

Fire Test Report
ANSI/API Standard 607, 5th Edition

Performed for

ValvTechnologies

www.valv.com



8 inch Class 600
TrunTech Ball Valve
Valve Code: H6C2-JJ-XX-B080-003AA-P02

Project Number: 213083
Test Date: January 24, 2014



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: ValvTechnologies

Date: 1/24/2014

Specification: ANSI/API Standard 607, Fifth Edition

Product Description: 8 inch Class 600 TrunTech Ball Valve

Valve Code: H6C2-JJ-XX-B080-003AA-P02

Project Number: PN213083

Equipment Confirmed to be in Calibration to NIST Standards: Yes

Burn and Cool Down Test

Burn Start Time:	11:36:00	
Average Pressure During Burn:	1113	psig
Seat Leak Rate During Burn:	0.0	ml/min
Allowable Seat Leak Rate:	3200	ml/min
External Leak Rate During Burn/Cool Down:	0.2	ml/min
Allowable External Leak Rate:	800	ml/min
Amount of Time of Avg. Cal. Blocks > 650 deg. C:	20.8	minutes
Were Test Conditions Within Compliance?	Yes	
Were the Valve Leakages Below the Allowables?	Yes	

Post-Burn Seat Test

Average Pressure During Test:	29	psig
Seat Leak Rate:	0.0	ml/min
Allowable Seat Leak Rate:	320	ml/min
Was the Leakage Below the Allowable?	Yes	

Operational Test

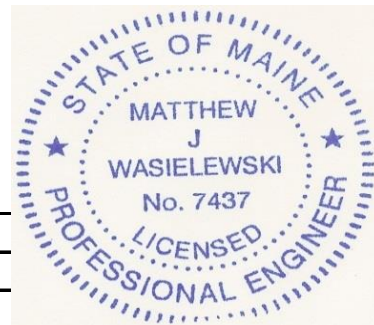
Average Pressure During Test:	1175	psig
External Leak Rate After Operating:	0.0	ml/min
Allowable External Leak Rate:	200	ml/min
Was the Leakage Below the Allowable?	Yes	

Does Valve Pass or Fail the Test Standard?	PASS
---	-------------

Certified by



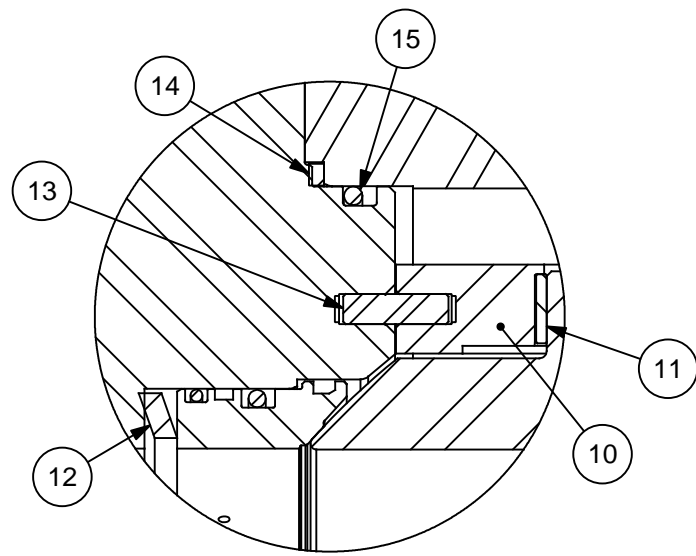
Matthew J. Wasielewski, PE
 President and Manager
 Yarmouth Research and Technology, LLC



