

# **Fire Test Report**

**API Standard 6FA, Third Edition, 1999**

*Performed for*

**Valvtechnologies Inc.**

5904 Bingle Road

Houston, Texas 77092

[www.valv.com](http://www.valv.com)



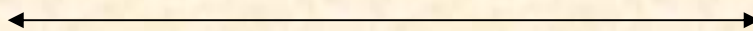
1-13/16 inch 10,000 psi

Top-Entry Ball Valve

Model: NACXT-RJ-FP-BS-1.8125

Project Number: 20991

August 2009



*Performed by*

**YARMOUTH RESEARCH AND TECHNOLOGY**

434 Walnut Hill Road

North Yarmouth, ME 04097 USA

(207) 829-5359

[info@yarmouthresearch.com](mailto:info@yarmouthresearch.com)

[www.yarmouthresearch.com](http://www.yarmouthresearch.com)

# Yarmouth Research and Technology

<b>Customer:</b> ValvTechnologies	<b>Date:</b> 8/31/2009
<b>Specification:</b> API Standard 6FA, Third Edition, April 1999	
"Specification for Fire Testing of Valves"	
<b>Product Description:</b> 1-13/16 inch 10000 psi Top-Entry Ball Valve	
<b>Project Number:</b> PN20991	
<b>Comments:</b> Model: NACXT-RJ-FP-BS-1.8125	
<b>Yarmouth Engineer:</b> Matthew J. Wasielewski, P.E.	
<b>Equipment Confirmed to be in Calibration to NIST Standards:</b> Yes	

***Burn and Cool Down Test***

Burn Start Time:	<b>15:13:00</b>	
Average Pressure During Burn:	<b>7522</b>	psig
Seat Leak Rate During Burn:	<b>3.3</b>	ml/min
Allowable Seat Leak Rate:	<b>725</b>	ml/min
External Leak Rate During Burn/Cool Down:	<b>4.2</b>	ml/min
Allowable External Leak Rate:	<b>181</b>	ml/min
Amount of Time of Avg. Cal. Blocks > 650 deg. C:	<b>17.5</b>	minutes
Were Test Conditions Within Compliance?	<b>Yes</b>	
Were the Valve Leakages Below the Allowables?	<b>Yes</b>	

***Operational Test***

Did Valve Unseat and Open Fully?:	<b>Yes</b>	
Average Pressure During Test:	<b>7555</b>	psig
External Leak Rate After Operating:	<b>89.0</b>	ml/min
Allowable External Leak Rate:	<b>363</b>	ml/min
Was the Leakage Below the Allowable?	<b>Yes</b>	

