

**Fire Test Report**  
**API Standard 6FB, Third Edition**

*Performed for*

FMI s.p.a.

**[www.fmi-spa.com](http://www.fmi-spa.com)**



**6 inch Class 300 Spiral Wound 316L Gasket  
With Micatherm FMI Filler  
Off-shore Test**

Project Number: 216058

Test Date: March 4, 2016



*Performed by*

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**YARMOUTH RESEARCH AND TECHNOLOGY, LLC**

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# Yarmouth Research and Technology, LLC

## API 6FB FIRE TEST REPORT

**Customer:** FMI s.p.a.

**Date:** 3/4/2016

**Product Code:** 6 inch Class 300 Spiral Wound 316L Gasket with Micatherm FMI Filler

**Project Number:** 216058

**Specification:** API 6FB, Third Edition, Nov. 1998

Part II, Offshore, Non-Bending

**Mean Circumference:** 24.2 inches

**Allowable Leakage:** 24.2 ml/min

**Nominal Test Pressure:** 555 psig

**YRT Technician:** Matthew J. Wasielewski, P.E.

**Version of YRT's FIRE-Control 6FB Software:** A

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

### *Burn and Cool Down Test*

Burn Start Time:	14:31:00	
Burn / Cooldown Duration:	60	minutes
Average Pressure During Burn/Cooldown:	551	psig
Leak Rate During Burn/Cool Down:	0.7	ml/min
Allowable External Leak Rate:	24.2	ml/min
Time that Cal. Block > 1800 deg.:	19.0	minutes
Were Test Conditions Within Compliance?	Yes	
Was the Leakage Below the Allowable?	Yes	

### *Depressurization - Repressurization Test*

Average Pressure During Test:	554	psig
Gasket Leak Rate:	0	ml/min
Allowable External Leak Rate:	24.2	ml/min
Was the Leakage Below the Allowable?	Yes	

