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

1 inch Class 1500
Monoflange Instrument Valve SDBB
Product Code: 10#1500 1 RTJxNPT

Project Number: 215374
Test Date: January 15, 2016

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: EV Metalværk A/S	**Date:** 1/14/2016
Specification: API Standard 6FA, Third Edition, April 1999 (R2008)	
Product Description: 1 inch Class 1500 Monoflange instrument valve SDBB	
Project Number: 215374	
Product Code: 10# 1500 1 RTJxNPT	

Equipment Confirmed to be in Calibration to NIST Standards: Yes

Burn and Cool Down Test

Burn Start Time:	14:17:00	
Average Pressure During Burn:	2725	psig
Seat Leak Rate During Burn:	0	ml/min
Allowable Seat Leak Rate:	400	ml/min
External Leak Rate During Burn/Cool Down:	1	ml/min
Allowable External Leak Rate:	100	ml/min
Amount of Time of Avg. Cal. Blocks > 650 deg. C:	22.5	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:	2658	psig
External Leak Rate After Operating:	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:

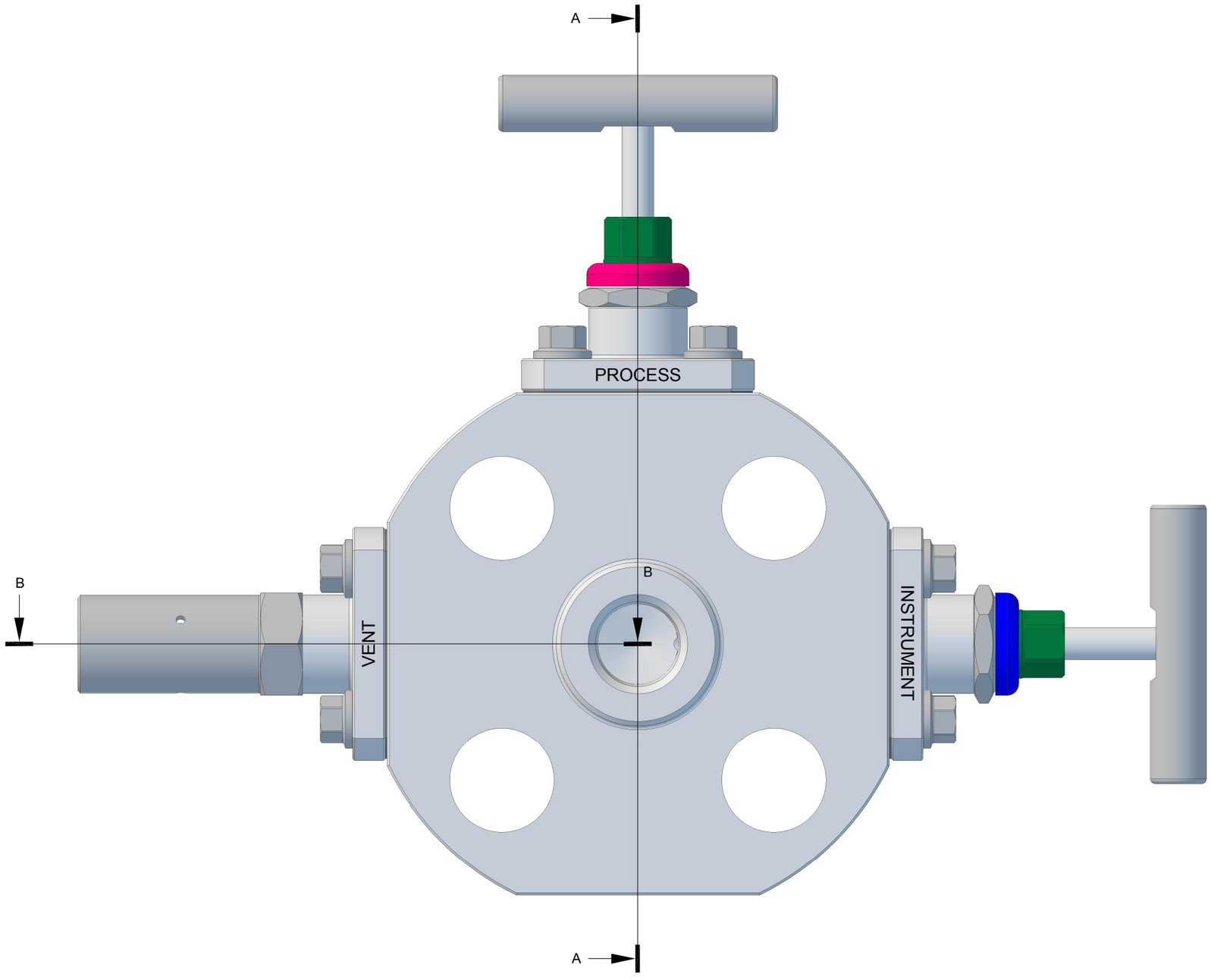
Matthew Wasielewski, PE
President and Manager
Yarmouth Research and Technology, LLC

