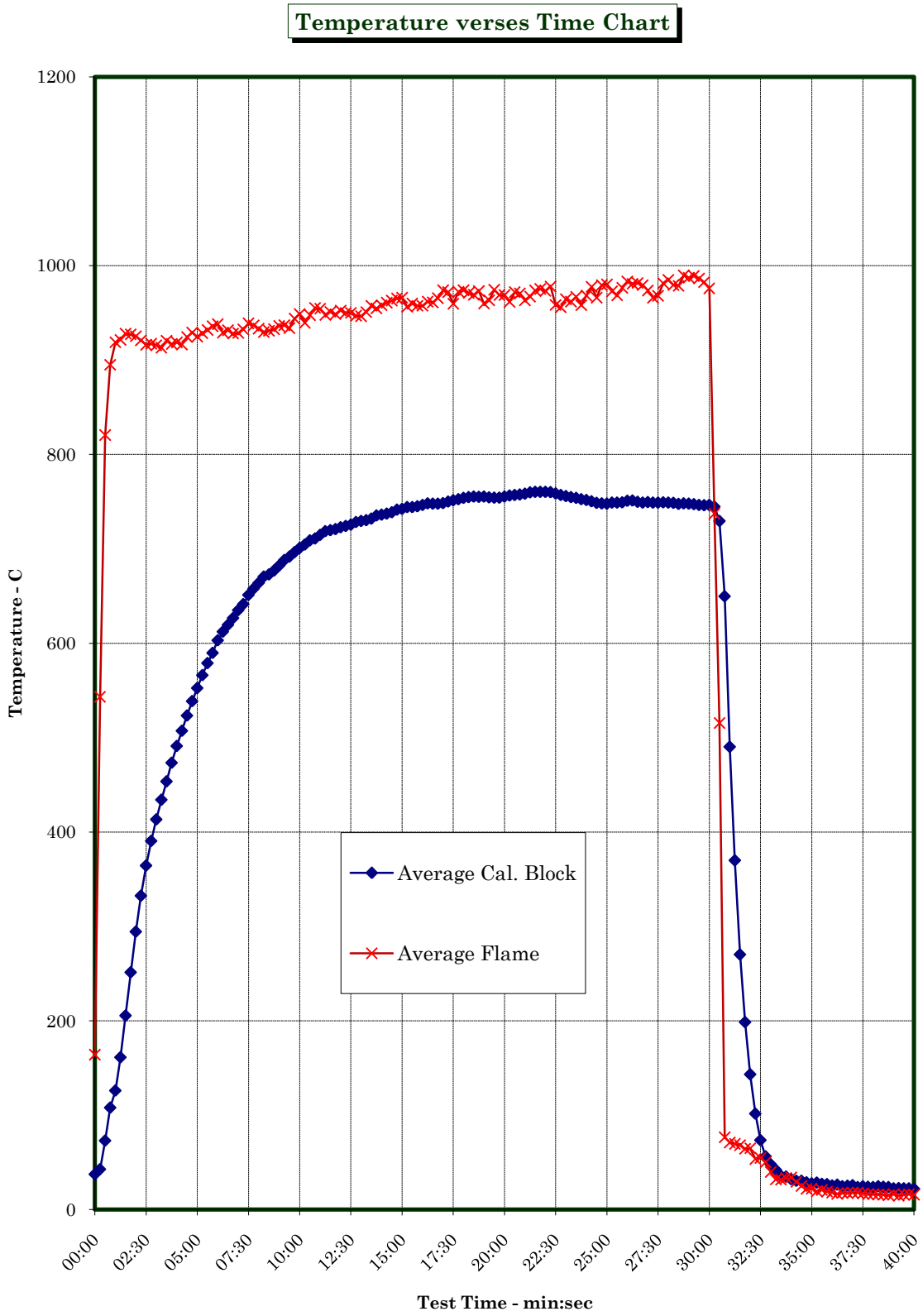
VALVTECHNOLOGIES

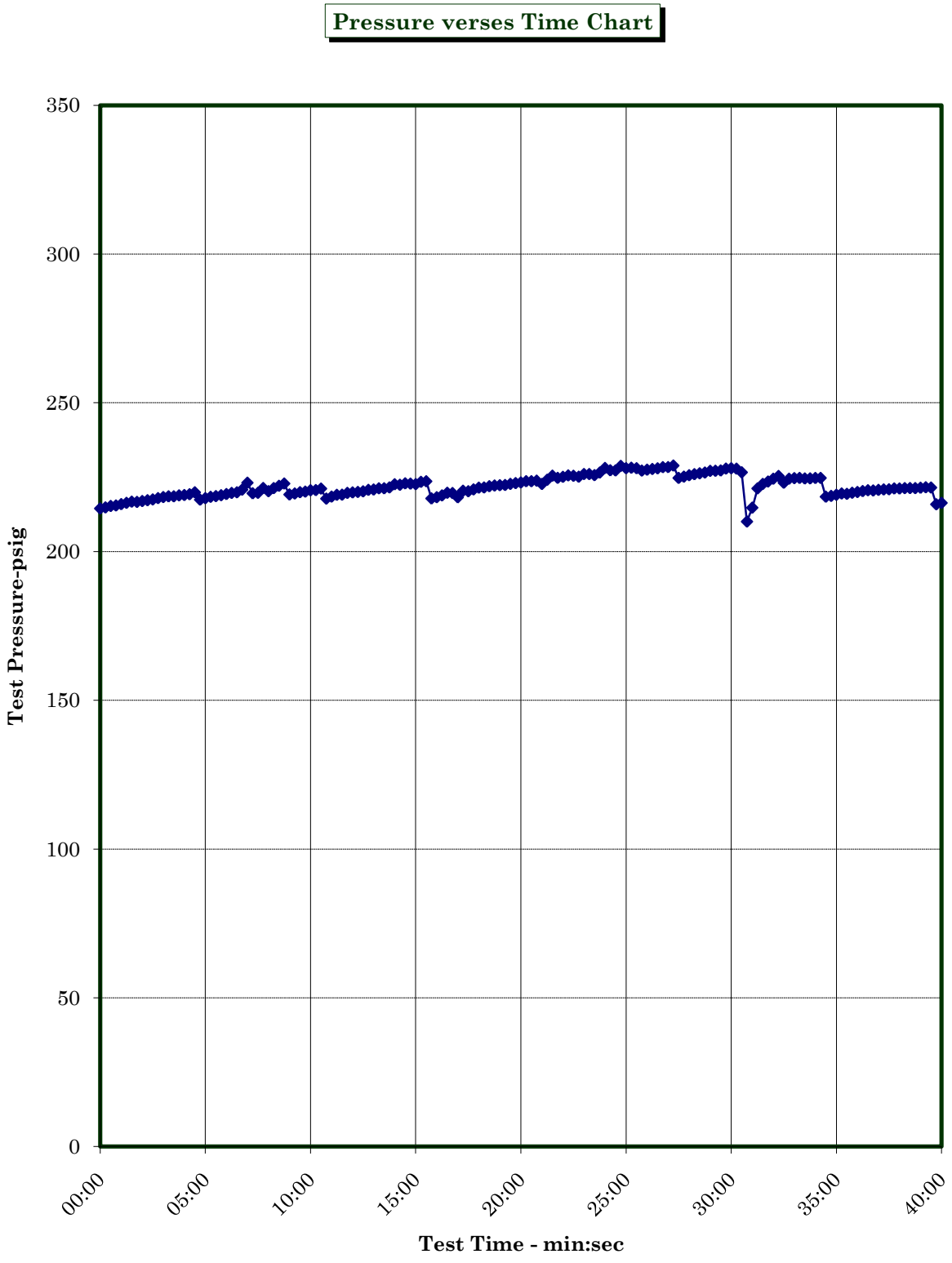
5904 BINGLE ROAD, HOUSTON TEXAS 77092
PH: (713) 860-0400 FAX: (713) 860-0499

TITLE: V3CC-RF-ST-L020-014DB-001
WITH LEVER OPERATOR

120090-001 REV. 0

SH 1 OF 1


Temperature verses Time Chart
1200
1000
800
600
400
200
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
350
300
250
200
150
100
50
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

