



# Fire Testing Laboratory



## TEST REPORT

Page 1 of 53

for

### American Wood Council

222 Catocin Circle SE, Suite 201  
Leesburg, VA 20175

### Standard Methods of Fire Tests of Building Construction and Materials ASTM E 119 – 11a

Test Report No: WP-1950


Assignment No: K-1089

Subject Material: Cross-Laminated Timber and Gypsum Board Wall Assembly (Load-Bearing)

Test Date: October 4, 2012

Report Date: October 15, 2012

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## Introduction

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The Fire Test Laboratory of NGC Testing Services (NGCTS) conducted testing for American Wood Council (AWC) on a load-bearing, Cross-Laminated Timber (CLT) and gypsum board wall assembly to evaluate its fire resistance properties when exposed to fire according to the pertinent test standard. Testing was conducted in accordance with ASTM E-119-11a (Standard Test Methods for Fire Tests of Building Construction and Materials). The test was conducted on October 4, 2012 and was witnessed by representatives of American Wood Council.

## Test Specimen

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### SAMPLE SELECTION

A total of four (4) specimen samples were provided for testing by American Wood Council. The specimen samples were described by the client as X-Lam 175-5s E1 panels, manufactured by Nordic Engineered Wood. Each panel measured, nominally, 175mm x 1524mm x 3048mm (6-7/8 in. x 60 in. x 120 in.). The specimen samples, which were delivered to NGCTS on September 25, 2012, were maintained as received in the Fire Test Laboratory until tested.

### CONSTRUCTION

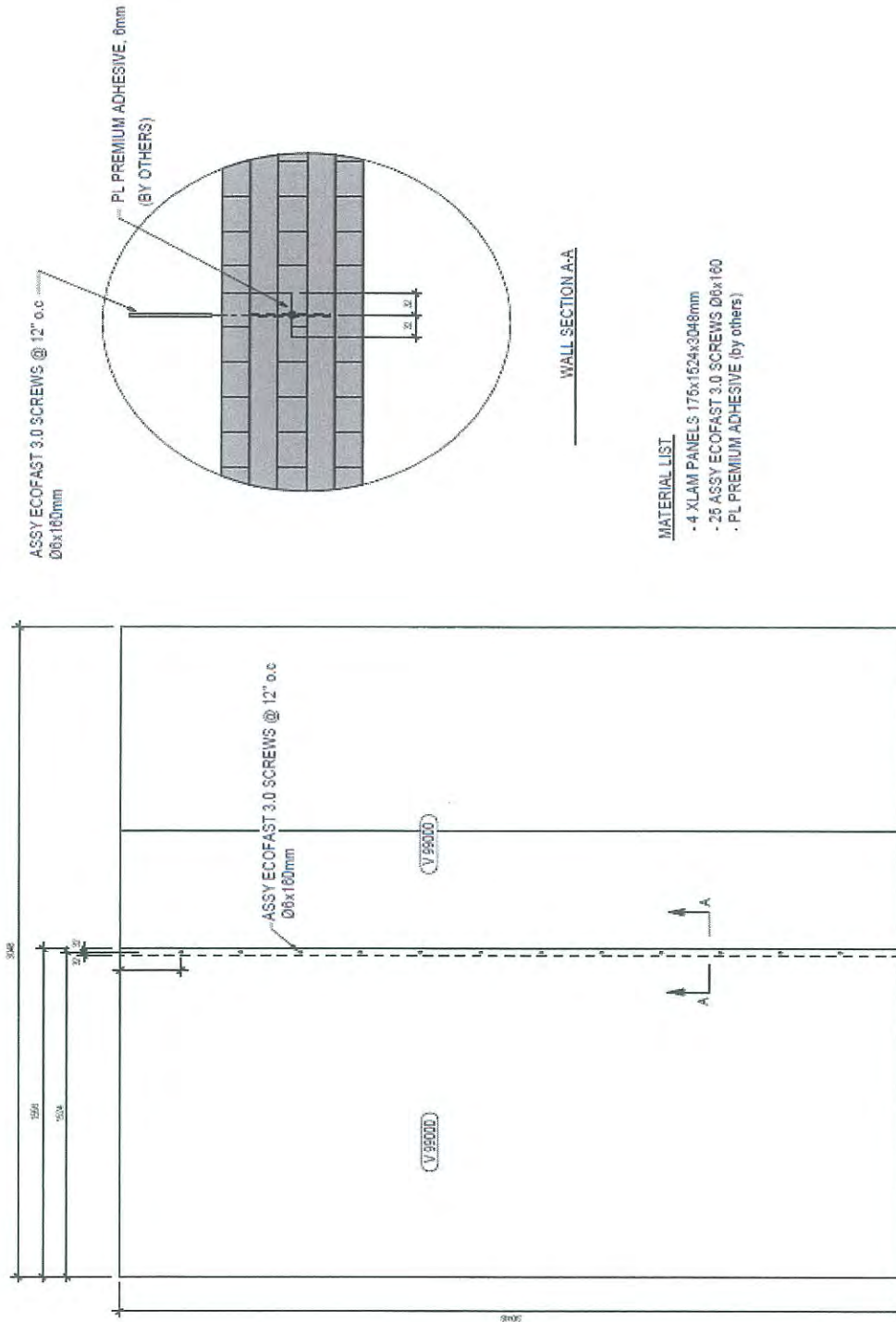
A 10' x 10' opening in a test frame was utilized to construct the 5-ply CLT wall and gypsum wallboard assembly that was evaluated in accordance with Test Method ASTM E 119-11a. The components of the assembly consisted of:

- **5-Ply CLT Wall**

The CLT wall was composed of two (2) X-Lam panels, positioned vertically in the test frame. The panels were connected to each other with a bead of PL Premium adhesive and ASSY ECOFAST 3.0 screws ( $\varnothing 6 \times 160 \text{mm}$ ) spaced 12 in. on center. A wall assembly detail drawing is provided on page 4. Mineral wool insulation filled any gaps between the CLT wall and the test frame.

- **Gypsum Sheathing**

A single layer of 5/8 in. thick, Type X gypsum wallboard was horizontally applied to each side of the CLT Wall. The wallboard was mechanically attached to the CLT wall with 2-1/4 in. long Type S drywall screws, spaced 12 in. on center. The wallboard joints were taped and coated with one layer of joint compound. The drywall screw heads were also covered with one layer of joint compound.



- MATERIAL LIST**
- 4 XLAM PANELS 176x1624x3048mm
  - 25 ASSY ECOFAST 3.0 SCREWS D6x160
  - PL PREMIUM ADHESIVE (by others)

 <p>TEL: 314-871-6532</p>	No. Project <b>0643</b>	Drawn by: CH Written by: JF Date: 10/15/12 Revision: A
	No. Test <b>0643</b>	WALL ASSEMBLY DETAIL 5 PLY CLT - 17E mm

CLT Wall Assembly Detail Drawing

## Testing and Evaluation Methods

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### INTRODUCTION

This report presents the results of an investigation of a fire test conducted according to ASTM E119 – Standard Test Methods of Fire Tests of Building Construction and Materials. This document contains a description of the material evaluated, procedures used, and the test results. Note that the results listed apply only to specimens tested, in the manner tested, and not to the entire production of this or similar specimens.

### LOADING

A superimposed live load of 87,000 lbs. total (system max.) was applied to the test specimen for the duration of testing. The load was applied by the use of eight (8) hydraulic jacks located under the bottom sill of the test frame.

### INSTRUMENTATION

NGCTS 10' x 10' vertical wall panel furnace was used to conduct the test. Furnace pressure control was maintained such that the neutral pressure plane was located at the top of the wall assembly. This resulted in negative pressure being applied to the entire wall assembly during the test.

Furnace temperature control was maintained with the use of nine (9), Type K insulated thermocouples equally spaced within the furnace chamber. The furnace temperatures were maintained in accordance with the ASTM E-119 time vs. temperature curve, as provided on page 35.


The test assembly was instrumented with nine (9) Type J thermocouples strategically located on the unexposed surface assembly in accordance with test method requirements. In addition, ten (10) Type J thermocouples were placed between the CLT wall and the gypsum board to provide membrane protection data. Five (5) membrane protection thermocouples were placed on each side – exposed and unexposed – of the wall. The locations of all test assembly thermocouples can be found on page 9. Temperature data was recorded at 15-second intervals for the entire test duration.

Lateral and vertical deflection measurements of the wall assembly, provided on page 6, were recorded at 10-minute intervals during the test. Lateral deflection measurements were taken between the wall's unexposed face and a taught string positioned across the test frame. Vertical deflection measurements were taken with a pair of dial indicators positioned below the bottom sill of the test frame.





## Test Observations

		<h1>TEST OBSERVATIONS</h1> <p>American Wood Council</p>			
DATE	10/04/2012	PROJECT NO.	K -1089	TEST NO.	WP-1950
ENGINEER	MJR	TECHNICIANS	SMA	SHEET NO.	1
<b>Time:</b> (hr:min:sec)		<b>Observation:</b>			
0:03:45	ES	Wallboard paper ignition			
0:06:00	ES	Most of paper charred			
0:07:30	ES	Joint compound starting to lift on edges			
0:17:00	ES	Joint compound starting to fall off horizontal joints			
0:25:00	US	Initial cracking and popping sounds coming from wall assembly			
0:26:00	US	Smoke emitting from upper corners or wall assembly			
0:28:00	ES	Wallboard joints opened up 1/2"			
0:30:00	ES	CLT wall flaming through opened wallboard joints			
0:35:00	US	Smoke increasing from upper corners or wall assembly			
0:35:00	US	"Sweat" dripping from upper north corner of wall assembly			
0:50:00	ES	Wallboard joints opened 1"; flaming of CLT wall through joints			
1:00:00	ES	Wallboard joints opened 1"; flaming of CLT wall through joints			
1:07:00	ES	Wallboard starting to buckle			
1:12:00	US	Smoke decreasing at upper south corner; continues at upper north corner			
1:16:00	ES	Wallboard starting to fall off			
1:35:00	ES	Most of wallboard has fallen off; intense flaming of CLT wall			
1:47:00	ES	Face layer of CLT wall falling off; second layer flaming			
2:10:00	ES	Second layer of CLT wall falling off			
2:15:00	ES	Most of third layer of CLT wall flaming			
2:20:00	US	Smoking ceased at upper south corner; continues at upper north corner			
2:45:00	ES	Third layer of CLT wall falling off			
3:05:57	US	<b>Structural Failure</b> - Flaming on unexposed side @ south perimeter of wall assembly			
3:06:44	US	Increased flaming on unexposed side @ south perimeter of wall assembly			
3:07:42	US	Test terminated			
		ES - Exposed side			
		US - Unexposed side			

## Conclusion

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The test specimen withstood the effects of fire exposure in accordance with ASTM E119 for a period of 3 hours, 5 minutes and 57 seconds (3:05:57) before failing under load (i.e., structural failure).

The finish rating (avg.) was established as 22 minutes and 15 seconds.

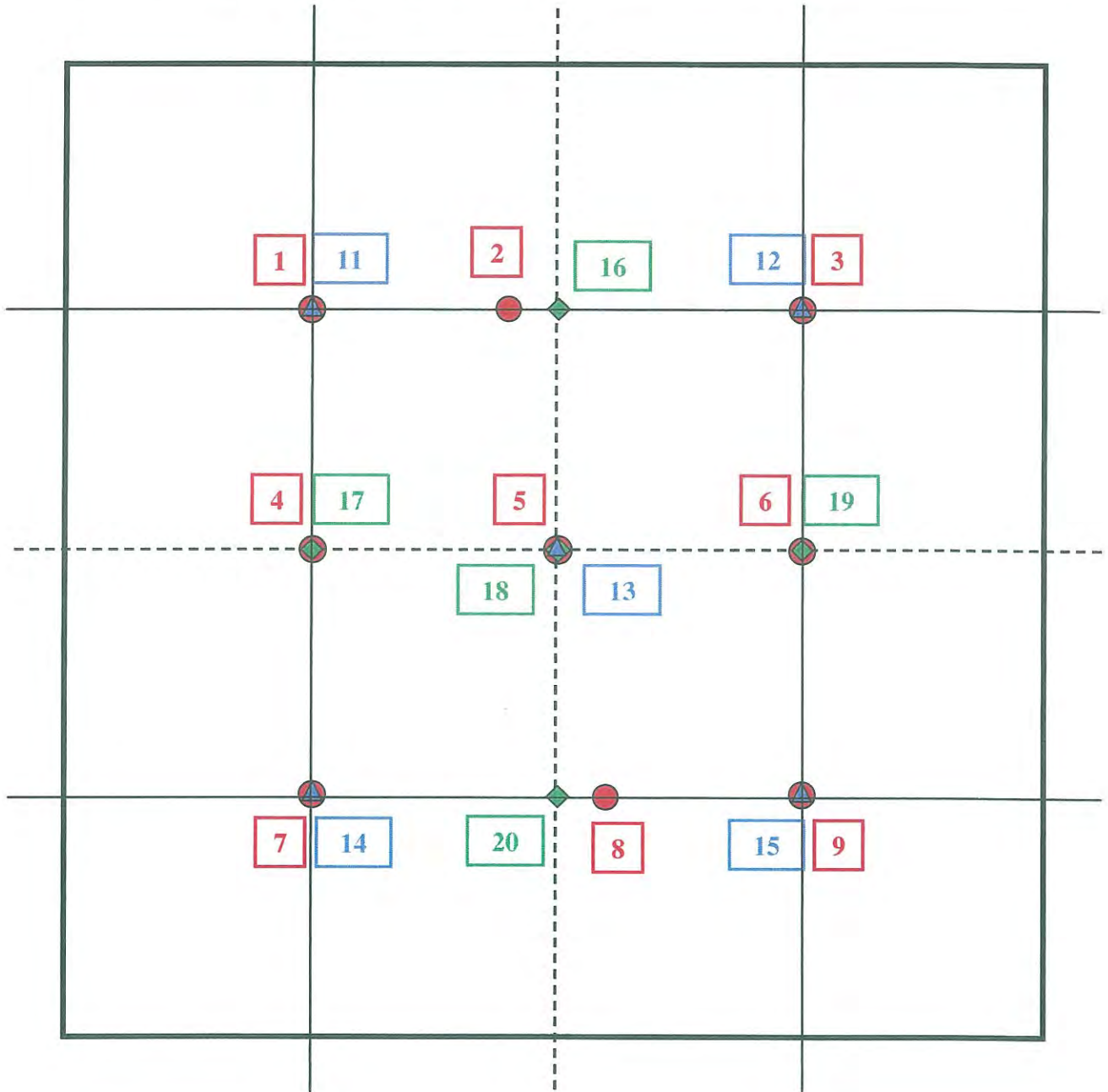
At the time of failure the maximum recorded unexposed surface temperature was 74 °F on individual thermocouple WP05. The average temperature of all nine (9) unexposed surface thermocouples was 71 °F.

The test was continued after structural failure for informational only purposes. The test was terminated at 03:07:42.

No hose stream test was conducted on the test specimen.