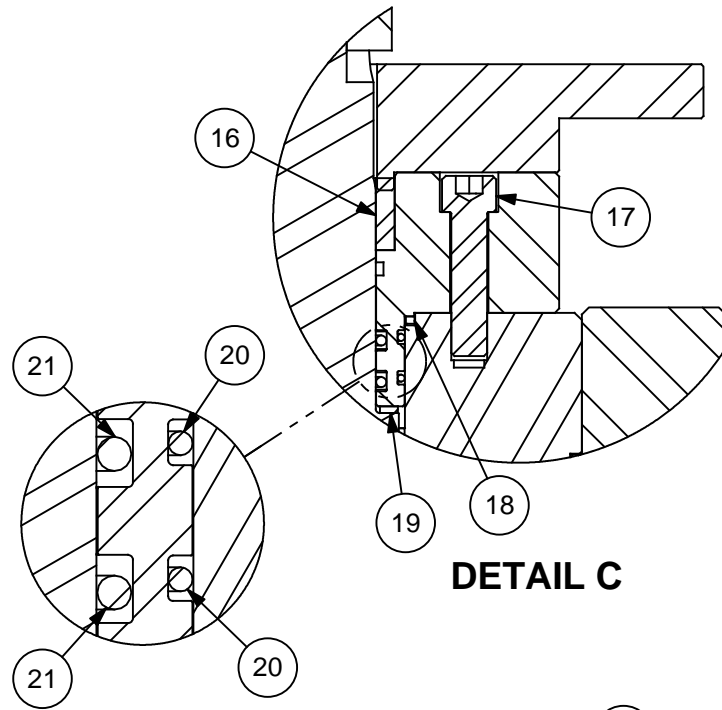
YARMOUTH RESEARCH AND TECHNOLOGY, LLC

Fire Test Information Sheet

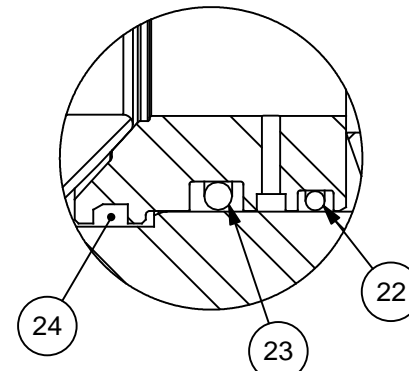
Fire Test Specification and Revision: (ie. API 607 6 th , API 6FA 3 rd , etc)	API 607 5 th Ed
Yarmouth Proposal Number:	213083A
Customer Purchase Order Number:	077803-01
Customer's Contact Name:	Matt Wasielewski
Valve Manufacturer's Name (used in test report as specified):	ValvTechnologies
Company Web Address for Report Cover:	www.valv.com
Valve Manufacturer's Address:	5904 Bingle Road Houston, TX. 77092
Did valve meet all required hydrostatic, leakage and other production pressure tests?	Yes
Valve Description for Report Cover:	TrunTech
Valve Product Code:	H6C2-JJ-XX-B080-003AA-P02
Valve Description	Size: 8.0" Pressure Rating/Class: 600# Pressure Rating at 100F (psig): 1480 psig Type: 3-Piece Design Weight: 1383 lbs Reduced or Full Bore: Full Bore Per API-6D Body/Bonnet Material: A105/A105 Trim Material: SA-29 AISI 4130 Seat Material: SA-29 AISI 4130 Stem Seal Material: SA-29 AISI 4130 Body Seal Material: Graphite Bolting Material: Stud: B7 / Nut: 2H Is valve considered "Soft-Seated"? No. Metal Seated
Valve Markings	Standard ValvTechnologies tag used with valve part #.
Nameplate Information: Casting Markings:	
Assembly Drawing Number / Revision / Date of Issue: Emailed (PDF) to Yarmouth: Date:	130537-001 05/20/2013 TBA
If valve is fitted with gearbox, state gearbox manufacturer, model number and mechanical advantage:	Exeeco Gearbox IW6R/420 complete with 24.0" Hand Wheel. MA=132
If valve is non-symmetric, state direction of flow for test:	Valve is bi-directional
For double-seated valves, state maximum allowable cavity pressure:	Max working pressure per B16.34 @ 100 deg. F, 600# = 1480 psig



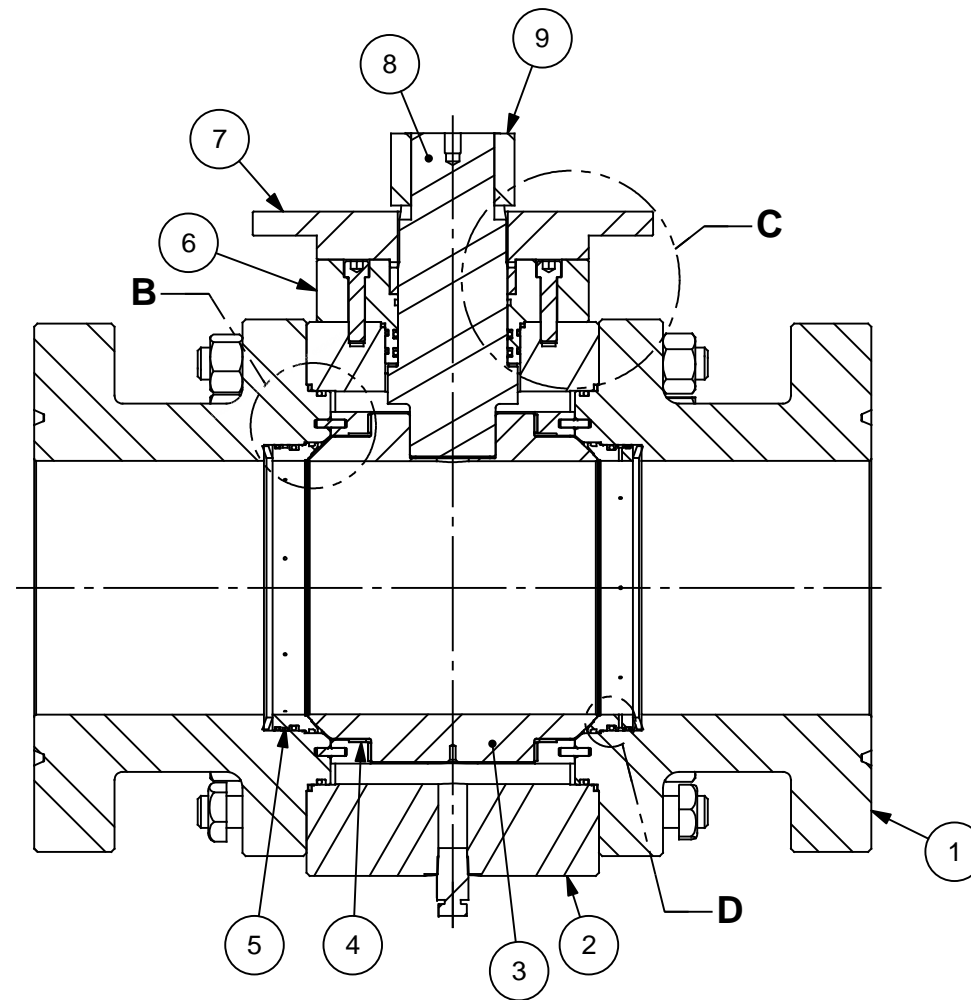
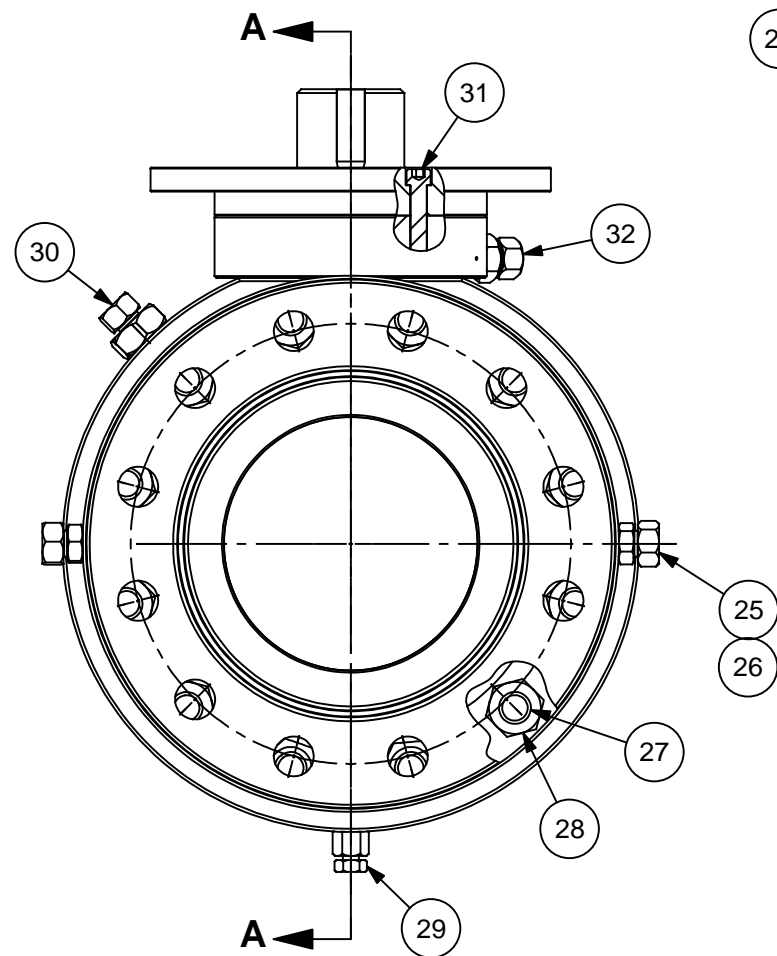
DETAIL B



