

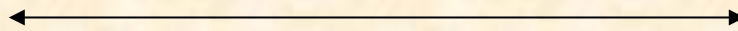
## **Fire Test Report**

**API Standard 6FA, Third Edition, April 1999**  
**“Specification for Fire Testing of Valves”**

*Performed for*

**EV Metalvaerk A/S**

[www.evmetal.dk](http://www.evmetal.dk)



**1 inch Class 600**  
**Monoflange Instrument Valve SDBB**  
Product Code: 10#600 1 RFxNPT

**Project Number: 215374**  
**Test Date: January 13, 2016**

*Performed by*

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**YARMOUTH RESEARCH AND TECHNOLOGY, LLC**

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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, LLC

**Customer:** EV Metalærk A/S

**Date:** 1/13/2016

**Specification:** API Standard 6FA, Third Edition, April 1999 (R2008)

**Product Description:** 1 inch Class 600 Monoflange Instrument Valve SDBB

**Project Number:** 215374

**Product Code:** 10# 600 1 RTJxNPT

**Equipment Confirmed to be in Calibration to NIST Standards:** Yes

***Burn and Cool Down Test***

Burn Start Time:	11:48:00	
Average Pressure During Burn:	1088	psig
Seat Leak Rate During Burn:	0	ml/min
Allowable Seat Leak Rate:	400	ml/min
External Leak Rate During Burn/Cool Down:	0.7	ml/min
Allowable External Leak Rate:	100	ml/min
Amount of Time of Avg. Cal. Blocks > 650 deg. C:	21.3	minutes
Were Test Conditions Within Compliance?	Yes	
Were the Valve Leakages Below the Allowables?	Yes	

***Operational Test***

Did Valve Unseat and Open Fully?:	Yes	
Average Pressure During Test:	1070	psig
External Leak Rate After Operating:	0	ml/min
Allowable External Leak Rate:	200	ml/min
Was the Leakage Below the Allowable?	Yes	
<b>Does Valve Pass or Fail the Test Standard?</b>	<b>PASS</b>	