Test Valve Prior to Burn

Test Valve During Burn

Fire Test Information

Customer: Valvetechnologies, Inc. **Date:** 4/12/2012

Product Code: 2 inch Class 150 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
9:41:00	214	46934	26	49	38	87	241	164
9:41:15	215	46932	29	56	43	526	561	543
9:41:30	215	46929	56	90	73	830	811	821
9:41:45	215	46935	103	113	108	932	858	895
9:42:00	216	46910	109	143	126	966	872	919
9:42:15	216	46913	134	188	161	969	873	921
9:42:30	217	46924	176	235	206	982	874	928
9:42:45	217	46927	221	282	251	984	870	927
9:43:00	217	46925	266	323	294	977	874	925
9:43:15	217	46909	308	357	333	966	876	921
9:43:30	217	46917	341	388	364	962	871	916
9:43:45	218	46923	367	414	391	960	874	917
9:44:00	218	46938	389	437	413	951	880	916
9:44:15	219	46895	410	458	434	952	874	913
9:44:30	219	46918	430	477	454	969	872	921
9:44:45	219	46924	450	497	473	956	878	917
9:45:00	219	46907	469	513	491	961	877	919
9:45:15	219	46905	487	528	507	957	876	916
9:45:30	220	46926	505	542	523	971	878	924
9:45:45	217	46933	523	554	539	981	878	929
9:46:00	218	46924	540	565	553	983	867	925
9:46:15	218	46937	556	577	566	981	876	928
9:46:30	219	46943	568	590	579	988	876	932
9:46:45	219	46956	582	598	590	999	872	936
9:47:00	219	46995	597	609	603	999	877	938
9:47:15	220	46993	607	618	612	986	873	929
9:47:30	220	46957	614	624	619	989	874	932
9:47:45	221	47049	623	630	627	984	872	928
9:48:00	223	47261	632	638	635	981	877	929
9:48:15	220	46774	640	643	641	989	876	933
9:48:30	220	46599	649	653	651	1004	874	939
9:48:45	221	47146	659	657	658	996	878	937
9:49:00	220	46404	666	662	664	989	878	933

Fire Test Data - continued

9:49:15	221	47041	671	671	671	967	892	930
9:49:30	222	48657	674	672	673	971	892	931
9:49:45	223	48156	677	677	677	978	888	933
9:50:00	219	47188	682	683	682	987	886	936
9:50:15	219	47490	689	687	688	994	880	937
9:50:30	220	47458	695	688	692	985	883	934
9:50:45	220	47444	700	693	696	1008	880	944
9:51:00	221	47439	706	696	701	1014	883	949
9:51:15	221	47422	711	698	704	998	881	939
9:51:30	221	47442	714	704	709	1002	893	948
9:51:45	218	47469	717	704	711	1018	892	955
9:52:00	218	47457	721	709	715	1012	897	954
9:52:15	219	47461	724	713	719	1002	893	948
9:52:30	219	47447	726	713	720	1013	889	951
9:52:45	220	47425	728	714	721	1011	886	949
9:53:00	220	47461	730	716	723	1013	892	953
9:53:15	220	47425	732	717	724	1006	894	950
9:53:30	220	47423	733	718	726	1003	897	950
9:53:45	221	47437	734	722	728	1004	890	947
9:54:00	221	47400	736	723	729	1005	888	946
9:54:15	221	47430	738	722	730	1011	891	951
9:54:30	221	47415	740	724	732	1013	902	958
9:54:45	221	46637	742	729	735	1006	904	955
9:55:00	223	47689	742	730	736	1011	906	958
9:55:15	222	47455	743	731	737	1015	907	961
9:55:30	223	47563	745	732	739	1011	916	963
9:55:45	223	47429	747	736	741	1013	917	965
9:56:00	223	46212	749	736	742	1017	915	966
9:56:15	223	48165	751	737	744	1003	910	956
9:56:30	224	47436	752	736	744	1014	906	960
9:56:45	218	47486	754	736	745	1012	903	958
9:57:00	218	47448	755	738	746	1009	906	958
9:57:15	219	47791	756	740	748	1013	911	962
9:57:30	220	47560	756	740	748	1004	918	961
9:57:45	220	47430	754	741	748	1008	923	966
9:58:00	218	46961	756	741	748	1023	925	974
9:58:15	220	47457	758	742	750	1014	929	972
9:58:30	220	47402	760	743	751	1017	902	960
9:58:45	221	47401	761	744	753	1017	928	972
9:59:00	221	47676	763	745	754	1014	933	974
9:59:15	221	47425	764	745	755	1012	931	971
9:59:30	222	47449	764	746	755	1008	930	969
9:59:45	222	47444	765	745	755	1014	932	973