DETAIL C

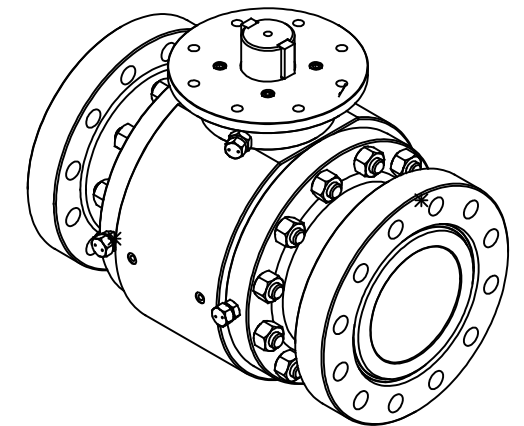


DETAIL D



SECTION A-A

BILL OF MATERIALS		
ITEM	DESCRIPTION	QTY.
1	END CAP	2
2	BODY	1
3	BALL	1
4	THRUST WASHER	1
5	SEAT	2
6	BONNET	1
7	CROWN PLATE	1
8	STEM	1
9	KEY	2
10	STANDARD TRUNNION BEARING	2
11	STANDARD SLEEVE BEARING	2
12	BELLEVILLE SPRING	2
13	DOWEL PIN	4
14	BODY GASKET	2
15	O-RING (END CAP)	2
16	STEM PACKING	1
17	BONNET CAP SCREW	4
18	BONNET GASKET	1
19	STEM BEARING	1
20	O-RING (BONNET O.D.)	2
21	O-RING (BONNET I.D.)	2
22	O-RING (SEAT, SMALL)	2
23	O-RING (SEAT, LARGE)	2
24	FLEX ROPE	2
25	INJECTION FITTING	4
26	CHECK VALVE	4
27	BODY STUD	24
28	BODY NUT	24
29	DRAIN VALVE	1
30	VENT PLUG	1
31	CROWN PLATE CAP SCREW	4
32	INJECTION FITTING W/ CHECK VALVE	1