**Certified By:**



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

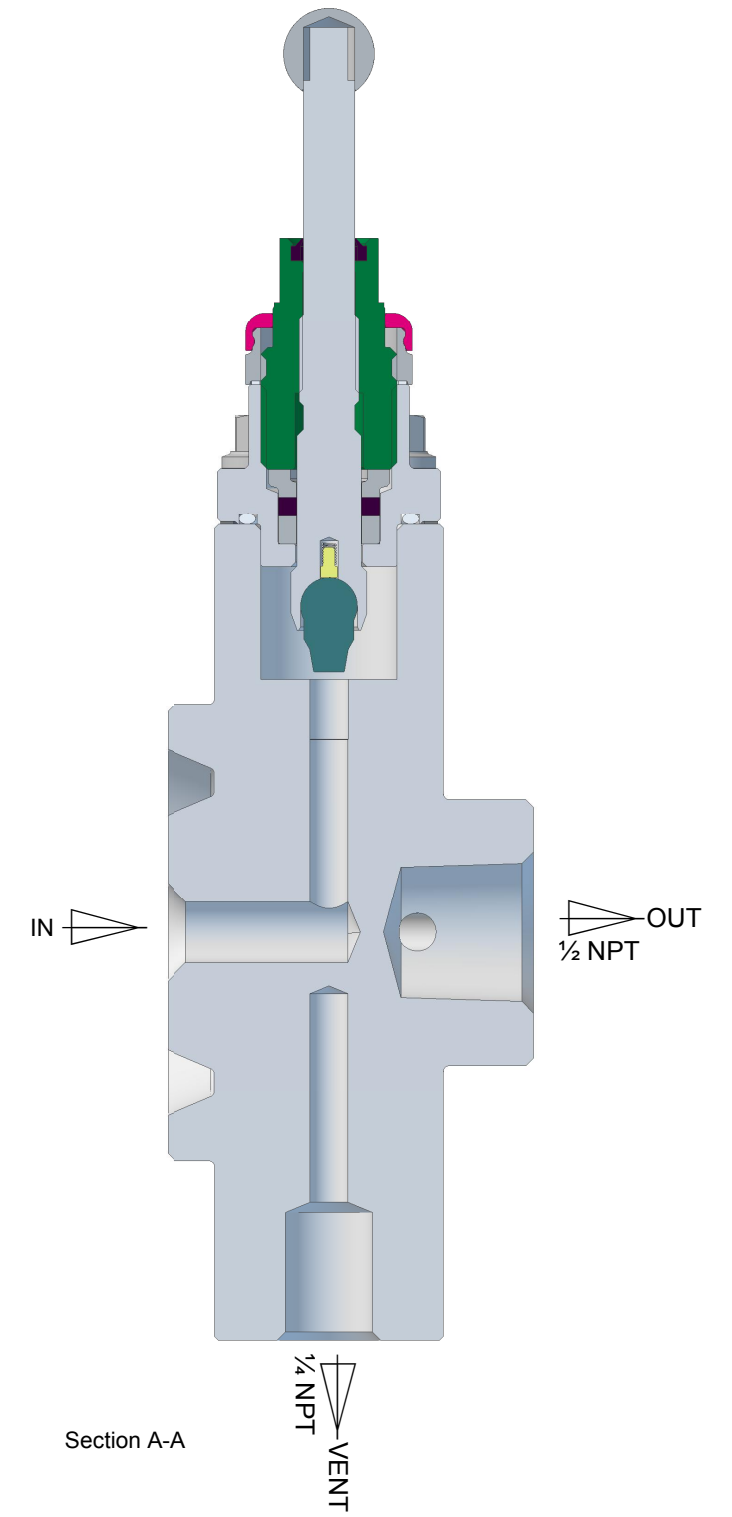
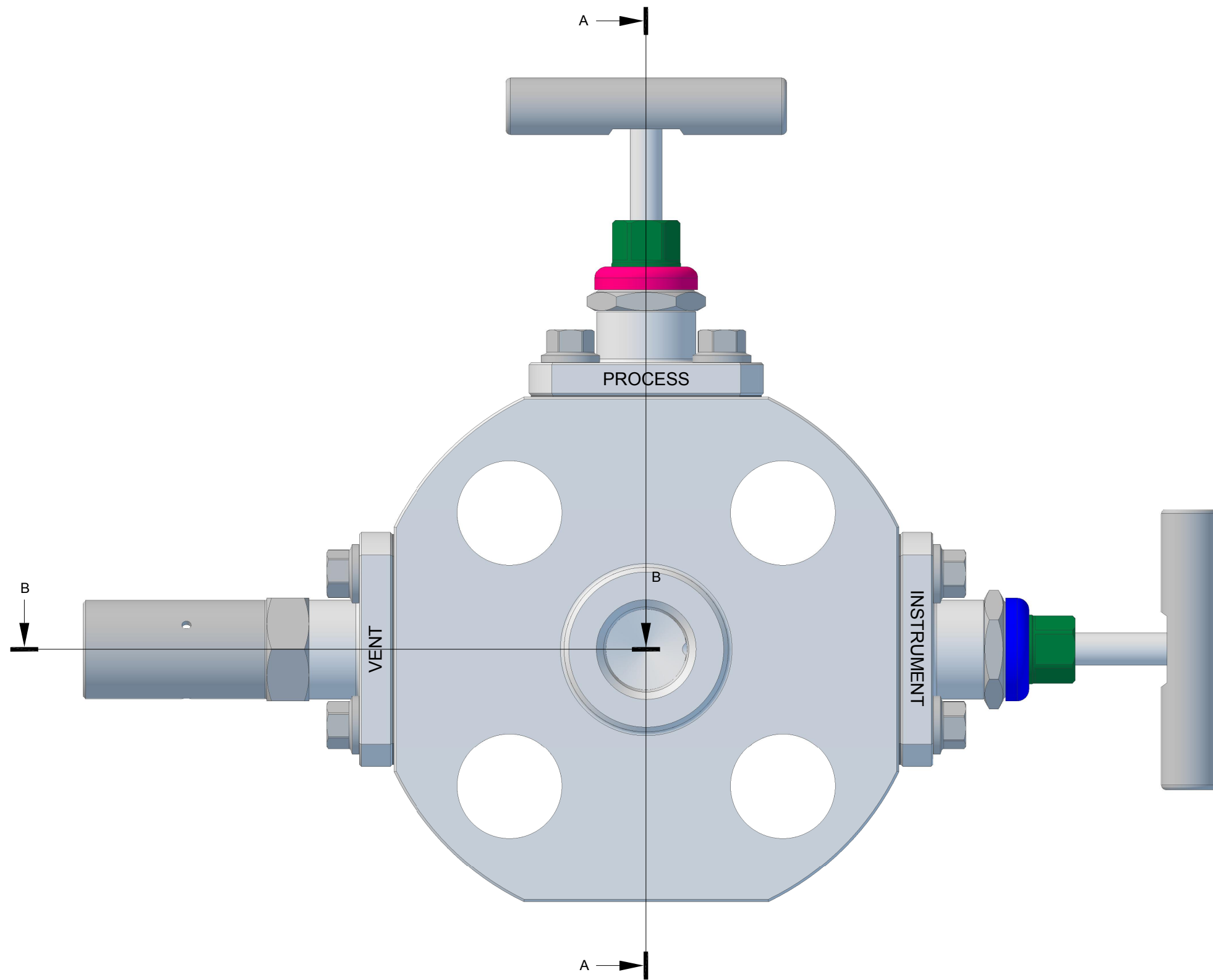


