TEST REPORT

Intertek

EVALUATION CENTER
16015 Shady Falls Road
Elmendorf, TX 78112
Phone: (210) 635-8100
Fax: (210) 635-8101
www.intertek.com

RENDERED TO

Thermotex Industries
112 Sunbelt CT
Greer, SC 29650

PRODUCT EVALUATED: Thermo-Spec Fire Curtain Model FFB-06-44-WFCC
EVALUATION PROPERTY: Fire Resistance

Report of Testing a Fire Curtain for compliance with the applicable requirements of the following criteria: *NFPA 80, Standard for Fire Doors and Other Opening Protectives, Sections 20.2.1.14 through 20.2.1.14.5, 2016 Edition.*

1 Table of Contents

2   Introduction

Intertek Testing Services NA, Inc. (Intertek) has conducted testing for Thermotex Industries, on Thermo-Spec Fire Curtain Model FFB-06-44-WFCC, to evaluate its fire resistance. Testing was conducted in accordance with applicable requirements, following the standard methods of **NFPA 80, Standard for Fire Doors and Other Opening Protectives, Sections 20.2.1.14 through 20.2.1.14.5, 2016 Edition**. This evaluation took place on July 13, 2016.

3   Test Samples

3.1.   SAMPLE SELECTION

Samples were witnessed by Rodney Wyatt of Intertek on June 21, 2016 at Thermotex Industries' manufacturing location located at 112 Sunbelt CT, Greer, SC. Samples (Intertek Sample ID No.SAT1606281216-002) were received at the Evaluation Center on June 28, 2016 in good condition. The test specimen identification is as provided by the client and Intertek accepts no responsibility for any inaccuracies therein.

3.2.   SAMPLE AND ASSEMBLY DESCRIPTION

The test specimen consisted of a 12 ft x 12 ft fire resistant curtain, fabricated from four pieces of fiberglass fabric with stainless steel wire inserted. Three pieces were beige, and the fourth piece was black in color. These four sections were sewn together using a Kevlar wrapped stainless steel wire with 1-1/8 in. overlap, creating a total of three vertical seams. A 6-in. diameter pocket was stitched into the bottom of the curtain to hold a 10 ft long 2-in. diameter schedule 40 steel pipe. The curtain was attached to the top of a 10 ft x 10 ft vertical fire resistance furnace frame. The frame was then pushed up against the furnace with the curtain fabric stretched tight on both sides, and the frame was clamped to the furnace, securing the curtain in place. Refer to Appendix C for photos.

4   Testing and Evaluation Methods

4.1.   INSTRUMENTATION

No thermocouples were required on the unexposed side of the sample.

4.2.   TEST STANDARD

Testing was conducted in accordance with the applicable requirements of, and following the standard methods of **NFPA 80, Standard for Fire Doors and Other Opening Protectives, Sections 20.2.1.14 through 20.2.1.14.5, 2016 Edition**.

The curtain was secured to the large scale vertical furnace and was tested to the standard time-temperature curve described in the E119 standard. The neutral pressure plane was established at a point one-third of the way up from the bottom of the specimen, so that the upper two-thirds of the specimen were under positive pressure.

5 Testing and Evaluation Results

5.1. RESULTS AND OBSERVATIONS

The test was initiated on July 13, 2016. John, Julie, and Lynn Snook of Thermotex Industries were present to witness the test. The ambient temperature at the time of the test was 82°F and the humidity was 81 % R.H.

Observations made during the test are listed below:

Time (min:sec)	Observation(s)
0:00	The test was initiated at 8:09 AM
5:00	Pressure established
6:00	Curtain began to darken; smoking
10:00	No significant changes
20:00	No significant changes
30:00	No significant changes
45:00	No significant changes
60:00	Test continues at client's request
90:00	Curtain still intact
105:00	No significant changes
120:00	Curtain still intact
150:00	No significant changes
180:00	Test terminated

The curtain withstood the fire endurance test without passage of flame or smoke for 180 minutes.

5.2. EXAMINATION OF RESULTS

5.2.1. Correction Factor for the Fire Endurance Test

In accordance with the E119 test standard, a calculation for any correction to the indicated fire resistance period was done. The correction factor was then mathematically added to the indicated fire resistance period, yielding the fire resistance period achieved by this specimen:

Correction Factor for the Fire Endurance Test

ITEM	DESCRIPTION	TEST VALUE
C	correction factor	0 minutes -26 seconds
I	indicated fire-resistance period	180 minutes
A	area under the curve of indicated average furnace temperature for the first three fourths of the indicated period	2931924 (°F•min)
As	area under the standard furnace curve for the same part of the indicated period	2942706 (°F•min)
ITEM	**DESCRIPTION**	**TEST VALUE**
L	lag correction	3240
	FIRE RESISTANCE PERIOD ACHIEVED BY THIS SPECIMEN ==>	180 minutes

Note: The standard specifies that the fire resistance be determined to the nearest integral minute. Consequently, if the correction factor is less than 30 seconds, and the test specimen met the criteria for the full indicated fire resistance period, no correction is deemed necessary.

6   Conclusion

Intertek Testing Services NA, Inc. (Intertek) has conducted testing for Thermotex Industries, on Thermo-Spec Fire Curtain FFB-06-37FCC, to evaluate its fire resistance. Testing was conducted in accordance with applicable requirements, following the standard methods of **NFPA 80, Standard for Fire Doors and Other Opening Protectives, Sections 20.2.1.14 through 20.2.1.14.5, 2016 Edition**. This evaluation took place on July 13, 2016.

Based on the results of this test, the Fire Curtain achieved a fire resistance rating of 180 minutes.

INTERTEK TESTING SERVICES NA, INC.

Tested by: _____
Jan-Michael Cabrera, M.S.
Project Engineer, Fire Resistance

Reported by: _____
Ryan Ferry
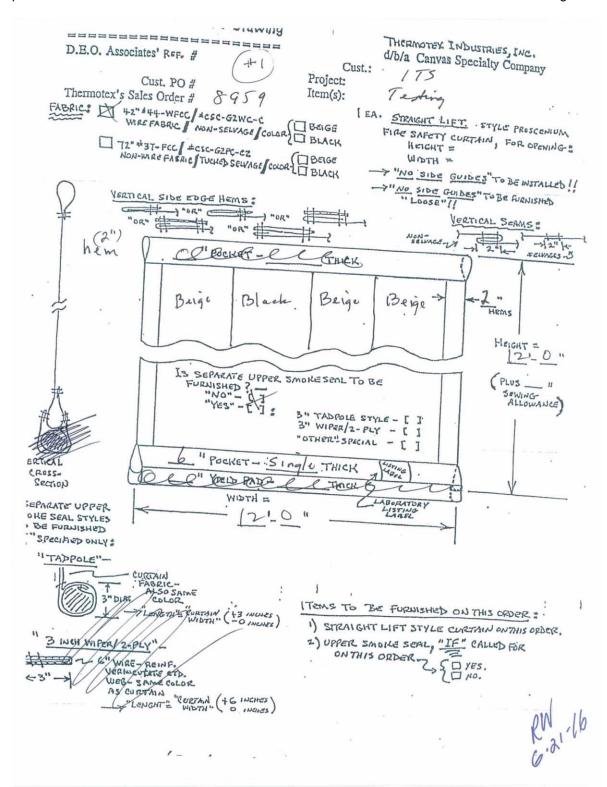**Engineer, Fire Resistance**

Reviewed by: _____
Victor M. Burgos
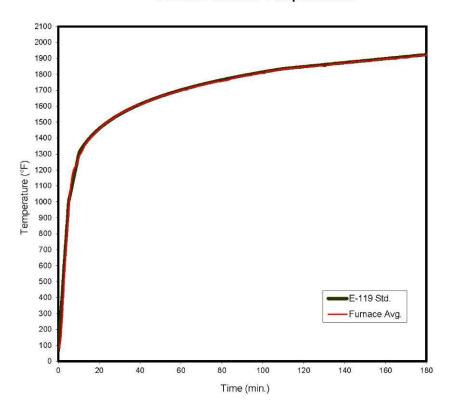**Senior Project Engineer, Fire Resistance**