REV.	DATE	DESCRIPTION	ECN	BY	APR

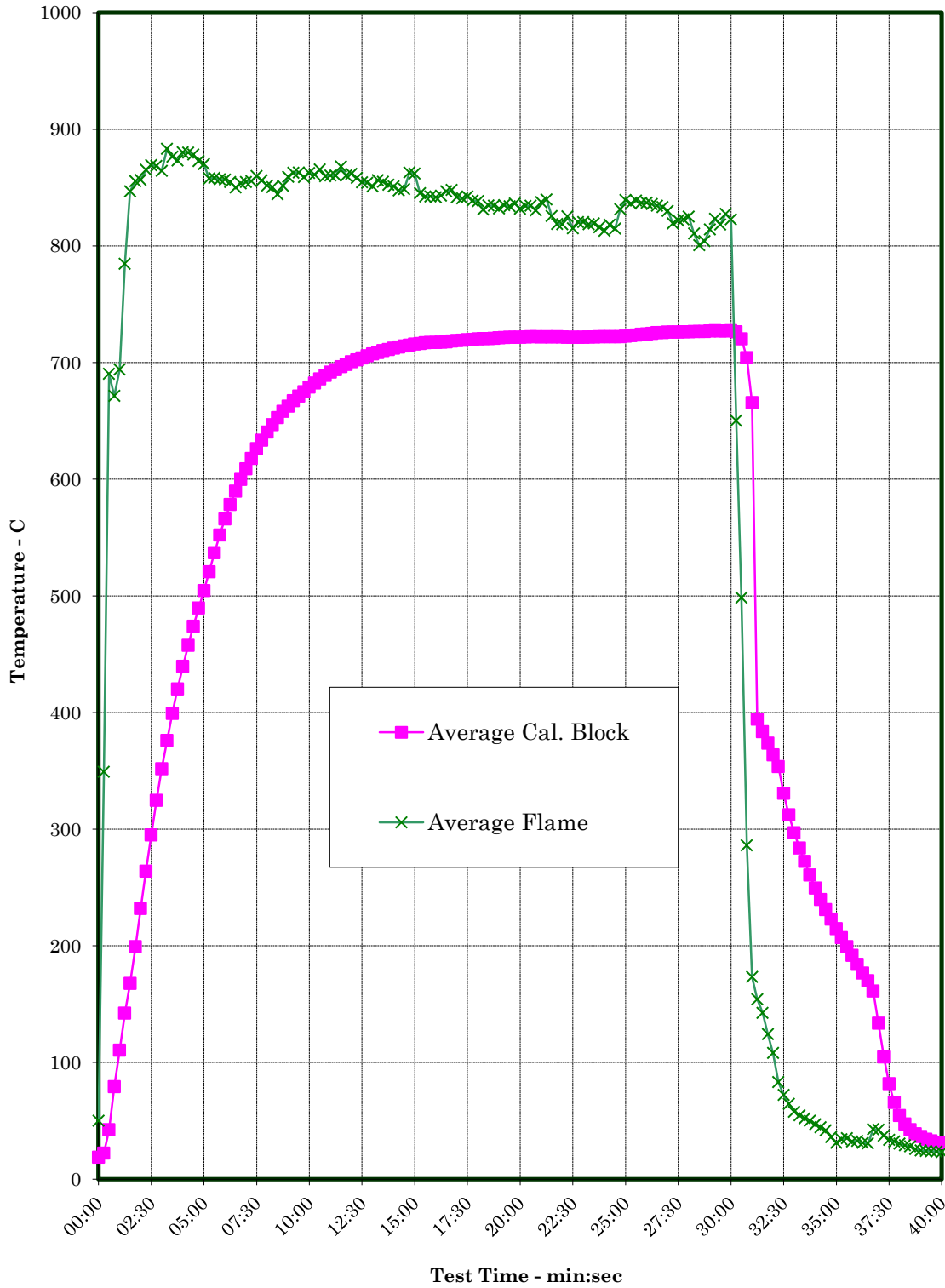
THIRD ANGLE PROJECTION
 THIS DRAWING AND THE INFORMATION CONTAINED WITHIN IS CONSIDERED TO BE CONFIDENTIAL AND THE SOLE PROPERTY OF VALVTECHNOLOGIES. THE CONTENTS OF THIS DRAWING MAY NOT BE REPRODUCED OR DISCLOSED VERBALLY OR OTHERWISE OUTSIDE THE HOLDERS OFFICE WITHOUT THE WRITTEN APPROVAL OF VALVTECHNOLOGIES.

DIMENSIONS ARE IN INCHES
 OVERALL DIMENSIONS (L) x (W) x (H)
FOR SALES ORDER
 ACTUATOR ORIENTATION IS FOR ILLUSTRATION PURPOSES ONLY. ACCESSORIES MAY NOT BE INCLUDED IN DRAWING.