## Wall Assembly Thermocouple Layout



● Unexposed Side – Surface Thermocouple Locations (WP01 – WP09)

▲ Exposed Side – Membrane Protection Thermocouple Locations (WP11 – WP15)

◆ Unexposed Side – Membrane Protection Thermocouple Locations (WP16 – WP20)



## Unexposed Surface Thermocouple Temperatures

Time (min)	UNEXPOSED SURFACE TEMP. °F				WP-1950	10/4/2012	AWC CLT WALL		K-1089	Grp Avg
	WP01	WP02	WP03	WP04	WP05	WP06	WP07	WP08	WP09	
0.00	69	69	69	69	68	68	68	68	69	69
0.25	69	69	69	69	68	68	68	68	69	69
0.50	69	69	69	69	68	68	68	68	69	69
0.75	69	69	69	69	68	68	68	68	69	69
1.00	69	69	69	69	68	68	68	68	69	69
1.25	69	69	69	69	68	68	68	68	69	69
1.50	69	69	69	69	68	68	68	68	69	69
1.75	69	69	69	69	68	68	68	68	69	69
2.00	69	69	69	69	68	68	68	68	69	69
2.25	69	69	69	69	68	68	68	68	69	69
2.50	69	69	69	69	68	68	68	68	69	69
2.75	69	69	69	69	68	68	68	68	69	69
3.00	69	69	69	69	68	68	68	68	69	69
3.25	69	69	69	69	68	68	68	68	69	69
3.50	69	69	69	69	68	68	68	68	69	69
3.75	69	68	69	69	68	68	68	68	69	69
4.00	69	69	68	69	68	68	68	68	69	69
4.25	69	69	68	69	68	68	68	68	69	69
4.50	69	69	69	68	68	68	68	68	69	69
4.75	69	69	69	69	68	68	68	68	69	69
5.00	69	69	69	69	68	68	68	68	69	69
5.25	69	69	69	69	68	68	68	68	69	69
5.50	69	69	69	69	68	68	68	68	69	69
5.75	69	69	69	69	68	68	68	68	69	69
6.00	69	69	69	69	68	68	68	68	69	69
6.25	69	69	69	69	68	68	68	68	69	69
6.50	69	69	69	69	68	68	68	68	69	69
6.75	69	69	69	69	68	68	68	68	69	69
7.00	69	69	69	69	68	68	68	68	69	69
7.25	69	69	69	69	68	68	68	68	69	69
7.50	69	69	69	69	68	68	68	68	69	69
7.75	69	69	69	69	68	68	68	68	69	69
8.00	69	69	69	69	68	68	68	68	69	69
8.25	69	69	69	69	68	68	68	68	69	69
8.50	69	69	69	69	69	68	68	68	69	69
8.75	69	69	69	69	69	68	68	68	69	69
9.00	69	68	69	69	68	68	68	68	69	69
9.25	69	69	68	69	68	68	68	68	69	69
9.50	69	69	69	69	68	68	68	68	69	69
9.75	69	69	69	69	68	68	68	68	69	69
10.00	69	69	69	69	68	68	68	68	69	69
10.25	69	69	69	69	69	68	68	68	69	69
10.50	69	69	69	69	69	68	68	68	69	69
10.75	69	69	69	69	68	69	68	68	69	69
11.00	69	69	69	69	69	68	68	68	69	69
11.25	69	69	69	69	69	68	68	68	69	69
11.50	69	69	69	69	68	68	68	68	69	69
11.75	69	69	69	69	68	68	68	68	69	69
12.00	69	69	69	69	69	68	68	68	69	69
12.25	69	69	69	69	68	68	68	68	69	69
12.50	69	69	69	69	68	68	68	68	69	69
12.75	69	69	69	69	68	68	68	68	69	69
13.00	69	69	69	69	68	68	68	68	69	69
13.25	69	69	69	69	69	68	68	68	69	69
13.50	69	69	69	69	69	68	68	68	69	69
13.75	69	69	69	69	69	68	68	68	69	69
14.00	69	68	69	69	69	68	68	68	69	69
14.25	69	69	68	69	69	68	68	68	69	69
14.50	69	69	69	69	68	68	68	68	69	69
14.75	69	69	69	69	69	68	68	68	69	69
15.00	69	69	69	69	68	68	68	68	69	69



### Unexposed Surface Thermocouple Temperatures (Continued)

Time (min)	UNEXPOSED SURFACE TEMP. °F				WP-1950	10/4/2012	AWC CLT WALL		K-1089	
	WP01	WP02	WP03	WP04	WP05	WP06	WP07	WP08	WP09	Grp Avg
15.25	69	69	69	69	69	68	68	69	69	69
15.50	69	69	69	69	68	68	68	69	69	69
15.75	69	69	69	69	68	68	68	69	69	69
16.00	69	69	69	69	68	68	68	68	69	69
16.25	69	69	69	69	68	68	68	69	68	69
16.50	69	69	69	69	68	68	68	69	69	69
16.75	69	69	69	69	69	68	68	69	69	69
17.00	69	69	69	69	68	68	68	69	69	69
17.25	69	69	69	69	69	68	68	69	69	69
17.50	69	69	69	69	68	68	68	69	69	69
17.75	69	69	69	69	68	68	68	69	69	69
18.00	69	69	69	69	68	68	68	69	69	69
18.25	69	69	69	69	68	68	68	69	69	69
18.50	69	69	69	69	69	68	68	69	69	69
18.75	69	69	69	69	68	68	68	69	69	69
19.00	69	69	69	69	68	68	68	69	69	69
19.25	69	69	69	69	68	68	68	69	69	69
19.50	69	69	68	69	68	68	68	69	69	69
19.75	69	69	69	69	68	68	68	69	69	69
20.00	69	69	69	69	68	68	68	69	69	69
20.25	69	69	69	69	68	68	68	69	69	69
20.50	69	69	69	69	68	68	68	69	69	69
20.75	69	69	69	69	69	68	68	69	69	69
21.00	69	69	69	69	68	68	68	68	69	69
21.25	69	69	69	69	68	68	68	69	68	69
21.50	69	69	69	69	68	68	68	69	68	69
21.75	69	69	69	69	69	68	68	69	69	69
22.00	69	69	69	69	68	68	68	69	69	69
22.25	69	69	69	69	68	69	68	69	69	69
22.50	69	69	69	69	68	68	68	69	69	69
22.75	69	69	69	69	68	68	68	69	69	69
23.00	69	69	69	69	68	68	68	69	69	69
23.25	69	69	69	69	69	69	68	69	69	69
23.50	69	69	69	69	68	68	68	69	69	69
23.75	69	69	69	69	68	68	68	69	69	69
24.00	69	69	69	69	68	68	68	68	69	69
24.25	69	68	69	69	68	68	68	69	69	69
24.50	69	69	68	69	68	68	68	69	69	69
24.75	69	69	69	68	68	68	68	69	69	69
25.00	69	69	69	69	68	68	68	69	69	69
25.25	69	69	69	69	68	68	68	69	69	69
25.50	69	69	69	69	68	68	68	69	69	69
25.75	69	69	69	69	68	68	68	69	69	69
26.00	69	69	69	69	68	68	68	69	69	69
26.25	69	69	69	69	68	68	68	68	69	69
26.50	69	69	69	69	68	68	68	69	68	69
26.75	69	69	69	69	68	68	68	69	69	69
27.00	69	69	69	69	68	68	68	69	69	69
27.25	69	69	69	69	68	68	68	69	69	69
27.50	69	69	69	69	68	68	68	69	69	69
27.75	69	69	69	69	68	68	68	69	69	69
28.00	69	69	69	69	68	68	68	69	69	69
28.25	69	69	69	69	68	68	68	69	69	69
28.50	69	69	69	69	68	68	68	69	69	69
28.75	69	69	69	69	68	68	68	69	69	69
29.00	69	69	69	69	69	68	68	69	69	69
29.25	69	69	69	69	68	68	68	69	69	69
29.50	69	68	69	69	68	68	68	69	69	69
29.75	69	69	68	69	68	68	68	69	69	69
30.00	69	69	69	69	68	68	68	69	69	69



### Unexposed Surface Thermocouple Temperatures (Continued)

Time (min)	UNEXPOSED SURFACE TEMP. °F				WP-1950	10/4/2012	AWC CLT WALL		K-1089	
	WP01	WP02	WP03	WP04	WP05	WP06	WP07	WP08	WP09	Grp Avg
30.25	69	69	69	69	68	68	68	69	69	69
30.50	69	69	69	69	68	68	68	69	69	69
30.75	69	69	69	69	69	68	68	69	69	69
31.00	69	69	69	69	68	68	68	69	69	69
31.25	69	69	69	69	68	68	68	68	69	69
31.50	69	69	69	69	68	68	68	69	68	69
31.75	69	69	69	69	68	68	68	69	68	69
32.00	69	69	69	69	68	68	68	69	69	69
32.25	69	69	69	69	68	68	68	69	69	69
32.50	69	69	69	69	69	68	68	69	69	69
32.75	69	69	69	69	68	68	68	69	69	69
33.00	69	69	69	69	68	68	68	69	69	69
33.25	69	69	69	69	68	68	68	69	69	69
33.50	69	69	69	69	68	68	68	69	69	69
33.75	69	69	69	69	68	69	68	69	69	69
34.00	69	69	69	69	68	68	68	69	69	69
34.25	69	69	69	69	68	68	68	69	69	69
34.50	69	69	69	69	68	68	68	69	69	69
34.75	69	69	68	69	68	68	68	69	69	69
35.00	69	69	69	69	68	68	68	69	69	69
35.25	69	69	69	69	68	68	68	69	69	69
35.50	69	69	69	69	68	68	68	69	69	69
35.75	69	69	69	69	68	68	68	69	69	69
36.00	69	69	69	69	69	68	68	69	69	69
36.25	69	69	69	69	68	69	68	69	69	69
36.50	69	69	69	69	68	68	68	68	69	69
36.75	69	69	69	69	68	69	68	69	68	69
37.00	69	69	69	69	68	68	68	69	69	69
37.25	69	69	69	69	68	68	68	69	69	69
37.50	69	69	69	69	68	68	68	69	69	69
37.75	69	69	69	69	68	68	68	69	69	69
38.00	69	69	69	69	69	68	68	69	69	69
38.25	69	69	69	69	69	69	68	69	69	69
38.50	69	69	69	69	69	68	68	69	69	69
38.75	69	69	69	69	69	68	68	69	69	69
39.00	69	69	69	69	69	68	68	69	69	69
39.25	69	69	69	69	69	68	68	69	69	69
39.50	69	68	69	69	69	69	68	69	69	69
39.75	69	69	69	69	69	68	68	69	69	69
40.00	69	69	68	69	69	68	68	69	69	69
40.25	69	69	69	69	69	68	68	69	69	69
40.50	69	69	69	69	68	69	68	69	69	69
40.75	69	69	69	69	69	68	68	69	69	69
41.00	69	69	69	69	69	68	68	69	69	69
41.25	69	69	69	69	69	69	68	69	69	69
41.50	69	69	69	69	69	68	68	68	69	69
41.75	70	69	69	69	69	69	68	69	68	69
42.00	69	69	69	69	69	68	68	69	68	69
42.25	69	69	69	69	69	69	68	69	69	69
42.50	69	69	69	69	69	69	68	69	69	69
42.75	69	69	69	69	69	69	68	69	69	69
43.00	69	69	69	69	69	69	68	69	69	69
43.25	69	69	69	69	69	68	68	69	69	69
43.50	69	69	69	69	69	69	68	69	69	69
43.75	69	69	69	69	69	69	68	69	69	69
44.00	69	69	69	69	69	68	68	69	69	69
44.25	69	69	69	69	69	68	68	69	69	69
44.50	69	69	69	69	69	68	68	69	69	69
44.75	69	69	69	69	69	68	68	69	69	69
45.00	69	69	68	69	69	68	68	69	69	69



### Unexposed Surface Thermocouple Temperatures (Continued)

Time (min)	UNEXPOSED SURFACE TEMP. °F				WP-1950	10/4/2012	AWC CLT WALL		K-1089	
	WP01	WP02	WP03	WP04	WP05	WP06	WP07	WP08	WP09	Grp Avg
45.25	69	69	69	69	69	68	68	69	69	69
45.50	69	69	69	69	69	68	68	69	69	69
45.75	69	69	69	69	68	68	68	69	69	69
46.00	69	69	69	69	69	68	68	69	69	69
46.25	69	69	69	69	69	69	68	69	69	69
46.50	69	69	69	69	69	68	68	69	69	69
46.75	69	69	69	69	69	69	68	68	69	69
47.00	70	69	69	69	69	69	68	69	68	69
47.25	69	69	69	69	69	68	68	69	69	69
47.50	69	69	69	69	69	69	69	69	69	69
47.75	69	69	69	69	69	68	68	69	69	69
48.00	69	69	69	69	69	69	68	69	69	69
48.25	69	69	69	69	69	69	68	69	69	69
48.50	69	69	69	69	69	69	68	69	69	69
48.75	69	69	69	69	69	69	69	69	69	69
49.00	69	69	69	69	69	68	68	69	69	69
49.25	69	69	69	69	69	69	68	69	69	69
49.50	69	69	69	69	69	69	68	69	69	69
49.75	69	69	69	69	69	68	68	69	69	69
50.00	69	69	69	69	69	69	68	69	69	69
50.25	70	69	68	69	69	69	68	69	69	69
50.50	69	69	69	69	69	69	68	69	69	69
50.75	69	69	69	69	68	69	69	69	69	69
51.00	69	69	69	69	69	68	68	69	69	69
51.25	69	69	69	69	69	68	68	69	69	69
51.50	69	69	69	69	69	68	68	69	69	69
51.75	69	69	69	69	69	69	68	68	69	69
52.00	69	69	69	69	69	69	68	69	68	69
52.25	69	69	69	69	69	69	68	69	68	69
52.50	69	69	69	69	69	69	68	69	69	69
52.75	69	69	69	69	69	69	69	69	69	69
53.00	69	69	69	69	69	69	68	69	69	69
53.25	69	69	69	69	69	69	69	69	69	69
53.50	70	69	69	69	69	69	68	69	69	69
53.75	69	69	69	69	69	69	68	69	69	69
54.00	69	69	69	69	69	69	68	69	69	69
54.25	69	69	69	69	69	69	68	69	69	69
54.50	69	69	69	69	69	69	68	69	69	69
54.75	69	69	69	69	69	68	68	69	69	69
55.00	69	69	69	69	69	69	69	69	69	69
55.25	69	69	69	69	69	68	69	69	69	69
55.50	69	69	69	69	69	68	68	69	69	69
55.75	70	69	69	69	69	69	68	69	69	69
56.00	69	69	69	69	68	69	68	69	69	69
56.25	69	69	69	69	69	68	68	69	69	69
56.50	69	69	69	69	69	69	68	69	69	69
56.75	69	69	69	69	69	69	68	68	69	69
57.00	69	69	69	69	69	68	68	69	69	69
57.25	69	69	69	69	69	68	68	69	68	69
57.50	70	69	69	69	69	69	69	69	69	69
57.75	69	69	69	69	69	69	68	69	69	69
58.00	69	69	69	69	69	68	68	69	69	69
58.25	69	69	69	69	69	69	68	69	69	69
58.50	69	69	69	69	69	69	68	69	69	69
58.75	69	69	69	69	69	69	69	69	69	69
59.00	69	69	69	69	69	69	68	69	69	69
59.25	69	69	69	69	69	68	68	69	69	69
59.50	69	69	69	69	69	69	68	69	69	69
59.75	69	69	69	69	69	69	68	69	69	69
60.00	69	69	69	69	69	69	68	69	69	69



### Unexposed Surface Thermocouple Temperatures (Continued)

Time (min)	UNEXPOSED SURFACE TEMP. °F				WP-1950	10/4/2012	AWC CLT WALL		K-1089	
	WP01	WP02	WP03	WP04	WP05	WP06	WP07	WP08	WP09	Grp Avg
60.25	69	69	69	69	69	69	68	69	69	69
60.50	69	69	69	69	69	69	68	69	69	69
60.75	69	69	69	69	69	69	68	69	69	69
61.00	69	69	69	69	68	69	69	69	69	69
61.25	69	69	69	69	69	68	68	69	69	69
61.50	69	69	69	69	69	68	69	69	69	69
61.75	70	69	69	69	69	69	68	69	69	69
62.00	69	69	69	69	69	69	68	69	69	69
62.25	69	69	69	69	69	69	68	69	68	69
62.50	70	69	69	69	69	69	68	69	68	69
62.75	70	69	69	69	69	69	68	69	69	69
63.00	69	69	69	69	69	69	68	69	69	69
63.25	69	69	69	69	69	69	68	69	69	69
63.50	70	69	69	69	69	69	68	69	69	69
63.75	70	69	69	69	69	69	68	69	69	69
64.00	70	69	69	69	69	69	69	69	69	69
64.25	69	69	69	69	69	69	68	69	69	69
64.50	70	69	69	69	69	69	68	69	69	69
64.75	69	69	69	69	69	69	69	69	69	69
65.00	69	69	69	69	69	69	69	69	69	69
65.25	70	69	69	69	69	69	68	69	69	69
65.50	69	69	69	69	69	69	68	69	69	69
65.75	69	69	69	69	69	69	69	69	69	69
66.00	70	69	69	69	69	69	68	69	69	69
66.25	69	69	69	69	68	69	69	69	69	69
66.50	69	69	69	69	69	68	69	69	69	69
66.75	69	69	69	69	69	69	68	69	69	69
67.00	69	69	69	69	69	69	68	69	69	69
67.25	69	69	69	69	69	69	69	69	69	69
67.50	69	69	69	69	69	69	68	69	68	69
67.75	69	69	69	69	69	69	68	69	69	69
68.00	69	69	69	69	69	69	68	69	69	69
68.25	69	69	69	69	69	69	68	69	69	69
68.50	70	69	69	69	69	69	68	69	69	69
68.75	69	69	69	69	69	69	69	69	69	69
69.00	70	69	69	69	69	69	69	69	69	69
69.25	69	69	69	69	69	69	69	69	69	69
69.50	69	69	69	69	69	69	68	69	69	69
69.75	70	69	69	69	69	69	69	69	69	69
70.00	69	69	69	69	69	69	68	69	69	69
70.25	69	69	69	69	69	69	68	69	69	69
70.50	70	69	69	69	69	69	68	69	69	69
70.75	69	69	69	69	69	69	69	69	69	69
71.00	70	69	69	69	69	69	69	69	69	69
71.25	70	69	69	70	68	69	69	69	69	69
71.50	70	69	69	69	69	68	69	69	69	69
71.75	70	69	69	69	69	68	68	69	69	69
72.00	69	69	69	69	69	69	68	69	69	69
72.25	70	69	69	69	69	69	68	69	69	69
72.50	70	69	69	69	69	69	69	69	68	69
72.75	70	69	69	70	69	69	69	69	69	69
73.00	70	69	69	69	69	69	69	69	69	69
73.25	70	69	69	69	69	69	68	69	69	69
73.50	70	69	69	69	69	69	68	69	69	69
73.75	70	69	69	70	69	69	68	69	69	69
74.00	69	69	69	70	69	69	68	69	69	69
74.25	70	69	69	70	69	69	69	69	69	69
74.50	70	69	69	70	69	69	69	69	69	69
74.75	70	69	69	69	69	69	69	69	69	69
75.00	69	69	69	69	69	69	68	69	69	69