<b>Valve Pass or Fail the Test Standard?</b>	<b>PASS</b>
--	-------------

*Witnesses*

*Matthew J. Wasielewski*



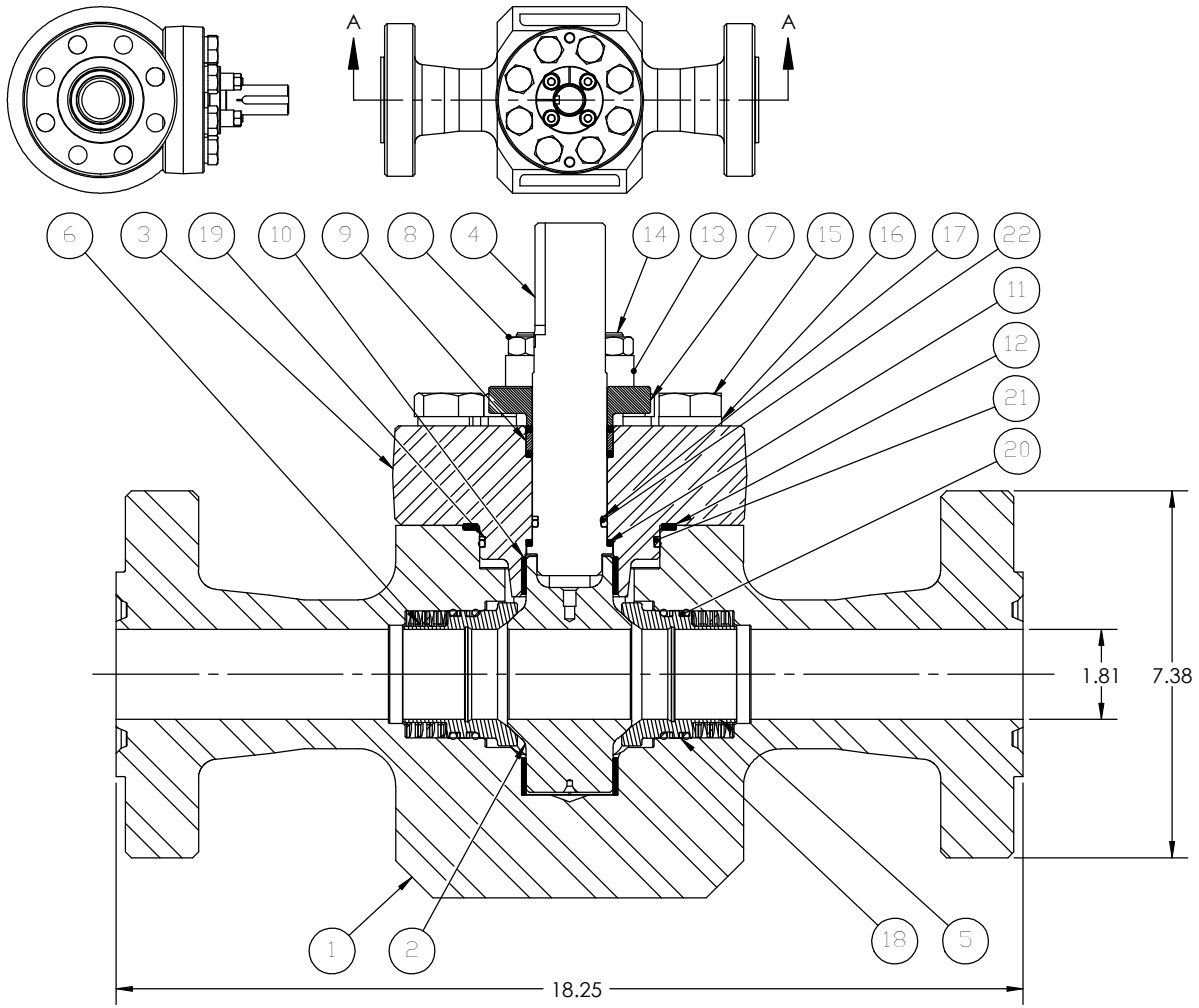
---

**YARMOUTH RESEARCH AND TECHNOLOGY**

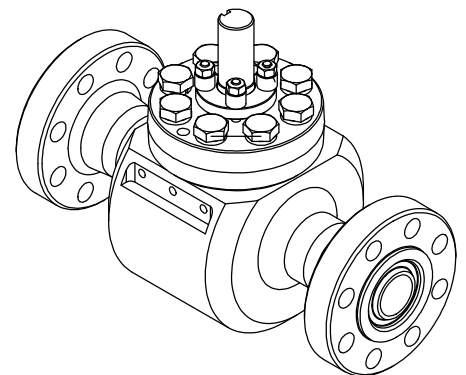
---

**Fire Test Information Sheet**

Valve Manufacturer's Name:	ValvTechnologies
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:	API 6A
Valve Description	Size: 1.8125" Pressure Rating: 10,000 psi Type: Top Entry Trunnion Weight: 160 lb Reduced or Full Bore: Full Bore Body/Bonnet Material: SA29 4130/ SA29 4130 Trim Material: SA29 4130/RAM1 Seat Material: SA564 type 630 Stem / Body Seal Material: SA564 type 630/Grafoil Bolting Material: SA193 B7 Is valve considered "Soft-Seated"? No
Valve Markings	Nameplate Information: Casting Markings:
Assembly Drawing Number / Revision / Date of Issue:	NACXT-RJ-FP-BS-1.8125
Assembly Drawing sent to Yarmouth:	Yes
If valve is fitted with gearbox, state gearbox manufacturer, model number and mechanical advantage:	Diamond Gear, Model# 26WG68, MA 19
If valve is non-symmetric, state direction of flow for test:	Symmetric Design
For double-seated valves, state maximum allowable cavity pressure:	
Manufacturer's Contact Name /Date:	Jonathan Jones/ 08/27/09