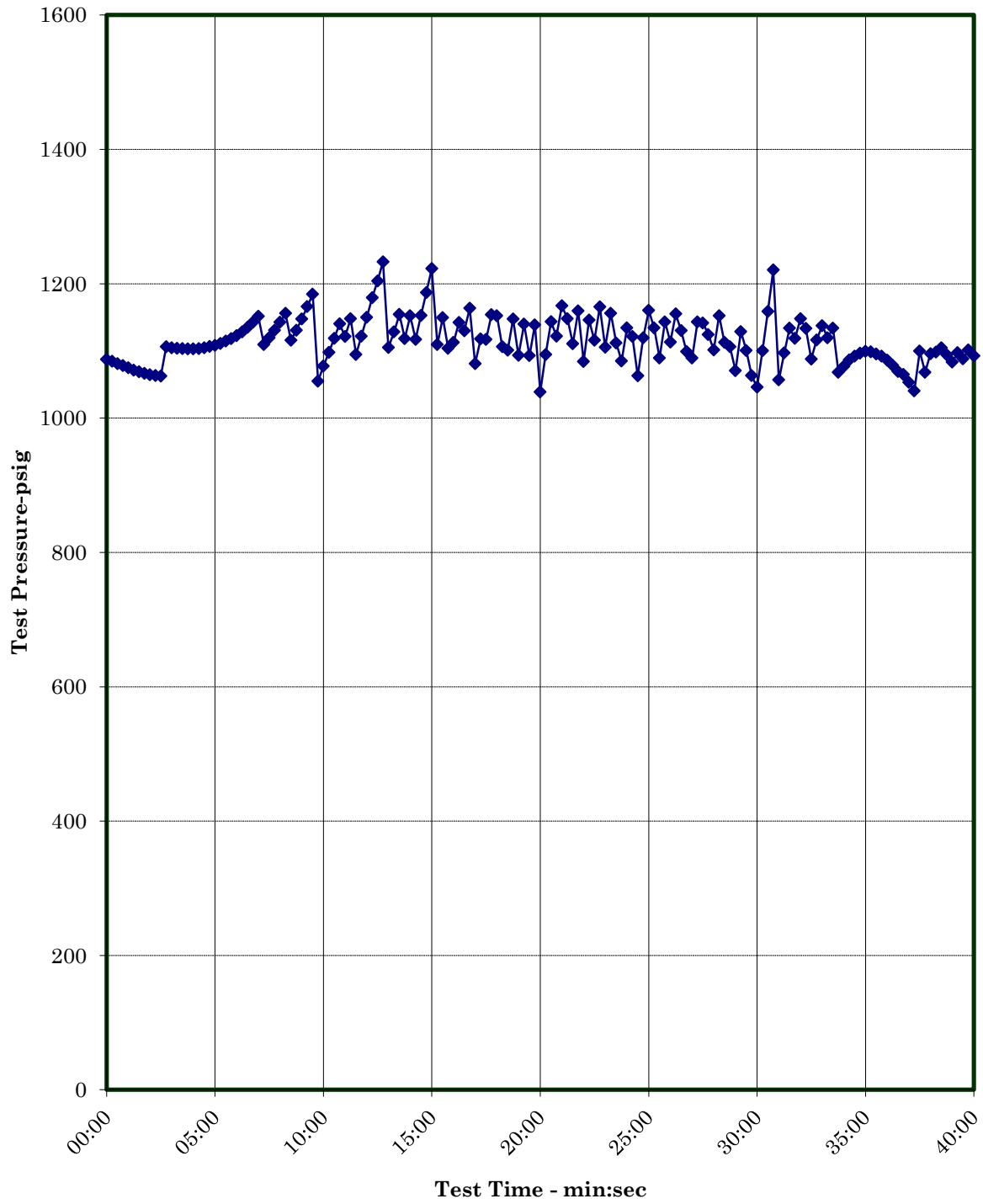
MODEL FILE 130475-001
 SCALE: 1:6 WEIGHT: 1383 LBS SHEET SIZE: 1 OF 2 B
 DRAWN BY: MS DATE: 5/01/13
 ENGINEER: PH DATE: 5/7/13

VALVTECHNOLOGIES
 5904 BINGLE ROAD, HOUSTON TEXAS 77092
 WWW.VALV.COM
 TITLE: 8" 600#, RTJ FLANGE, ZLT 7.913" BORE 3-PIECE TRUNNION
 130475-001 REV. 0