### Unexposed Surface Thermocouple Temperatures (Continued)

Time (min)	UNEXPOSED SURFACE TEMP. °F				WP-1950 10/4/2012		AWC CLT WALL		K-1089	
	WP01	WP02	WP03	WP04	WP05	WP06	WP07	WP08	WP09	Grp Avg
75.25	69	69	69	69	69	69	69	69	69	69
75.50	70	69	69	70	69	69	68	69	69	69
75.75	70	69	69	70	69	69	69	69	69	69
76.00	70	69	69	69	69	69	69	69	69	69
76.25	70	69	69	69	69	69	69	69	69	69
76.50	70	69	69	69	68	69	68	69	69	69
76.75	70	69	69	69	69	68	68	69	69	69
77.00	70	69	69	69	69	69	68	69	69	69
77.25	70	69	69	69	69	69	69	69	69	69
77.50	70	69	69	69	69	69	69	68	69	69
77.75	70	69	69	70	69	69	68	69	68	69
78.00	70	69	69	69	69	69	69	69	69	69
78.25	70	69	69	69	69	69	69	69	69	69
78.50	70	69	69	69	69	69	69	69	69	69
78.75	70	70	69	70	69	69	68	69	69	69
79.00	70	69	69	69	69	69	69	69	69	69
79.25	70	69	69	69	69	69	69	69	69	69
79.50	70	70	69	69	69	69	69	69	69	69
79.75	70	69	69	69	69	69	69	69	69	69
80.00	70	69	69	69	69	69	68	69	69	69
80.25	69	69	69	69	69	69	69	69	69	69
80.50	70	69	69	70	69	69	68	69	69	69
80.75	70	69	69	69	69	69	69	69	69	69
81.00	70	69	69	69	69	69	69	69	69	69
81.25	70	69	69	69	69	69	69	69	69	69
81.50	70	69	69	69	68	69	69	69	69	69
81.75	70	69	69	69	69	68	69	69	69	69
82.00	69	69	69	70	69	68	69	69	69	69
82.25	70	69	69	69	69	69	68	69	69	69
82.50	70	69	69	69	69	69	69	69	69	69
82.75	70	69	69	70	69	69	69	69	68	69
83.00	70	69	69	70	69	69	69	69	69	69
83.25	70	69	69	69	69	69	69	69	69	69
83.50	70	69	69	69	69	69	69	69	69	69
83.75	70	69	69	69	69	69	69	69	69	69
84.00	70	69	69	70	69	69	69	69	69	69
84.25	70	69	69	70	69	69	69	69	69	69
84.50	70	69	69	69	69	69	69	69	69	69
84.75	70	69	69	70	69	69	69	69	69	69
85.00	70	69	69	69	69	69	69	69	69	69
85.25	69	69	69	70	69	69	69	69	69	69
85.50	69	69	69	69	69	69	69	69	69	69
85.75	70	69	69	70	69	69	69	69	69	69
86.00	70	69	69	70	69	69	69	69	69	69
86.25	70	69	69	69	69	69	69	69	69	69
86.50	70	70	69	69	69	69	69	69	69	69
86.75	70	69	69	70	68	69	69	69	69	69
87.00	70	70	69	70	69	68	69	69	69	69
87.25	70	69	69	70	69	69	68	69	69	69
87.50	70	69	69	70	69	69	69	69	69	69
87.75	70	69	69	69	69	69	69	69	69	69
88.00	70	69	69	69	69	69	69	69	69	69
88.25	70	69	69	70	69	69	68	69	69	69
88.50	70	69	69	69	69	69	69	69	69	69
88.75	70	69	69	70	69	69	69	69	69	69
89.00	70	70	69	69	69	69	69	69	69	69
89.25	70	69	69	70	69	69	69	69	69	69
89.50	70	69	69	70	69	69	69	69	69	69
89.75	70	69	69	70	69	69	69	69	69	69
90.00	70	69	69	70	69	69	69	69	69	69



### Unexposed Surface Thermocouple Temperatures (Continued)

Time (min)	UNEXPOSED SURFACE TEMP. °F				WP-1950	10/4/2012	AWC CLT WALL		K-1089	
	WP01	WP02	WP03	WP04	WP05	WP06	WP07	WP08	WP09	Grp Avg
90.25	70	69	69	69	69	69	69	69	69	69
90.50	69	69	69	70	69	69	69	69	69	69
90.75	70	69	69	70	69	69	69	69	69	69
91.00	70	69	69	70	69	69	69	69	69	69
91.25	70	69	69	69	69	69	69	69	69	69
91.50	70	69	69	69	69	69	69	69	69	69
91.75	70	69	69	69	68	69	69	69	69	69
92.00	70	69	69	69	69	68	69	69	69	69
92.25	70	69	69	70	69	68	69	69	69	69
92.50	70	70	69	69	69	69	68	69	69	69
92.75	70	69	69	69	69	69	69	69	69	69
93.00	70	70	69	70	69	69	69	69	69	69
93.25	70	70	69	70	69	69	69	69	69	69
93.50	70	70	69	70	69	69	69	69	69	69
93.75	70	70	69	70	69	69	69	69	69	69
94.00	70	69	69	69	69	69	69	69	69	69
94.25	70	69	69	70	69	69	69	69	69	69
94.50	70	69	69	70	69	69	69	69	69	69
94.75	70	69	70	70	69	69	69	69	69	69
95.00	70	69	69	70	69	69	69	69	69	69
95.25	70	70	69	70	69	69	69	69	69	69
95.50	69	69	69	70	69	69	69	69	69	69
95.75	69	69	69	70	69	69	69	69	69	69
96.00	70	69	69	70	69	69	69	69	69	69
96.25	70	69	69	70	69	69	69	69	69	69
96.50	70	70	69	69	69	69	69	69	69	69
96.75	70	70	70	70	68	69	69	69	69	69
97.00	70	69	69	70	68	69	69	69	69	69
97.25	70	70	69	70	69	68	69	69	69	69
97.50	70	70	69	70	69	69	68	69	69	69
97.75	70	69	69	70	69	69	69	69	69	69
98.00	70	70	70	70	69	69	69	69	69	69
98.25	70	70	69	70	69	69	69	69	69	69
98.50	70	70	69	70	69	69	69	69	69	69
98.75	70	70	70	70	69	69	69	69	69	69
99.00	70	70	69	69	69	69	69	69	69	69
99.25	70	70	69	70	69	69	69	69	69	69
99.50	70	70	69	70	69	69	69	69	69	69
99.75	70	70	70	70	69	69	69	69	69	69
100.00	70	70	69	70	69	69	69	69	69	69
100.25	70	70	70	70	69	69	69	69	69	69
100.50	70	70	69	70	69	69	69	69	69	69
100.75	69	70	70	70	69	69	69	69	69	69
101.00	70	69	69	70	69	69	69	69	69	69
101.25	70	70	69	70	69	69	69	69	69	69
101.50	70	70	69	70	69	69	69	69	70	69
101.75	70	70	70	69	69	69	69	69	69	69
102.00	70	70	70	70	68	69	69	69	69	69
102.25	70	70	70	70	69	68	69	69	69	69
102.50	70	70	69	70	69	69	69	69	69	69
102.75	70	70	70	70	69	69	68	69	69	69
103.00	70	70	70	70	69	69	69	69	69	69
103.25	70	70	70	70	69	69	69	69	69	69
103.50	70	70	70	70	69	69	69	69	69	69
103.75	70	70	70	70	69	69	69	69	69	69
104.00	70	70	69	70	69	69	69	69	69	69
104.25	70	70	69	70	69	69	69	69	69	69
104.50	70	70	70	70	69	69	69	69	69	69
104.75	70	70	70	70	69	69	69	69	70	69
105.00	70	70	70	70	69	69	69	69	69	69





### Unexposed Surface Thermocouple Temperatures (Continued)

Time (min)	UNEXPOSED SURFACE TEMP. °F				WP-1950	10/4/2012	AWC CLT WALL		K-1089	
	WP01	WP02	WP03	WP04	WP05	WP06	WP07	WP08	WP09	Grp Avg
120.25	70	70	70	70	69	69	69	70	70	70
120.50	70	70	70	70	69	69	69	69	69	69
120.75	70	70	70	70	69	69	69	70	70	70
121.00	70	70	70	70	70	69	69	70	69	70
121.25	70	70	70	70	69	69	69	70	70	70
121.50	70	70	70	70	69	69	69	69	70	70
121.75	70	70	69	70	70	69	69	70	70	70
122.00	70	70	69	70	69	69	69	70	70	70
122.25	70	70	70	69	69	69	69	69	69	69
122.50	70	70	70	70	69	69	69	70	70	70
122.75	70	70	70	70	69	69	69	70	69	70
123.00	70	70	70	70	69	69	69	70	69	70
123.25	70	70	70	70	69	69	69	70	69	70
123.50	70	70	70	70	69	69	69	69	69	70
123.75	70	70	70	70	69	69	69	70	69	70
124.00	70	70	70	70	69	69	69	70	70	70
124.25	70	70	70	70	69	69	69	69	70	70
124.50	70	70	70	70	69	69	69	70	69	70
124.75	70	70	70	70	69	69	69	70	70	70
125.00	70	70	70	70	69	69	69	70	70	70
125.25	70	70	70	70	69	69	69	70	70	70
125.50	70	70	70	70	69	69	69	70	70	70
125.75	70	70	70	70	69	69	69	70	69	70
126.00	70	70	70	70	70	69	69	70	69	70
126.25	70	70	70	70	69	69	69	70	70	70
126.50	70	70	70	70	70	69	69	70	70	70
126.75	70	70	70	70	70	69	69	70	69	70
127.00	70	70	69	70	69	69	69	70	69	70
127.25	70	70	70	69	69	69	69	70	70	70
127.50	70	70	70	70	69	69	69	70	69	70
127.75	70	70	70	70	69	69	69	70	69	70
128.00	70	70	70	70	70	69	69	70	70	70
128.25	70	70	70	70	70	69	69	70	70	70
128.50	70	70	70	70	70	69	69	69	70	70
128.75	70	70	70	70	70	69	69	70	69	70
129.00	70	70	70	70	70	69	69	70	69	70
129.25	70	70	70	70	70	69	69	70	70	70
129.50	70	70	70	70	70	69	69	70	70	70
129.75	70	70	70	70	69	69	69	70	70	70
130.00	70	70	70	70	70	69	69	70	69	70
130.25	70	70	70	70	70	69	69	70	70	70
130.50	70	70	70	70	70	69	69	70	70	70
130.75	70	70	70	70	70	69	69	70	70	70
131.00	70	70	70	70	70	69	69	70	70	70
131.25	70	70	70	70	70	69	69	70	70	70
131.50	70	70	70	70	69	69	69	70	69	70
131.75	70	70	70	70	70	69	69	70	70	70
132.00	70	70	70	70	70	69	69	70	70	70
132.25	70	70	69	70	70	69	69	70	70	70
132.50	70	70	70	69	70	69	69	70	70	70
132.75	70	70	70	70	69	69	69	70	70	70
133.00	70	70	70	70	70	69	69	70	69	70
133.25	70	70	70	70	70	69	69	70	70	70
133.50	70	70	70	70	70	69	69	70	70	70
133.75	70	70	70	70	70	69	69	69	70	70
134.00	70	70	70	70	70	69	69	70	69	70
134.25	70	70	70	70	70	69	69	70	70	70
134.50	70	70	70	70	70	69	69	70	70	70
134.75	70	70	70	70	70	69	69	70	70	70
135.00	70	70	70	70	69	69	69	70	70	70



### Unexposed Surface Thermocouple Temperatures (Continued)

Time (min)	UNEXPOSED SURFACE TEMP. °F				WP-1950	10/4/2012	AWC CLT WALL		K-1089	
	WP01	WP02	WP03	WP04	WP05	WP06	WP07	WP08	WP09	Grp Avg
135.25	70	70	70	70	69	69	69	70	70	70
135.50	70	70	70	70	70	69	69	70	70	70
135.75	70	70	70	70	70	69	69	70	70	70
136.00	70	70	70	70	70	69	69	70	70	70
136.25	70	70	70	70	70	69	69	70	70	70
136.50	70	70	70	70	70	69	69	70	70	70
136.75	70	70	70	70	70	69	69	70	70	70
137.00	70	70	70	70	70	69	69	70	69	70
137.25	70	70	69	70	70	69	69	70	70	70
137.50	70	70	70	70	70	69	69	70	70	70
137.75	70	70	70	70	69	69	69	70	70	70
138.00	70	70	70	70	69	69	69	70	70	70
138.25	70	70	70	70	70	69	69	70	70	70
138.50	70	70	70	70	70	70	69	70	70	70
138.75	70	70	70	70	70	69	69	69	70	70
139.00	70	70	70	70	70	69	69	70	69	70
139.25	70	70	70	70	70	69	69	70	69	70
139.50	70	70	70	70	70	69	69	70	70	70
139.75	70	70	70	70	70	69	69	70	70	70
140.00	70	70	70	70	70	69	69	70	70	70
140.25	70	70	70	70	70	69	69	70	70	70
140.50	70	70	70	70	70	69	69	70	70	70
140.75	70	70	70	70	70	69	69	70	70	70
141.00	71	70	70	70	70	69	69	70	70	70
141.25	70	70	70	70	70	69	69	70	70	70
141.50	70	70	70	70	70	69	69	70	70	70
141.75	70	70	70	70	70	69	69	70	70	70
142.00	70	70	70	70	70	69	69	70	70	70
142.25	70	70	69	70	70	69	69	70	70	70
142.50	70	70	70	70	70	69	69	70	70	70
142.75	70	70	70	70	70	69	69	70	70	70
143.00	70	70	70	70	69	69	69	70	70	70
143.25	70	70	70	70	70	69	69	70	70	70
143.50	70	70	70	70	70	69	69	70	70	70
143.75	70	70	70	70	70	69	69	70	70	70
144.00	70	70	70	70	70	69	69	69	70	70
144.25	70	70	70	70	70	69	69	70	69	70
144.50	70	70	70	70	70	69	69	70	70	70
144.75	70	70	70	70	70	69	69	70	70	70
145.00	70	70	70	70	70	69	69	70	70	70
145.25	70	70	70	70	70	69	69	70	70	70
145.50	70	70	70	70	70	69	69	70	70	70
145.75	70	70	70	70	70	69	69	70	70	70
146.00	70	70	70	70	70	69	69	70	70	70
146.25	71	70	70	70	70	69	70	70	70	70
146.50	70	70	70	70	70	69	69	70	70	70
146.75	70	70	70	70	70	69	69	70	70	70
147.00	71	70	70	70	70	70	69	70	70	70
147.25	71	70	70	70	70	70	69	70	70	70
147.50	71	70	70	70	70	70	69	70	70	70
147.75	70	70	70	70	70	70	69	70	70	70
148.00	71	70	70	70	70	69	70	70	70	70
148.25	70	70	70	70	69	69	69	70	70	70
148.50	71	70	70	70	70	69	69	70	70	70
148.75	70	70	70	70	70	69	69	70	70	70
149.00	70	70	70	70	70	69	69	70	70	70
149.25	71	70	70	70	70	70	70	70	69	70
149.50	71	70	70	70	70	70	70	70	69	70
149.75	71	70	70	70	70	69	69	70	70	70
150.00	70	70	70	70	70	69	70	70	70	70