YARMOUTH RESEARCH AND TECHNOLOGY, LLC

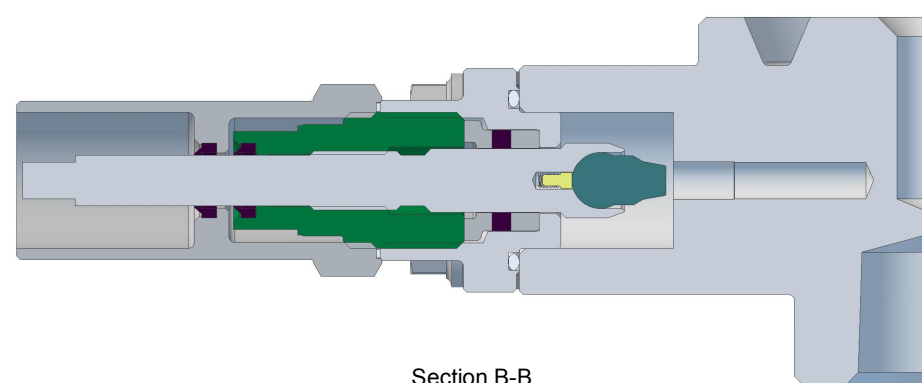
**Fire Test Information Sheet**

Fire Test Specification and Revision: (ie. API 607 6th, API 6FA 3rd, etc)	API 6FA 3rd.
Yarmouth Proposal Number:	215374A
Customer Purchase Order Number:	5028401
Customer's Contact Name:	Erling Tofting
Valve Manufacturer's Name (used in test report as specified):	EV Metalværk A/S
Company Web Address for Report Cover:	<a href="http://www.evmetal.dk">www.evmetal.dk</a>
Valve Manufacturer's Address:	Ribovej 1, 6950 Ringkøbing, Denmark
Did valve meet all required hydrostatic, leakage and other production pressure tests?	Yes
Valve Description for Report Cover:	Monoflange instrument valve SDBB
Valve Product Code:	10#600 1 RTJxNPT
<b>Valve Description</b>	
Size:	1"
Pressure Rating/Class:	# 600
Pressure Rating at 100F (psig):	1440 psig
Type:	SDBB valve
Weight:	
Reduced or Full Bore:	Needle valve
Body/Bonnet Material:	EN 1.4404
Trim Material:	NA
Seat Material:	EN 1.4404
Stem Seal Material:	PCTFE
Body Seal Material:	PTFE
Bolting Material:	EN 1.4410
Is valve considered "Soft-Seated"?	No
<b>Valve Markings</b>	
Nameplate Information:	Se enclosed drawing
Casting Markings:	NA
Assembly Drawing Number / Revision / Date of Issue:	Se enclosed drawing.
Emailed (PDF) to Yarmouth: Date:	
If valve is fitted with gearbox, state gearbox manufacturer, model number and mechanical advantage:	No gearbox
If valve is non-symmetric, state direction of flow for test:	See marking drawing
For double-seated valves, state maximum allowable cavity pressure:	NA
Form Submission Date:	22-12-2015

