Fire Test Report

ANSI/API Standard 607, 7th Edition

Performed for

AIGI Environmental Inc.

www.aigienvironmental.com

6 inch Class 300 AIGI 350IM Gasket

Project Number: 218029
Test Date: January 23, 2018

Performed by

YARMOUTH RESEARCH AND TECHNOLOGY, LLC

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Yarmouth Research and Technology, LLC

Customer:	AIGI Environmental, Inc.	**Date:**	1/23/2018
Specification:	ANSI/API Standard 607, Seventh Edition		
	GASKET TEST ONLY		
Product Description:	6 inch Class 300 AIGI 350IM Gasket		
Project Number:	218029		

Equipment Confirmed to be in Calibration to NIST Standards: Yes

Burn and Cool Down Test

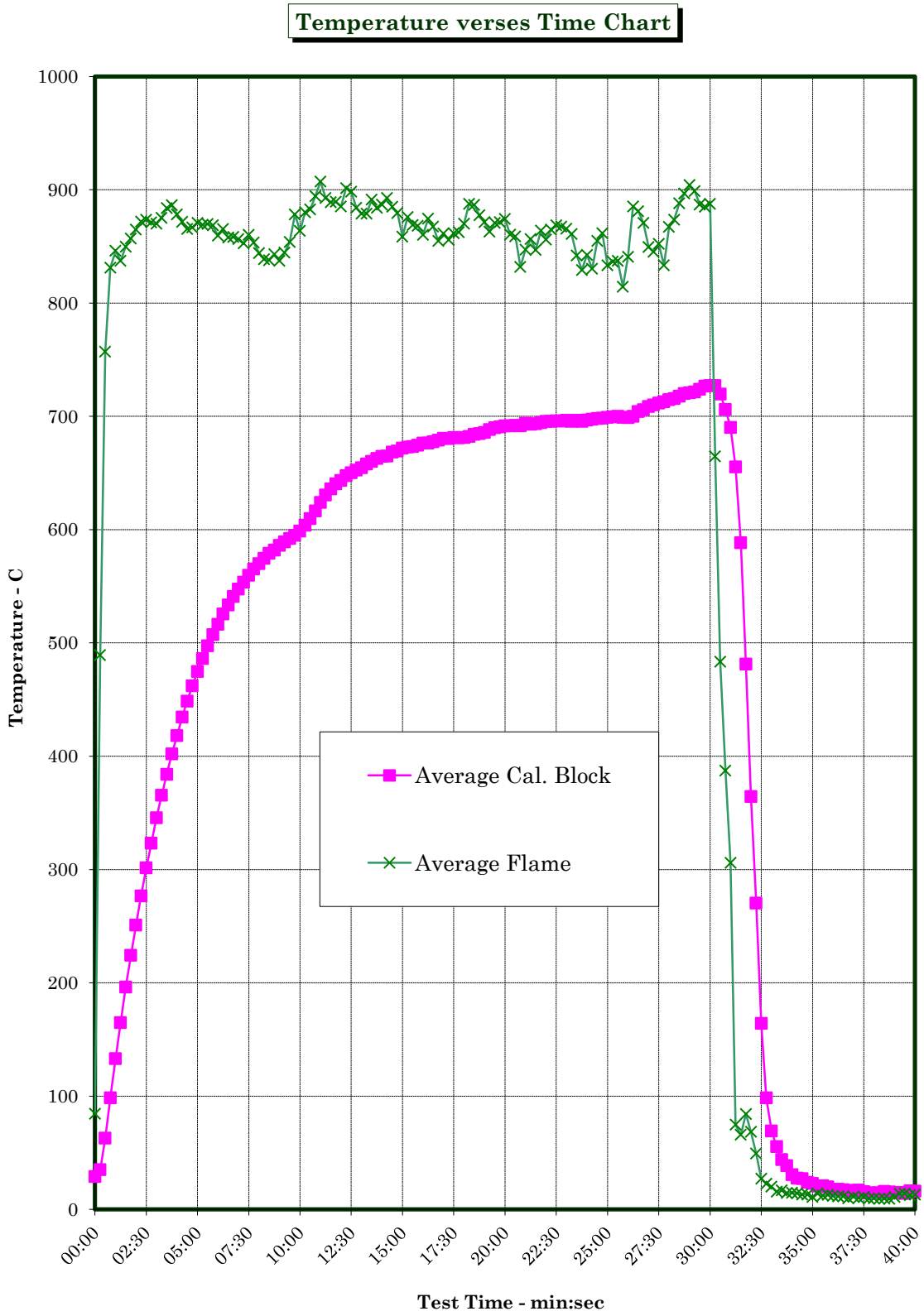
Burn Start Time:	11:15:00	
Average Pressure During Burn:	567	psig
External Leak Rate During Burn/Cool Down:	2.7	ml/min
Allowable External Leak Rate:	600	ml/min
Amount of Time of Avg. Cal. Blocks > 650 deg. C:	17.5	minutes
Were Test Conditions Within Compliance?	Yes	
Were the Valve Leakages Below the Allowables?	Yes	