**Does the Gasket Pass or Fail API 6FB?** | **PASS**

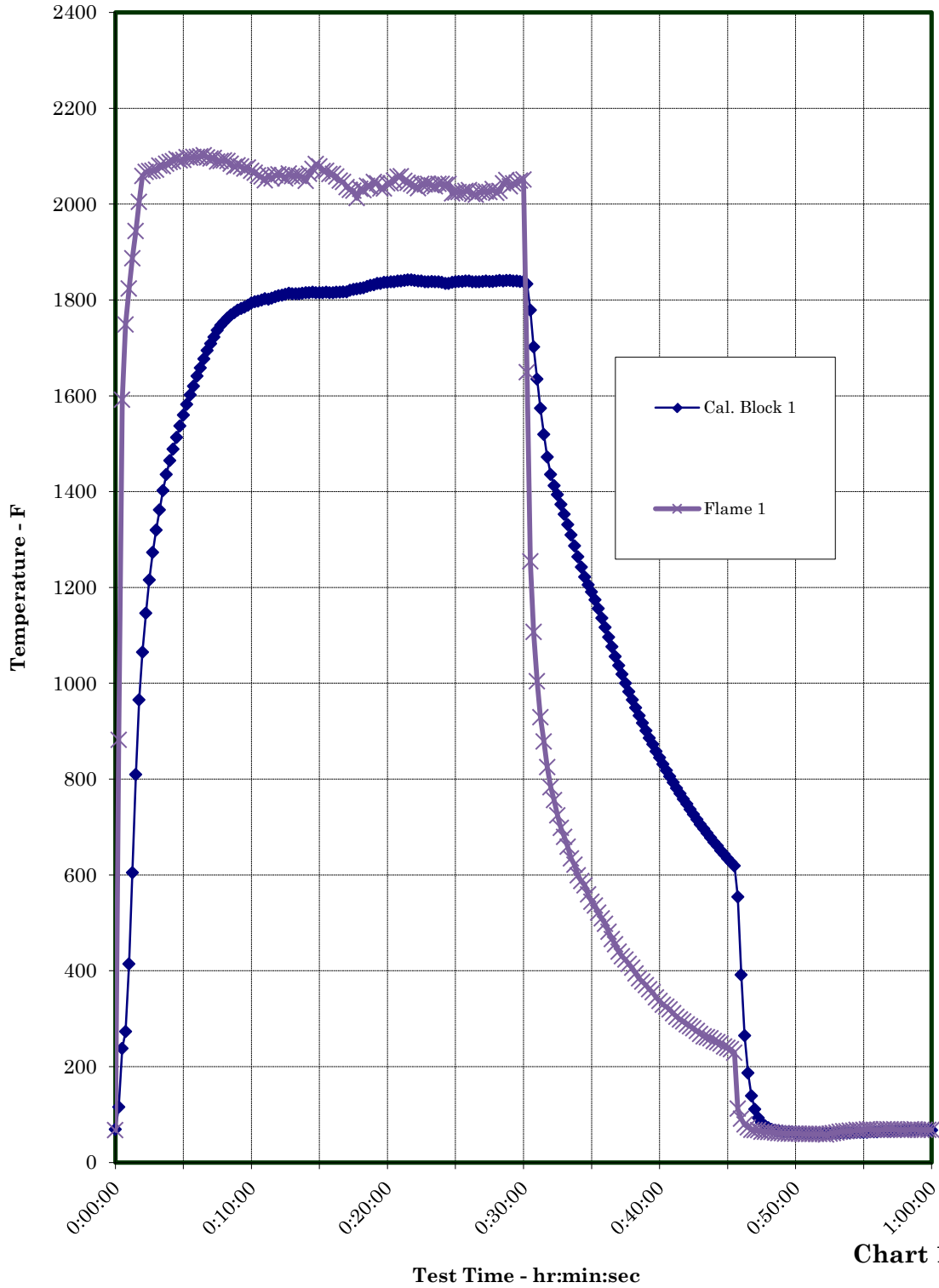
*Witnesses*



*Note:*



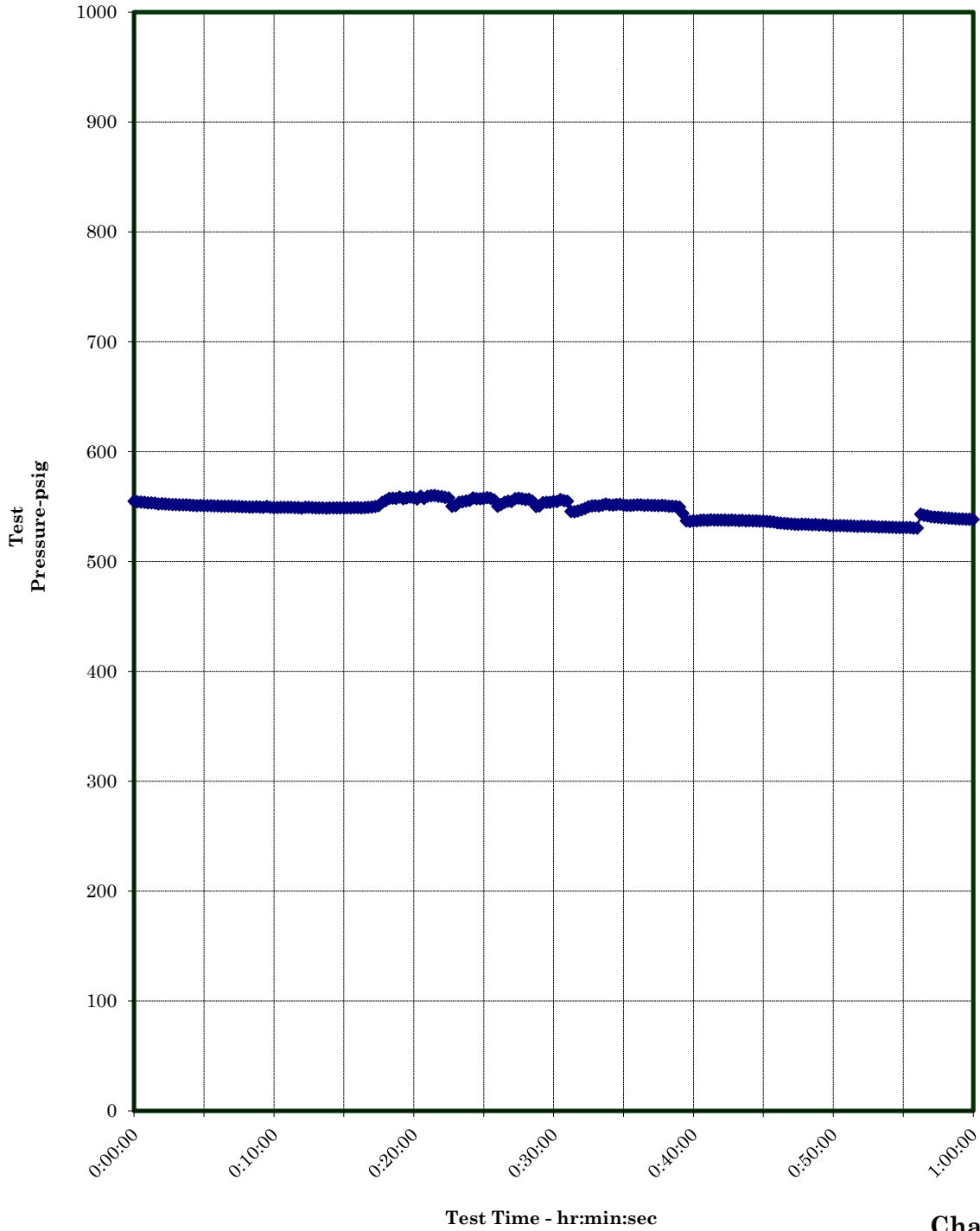
**Temperature verses Time Chart**



**Chart 1**

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**Pressure versus Time Chart**