Temperature verses Time Chart



System Pressure versus Time Chart

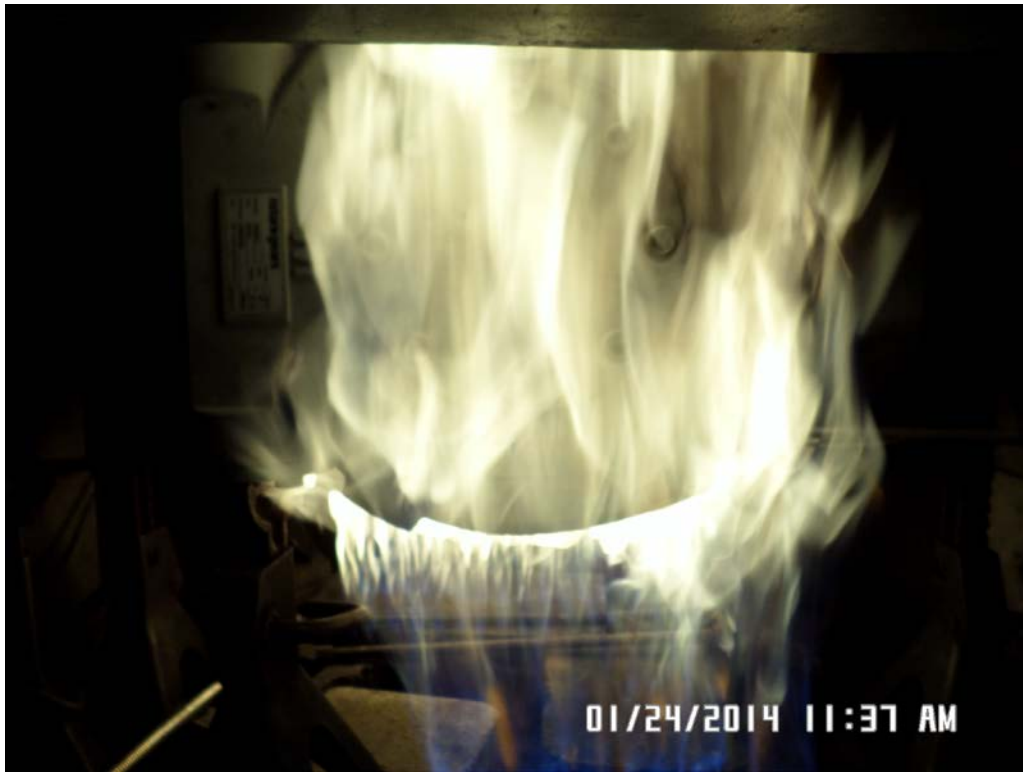


Yarmouth Research and Technology, LLC



Test Setup Prior to Burn

Yarmouth Research and Technology, LLC



Test Valve During Burn

Yarmouth Research and Technology, LLC

Fire Test Information

Customer: ValvTechnologies

Date: 1/24/2014

Product Code: 8 inch Class 600 TrunTech Ball Valve

Project Number: PN213083

Fire Test Raw Data

Time	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
11:36:00	1087	44593	21	16	17	18	81	19	50
11:36:15	1084	44600	26	18	24	23	433	265	349
11:36:30	1081	44596	47	38	58	48	818	562	690
11:36:45	1078	44591	85	73	107	88	789	553	671
11:37:00	1075	44582	128	93	109	110	877	511	694
11:37:15	1071	44591	176	109	128	138	947	623	785
11:37:30	1069	44591	221	114	171	169	963	731	847
11:37:45	1066	44586	262	136	219	206	954	757	856
11:38:00	1064	44590	300	164	266	243	966	747	857
11:38:15	1063	44584	334	194	303	277	962	769	865
11:38:30	1063	44589	365	225	334	308	962	776	869
11:38:45	1106	44580	394	255	360	336	964	773	869
11:39:00	1105	44586	421	283	384	362	953	776	864
11:39:15	1104	44591	444	308	404	386	969	798	883
11:39:30	1104	44598	467	331	424	408	976	777	876
11:39:45	1103	44585	488	353	443	428	964	783	873
11:40:00	1103	44583	507	372	460	446	968	793	880
11:40:15	1103	44597	524	391	476	464	966	794	880
11:40:30	1105	44591	539	408	491	479	969	788	878
11:40:45	1107	44581	554	425	504	494	946	800	873
11:41:00	1108	44595	566	443	516	508	917	824	870
11:41:15	1111	44602	577	464	526	522	887	829	858
11:41:30	1114	44576	588	486	536	537	872	844	858
11:41:45	1118	44599	598	507	546	550	866	849	857
11:42:00	1123	44608	607	525	554	562	869	844	857
11:42:15	1128	44580	615	542	562	573	847	862	855
11:42:30	1135	44577	623	557	570	583	842	858	850
11:42:45	1143	44608	630	569	577	592	852	855	854
11:43:00	1152	44596	636	582	583	600	851	858	855
11:43:15	1109	44593	642	593	589	608	857	854	856
11:43:30	1119	44606	648	604	595	616	864	856	860
11:43:45	1131	44597	653	613	601	623	857	855	856
11:44:00	1143	44607	658	622	607	629	862	841	852

Yarmouth Research and Technology, LLC

Fire Test Data - continued

11:44:15	1156	44587	663	631	611	635	855	846	850
11:44:30	1116	44585	667	638	616	640	831	858	844
11:44:45	1131	44586	671	646	619	645	842	861	851
11:45:00	1147	44586	673	652	622	649	854	864	859
11:45:15	1166	44597	677	658	626	654	868	858	863
11:45:30	1185	44610	679	663	630	657	874	852	863
11:45:45	1055	44598	682	668	634	661	872	846	859
11:46:00	1077	44582	685	673	637	665	878	847	863
11:46:15	1098	44585	688	677	640	668	876	846	861
11:46:30	1119	44612	690	682	643	671	879	852	866
11:46:45	1140	44607	692	686	646	674	869	851	860
11:47:00	1121	44577	694	689	648	677	868	852	860
11:47:15	1148	44589	696	692	651	679	872	848	860
11:47:30	1095	44591	698	695	652	682	879	857	868
11:47:45	1122	44598	699	698	654	684	873	848	860
11:48:00	1150	44588	701	701	656	686	872	852	862
11:48:15	1179	44589	702	703	658	687	864	853	858
11:48:30	1204	44591	703	705	659	689	863	846	854
11:48:45	1233	44588	704	708	661	691	858	850	854
11:49:00	1105	44610	705	710	662	692	858	844	851
11:49:15	1128	44573	706	712	663	694	864	849	856
11:49:30	1154	44595	707	714	664	695	867	843	855
11:49:45	1118	44597	707	715	666	696	862	843	853
11:50:00	1152	44575	708	717	667	697	856	846	851
11:50:15	1117	44589	708	718	668	698	856	839	848
11:50:30	1153	44583	709	719	669	699	853	844	849
11:50:45	1187	44592	709	721	671	700	871	856	863
11:51:00	1222	44580	710	722	672	701	873	851	862
11:51:15	1109	44580	711	722	672	702	838	852	845
11:51:30	1150	44585	711	723	672	702	835	850	843
11:51:45	1104	44574	711	723	672	702	827	858	843
11:52:00	1112	44604	711	724	672	702	838	846	842
11:52:15	1142	44578	711	724	673	703	840	846	843
11:52:30	1130	44565	711	725	674	703	852	842	847
11:52:45	1163	44602	711	726	674	704	850	846	848
11:53:00	1081	44581	712	726	675	704	839	844	842
11:53:15	1118	44589	712	727	676	705	837	844	841
11:53:30	1117	44583	712	727	676	705	842	843	843
11:53:45	1154	44574	712	728	677	705	844	834	839
11:54:00	1152	44594	712	728	677	706	842	834	838
11:54:15	1106	44595	712	729	678	706	836	826	831
11:54:30	1101	44577	712	729	678	706	838	832	835
11:54:45	1147	44578	712	729	678	706	839	830	834