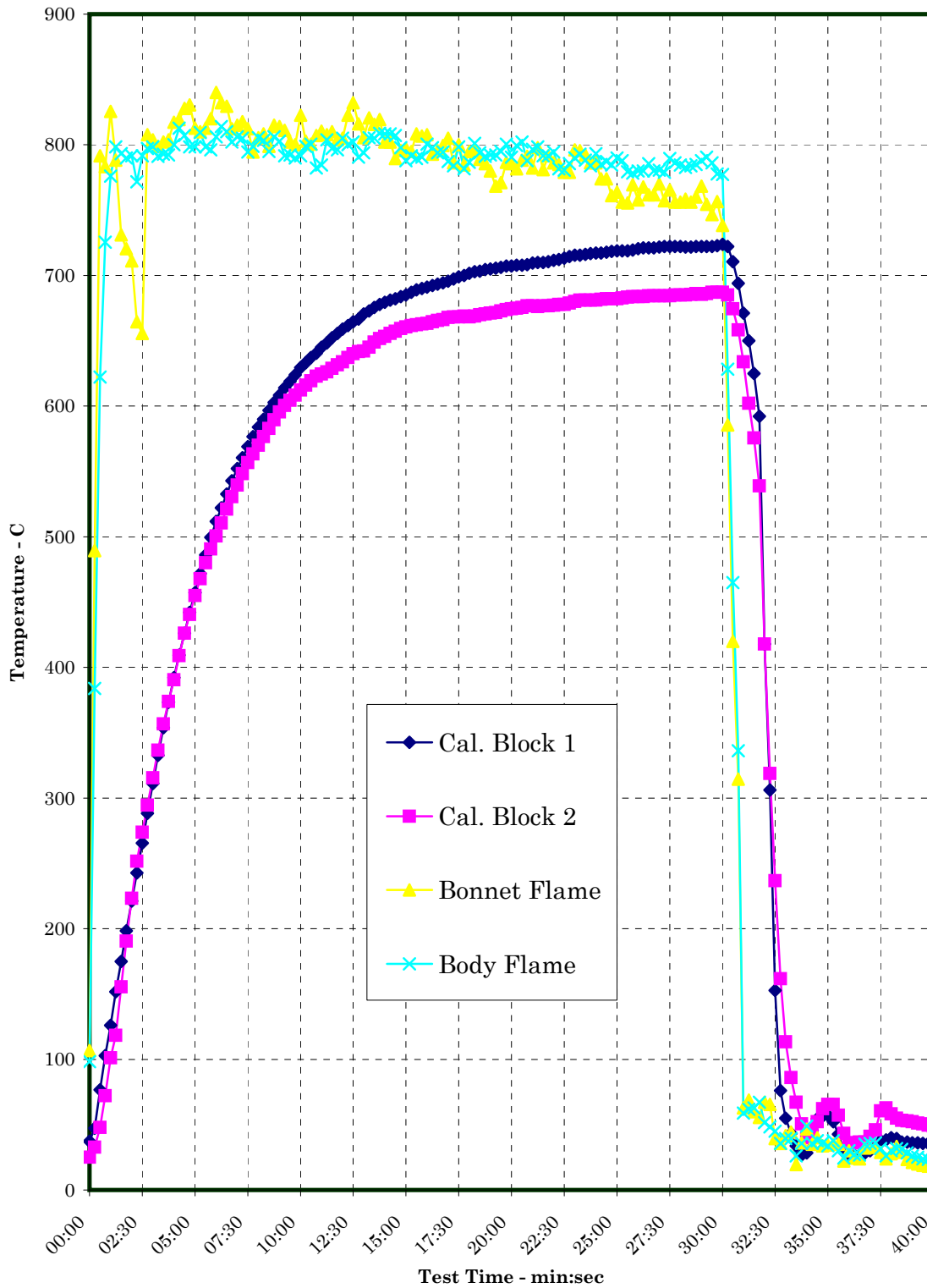
ITEM NO.	DESCRIPTION	MATERIAL	QTY.
1	BODY	SA29 4130	1
2	BALL	SA29 4130/RAM1	1
3	BONNET	SA29 4130	1
4	STEM	SA564 630	1
5	SEAT	SA29 4130/RAM1	2
6	WAVE SPRING	INC X750	2
7	GLAND	SA29 4130/QPQ	1
8	GLAND NUT	SA194 8M	4
9	PACKING	INC718/GRAPHITE	1
10	TRUNNION BEARING	GARLOCK DU	2
11	THRUST BEARING	SA564 530	1
12	BONNET GASKET	GRAPHITE	1
13	GLAND SPRING	INC718	4
14	GLAND STUD	SA193 B8M	4
15	BONNET BOLT	SA193 B7	8
16	LOCK WASHER	CS	8
17	STEM BACKUP RING	PEEK	1
18	SEAT BACKUP RING	PEEK	2
19	BONNET BACKUP RING	PEEK	1
20	SEAT O-RING	PARCO 9162	2
21	BONNET O-RING	PARCO 9162	1
22	STEM O-RING	PARCO 9162	1



A-A (1 : 2.5)