APPENDIX A:
Assembly Drawings

APPENDIX B:
Test Data

**Thermotex
102506902SAT-010
13 July 2016
Furnace Interior Temperatures**

Thermotex   G102506902SAT-010   13 July 2016

Time (min)	E119 Std Average (°F)	Furnace Average (°F)	Integration of Furnace Average (°F•min)	Integration of E119 Std Average (°F•min)	Error (%)	Furnace Probe #1 (°F)	Furnace Probe #2 (°F)	Furnace Probe #3 (°F)
0	68	85	0	0	0	85	85	85
0.5	161.2	89	71.0833	149.12	-52.3315	91	89	88
1	254.4	118.583	206.1667	754.92	-72.6903	126	125	111
1.5	347.6	184.917	549.25	1826.72	-69.9324	187	219	179
2	440.8	286.583	1275.2083	3364.52	-62.0984	272	345	276
2.5	534	411.5	2551.0833	5368.32	-52.4789	391	479	393
3	627.2	537.583	4459.125	7838.12	-43.1098	529	593	520
3.5	720.4	647.083	6974.375	10773.92	-35.2661	652	686	626
4	813.6	748.5	10025.9583	14175.72	-29.2737	765	772	720
4.5	906.8	846.833	13577.4583	18043.52	-24.7516	873	855	810
5	1000	940.083	17614.4167	22377.32	-21.2845	974	941	898
5.5	1030	1024.5	22107.875	27076	-18.3488	1062	1018	983
6	1060	1095.33	27004.625	31931	-15.4282	1132	1082	1059
6.5	1090	1144.58	32219.5417	36936	-12.7693	1174	1129	1111
7	1120	1180.25	37659.2917	42091	-10.5289	1205	1163	1149
7.5	1150	1205	43261.875	47396	-8.7225	1227	1187	1177
8	1180	1217.42	48968.3333	52851	-7.3464	1234	1200	1192
8.5	1210	1225.17	54726.9167	58456	-6.3793	1236	1209	1201
9	1240	1237.08	60527.5	64211	-5.7366	1246	1221	1213
9.5	1270	1255.5	66398.9583	70116	-5.3013	1265	1239	1232
10	1300	1276.42	72368.3333	76171	-4.9923	1288	1259	1253
10.5	1317.35	1292.42	78437.2083	82368.4893	-4.7728	1302	1276	1270
11	1327.6	1302.25	84573.625	88630.7578	-4.5776	1309	1286	1281
11.5	1337.39	1314.17	90761.9167	94943.5802	-4.4044	1318	1299	1293
12	1346.77	1328.92	97016.75	101304.738	-4.2328	1333	1314	1308
12.5	1355.77	1341.5	103340.333	107712.199	-4.0588	1345	1327	1320
13	1364.41	1353.33	109725.458	114164.094	-3.8879	1356	1340	1332
13.5	1372.72	1364.17	116168.125	120658.701	-3.7217	1365	1352	1342
14	1380.74	1373.92	122663.583	127194.426	-3.5621	1374	1361	1353
14.5	1388.47	1382.42	129206.417	133769.788	-3.4114	1381	1370	1361
15	1395.94	1389.83	135789.833	140383.41	-3.2722	1388	1377	1368
15.5	1403.16	1396.92	142409.667	147034.009	-3.1451	1395	1385	1375
16	1410.16	1403.75	149064.542	153720.383	-3.0288	1401	1392	1382
16.5	1416.94	1410.08	155752.792	160441.407	-2.9223	1407	1398	1388
17	1423.52	1416.5	162473.292	167196.024	-2.8247	1414	1403	1396
17.5	1429.9	1424.17	169228.458	173983.239	-2.7329	1420	1411	1404
18	1436.11	1432.67	176022.5	180802.117	-2.6436	1428	1420	1412
18.5	1442.15	1438.83	182855.042	187651.771	-2.5562	1435	1427	1419
19	1448.02	1444.75	189718.667	194531.367	-2.474	1441	1433	1425
19.5	1453.75	1449.75	196610.333	201440.111	-2.3976	1446	1438	1430
20	1459.32	1454.92	203526.917	208377.251	-2.3277	1452	1442	1436
20.5	1464.77	1460.58	210469.625	215342.075	-2.2627	1457	1448	1442

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Thermotex   G102506902SAT-010   13 July 2016

Time (min)	E119 Std Average (°F)	Furnace Average (°F)	Integration of Furnace Average (°F•min)	Integration of E119 Std Average (°F•min)	Error (%)	Furnace Probe #1 (°F)	Furnace Probe #2 (°F)	Furnace Probe #3 (°F)
21	1470.07	1467	217441.083	222333.904	-2.2007	1464	1455	1448
21.5	1475.26	1474.5	224447.083	229352.091	-2.1386	1471	1463	1455
22	1480.32	1480.17	231488.583	236396.021	-2.0759	1477	1468	1462
22.5	1485.28	1485.58	238558.167	243465.105	-2.0155	1483	1472	1468
23	1490.12	1491.58	245654.167	250558.782	-1.9575	1488	1478	1474
23.5	1494.86	1497.75	252781.875	257676.516	-1.8995	1494	1484	1480
24	1499.5	1503	259939.417	264817.791	-1.8422	1499	1490	1485
24.5	1504.04	1506.17	267119.083	271982.116	-1.788	1502	1493	1489
25	1508.49	1509.08	274314.375	279169.017	-1.739	1505	1495	1493
25.5	1512.85	1512	281524.458	286378.042	-1.6948	1508	1498	1495
26	1517.13	1515.58	288749.208	293608.755	-1.6551	1512	1501	1499
26.5	1521.33	1520.5	295994.583	300860.738	-1.6174	1516	1507	1504
27	1525.45	1524.5	303263.5	308133.586	-1.5805	1520	1511	1509
27.5	1529.49	1528.75	310551.917	315426.914	-1.5455	1525	1516	1513
28	1533.46	1533.92	317862.208	322740.345	-1.5115	1530	1521	1518
28.5	1537.36	1539.33	325200.375	330073.522	-1.4764	1535	1526	1523
29	1541.19	1544	332564.292	337426.095	-1.4408	1540	1531	1528
29.5	1544.96	1547.08	339947.917	344797.729	-1.4066	1544	1532	1532
30	1548.66	1550.75	347348.667	352188.1	-1.3741	1548	1536	1536
30.5	1552.3	1554.25	354768	359596.894	-1.3429	1552	1541	1540
31	1555.89	1557.5	362204.333	367023.809	-1.3131	1553	1545	1543
31.5	1559.41	1561.67	369658.125	374468.551	-1.2846	1557	1549	1547
32	1562.88	1565.17	377132.083	381930.837	-1.2564	1562	1552	1550
32.5	1566.3	1568	384622.25	389410.391	-1.2296	1564	1556	1553
33	1569.66	1569.92	392124.792	396906.947	-1.2049	1565	1557	1555
33.5	1572.98	1571.58	399637.083	404420.246	-1.1827	1567	1559	1557
34	1576.24	1574.42	407158.667	411950.038	-1.1631	1571	1560	1560
34.5	1579.46	1578.5	414696.875	419496.08	-1.144	1575	1565	1565
35	1582.63	1582.17	422255.042	427058.135	-1.1247	1579	1569	1568
35.5	1585.75	1585.83	429830.583	434635.973	-1.1056	1582	1573	1572
36	1588.83	1591.25	437427.708	442229.373	-1.0858	1588	1578	1577
36.5	1591.87	1596.17	445051.375	449838.117	-1.0641	1592	1582	1582
37	1594.87	1600.33	452699.292	457461.994	-1.0411	1597	1586	1587
37.5	1597.83	1602.58	460363.5	465100.8	-1.0186	1598	1588	1590
38	1600.75	1605.17	468041.667	472754.334	-0.9969	1601	1591	1593
38.5	1603.63	1607.17	475731.25	480422.403	-0.9765	1604	1593	1595
39	1606.47	1609.08	483430.208	488104.816	-0.9577	1606	1595	1598
39.5	1609.28	1607.17	491134.5	495801.391	-0.9413	1604	1593	1597
40	1612.05	1606.58	498828.083	503511.947	-0.9302	1603	1592	1595
40.5	1614.79	1607.92	506522.917	511236.308	-0.922	1604	1595	1595
41	1617.49	1609.58	514224.292	518974.304	-0.9153	1606	1596	1597
41.5	1620.16	1613.67	521937.208	526725.769	-0.9091	1610	1600	1602

Thermotex   G102506902SAT-010   13 July 2016

Time (min)	E119 Std Average (°F)	Furnace Average (°F)	Integration of Furnace Average (°F•min)	Integration of E119 Std Average (°F•min)	Error (%)	Furnace Probe #1 (°F)	Furnace Probe #2 (°F)	Furnace Probe #3 (°F)
42	1622.8	1618.5	529673.167	534490.539	-0.9013	1615	1605	1607
42.5	1625.41	1622.25	537431.958	542268.456	-0.8919	1619	1608	1611
43	1627.98	1625.5	545208.75	550059.365	-0.8818	1621	1611	1614
43.5	1630.53	1628.5	553000.25	557863.114	-0.8717	1625	1614	1617
44	1633.05	1631.75	560807.375	565679.556	-0.8613	1627	1617	1621
44.5	1635.54	1634.58	568631.333	573508.545	-0.8504	1629	1620	1624
45	1638	1635.83	576465.5	581349.941	-0.8402	1630	1621	1626
45.5	1640.44	1637.17	584305	589203.605	-0.8314	1631	1623	1627
46	1642.84	1638.75	592153.292	597069.403	-0.8234	1635	1624	1628
46.5	1645.23	1640.17	600009.375	604947.201	-0.8162	1637	1625	1630
47	1647.58	1641.92	607872.708	612836.872	-0.81	1639	1628	1631
47.5	1649.91	1646.5	615748.75	620738.287	-0.8038	1643	1632	1635
48	1652.22	1649.83	623645.125	628651.324	-0.7963	1646	1637	1638
48.5	1654.5	1653	631559.167	636575.861	-0.7881	1649	1640	1641
49	1656.76	1655.33	639488.292	644511.778	-0.7794	1651	1643	1644
49.5	1659	1657.17	647428.417	652458.961	-0.771	1653	1644	1646
50	1661.22	1659.83	655378.583	660417.294	-0.763	1656	1647	1649
50.5	1663.41	1663.5	663343.042	668386.667	-0.7546	1660	1649	1652
51	1665.58	1666.92	671326.542	676366.969	-0.7452	1663	1653	1656
51.5	1667.73	1668	679322.25	684358.093	-0.7358	1664	1654	1657
52	1669.86	1669.58	687324.708	692359.933	-0.7273	1664	1655	1659
52.5	1671.97	1670.17	695333.417	700372.388	-0.7195	1666	1655	1661
53	1674.05	1671	703345.75	708395.355	-0.7128	1666	1657	1662
53.5	1676.12	1671.75	711361.417	716428.734	-0.7073	1667	1658	1662
54	1678.17	1673.08	719381.792	724472.43	-0.7027	1669	1658	1664
54.5	1680.2	1675.08	727409.708	732526.345	-0.6985	1671	1660	1666
55	1682.22	1678.58	735450.292	740590.385	-0.6941	1675	1664	1670
55.5	1684.21	1680.67	743507.167	748664.46	-0.6889	1677	1666	1672
56	1686.19	1682.17	751573.208	756748.477	-0.6839	1678	1668	1673
56.5	1688.14	1684.5	759647.667	764842.349	-0.6792	1680	1670	1675
57	1690.09	1686.42	767732.083	772945.987	-0.6745	1682	1672	1677
57.5	1692.01	1688.83	775827.583	781059.307	-0.6698	1685	1675	1679
58	1693.92	1690.75	783933.833	789182.222	-0.665	1687	1677	1680
58.5	1695.81	1693.5	792051.708	797314.652	-0.6601	1689	1680	1683
59	1697.68	1695.42	800182.125	805456.514	-0.6548	1690	1681	1685
59.5	1699.54	1697.08	808321.125	813607.728	-0.6498	1692	1683	1687
60	1701.39	1697.92	816467.708	821768.216	-0.645	1693	1685	1688
60.5	1703.22	1699.08	824619.125	829937.899	-0.6409	1694	1686	1689
61	1705.03	1699.67	832775.625	838116.703	-0.6373	1696	1686	1690
61.5	1706.83	1700.33	840935	846304.551	-0.6345	1697	1686	1691
62	1708.61	1700.83	849097.875	854501.371	-0.6324	1697	1687	1692
62.5	1710.38	1701.67	857263.292	862707.09	-0.631	1697	1689	1693