Yarmouth Research and Technology, LLC

Fire Test Data - continued

11:55:00	1093	44546	712	730	678	707	836	828	832
11:55:15	1140	44571	712	731	678	707	839	831	835
11:55:30	1093	44551	713	731	679	707	840	828	834
11:55:45	1139	44572	712	731	679	708	842	831	836
11:56:00	1039	44545	712	731	679	707	833	831	832
11:56:15	1095	44568	713	731	680	708	836	833	834
11:56:30	1143	44559	713	732	680	708	838	831	834
11:56:45	1122	44552	713	732	680	708	828	833	831
11:57:00	1167	44567	712	732	681	708	841	834	838
11:57:15	1148	44543	713	732	681	708	847	833	840
11:57:30	1111	44541	712	732	680	708	820	831	826
11:57:45	1159	44562	712	732	679	708	804	834	819
11:58:00	1084	44540	712	732	678	707	802	835	819
11:58:15	1146	44543	711	732	678	707	817	834	825
11:58:30	1116	44536	711	732	679	707	815	815	815
11:58:45	1165	44558	711	733	679	708	821	821	821
11:59:00	1106	44562	711	733	680	708	824	817	821
11:59:15	1156	44558	711	733	680	708	819	818	819
11:59:30	1112	44565	711	733	680	708	821	818	819
11:59:45	1085	44550	711	734	681	709	816	816	816
12:00:00	1134	44510	711	734	681	709	814	812	813
12:00:15	1121	44542	710	734	682	709	817	819	818
12:00:30	1063	44562	710	734	681	709	813	816	815
12:00:45	1119	44543	710	734	682	709	832	831	831
12:01:00	1160	44532	710	735	682	709	846	833	839
12:01:15	1134	44560	711	736	682	709	838	834	836
12:01:30	1089	44533	711	736	682	710	838	839	839
12:01:45	1143	44512	712	737	683	710	837	837	837
12:02:00	1113	44555	712	737	683	711	839	835	837
12:02:15	1155	44517	713	737	683	711	840	832	836
12:02:30	1130	44532	713	738	684	712	834	835	834
12:02:45	1099	44525	713	738	684	712	837	829	833
12:03:00	1089	44541	714	738	684	712	834	826	830
12:03:15	1143	44539	714	738	684	712	827	812	819
12:03:30	1142	44551	714	738	684	712	836	808	822
12:03:45	1124	44547	714	738	684	712	842	803	823
12:04:00	1101	44529	714	738	684	712	844	806	825
12:04:15	1153	44523	715	738	685	713	831	790	811
12:04:30	1113	44529	715	738	685	713	829	772	801
12:04:45	1106	44512	715	738	684	713	826	782	804
12:05:00	1071	44544	715	739	685	713	818	810	814
12:05:15	1129	44525	716	739	685	713	821	826	823
12:05:30	1101	44523	715	739	685	713	816	821	818

Yarmouth Research and Technology, LLC

Fire Test Data - continued

12:05:45	1063	44522	715	739	686	713	816	839	828
12:06:00	1046	44530	715	739	686	714	812	834	823
12:06:15	1100	44535	714	739	685	713	664	636	650
12:06:30	1159	44523	707	734	673	704	524	472	498
12:06:45	1221	44528	688	721	654	687	207	366	286
12:07:00	1057	44509	629	702	634	655	49	297	173
12:07:15	1097	44527	108	680	616	468	57	251	154
12:07:30	1134	44511	108	659	599	455	66	219	143
12:07:45	1119	44508	108	639	583	444	62	187	124
12:08:00	1148	44510	107	620	566	431	52	164	108
12:08:15	1134	44460	107	600	551	419	23	143	83
12:08:30	1088	44512	82	580	536	399	19	126	72
12:08:45	1116	44483	64	561	478	367	17	112	64
12:09:00	1138	44498	52	542	317	304	16	100	58
12:09:15	1120	44505	44	523	277	281	15	94	55
12:09:30	1134	44512	39	506	256	267	14	90	52
12:09:45	1068	44503	36	486	234	252	15	85	50
12:10:00	1077	44516	33	466	228	242	14	80	47
12:10:15	1086	44510	31	449	226	235	13	76	44
12:10:30	1092	44518	29	433	221	228	13	71	42
12:10:45	1097	44507	28	417	217	221	12	60	36
12:11:00	1099	44521	27	402	211	214	12	50	31
12:11:15	1099	44513	27	387	207	207	13	55	34
12:11:30	1095	44512	26	373	201	200	14	56	35
12:11:45	1092	44511	26	357	197	193	14	51	32
12:12:00	1086	44520	26	343	192	187	15	51	33
12:12:15	1078	44517	25	328	186	180	14	48	31
12:12:30	1069	44523	25	315	181	174	14	47	31
12:12:45	1065	44513	25	297	177	166	21	65	43
12:13:00	1053	44519	26	241	169	146	23	61	42
12:13:15	1041	44529	28	182	158	123	23	52	37
12:13:30	1100	44495	29	134	152	105	22	46	34
12:13:45	1068	44496	31	101	148	93	22	43	32
12:14:00	1096	44490	31	78	144	84	21	39	30
12:14:15	1098	44492	32	63	142	79	20	38	29
12:14:30	1105	44468	32	53	138	74	21	36	28
12:14:45	1094	44467	32	46	135	71	19	32	26
12:15:00	1083	44469	32	41	132	68	19	30	24
12:15:15	1097	44452	31	37	129	66	20	28	24
12:15:30	1088	44429	31	34	126	64	19	28	24
12:15:45	1101	44415	31	32	123	62	19	28	24
12:16:00	1093	44425	31	31	121	61	20	26	23