Fire Test Data - continued

10:00:00	222	47453	765	746	755	999	921	960
10:00:15	222	47447	763	746	754	993	933	963
10:00:30	223	47436	762	746	754	1007	942	974
10:00:45	223	47446	762	746	754	1004	933	969
10:01:00	223	47450	764	747	755	1008	930	969
10:01:15	224	47445	765	748	756	994	929	962
10:01:30	224	47435	766	748	757	1011	933	972
10:01:45	224	47424	767	748	758	1007	934	971
10:02:00	223	47123	767	749	758	1016	911	963
10:02:15	224	47389	768	752	760	1014	921	967
10:02:30	225	48266	769	752	760	1003	944	974
10:02:45	225	47415	770	751	760	1009	941	975
10:03:00	225	47611	771	750	760	1014	932	973
10:03:15	226	47623	771	749	760	1008	947	978
10:03:30	225	47409	767	750	759	993	924	958
10:03:45	225	46471	762	752	757	1002	909	956
10:04:00	226	47435	757	754	756	1011	918	964
10:04:15	226	47408	754	755	755	1009	914	962
10:04:30	226	47432	751	757	754	999	935	967
10:04:45	226	47406	748	757	753	992	924	958
10:05:00	228	47997	745	758	752	1001	936	968
10:05:15	227	47435	743	757	750	1006	949	978
10:05:30	227	47395	741	757	749	1006	927	966
10:05:45	229	48511	739	757	748	1019	939	979
10:06:00	228	47422	738	758	748	1018	942	980
10:06:15	228	47399	739	759	749	994	951	973
10:06:30	228	48319	738	759	749	998	939	969
10:06:45	227	47434	740	758	749	1017	936	976
10:07:00	227	47406	742	759	751	1016	951	983
10:07:15	228	47418	743	759	751	1012	949	981
10:07:30	228	47409	741	758	750	1011	952	982
10:07:45	228	47402	739	759	749	1012	947	979
10:08:00	228	47401	738	761	749	1005	942	974
10:08:15	229	47394	737	761	749	1016	916	966
10:08:30	225	47446	736	762	749	1008	928	968
10:08:45	225	47437	735	763	749	1017	946	981
10:09:00	226	47417	735	763	749	1016	954	985
10:09:15	226	47400	736	762	749	1007	952	979
10:09:30	226	47428	734	761	748	1003	954	979
10:09:45	227	47402	735	761	748	1016	964	990
10:10:00	227	47407	736	760	748	1016	958	987
10:10:15	227	47426	734	760	747	1010	968	989
10:10:30	227	47397	733	760	746	1007	966	986

Fire Test Data - continued

10:10:45	228	47409	732	760	746	1007	958	983
10:11:00	228	47406	732	761	746	1008	944	976
10:11:15	228	47387	729	760	745	764	711	737
10:11:30	227	47032	719	740	729	546	486	516
10:11:45	210	39460	671	629	650	89	64	77
10:12:00	215	38099	543	438	490	81	62	71
10:12:15	221	38683	436	304	370	85	54	70
10:12:30	223	38629	341	200	270	82	54	68
10:12:45	223	38642	262	136	199	81	48	64
10:13:00	224	38628	192	95	143	83	47	65
10:13:15	225	38619	128	76	102	62	45	54
10:13:30	223	38601	83	64	74	62	47	55
10:13:45	224	38609	58	55	56	51	50	50
10:14:00	225	38596	43	53	48	38	42	40
10:14:15	225	38619	34	51	42	31	33	32
10:14:30	225	38594	28	44	36	28	35	32
10:14:45	225	38571	24	46	35	26	41	34
10:15:00	225	38564	22	43	32	24	44	34
10:15:15	225	38549	21	41	31	23	36	29
10:15:30	218	38579	18	43	31	22	28	25
10:15:45	219	38594	18	39	29	22	22	22
10:16:00	219	38599	18	38	28	21	23	22
10:16:15	219	38563	17	41	29	19	19	19
10:16:30	219	38543	17	38	27	19	22	21
10:16:45	220	38552	16	38	27	19	19	19
10:17:00	220	38570	16	35	26	18	18	18
10:17:15	220	38573	16	37	26	18	15	17
10:17:30	221	38529	16	33	25	18	17	18
10:17:45	220	38531	16	34	25	18	17	18
10:18:00	221	38520	16	36	26	18	18	18
10:18:15	221	38530	17	31	24	18	18	18
10:18:30	221	38520	16	34	25	17	17	17
10:18:45	221	38536	16	32	24	17	16	16
10:19:00	221	38512	16	32	24	17	16	16
10:19:15	221	38519	16	34	25	17	16	16
10:19:30	221	38488	15	33	24	17	15	16
10:19:45	221	38501	16	32	24	16	14	15
10:20:00	221	38464	16	29	23	17	16	16
10:20:15	222	38488	15	31	23	16	14	15
10:20:30	221	38449	15	30	23	16	16	16
10:20:45	216	38474	16	29	23	16	17	16
10:21:00	216	38452	15	29	22	16	16	16