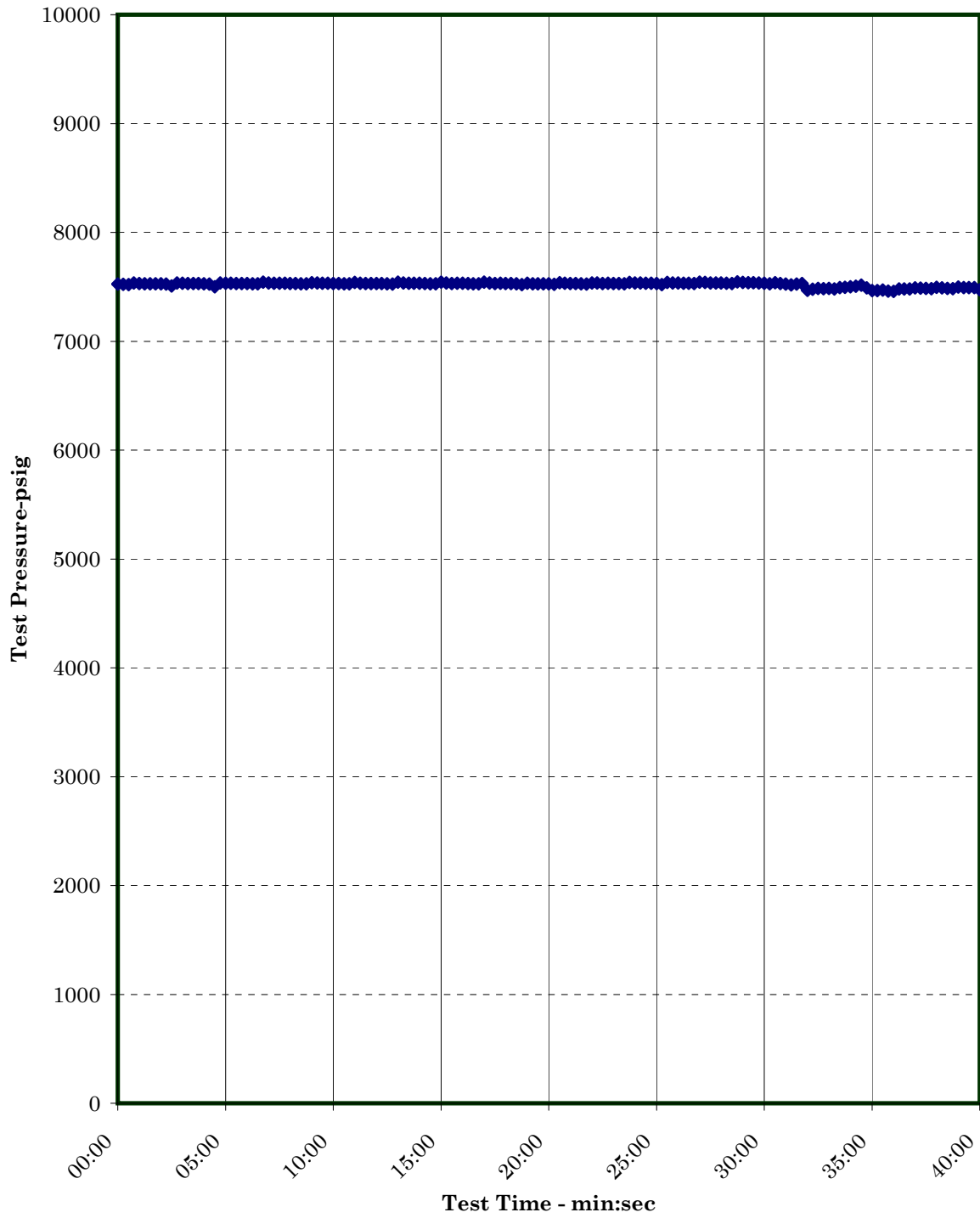
<p>THIRD ANGLE PROJECTION</p>	-	-	-	-	-	-	-	DIMENSIONS ARE IN INCHES REMOVE BURRS AND BREAK EDGES UNLESS OTHERWISE SPECIFIED	SCALE 1:6	MODEL FILE NACXT-RJ-FP-BS-1.8125	REV B	<p>3004 BRIGLE ROAD, HOUSTON, TEXAS 77092          PH: (713) 860-0400 FAX: (713) 860-0430</p>
	THIS DRAWING AND THE INFORMATION CONTAINED WITHIN IS CONSIDERED TO BE CONFIDENTIAL AND THE SOLE PROPERTY OF VALVETECHNOLOGIES. THE CONTENTS OF THIS DRAWING MAY NOT BE REPRODUCED OR DISCLOSED VERBALLY OR OTHERWISE OUTSIDE THE HOLDERS OFFICE WITHOUT THE WRITTEN APPROVAL OF VALVETECHNOLOGIES.	REV	DATE	DESCRIPTION	ECN	BY	CHK		APR	CORNER RADII .03 MAX .X= ±.030 .XX= ±.015 .XXX= ±.005 CONCENTRICITY .010 T.I.R. ANGULAR= ±1/2° SURFACE TEXTURE 125 RMS MIN. INTERNAL FILLETS .015	DRAWN BY REM DATE 1/15/09 CHECKED BY JDJ DATE 2/17/09 ENGINEER JDJ DATE 2/17/09 APPROVED BY VK DATE 1/15/09	