### Unexposed Surface Thermocouple Temperatures (Continued)

Time (min)	UNEXPOSED SURFACE TEMP. °F				WP-1950	10/4/2012	AWC CLT WALL		K-1089	
	WP01	WP02	WP03	WP04	WP05	WP06	WP07	WP08	WP09	Grp Avg
150.25	71	70	70	70	70	70	69	70	70	70
150.50	70	70	70	70	70	69	69	70	70	70
150.75	70	70	70	70	70	69	70	70	70	70
151.00	71	70	70	70	70	69	70	70	70	70
151.25	71	70	70	70	70	70	70	70	70	70
151.50	71	70	70	70	70	69	70	70	70	70
151.75	71	70	70	70	70	70	70	70	70	70
152.00	70	70	70	70	70	70	69	70	70	70
152.25	71	70	70	70	70	70	69	70	70	70
152.50	71	70	70	70	70	70	70	70	70	70
152.75	70	70	70	70	70	70	69	70	70	70
153.00	71	70	70	70	70	69	69	70	70	70
153.25	71	70	70	70	70	70	70	70	70	70
153.50	71	71	70	70	70	69	69	70	70	70
153.75	71	70	70	70	70	70	69	70	70	70
154.00	71	70	70	70	70	70	69	70	70	70
154.25	71	70	70	70	70	70	69	70	70	70
154.50	71	71	70	70	70	70	70	70	69	70
154.75	70	70	70	70	70	70	69	70	70	70
155.00	71	70	70	70	70	69	70	70	70	70
155.25	71	71	70	70	70	70	70	70	70	70
155.50	71	70	70	70	70	70	70	70	70	70
155.75	71	70	70	70	70	70	70	70	70	70
156.00	71	70	70	70	70	70	70	70	70	70
156.25	71	70	70	70	70	70	69	70	70	70
156.50	71	70	70	71	70	70	70	70	70	70
156.75	71	70	70	70	70	70	70	70	70	70
157.00	70	70	70	70	70	70	70	70	70	70
157.25	71	70	70	71	70	70	70	70	70	70
157.50	71	70	70	70	70	70	69	70	70	70
157.75	71	70	70	70	70	70	70	70	70	70
158.00	71	70	70	70	70	70	70	70	70	70
158.25	71	70	70	70	70	70	70	70	70	70
158.50	71	70	70	70	70	70	70	70	70	70
158.75	71	71	70	71	70	69	70	70	70	70
159.00	71	70	70	71	70	70	69	70	70	70
159.25	71	71	70	71	70	70	70	70	70	70
159.50	71	71	70	70	70	69	70	70	69	70
159.75	71	71	70	71	70	70	70	70	69	70
160.00	71	71	70	71	70	70	69	70	70	70
160.25	71	70	70	71	70	70	70	70	70	70
160.50	71	70	70	71	70	70	70	70	70	70
160.75	71	70	71	71	70	70	70	70	70	70
161.00	71	70	71	70	70	70	70	70	70	70
161.25	71	71	70	71	70	70	70	70	70	70
161.50	71	70	71	71	70	70	70	70	70	70
161.75	71	70	70	71	70	70	70	70	70	70
162.00	71	71	70	70	70	70	70	70	70	70
162.25	70	71	71	71	70	70	70	70	70	70
162.50	71	70	71	70	70	70	70	70	70	70
162.75	71	71	70	71	70	70	70	70	70	70
163.00	71	70	70	70	70	70	70	70	70	70
163.25	71	71	71	70	70	70	70	70	70	70
163.50	71	70	70	70	70	70	70	70	70	70
163.75	71	71	71	71	70	69	70	70	70	70
164.00	71	70	70	71	70	70	69	70	70	70
164.25	71	71	71	71	70	70	69	70	70	70
164.50	71	71	71	71	70	70	70	70	70	70
164.75	71	71	70	71	70	70	70	70	70	70
165.00	71	71	70	71	70	70	70	70	70	70



### Unexposed Surface Thermocouple Temperatures (Continued)

Time (min)	UNEXPOSED SURFACE TEMP. °F				WP-1950	10/4/2012	AWC CLT WALL		K-1089	
	WP01	WP02	WP03	WP04	WP05	WP06	WP07	WP08	WP09	Grp Avg
165.25	71	71	71	71	71	70	70	70	70	70
165.50	71	71	70	71	70	70	70	70	70	70
165.75	71	71	71	71	70	70	70	70	70	70
166.00	71	71	70	71	70	70	70	70	70	70
166.25	71	71	71	71	71	70	70	70	70	70
166.50	71	71	71	71	71	70	70	71	70	70
166.75	71	71	71	71	70	70	70	70	70	70
167.00	71	71	70	71	70	70	70	70	70	70
167.25	70	71	71	71	70	70	70	70	70	70
167.50	71	70	71	71	70	70	70	70	70	70
167.75	71	70	71	71	71	70	70	70	70	70
168.00	71	71	70	71	70	70	70	70	70	70
168.25	71	71	71	70	71	70	70	70	70	70
168.50	71	71	71	71	70	70	70	70	70	70
168.75	71	71	70	71	70	69	70	70	70	70
169.00	71	71	71	71	71	69	70	71	70	70
169.25	71	71	71	71	70	70	69	70	70	70
169.50	71	71	71	71	71	70	70	70	70	70
169.75	71	71	71	71	71	70	70	70	70	70
170.00	71	71	71	71	71	70	70	70	70	70
170.25	71	71	71	71	71	70	70	70	70	70
170.50	71	71	71	71	71	70	70	70	70	70
170.75	71	71	71	71	71	70	70	70	70	70
171.00	71	71	71	71	71	70	70	70	70	70
171.25	71	71	71	71	71	70	70	70	70	71
171.50	71	71	71	71	71	70	70	70	70	70
171.75	71	71	71	71	71	70	70	70	70	70
172.00	71	71	71	71	71	70	70	71	70	70
172.25	71	71	71	71	71	70	70	71	70	70
172.50	71	71	71	71	71	70	70	70	70	70
172.75	71	70	71	71	71	70	70	71	70	70
173.00	71	71	70	71	71	70	70	71	70	71
173.25	71	71	71	70	71	70	70	71	70	71
173.50	71	71	71	70	71	70	70	71	70	70
173.75	71	71	71	71	70	70	70	71	70	71
174.00	71	71	71	71	71	70	70	70	70	71
174.25	71	71	71	71	71	70	69	70	70	71
174.50	71	71	71	71	71	70	70	70	70	71
174.75	71	71	71	71	71	70	70	70	70	71
175.00	71	71	71	71	71	70	70	71	70	71
175.25	71	71	71	71	71	70	70	71	70	71
175.50	71	71	71	71	71	70	70	71	70	71
175.75	71	71	71	71	71	70	70	71	70	71
176.00	71	71	71	71	71	70	70	71	70	71
176.25	71	71	71	71	71	70	70	71	70	71
176.50	71	71	71	71	71	70	70	71	70	71
176.75	71	71	71	71	71	70	70	71	70	71
177.00	71	71	71	71	72	70	70	71	70	71
177.25	71	71	71	71	72	70	70	71	70	71
177.50	71	71	71	71	72	70	70	71	70	71
177.75	71	71	71	71	72	70	70	71	70	71
178.00	71	70	71	71	72	70	70	71	70	71
178.25	71	71	70	71	72	70	70	71	70	71
178.50	71	71	71	71	72	70	70	71	70	71
178.75	71	71	71	71	71	70	70	71	70	71
179.00	71	71	71	71	72	69	70	71	70	71
179.25	71	71	71	71	72	69	70	71	71	71
179.50	71	71	71	71	72	70	70	71	70	71
179.75	71	71	71	71	72	70	70	70	70	71
180.00	71	71	71	71	72	70	70	71	70	71



### Unexposed Surface Thermocouple Temperatures (Continued)

Time (min)	UNEXPOSED SURFACE TEMP. °F				WP-1950 10/4/2012		AWC CLT WALL		K-1089	
	WP01	WP02	WP03	WP04	WP05	WP06	WP07	WP08	WP09	Grp Avg
180.25	71	71	71	71	72	70	70	71	70	71
180.50	71	71	71	71	72	70	70	71	70	71
180.75	71	71	71	71	72	70	70	71	70	71
181.00	71	71	71	71	72	70	70	71	70	71
181.25	71	71	71	71	73	70	70	71	70	71
181.50	71	71	71	71	73	70	70	71	70	71
181.75	71	71	71	71	73	70	70	71	71	71
182.00	71	71	71	71	73	70	70	71	70	71
182.25	71	71	71	71	73	70	70	71	71	71
182.50	71	71	71	71	73	70	70	71	70	71
182.75	71	71	71	71	73	70	70	71	71	71
183.00	71	71	71	71	73	70	70	71	70	71
183.25	71	71	70	71	73	70	70	71	71	71
183.50	71	71	71	71	73	70	71	71	71	71
183.75	71	71	71	71	74	70	70	71	71	71
184.00	71	71	71	71	73	70	70	71	71	71
184.25	71	71	71	71	74	70	71	71	71	71
184.50	71	71	71	71	74	70	70	71	71	71
184.75	71	71	71	71	74	70	70	70	71	71
185.00	71	71	71	71	74	70	70	70	71	71
185.25	71	71	71	71	74	70	71	71	70	71
185.50	71	71	71	71	74	70	70	71	71	71
185.75	72	71	71	71	74	70	70	71	71	71
186.00	71	71	71	71	74	70	70	71	71	71
186.25	71	71	71	71	75	70	71	71	71	71
186.50	71	71	71	71	75	70	71	71	71	71
186.75	71	71	71	72	75	70	70	71	71	71
187.00	72	71	71	72	75	70	70	71	71	71
187.25	71	71	71	71	76	70	70	71	71	71
187.50	72	71	71	71	76	70	71	71	71	72
187.75	72	72	71	72	76	70	71	71	71	72



## Membrane Protection Thermocouple Temperatures

Time (min)	EXPOSED SIDE TEMP. °F			WP-1950			UNEXPOSED SIDE TEMP. °F			K-1089
	WP11	WP12	WP13	WP14	WP15	WP16	WP17	WP18	WP19	
0.00	69	69	68	68	68	70	69	69	69	70
0.25	69	69	68	68	68	70	69	69	69	69
0.50	69	69	68	68	68	70	69	69	69	70
0.75	69	69	68	69	68	70	69	69	69	70
1.00	70	69	68	69	68	70	69	69	69	69
1.25	70	69	69	71	69	70	69	69	69	70
1.50	72	70	70	74	70	70	69	69	69	70
1.75	74	71	71	78	72	70	69	69	69	70
2.00	78	74	73	83	74	70	69	69	69	70
2.25	83	79	76	90	78	70	69	69	69	70
2.50	90	85	81	98	83	70	69	69	69	69
2.75	99	94	87	107	88	70	69	69	69	69
3.00	110	104	96	117	94	70	69	69	69	70
3.25	122	117	108	127	102	70	69	69	69	70
3.50	135	132	123	136	110	70	69	69	69	69
3.75	150	148	140	146	118	70	69	69	69	70
4.00	165	165	161	156	128	70	69	69	69	70
4.25	174	175	174	166	137	70	68	69	69	70
4.50	183	182	180	192	146	70	69	69	69	70
4.75	188	186	183	200	154	70	69	68	69	69
5.00	192	188	183	200	161	70	69	69	69	70
5.25	194	190	187	199	168	70	69	69	69	69
5.50	196	191	199	200	174	70	69	69	69	70
5.75	197	193	199	201	178	70	69	69	69	70
6.00	197	194	199	201	183	70	69	69	69	70
6.25	197	196	199	200	185	70	69	69	69	69
6.50	182	197	202	196	186	70	69	69	69	69
6.75	198	197	202	194	189	70	69	69	69	70
7.00	199	197	201	194	191	70	69	69	69	70
7.25	199	198	200	193	191	70	69	69	69	69
7.50	200	199	200	192	194	70	69	69	69	69
7.75	200	199	199	192	193	70	69	69	69	70
8.00	200	199	200	193	194	70	69	69	69	70
8.25	200	198	199	193	195	70	69	69	69	69
8.50	200	198	199	193	196	70	69	69	69	70
8.75	200	197	199	194	196	70	69	69	69	69
9.00	200	196	200	195	196	70	69	69	69	70
9.25	200	196	200	195	196	70	69	69	69	69
9.50	200	195	201	196	195	70	69	69	69	69
9.75	200	194	200	196	195	70	69	69	69	70
10.00	199	194	201	196	194	70	69	69	69	70
10.25	200	193	200	196	194	70	69	69	69	69
10.50	200	193	201	196	194	70	69	69	69	69
10.75	200	193	201	197	195	70	69	69	69	70
11.00	200	194	201	197	195	70	69	69	69	70
11.25	200	194	201	198	195	70	69	69	69	70
11.50	200	194	201	198	195	70	69	69	69	70
11.75	200	194	201	198	195	70	69	69	69	70
12.00	201	193	201	198	196	70	69	69	69	70
12.25	201	193	201	198	196	70	69	69	69	70
12.50	201	194	200	198	196	70	69	69	69	70
12.75	201	194	195	198	196	70	69	69	69	70
13.00	201	194	194	199	196	70	69	69	69	70
13.25	202	194	197	199	196	70	69	69	69	70
13.50	201	194	196	200	196	70	69	69	69	70
13.75	201	194	195	200	196	70	69	69	69	70
14.00	201	194	195	200	197	70	69	69	69	70
14.25	201	194	194	201	197	70	69	69	69	70
14.50	201	194	194	202	197	70	69	69	69	70
14.75	201	194	194	204	197	70	69	68	69	70
15.00	201	194	193	208	197	70	69	68	69	70



## Membrane Protection Thermocouple Temperatures (Continued)

Time (min)	EXPOSED SIDE TEMP. °F			WP-1950		10/4/2012	AWC	UNEXPOSED SIDE TEMP. °F			K-1089
	WP11	WP12	WP13	WP14	WP15	WP16	WP17	WP18	WP19	WP20	
15.25	202	194	193	211	198	70	69	69	69	70	
15.50	203	194	192	213	199	70	69	69	69	69	
15.75	204	193	192	215	200	70	69	69	69	70	
16.00	206	193	191	216	200	70	69	69	69	70	
16.25	207	194	191	218	200	70	69	69	69	70	
16.50	209	196	191	219	201	70	69	69	69	70	
16.75	209	197	194	220	201	70	69	69	69	70	
17.00	211	198	196	222	202	70	69	69	69	70	
17.25	214	198	200	224	202	70	69	69	69	69	
17.50	216	200	201	226	203	70	69	69	69	70	
17.75	219	201	203	227	204	70	69	69	69	69	
18.00	222	203	203	229	204	70	69	69	69	70	
18.25	227	207	205	232	205	70	69	69	69	70	
18.50	232	209	205	235	206	70	69	69	69	70	
18.75	239	212	206	237	207	70	69	69	69	69	
19.00	246	215	208	240	209	70	69	69	69	70	
19.25	254	218	209	243	210	70	69	69	69	70	
19.50	267	221	211	247	211	70	69	69	69	70	
19.75	282	224	213	251	213	70	69	69	69	70	
20.00	299	228	215	256	214	70	69	69	69	69	
20.25	317	232	218	261	216	70	69	69	68	70	
20.50	336	236	222	267	217	70	69	69	69	69	
20.75	355	241	226	276	219	70	69	69	69	69	
21.00	374	249	231	286	220	70	69	69	69	70	
21.25	393	258	236	302	222	70	69	69	69	70	
21.50	411	269	243	319	224	70	69	69	69	70	
21.75	430	281	252	337	226	70	69	69	69	69	
22.00	448	294	263	355	228	70	69	69	69	70	
22.25	468	311	275	372	230	70	69	69	69	70	
22.50	488	330	290	388	232	70	69	69	69	70	
22.75	505	348	304	403	235	70	69	69	69	70	
23.00	518	367	319	418	238	70	69	69	69	70	
23.25	530	386	332	434	241	70	69	69	69	70	
23.50	540	404	346	449	245	70	69	69	69	70	
23.75	550	422	360	465	250	70	69	69	69	70	
24.00	560	439	375	481	255	70	69	69	69	70	
24.25	569	454	389	497	261	70	69	69	69	70	
24.50	580	470	405	514	267	70	69	69	69	70	
24.75	590	486	419	530	276	70	69	69	69	70	
25.00	600	502	433	550	287	70	69	68	69	70	
25.25	625	518	447	567	300	70	69	69	69	70	
25.50	651	532	460	581	314	70	69	69	69	70	
25.75	659	545	474	595	328	70	69	69	69	69	
26.00	671	558	488	608	343	70	69	69	69	69	
26.25	683	569	501	622	357	70	69	69	69	70	
26.50	698	579	513	636	371	70	70	69	69	69	
26.75	711	589	528	653	384	70	69	69	69	70	
27.00	715	597	543	667	397	70	69	69	69	70	
27.25	724	604	560	682	409	70	69	69	69	70	
27.50	734	610	575	696	421	70	69	69	69	70	
27.75	743	617	591	710	432	70	69	69	69	70	
28.00	750	624	606	723	444	70	69	69	69	70	
28.25	757	631	620	736	455	70	69	69	69	70	
28.50	765	637	626	749	465	70	69	69	69	70	
28.75	776	645	640	759	477	70	69	69	69	70	
29.00	786	651	650	771	489	70	69	69	69	70	
29.25	795	659	656	784	501	70	69	69	69	70	
29.50	804	671	665	794	513	70	69	69	69	70	
29.75	812	681	674	804	525	70	69	69	69	70	
30.00	821	693	683	814	538	70	69	69	69	70	