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:	880	mls
Average Leak Rate Over 30 Minute Duration:	29	ml/min
Allowable Leak Rate:	800	ml/min

Total Through Seat Leakage Collected Over 10 Minute Cool Down:	10	mls

Total Water Volume Lost Over 40 Minute Burn and Cool Down:	8482	mls
Water Collected in System Relief Valve:	0	mls
Calculated External Leakage During 40 Minute Duration:	7592	mls
Average Leak Rate Over 40 Minute Duration:	190	ml/min
Allowable Leak Rate:	200	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:	229	psig
Average Pressure During Burn/Cool Down:	222	psig
Minimum Pressure During Burn/Cool Down:	210	psig
Amount of Time of Avg. Cal Block > 650 deg.C:	8.0	minutes
Minimum Allowable Time at Temperature:	15.0	minutes
Maximum Avg Cal Block Temperature:	760	deg. C
Average Cal Block Temperature:	521	deg. C
Lowest Avg Cal. Block Temperature:	22	deg. C
Maximum Body Flame Temperature During Burn:	968	deg. C
Average Body Flame Temperature During Burn:	900	deg. C
Maximum Bonnet Flame Temperature During Burn:	1023	deg. C
Average Bonnet Flame Temperature During Burn:	988	deg. C
Average of Both Flame Temperatures During Burn:	944	deg. C

Note

Were Test Conditions Within Compliance?	**Yes**

Yarmouth Research and Technology, LLC

Post-Burn Seat Test Information

Customer: Valvetechnologies, Inc. **Date:** 4/12/2012

Product Code: 2 inch Class 150 Ball Valve

Project Number: PN211088

Time	Pressure (psig)	Cal Block Temp - C
10:29:41	30	25
10:29:56	30	25
10:30:11	30	25
10:30:26	30	25
10:30:41	30	24
10:30:56	30	24
10:31:11	30	25
10:31:26	30	23
10:31:41	29	25
10:31:56	29	23
10:32:11	30	24
10:32:26	30	24
10:32:41	30	25
10:32:56	30	26
10:33:11	29	26
10:33:26	30	24
10:33:41	31	26
10:33:56	32	25
10:34:11	33	24
10:34:26	34	25
10:34:41	35	25

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**

Yarmouth Research and Technology, LLC

Operational Test Information

Customer: Valvetechnologies, Inc. **Date:** 4/12/2012

Product Code: 2 inch Class 150 Ball Valve

Project Number: PN211088

Test Data

Time	Pressure (psig)	Cal Block Temp - C
10:48:36	225	24
10:48:51	225	24
10:49:06	226	26
10:49:21	226	26
10:49:36	226	24
10:49:51	226	25
10:50:06	226	24
10:50:21	226	25
10:50:36	226	25
10:50:51	227	25
10:51:06	227	26
10:51:21	227	26
10:51:36	227	25
10:51:51	227	26
10:52:06	227	24
10:52:21	228	24
10:52:36	228	24
10:52:51	228	24
10:53:06	228	24
10:53:21	228	24
10:53:36	228	24

Leakages were collected manually.

Total External Leakage Collected Over 5 Minute Duration:	0.0	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**