**Temperature verses Time Chart**

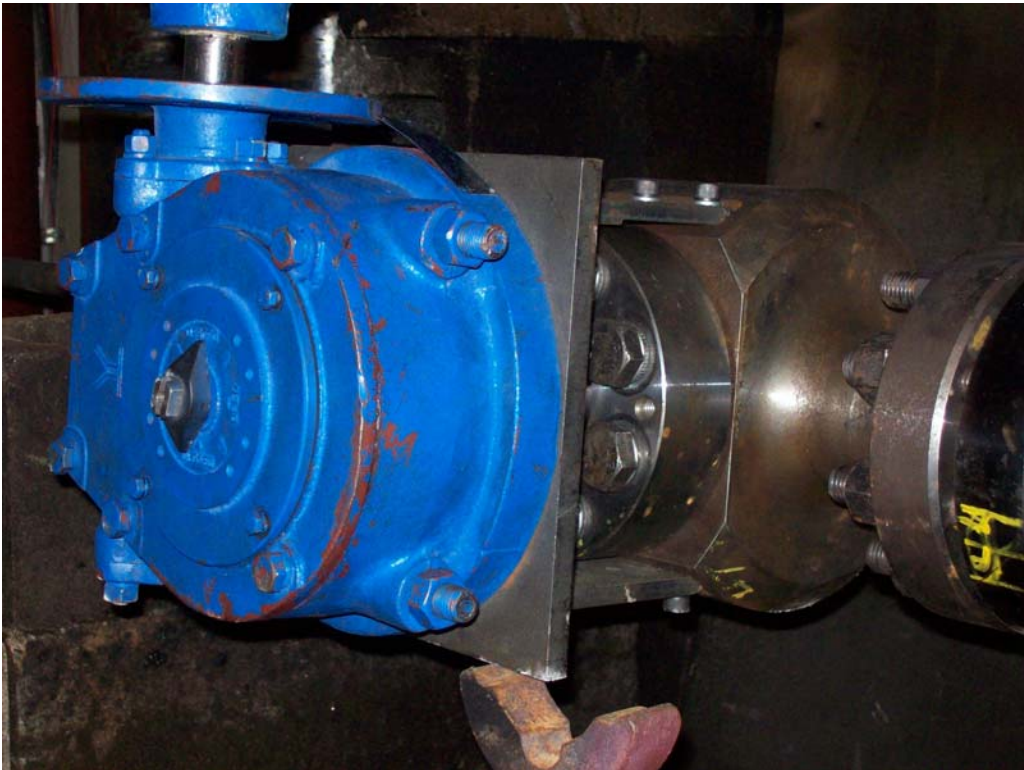
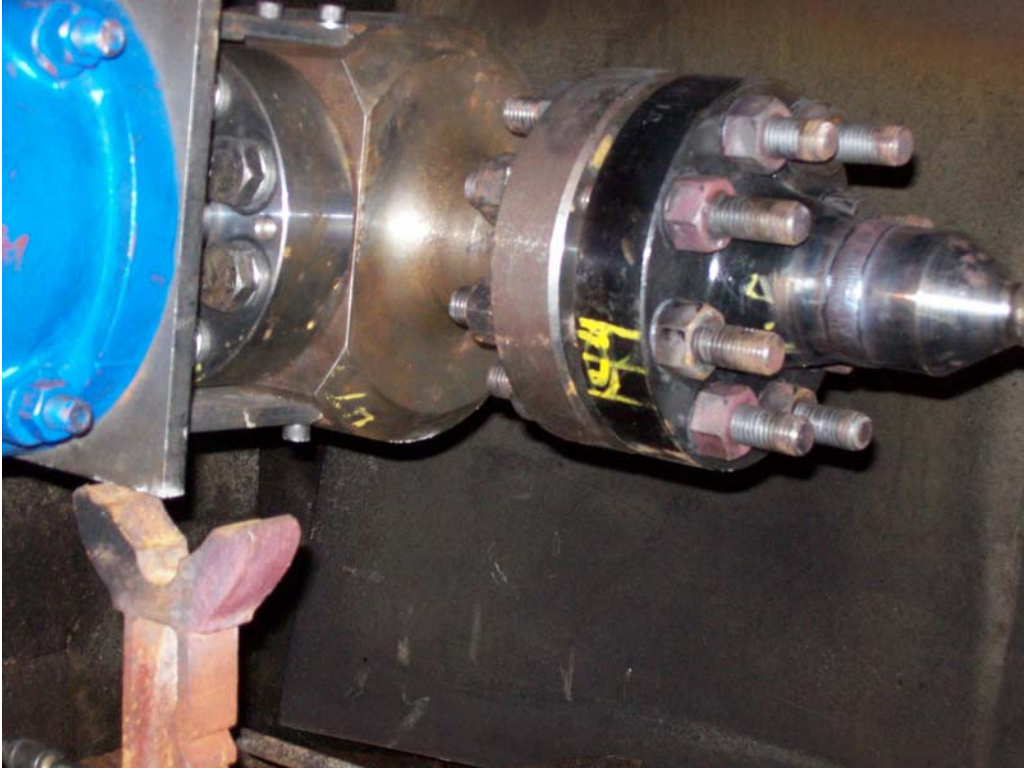


# Yarmouth Research and Technology

**Pressure verses Time Chart**



Yarmouth Research and Technology



Valve prior to Test



## Yarmouth Research and Technology



Valve During Burn



# Yarmouth Research and Technology

## Fire Test Information

**Customer:** ValvTechnologies

**Date:** 8/31/2009

**Product Code:** 1-13/16 inch 10000 psi Top-Entry Ball Valve

**Project Number:** PN20991

### *Fire Test Raw Data*

Time	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
15:13:00	7525	38118	37.2	25.0	31.1	106.7	98.3	102.5
15:13:15	7523	38120	47.2	32.8	40.0	489.4	383.9	436.7
15:13:30	7521	38120	76.7	47.8	62.2	791.7	622.2	706.9
15:13:45	7537	38103	102.8	72.2	87.5	783.3	725.6	754.4
15:14:00	7530	38108	126.1	101.1	113.6	825.6	776.1	800.8
15:14:15	7528	38108	151.7	118.3	135.0	788.3	798.3	793.3
15:14:30	7529	38099	175.0	155.6	165.3	731.1	793.3	762.2
15:14:45	7528	38111	198.3	190.6	194.4	720.6	790.0	755.3
15:15:00	7527	38106	221.1	223.3	222.2	711.1	791.7	751.4
15:15:15	7525	38103	242.8	251.7	247.2	664.4	771.7	718.1
15:15:30	7509	38106	265.6	273.9	269.7	655.6	791.7	723.6
15:15:45	7536	38093	288.3	294.4	291.4	807.8	797.2	802.5
15:17:30	7501	37919	426.1	426.1	426.1	827.8	807.2	817.5
15:17:45	7537	38090	442.2	440.6	441.4	830.6	798.3	814.4
15:18:00	7533	38088	457.2	455.0	456.1	812.8	798.3	805.6
15:18:15	7532	38099	471.7	467.8	469.7	810.0	809.4	809.7
15:18:30	7532	38080	486.1	480.0	483.1	812.8	798.3	805.6
15:18:45	7531	38084	499.4	490.6	495.0	820.0	796.1	808.1
15:19:00	7530	38093	511.7	500.6	506.1	840.0	806.1	823.1
15:19:15	7528	38089	522.2	510.6	516.4	832.2	813.9	823.1
15:19:30	7527	38091	532.8	521.1	526.9	829.4	810.0	819.7
15:19:45	7543	38068	542.8	530.6	536.7	812.2	802.2	807.2
15:20:00	7536	38066	552.2	539.4	545.8	815.0	806.1	810.6
15:20:15	7533	38071	560.6	548.3	554.4	817.8	805.0	811.4
15:20:30	7533	38074	568.9	556.7	562.8	812.2	794.4	803.3
15:20:45	7532	38076	576.7	563.3	570.0	794.4	798.9	796.7
15:21:00	7531	38083	583.9	570.0	576.9	805.6	805.6	805.6