***PLEASE RETURN AS AN EXCEL DOCUMENT***



Section A-A



Section B-B

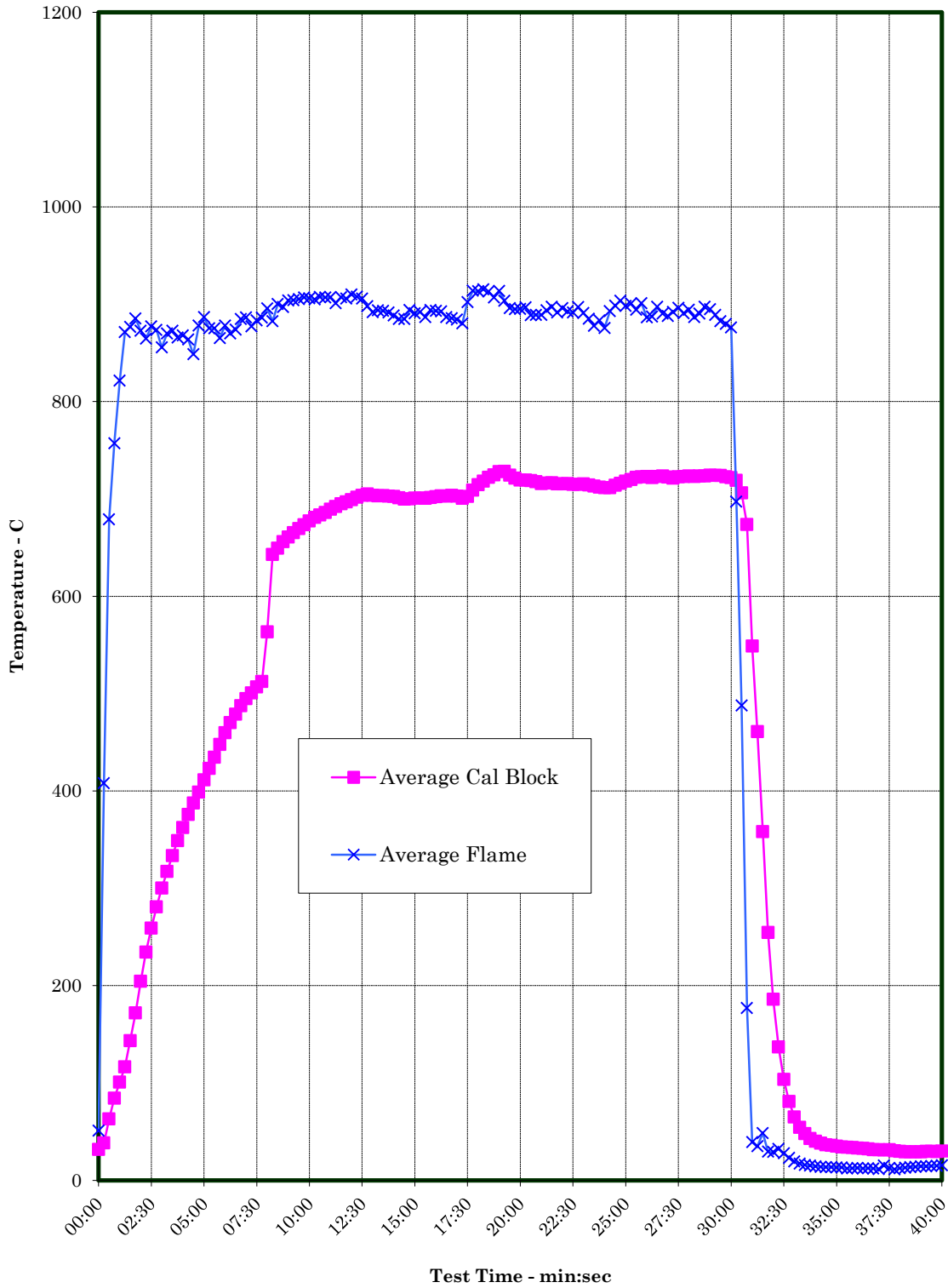


EV METALVÆRK A/S  
RIBOVEJ 1  
DK-6950 RINGKØBING

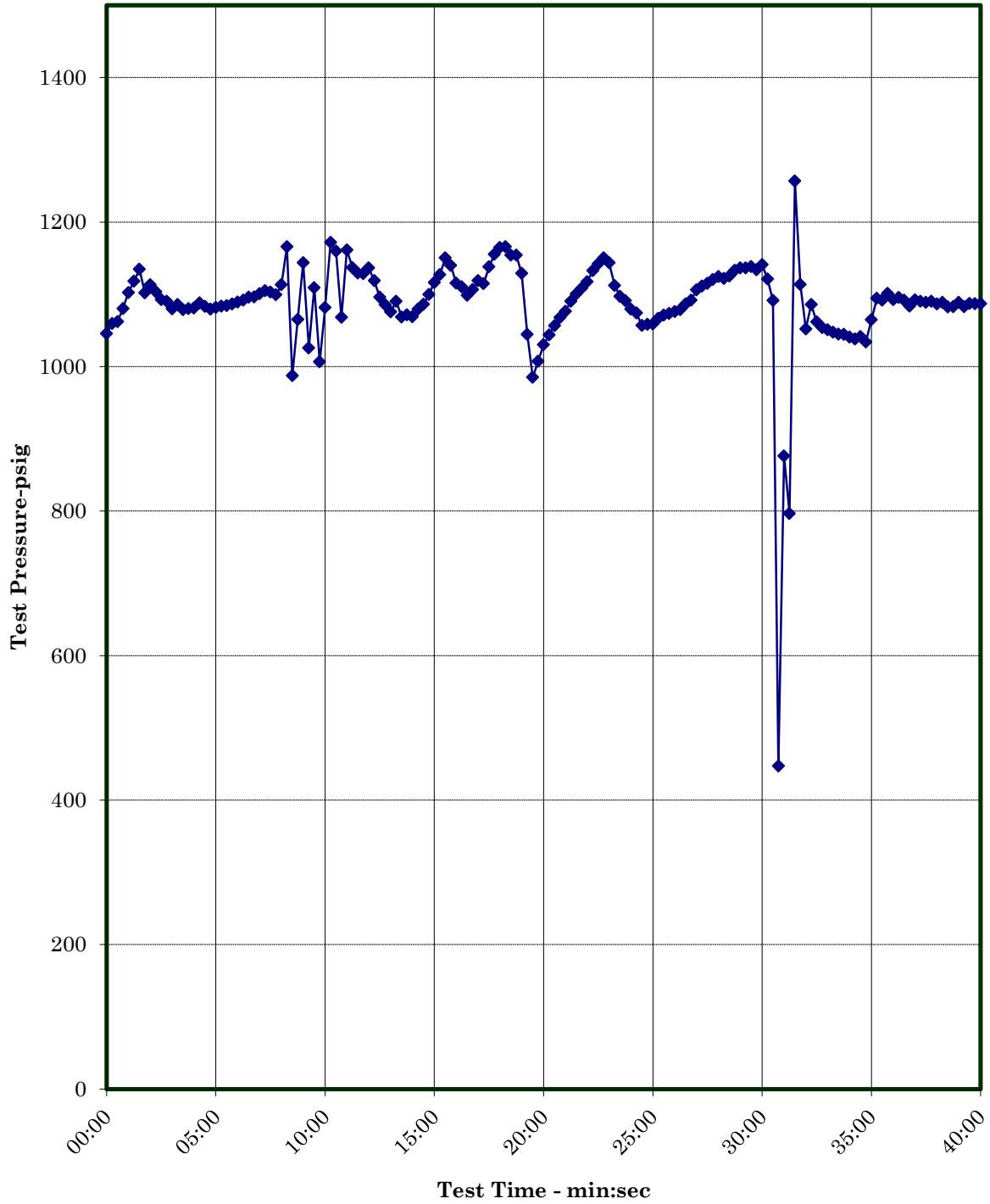
Scale	Date	Drawn by	Material	Weight	Dim.
1:1	19.01.15	NBJ			
A3	Post treatment				
Edges deburred. Dimensions without tolerance $\pm 0.1$ mm					
Designation				Dwg. no.	
Slimline Block & Bleed valve					

Confidential: Property of EV METALVÆRK A/S. Not to be handed over to, copied or used by third party. 2D/3D reproduction of contents to be authorized by EV METALVÆRK A/S.