## Membrane Protection Thermocouple Temperatures (Continued)

Time (min)	EXPOSED SIDE TEMP. °F			WP-1950	10/4/2012	AWC	UNEXPOSED SIDE TEMP. °F			K-1089
	WP11	WP12	WP13	WP14	WP15	WP16	WP17	WP18	WP19	WP20
30.25	829	704	692	823	552	70	69	68	69	70
30.50	837	714	701	834	566	70	69	69	68	70
30.75	842	722	710	844	581	70	69	69	69	69
31.00	844	684	718	852	595	70	69	69	69	69
31.25	847	699	726	857	609	70	69	69	69	70
31.50	854	714	735	864	624	70	69	69	69	70
31.75	858	725	745	875	640	70	69	69	69	70
32.00	861	734	755	885	656	70	69	69	69	70
32.25	863	741	761	893	673	70	69	69	69	70
32.50	868	744	770	901	690	70	69	69	69	70
32.75	874	750	778	908	703	70	69	69	69	70
33.00	881	755	787	914	715	70	69	69	69	70
33.25	886	762	797	921	724	70	69	69	69	70
33.50	891	770	806	931	733	70	69	69	69	70
33.75	897	779	810	940	740	70	69	69	69	70
34.00	903	787	818	948	749	70	69	69	69	70
34.25	911	797	826	957	756	70	69	69	69	70
34.50	917	805	835	964	756	70	69	69	69	70
34.75	924	814	845	970	762	70	70	69	69	70
35.00	929	822	855	976	769	70	69	69	69	70
35.25	934	831	862	983	774	70	69	68	69	70
35.50	941	839	869	990	777	70	70	68	69	70
35.75	948	847	874	996	780	70	69	69	68	70
36.00	955	853	880	1002	782	70	69	69	69	69
36.25	964	861	886	1007	782	70	69	69	69	70
36.50	972	873	892	1012	785	70	69	69	69	70
36.75	980	882	899	1016	789	70	69	69	69	70
37.00	987	890	903	1020	793	70	69	69	69	70
37.25	992	897	908	1025	798	70	69	69	69	70
37.50	998	904	913	1029	805	70	69	69	69	70
37.75	1005	909	917	1034	811	70	69	69	69	70
38.00	1012	916	922	1039	818	70	69	69	69	70
38.25	1017	922	927	1044	825	70	69	69	69	70
38.50	1023	928	932	1049	831	71	69	69	69	70
38.75	1029	932	937	1053	838	70	69	69	69	70
39.00	1034	937	942	1056	844	70	70	69	69	70
39.25	1039	942	948	1059	852	70	69	69	69	70
39.50	1044	947	954	1060	861	70	69	69	69	70
39.75	1049	953	960	1064	868	71	69	69	69	70
40.00	1053	959	965	1069	876	70	69	69	69	70
40.25	1058	962	970	1074	883	71	69	69	69	70
40.50	1058	966	976	1080	889	70	69	69	69	70
40.75	1061	970	981	1085	899	70	69	69	68	70
41.00	1064	974	986	1090	907	71	69	69	69	70
41.25	1068	978	991	1086	916	70	69	69	69	69
41.50	1071	981	995	1090	924	70	69	69	69	70
41.75	1073	984	999	1096	930	71	69	69	69	70
42.00	1075	988	1003	1102	937	71	69	69	69	70
42.25	1077	992	1008	1107	944	71	69	69	69	70
42.50	1080	996	1011	1112	950	70	69	69	69	70
42.75	1084	998	1014	1118	955	71	69	69	69	70
43.00	1088	1001	1017	1122	960	70	69	69	69	70
43.25	1091	1004	1021	1126	965	71	69	69	69	70
43.50	1094	1007	1026	1130	971	71	69	69	69	70
43.75	1097	1010	1031	1135	977	70	69	69	69	70
44.00	1100	1010	1035	1139	983	71	69	69	69	70
44.25	1104	1015	1039	1144	987	70	69	69	69	70
44.50	1106	1019	1043	1149	992	71	69	69	69	70
44.75	1109	1022	1047	1152	995	71	69	69	68	70
45.00	1111	1025	1050	1156	998	71	69	69	69	70





### Membrane Protection Thermocouple Temperatures (Continued)

Time (min)	EXPOSED SIDE TEMP. °F			WP-1950		10/4/2012	AWC	UNEXPOSED SIDE TEMP. °F			K-1089
	WP11	WP12	WP13	WP14	WP15	WP16	WP17	WP18	WP19	WP20	
45.25	1113	1028	1053	1159	1002	71	69	69	69	70	
45.50	1117	1031	1057	1162	1006	71	69	69	69	70	
45.75	1120	1034	1060	1166	1010	71	69	69	69	70	
46.00	1123	1037	1064	1169	1015	71	70	69	68	70	
46.25	1127	1041	1066	1172	1019	71	69	69	69	70	
46.50	1125	1044	1069	1175	1023	71	69	69	69	70	
46.75	1126	1047	1072	1178	1027	71	69	69	69	70	
47.00	1128	1050	1042	1181	1031	71	69	69	68	70	
47.25	1130	1052	1049	1184	1036	71	69	69	69	70	
47.50	1133	1053	1055	1187	1039	71	69	69	69	70	
47.75	1136	1056	1060	1190	1043	71	69	69	69	70	
48.00	1140	1054	1064	1193	1047	71	69	69	69	70	
48.25	1143	1055	1067	1195	1050	71	69	69	69	70	
48.50	1146	1057	1070	1197	1054	71	69	69	69	70	
48.75	1148	1060	1073	1200	1056	71	69	69	69	70	
49.00	1152	1062	1075	1201	1059	71	69	69	69	70	
49.25	1154	1064	1077	1203	1063	71	69	69	69	70	
49.50	1158	1066	1080	1206	1065	71	70	69	69	70	
49.75	1161	1068	1083	1208	1068	71	69	69	68	70	
50.00	1162	1071	1086	1210	1071	71	69	69	68	70	
50.25	1163	1073	1088	1212	1072	71	69	69	69	70	
50.50	1166	1075	1091	1215	1072	71	69	69	68	70	
50.75	1168	1078	1095	1217	1074	71	69	69	69	70	
51.00	1171	1080	1098	1219	1076	71	69	69	68	70	
51.25	1173	1082	1101	1220	1078	71	69	69	68	70	
51.50	1175	1084	1104	1222	1081	71	69	69	69	70	
51.75	1177	1083	1106	1224	1082	71	69	69	68	70	
52.00	1180	1085	1109	1225	1081	71	69	69	69	70	
52.25	1182	1087	1112	1227	1083	71	69	69	68	70	
52.50	1185	1090	1114	1228	1080	71	69	69	68	70	
52.75	1187	1092	1116	1229	1083	71	69	69	68	70	
53.00	1190	1093	1118	1232	1087	71	69	69	68	70	
53.25	1193	1095	1120	1234	1090	71	69	69	68	70	
53.50	1195	1097	1120	1236	1093	71	69	69	68	70	
53.75	1197	1098	1122	1237	1096	71	69	69	68	70	
54.00	1200	1100	1120	1239	1098	71	69	69	68	70	
54.25	1202	1101	1122	1242	1098	71	69	69	68	70	
54.50	1205	1102	1126	1245	1099	71	69	69	68	70	
54.75	1207	1104	1128	1248	1101	71	69	69	68	70	
55.00	1209	1106	1132	1249	1102	71	69	69	68	70	
55.25	1211	1107	1135	1250	1103	71	69	69	68	70	
55.50	1213	1108	1139	1254	1105	71	69	69	68	70	
55.75	1215	1108	1143	1258	1108	71	69	69	68	70	
56.00	1218	1109	1146	1262	1110	71	69	69	69	70	
56.25	1220	1111	1150	1266	1112	71	69	69	68	70	
56.50	1223	1112	1154	1270	1114	71	69	69	68	70	
56.75	1225	1114	1159	1275	1114	71	69	69	68	70	
57.00	1227	1116	1164	1279	1116	71	69	69	68	70	
57.25	1229	1119	1168	1284	1118	71	69	69	68	70	
57.50	1231	1121	1167	1288	1120	71	69	69	68	70	
57.75	1233	1124	1171	1294	1122	71	69	69	68	70	
58.00	1235	1127	1177	1301	1124	71	70	69	68	70	
58.25	1237	1128	1184	1308	1126	71	69	69	68	70	
58.50	1240	1131	1189	1319	1129	71	69	69	68	70	
58.75	1243	1134	1196	1332	1131	71	69	69	68	70	
59.00	1245	1137	1202	1347	1133	71	69	69	68	70	
59.25	1247	1140	1208	1362	1136	71	69	69	68	70	
59.50	1249	1143	1214	1376	1138	71	70	69	68	70	
59.75	1251	1145	1221	1393	1140	71	69	69	68	70	
60.00	1254	1148	1227	1413	1143	71	69	69	68	70	



## Membrane Protection Thermocouple Temperatures (Continued)

Time (min)	EXPOSED SIDE TEMP. °F			WP-1950		10/4/2012	AWC	UNEXPOSED SIDE TEMP. °F			K-1089
	WP11	WP12	WP13	WP14	WP15	WP16	WP17	WP18	WP19	WP20	
60.25	1256	1150	1232	1431	1145	71	69	69	68	70	
60.50	1258	1153	1238	1446	1147	71	69	69	68	70	
60.75	1259	1155	1244	1460	1149	71	69	69	68	70	
61.00	1261	1157	1249	1473	1151	71	69	69	68	70	
61.25	1263	1159	1255	1488	1153	71	69	69	68	71	
61.50	1265	1161	1261	1498	1156	71	69	69	68	70	
61.75	1267	1163	1266	1507	1158	71	69	69	68	70	
62.00	1268	1165	1271	1515	1161	71	69	69	68	70	
62.25	1270	1166	1275	1529	1163	71	69	69	68	70	
62.50	1272	1168	1280	1547	1165	71	69	69	68	70	
62.75	1274	1170	1285	1556	1168	71	69	69	68	70	
63.00	1274	1172	1290	1568	1170	71	69	69	68	71	
63.25	1277	1174	1294	1573	1172	71	69	69	68	71	
63.50	1278	1176	1299	1586	1175	71	69	69	68	70	
63.75	1280	1179	1303	1598	1177	71	69	69	68	71	
64.00	1282	1181	1309	1607	1179	71	69	69	68	70	
64.25	1284	1183	1314	1620	1181	71	69	69	68	71	
64.50	1285	1186	1319	1627	1184	71	70	69	68	70	
64.75	1287	1189	1323	1633	1187	71	69	69	68	70	
65.00	1288	1191	1328	1639	1190	71	69	69	68	71	
65.25	1289	1193	1332	1646	1192	71	70	69	68	70	
65.50	1291	1195	1336	1651	1195	71	69	69	68	71	
65.75	1292	1197	1340	1652	1198	71	69	69	68	71	
66.00	1293	1199	1344	1647	1201	71	69	69	68	71	
66.25	1294	1201	1349	1636	1204	71	70	69	68	71	
66.50	1296	1203	1354	1617	1207	71	69	69	68	71	
66.75	1297	1205	1358	1599	1210	71	69	69	68	70	
67.00	1298	1207	1362	1582	1212	71	69	69	68	71	
67.25	1299	1209	1366	1565	1215	71	69	69	68	71	
67.50	1300	1210	1369	1551	1218	71	70	69	68	71	
67.75	1302	1212	1372	1549	1220	71	69	69	68	71	
68.00	1303	1214	1375	1540	1223	71	70	69	68	71	
68.25	1304	1216	1377	1541	1225	71	70	69	68	71	
68.50	1306	1217	1380	1542	1228	71	69	69	68	71	
68.75	1308	1220	1382	1796	1230	71	69	69	68	71	
69.00	1310	1222	1386	1787	1233	71	69	69	68	71	
69.25	1312	1224	1389	1797	1235	71	69	69	68	70	
69.50	1314	1226	1394	1760	1238	71	69	69	68	71	
69.75	1314	1227	1398	1765	1242	71	69	69	68	71	
70.00	1316	1229	1403	1773	1245	71	70	69	68	71	
70.25	1318	1231	1409	1772	1247	71	69	69	68	71	
70.50	1320	1233	1414	1765	1250	71	70	69	68	71	
70.75	1322	1235	1420	1762	1253	71	69	69	68	71	
71.00	1323	1237	1427	1754	1256	71	69	69	68	71	
71.25	1326	1239	1434	1745	1258	71	69	69	68	71	
71.50	1328	1241	1441	1732	1261	71	70	69	67	71	
71.75	1330	1243	1450	1724	1264	71	70	69	68	70	
72.00	1331	1245	1458	1715	1266	71	69	69	68	70	
72.25	1333	1247	1466	1696	1269	71	70	69	68	71	
72.50	1333	1248	1477	1698	1272	71	69	69	68	71	
72.75	1335	1250	1485	1694	1275	71	70	69	68	71	
73.00	1336	1252	1489	1692	1278	71	70	69	68	71	
73.25	1339	1254	1494	1701	1281	71	70	69	68	71	
73.50	1340	1255	1503	1718	1284	71	70	70	68	71	
73.75	1342	1258	1503	1720	1286	71	69	69	68	71	
74.00	1344	1259	1502	1706	1289	71	70	69	68	71	
74.25	1345	1261	1501	1688	1292	71	70	69	68	71	
74.50	1347	1263	1501	1672	1295	71	69	69	67	71	
74.75	1348	1264	1500	1657	1298	71	70	70	67	71	
75.00	1349	1266	1501	1679	1300	71	70	69	67	71	



## Membrane Protection Thermocouple Temperatures (Continued)

Time (min)	EXPOSED SIDE TEMP. °F			WP-1950		10/4/2012	AWC	UNEXPOSED SIDE TEMP. °F			K-1089
	WP11	WP12	WP13	WP14	WP15	WP16	WP17	WP18	WP19	WP20	
75.25	1351	1267	1501	1681	1302	70	69	69	67	71	
75.50	1351	1269	1500	1685	1304	71	70	69	67	71	
75.75	1352	1270	1503	1681	1306	71	70	69	67	71	
76.00	1354	1271	1505	1676	1309	71	69	69	67	71	
76.25	1355	1273	1507	1644	1311	71	69	69	67	71	
76.50	1356	1275	1506	1653	1312	71	70	69	66	71	
76.75	1358	1276	1504	1673	1314	71	69	69	67	71	
77.00	1359	1277	1503	1682	1316	71	69	70	67	71	
77.25	1361	1278	1503	1714	1318	71	69	69	67	71	
77.50	1362	1279	1503	1693	1319	71	70	69	67	71	
77.75	1363	1281	1504	1709	1321	71	70	69	67	71	
78.00	1365	1282	1508	1722	1323	71	70	69	67	71	
78.25	1366	1284	1511	1707	1324	71	70	69	67	71	
78.50	1367	1285	1514	1685	1326	71	70	69	67	71	
78.75	1368	1287	1518	1676	1328	71	70	69	67	71	
79.00	1369	1289	1519	1674	1330	71	70	69	67	71	
79.25	1370	1290	1522	1666	1331	71	70	69	67	71	
79.50	1372	1291	1525	1662	1332	71	69	69	67	71	
79.75	1373	1293	1531	1680	1333	71	69	69	67	71	
80.00	1373	1294	1535	1674	1335	71	70	69	67	71	
80.25	1374	1295	1540	1656	1336	71	70	69	67	71	
80.50	1375	1296	1544	1649	1338	71	70	69	67	71	
80.75	1376	1297	1545	1653	1339	71	70	69	67	71	
81.00	1378	1298	1546	1648	1340	71	69	69	67	71	
81.25	1379	1299	1546	1688	1341	71	69	70	67	71	
81.50	1380	1300	1549	1685	1342	71	69	69	67	71	
81.75	1381	1301	1550	1669	1344	71	70	69	66	71	
82.00	1383	1303	1550	1664	1345	71	70	69	67	71	
82.25	1384	1304	1549	1678	1346	71	70	69	67	71	
82.50	1385	1306	1545	1687	1347	71	70	69	67	71	
82.75	1387	1308	1545	1673	1348	71	69	70	67	71	
83.00	1389	1309	1548	1655	1349	71	69	69	67	71	
83.25	1390	1311	1547	1638	1350	71	70	69	67	71	
83.50	1393	1314	1544	1691	1350	71	70	69	67	71	
83.75	1396	1315	1547	1696	1350	71	69	69	67	71	
84.00	1398	1317	1546	1666	1350	71	69	69	67	71	
84.25	1400	1319	1550	1689	1350	71	70	69	67	71	
84.50	1402	1320	1553	1727	1350	71	70	69	67	71	
84.75	1404	1322	1556	1739	1351	71	70	69	67	71	
85.00	1406	1323	1556	1746	1352	71	70	69	67	71	
85.25	1407	1325	1560	1734	1353	71	70	69	67	71	
85.50	1409	1327	1563	1732	1354	71	70	69	67	71	
85.75	1411	1328	1567	1733	1355	71	70	70	67	71	
86.00	1413	1329	1571	1725	1356	71	70	69	67	71	
86.25	1415	1331	1571	1703	1357	71	69	69	67	71	
86.50	1416	1333	1574	1687	1358	71	70	69	67	71	
86.75	1417	1335	1575	1683	1359	71	70	70	66	71	
87.00	1418	1337	1575	1675	1360	71	70	69	66	71	
87.25	1419	1338	1574	1673	1361	71	70	69	67	71	
87.50	1421	1340	1573	1670	1363	71	70	69	67	71	
87.75	1422	1342	1574	1661	1364	71	70	70	67	71	
88.00	1423	1345	1574	1662	1366	71	70	69	67	71	
88.25	1424	1347	1569	1655	1367	71	70	70	67	71	
88.50	1426	1349	1556	1668	1368	71	70	70	67	71	
88.75	1428	1351	1543	1677	1369	71	70	70	67	71	
89.00	1429	1353	1541	1671	1370	71	70	70	67	71	
89.25	1431	1356	1539	1669	1371	71	70	69	67	71	
89.50	1433	1359	1547	1662	1371	71	70	69	67	71	
89.75	1434	1359	1553	1662	1371	71	70	70	67	71	
90.00	1435	1361	1567	1695	1373	71	70	69	67	71	