## Yarmouth Research and Technology

*Fire Test Data - continued*

15:21:15	7530	38087	590.0	576.7	583.3	808.3	803.3	805.8
15:21:30	7527	38088	596.7	582.8	589.7	798.9	795.0	796.9
15:21:45	7528	38047	602.8	589.4	596.1	815.0	806.1	810.6
15:22:00	7538	38061	608.3	595.6	601.9	813.9	802.8	808.3
15:22:15	7534	38062	613.9	600.6	607.2	811.1	791.7	801.4
15:22:30	7533	38062	618.9	604.4	611.7	802.2	792.2	797.2
15:22:45	7533	38071	623.9	608.3	616.1	800.0	790.0	795.0
15:23:00	7532	38066	629.4	612.2	620.8	822.8	791.7	807.2
15:23:15	7530	38068	633.3	616.1	624.7	802.8	798.9	800.8
15:23:30	7529	38073	637.2	619.4	628.3	800.6	800.6	800.6
15:23:45	7527	38069	640.6	622.8	631.7	807.2	782.2	794.7
15:24:00	7542	38052	645.0	624.4	634.7	810.6	784.4	797.5
15:24:15	7534	38050	648.3	626.1	637.2	807.8	803.9	805.8
15:24:30	7531	38058	652.2	628.9	640.6	810.0	797.2	803.6
15:24:45	7531	38059	655.6	631.7	643.6	803.9	796.1	800.0
15:25:00	7531	38057	658.9	633.9	646.4	805.0	805.0	805.0
15:25:15	7530	38059	661.7	637.2	649.4	822.8	800.0	811.4
15:25:30	7529	38065	664.4	640.0	652.2	832.2	802.2	817.2
15:25:45	7526	38066	666.7	641.7	654.2	816.1	790.6	803.3
15:26:00	7542	38045	670.6	642.2	656.4	805.6	793.9	799.7
15:26:15	7535	38049	672.8	645.0	658.9	820.6	805.6	813.1
15:26:30	7532	38045	675.6	648.9	662.2	815.6	805.0	810.3
15:26:45	7532	38048	677.8	651.7	664.7	819.4	808.9	814.2
15:27:00	7532	38050	679.4	653.3	666.4	802.2	808.3	805.3
15:27:15	7531	38055	681.1	655.6	668.3	802.2	808.3	805.3
15:27:30	7529	38058	682.2	657.2	669.7	789.4	807.2	798.3
15:27:45	7527	38066	683.9	659.4	671.7	795.6	797.8	796.7
15:28:00	7542	38041	685.0	660.6	672.8	797.2	787.8	792.5
15:28:15	7535	38042	687.2	661.7	674.4	795.0	791.7	793.3
15:28:30	7532	38054	688.9	662.2	675.6	808.3	789.4	798.9
15:28:45	7532	38060	690.0	662.8	676.4	806.7	790.6	798.6
15:29:00	7532	38063	691.1	663.3	677.2	807.8	800.6	804.2
15:29:15	7531	38066	692.2	664.4	678.3	792.8	797.8	795.3
15:29:30	7529	38068	693.3	665.6	679.4	795.6	793.9	794.7
15:29:45	7527	38060	694.4	666.1	680.3	799.4	794.4	796.9
15:30:00	7543	38045	695.6	667.8	681.7	805.0	787.2	796.1
15:30:15	7535	38055	697.2	668.3	682.8	786.1	783.9	785.0
15:30:30	7531	38047	698.9	668.3	683.6	800.0	798.3	799.2
15:30:45	7532	38057	700.0	668.9	684.4	784.4	781.7	783.1
15:31:00	7531	38058	701.7	668.3	685.0	795.0	786.7	790.8
15:31:15	7530	38059	702.8	668.9	685.8	796.1	801.1	798.6
15:31:30	7529	38070	703.3	670.0	686.7	788.9	793.9	791.4
15:31:45	7520	38066	704.4	670.6	687.5	785.6	791.1	788.3