Thermotex   G102506902SAT-010   13 July 2016

Time (min)	E119 Std Average (°F)	Furnace Average (°F)	Integration of Furnace Average (°F•min)	Integration of E119 Std Average (°F•min)	Error (%)	Furnace Probe #1 (°F)	Furnace Probe #2 (°F)	Furnace Probe #3 (°F)
63	1712.14	1703.75	865434.042	870921.637	-0.6301	1699	1691	1695
63.5	1713.88	1706.67	873616.417	879144.941	-0.6289	1703	1694	1697
64	1715.61	1711.08	881815.958	887376.933	-0.6267	1707	1699	1702
64.5	1717.32	1715.5	890038.958	895617.546	-0.6229	1711	1702	1707
65	1719.02	1717.92	898280.083	903866.712	-0.6181	1714	1705	1709
65.5	1720.71	1719.08	906531.333	912124.366	-0.6132	1715	1706	1711
66	1722.39	1720.17	914788.625	920390.442	-0.6086	1717	1707	1711
66.5	1724.05	1721	923051.208	928664.878	-0.6045	1717	1708	1713
67	1725.7	1721.92	931317.333	936947.609	-0.6009	1718	1709	1714
67.5	1727.34	1722.67	939587.792	945238.573	-0.5978	1718	1710	1715
68	1728.97	1723.33	947861.792	953537.711	-0.5952	1719	1710	1716
68.5	1730.58	1724.83	956140.875	961844.961	-0.593	1720	1712	1717
69	1732.18	1726.83	964428.625	970160.265	-0.5908	1722	1713	1718
69.5	1733.77	1727.83	972723.667	978483.563	-0.5887	1723	1714	1719
70	1735.35	1729.67	981025.833	986814.798	-0.5866	1725	1716	1720
70.5	1736.92	1731.67	989337.833	995153.914	-0.5844	1727	1718	1724
71	1738.48	1733.33	997659.125	1003500.85	-0.5821	1729	1719	1725
71.5	1740.02	1735.17	1005988.67	1011855.56	-0.5798	1731	1722	1726
72	1741.56	1736.5	1014327.08	1020217.99	-0.5774	1733	1723	1728
72.5	1743.08	1738.33	1022672.21	1028588.07	-0.5751	1735	1725	1730
73	1744.6	1741.42	1031027.83	1036965.77	-0.5726	1738	1728	1733
73.5	1746.1	1743.25	1039398.25	1045351.02	-0.5695	1740	1730	1735
74	1747.6	1745.08	1047776.63	1053743.77	-0.5663	1741	1732	1736
74.5	1749.08	1746.92	1056165.13	1062143.98	-0.5629	1743	1734	1739
75	1750.55	1747.67	1064561.42	1070551.59	-0.5595	1743	1736	1739
75.5	1752.02	1748.5	1072961.29	1078966.56	-0.5566	1744	1736	1740
76	1753.47	1749.42	1081365.71	1087388.83	-0.5539	1745	1737	1741
76.5	1754.92	1750.92	1089774.54	1095818.36	-0.5515	1747	1738	1743
77	1756.35	1752.5	1098191.42	1104255.1	-0.5491	1748	1740	1745
77.5	1757.78	1753.58	1106616.04	1112699.01	-0.5467	1750	1741	1746
78	1759.2	1753.67	1115044.71	1121150.03	-0.5446	1751	1741	1746
78.5	1760.6	1753.58	1123473.33	1129608.12	-0.5431	1751	1742	1746
79	1762	1753.75	1131901.5	1138073.23	-0.5423	1750	1742	1746
79.5	1763.39	1753.67	1140330.17	1146545.33	-0.5421	1750	1741	1746
80	1764.77	1755.17	1148760.42	1155024.37	-0.5423	1752	1743	1748
80.5	1766.15	1757	1157199.75	1163510.3	-0.5424	1754	1744	1749
81	1767.51	1758.75	1165648.08	1172003.08	-0.5422	1756	1746	1751
81.5	1768.87	1759.33	1174102.83	1180502.67	-0.5421	1756	1746	1751
82	1770.21	1760.5	1182560.38	1189009.03	-0.5424	1757	1747	1753
82.5	1771.55	1761.83	1191024.58	1197522.11	-0.5426	1757	1750	1754
83	1772.89	1763	1199494.96	1206041.88	-0.5428	1759	1751	1755
83.5	1774.21	1765.58	1207972.42	1214568.29	-0.5431	1762	1753	1757

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Time (min)	E119 Std Average (°F)	Furnace Average (°F)	Integration of Furnace Average (°F•min)	Integration of E119 Std Average (°F•min)	Error (%)	Furnace Probe #1 (°F)	Furnace Probe #2 (°F)	Furnace Probe #3 (°F)
84	1775.52	1768.58	1216464.54	1223101.31	-0.5426	1765	1756	1760
84.5	1776.83	1770.5	1224970	1231640.89	-0.5416	1767	1758	1763
85	1778.13	1771.67	1233484.29	1240187	-0.5405	1768	1759	1764
85.5	1779.42	1772.58	1242003.75	1248739.6	-0.5394	1769	1759	1765
86	1780.71	1773.58	1250527.92	1257298.65	-0.5385	1770	1760	1766
86.5	1781.99	1775.67	1259058.08	1265864.11	-0.5377	1772	1763	1768
87	1783.26	1779.08	1267600.96	1274435.94	-0.5363	1775	1766	1771
87.5	1784.52	1781.92	1276160.13	1283014.12	-0.5342	1778	1769	1774
88	1785.77	1784.08	1284732.67	1291598.6	-0.5316	1779	1771	1777
88.5	1787.02	1785.83	1293316.38	1300189.34	-0.5286	1782	1773	1779
89	1788.26	1785.75	1301905.33	1308786.32	-0.5258	1782	1773	1779
89.5	1789.5	1785.92	1310494.67	1317389.49	-0.5234	1781	1774	1779
90	1790.73	1786.25	1319084.42	1325998.82	-0.5214	1782	1774	1779
90.5	1791.95	1787.75	1327677.46	1334614.28	-0.5198	1784	1775	1780
91	1793.16	1789	1336278.21	1343235.83	-0.518	1785	1776	1782
91.5	1794.37	1789.33	1344883.96	1351863.45	-0.5163	1785	1776	1781
92	1795.57	1790.75	1353493.25	1360497.09	-0.5148	1786	1778	1783
92.5	1796.76	1791.42	1362108.63	1369136.72	-0.5133	1788	1779	1784
93	1797.95	1791.42	1370726.54	1377782.32	-0.5121	1787	1779	1784
93.5	1799.13	1792.5	1379345.96	1386433.84	-0.5112	1788	1780	1786
94	1800.31	1792.5	1387968	1395091.26	-0.5106	1788	1779	1787
94.5	1801.48	1793.17	1396590.13	1403754.55	-0.5104	1789	1781	1787
95	1802.64	1796.17	1405220.46	1412423.67	-0.51	1792	1785	1789
95.5	1803.79	1799.42	1413866.63	1421098.6	-0.5089	1795	1787	1792
96	1804.95	1802.42	1422528.42	1429779.31	-0.5071	1799	1790	1796
96.5	1806.09	1803.67	1431202.63	1438465.75	-0.5049	1800	1792	1797
97	1807.23	1803.75	1439880.42	1447157.91	-0.5029	1800	1792	1797
97.5	1808.36	1805.25	1448561.54	1455855.76	-0.501	1802	1793	1798
98	1809.49	1806.08	1457249.29	1464559.26	-0.4991	1802	1794	1799
98.5	1810.61	1806.5	1465940.29	1473268.38	-0.4974	1803	1794	1800
99	1811.73	1806.42	1474633.21	1481983.11	-0.496	1802	1794	1800
99.5	1812.84	1806	1483324.83	1490703.4	-0.495	1802	1794	1799
100	1813.94	1805.25	1492014.71	1499429.24	-0.4945	1801	1793	1798
100.5	1815.04	1804.75	1500700.17	1508160.59	-0.4947	1801	1793	1798
101	1816.13	1807.33	1509387.04	1516897.43	-0.4951	1805	1795	1800
101.5	1817.22	1812	1518090.92	1525639.72	-0.4948	1810	1800	1805
102	1818.3	1816.25	1526817.67	1534387.45	-0.4933	1813	1805	1810
102.5	1819.38	1819.58	1535564	1543140.58	-0.491	1816	1807	1814
103	1820.45	1821.25	1544323.75	1551899.1	-0.4881	1818	1809	1815
103.5	1821.52	1820.92	1553090.13	1560662.96	-0.4852	1817	1809	1814
104	1822.58	1820.58	1561854.54	1569432.16	-0.4828	1817	1809	1814
104.5	1823.64	1820.08	1570617.21	1578206.65	-0.4809	1816	1808	1813