## Membrane Protection Thermocouple Temperatures (Continued)

Time (min)	EXPOSED SIDE TEMP. °F			WP-1950		10/4/2012	AWC	UNEXPOSED SIDE TEMP. °F			K-1089
	WP11	WP12	WP13	WP14	WP15	WP16	WP17	WP18	WP19	WP20	
90.25	1436	1363	1591	1713	1375	71	70	69	67	72	
90.50	1437	1365	1621	1714	1376	71	69	70	67	71	
90.75	1438	1367	1645	1708	1376	71	70	69	67	71	
91.00	1440	1369	1673	1725	1377	72	70	70	67	72	
91.25	1442	1372	1703	1758	1378	71	69	69	67	71	
91.50	1443	1373	1704	1815	1379	71	69	69	67	71	
91.75	1443	1375	1720	1809	1380	71	70	69	67	71	
92.00	1444	1377	1727	1793	1380	72	70	69	67	71	
92.25	1444	1379	1734	1789	1381	72	70	70	67	71	
92.50	1444	1380	1742	1782	1382	72	70	69	67	71	
92.75	1445	1382	1749	1788	1383	72	70	69	67	72	
93.00	1445	1384	1752	1792	1384	72	70	69	67	71	
93.25	1445	1385	1753	1789	1385	72	70	70	67	72	
93.50	1446	1387	1755	1789	1386	72	70	69	67	71	
93.75	1446	1389	1736	1783	1386	72	70	70	67	72	
94.00	1446	1391	1731	1781	1387	72	70	70	67	72	
94.25	1446	1393	1727	1788	1388	72	70	70	67	72	
94.50	1447	1395	1729	1787	1389	72	70	70	67	72	
94.75	1447	1397	1730	1773	1391	72	70	70	67	72	
95.00	1448	1399	1731	1795	1392	72	70	70	67	72	
95.25	1447	1400	1732	1789	1395	72	70	70	67	72	
95.50	1447	1403	1739	1779	1395	72	70	70	67	72	
95.75	1448	1405	1739	1764	1396	72	70	70	67	72	
96.00	1448	1407	1735	1751	1396	72	70	70	67	72	
96.25	1449	1410	1736	1744	1396	72	69	70	67	72	
96.50	1450	1410	1741	1730	1396	72	69	70	67	72	
96.75	1450	1411	1735	1726	1397	72	70	69	67	72	
97.00	1451	1411	1734	1723	1398	72	70	70	67	72	
97.25	1451	1412	1735	1719	1399	72	70	69	67	72	
97.50	1451	1414	1736	1715	1400	72	70	70	67	72	
97.75	1452	1415	1740	1713	1401	72	69	69	67	72	
98.00	1453	1416	1737	1710	1402	72	70	70	67	72	
98.25	1453	1417	1739	1719	1406	72	70	70	67	72	
98.50	1454	1418	1741	1723	1407	72	70	70	67	72	
98.75	1454	1419	1741	1736	1408	72	70	70	67	72	
99.00	1455	1420	1743	1732	1409	72	69	70	67	72	
99.25	1455	1421	1743	1744	1409	72	70	70	67	72	
99.50	1455	1423	1740	1742	1409	72	70	70	67	72	
99.75	1456	1425	1742	1742	1410	72	70	70	67	72	
100.00	1456	1427	1744	1744	1410	72	70	70	67	72	
100.25	1456	1428	1744	1747	1412	72	70	70	67	72	
100.50	1457	1430	1748	1752	1413	72	70	70	67	72	
100.75	1457	1431	1749	1748	1414	72	70	70	67	72	
101.00	1457	1433	1750	1745	1415	72	70	70	67	72	
101.25	1458	1434	1754	1747	1417	72	70	70	67	72	
101.50	1458	1435	1750	1747	1419	72	69	70	67	72	
101.75	1458	1439	1756	1745	1421	72	69	70	67	72	
102.00	1458	1440	1759	1747	1423	72	70	69	67	72	
102.25	1459	1443	1760	1749	1425	72	70	70	67	72	
102.50	1460	1445	1759	1751	1428	72	70	70	67	72	
102.75	1460	1446	1756	1753	1430	72	70	70	67	72	
103.00	1460	1448	1757	1771	1432	72	70	70	67	72	
103.25	1461	1448	1754	1774	1434	73	70	70	67	72	
103.50	1461	1450	1754	1788	1435	73	70	70	67	72	
103.75	1462	1446	1760	1814	1436	72	70	70	67	72	
104.00	1462	1445	1755	1811	1436	72	70	70	67	72	
104.25	1463	1445	1760	1816	1437	73	70	70	67	72	
104.50	1464	1447	1753	1792	1438	72	70	70	67	72	
104.75	1464	1448	1756	1790	1438	72	70	70	67	72	
105.00	1465	1450	1762	1777	1440	73	70	70	67	72	



## Membrane Protection Thermocouple Temperatures (Continued)

Time (min)	EXPOSED SIDE TEMP. °F			WP-1950		10/4/2012	AWC	UNEXPOSED SIDE TEMP. °F			K-1089
	WP11	WP12	WP13	WP14	WP15	WP16	WP17	WP18	WP19	WP20	
105.25	1464	1451	1761	1788	1441	73	70	70	67	72	
105.50	1465	1453	1756	1780	1442	73	70	70	67	72	
105.75	1464	1454	1750	1781	1443	72	70	70	67	72	
106.00	1464	1456	1752	1777	1444	73	70	70	67	72	
106.25	1463	1458	1755	1776	1446	73	70	70	67	72	
106.50	1463	1460	1757	1787	1448	73	70	70	67	72	
106.75	1462	1462	1754	1791	1449	73	69	70	67	72	
107.00	1461	1463	1747	1792	1450	73	70	69	67	72	
107.25	1461	1466	1744	1790	1452	73	70	70	67	72	
107.50	1461	1468	1738	1795	1454	73	70	70	67	72	
107.75	1460	1470	1733	1790	1456	73	70	70	67	72	
108.00	1459	1473	1718	1773	1457	73	70	70	67	72	
108.25	1459	1473	1730	1768	1461	73	70	70	67	72	
108.50	1458	1475	1726	1761	1463	73	70	70	67	72	
108.75	1457	1475	1719	1751	1467	73	70	70	67	72	
109.00	1456	1474	1720	1745	1471	73	70	70	67	72	
109.25	1456	1475	1715	1748	1477	73	70	70	67	72	
109.50	1455	1476	1707	1744	1483	73	70	70	67	73	
109.75	1455	1476	1710	1740	1489	73	70	70	67	73	
110.00	1454	1478	1713	1739	1494	73	70	70	67	72	
110.25	1454	1478	1714	1726	1504	73	70	70	67	72	
110.50	1453	1478	1710	1723	1514	73	70	70	67	73	
110.75	1453	1479	1705	1723	1522	73	70	70	67	72	
111.00	1452	1480	1713	1729	1530	73	70	70	67	73	
111.25	1452	1481	1714	1723	1537	73	70	70	67	73	
111.50	1450	1482	1711	1724	1541	73	70	70	67	73	
111.75	1451	1485	1714	1732	1555	73	69	70	67	72	
112.00	1452	1486	1715	1780	1579	73	69	70	67	72	
112.25	1452	1488	1720	1781	1586	73	70	69	67	73	
112.50	1451	1490	1719	1784	1614	73	70	70	54	73	
112.75	1451	1493	1712	1791	1638	73	70	70	66	72	
113.00	1452	1495	1697	1804	1664	73	70	70	66	73	
113.25	1452	1496	1699	1769	1639	73	70	70	67	73	
113.50	1453	1496	1691	1752	1633	73	70	70	66	73	
113.75	1452	1497	1686	1744	1630	73	70	70	67	73	
114.00	1452	1498	1685	1750	1629	73	70	70	67	73	
114.25	1452	1500	1686	1747	1632	73	70	70	67	73	
114.50	1452	1502	1689	1740	1636	73	70	70	66	73	
114.75	1451	1504	1689	1728	1635	73	70	70	66	73	
115.00	1451	1507	1693	1729	1637	73	70	70	66	73	
115.25	1452	1508	1696	1732	1638	73	70	70	67	73	
115.50	1452	1510	1696	1719	1637	73	70	70	67	73	
115.75	1451	1512	1698	1708	1645	73	70	70	67	73	
116.00	1452	1514	1698	1704	1640	73	70	70	66	73	
116.25	1454	1514	1700	1716	1640	73	70	70	67	73	
116.50	1455	1515	1698	1721	1641	74	70	70	66	73	
116.75	1457	1517	1691	1723	1638	73	70	70	67	73	
117.00	1458	1517	1702	1728	1640	74	69	70	67	73	
117.25	1458	1518	1704	1728	1642	73	70	70	66	73	
117.50	1459	1518	1703	1730	1648	73	70	70	60	73	
117.75	1459	1519	1703	1722	1650	74	70	70	61	73	
118.00	1460	1520	1703	1723	1654	73	70	70	67	73	
118.25	1460	1520	1703	1724	1657	74	70	70	67	73	
118.50	1458	1520	1701	1718	1651	73	70	70	67	73	
118.75	1460	1520	1704	1723	1648	73	70	70	67	73	
119.00	1465	1520	1707	1717	1651	74	70	70	67	73	
119.25	1468	1519	1708	1714	1651	74	70	70	67	73	
119.50	1472	1518	1709	1711	1654	74	70	70	67	73	
119.75	1723	1518	1708	1728	1646	74	70	70	67	73	
120.00	1673	1519	1707	1729	1648	73	70	70	67	73	



### Membrane Protection Thermocouple Temperatures (Continued)

Time (min)	EXPOSED SIDE TEMP. °F			WP-1950		10/4/2012	AWC	UNEXPOSED SIDE TEMP. °F			K-1089
	WP11	WP12	WP13	WP14	WP15	WP16	WP17	WP18	WP19	WP20	
120.25	1631	1519	1707	1727	1643	74	70	70	67	73	
120.50	1613	1520	1707	1725	1648	74	70	70	67	73	
120.75	1603	1520	1715	1725	1647	73	70	70	67	73	
121.00	1599	1520	1706	1721	1645	74	70	70	67	73	
121.25	1595	1521	1713	1729	1644	74	70	70	67	73	
121.50	1592	1522	1713	1733	1645	74	70	70	67	73	
121.75	1589	1523	1711	1737	1644	74	70	70	67	73	
122.00	1585	1524	1716	1734	1646	74	69	70	67	73	
122.25	1584	1525	1716	1725	1646	74	70	70	67	73	
122.50	1587	1526	1712	1723	1650	74	70	70	67	73	
122.75	1582	1525	1713	1722	1649	74	70	70	62	73	
123.00	1582	1527	1712	1725	1647	74	70	70	67	73	
123.25	1562	1528	1714	1725	1644	74	70	70	67	73	
123.50	1570	1529	1711	1731	1640	74	70	70	67	73	
123.75	1572	1532	1710	1730	1645	74	70	70	67	73	
124.00	1582	1533	1718	1731	1643	74	70	70	67	74	
124.25	1564	1533	1714	1728	1647	74	70	70	67	74	
124.50	1557	1535	1709	1727	1653	74	70	70	67	73	
124.75	1539	1534	1711	1728	1656	74	70	70	67	74	
125.00	1763	1535	1711	1728	1662	74	70	70	67	73	
125.25	1835	1537	1707	1720	1672	74	70	70	67	74	
125.50	1798	1537	1698	1718	1675	74	70	70	67	74	
125.75	1767	1536	1710	1719	1681	74	70	70	67	74	
126.00	1748	1536	1708	1719	1684	74	70	70	67	74	
126.25	1724	1537	1707	1713	1697	74	70	70	67	74	
126.50	1714	1536	1700	1715	1692	74	70	70	67	74	
126.75	1692	1534	1693	1716	1704	74	70	70	67	74	
127.00	1669	1531	1695	1711	1710	74	70	70	67	74	
127.25	1711	1527	1701	1711	1719	74	69	70	67	74	
127.50	1698	1525	1704	1712	1714	74	70	70	67	74	
127.75	1735	1519	1683	1713	1716	74	70	70	60	74	
128.00	1730	1517	1694	1714	1722	74	70	70	60	74	
128.25	1731	1511	1668	1718	1717	75	70	70	67	74	
128.50	1771	1505	1691	1714	1712	75	70	70	67	74	
128.75	1796	1502	1698	1711	1713	74	70	70	67	74	
129.00	1791	1500	1688	1706	1703	74	70	70	67	74	
129.25	1790	1496	1680	1709	1709	74	70	70	67	74	
129.50	1792	1493	1673	1709	1714	75	70	70	67	74	
129.75	1790	1491	1642	1703	1718	74	70	70	67	74	
130.00	1792	1491	1668	1701	1724	75	70	70	67	74	
130.25	1801	1490	1643	1699	1737	75	70	70	67	74	
130.50	1873	1488	1641	1700	1743	75	70	70	67	74	
130.75	1879	1487	1624	1695	1739	75	70	70	67	74	
131.00	1873	1484	1616	1697	1735	75	70	70	67	74	
131.25	1880	1481	1605	1698	1730	75	70	70	67	74	
131.50	1876	1485	1575	1704	1729	75	70	70	67	74	
131.75	1880	1484	1473	1705	1732	75	70	70	67	74	
132.00	1882	1482	1493	1708	1722	75	70	70	67	74	
132.25	1878	1480	1511	1706	1714	75	70	70	67	74	
132.50	1882	1475	1523	1701	1705	75	70	70	67	74	
132.75	1885	1474	1492	1699	1697	75	70	70	67	75	
133.00	1886	1454	1454	1679	1688	75	70	70	60	74	
133.25	1887	1448	1492	1689	1698	75	70	70	67	74	
133.50	1890	1443	1468	1706	1694	75	70	70	67	75	
133.75	1890	1437	1450	1707	1690	75	70	70	67	75	
134.00	1889	1435	1495	1692	1680	75	70	70	67	75	
134.25	1885	1505	1496	1696	1683	75	70	70	67	74	
134.50	1889	1511	1502	1688	1685	75	70	70	67	75	
134.75	1888	1551	1487	1688	1674	75	70	70	67	75	
135.00	1893	1559	1457	1688	1671	75	70	70	67	75	