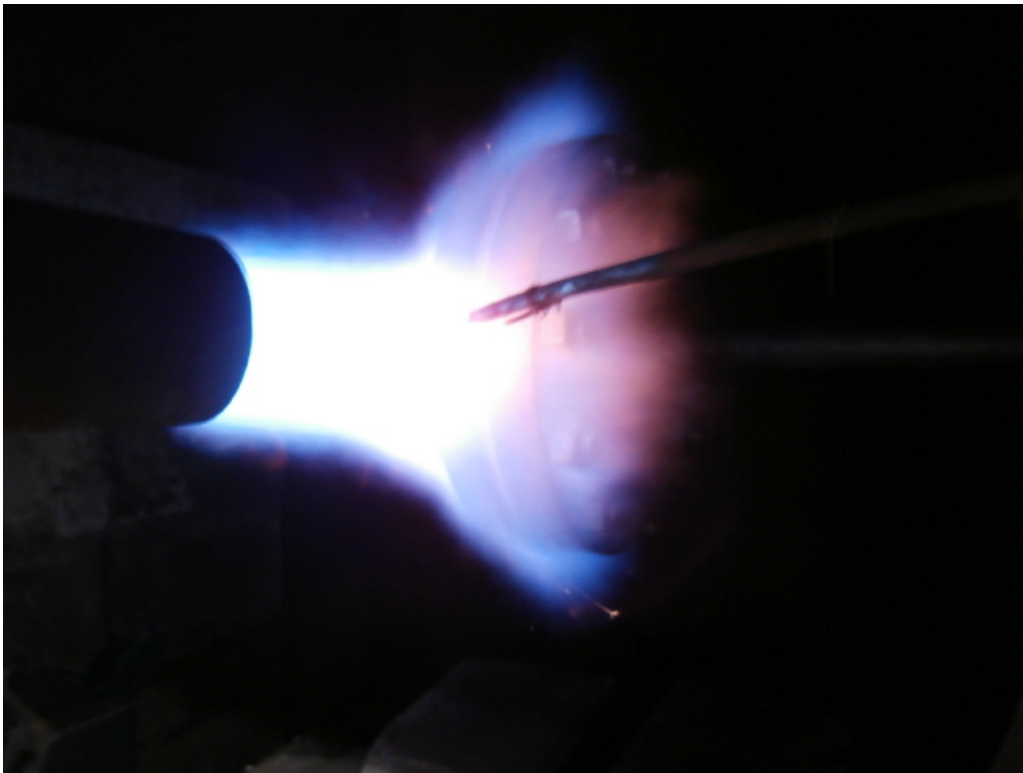


**Chart 2**

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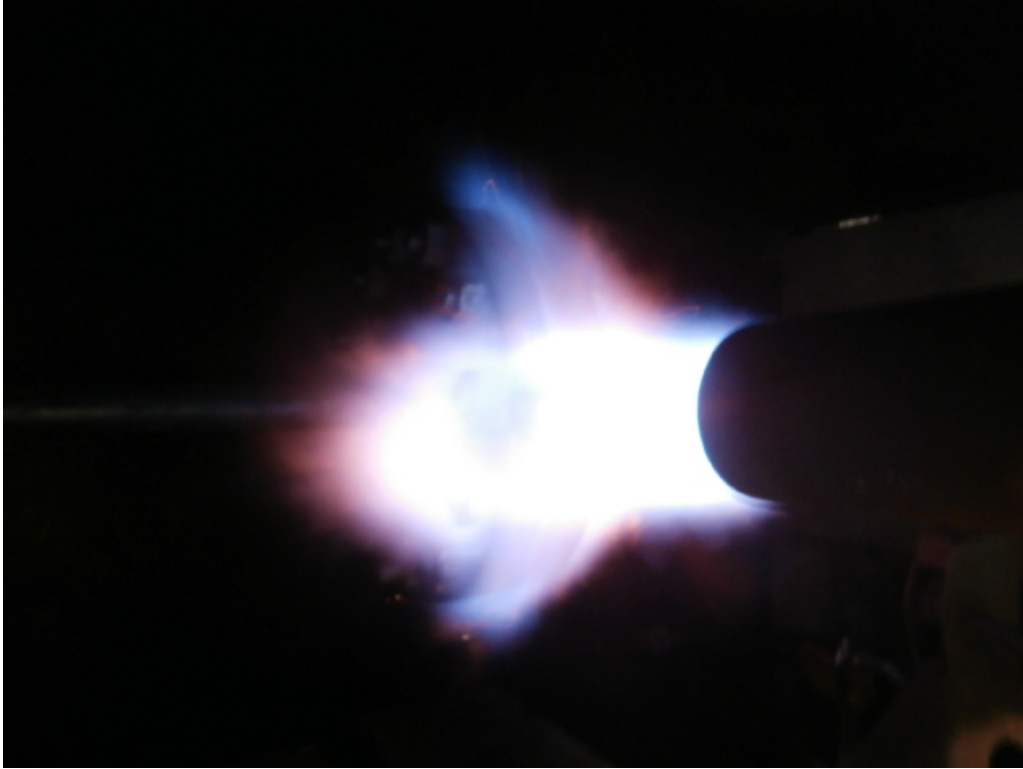


Test Setup



During Burn  
Offshore test utilizes single torch.

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During Burn  
Offshore test utilizes single torch.