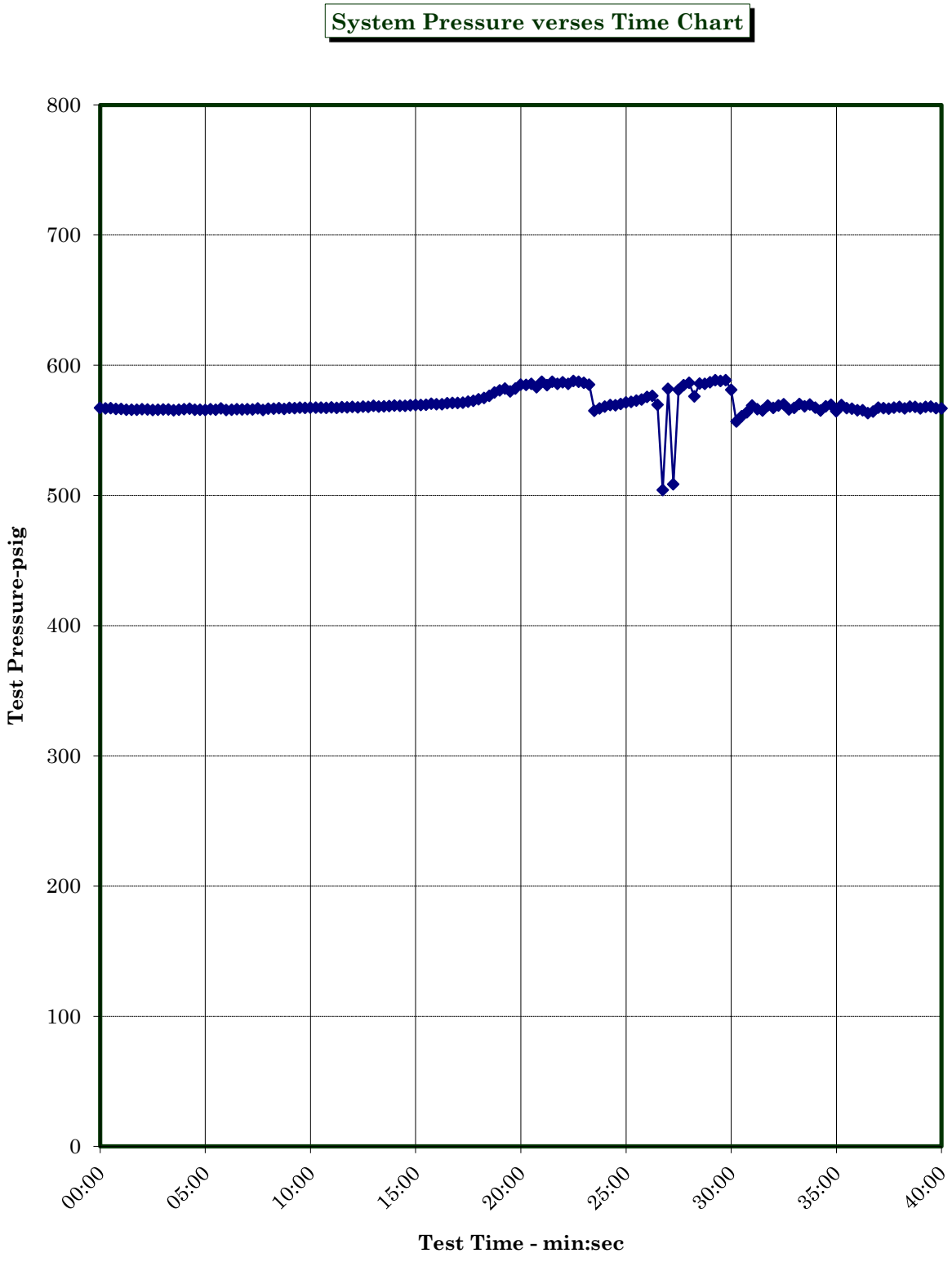
Operational Test

Average Pressure During Test:	565	psig
External Leak Rate After Operating:	22	ml/min
Allowable External Leak Rate:	150	ml/min
Was the Leakage Below the Allowable?	Yes	
Does Gasket Pass or Fail the Test Standard?	**PASS**	