**Temperature verses Time Chart**



**Pressure verses Time Chart**



Yarmouth Research and Technology, LLC



Valve Markings



Test Setup Prior to Burn



Yarmouth Research and Technology, LLC



Test Valve During Burn



## Yarmouth Research and Technology, LLC

### Fire Test Information

**Customer:** EV Metalærk A/S

**Date:** 1/13/2016

**Product Code:** 1 inch Class 600 Monoflange Instrument Valve SDBB

**Project Number:** 215374

### *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
11:48:00	1046	43678	32	31	32	53	49	51
11:48:15	1059	43723	43	33	38	398	418	408
11:48:30	1062	43703	74	52	63	681	677	679
11:48:45	1080	43687	81	88	84	728	786	757
11:49:00	1103	43704	84	117	101	821	822	821
11:49:15	1118	43687	96	138	117	903	840	871
11:49:30	1135	43703	114	172	143	909	844	877
11:49:45	1102	43682	134	210	172	921	850	885
11:50:00	1113	43696	158	251	204	908	838	873
11:50:15	1104	43706	179	289	234	890	839	865
11:50:30	1093	43689	194	324	259	897	857	877
11:50:45	1090	43706	207	354	281	892	856	874
11:51:00	1080	43704	218	382	300	882	829	856
11:51:15	1086	43690	228	406	317	892	848	870
11:51:30	1079	43681	238	429	334	883	862	873
11:51:45	1080	43698	246	452	349	867	864	866
11:52:00	1081	43711	253	472	363	868	868	868
11:52:15	1088	43683	261	491	376	876	852	864
11:52:30	1083	43688	267	508	388	840	857	849
11:52:45	1079	43720	274	524	399	895	861	878
11:53:00	1082	43763	284	539	411	905	868	887
11:53:15	1084	43722	293	553	423	881	870	875
11:53:30	1084	43667	303	567	435	881	869	875
11:53:45	1087	43747	317	579	448	866	864	865
11:54:00	1089	43684	329	590	460	891	865	878
11:54:15	1092	43734	340	601	470	873	867	870
11:54:30	1096	43734	347	611	479	881	867	874
11:54:45	1097	43705	356	619	488	906	863	885
11:55:00	1101	43725	361	628	495	908	864	886
11:55:15	1105	43753	365	636	501	892	862	877
11:55:30	1103	43737	370	644	507	900	867	883
11:55:45	1099	43778	374	651	513	908	864	886
11:56:00	1113	43692	469	657	563	922	869	896

## Yarmouth Research and Technology, LLC

### *Fire Test Data - continued*

11:56:15	1166	43712	622	663	643	899	866	883
11:56:30	987	43707	629	669	649	926	874	900
11:56:45	1065	43729	637	675	656	933	861	897
11:57:00	1144	43743	642	679	661	944	864	904
11:57:15	1026	43752	646	684	665	941	868	904
11:57:30	1109	43740	650	689	669	944	867	905
11:57:45	1007	43753	653	693	673	946	868	907
11:58:00	1082	43751	657	698	677	946	866	906
11:58:15	1172	43758	661	701	681	942	868	905
11:58:30	1160	43762	663	704	684	942	873	908
11:58:45	1068	43713	664	708	686	942	872	907
11:59:00	1162	43755	668	711	689	944	871	907
11:59:15	1137	43705	670	714	692	939	863	901
11:59:30	1130	43773	672	718	695	944	870	907
11:59:45	1129	43684	674	720	697	943	869	906
12:00:00	1137	43686	676	723	699	942	878	910
12:00:15	1119	43725	678	726	702	943	873	908
12:00:30	1096	43697	679	728	704	941	871	906
12:00:45	1086	43776	680	730	705	929	867	898
12:01:00	1076	43715	675	732	704	912	872	892
12:01:15	1091	43684	672	734	703	919	868	894
12:01:30	1068	43760	671	736	703	917	869	893
12:01:45	1072	43721	668	737	703	913	869	891
12:02:00	1069	43693	666	739	703	904	872	888
12:02:15	1080	43693	662	740	701	897	873	885
12:02:30	1086	43702	658	741	700	899	871	885
12:02:45	1100	43743	658	742	700	916	872	894
12:03:00	1116	43764	658	743	701	911	871	891
12:03:15	1127	43738	657	744	701	912	872	892
12:03:30	1150	43710	656	745	701	899	874	887
12:03:45	1140	43714	657	746	701	917	871	894
12:04:00	1116	43715	658	747	702	912	874	893
12:04:15	1110	43742	659	747	703	913	872	893
12:04:30	1099	43681	657	748	703	898	876	887
12:04:45	1107	43763	658	749	704	898	873	886
12:05:00	1119	43776	656	749	703	891	877	884
12:05:15	1115	43732	651	750	701	886	874	880
12:05:30	1138	43747	654	751	703	928	876	902
12:05:45	1155	43707	666	752	709	946	882	914
12:06:00	1165	43764	676	753	714	954	873	913
12:06:15	1166	43702	683	753	718	949	882	915
12:06:30	1154	43722	690	754	722	950	876	913
12:06:45	1154	43748	695	754	725	944	870	907