Post-Burn Gasket

## Yarmouth Research and Technology, LLC

### Fire Test Information

**Customer:** FMI s.p.a.

**Date:** 3/4/2016

**Product Code:** 6 inch Class 300 Spiral Wound 316L Gasket with Micatherm FMI Filler

**Project Number:** 216058

### *Fire Test Raw Data*

Time	Pressure (psig)	Water Volume (mls)	Cal. 1 Block Temp - F	Flame 1 Temp - F
14:31:00	555	38430	69	67
14:31:15	554	38442	115	882
14:31:30	554	38430	238	1591
14:31:45	554	38439	273	1748
14:32:00	553	38485	414	1823
14:32:15	553	38375	605	1887
14:32:30	553	38454	810	1944
14:32:45	552	38395	965	2005
14:33:00	552	38516	1065	2059
14:33:15	552	38419	1146	2067
14:33:30	552	38446	1215	2069
14:33:45	552	38408	1273	2069
14:34:00	552	38356	1319	2072
14:34:15	551	38438	1362	2080
14:34:30	551	38388	1402	2079
14:34:45	551	38445	1436	2084
14:35:00	551	38446	1465	2088
14:35:15	551	38469	1488	2089
14:35:30	551	38457	1513	2094
14:35:45	551	38452	1537	2091
14:36:00	551	38436	1559	2092
14:36:15	551	38431	1582	2098
14:36:30	551	38460	1602	2097
14:36:45	550	38478	1620	2098
14:37:00	550	38478	1641	2098
14:37:15	550	38460	1658	2099
14:37:30	550	38475	1677	2102
14:37:45	550	38435	1694	2097
14:38:00	550	38475	1709	2095
14:38:15	550	38474	1722	2096
14:38:30	550	38496	1737	2089
14:38:45	550	38488	1747	2090
14:39:00	550	38515	1754	2091
14:39:15	549	38472	1762	2090
14:39:30	550	38514	1769	2084
14:39:45	550	38477	1774	2077
14:40:00	549	38498	1779	2081
14:40:15	549	38508	1782	2078
14:40:30	550	38528	1785	2074
14:40:45	549	38512	1789	2076
14:41:00	549	38515	1793	2069
14:41:15	549	38543	1796	2065

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14:41:30	549	38552	1797	2059
14:41:45	549	38516	1799	2057
14:42:00	549	38489	1803	2050
14:42:15	549	38553	1801	2060
14:42:30	549	38546	1804	2053
14:42:45	549	38526	1807	2060
14:43:00	549	38522	1809	2062
14:43:15	549	38563	1810	2060
14:43:30	549	38577	1812	2054
14:43:45	549	38533	1814	2064
14:44:00	549	38599	1813	2058
14:44:15	549	38578	1813	2059
14:44:30	549	38575	1813	2059
14:44:45	548	38586	1814	2057
14:45:00	549	38601	1815	2048
14:45:15	549	38622	1815	2063
14:45:30	549	38587	1816	2073
14:45:45	549	38604	1815	2083
14:46:00	549	38577	1815	2079
14:46:15	549	38611	1815	2069
14:46:30	549	38671	1816	2069
14:46:45	549	38656	1815	2063
14:47:00	549	38716	1815	2063
14:47:15	549	38696	1816	2057
14:47:30	549	38666	1816	2049
14:47:45	549	38656	1817	2046
14:48:00	549	38724	1817	2035
14:48:15	550	38718	1820	2030
14:48:30	551	38847	1822	2028
14:48:45	554	38873	1823	2012
14:49:00	555	39138	1824	2032
14:49:15	557	39237	1825	2029
14:49:30	557	39217	1828	2038
14:49:45	557	38864	1830	2036
14:50:00	559	39757	1831	2046
14:50:15	557	39094	1834	2043
14:50:30	558	38625	1834	2032
14:50:45	559	38854	1836	2032
14:51:00	558	38649	1836	2043
14:51:15	557	38754	1838	2043
14:51:30	559	40435	1838	2049
14:51:45	557	38693	1840	2057
14:52:00	559	39055	1840	2058
14:52:15	560	39944	1841	2048
14:52:30	560	40240	1842	2044
14:52:45	559	39253	1842	2042
14:53:00	559	39376	1841	2038
14:53:15	558	39515	1840	2033
14:53:30	558	39520	1840	2042
14:53:45	550	39016	1838	2041
14:54:00	551	39031	1838	2042
14:54:15	554	39261	1839	2039
14:54:30	554	39280	1838	2037