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Time (min)	E119 Std Average (°F)	Furnace Average (°F)	Integration of Furnace Average (°F•min)	Integration of E119 Std Average (°F•min)	Error (%)	Furnace Probe #1 (°F)	Furnace Probe #2 (°F)	Furnace Probe #3 (°F)
105	1824.69	1820.5	1579377.83	1586986.42	-0.4794	1816	1809	1814
105.5	1825.74	1821.83	1588142.54	1595771.44	-0.4781	1819	1810	1815
106	1826.78	1823	1596913.29	1604561.69	-0.4767	1819	1812	1816
106.5	1827.82	1823.58	1605688.17	1613357.14	-0.4753	1820	1812	1817
107	1828.85	1824.33	1614466	1622157.77	-0.4742	1821	1812	1818
107.5	1829.87	1826.17	1623249.75	1630963.55	-0.473	1823	1814	1820
108	1830.9	1828.42	1632043.92	1639774.46	-0.4714	1825	1816	1824
108.5	1831.91	1829.5	1640847.79	1648590.47	-0.4697	1826	1817	1826
109	1832.93	1830.25	1649656.96	1657411.57	-0.4679	1826	1818	1825
109.5	1833.94	1830.33	1658468.5	1666237.72	-0.4663	1827	1819	1825
110	1834.94	1831.42	1667281.17	1675068.91	-0.4649	1829	1819	1826
110.5	1835.68	1832.33	1676099.92	1683904.9	-0.4635	1829	1820	1827
111	1836.3	1833.25	1684922.63	1692744.22	-0.4621	1829	1821	1828
111.5	1836.93	1833.92	1693750.46	1701586.69	-0.4605	1830	1822	1829
112	1837.56	1834.75	1702581.08	1710432.3	-0.459	1831	1823	1829
112.5	1838.19	1835.08	1711414.92	1719281.05	-0.4575	1831	1823	1829
113	1838.82	1835.83	1720251.54	1728132.94	-0.4561	1832	1824	1830
113.5	1839.45	1837.42	1729093.46	1736987.97	-0.4545	1833	1826	1831
114	1840.08	1838.33	1737942.04	1745846.15	-0.4527	1834	1826	1832
114.5	1840.7	1839.08	1746795.54	1754707.47	-0.4509	1835	1827	1833
115	1841.33	1839.58	1755651	1763571.93	-0.4491	1835	1828	1834
115.5	1841.96	1839.17	1764508.38	1772439.53	-0.4475	1834	1828	1833
116	1842.59	1839.67	1773364.38	1781310.28	-0.4461	1836	1828	1834
116.5	1843.22	1840.67	1782224.29	1790184.16	-0.4446	1837	1829	1834
117	1843.85	1841.33	1791088.54	1799061.19	-0.4432	1838	1830	1835
117.5	1844.47	1841.58	1799955.92	1807941.36	-0.4417	1839	1830	1836
118	1845.1	1842.17	1808824.42	1816824.67	-0.4403	1839	1831	1837
118.5	1845.73	1842.58	1817695.71	1825711.13	-0.439	1840	1832	1837
119	1846.36	1843.58	1826569.17	1834600.73	-0.4378	1840	1833	1838
119.5	1846.99	1844.33	1835447.33	1843493.46	-0.4365	1840	1834	1839
120	1847.62	1845.5	1844330.58	1852389.34	-0.435	1840	1835	1840
120.5	1848.24	1845.58	1853217.38	1861288.37	-0.4336	1841	1834	1840
121	1848.87	1845.58	1862106.75	1870190.53	-0.4322	1842	1834	1840
121.5	1849.5	1845.67	1870994.29	1879095.84	-0.4311	1842	1834	1841
122	1850.13	1844.42	1879880	1888004.29	-0.4303	1840	1833	1838
122.5	1850.76	1844.58	1888761.21	1896915.88	-0.4299	1840	1834	1839
123	1851.39	1845.58	1897644.96	1905830.61	-0.4295	1842	1834	1840
123.5	1852.01	1846.75	1906534	1914748.49	-0.429	1843	1835	1841
124	1852.64	1847.33	1915429.17	1923669.5	-0.4284	1844	1836	1842
124.5	1853.27	1847.5	1924326.83	1932593.66	-0.4278	1844	1836	1842
125	1853.9	1848.25	1933225.63	1941520.96	-0.4273	1844	1837	1844
125.5	1854.53	1849.58	1942128.46	1950451.4	-0.4267	1845	1838	1844

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Time (min)	E119 Std Average (°F)	Furnace Average (°F)	Integration of Furnace Average (°F•min)	Integration of E119 Std Average (°F•min)	Error (%)	Furnace Probe #1 (°F)	Furnace Probe #2 (°F)	Furnace Probe #3 (°F)
126	1855.16	1850.67	1951038.63	1959384.99	-0.426	1847	1840	1845
126.5	1855.79	1851.5	1959952.96	1968321.71	-0.4252	1848	1840	1846
127	1856.41	1851.83	1968871.29	1977261.58	-0.4243	1848	1841	1846
127.5	1857.04	1852.42	1977791.58	1986204.59	-0.4236	1848	1841	1848
128	1857.67	1852.5	1986713.33	1995150.75	-0.4229	1847	1841	1847
128.5	1858.3	1851.58	1995633.88	2004100.04	-0.4224	1848	1840	1847
129	1858.93	1851.5	2004552.33	2013052.48	-0.4223	1847	1840	1846
129.5	1859.56	1850.42	2013468.42	2022008.06	-0.4223	1846	1840	1845
130	1860.18	1849.67	2022380.21	2030966.78	-0.4228	1845	1839	1844
130.5	1860.81	1849.83	2031287.96	2039928.64	-0.4236	1846	1839	1844
131	1861.44	1852.33	2040201.04	2048893.64	-0.4243	1848	1841	1846
131.5	1862.07	1855.92	2049127.92	2057861.79	-0.4244	1852	1844	1850
132	1862.7	1857.75	2058069.79	2066833.08	-0.424	1853	1846	1852
132.5	1863.33	1859.83	2067021.5	2075807.51	-0.4233	1856	1849	1855
133	1863.95	1861.83	2075984.13	2084785.08	-0.4222	1857	1851	1857
133.5	1864.58	1862.5	2084954.75	2093765.8	-0.4208	1858	1850	1857
134	1865.21	1862.33	2093927.96	2102749.65	-0.4195	1858	1851	1857
134.5	1865.84	1859.58	2102893.58	2111736.65	-0.4188	1856	1849	1854
135	1866.47	1860.5	2111852.08	2120726.79	-0.4185	1856	1849	1856
135.5	1867.1	1862.92	2120817.71	2129720.08	-0.418	1858	1852	1858
136	1867.72	1864.75	2129794.92	2138716.5	-0.4171	1860	1854	1860
136.5	1868.35	1866.17	2138781.5	2147716.07	-0.416	1862	1855	1862
137	1868.98	1866.83	2147773.13	2156718.78	-0.4148	1862	1855	1862
137.5	1869.61	1867.58	2156769	2165724.63	-0.4135	1863	1856	1863
138	1870.24	1867.5	2165765.83	2174733.62	-0.4124	1862	1856	1861
138.5	1870.87	1868	2174763.54	2183745.75	-0.4113	1863	1856	1862
139	1871.5	1868.58	2183765.17	2192761.03	-0.4103	1863	1858	1864
139.5	1872.12	1868.75	2192768.08	2201779.45	-0.4093	1864	1858	1864
140	1872.75	1868.17	2201771.17	2210801.01	-0.4084	1863	1857	1864
140.5	1873.38	1867.25	2210770.54	2219825.71	-0.4079	1862	1857	1862
141	1874.01	1867	2219765.75	2228853.56	-0.4077	1863	1856	1862
141.5	1874.64	1867.92	2228761.17	2237884.54	-0.4077	1864	1857	1863
142	1875.27	1868.5	2237761.88	2246918.67	-0.4075	1864	1859	1863
142.5	1875.89	1869.75	2246765.29	2255955.94	-0.4074	1865	1860	1865
143	1876.52	1872.33	2255778.13	2264996.35	-0.407	1868	1863	1866
143.5	1877.15	1876.17	2264805.42	2274039.91	-0.4061	1873	1866	1870
144	1877.78	1878.33	2273849.21	2283086.61	-0.4046	1874	1869	1873
144.5	1878.41	1878.75	2282902.58	2292136.44	-0.4028	1875	1869	1873
145	1879.04	1877.75	2291955	2301189.42	-0.4013	1873	1868	1871
145.5	1879.66	1878	2301003.67	2310245.55	-0.4	1873	1869	1872
146	1880.29	1877.92	2310054.13	2319304.81	-0.3989	1873	1868	1872
146.5	1880.92	1878.5	2319103.21	2328367.22	-0.3979	1873	1868	1873