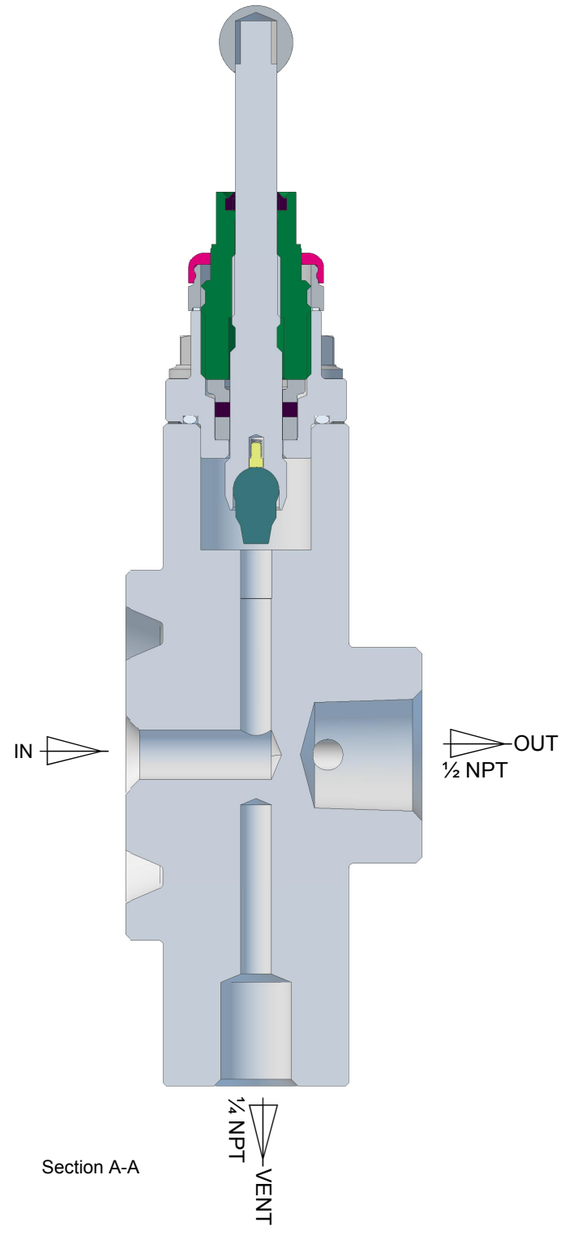
YARMOUTH RESEARCH AND TECHNOLOGY, LLC

Fire Test Information Sheet

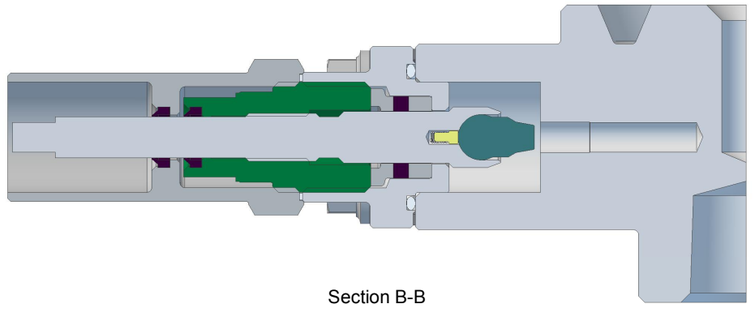
Fire Test Specification and Revision: (ie. API 607 6th, API 6FA 3rd, etc)	API 6FA 3rd.
Yarmouth Proposal Number:	215374A
Customer Purchase Order Number:	5028401
Customer's Contact Name:	Erling Tofting
Valve Manufacturer's Name (used in test report as specified):	EV Metalværk A/S
Company Web Address for Report Cover:	www.evmetal.dk
Valve Manufacturer's Address:	Ribovej 1, 6950 Ringkobing, 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#1500 1 RTJxNPT
Valve Description	
Size:	1"
Pressure Rating/Class:	# 1500
Pressure Rating at 100F (psig):	3600 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
Valve Markings	
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