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14:54:45	555	39740	1838	2042
14:55:00	555	38518	1836	2042
14:55:15	558	40197	1834	2040
14:55:30	557	40457	1834	2042
14:55:45	557	40323	1836	2022
14:56:00	557	40167	1838	2024
14:56:15	558	39492	1839	2025
14:56:30	557	39448	1839	2025
14:56:45	556	39443	1840	2027
14:57:00	550	39293	1840	2029
14:57:15	552	39290	1838	2021
14:57:30	554	39254	1838	2019
14:57:45	555	40118	1838	2025
14:58:00	554	38508	1839	2026
14:58:15	557	39565	1840	2026
14:58:30	557	40312	1839	2025
14:58:45	557	40522	1839	2031
14:59:00	556	38940	1840	2023
14:59:15	556	39443	1841	2027
14:59:30	555	39404	1840	2043
14:59:45	550	39257	1841	2050
15:00:00	551	39136	1841	2037
15:00:15	553	38946	1840	2043
15:00:30	554	39724	1840	2044
15:00:45	554	38489	1839	2049
15:01:00	555	38464	1839	2051
15:01:15	554	38531	1833	1649
15:01:30	556	39532	1779	1254
15:01:45	555	39445	1702	1107
15:02:00	555	39434	1635	1004
15:02:15	545	39131	1574	929
15:02:30	545	38730	1519	878
15:02:45	546	38760	1472	825
15:03:00	547	38781	1436	783
15:03:15	548	39056	1412	756
15:03:30	550	39064	1394	724
15:03:45	550	39185	1373	698
15:04:00	551	39170	1352	679
15:04:15	550	39256	1331	659
15:04:30	551	38738	1309	634
15:04:45	552	39643	1286	621
15:05:00	551	39886	1264	599
15:05:15	551	39739	1242	587
15:05:30	552	39965	1222	578
15:05:45	552	39143	1205	559
15:06:00	551	39611	1191	544
15:06:15	551	38862	1174	536
15:06:30	551	39051	1156	521
15:06:45	551	39459	1136	509
15:07:00	551	39242	1117	498
15:07:15	552	39213	1096	481
15:07:30	551	39264	1076	466
15:07:45	551	39202	1056	455

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15:08:00	551	39368	1037	440
15:08:15	551	39395	1019	430
15:08:30	551	39376	1000	423
15:08:45	551	39349	983	414
15:09:00	551	39376	965	406
15:09:15	550	39365	949	394
15:09:30	550	39363	932	384
15:09:45	550	39363	917	377
15:10:00	549	39340	901	370
15:10:15	544	39059	886	361
15:10:30	537	38640	872	355
15:10:45	536	38576	858	344
15:11:00	537	38697	845	337
15:11:15	537	38566	831	329
15:11:30	537	38591	818	325
15:11:45	537	38606	805	319
15:12:00	537	38559	793	311
15:12:15	538	38528	781	304
15:12:30	538	38546	769	298
15:12:45	537	38581	758	294
15:13:00	537	38581	748	288
15:13:15	538	38620	736	284
15:13:30	537	38543	726	280
15:13:45	537	38527	716	274
15:14:00	537	38509	706	268
15:14:15	537	38554	696	263
15:14:30	537	38488	687	261
15:14:45	537	38550	678	259
15:15:00	537	38549	668	253
15:15:15	537	38548	660	251
15:15:30	537	38527	651	248
15:15:45	537	38529	643	242
15:16:00	537	38550	634	239
15:16:15	536	38532	626	236
15:16:30	536	38501	619	229
15:16:45	536	38535	554	112
15:17:00	535	38479	391	91
15:17:15	535	38447	265	79
15:17:30	534	38447	186	73
15:17:45	534	38481	139	68
15:18:00	534	38464	111	67
15:18:15	534	38422	93	67
15:18:30	534	38443	82	64
15:18:45	534	38413	76	64
15:19:00	534	38419	72	63
15:19:15	534	38423	69	63
15:19:30	533	38414	67	62
15:19:45	534	38406	66	61
15:20:00	533	38407	65	61
15:20:15	533	38466	64	60
15:20:30	533	38436	64	60
15:20:45	533	38367	64	60
15:21:00	533	38400	63	60