## Yarmouth Research and Technology, LLC

### *Fire Test Data - continued*

12:07:00	1129	43750	701	755	728	950	877	914
12:07:15	1045	43732	701	756	728	929	878	904
12:07:30	985	43781	693	756	724	914	878	896
12:07:45	1007	43667	686	757	721	915	875	895
12:08:00	1030	43685	682	757	719	915	876	895
12:08:15	1044	43679	681	758	719	915	879	897
12:08:30	1057	43715	679	759	719	902	875	889
12:08:45	1068	43754	677	759	718	903	874	889
12:09:00	1077	43723	672	759	716	903	874	889
12:09:15	1090	43716	672	760	716	916	871	894
12:09:30	1100	43686	673	760	716	918	877	898
12:09:45	1108	43649	671	760	715	908	875	891
12:10:00	1117	43702	670	761	715	912	881	896
12:10:15	1133	43718	670	761	716	907	878	893
12:10:30	1142	43754	668	762	715	906	877	891
12:10:45	1150	43722	668	762	715	917	878	897
12:11:00	1144	43718	668	763	715	904	877	891
12:11:15	1112	43709	666	763	714	894	876	885
12:11:30	1097	43738	663	763	713	879	877	878
12:11:45	1091	43733	660	764	712	889	878	883
12:12:00	1079	43771	658	764	711	872	879	876
12:12:15	1074	43726	658	764	711	908	877	893
12:12:30	1057	43719	663	764	714	918	879	899
12:12:45	1059	43704	667	765	716	926	881	904
12:13:00	1059	43718	671	766	718	914	883	898
12:13:15	1067	43712	674	766	720	920	882	901
12:13:30	1071	43713	678	766	722	907	881	894
12:13:45	1073	43718	679	766	723	925	877	901
12:14:00	1076	43673	679	767	723	893	880	886
12:14:15	1079	43711	677	767	722	895	879	887
12:14:30	1087	43743	679	767	723	917	878	898
12:14:45	1092	43719	679	768	724	900	881	890
12:15:00	1106	43681	677	768	723	893	883	888
12:15:15	1112	43728	675	768	721	902	882	892
12:15:30	1115	43701	678	768	723	911	882	896
12:15:45	1120	43713	678	768	723	903	878	891
12:16:00	1125	43716	678	769	724	909	879	894
12:16:15	1122	43719	677	769	723	893	881	887
12:16:30	1125	43700	678	769	724	899	881	890
12:16:45	1133	43687	678	769	724	911	884	898
12:17:00	1137	43722	679	769	724	909	881	895
12:17:15	1137	43690	678	770	724	897	881	889
12:17:30	1138	43687	678	771	724	886	879	883

## Yarmouth Research and Technology, LLC

### *Fire Test Data - continued*

12:17:45	1134	43694	676	770	723	880	879	880
12:18:00	1141	43708	673	771	722	871	881	876
12:18:15	1121	43721	668	771	719	693	702	697
12:18:30	1091	43689	646	766	706	478	498	488
12:18:45	447	43177	595	752	674	114	240	177
12:19:00	876	43135	385	713	549	28	51	39
12:19:15	797	42690	293	629	461	24	46	35
12:19:30	1257	42286	249	467	358	25	72	49
12:19:45	1114	42181	216	293	255	30	29	29
12:20:00	1052	42143	188	184	186	39	19	29
12:20:15	1086	42128	151	123	137	48	17	32
12:20:30	1062	42183	119	88	104	40	16	28
12:20:45	1054	42137	94	68	81	31	15	23
12:21:00	1051	42126	75	55	65	24	14	19
12:21:15	1048	42121	62	47	54	21	14	17
12:21:30	1045	42127	53	43	48	18	14	16
12:21:45	1045	42150	46	40	43	17	14	15
12:22:00	1041	42158	42	39	40	15	14	14
12:22:15	1038	42110	38	38	38	14	14	14
12:22:30	1042	42094	36	37	36	13	14	14
12:22:45	1034	42103	34	38	36	13	14	14
12:23:00	1065	42106	32	38	35	13	14	13
12:23:15	1094	42121	31	37	34	12	14	13
12:23:30	1092	42111	31	37	34	12	13	12
12:23:45	1101	42117	30	37	34	12	13	13
12:24:00	1093	42102	29	37	33	12	14	13
12:24:15	1096	42130	29	36	33	12	13	12
12:24:30	1092	42153	29	36	32	12	13	13
12:24:45	1084	42098	28	34	31	12	13	12
12:25:00	1092	42105	28	34	31	11	12	12
12:25:15	1090	42132	28	34	31	12	19	15
12:25:30	1089	42102	28	35	31	11	14	13
12:25:45	1090	42096	28	33	30	11	12	11
12:26:00	1087	42101	28	32	30	12	13	13
12:26:15	1089	42094	27	31	29	13	13	13
12:26:30	1082	42113	28	31	29	13	14	14
12:26:45	1083	42076	28	31	29	14	14	14
12:27:00	1089	42113	28	31	29	14	14	14
12:27:15	1083	42111	28	31	30	14	15	14
12:27:30	1087	42090	28	31	30	14	15	15
12:27:45	1087	42113	28	31	29	14	16	15
12:28:00	1087	42149	29	31	30	15	16	16