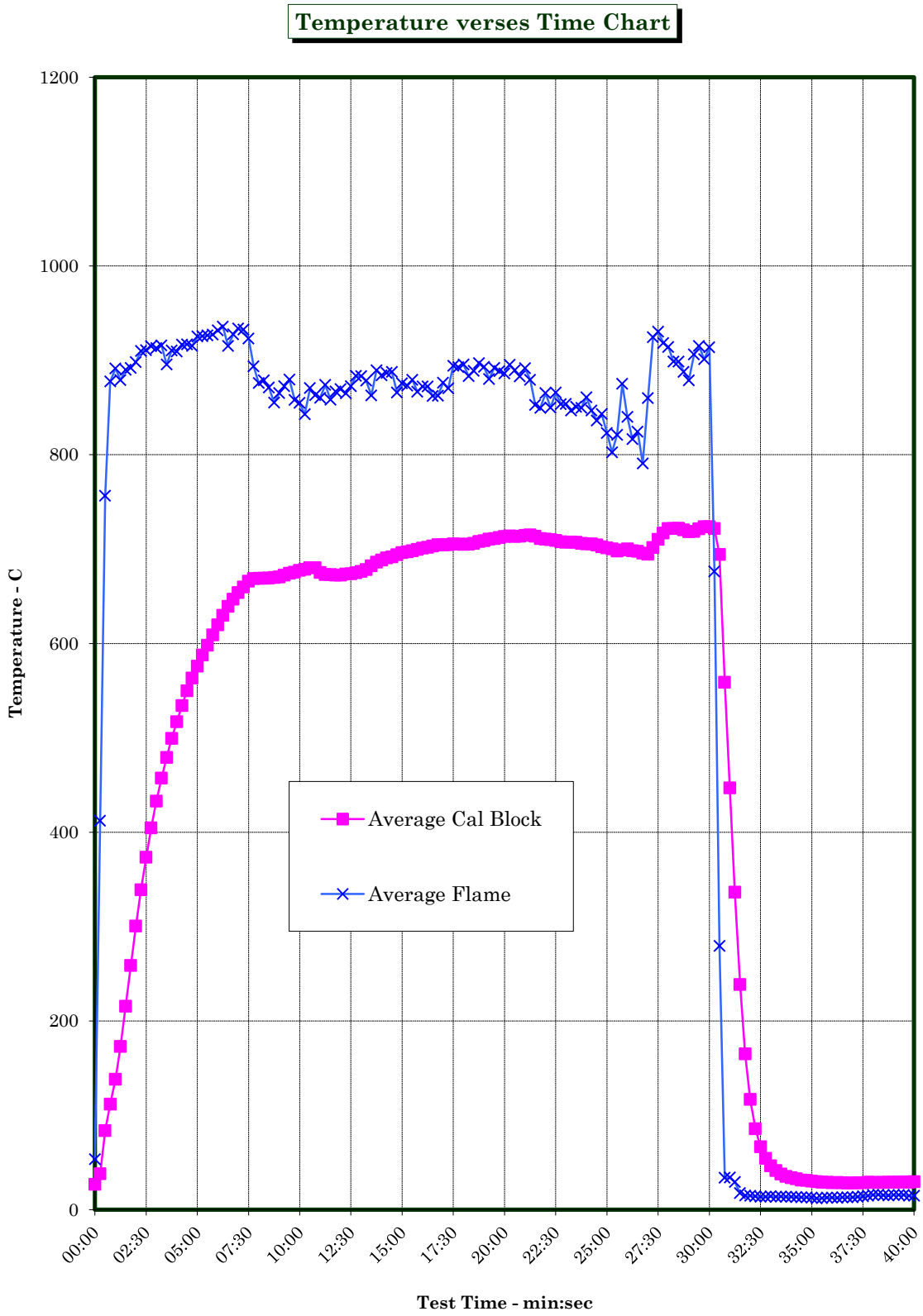
Section A-A

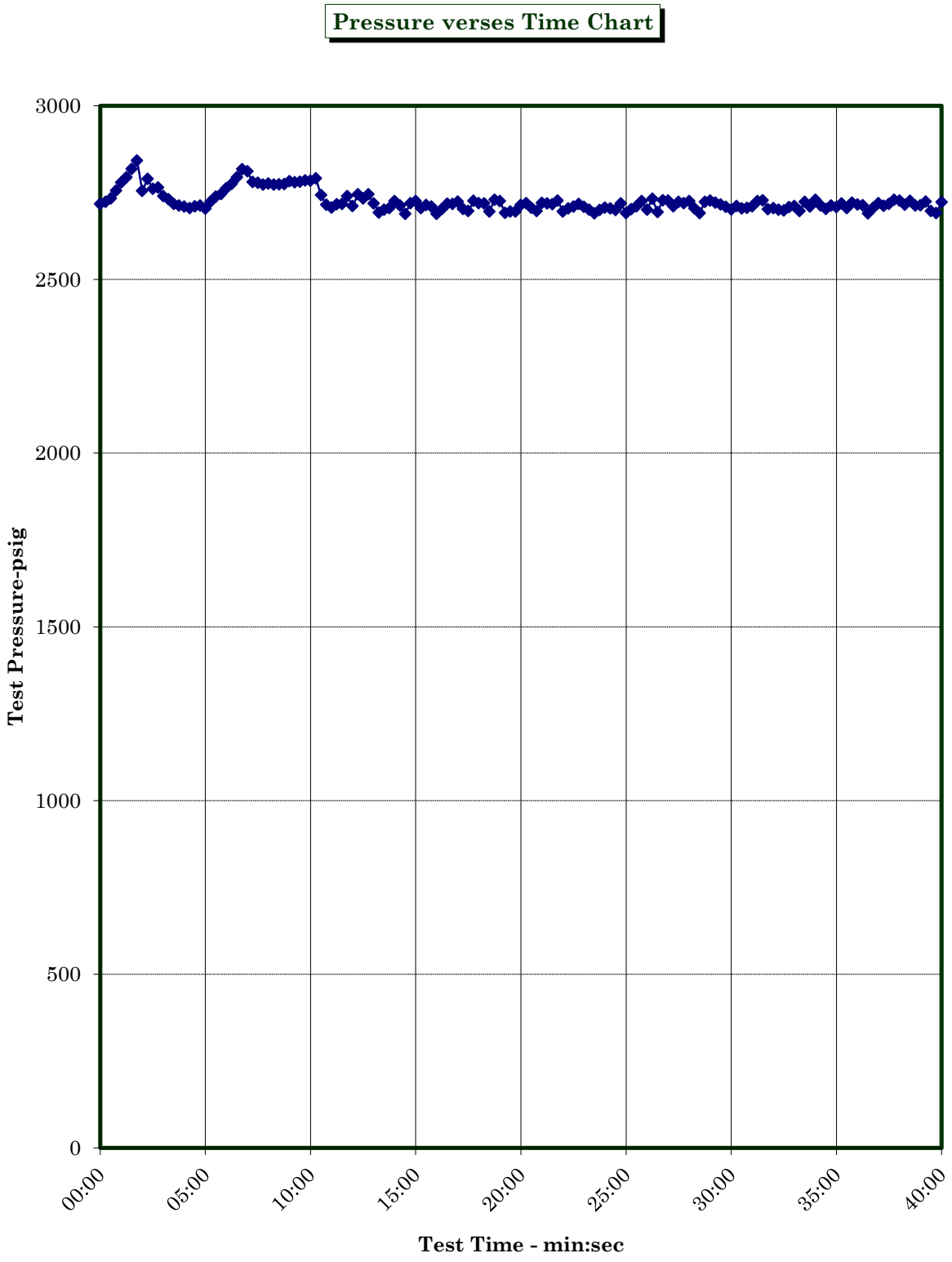


Section B-B

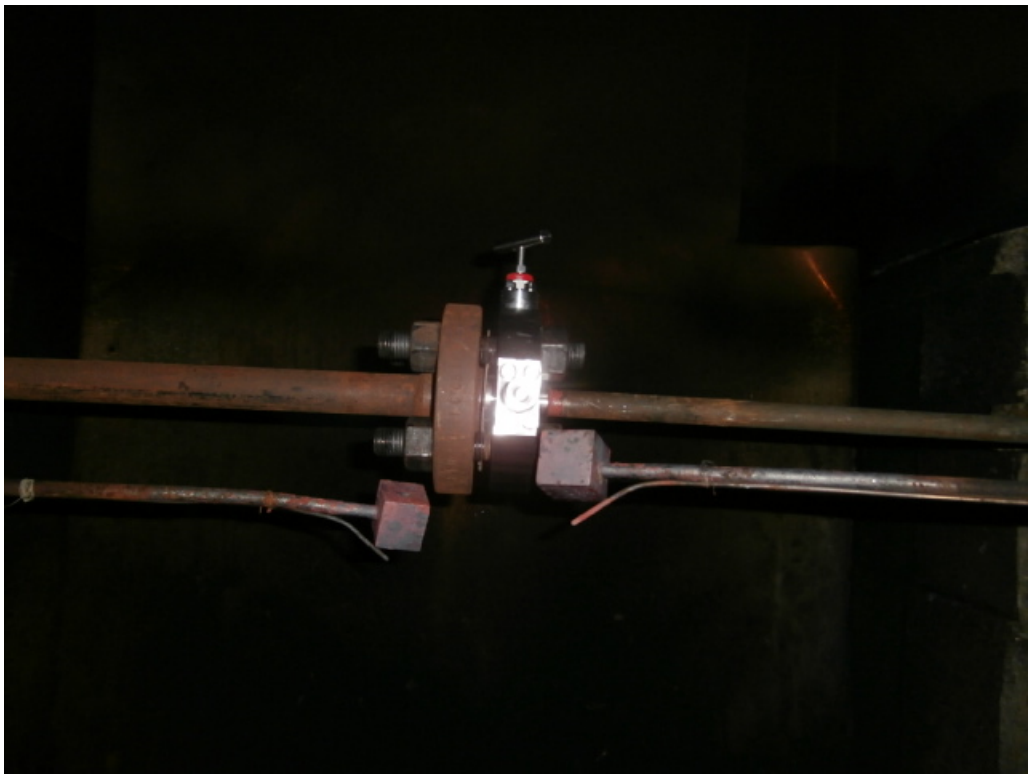
EV METALVÆRK A/S
RIBOVEJ 1
DK-6950 RINGKØBING

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


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
Average Cal Block
Average Flame


Pressure verses Time Chart
3000
2500
2000
1500
1000
500
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