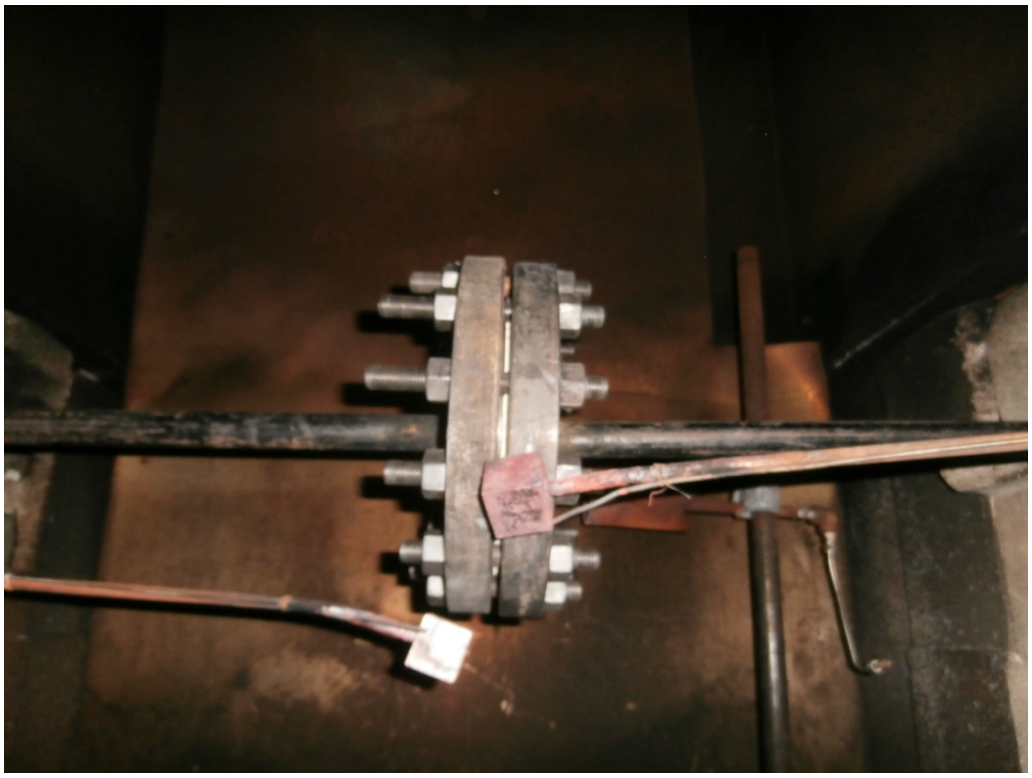
Certified by

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


Temperature verses Time Chart
1000
900
800
700
600
500
400
300
200
100
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