## Yarmouth Research and Technology

### *Fire Test Data - continued*

15:32:00	7533	38052	705.0	671.1	688.1	780.0	792.2	786.1
15:32:15	7528	38054	705.6	671.7	688.6	768.3	792.2	780.3
15:32:30	7528	38054	706.1	672.8	689.4	771.1	795.0	783.1
15:32:45	7528	38058	707.2	673.9	690.6	786.7	800.6	793.6
15:33:00	7527	38060	707.2	674.4	690.8	785.6	790.6	788.1
15:33:15	7524	38057	707.8	675.0	691.4	781.7	799.4	790.6
15:33:30	7539	38045	707.8	675.6	691.7	788.3	802.2	795.3
15:33:45	7532	38036	708.3	676.7	692.5	791.1	787.8	789.4
15:34:00	7530	38046	709.4	676.7	693.1	782.2	796.7	789.4
15:34:15	7530	38049	710.0	676.1	693.1	797.8	798.3	798.1
15:34:30	7529	38045	710.0	676.7	693.3	781.1	791.7	786.4
15:34:45	7526	38050	710.6	676.7	693.6	791.7	791.7	791.7
15:35:00	7535	38031	711.7	677.2	694.4	786.1	794.4	790.3
15:35:15	7535	38033	712.2	677.8	695.0	785.0	781.7	783.3
15:35:30	7530	38035	713.3	677.8	695.6	778.9	780.6	779.7
15:35:45	7533	38037	714.4	678.9	696.7	778.9	785.6	782.2
15:36:00	7532	38048	715.6	680.0	697.8	796.1	790.0	793.1
15:36:15	7530	38042	715.6	681.1	698.3	795.6	792.8	794.2
15:36:30	7528	38046	716.1	681.1	698.6	792.2	788.3	790.3
15:36:45	7541	38007	716.7	681.1	698.9	786.1	783.9	785.0
15:37:00	7537	38025	717.2	681.1	699.2	786.1	793.3	789.7
15:37:15	7535	38024	717.2	681.7	699.4	773.9	785.0	779.4
15:37:30	7534	38031	717.8	682.2	700.0	773.9	787.2	780.6
15:37:45	7533	38034	718.3	682.2	700.3	761.1	784.4	772.8
15:38:00	7531	38032	718.9	682.2	700.6	763.9	790.0	776.9
15:38:15	7521	38044	718.9	682.8	700.8	756.1	787.8	771.9
15:38:30	7540	38014	718.9	683.3	701.1	755.6	779.4	767.5
15:38:45	7535	38016	719.4	683.9	701.7	769.4	778.3	773.9
15:39:00	7535	38021	720.6	683.9	702.2	757.8	780.0	768.9
15:39:15	7534	38010	721.1	683.9	702.5	767.8	780.0	773.9
15:39:30	7533	38027	721.1	684.4	702.8	761.7	785.6	773.6
15:39:45	7530	38038	721.1	684.4	702.8	761.7	780.0	770.8
15:40:00	7542	37996	721.7	684.4	703.1	770.0	780.6	775.3
15:40:15	7541	38007	722.2	684.4	703.3	757.2	778.9	768.1
15:40:30	7537	38008	722.2	684.4	703.3	765.6	789.4	777.5
15:40:45	7536	38024	722.2	685.0	703.6	756.1	786.1	771.1
15:41:00	7535	38020	722.2	685.0	703.6	756.1	784.4	770.3
15:41:15	7533	38026	721.7	685.0	703.3	758.3	782.8	770.6
15:41:30	7531	38015	721.7	685.6	703.6	756.1	783.9	770.0
15:41:45	7546	37995	722.2	686.1	704.2	760.0	785.0	772.5
15:42:00	7540	38010	722.2	685.6	703.9	768.3	787.8	778.1
15:42:15	7537	38005	722.2	686.1	704.2	754.4	790.6	772.5
15:42:30	7537	38004	722.2	687.2	704.7	746.7	786.1	766.4