Yarmouth Research and Technology, LLC

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:	0.0	mls
Average Leak Rate Over 30 Minute Duration:	0.0	ml/min
Allowable Leak Rate:	3200	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:	168	mls
Water Collected in System Relief Valve:	160	mls
Calculated External Leakage During 40 Minute Duration:	8.0	mls
Average Leak Rate Over 40 Minute Duration:	0.2	ml/min
Allowable Leak Rate:	800	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:	1233	psig
Average Pressure During Burn/Cool Down:	1115	psig
Minimum Pressure During Burn/Cool Down:	1039	psig
Amount of Time of Avg. Cal Block > 650 deg.C:	20.8	minutes
Minimum Allowable Time at Temperature:	15.0	minutes
Maximum Avg Cal Block Temperature:	714	deg. C
Average Cal Block Temperature:	527	deg. C
Lowest Avg Cal. Block Temperature:	18.0	deg. C
Maximum Body Flame Temperature During Burn:	864	deg. C
Average Body Flame Temperature During Burn:	811	deg. C
Maximum Bonnet Flame Temperature During Burn:	976	deg. C
Average Bonnet Flame Temperature During Burn:	851	deg. C
Average of Both Flame Temperatures During Burn:	831	deg. C

Notes

Were Test Conditions Within Compliance?	Yes
---	-----

Yarmouth Research and Technology, LLC

Post-Burn Seat Test Information

Customer: ValvTechnologies

Date: 1/24/2014

Product Code: 8 inch Class 600 TrunTech Ball Valve

Project Number: PN213083

Test Data

Time	Pressure (psig)	Cal Block Temp - C
12:35:34	29	26
12:35:49	29	26
12:36:04	29	26
12:36:19	29	27
12:36:34	29	27
12:36:49	29	26
12:37:04	29	26
12:37:19	29	27
12:37:34	29	27
12:37:49	29	27
12:38:04	29	27
12:38:19	29	27
12:38:34	29	27
12:38:49	29	27
12:39:04	29	27
12:39:19	29	27
12:39:34	29	27
12:39:49	29	27
12:40:04	29	27
12:40:19	29	27
12:40:34	29	27

Leakages were collected manually.

Total Seat Leakage Collected Over 5 Minute Duration:	0.0	mls
Average Leak Rate Over 5 Minute Duration:	0.0	ml/min
Allowable Leak Rate:	320	ml/min

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

Yarmouth Research and Technology, LLC

Operational Test Information

Customer: ValvTechnologies

Date: 1/24/2014

Product Code: 8 inch Class 600 TrunTech Ball Valve

Project Number: PN213083

Test Data

Time	Pressure (psig)	Cal Block Temp - C
12:51:25	1080	28
12:51:40	1095	28
12:51:55	1109	29
12:52:10	1119	29
12:52:25	1131	29
12:52:40	1140	29
12:52:55	1151	29
12:53:10	1160	29
12:53:25	1169	29
12:53:40	1177	29
12:53:55	1185	29
12:54:10	1191	29
12:54:25	1196	29
12:54:40	1203	29
12:54:55	1209	29
12:55:10	1216	29
12:55:25	1221	29
12:55:40	1226	29
12:55:55	1229	29
12:56:10	1233	29
12:56:25	1238	29

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:	200	ml/min

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

API Standard API-607 5th Ed. ISO-10497-5:2004 Fire Test Certificate

Name of Manufacturer:	ValvTechnologies, Inc.	Test Date:	1/24/2014
Designation of Valve:	Trunnion Ball Valve H6C2-JJ-XX-B080-003AA-P02	Report/Certificate Number:	213083-8600
Size:	8 inch	Pressure Rating:	ANSI Class 600
Body Material:	Carbon Steel- SA-105	Seat Material:	SA-29 AISI 4130
Trim Material:	SA-29 AISI 4130	Stem Seal / Body Seal:	SA-29 AISI 4130/ 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.

Size Qualified API-607:	8" and larger API-6D	Pressure Ranges Qualified API-607:	600#, 800# & 900# API-6D
-------------------------	----------------------	------------------------------------	--------------------------

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