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Time (min)	E119 Std Average (°F)	Furnace Average (°F)	Integration of Furnace Average (°F•min)	Integration of E119 Std Average (°F•min)	Error (%)	Furnace Probe #1 (°F)	Furnace Probe #2 (°F)	Furnace Probe #3 (°F)
147	1881.55	1879.67	2328157.29	2337432.77	-0.3968	1874	1868	1874
147.5	1882.18	1880.58	2337217.46	2346501.46	-0.3957	1875	1870	1876
148	1882.81	1881.33	2346282	2355573.29	-0.3944	1875	1870	1877
148.5	1883.43	1881.17	2355348.83	2364648.27	-0.3933	1876	1870	1876
149	1884.06	1881.67	2364415.79	2373726.38	-0.3922	1877	1870	1877
149.5	1884.69	1882.17	2373484.5	2382807.64	-0.3913	1877	1870	1878
150	1885.32	1881.92	2382555.04	2391892.04	-0.3904	1876	1871	1877
150.5	1885.95	1881.33	2391623	2400979.58	-0.3897	1876	1871	1877
151	1886.58	1881.25	2400689.79	2410070.27	-0.3892	1875	1871	1877
151.5	1887.21	1880.83	2409755.54	2419164.09	-0.3889	1876	1870	1876
152	1887.83	1879.58	2418817.17	2428261.06	-0.3889	1874	1869	1875
152.5	1888.46	1880.67	2427875.88	2437361.17	-0.3892	1876	1870	1876
153	1889.09	1881.5	2436939.63	2446464.43	-0.3893	1877	1872	1876
153.5	1889.72	1883.17	2446009.13	2455570.82	-0.3894	1879	1873	1877
154	1890.35	1885.42	2455088.5	2464680.36	-0.3892	1880	1875	1879
154.5	1890.98	1886.5	2464177.54	2473793.04	-0.3887	1881	1876	1881
155	1891.6	1888.42	2473273.42	2482908.86	-0.3881	1883	1879	1883
155.5	1892.23	1889.83	2482377.92	2492027.82	-0.3872	1884	1881	1884
156	1892.86	1891	2491489	2501149.92	-0.3863	1885	1880	1887
156.5	1893.49	1891.17	2500604.71	2510275.17	-0.3852	1885	1880	1887
157	1894.12	1891.58	2509720.92	2519403.56	-0.3843	1886	1881	1887
157.5	1894.75	1892.33	2518839.79	2528535.09	-0.3834	1886	1881	1888
158	1895.37	1891.92	2527960.83	2537669.76	-0.3826	1885	1882	1886
158.5	1896	1892.33	2537080.92	2546807.58	-0.3819	1886	1882	1886
159	1896.63	1892.92	2546204.63	2555948.53	-0.3812	1887	1884	1886
159.5	1897.26	1894.25	2555330.54	2565092.63	-0.3806	1888	1884	1889
160	1897.89	1896.5	2564465.67	2574239.87	-0.3797	1890	1887	1891
160.5	1898.52	1897.58	2573610.58	2583390.26	-0.3786	1890	1887	1892
161	1899.14	1898.08	2582759.63	2592543.78	-0.3774	1891	1889	1892
161.5	1899.77	1898.25	2591910.63	2601700.45	-0.3763	1892	1888	1892
162	1900.4	1898.42	2601062.63	2610860.26	-0.3753	1891	1888	1893
162.5	1901.03	1898.83	2610215.38	2620023.21	-0.3743	1892	1888	1894
163	1901.66	1898.42	2619369.17	2629189.3	-0.3735	1892	1889	1893
163.5	1902.29	1897.58	2628519.54	2638358.53	-0.3729	1890	1888	1892
164	1902.92	1895.58	2637665.29	2647530.91	-0.3726	1888	1886	1890
164.5	1903.54	1894.75	2646801.96	2656706.43	-0.3728	1887	1884	1891
165	1904.17	1894.67	2655935.54	2665885.09	-0.3732	1888	1884	1890
165.5	1904.8	1896.17	2665070.25	2675066.89	-0.3737	1890	1886	1891
166	1905.43	1898.42	2674214.13	2684251.84	-0.3739	1892	1889	1894
166.5	1906.06	1900.67	2683369.63	2693439.92	-0.3739	1893	1891	1896
167	1906.69	1901.83	2692534.75	2702631.15	-0.3736	1895	1892	1897
167.5	1907.31	1901.92	2701704.88	2711825.52	-0.3732	1894	1893	1897

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168	1907.94	1902.33	2710875.13	2721023.03	-0.3729	1894	1892	1898
168.5	1908.57	1902.42	2720047	2730223.69	-0.3727	1894	1893	1897
169	1909.2	1902.08	2729218.25	2739427.49	-0.3727	1895	1893	1897
169.5	1909.83	1901.08	2738387	2748634.42	-0.3728	1894	1892	1896
170	1910.46	1901.58	2747552.25	2757844.5	-0.3732	1894	1892	1897
170.5	1911.08	1903.08	2756722.58	2767057.73	-0.3735	1896	1894	1899
171	1911.71	1904.5	2765900.42	2776274.09	-0.3737	1897	1895	1900
171.5	1912.34	1905.33	2775084.71	2785493.6	-0.3737	1898	1896	1900
172	1912.97	1907	2784273.58	2794716.25	-0.3737	1900	1897	1902
172.5	1913.6	1907.5	2793470.42	2803942.04	-0.3735	1900	1898	1902
173	1914.23	1908.17	2802669.25	2813170.97	-0.3733	1901	1899	1903
173.5	1914.85	1910.08	2811873.33	2822403.05	-0.3731	1903	1900	1905
174	1915.48	1911.75	2821087.63	2831638.26	-0.3726	1904	1902	1906
174.5	1916.11	1912.17	2830307	2840876.62	-0.3721	1905	1902	1908
175	1916.74	1913.5	2839529.08	2850118.12	-0.3715	1906	1902	1909
175.5	1917.37	1914.42	2848758.04	2859362.76	-0.3709	1907	1903	1911
176	1918	1915.25	2857992.67	2868610.55	-0.3701	1908	1905	1911
176.5	1918.63	1914.92	2867227.33	2877861.47	-0.3695	1907	1905	1911
177	1919.25	1915.67	2876462.46	2887115.54	-0.369	1908	1906	1912
177.5	1919.88	1916.5	2885702.75	2896372.75	-0.3684	1908	1907	1913
178	1920.51	1916.92	2894946.25	2905633.11	-0.3678	1908	1908	1913
178.5	1921.14	1917.25	2904191.42	2914896.6	-0.3673	1908	1907	1914
179	1921.77	1916.92	2913436.96	2924163.24	-0.3668	1908	1906	1913
179.5	1922.4	1916.5	2922680.54	2933433.02	-0.3665	1908	1906	1913
180	1923.02	1917	2931924.04	2942705.94	-0.3664	1909	1907	1913

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Time (min)	Furnace Probe #4 (°F)	Furnace Probe #5 (°F)	Furnace Probe #6 (°F)	Furnace Probe #7 (°F)	Furnace Probe #8 (°F)	Furnace Probe #9 (°F)	Furnace Probe #10 (°F)	Furnace Probe #11 (°F)	Furnace Probe #12 (°F)
0	85	85	85	85	85	86	86	84	84
0.5	93	89	89	92	88	87	88	86	88
1	131	120	110	131	112	102	116	118	121
1.5	189	203	160	186	160	157	200	195	184
2	258	318	229	277	243	248	333	317	323
2.5	373	452	311	415	354	348	482	476	464
3	492	584	402	559	483	450	616	640	583
3.5	597	692	489	685	609	543	726	775	685
4	697	789	577	798	730	635	826	891	782
4.5	797	884	667	902	855	728	920	992	879
5	902	973	759	995	960	824	1007	1078	970
5.5	1000	1048	851	1075	1049	917	1084	1152	1055
6	1084	1109	941	1140	1124	999	1145	1207	1122
6.5	1139	1152	1021	1186	1173	1063	1189	1238	1160
7	1178	1183	1074	1218	1206	1112	1219	1262	1194
7.5	1204	1204	1114	1237	1232	1147	1235	1277	1219
8	1218	1215	1141	1248	1242	1168	1244	1279	1228
8.5	1227	1221	1160	1255	1247	1184	1250	1278	1234
9	1240	1231	1178	1266	1257	1200	1261	1286	1246
9.5	1256	1248	1199	1282	1275	1218	1276	1306	1270
10	1276	1267	1222	1300	1297	1239	1295	1328	1293
10.5	1293	1283	1241	1316	1312	1256	1311	1342	1307
11	1304	1291	1255	1327	1319	1272	1323	1348	1312
11.5	1315	1304	1269	1340	1328	1287	1337	1358	1322
12	1330	1318	1285	1354	1341	1303	1351	1372	1338
12.5	1342	1330	1300	1367	1353	1317	1364	1383	1350
13	1354	1342	1313	1379	1362	1331	1377	1393	1361
13.5	1364	1353	1325	1390	1372	1345	1389	1402	1371
14	1374	1362	1336	1400	1380	1357	1400	1410	1380
14.5	1382	1371	1347	1408	1389	1367	1406	1418	1389
15	1390	1378	1357	1415	1397	1375	1413	1424	1396
15.5	1397	1386	1366	1421	1403	1383	1419	1430	1403
16	1403	1393	1374	1428	1410	1390	1425	1436	1411
16.5	1409	1399	1381	1434	1416	1398	1432	1441	1418
17	1415	1403	1388	1439	1422	1406	1440	1446	1426
17.5	1422	1411	1396	1447	1428	1416	1450	1452	1433
18	1431	1420	1404	1455	1436	1425	1458	1461	1442
18.5	1437	1426	1411	1461	1443	1432	1463	1466	1446
19	1443	1432	1418	1467	1448	1438	1469	1471	1452
19.5	1448	1437	1424	1472	1452	1443	1473	1476	1458
20	1454	1440	1430	1477	1457	1448	1478	1481	1464
20.5	1459	1446	1436	1482	1463	1454	1483	1487	1470