Valve Markings



Test Setup Prior to Burn

Test Valve During Burn

Fire Test Information

Customer: EV Metalværk A/S **Date:** 1/14/2016

Product Code: 1 inch Class 1500 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
14:17:00	2717	41717	28	26	27	49	58	54
14:17:15	2723	41730	46	30	38	397	428	412
14:17:30	2733	41696	113	54	84	759	754	756
14:17:45	2756	41755	126	98	112	914	841	878
14:18:00	2779	41720	154	122	138	944	839	891
14:18:15	2794	41719	200	146	173	951	807	879
14:18:30	2818	41682	252	179	216	953	827	890
14:18:45	2842	41768	302	216	259	954	829	892
14:19:00	2754	41705	348	253	301	957	839	898
14:19:15	2789	41751	389	289	339	962	858	910
14:19:30	2761	41750	424	322	373	965	857	911
14:19:45	2764	41733	455	354	405	964	866	915
14:20:00	2740	41757	482	384	433	966	861	913
14:20:15	2730	41737	503	411	457	967	864	916
14:20:30	2717	41726	523	436	479	969	822	896
14:20:45	2713	41726	541	458	499	968	853	911
14:21:00	2710	41747	556	478	517	967	852	909
14:21:15	2705	41711	571	498	534	971	863	917
14:21:30	2711	41735	584	515	550	971	863	917
14:21:45	2713	41738	596	531	563	974	857	915
14:22:00	2703	41697	606	546	576	972	878	925
14:22:15	2724	41756	616	560	588	972	879	926
14:22:30	2738	41705	624	572	598	972	881	926
14:22:45	2745	41723	634	584	609	974	880	927
14:23:00	2762	41755	644	595	620	976	888	932
14:23:15	2775	41735	654	605	630	977	894	936
14:23:30	2794	41765	664	614	639	979	852	915
14:23:45	2817	41720	671	623	647	977	878	928
14:24:00	2811	41741	677	631	654	974	893	934
14:24:15	2780	41706	681	639	660	976	889	933
14:24:30	2778	41725	685	647	666	964	882	923
14:24:45	2773	41743	684	653	669	937	851	894
14:25:00	2776	41747	679	659	669	907	844	876

Fire Test Data - continued

14:25:15	2772	41745	673	664	669	904	853	879
14:25:30	2774	41747	669	669	669	896	847	871
14:25:45	2774	41738	666	674	670	881	830	855
14:26:00	2782	41687	663	678	670	893	838	865
14:26:15	2780	41722	663	682	673	903	842	873
14:26:30	2781	41716	663	686	674	909	850	880
14:26:45	2785	41760	662	689	676	876	841	858
14:27:00	2784	41763	662	693	678	858	852	855
14:27:15	2791	41708	661	697	679	866	819	843
14:27:30	2743	41367	662	699	680	888	853	871
14:27:45	2715	41355	660	701	680	857	869	863
14:28:00	2707	41603	656	695	675	846	874	860
14:28:15	2716	41500	652	694	673	875	873	874
14:28:30	2717	41617	649	697	673	846	871	858
14:28:45	2740	41243	644	701	673	868	866	867
14:29:00	2711	41412	642	703	673	870	869	869
14:29:15	2745	41309	642	705	674	867	863	865
14:29:30	2733	41472	644	704	674	882	863	873
14:29:45	2745	41314	646	704	675	906	862	884
14:30:00	2719	41287	648	704	676	916	851	883
14:30:15	2692	41406	652	705	678	915	842	878
14:30:30	2701	41375	659	706	682	898	827	863
14:30:45	2705	41223	666	706	686	927	852	889
14:31:00	2725	41193	669	708	688	931	838	884
14:31:15	2713	41187	672	709	691	927	847	887
14:31:30	2688	41180	673	710	692	913	863	888
14:31:45	2719	41202	676	712	694	898	833	866
14:32:00	2726	41234	679	713	696	929	822	876
14:32:15	2705	41187	680	714	697	929	817	873
14:32:30	2714	41199	682	714	698	921	837	879
14:32:45	2710	41186	683	716	699	913	821	867
14:33:00	2689	41210	685	717	701	920	824	872
14:33:15	2703	41203	686	718	702	919	825	872
14:33:30	2718	41189	688	718	703	923	802	862
14:33:45	2717	41214	691	719	705	923	802	863
14:34:00	2724	41234	690	719	704	928	824	876
14:34:15	2703	41171	690	719	705	923	817	870
14:34:30	2696	41198	691	721	706	937	851	894
14:34:45	2726	41202	688	722	705	927	859	893
14:35:00	2719	41203	686	724	705	924	867	896
14:35:15	2718	41201	685	726	705	921	846	883
14:35:30	2695	41197	685	727	706	939	839	889
14:35:45	2729	41221	688	728	708	943	851	897