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15:21:15	532	38403	63	60
15:21:30	533	38400	63	59
15:21:45	532	38388	62	59
15:22:00	532	38373	62	59
15:22:15	532	38384	62	59
15:22:30	532	38374	62	59
15:22:45	532	38381	62	59
15:23:00	532	38389	61	59
15:23:15	532	38414	61	58
15:23:30	532	38386	61	60
15:23:45	532	38370	61	61
15:24:00	532	38385	61	62
15:24:15	531	38376	61	64
15:24:30	531	38384	62	65
15:24:45	531	38401	62	65
15:25:00	531	38353	62	66
15:25:15	531	38374	63	66
15:25:30	531	38397	63	68
15:25:45	531	38369	63	67
15:26:00	531	38410	63	68
15:26:15	531	38372	63	69
15:26:30	531	38364	64	69
15:26:45	530	38373	64	68
15:27:00	530	38407	64	68
15:27:15	543	38352	65	68
15:27:30	542	38329	65	69
15:27:45	541	38331	65	69
15:28:00	541	38362	65	69
15:28:15	540	38351	65	69
15:28:30	540	38366	66	68
15:28:45	540	38360	65	68
15:29:00	539	38356	66	68
15:29:15	539	38338	66	68
15:29:30	539	38376	66	69
15:29:45	539	38354	67	69
15:30:00	539	38343	67	68
15:30:15	539	38340	67	68
15:30:30	538	38378	67	68
15:30:45	538	38377	67	68
15:31:00	538	38388	67	68

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### Leakage Summary for Burn and Cool Down Periods

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All pressure transducers and thermocouples are in calibration per YRT's QA program.  
External leakage was collected electronically.

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Test Duration:	60	minutes
Tank Water Loss:	42	ml
System Relief Water Collected:	0	ml
Calculated Water Loss:	42	ml
Average Leak Rate:	0.7	ml/min
Average Seal Circumference	24.2	inches
Allowable Leak Rate:	24.2	ml/min

<b>Was the Leakage Below the Allowable?</b>	<b>Yes</b>
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### Summary of Test Parameters During Burn and Cool Down Periods

Time Cal. Block > 1800 deg.:	19.0	minutes
Max. Allowable Time to Reach Temperature:	15	minutes
Average Cal. Block Temperature During Burn:	1125	deg. F
Maximum Cal. Block Temperature During Burn:	1842	deg. F
Minimum Cal. Block Temperature During Burn:	61	deg. F
Average Flame Temperature During Burn:	2019	deg. F
Maximum Flame Temperature During Burn:	2102	deg. F
Minimum Flame Temperature During Burn:	1823	deg. F

*Notes*

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<b>Were Test Conditions Within Compliance?</b>	<b>Yes</b>
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# Yarmouth Research and Technology, LLC

## Depressurization - Repressurization Test Information

Customer: FMI s.p.a.

Date: 3/4/2016

Product Code: 6 inch Class 300 Spiral Wound 316L Gasket with Micatherm FMI Filler

Project Number: 216058

System pressure was lowered to 0 and then repressurized.

### *Operational Test Raw Data*

Time	Pressure (psig)	Average Block Temp-F
15:36:05	555	303
15:36:20	555	303
15:36:35	555	310
15:36:50	555	303
15:37:05	554	317
15:37:20	554	314
15:37:35	554	316
15:37:50	554	319
15:38:05	554	334
15:38:20	554	330
15:38:35	554	323
15:38:50	553	324
15:39:05	553	329
15:39:20	553	323
15:39:35	553	318
15:39:50	553	323
15:40:05	553	315
15:40:20	553	326
15:40:35	553	319
15:40:50	552	330
15:41:05	552	334

*Leakage was 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:	24.2	ml/min

Was the Leakage Below the Allowable?	Yes
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