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Time (min)	Furnace Probe #4 (°F)	Furnace Probe #5 (°F)	Furnace Probe #6 (°F)	Furnace Probe #7 (°F)	Furnace Probe #8 (°F)	Furnace Probe #9 (°F)	Furnace Probe #10 (°F)	Furnace Probe #11 (°F)	Furnace Probe #12 (°F)
21	1465	1452	1443	1488	1470	1461	1489	1493	1476
21.5	1472	1461	1451	1496	1477	1467	1496	1501	1484
22	1478	1466	1457	1501	1482	1474	1502	1506	1489
22.5	1484	1470	1462	1506	1487	1481	1508	1511	1495
23	1489	1476	1469	1512	1493	1487	1514	1517	1502
23.5	1494	1483	1477	1516	1500	1490	1517	1525	1513
24	1499	1489	1483	1521	1506	1496	1522	1529	1517
24.5	1503	1492	1487	1525	1508	1500	1526	1530	1519
25	1505	1494	1489	1527	1510	1505	1530	1533	1523
25.5	1508	1497	1492	1530	1513	1510	1534	1535	1524
26	1512	1500	1496	1534	1515	1514	1538	1538	1528
26.5	1517	1505	1501	1539	1519	1519	1543	1543	1533
27	1521	1509	1505	1542	1525	1522	1546	1547	1537
27.5	1525	1514	1510	1547	1529	1526	1549	1551	1540
28	1531	1519	1515	1552	1534	1530	1554	1556	1547
28.5	1535	1525	1521	1556	1539	1537	1560	1562	1553
29	1539	1529	1525	1561	1544	1541	1564	1567	1559
29.5	1544	1530	1528	1563	1546	1546	1569	1570	1561
30	1548	1534	1532	1567	1549	1551	1573	1572	1563
30.5	1551	1538	1535	1571	1552	1554	1576	1575	1566
31	1554	1542	1539	1574	1555	1559	1580	1577	1569
31.5	1557	1547	1544	1578	1559	1562	1583	1583	1574
32	1560	1550	1548	1581	1564	1564	1585	1587	1579
32.5	1563	1554	1551	1584	1567	1567	1587	1589	1581
33	1565	1556	1554	1586	1569	1569	1589	1591	1583
33.5	1566	1557	1555	1588	1570	1571	1591	1592	1586
34	1569	1560	1559	1590	1573	1574	1593	1595	1589
34.5	1574	1564	1562	1595	1576	1578	1598	1599	1591
35	1578	1568	1566	1598	1579	1583	1602	1602	1594
35.5	1581	1572	1570	1602	1582	1587	1606	1605	1598
36	1586	1577	1576	1607	1586	1592	1611	1611	1606
36.5	1591	1581	1580	1611	1591	1597	1617	1617	1613
37	1595	1584	1585	1615	1595	1600	1619	1622	1619
37.5	1597	1587	1588	1617	1598	1602	1620	1624	1622
38	1600	1589	1591	1619	1600	1604	1622	1627	1625
38.5	1603	1590	1593	1622	1602	1604	1624	1628	1628
39	1605	1593	1595	1623	1604	1606	1625	1630	1629
39.5	1603	1591	1595	1621	1603	1606	1623	1626	1624
40	1602	1590	1595	1620	1603	1606	1622	1626	1625
40.5	1603	1593	1596	1622	1605	1606	1623	1627	1626
41	1604	1594	1597	1624	1606	1610	1627	1627	1627
41.5	1608	1598	1599	1628	1610	1615	1632	1632	1630

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Time (min)	Furnace Probe #4 (°F)	Furnace Probe #5 (°F)	Furnace Probe #6 (°F)	Furnace Probe #7 (°F)	Furnace Probe #8 (°F)	Furnace Probe #9 (°F)	Furnace Probe #10 (°F)	Furnace Probe #11 (°F)	Furnace Probe #12 (°F)
42	1612	1602	1604	1632	1615	1619	1636	1638	1637
42.5	1616	1606	1608	1636	1619	1622	1639	1642	1641
43	1620	1610	1611	1639	1621	1626	1644	1645	1644
43.5	1622	1613	1614	1642	1624	1629	1647	1648	1647
44	1625	1616	1617	1645	1627	1633	1651	1651	1651
44.5	1629	1618	1620	1648	1630	1637	1654	1653	1653
45	1630	1620	1622	1650	1631	1638	1655	1654	1653
45.5	1631	1621	1624	1651	1633	1638	1655	1656	1656
46	1633	1622	1627	1652	1634	1639	1655	1658	1658
46.5	1636	1624	1629	1654	1635	1639	1657	1657	1659
47	1637	1626	1631	1656	1637	1641	1658	1659	1660
47.5	1641	1630	1635	1660	1641	1645	1663	1666	1667
48	1644	1634	1637	1664	1646	1647	1666	1670	1669
48.5	1647	1638	1641	1667	1651	1649	1668	1673	1672
49	1650	1641	1643	1670	1652	1652	1671	1674	1673
49.5	1651	1642	1644	1671	1654	1656	1674	1676	1675
50	1653	1644	1647	1673	1658	1657	1676	1679	1679
50.5	1657	1647	1651	1677	1661	1661	1680	1683	1684
51	1660	1651	1655	1680	1664	1664	1682	1687	1688
51.5	1662	1652	1657	1681	1664	1667	1685	1686	1687
52	1663	1653	1658	1683	1665	1671	1687	1687	1690
52.5	1664	1653	1659	1683	1665	1672	1688	1687	1689
53	1665	1654	1659	1684	1666	1673	1688	1688	1690
53.5	1666	1655	1660	1685	1667	1674	1689	1688	1690
54	1667	1656	1661	1687	1668	1676	1691	1689	1691
54.5	1669	1658	1663	1689	1669	1678	1694	1691	1693
55	1673	1661	1666	1692	1673	1682	1698	1694	1695
55.5	1675	1663	1669	1694	1676	1683	1699	1697	1697
56	1676	1665	1671	1695	1677	1684	1700	1699	1700
56.5	1678	1668	1674	1697	1680	1685	1702	1702	1703
57	1679	1670	1676	1700	1682	1687	1704	1703	1705
57.5	1682	1673	1677	1703	1684	1689	1706	1706	1707
58	1684	1675	1680	1705	1687	1690	1707	1708	1709
58.5	1686	1678	1682	1707	1690	1694	1711	1711	1711
59	1688	1679	1684	1709	1691	1697	1714	1713	1714
59.5	1690	1682	1686	1710	1693	1699	1714	1714	1715
60	1691	1683	1687	1711	1694	1700	1714	1714	1715
60.5	1692	1684	1689	1712	1695	1700	1715	1716	1717
61	1693	1684	1690	1713	1695	1700	1715	1717	1717
61.5	1694	1684	1691	1714	1696	1701	1716	1717	1717
62	1694	1685	1691	1713	1696	1703	1717	1717	1718
62.5	1695	1686	1691	1715	1696	1704	1719	1717	1718