## Membrane Protection Thermocouple Temperatures (Continued)

Time (min)	EXPOSED SIDE TEMP. °F			WP-1950		10/4/2012	AWC	UNEXPOSED SIDE TEMP. °F			K-1089
	WP11	WP12	WP13	WP14	WP15	WP16	WP17	WP18	WP19	WP20	
135.25	1893	1557	1765	1681	1667	75	70	70	67	75	
135.50	1897	1559	1802	1681	1665	75	70	70	67	75	
135.75	1895	1560	1815	1680	1662	75	70	70	67	75	
136.00	1892	1563	1748	1685	1639	75	70	70	66	75	
136.25	1888	1557	1745	1696	1635	76	70	70	67	75	
136.50	1886	1556	1811	1693	1588	76	70	70	67	75	
136.75	1888	1560	1797	1692	1596	76	70	70	67	75	
137.00	1880	1550	1818	1690	1600	76	70	70	66	75	
137.25	1881	1543	1831	1709	1591	76	70	70	67	75	
137.50	1888	1542	1844	1708	1579	76	70	70	66	75	
137.75	1887	1539	1846	1710	1566	76	70	70	67	75	
138.00	1886	1544	1839	1705	1561	76	70	70	61	75	
138.25	1889	1542	1841	1710	1550	76	70	70	67	75	
138.50	1882	1539	1445	1709	1526	76	70	70	67	75	
138.75	1879	1541	1379	1709	1510	76	70	70	67	75	
139.00	1875	1539	1338	1706	1512	76	70	70	67	75	
139.25	1882	1543	1284	1704	1494	76	70	70	66	75	
139.50	1881	1540	1894	1704	1527	76	70	70	66	75	
139.75	1881	1537	1872	1705	1552	76	70	70	67	75	
140.00	1876	1541	1881	1706	1473	76	70	70	67	75	
140.25	1872	1542	1894	1701	1540	76	70	70	66	75	
140.50	1874	1542	1885	1697	1435	77	70	70	66	75	
140.75	1866	1542	1853	1696	1431	76	70	70	66	75	
141.00	1865	1538	1858	1703	1414	76	70	70	66	76	
141.25	1870	1543	1856	1699	1402	77	70	71	66	75	
141.50	1864	1540	1855	1701	1409	77	70	70	66	76	
141.75	1867	1541	1871	1703	1397	77	70	71	66	76	
142.00	1869	1540	1872	1704	1392	77	70	70	66	76	
142.25	1864	1538	1889	1706	1368	77	70	70	66	76	
142.50	1869	1542	1877	1713	1354	77	70	70	66	76	
142.75	1865	1542	1867	1713	1338	77	70	70	66	76	
143.00	1863	1537	1864	1714	1346	77	70	70	66	76	
143.25	1868	1539	1869	1713	1322	77	70	70	61	76	
143.50	1865	1538	1874	1709	1706	77	70	70	66	76	
143.75	1865	1540	1889	1707	1706	77	70	71	66	76	
144.00	1865	1540	1857	1710	1710	77	70	71	66	76	
144.25	1863	1539	1854	1716	1707	77	70	70	66	76	
144.50	1864	1541	1866	1716	1795	78	70	71	66	76	
144.75	1860	1541	1875	1719	1821	77	70	71	66	76	
145.00	1866	1542	1877	1715	1823	77	70	70	66	76	
145.25	1864	1538	1873	1717	1827	78	70	70	66	76	
145.50	1865	1542	1881	1716	1821	78	70	71	66	76	
145.75	1868	1541	1887	1711	1824	78	70	70	66	76	
146.00	1863	1545	1889	1710	1826	78	70	70	66	76	
146.25	1869	1542	1893	1705	1830	78	70	71	66	76	
146.50	1861	1540	1891	1699	1828	78	70	71	66	76	
146.75	1859	1541	1883	1698	1819	78	70	71	66	76	
147.00	1862	1540	1881	1708	1818	78	70	70	66	76	
147.25	1864	1538	1879	1721	1820	78	70	70	66	76	
147.50	1863	1539	1881	1721	1808	78	70	70	65	76	
147.75	1860	1536	1871	1713	1800	78	70	71	66	77	
148.00	1861	1540	1872	1710	1808	78	70	70	66	76	
148.25	1866	1538	1870	1666	1795	78	70	71	60	76	
148.50	1866	1539	1886	1624	1799	78	70	71	66	76	
148.75	1869	1538	1893	1617	1786	78	70	71	66	76	
149.00	1872	1540	1892	1618	1771	79	70	71	66	77	
149.25	1872	1539	1888	1618	1758	79	70	71	66	77	
149.50	1874	1542	1897	1615	1726	79	71	71	66	77	
149.75	1872	1543	1892	1612	1671	79	70	71	66	77	
150.00	1870	1543	1906	1611	1621	79	70	71	65	77	



## Membrane Protection Thermocouple Temperatures (Continued)

Time (min)	EXPOSED SIDE TEMP. °F			WP-1950		AWC	UNEXPOSED SIDE TEMP. °F				K-1089
	WP11	WP12	WP13	WP14	WP15		WP16	WP17	WP18	WP19	
150.25	1870	1541	1895	1605	1574	79	70	71	65	77	
150.50	1869	1541	1895	1611	1630	79	71	71	66	77	
150.75	1871	1541	1882	1605	1651	79	70	71	66	77	
151.00	1869	1541	1905	1595	1623	79	71	71	66	77	
151.25	1872	1541	1903	1582	1737	79	70	71	66	77	
151.50	1872	1540	1880	1576	1720	79	71	71	66	77	
151.75	1873	1541	1884	1572	1822	79	70	71	65	77	
152.00	1870	1542	1890	1570	1750	79	70	71	66	77	
152.25	1873	1541	1890	1571	1807	80	70	71	66	77	
152.50	1875	1539	1889	1572	1811	79	70	71	66	77	
152.75	1874	1537	1891	1573	1831	80	70	71	66	77	
153.00	1877	1537	1890	1579	1823	80	71	70	65	77	
153.25	1877	1539	1890	1579	1824	80	70	70	65	77	
153.50	1876	1536	1897	1580	1829	80	70	71	59	77	
153.75	1877	1539	1890	1582	1832	80	70	71	66	77	
154.00	1876	1536	1890	1582	1836	80	70	71	66	77	
154.25	1877	1535	1889	1585	1835	80	70	71	65	78	
154.50	1877	1538	1903	1582	1846	80	71	71	66	77	
154.75	1876	1538	1905	1580	1849	80	71	71	65	78	
155.00	1869	1537	1910	1582	1856	80	71	71	66	78	
155.25	1869	1533	1911	1583	1857	80	71	71	66	78	
155.50	1872	1532	1910	1584	1861	80	70	71	66	78	
155.75	1870	1529	1914	1585	1860	81	71	71	66	78	
156.00	1869	1530	1927	1583	1866	81	70	71	65	78	
156.25	1866	1529	1929	1582	1870	81	70	71	66	78	
156.50	1867	1528	1935	1594	1870	81	71	71	66	78	
156.75	1863	1527	1931	1602	1874	81	70	71	65	78	
157.00	1862	1527	1915	1653	1878	81	71	71	65	78	
157.25	1859	1520	1907	1647	1874	81	71	71	66	78	
157.50	1857	1514	1906	1647	1868	81	71	71	66	78	
157.75	1856	1507	1906	1647	1862	81	71	71	65	78	
158.00	1852	1502	1904	1660	1859	81	70	71	65	78	
158.25	1853	1493	1896	1670	1852	82	71	71	65	78	
158.50	1853	1487	1890	1671	1848	82	71	71	58	78	
158.75	1848	1482	1896	1678	1848	82	71	71	65	78	
159.00	1843	1473	1886	1671	1845	82	71	71	65	78	
159.25	1844	1471	1881	1704	1843	82	71	71	66	79	
159.50	1835	1462	1877	1691	1829	82	71	71	65	79	
159.75	1833	1456	1883	1690	1825	82	71	71	65	79	
160.00	1828	1449	1878	1679	1836	82	71	71	65	79	
160.25	1826	1446	1876	1680	1846	82	71	71	65	79	
160.50	1825	1441	1879	1694	1848	82	71	71	66	79	
160.75	1824	1436	1874	1678	1844	83	71	71	65	79	
161.00	1824	1433	1866	1693	1841	83	71	71	66	79	
161.25	1819	1436	1874	1691	1840	83	71	71	66	79	
161.50	1817	1433	1869	1691	1834	83	71	71	65	79	
161.75	1804	1429	1857	1699	1824	83	71	71	66	79	
162.00	1791	1424	1850	1691	1824	83	71	71	65	79	
162.25	1784	1420	1844	1730	1808	83	71	71	66	79	
162.50	1779	1417	1841	1762	1801	83	71	71	66	79	
162.75	1775	1415	1839	1721	1802	83	71	71	66	79	
163.00	1770	1416	1835	1711	1797	83	71	71	65	79	
163.25	1767	1417	1838	1669	1791	84	71	71	66	79	
163.50	1763	1413	1834	1651	1796	84	71	71	65	79	
163.75	1761	1411	1833	1619	1794	84	71	72	59	79	
164.00	1763	1409	1840	1603	1796	84	71	72	65	79	
164.25	1769	1412	1848	1586	1802	84	71	72	66	80	
164.50	1774	1406	1853	1616	1792	84	71	72	66	80	
164.75	1778	1395	1858	1641	1789	84	71	72	66	80	
165.00	1780	1392	1863	1674	1793	84	71	72	66	80	





## Membrane Protection Thermocouple Temperatures (Continued)

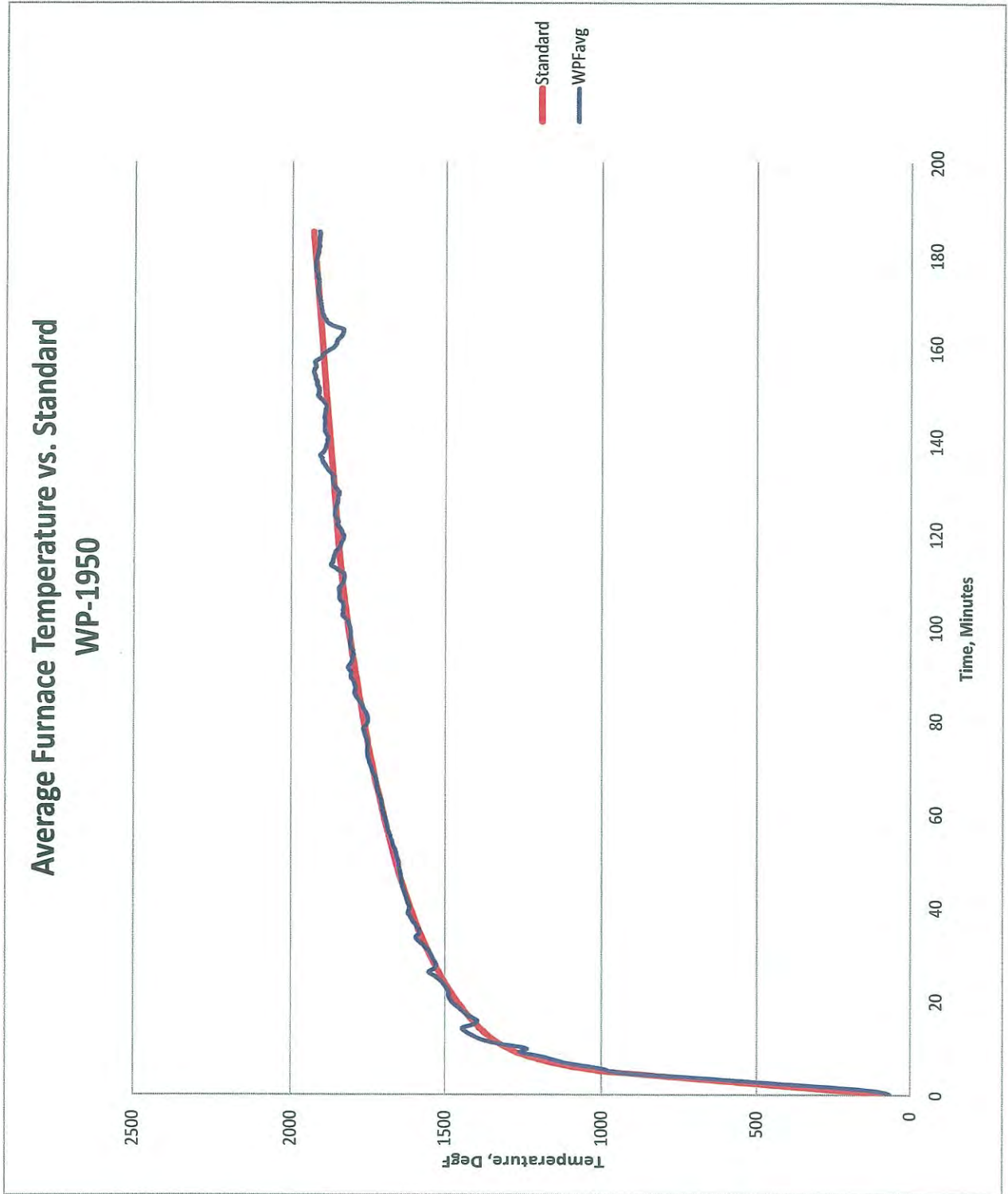
Time (min)	EXPOSED SIDE TEMP. °F			WP-1950		10/4/2012	AWC	UNEXPOSED SIDE TEMP. °F			K-1089
	WP11	WP12	WP13	WP14	WP15	WP16	WP17	WP18	WP19	WP20	
165.25	1780	1392	1867	1687	1795	85	71	72	65	80	
165.50	1784	1380	1859	1694	1799	85	71	72	66	80	
165.75	1787	1380	1857	1694	1801	85	71	73	66	80	
166.00	1789	1381	1859	1706	1805	85	71	73	65	80	
166.25	1791	1386	1866	1706	1826	85	71	73	66	80	
166.50	1794	1383	1869	1706	1835	85	71	74	66	80	
166.75	1795	1377	1857	1709	1835	85	71	74	65	80	
167.00	1797	1366	1857	1707	1840	85	71	74	66	80	
167.25	1798	1360	1854	1706	1842	85	71	74	66	80	
167.50	1800	1359	1856	1707	1836	85	71	75	65	80	
167.75	1801	1359	1867	1707	1846	86	71	75	66	81	
168.00	1803	1360	1864	1704	1842	86	71	75	66	80	
168.25	1804	1362	1866	1623	1846	86	71	75	66	81	
168.50	1806	1355	1873	1629	1844	86	71	75	66	81	
168.75	1808	1354	1874	1631	1846	86	71	76	66	81	
169.00	1810	1351	1878	1639	1854	86	71	77	66	81	
169.25	1812	1341	1878	1640	1852	86	71	77	66	80	
169.50	1812	1340	1885	1699	1858	86	71	77	66	81	
169.75	1814	1338	1892	1711	1862	86	71	78	66	81	
170.00	1814	1321	1893	1717	1869	87	71	78	66	81	
170.25	1816	1318	1891	1718	1870	86	71	80	66	81	
170.50	1816	1318	1885	1687	1869	87	71	80	66	81	
170.75	1817	1315	1890	1678	1869	87	71	80	66	81	
171.00	1818	1315	1887	1687	1881	87	71	81	66	81	
171.25	1819	1313	1888	1685	1883	87	71	81	66	82	
171.50	1819	1319	1883	1694	1885	87	71	81	66	82	
171.75	1802	1330	1885	1708	1883	87	71	81	66	82	
172.00	1796	1324	1885	1710	1883	87	71	82	66	82	
172.25	1795	1292	1891	1725	1872	87	71	82	66	82	
172.50	1792	1287	1889	1736	1874	87	71	82	66	82	
172.75	1794	1285	1893	1731	1815	87	71	83	66	82	
173.00	1792	1293	1894	1733	1797	88	71	83	66	82	
173.25	1791	1296	1896	1733	1794	88	71	83	66	82	
173.50	1790	1296	1894	1727	1793	88	71	83	66	83	
173.75	1790	1297	1892	1728	1794	88	71	83	66	83	
174.00	1790	1298	1888	1730	1799	88	71	84	66	83	
174.25	1783	1300	1892	1733	1800	88	71	84	66	83	
174.50	1777	1299	1889	1725	1802	88	71	84	66	83	
174.75	1772	1301	1891	1727	1826	88	71	84	66	83	
175.00	1766	1302	1894	1727	1842	88	71	84	66	83	
175.25	1761	1303	1896	1726	1853	88	71	84	66	83	
175.50	1755	1304	1899	1710	1849	88	71	84	66	84	
175.75	1750	1304	1894	1712	1852	89	72	84	66	84	
176.00	1747	1306	1895	1715	1856	89	71	84	66	84	
176.25	1753	1309	1896	1714	1861	89	71	83	66	85	
176.50	1618	1310	1892	1711	1271	89	71	84	66	86	
176.75	1523	1314	1893	1712	1269	89	71	84	66	93	
177.00	1488	1314	1892	1712	1253	90	72	84	66	102	
177.25	1487	1312	1886	1711	1292	90	72	84	66	111	
177.50	1498	1311	1889	1712	1280	90	72	84	67	118	
177.75	1501	1310	1887	1715	1229	90	72	84	66	125	
178.00	1499	1322	1890	1715	1187	90	72	84	66	127	
178.25	1507	1331	1888	1719	1757	90	71	84	66	147	
178.50	1492	1336	1897	1722	1156	90	71	84	66	150	
178.75	1493	1341	1898	1722	1198	91	72	84	66	148	
179.00	1515	1341	1904	1725	1230	91	72	84	66	150	
179.25	1524	1342	1907	1718	1192	91	72	85	67	144	
179.50	1531	1403	1906	1723	1355	92	72	85	67	138	
179.75	1533	1505	1900	1720	1222	92	72	85	66	133	
180.00	1542	1503	1899	1722	1319	92	72	86	66	129	



**Membrane Protection Thermocouple Temperatures (Continued)**

Time (min)	EXPOSED SIDE TEMP. °F			WP-1950	10/4/2012	AWC	UNEXPOSED SIDE TEMP. °F			K-1089
	WP11	WP12	WP13	WP14	WP15	WP16	WP17	WP18	WP19	WP20
180.25	1551	1492	1895	1726	1819	93	72	86	66	127
180.50	1553	1487	1891	1730	1398	93	72	86	66	124
180.75	1560	1480	1893	1733	1402	93	72	87	66	122
181.00	1554	1477	1897	1739	1379	94	72	88	66	121
181.25	1558	1474	1903	1744	1853	94	72	89	66	120
181.50	1558	1473	1907	1748	1848	94	72	90	66	121
181.75	1563	1465	1908	1747	1856	95	72	92	66	124
182.00	1565	1465	1903	1753	1853	95	72	93	66	127
182.25	1571	1464	1905	1756	1845	96	72	95	66	138
182.50	1580	1465	1904	1761	1822	96	73	97	66	162
182.75	1579	1468	1898	1765	1737	97	73	100	66	181
183.00	1592	1465	1898	1775	1728	97	72	103	67	177
183.25	1594	1466	1896	1782	1549	97	72	107	66	174
183.50	1600	1468	1897	1785	1702	98	72	111	66	176
183.75	1595	1464	1900	1787	1869	99	73	114	66	174
184.00	1594	1465	1905	1791	1870	100	73	117	66	189
184.25	1596	1464	1903	1813	1873	100	73	122	66	187
184.50	1595	1466	1901	1814	1876	101	73	127	66	182
184.75	1602	1467	1903	1818	1879	101	73	131	67	187
185.00	1590	1478	1899	1819	1879	102	73	134	66	187
185.25	1554	1477	1904	1823	1886	103	73	139	66	186
185.50	1467	1483	1911	1842	1893	104	73	146	66	189
185.75	1460	1464	1912	1803	1907	106	73	163	66	187
186.00	1492	1448	1899	1927	1922	108	73	163	66	184
186.25	1422	1449	1889	1925	1927	116	73	155	66	172
186.50	1477	1554	1875	1864	1914	141	73	146	66	158
186.75	1538	1773	1860	1763	1908	168	73	130	66	147
187.00	1673	1784	1850	1700	1904	180	73	127	66	141
187.25	1761	1780	1839	1672	1903	184	73	153	66	135
187.50	1785	1780	1829	1673	1883	186	73	152	66	131
187.75	1697	1771	1830	1662	1853	171	73	135	66	127