Fire Test Data - continued

14:36:00	2726	41168	689	728	709	929	857	893
14:36:15	2691	41243	692	729	711	926	834	880
14:36:30	2695	41228	692	730	711	927	857	892
14:36:45	2695	41190	693	731	712	932	845	889
14:37:00	2714	41217	694	732	713	944	828	886
14:37:15	2719	41211	694	733	714	932	858	895
14:37:30	2706	41246	693	734	713	925	854	889
14:37:45	2696	41202	693	734	714	929	837	883
14:38:00	2720	41173	694	735	714	935	848	892
14:38:15	2719	41223	694	736	715	921	838	879
14:38:30	2716	41170	691	737	714	860	846	853
14:38:45	2727	41230	685	737	711	873	826	849
14:39:00	2695	41248	684	737	711	893	837	865
14:39:15	2704	41159	682	738	710	879	821	850
14:39:30	2710	41228	681	738	709	899	833	866
14:39:45	2717	41212	677	738	708	887	820	854
14:40:00	2709	41217	676	738	707	873	835	854
14:40:15	2700	41201	676	739	708	880	813	847
14:40:30	2690	41184	676	739	707	872	830	851
14:40:45	2700	41231	672	740	706	878	821	850
14:41:00	2707	41211	671	740	706	889	833	861
14:41:15	2704	41197	671	740	706	889	804	847
14:41:30	2700	41194	668	741	704	866	807	836
14:41:45	2719	41220	665	740	703	874	812	843
14:42:00	2691	41190	662	741	701	843	803	823
14:42:15	2702	41212	659	741	700	796	809	803
14:42:30	2711	41255	654	741	698	827	815	821
14:42:45	2725	41217	656	742	699	903	847	875
14:43:00	2700	41230	658	742	700	847	833	840
14:43:15	2732	41186	654	742	698	811	822	816
14:43:30	2694	41216	652	743	698	821	828	824
14:43:45	2728	41156	648	743	696	791	791	791
14:44:00	2727	41169	646	743	694	878	842	860
14:44:15	2710	41208	659	744	702	956	893	924
14:44:30	2723	41165	675	746	710	955	906	930
14:44:45	2719	41213	687	747	717	948	889	918
14:45:00	2725	41192	695	748	722	941	887	914
14:45:15	2704	41226	694	749	722	907	890	899
14:45:30	2691	41173	693	751	722	918	879	899
14:45:45	2723	41184	688	752	720	895	881	888
14:46:00	2727	41192	683	753	718	875	882	879
14:46:15	2721	41175	682	755	719	931	881	906
14:46:30	2715	41194	688	755	721	945	886	915