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Time (min)	Furnace Probe #4 (°F)	Furnace Probe #5 (°F)	Furnace Probe #6 (°F)	Furnace Probe #7 (°F)	Furnace Probe #8 (°F)	Furnace Probe #9 (°F)	Furnace Probe #10 (°F)	Furnace Probe #11 (°F)	Furnace Probe #12 (°F)
63	1697	1689	1693	1716	1699	1706	1720	1720	1720
63.5	1700	1691	1696	1720	1701	1708	1724	1723	1723
64	1704	1695	1700	1724	1705	1712	1729	1728	1728
64.5	1708	1700	1705	1728	1709	1716	1733	1733	1734
65	1712	1702	1708	1731	1712	1718	1734	1735	1735
65.5	1713	1703	1709	1732	1713	1719	1735	1736	1737
66	1713	1704	1711	1732	1715	1720	1736	1737	1739
66.5	1714	1705	1712	1733	1715	1722	1737	1737	1739
67	1715	1705	1712	1734	1715	1724	1739	1738	1740
67.5	1715	1706	1713	1735	1716	1725	1740	1738	1741
68	1716	1708	1714	1735	1716	1725	1740	1739	1742
68.5	1717	1709	1716	1736	1718	1726	1742	1741	1744
69	1719	1711	1718	1738	1721	1727	1743	1744	1748
69.5	1720	1712	1719	1740	1723	1727	1743	1745	1749
70	1722	1714	1721	1742	1724	1730	1746	1746	1750
70.5	1724	1715	1723	1744	1725	1733	1749	1747	1751
71	1726	1717	1724	1746	1727	1735	1750	1749	1753
71.5	1728	1720	1727	1747	1730	1735	1751	1751	1754
72	1730	1721	1728	1748	1731	1737	1752	1752	1755
72.5	1731	1722	1730	1750	1733	1739	1754	1754	1757
73	1734	1725	1733	1753	1736	1741	1757	1758	1761
73.5	1736	1728	1735	1755	1738	1742	1759	1759	1762
74	1738	1730	1737	1757	1740	1744	1761	1761	1764
74.5	1740	1731	1739	1758	1741	1746	1763	1763	1766
75	1740	1733	1740	1759	1742	1747	1763	1764	1766
75.5	1741	1733	1741	1760	1742	1749	1765	1764	1767
76	1742	1735	1742	1761	1743	1750	1765	1765	1767
76.5	1744	1735	1743	1763	1744	1751	1768	1766	1769
77	1746	1737	1744	1765	1746	1752	1768	1768	1771
77.5	1747	1738	1745	1765	1747	1754	1769	1769	1772
78	1747	1739	1746	1765	1747	1753	1769	1769	1771
78.5	1746	1739	1746	1765	1747	1753	1768	1768	1772
79	1746	1739	1746	1765	1748	1753	1768	1769	1773
79.5	1746	1738	1746	1765	1748	1754	1768	1769	1773
80	1748	1739	1747	1766	1749	1756	1770	1770	1774
80.5	1749	1742	1749	1768	1751	1757	1773	1772	1776
81	1751	1743	1751	1770	1753	1758	1774	1774	1778
81.5	1752	1743	1752	1771	1753	1760	1775	1775	1778
82	1753	1744	1753	1772	1755	1761	1776	1776	1779
82.5	1754	1747	1754	1773	1756	1762	1777	1777	1781
83	1755	1748	1756	1773	1758	1762	1777	1779	1783
83.5	1758	1751	1758	1776	1761	1764	1780	1781	1786

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84	1761	1753	1760	1780	1763	1768	1785	1784	1788
84.5	1763	1755	1763	1782	1765	1770	1786	1785	1789
85	1765	1756	1764	1783	1766	1771	1787	1787	1790
85.5	1765	1756	1765	1784	1768	1771	1788	1789	1792
86	1766	1757	1766	1785	1769	1773	1790	1789	1792
86.5	1767	1761	1768	1787	1770	1775	1792	1791	1794
87	1771	1764	1771	1790	1773	1779	1795	1795	1799
87.5	1774	1766	1773	1793	1775	1782	1798	1799	1802
88	1776	1768	1776	1794	1777	1786	1800	1801	1804
88.5	1778	1770	1778	1797	1777	1788	1802	1801	1805
89	1779	1770	1778	1797	1778	1787	1802	1800	1804
89.5	1779	1770	1779	1798	1779	1787	1802	1800	1803
90	1779	1770	1780	1798	1780	1786	1802	1800	1805
90.5	1780	1772	1781	1799	1782	1787	1803	1803	1807
91	1781	1773	1782	1800	1783	1789	1804	1804	1809
91.5	1781	1774	1783	1799	1783	1790	1806	1804	1810
92	1783	1775	1784	1802	1783	1792	1807	1805	1811
92.5	1784	1775	1784	1802	1784	1793	1807	1806	1811
93	1783	1776	1785	1801	1783	1794	1807	1806	1812
93.5	1784	1777	1786	1802	1784	1795	1808	1807	1813
94	1785	1777	1786	1802	1785	1793	1807	1808	1813
94.5	1786	1778	1787	1803	1786	1793	1807	1808	1813
95	1788	1782	1789	1806	1790	1795	1811	1811	1816
95.5	1792	1784	1792	1810	1793	1799	1816	1814	1819
96	1795	1787	1795	1814	1795	1802	1818	1817	1821
96.5	1795	1789	1797	1814	1798	1803	1819	1818	1822
97	1795	1789	1798	1814	1798	1803	1819	1818	1822
97.5	1797	1790	1799	1815	1799	1805	1820	1820	1825
98	1798	1791	1800	1816	1800	1806	1820	1821	1826
98.5	1798	1791	1801	1816	1800	1807	1821	1821	1826
99	1798	1791	1801	1817	1800	1807	1821	1820	1826
99.5	1798	1790	1800	1816	1800	1807	1821	1820	1825
100	1797	1789	1800	1815	1799	1806	1820	1820	1825
100.5	1796	1790	1800	1814	1799	1804	1819	1819	1824
101	1799	1792	1801	1817	1801	1807	1823	1821	1827
101.5	1803	1796	1805	1822	1805	1812	1828	1827	1831
102	1807	1801	1809	1825	1809	1816	1832	1832	1836
102.5	1811	1804	1812	1829	1811	1821	1836	1834	1840
103	1813	1805	1813	1830	1813	1822	1837	1837	1843
103.5	1813	1806	1814	1831	1814	1821	1836	1835	1841
104	1812	1806	1815	1830	1814	1820	1835	1835	1840
104.5	1811	1805	1816	1829	1814	1820	1834	1835	1840

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Time (min)	Furnace Probe #4 (°F)	Furnace Probe #5 (°F)	Furnace Probe #6 (°F)	Furnace Probe #7 (°F)	Furnace Probe #8 (°F)	Furnace Probe #9 (°F)	Furnace Probe #10 (°F)	Furnace Probe #11 (°F)	Furnace Probe #12 (°F)
105	1812	1805	1816	1830	1814	1820	1835	1834	1841
105.5	1813	1806	1817	1832	1815	1821	1837	1835	1842
106	1815	1808	1818	1833	1816	1822	1837	1837	1843
106.5	1815	1808	1819	1834	1817	1823	1838	1837	1843
107	1816	1808	1819	1834	1817	1825	1840	1838	1844
107.5	1818	1811	1820	1836	1819	1826	1840	1840	1847
108	1820	1812	1822	1838	1820	1830	1842	1843	1849
108.5	1821	1813	1824	1839	1821	1830	1844	1844	1849
109	1822	1814	1825	1839	1823	1831	1843	1845	1852
109.5	1821	1814	1826	1839	1822	1830	1844	1845	1852
110	1823	1815	1826	1840	1823	1831	1846	1846	1853
110.5	1824	1816	1827	1841	1825	1832	1846	1847	1854
111	1824	1817	1828	1841	1826	1833	1848	1848	1856
111.5	1825	1818	1829	1842	1827	1833	1847	1849	1856
112	1826	1819	1830	1843	1828	1834	1848	1850	1856
112.5	1826	1820	1831	1843	1829	1835	1848	1850	1856
113	1826	1820	1832	1844	1830	1836	1848	1851	1857
113.5	1828	1822	1833	1846	1831	1839	1851	1852	1857
114	1829	1822	1834	1847	1832	1840	1852	1853	1859
114.5	1830	1824	1835	1848	1833	1839	1852	1853	1860
115	1830	1825	1835	1848	1833	1840	1854	1853	1860
115.5	1829	1825	1836	1847	1833	1839	1852	1853	1861
116	1830	1824	1837	1848	1834	1839	1853	1853	1860
116.5	1831	1826	1838	1849	1835	1839	1853	1855	1862
117	1832	1826	1838	1850	1835	1841	1854	1855	1862
117.5	1832	1826	1838	1850	1836	1841	1855	1855	1861
118	1833	1827	1838	1851	1837	1841	1855	1855	1862
118.5	1833	1827	1839	1851	1837	1841	1855	1856	1863
119	1834	1829	1840	1852	1838	1843	1855	1857	1864
119.5	1834	1829	1840	1853	1839	1844	1857	1858	1865
120	1835	1830	1842	1854	1840	1845	1859	1860	1866
120.5	1835	1830	1842	1854	1840	1847	1859	1860	1865
121	1835	1830	1842	1854	1840	1846	1858	1860	1866
121.5	1836	1829	1842	1853	1840	1847	1858	1860	1866
122	1834	1829	1841	1852	1840	1846	1856	1859	1865
122.5	1834	1829	1841	1852	1839	1846	1857	1859	1865
123	1835	1829	1842	1853	1840	1847	1858	1860	1867
123.5	1837	1831	1843	1854	1841	1849	1859	1861	1867
124	1838	1832	1843	1855	1842	1848	1860	1861	1867
124.5	1838	1832	1844	1856	1841	1849	1861	1860	1867
125	1839	1833	1844	1857	1842	1850	1862	1860	1867
125.5	1840	1833	1845	1858	1844	1853	1863	1863	1869