System Pressure verses Time Chart
800
700
600
500
400
300
200
100
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

Pre-Test Gasket



Test Setup

Test Gasket During Burn

Test Gasket During Burn

Post-Test Gasket

Fire Test Information

Customer: AIGI Environmental, Inc. **Date:** 1/23/2018

Product Code: 6 inch Class 300 AIGI 350IM Gasket

Project Number: 218029

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
11:15:00	567	44088	25	33	29	74	95	84
11:15:15	567	44110	29	41	35	492	486	489
11:15:30	567	44129	53	73	63	783	731	757
11:15:45	566	44108	83	114	98	841	822	831
11:16:00	566	44125	112	154	133	831	861	846
11:16:15	566	44128	139	191	165	853	822	837
11:16:30	566	44073	165	227	196	861	838	850
11:16:45	566	44140	188	261	224	862	852	857
11:17:00	566	44115	210	292	251	878	852	865
11:17:15	566	44148	232	321	277	878	866	872
11:17:30	566	44116	253	349	301	872	875	874
11:17:45	566	44114	273	373	323	875	867	871
11:18:00	566	44072	292	399	346	888	852	870
11:18:15	566	44121	310	421	366	888	863	875
11:18:30	565	44098	326	442	384	902	866	884
11:18:45	566	44116	342	462	402	900	873	886
11:19:00	566	44128	356	481	418	901	856	878
11:19:15	567	44139	369	499	434	897	846	872
11:19:30	566	44186	382	516	449	892	839	865
11:19:45	566	44163	395	529	462	896	837	867
11:20:00	566	44077	406	543	475	895	847	871
11:20:15	566	44116	417	556	486	898	841	869
11:20:30	566	44107	427	568	498	901	839	870
11:20:45	567	44160	436	579	507	894	843	869
11:21:00	566	44131	444	589	516	896	823	859
11:21:15	566	44143	452	599	526	896	835	865
11:21:30	566	44174	458	609	533	896	820	858
11:21:45	566	44194	465	617	541	893	823	858
11:22:00	566	44194	472	623	548	893	820	856
11:22:15	566	44173	477	631	554	894	811	853
11:22:30	567	44144	482	637	560	893	827	860
11:22:45	566	44118	487	644	565	890	817	853
11:23:00	567	44142	491	649	570	879	809	844

Fire Test Data - continued

11:23:15	567	44176	495	654	575	884	793	839
11:23:30	567	44176	498	660	579	880	796	838
11:23:45	567	44182	499	664	582	889	797	843
11:24:00	567	44223	503	669	586	888	787	837
11:24:15	567	44172	506	673	589	892	797	844
11:24:30	567	44217	508	677	592	879	829	854
11:24:45	567	44192	509	681	595	901	856	878
11:25:00	567	44197	514	683	599	918	809	864
11:25:15	567	44190	522	686	604	939	821	880
11:25:30	567	44149	530	689	610	943	823	883
11:25:45	567	44262	540	693	616	966	823	894
11:26:00	568	44301	551	697	624	963	851	907
11:26:15	567	44189	562	699	631	935	851	893
11:26:30	568	44214	568	703	636	921	857	889
11:26:45	568	44223	573	707	640	912	867	889
11:27:00	568	44236	578	708	643	908	862	885
11:27:15	568	44239	583	712	648	917	886	901
11:27:30	568	44194	586	714	650	893	903	898
11:27:45	568	44229	588	717	653	874	894	884
11:28:00	569	44186	592	718	655	897	861	879
11:28:15	568	44278	594	721	658	907	851	879
11:28:30	568	44289	597	724	660	896	887	891
11:28:45	569	44269	601	725	663	881	887	884
11:29:00	569	44300	602	728	665	896	878	887
11:29:15	569	44296	603	727	665	888	898	893
11:29:30	569	44309	607	730	668	896	874	885
11:29:45	569	44326	608	731	669	883	876	879
11:30:00	569	44317	611	733	672	899	818	859
11:30:15	570	44332	612	733	673	893	859	876
11:30:30	570	44324	612	734	673	879	859	869
11:30:45	570	44280	614	735	674	869	867	868
11:31:00	570	44270	616	737	676	883	837	860
11:31:15	570	44367	616	737	676	891	858	874
11:31:30	571	44326	618	737	678	867	868	868
11:31:45	571	44411	619	738	679	883	826	855
11:32:00	571	44378	622	739	681	881	842	861
11:32:15	571	44474	621	739	680	865	847	856
11:32:30	572	44387	623	739	681	855	868	862
11:32:45	573	44465	622	740	681	857	868	863
11:33:00	574	44452	621	742	681	867	873	870
11:33:15	575	44581	622	742	682	892	883	888
11:33:30	576	44608	624	744	684	890	883	887
11:33:45	579	44776	626	744	685	879	876	878