Fire Test Data - continued

14:46:45	2709	41201	691	756	724	914	888	901
14:47:00	2701	41247	691	757	724	937	891	914
14:47:15	2711	41200	686	758	722	700	653	676
14:47:30	2704	41214	638	750	694	160	399	279
14:47:45	2706	41222	417	701	559	23	45	34
14:48:00	2710	41172	309	585	447	20	48	34
14:48:15	2725	41202	241	432	336	19	40	29
14:48:30	2727	41179	183	294	239	14	21	18
14:48:45	2702	41189	136	194	165	13	17	15
14:49:00	2705	41213	103	131	117	13	16	15
14:49:15	2701	41202	81	91	86	13	15	14
14:49:30	2698	41226	66	67	67	13	14	14
14:49:45	2708	41187	56	53	54	13	14	14
14:50:00	2711	41182	49	44	46	13	15	14
14:50:15	2696	41209	44	39	41	13	14	14
14:50:30	2723	41200	40	36	38	13	14	14
14:50:45	2709	41216	37	33	35	13	14	14
14:51:00	2729	41185	35	33	34	13	14	14
14:51:15	2712	41166	34	32	33	13	14	13
14:51:30	2702	41194	32	31	31	13	13	13
14:51:45	2712	41201	32	31	31	12	14	13
14:52:00	2708	41198	31	30	30	12	13	13
14:52:15	2719	41216	30	29	30	12	12	12
14:52:30	2705	41192	29	29	29	12	13	12
14:52:45	2720	41204	29	29	29	12	13	13
14:53:00	2716	41195	29	28	29	12	13	13
14:53:15	2713	41193	29	29	29	12	13	13
14:53:30	2690	41191	28	29	29	13	13	13
14:53:45	2705	41188	28	28	28	13	13	13
14:54:00	2719	41209	28	28	28	13	13	13
14:54:15	2711	41202	28	29	29	13	14	14
14:54:30	2717	41189	28	29	29	14	14	14
14:54:45	2729	41194	29	29	29	14	15	15
14:55:00	2727	41207	29	29	29	16	16	16
14:55:15	2714	41163	29	29	29	16	16	16
14:55:30	2726	41213	29	29	29	16	15	15
14:55:45	2712	41182	29	29	29	15	15	15
14:56:00	2713	41176	29	29	29	16	16	16
14:56:15	2724	41226	29	29	29	16	16	16
14:56:30	2697	41244	29	29	29	16	16	16
14:56:45	2691	41241	29	29	29	14	15	15
14:57:00	2722	41196	30	29	30	14	15	15

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:	521	mls
Water Collected in System Relief Valve:	475	mls
Calculated External Leakage During 40 Minute Duration:	46	mls
Average Leak Rate Over 40 Minute Duration:	1	ml/min
Allowable Leak Rate:	100	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:	2842	psig
Average Pressure During Burn/Cool Down:	2725	psig
Minimum Pressure During Burn/Cool Down:	2688	psig
Amount of Time of Avg. Cal Block > 650 deg.C:	22.5	minutes
Minimum Allowable Time at Temperature:	15.0	minutes
Maximum Avg Cal Block Temperature:	724	deg. C
Average Cal Block Temperature:	501	deg. C
Lowest Avg Cal. Block Temperature:	27	deg. C
Maximum Body Flame Temperature During Burn:	906	deg. C
Average Body Flame Temperature During Burn:	839	deg. C
Maximum Bonnet Flame Temperature During Burn:	979	deg. C
Average Bonnet Flame Temperature During Burn:	901	deg. C
Average of Both Flame Temperatures During Burn:	870	deg. C

Note

Were Test Conditions Within Compliance?	**Yes**

Post-Burn Seat Test Information

Customer:	EV Metalværk A/S	**Date:**	1/14/2016
Product Code:	1 inch Class 1500 Monoflange instrument valve SDBB		
Project Number:	215374		

This test is not required for this pressure class.

Yarmouth Research and Technology, LLC

Operational Test Information

Customer: EV Metalværk A/S **Date:** 1/14/2016

Product Code: 1 inch Class 1500 Monoflange instrument valve SDBB

Project Number: 215374

Test Data

Time	Pressure (psig)	Cal Block Temp - C
15:02:18	2711	30
15:02:33	2712	30
15:02:48	2711	31
15:03:03	2712	30
15:03:18	2711	30
15:03:33	2709	30
15:03:48	2711	30
15:04:03	2709	30
15:04:18	2712	30
15:04:33	2711	30
15:04:48	2707	30
15:05:03	2708	31
15:05:18	2709	30
15:05:33	2712	30
15:05:48	2707	30
15:06:03	2602	30
15:06:18	2529	30
15:06:33	2516	31
15:06:48	2504	31
15:07:03	2506	30
15:07:18	2503	31

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**