## 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	mls
Average Leak Rate Over 30 Minute Duration:	0	ml/min
Allowable Leak Rate:	400	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:	1529	mls
Water Collected in System Relief Valve:	1500	mls
Calculated External Leakage During 40 Minute Duration:	29	mls
Average Leak Rate Over 40 Minute Duration:	0.7	ml/min
Allowable Leak Rate:	100	ml/min

<b>Were the Valve Leakages Below the Allowables?</b>	<b>Yes</b>
--	------------

**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:	1257	psig
Average Pressure During Burn/Cool Down:	1088	psig
Minimum Pressure During Burn/Cool Down:	447	psig
Amount of Time of Avg. Cal Block > 650 deg.C:	21.3	minutes
Minimum Allowable Time at Temperature:	15.0	minutes
Maximum Avg Cal Block Temperature:	728	deg. C
Average Cal Block Temperature:	486	deg. C
Lowest Avg Cal. Block Temperature:	29	deg. C
Maximum Body Flame Temperature During Burn:	884	deg. C
Average Body Flame Temperature During Burn:	860	deg. C
Maximum Bonnet Flame Temperature During Burn:	954	deg. C
Average Bonnet Flame Temperature During Burn:	896	deg. C
Average of Both Flame Temperatures During Burn:	878	deg. C

*Note*

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Were Test Conditions Within Compliance?	Yes
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# Yarmouth Research and Technology, LLC

## Post-Burn Seat Test Information

Customer: EV Metalærk A/S

Date: 1/13/2016

Product Code: 1 inch Class 600 Monoflange Instrument Valve SDBB

Project Number: 215374

### Test Data

Time	Pressure (psig)	Cal Block Temp - C
12:28:43	107	31
12:28:58	109	31
12:29:13	105	31
12:29:28	104	31
12:29:43	101	31
12:29:58	104	31
12:30:13	108	31
12:30:28	107	31
12:30:43	104	31
12:30:58	104	31
12:31:13	100	31
12:31:28	108	31
12:31:43	108	31
12:31:58	108	32
12:32:13	103	31
12:32:28	102	31
12:32:43	103	32
12:32:58	105	32
12:33:13	105	32
12:33:28	105	32
12:33:43	104	32

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	ml/min
Allowable Leak Rate:	20	ml/min

Was the Valve Leakage Below the Allowable?	Yes
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# Yarmouth Research and Technology, LLC

## Operational Test Information

Customer: EV Metalærk A/S

Date: 1/13/2016

Product Code: 1 inch Class 600 Monoflange Instrument Valve SDBB

Project Number: 215374

## Test Data

Time	Pressure (psig)	Cal Block Temp - C
12:35:20	1107	32
12:35:35	1091	32
12:35:50	1056	32
12:36:05	1055	32
12:36:20	1051	32
12:36:35	1046	32
12:36:50	1043	33
12:37:05	1042	33
12:37:20	1050	32
12:37:35	1087	33
12:37:50	1083	33
12:38:05	1082	33
12:38:20	1079	33
12:38:35	1075	33
12:38:50	1075	33
12:39:05	1074	33
12:39:20	1075	33
12:39:35	1074	33
12:39:50	1074	33
12:40:05	1072	33
12:40:20	1073	33

*Leakages were collected manually.*

Total External Leakage Collected Over 5 Minute Duration:	0	mls
Average Leak Rate Over 5 Minute Duration:	0	ml/min
Allowable Leak Rate:	200	ml/min

Was the Valve Leakage Below the Allowable?	Yes
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