## Yarmouth Research and Technology

*Fire Test Data - continued*

15:42:45	7535	38018	722.8	687.2	705.0	756.7	777.8	767.2
15:43:00	7533	38019	723.9	687.2	705.6	738.3	777.2	757.8
15:43:15	7529	38039	722.2	685.0	703.6	585.6	628.3	606.9
15:43:30	7537	37979	710.6	674.4	692.5	420.0	465.0	442.5
15:43:45	7530	37998	693.9	658.3	676.1	314.4	336.1	325.3
15:44:00	7526	37998	671.1	633.9	652.5	62.8	58.9	60.8
15:44:15	7519	38019	650.0	602.2	626.1	68.9	61.7	65.3
15:44:30	7526	37984	625.0	575.6	600.3	60.0	62.8	61.4
15:44:45	7531	37968	592.2	538.9	565.6	55.6	67.2	61.4
15:45:00	7469	37990	417.8	417.8	417.8	67.2	51.7	59.4
15:45:15	7479	37956	306.1	318.9	312.5	65.6	48.3	56.9
15:45:30	7485	37963	152.8	236.7	194.7	39.4	45.0	42.2
15:45:45	7484	37945	76.1	161.7	118.9	35.6	35.6	35.6
15:46:00	7485	37964	55.0	113.3	84.2	41.7	39.4	40.6
15:46:15	7480	37940	43.3	86.1	64.7	44.4	39.4	41.9
15:46:30	7492	37917	33.9	67.2	50.6	19.4	26.1	22.8
15:46:45	7496	37924	26.7	50.6	38.6	36.1	35.6	35.8
15:47:00	7502	37909	28.3	40.0	34.2	46.7	48.9	47.8
15:47:15	7506	37903	45.6	46.1	45.8	35.0	35.6	35.3
15:47:30	7515	37893	54.4	52.2	53.3	40.0	37.8	38.9
15:47:45	7491	37904	56.7	62.2	59.4	33.9	36.1	35.0
15:48:00	7465	37894	57.2	65.6	61.4	34.4	33.9	34.2
15:48:15	7467	37874	52.2	65.6	58.9	35.0	37.8	36.4
15:48:30	7471	37885	42.8	57.2	50.0	35.0	30.0	32.5
15:48:45	7462	37875	29.4	43.3	36.4	22.2	24.4	23.3
15:49:00	7458	37854	26.7	36.1	31.4	30.0	30.0	30.0
15:49:15	7480	37869	26.7	36.1	31.4	24.4	27.2	25.8
15:49:30	7482	37859	26.7	36.7	31.7	23.9	26.7	25.3
15:49:45	7481	37867	28.3	36.7	32.5	32.2	35.0	33.6
15:50:00	7491	37846	30.0	41.1	35.6	32.8	35.6	34.2
15:50:15	7488	37846	33.9	46.1	40.0	32.8	36.1	34.4
15:50:30	7486	37845	37.8	60.6	49.2	28.9	31.7	30.3
15:50:45	7482	37859	38.3	62.8	50.6	23.9	26.1	25.0
15:51:00	7496	37859	40.0	58.3	49.2	27.8	30.0	28.9
15:51:15	7490	37849	39.4	55.0	47.2	33.3	31.7	32.5
15:51:30	7485	37892	36.7	53.3	45.0	28.9	31.1	30.0
15:51:45	7484	37889	36.7	52.8	44.7	23.3	28.3	25.8
15:52:00	7499	37835	36.1	52.2	44.2	21.1	26.1	23.6
15:52:15	7494	37842	36.1	51.1	43.6	20.0	25.0	22.5
15:52:30	7494	37890	35.6	50.6	43.1	18.9	23.9	21.4
15:52:45	7492	37853	35.6	49.4	42.5	18.3	23.3	20.8
15:53:00	7474	37850	35.0	48.9	41.9	18.3	22.8	20.6

## Yarmouth Research and Technology

### 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:	100	mls
Average Leak Rate Over 30 Minute Duration:	3.3	ml/min
Allowable Leak Rate:	725	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:	268	mls
Water Collected in System Relief Valve:	0	mls
Calculated External Leakage During 40 Minute Duration:	168	mls
Average Leak Rate Over 40 Minute Duration:	4	ml/min
Allowable Leak Rate:	181	ml/min
Were the Valve Leakages Below the Allowables?	Yes	
Maximum Cavity Pressure During Burn:	0	

## Yarmouth Research and Technology

### 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:	7546.1	psig
Average Pressure During Burn/Cool Down:	7521.6	psig
Minimum Pressure During Burn/Cool Down:	7458.1	psig
Amount of Time of Avg. Cal Block > 650 deg.C:	17.5	minutes
Minimum Allowable Time at Temperature:	15.0	minutes
Maximum Avg Cal Block Temperature:	723.9	deg. C
Average Cal Block Temperature:	498.2	deg. C
Lowest Avg Cal. Block Temperature:	26.7	deg. C
Maximum Body Flame Temperature During Burn:	813.9	deg. C
Average Body Flame Temperature During Burn:	783.3	deg. C
Maximum Bonnet Flame Temperature During Burn:	840.0	deg. C
Average Bonnet Flame Temperature During Burn:	780.8	deg. C
Average of Both Flame Temperatures During Burn:	782.0	deg. C

*Note*

---



---



---



---

<b>Were Test Conditions Within Compliance?</b>	<b>Yes</b>
--	------------



# Yarmouth Research and Technology

## Post-Burn Seat Test Information

**Customer:** ValvTechnologies

**Date:** 8/31/2009

---

**Product Code:** 1-13/16 inch 10000 psi Top-Entry Ball Valve

---

**Project Number:** PN20991

---

### *Test Data*

*This test not required for this pressure valve.*

# Yarmouth Research and Technology

## Operational Test Information

Customer: ValvTechnologies

Date: 8/31/2009

Product Code: 1-13/16 inch 10000 psi Top-Entry Ball Valve

Project Number: PN20991

## Test Data

Time	Pressure (psig)	Cal Block Temp - C
16:02:11	7436	23.3
16:02:26	7593	23.3
16:02:41	7524	23.3
16:02:56	7663	22.8
16:03:11	7640	22.8
16:03:26	7598	23.3
16:03:41	7456	22.8
16:03:56	7519	23.3
16:04:11	7544	22.8
16:04:26	7548	22.8
16:04:41	7536	22.8
16:04:56	7498	22.8
16:05:11	7439	22.8
16:05:26	7572	22.8
16:05:41	7572	22.8
16:05:56	7628	22.8
16:06:11	7505	22.8
16:06:26	7573	22.8
16:06:41	7597	22.8
16:06:56	7611	22.8
16:07:11	7612	22.2

*Leakages were collected manually.*

Total External Leakage Collected Over 5 Minute Duration:	445	mls
Average Leak Rate Over 5 Minute Duration:	89	ml/min
Allowable Leak Rate:	363	ml/min

Was the Valve Leakage Below the Allowable?	Yes
--	-----