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Time (min)	Furnace Probe #4 (°F)	Furnace Probe #5 (°F)	Furnace Probe #6 (°F)	Furnace Probe #7 (°F)	Furnace Probe #8 (°F)	Furnace Probe #9 (°F)	Furnace Probe #10 (°F)	Furnace Probe #11 (°F)	Furnace Probe #12 (°F)
126	1841	1835	1847	1859	1845	1853	1862	1864	1870
126.5	1841	1836	1848	1860	1846	1853	1864	1865	1871
127	1841	1836	1848	1859	1846	1855	1865	1865	1872
127.5	1842	1837	1848	1859	1847	1855	1865	1866	1873
128	1841	1837	1849	1860	1848	1855	1864	1867	1874
128.5	1841	1836	1848	1859	1846	1854	1864	1865	1871
129	1841	1836	1849	1858	1846	1854	1864	1865	1872
129.5	1839	1836	1848	1857	1845	1852	1863	1863	1871
130	1839	1835	1847	1857	1845	1850	1861	1863	1871
130.5	1838	1835	1847	1857	1845	1851	1862	1863	1871
131	1841	1837	1849	1860	1848	1853	1865	1866	1874
131.5	1844	1840	1852	1864	1851	1858	1869	1869	1878
132	1846	1842	1854	1865	1853	1860	1871	1872	1879
132.5	1848	1844	1856	1866	1854	1862	1872	1875	1881
133	1850	1847	1858	1868	1855	1864	1875	1877	1883
133.5	1851	1847	1859	1868	1857	1865	1874	1879	1885
134	1851	1847	1861	1867	1857	1863	1872	1878	1886
134.5	1848	1844	1859	1865	1855	1858	1869	1874	1884
135	1848	1845	1860	1866	1856	1859	1870	1876	1885
135.5	1851	1847	1861	1868	1858	1862	1873	1880	1887
136	1852	1849	1863	1870	1860	1863	1875	1882	1889
136.5	1854	1850	1863	1872	1860	1866	1877	1883	1890
137	1854	1851	1864	1872	1862	1867	1877	1884	1892
137.5	1855	1852	1865	1873	1863	1868	1879	1883	1891
138	1855	1852	1866	1873	1864	1867	1879	1883	1892
138.5	1855	1853	1866	1874	1865	1868	1879	1883	1892
139	1856	1854	1867	1874	1865	1868	1879	1883	1892
139.5	1857	1854	1867	1875	1864	1869	1879	1883	1891
140	1856	1853	1866	1874	1863	1869	1879	1883	1891
140.5	1855	1852	1866	1872	1863	1868	1878	1882	1890
141	1854	1852	1866	1872	1863	1867	1877	1882	1890
141.5	1855	1854	1866	1873	1864	1867	1878	1883	1891
142	1855	1855	1868	1874	1865	1867	1879	1882	1891
142.5	1857	1857	1869	1875	1866	1868	1880	1883	1892
143	1859	1860	1871	1878	1869	1869	1883	1887	1895
143.5	1862	1863	1875	1881	1873	1875	1887	1890	1899
144	1865	1865	1876	1883	1874	1879	1889	1892	1901
144.5	1866	1865	1877	1884	1874	1879	1889	1892	1902
145	1864	1864	1877	1883	1874	1877	1888	1892	1902
145.5	1864	1865	1878	1883	1875	1876	1888	1892	1901
146	1865	1864	1877	1883	1874	1877	1888	1893	1901
146.5	1865	1865	1878	1883	1875	1879	1889	1893	1901

Thermotex   G102506902SAT-010   13 July 2016

Time (min)	Furnace Probe #4 (°F)	Furnace Probe #5 (°F)	Furnace Probe #6 (°F)	Furnace Probe #7 (°F)	Furnace Probe #8 (°F)	Furnace Probe #9 (°F)	Furnace Probe #10 (°F)	Furnace Probe #11 (°F)	Furnace Probe #12 (°F)
147	1865	1865	1879	1884	1876	1881	1891	1895	1904
147.5	1866	1866	1880	1884	1877	1883	1890	1895	1905
148	1867	1866	1881	1885	1878	1884	1891	1897	1905
148.5	1867	1866	1881	1885	1878	1883	1891	1896	1905
149	1868	1866	1881	1886	1878	1884	1891	1897	1905
149.5	1868	1866	1882	1886	1878	1885	1893	1897	1906
150	1868	1867	1882	1886	1878	1884	1892	1897	1905
150.5	1868	1867	1881	1885	1877	1883	1891	1896	1904
151	1866	1867	1882	1885	1878	1882	1891	1896	1905
151.5	1866	1866	1882	1884	1878	1882	1890	1896	1904
152	1865	1865	1880	1884	1876	1882	1890	1893	1902
152.5	1866	1865	1881	1885	1877	1882	1891	1895	1904
153	1867	1867	1881	1886	1878	1883	1892	1895	1904
153.5	1868	1869	1883	1888	1880	1884	1894	1897	1906
154	1871	1871	1885	1890	1883	1886	1897	1900	1908
154.5	1871	1873	1886	1891	1884	1888	1898	1901	1908
155	1873	1875	1888	1894	1885	1889	1900	1902	1910
155.5	1874	1877	1889	1894	1887	1890	1900	1905	1913
156	1876	1876	1890	1896	1888	1892	1901	1907	1914
156.5	1876	1876	1891	1896	1888	1893	1902	1906	1914
157	1877	1876	1891	1896	1889	1893	1902	1906	1915
157.5	1877	1877	1892	1896	1890	1894	1903	1908	1916
158	1876	1878	1892	1895	1890	1894	1901	1907	1917
158.5	1875	1878	1893	1895	1891	1894	1901	1909	1918
159	1876	1879	1894	1896	1892	1893	1901	1909	1918
159.5	1878	1879	1895	1897	1893	1894	1903	1911	1920
160	1878	1882	1897	1898	1895	1897	1904	1915	1924
160.5	1879	1883	1899	1899	1897	1898	1906	1916	1925
161	1880	1884	1899	1900	1897	1899	1907	1915	1924
161.5	1882	1883	1899	1902	1896	1901	1908	1913	1923
162	1882	1883	1899	1902	1897	1900	1908	1914	1924
162.5	1881	1884	1900	1902	1897	1901	1909	1914	1924
163	1881	1883	1900	1901	1897	1901	1908	1913	1923
163.5	1881	1883	1899	1901	1896	1900	1907	1913	1921
164	1878	1882	1897	1898	1894	1899	1905	1911	1919
164.5	1878	1880	1896	1898	1893	1897	1905	1910	1918
165	1878	1879	1896	1898	1893	1897	1906	1909	1918
165.5	1879	1882	1897	1900	1894	1898	1908	1910	1919
166	1881	1885	1898	1902	1897	1900	1909	1913	1921
166.5	1883	1887	1901	1904	1899	1901	1910	1917	1926
167	1884	1888	1902	1904	1900	1904	1911	1918	1927
167.5	1884	1888	1903	1904	1900	1904	1912	1918	1926

Intertek

Thermotex   G102506902SAT-010   13 July 2016

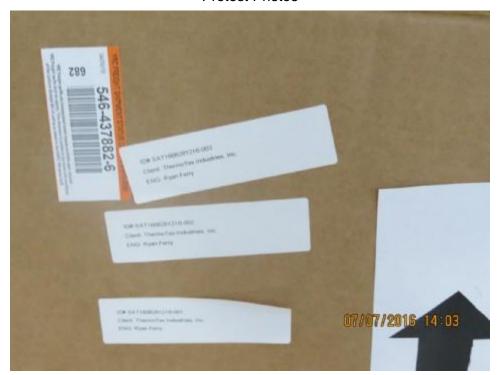| Time (min)	Furnace Probe #4 (°F)	Furnace Probe #5 (°F)	Furnace Probe #6 (°F)	Furnace Probe #7 (°F)	Furnace Probe #8 (°F)	Furnace Probe #9 (°F)	Furnace Probe #10 (°F)	Furnace Probe #11 (°F)	Furnace Probe #12 (°F)
168	1884	1888	1904	1905	1901	1905	1912	1918	1927
168.5	1884	1888	1904	1904	1901	1905	1912	1919	1928
169	1883	1888	1904	1903	1901	1905	1910	1918	1928
169.5	1882	1887	1903	1902	1899	1905	1911	1916	1926
170	1883	1887	1903	1903	1900	1905	1912	1917	1926
170.5	1884	1890	1904	1905	1902	1904	1911	1919	1929
171	1886	1890	1905	1907	1904	1905	1914	1921	1930
171.5	1887	1891	1906	1908	1904	1907	1916	1921	1930
172	1890	1892	1907	1911	1905	1909	1918	1922	1931
172.5	1890	1893	1908	1911	1906	1909	1918	1923	1932
173	1890	1894	1909	1911	1907	1910	1918	1923	1933
173.5	1892	1895	1911	1914	1909	1913	1920	1925	1934
174	1893	1898	1912	1915	1911	1915	1922	1927	1936
174.5	1895	1898	1913	1916	1911	1914	1922	1927	1935
175	1895	1899	1914	1916	1913	1917	1924	1929	1938
175.5	1896	1899	1915	1917	1914	1918	1925	1929	1939
176	1897	1901	1916	1918	1914	1918	1925	1930	1940
176.5	1897	1900	1916	1918	1913	1918	1925	1930	1939
177	1897	1901	1916	1918	1915	1919	1925	1931	1940
177.5	1898	1902	1917	1919	1915	1920	1926	1932	1941
178	1898	1902	1917	1919	1915	1922	1927	1932	1942
178.5	1898	1902	1918	1919	1916	1923	1927	1933	1942
179	1898	1902	1918	1919	1916	1922	1927	1932	1942
179.5	1898	1901	1918	1918	1915	1921	1926	1932	1942
180	1898	1902	1919	1919	1915	1922	1927	1932	1941

APPENDIX C:
Photos

Pretest Photos

Test photos

CALIBRATED INSTRUMENTATION USED FOR TESTING

Description	Serial No.	Calibration Due Date
100-Channel Data Acquisition System	99LE004	9/22/2016
Manometer	01LE013	10/26/2016
Thermo/Hygrometer	151860229	10/23/2017
Stop Watch	151950635	12/17/17

REVISION SUMMARY

DATE	SUMMARY
July 26, 2016	Original Issue Date