Fire Test Data - continued

11:34:00	581	44798	627	745	686	893	850	871
11:34:15	582	44969	629	747	688	906	820	863
11:34:30	580	44151	632	748	690	885	857	871
11:34:45	582	43585	632	749	691	888	854	871
11:35:00	585	44366	634	749	692	882	866	874
11:35:15	585	46550	633	750	692	869	852	861
11:35:30	586	45796	634	750	692	861	857	859
11:35:45	583	43699	634	749	692	862	802	832
11:36:00	587	45785	636	752	694	868	827	847
11:36:15	585	46609	636	751	693	876	837	856
11:36:30	587	46100	636	751	693	866	828	847
11:36:45	586	43951	637	752	694	886	842	864
11:37:00	587	46554	638	753	696	880	832	856
11:37:15	586	43907	638	753	696	868	862	865
11:37:30	588	44854	639	753	696	867	871	869
11:37:45	587	44105	638	754	696	874	861	868
11:38:00	587	44106	639	754	696	868	863	866
11:38:15	585	43647	638	753	696	870	852	861
11:38:30	565	44314	638	755	696	852	832	842
11:38:45	567	44363	636	755	696	855	803	829
11:39:00	568	44315	638	756	697	861	824	843
11:39:15	569	44287	638	757	698	879	781	830
11:39:30	569	44334	639	757	698	877	833	855
11:39:45	570	44399	639	758	698	884	839	862
11:40:00	571	44467	639	759	699	857	809	833
11:40:15	572	44491	639	759	699	868	806	837
11:40:30	573	44480	639	761	700	869	805	837
11:40:45	574	44017	638	760	699	862	767	814
11:41:00	576	44595	638	760	699	892	790	841
11:41:15	577	44668	639	761	700	934	837	885
11:41:30	570	44719	646	763	704	939	823	881
11:41:45	504	44918	650	762	706	939	802	871
11:42:00	582	44143	656	762	709	927	772	849
11:42:15	509	45886	658	762	710	928	762	845
11:42:30	581	45460	661	763	712	928	777	852
11:42:45	585	45078	663	763	713	911	756	833
11:43:00	586	45867	666	764	715	955	779	867
11:43:15	576	46476	666	766	716	960	787	874
11:43:30	586	44344	671	765	718	961	815	888
11:43:45	586	46458	674	766	720	947	846	897
11:44:00	587	45622	676	766	721	948	861	904
11:44:15	589	45034	681	762	721	937	861	899
11:44:30	588	46147	682	766	724	944	829	887

Fire Test Data - continued

11:44:45	588	44057	685	768	727	949	821	885
11:45:00	581	43968	687	768	727	944	831	888
11:45:15	557	44203	688	767	727	709	620	665
11:45:30	561	44201	681	759	720	522	445	483
11:45:45	564	44237	667	746	706	426	349	387
11:46:00	569	44228	651	729	690	363	248	306
11:46:15	566	44165	604	707	655	68	82	75
11:46:30	565	44160	513	664	588	57	75	66
11:46:45	569	44151	348	614	481	87	82	84
11:47:00	567	44072	185	544	364	50	87	68
11:47:15	569	44088	118	422	270	28	71	49
11:47:30	570	44079	85	243	164	17	37	27
11:47:45	566	44066	64	132	98	16	29	23
11:48:00	567	44045	50	88	69	15	25	20
11:48:15	570	44036	42	69	55	10	21	16
11:48:30	568	44063	37	51	44	14	19	17
11:48:45	570	44041	33	44	39	12	17	14
11:49:00	567	44018	25	36	31	12	18	15
11:49:15	565	44032	24	31	28	12	17	14
11:49:30	568	43983	25	29	27	9	17	13
11:49:45	570	44043	22	26	24	9	17	13
11:50:00	565	44027	22	24	23	9	13	11
11:50:15	570	44002	19	22	21	13	15	14
11:50:30	567	44004	20	22	21	10	14	12
11:50:45	567	44005	19	20	20	9	17	13
11:51:00	565	43990	16	18	17	8	16	12
11:51:15	565	43969	16	19	18	8	14	11
11:51:30	563	44012	16	18	17	9	14	11
11:51:45	564	43997	16	18	17	8	12	10
11:52:00	567	43983	14	18	16	8	14	11
11:52:15	567	43966	17	17	17	8	12	10
11:52:30	567	43975	14	17	16	9	13	11
11:52:45	567	43989	15	14	15	8	11	9
11:53:00	568	43952	13	16	14	8	12	10
11:53:15	567	43993	14	15	15	8	11	9
11:53:30	568	43943	17	15	16	9	10	9
11:53:45	568	43944	16	15	15	8	11	9
11:54:00	567	43992	13	17	15	9	12	11
11:54:15	568	43953	14	16	15	12	15	14
11:54:30	568	43970	14	14	14	13	15	14
11:54:45	567	43958	16	17	16	11	14	13
11:55:00	567	43979	15	17	16	12	14	13

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 Water Volume Lost Over 40 Minute Burn and Cool Down:	109	mls
Water Collected in System Relief Valve:	0	mls
Calculated External Leakage During 40 Minute Duration:	109	mls
Average Leak Rate Over 40 Minute Duration:	2.7	ml/min
Allowable Leak Rate:	600	ml/min

Were the Gasket Leakage 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:	589	psig
Average Pressure During Burn/Cool Down:	570	psig
Minimum Pressure During Burn/Cool Down:	504	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:	727	deg. C
Average Cal Block Temperature:	483	deg. C
Lowest Avg Cal. Block Temperature:	13.9	deg. C
Maximum Body Flame Temperature During Burn:	903	deg. C
Average Body Flame Temperature During Burn:	830	deg. C
Maximum Bonnet Flame Temperature During Burn:	966	deg. C
Average Bonnet Flame Temperature During Burn:	885	deg. C
Average of Both Flame Temperatures During Burn:	857	deg. C

Notes

Were Test Conditions Within Compliance?	**Yes**

Yarmouth Research and Technology, LLC

Operational Test Information

Customer: AIGI Environmental, Inc. **Date:** 1/23/2018

Product Code: 6 inch Class 300 AIGI 350IM Gasket

Project Number: 218029

Test Data

Time	Pressure (psig)	Cal Block Temp - C
11:59:20	566	21
11:59:35	566	21
11:59:50	566	21
12:00:05	565	22
12:00:20	566	22
12:00:35	565	21
12:00:50	565	21
12:01:05	565	22
12:01:20	565	22
12:01:35	566	20
12:01:50	566	21
12:02:05	564	21
12:02:20	565	23
12:02:35	564	22
12:02:50	564	22
12:03:05	565	20
12:03:20	564	23
12:03:35	564	23
12:03:50	565	23
12:04:05	564	24
12:04:20	564	23

Leakages were collected manually.

Total External Leakage Collected Over 5 Minute Duration:	109	mls
Average Leak Rate Over 5 Minute Duration:	22	ml/min
Allowable Leak Rate:	150	ml/min

Was the Gasket Leakage Below the Allowable?	**Yes**