### ASTM E119 Time-Temperature Curve





## Furnace Pressures and Temperatures

FURNACE PRESSURE (in. H <sub>2</sub> O)			Time (min)	WP-1950				10/4/2012				FURNACE TEMP. °F			AWC		K-1089
WPP01	WPP02	WPP03		WPF01	WPF02	WPF03	WPF04	WPF05	WPF06	WPF07	WPF08	WPF09	Grp Avg				
-0.074	-0.062	-0.089	0.00	69	69	68	69	69	69	68	68	68	68	69			
-0.034	-0.038	-0.069	0.25	71	76	69	72	74	70	70	74	74	69	72			
-0.035	-0.044	-0.079	0.50	84	99	73	82	92	75	78	92	74	83				
-0.032	-0.041	-0.075	0.75	114	136	85	105	124	84	97	123	85	106				
-0.028	-0.038	-0.073	1.00	157	187	105	139	170	100	129	166	102	139				
-0.014	-0.028	-0.057	1.25	202	245	132	181	228	124	172	217	128	181				
-0.017	-0.031	-0.065	1.50	248	305	164	227	293	159	223	276	168	229				
-0.016	-0.032	-0.064	1.75	293	364	202	276	368	209	282	343	223	284				
-0.018	-0.034	-0.066	2.00	338	419	244	326	440	267	345	412	291	342				
-0.016	-0.032	-0.063	2.25	381	468	289	375	506	330	409	477	364	400				
-0.012	-0.030	-0.060	2.50	422	513	333	423	566	396	470	539	439	456				
-0.011	-0.027	-0.060	2.75	463	555	377	471	620	465	530	597	515	510				
-0.007	-0.027	-0.057	3.00	503	596	423	520	670	534	588	653	590	564				
-0.008	-0.027	-0.058	3.25	542	636	469	568	719	603	645	711	664	617				
0.000	-0.020	-0.052	3.50	580	676	515	617	768	673	702	770	744	672				
-0.005	-0.024	-0.058	3.75	617	720	563	667	821	749	777	838	840	732				
-0.004	-0.023	-0.056	4.00	655	769	610	722	888	828	864	923	938	800				
-0.004	-0.023	-0.057	4.25	694	819	657	781	952	899	939	999	1011	861				
-0.012	-0.029	-0.065	4.50	736	874	705	839	1008	956	999	1055	1066	915				
-0.013	-0.030	-0.064	4.75	773	915	748	883	1044	984	1039	1085	1097	952				
-0.011	-0.029	-0.063	5.00	800	937	779	914	1059	993	1058	1094	1111	972				
-0.008	-0.026	-0.060	5.25	822	950	802	938	1067	998	1068	1097	1119	985				
-0.005	-0.024	-0.058	5.50	843	965	822	963	1079	1005	1080	1106	1129	999				
-0.002	-0.022	-0.055	5.75	866	985	844	990	1098	1019	1098	1124	1145	1019				
-0.001	-0.022	-0.054	6.00	891	1008	870	1020	1123	1037	1120	1151	1168	1043				
-0.002	-0.022	-0.055	6.25	916	1033	899	1050	1150	1060	1146	1181	1195	1070				
-0.004	-0.025	-0.057	6.50	940	1056	927	1078	1175	1082	1169	1207	1217	1095				
-0.007	-0.026	-0.060	6.75	962	1075	950	1099	1197	1098	1188	1228	1237	1115				
-0.005	-0.026	-0.059	7.00	982	1088	970	1117	1211	1109	1202	1240	1249	1130				
-0.005	-0.025	-0.058	7.25	999	1100	986	1133	1223	1118	1215	1250	1258	1143				
-0.007	-0.026	-0.060	7.50	1017	1114	1002	1150	1236	1130	1228	1263	1269	1157				
-0.004	-0.024	-0.058	7.75	1034	1126	1016	1165	1248	1145	1239	1277	1282	1170				
-0.001	-0.022	-0.054	8.00	1049	1140	1031	1181	1261	1158	1251	1291	1293	1184				
-0.005	-0.025	-0.059	8.25	1066	1157	1049	1200	1281	1176	1268	1309	1306	1201				
-0.009	-0.028	-0.064	8.50	1086	1179	1069	1223	1305	1193	1288	1329	1319	1221				
-0.009	-0.028	-0.064	8.75	1112	1209	1090	1251	1331	1207	1310	1347	1324	1242				
-0.017	-0.034	-0.071	9.00	1135	1234	1109	1272	1354	1213	1326	1361	1323	1259				
-0.013	-0.031	-0.067	9.25	1146	1237	1115	1274	1348	1197	1318	1350	1302	1254				
-0.014	-0.032	-0.068	9.50	1150	1231	1114	1272	1335	1179	1305	1331	1277	1244				
-0.007	-0.027	-0.062	9.75	1153	1226	1111	1272	1327	1168	1298	1319	1260	1237				
-0.007	-0.027	-0.060	10.00	1164	1240	1119	1285	1343	1178	1306	1329	1261	1247				
-0.006	-0.027	-0.061	10.25	1184	1269	1134	1311	1377	1200	1331	1356	1279	1271				
-0.009	-0.029	-0.063	10.50	1207	1298	1153	1341	1411	1223	1361	1383	1303	1298				
-0.005	-0.025	-0.059	10.75	1227	1323	1170	1364	1435	1245	1388	1406	1324	1320				
-0.006	-0.026	-0.062	11.00	1247	1340	1187	1384	1452	1265	1410	1425	1343	1339				
-0.006	-0.026	-0.061	11.25	1266	1357	1203	1400	1467	1284	1427	1442	1363	1356				
-0.007	-0.028	-0.062	11.50	1282	1370	1217	1415	1481	1296	1440	1455	1380	1371				
-0.008	-0.027	-0.063	11.75	1296	1381	1229	1427	1493	1307	1449	1467	1394	1382				
-0.007	-0.028	-0.063	12.00	1310	1392	1240	1437	1503	1317	1458	1475	1402	1393				
-0.006	-0.026	-0.060	12.25	1322	1399	1250	1446	1513	1322	1466	1484	1406	1401				
-0.007	-0.027	-0.061	12.50	1333	1404	1256	1457	1525	1326	1473	1493	1409	1408				
-0.008	-0.028	-0.063	12.75	1341	1409	1262	1464	1534	1332	1478	1502	1412	1415				
-0.006	-0.026	-0.061	13.00	1351	1420	1269	1471	1542	1339	1483	1510	1417	1422				
-0.005	-0.025	-0.060	13.25	1357	1427	1276	1477	1547	1348	1488	1516	1422	1429				
-0.006	-0.026	-0.061	13.50	1363	1434	1283	1482	1553	1352	1491	1522	1426	1434				
-0.006	-0.026	-0.061	13.75	1370	1439	1289	1485	1559	1359	1496	1527	1431	1439				
-0.007	-0.027	-0.061	14.00	1374	1443	1294	1489	1563	1363	1500	1532	1434	1444				
-0.013	-0.032	-0.067	14.25	1375	1441	1295	1487	1562	1359	1499	1532	1432	1443				
-0.011	-0.030	-0.065	14.50	1366	1429	1289	1474	1547	1345	1485	1520	1420	1431				
-0.009	-0.028	-0.064	14.75	1353	1416	1279	1462	1531	1332	1470	1507	1405	1417				
-0.011	-0.029	-0.066	15.00	1340	1406	1273	1452	1520	1324	1458	1496	1392	1407				

## Furnace Pressures and Temperatures (Continued)

FURNACE PRESSURE (in. H2O)			Time (min)	WP-1950				10/4/2012				FURNACE TEMP. °F			AWC		K-1089
WPP01	WPP02	WPP03		WPF01	WPF02	WPF03	WPF04	WPF05	WPF06	WPF07	WPF08	WPF09	WPF10	WPF11	WPF12	WPF13	Grp Avg
-0.011	-0.029	-0.066	15.25	1332	1399	1269	1446	1513	1317	1450	1489	1383	1400	1396			
-0.009	-0.028	-0.064	15.50	1328	1396	1266	1444	1509	1312	1447	1485	1378	1396	1396			
-0.008	-0.027	-0.061	15.75	1327	1396	1264	1446	1510	1310	1448	1485	1376	1396	1396			
-0.009	-0.028	-0.063	16.00	1328	1403	1264	1451	1520	1313	1454	1494	1380	1401	1401			
-0.007	-0.026	-0.060	16.25	1328	1413	1267	1455	1531	1322	1461	1508	1390	1408	1408			
-0.008	-0.027	-0.061	16.50	1328	1423	1274	1460	1541	1330	1470	1520	1400	1416	1416			
-0.007	-0.026	-0.061	16.75	1329	1429	1281	1466	1546	1337	1478	1527	1408	1422	1422			
-0.009	-0.029	-0.064	17.00	1332	1436	1288	1471	1552	1345	1485	1534	1416	1429	1429			
-0.008	-0.027	-0.061	17.25	1337	1441	1294	1475	1556	1350	1488	1536	1420	1433	1433			
-0.009	-0.027	-0.063	17.50	1344	1446	1298	1481	1558	1352	1492	1537	1425	1437	1437			
-0.009	-0.028	-0.063	17.75	1353	1449	1302	1487	1561	1355	1496	1539	1427	1441	1441			
-0.006	-0.026	-0.060	18.00	1360	1452	1307	1492	1566	1359	1503	1545	1429	1446	1446			
-0.006	-0.025	-0.059	18.25	1364	1457	1312	1495	1571	1364	1507	1550	1434	1450	1450			
-0.005	-0.025	-0.059	18.50	1368	1463	1316	1500	1576	1370	1511	1553	1438	1455	1455			
-0.006	-0.025	-0.060	18.75	1371	1466	1322	1503	1579	1375	1515	1556	1442	1459	1459			
-0.007	-0.026	-0.061	19.00	1375	1469	1330	1507	1585	1382	1521	1561	1447	1464	1464			
-0.007	-0.026	-0.060	19.25	1379	1473	1337	1513	1590	1387	1526	1566	1452	1469	1469			
-0.006	-0.025	-0.060	19.50	1384	1478	1341	1518	1594	1392	1532	1570	1458	1474	1474			
-0.007	-0.026	-0.061	19.75	1387	1481	1345	1521	1598	1394	1536	1573	1462	1478	1478			
-0.008	-0.027	-0.062	20.00	1389	1482	1348	1524	1599	1398	1539	1575	1465	1480	1480			
-0.008	-0.027	-0.062	20.25	1389	1484	1351	1525	1602	1401	1540	1579	1467	1482	1482			
-0.007	-0.027	-0.061	20.50	1390	1486	1354	1527	1606	1402	1541	1583	1471	1485	1485			
-0.009	-0.029	-0.063	20.75	1390	1486	1356	1528	1609	1405	1543	1587	1474	1487	1487			
-0.007	-0.026	-0.060	21.00	1390	1487	1359	1530	1609	1409	1545	1587	1475	1488	1488			
-0.008	-0.027	-0.062	21.25	1389	1488	1362	1532	1609	1411	1546	1586	1475	1489	1489			
-0.008	-0.028	-0.062	21.50	1388	1484	1363	1532	1608	1410	1547	1586	1475	1488	1488			
-0.008	-0.028	-0.063	21.75	1389	1482	1363	1532	1608	1409	1548	1587	1474	1488	1488			
-0.006	-0.026	-0.060	22.00	1391	1484	1364	1534	1610	1408	1550	1589	1474	1489	1489			
-0.009	-0.028	-0.061	22.25	1394	1489	1365	1535	1613	1407	1551	1592	1475	1491	1491			
-0.007	-0.026	-0.061	22.50	1397	1491	1368	1538	1615	1410	1553	1594	1478	1494	1494			
-0.008	-0.027	-0.062	22.75	1399	1493	1369	1540	1617	1411	1556	1594	1481	1496	1496			
-0.007	-0.027	-0.061	23.00	1401	1495	1370	1543	1619	1414	1559	1596	1484	1498	1498			
-0.006	-0.026	-0.060	23.25	1403	1497	1371	1546	1620	1417	1562	1598	1487	1500	1500			
-0.006	-0.026	-0.060	23.50	1406	1499	1374	1548	1623	1423	1565	1603	1490	1504	1504			
-0.007	-0.026	-0.062	23.75	1409	1505	1376	1551	1628	1423	1570	1610	1492	1507	1507			
-0.006	-0.026	-0.060	24.00	1410	1508	1378	1551	1632	1423	1573	1614	1493	1509	1509			
-0.009	-0.028	-0.063	24.25	1415	1511	1381	1554	1639	1426	1574	1619	1495	1513	1513			
-0.008	-0.028	-0.063	24.50	1429	1518	1382	1562	1641	1430	1575	1619	1497	1517	1517			
-0.008	-0.027	-0.061	24.75	1446	1524	1382	1571	1645	1434	1579	1620	1500	1522	1522			
-0.008	-0.027	-0.062	25.00	1459	1528	1384	1579	1648	1438	1584	1623	1504	1527	1527			
-0.008	-0.029	-0.062	25.25	1471	1529	1387	1587	1649	1441	1590	1626	1506	1532	1532			
-0.007	-0.028	-0.062	25.50	1488	1531	1392	1598	1652	1446	1598	1628	1513	1538	1538			
-0.008	-0.028	-0.062	25.75	1505	1534	1397	1608	1655	1452	1606	1629	1522	1545	1545			
-0.011	-0.030	-0.065	26.00	1518	1540	1402	1617	1661	1457	1611	1633	1528	1552	1552			
-0.009	-0.028	-0.062	26.25	1522	1537	1404	1619	1659	1457	1610	1632	1528	1552	1552			
-0.009	-0.029	-0.063	26.50	1520	1529	1400	1613	1649	1448	1600	1623	1519	1544	1544			
-0.008	-0.028	-0.062	26.75	1514	1524	1394	1605	1640	1441	1590	1615	1511	1537	1537			
-0.011	-0.030	-0.065	27.00	1509	1523	1390	1599	1636	1434	1585	1610	1505	1532	1532			
-0.010	-0.029	-0.063	27.25	1509	1520	1387	1596	1633	1433	1581	1607	1501	1530	1530			
-0.010	-0.030	-0.064	27.50	1510	1518	1386	1596	1633	1434	1579	1607	1499	1529	1529			
-0.008	-0.029	-0.062	27.75	1510	1517	1387	1595	1634	1436	1579	1608	1499	1530	1530			
-0.008	-0.027	-0.062	28.00	1511	1517	1389	1595	1635	1439	1581	1610	1500	1531	1531			
-0.008	-0.028	-0.062	28.25	1513	1517	1391	1595	1637	1441	1583	1612	1500	1532	1532			
-0.008	-0.027	-0.061	28.50	1515	1518	1393	1596	1640	1444	1587	1615	1502	1535	1535			
-0.006	-0.025	-0.059	28.75	1515	1522	1395	1598	1643	1446	1591	1617	1506	1537	1537			
-0.007	-0.028	-0.061	29.00	1513	1525	1397	1599	1645	1449	1595	1620	1512	1539	1539			
-0.006	-0.025	-0.060	29.25	1513	1527	1399	1601	1647	1455	1599	1624	1518	1542	1542			
-0.008	-0.027	-0.061	29.50	1510	1525	1400	1601	1646	1457	1605	1626	1520	1543	1543			
-0.007	-0.026	-0.060	29.75	1507	1520	1401	1601	1643	1459	1613	1627	1521	1544	1544			
-0.009	-0.028	-0.062	30.00	1508	1520	1402	1603	1642	1463	1622	1628	1523	1546	1546			

## Furnace Pressures and Temperatures (Continued)

FURNACE PRESSURE (in. H2O)			Time (min)	WP-1950				10/4/2012				FURNACE TEMP. °F				AWC		K-1089
WPP01	WPP02	WPP03		WPF01	WPF02	WPF03	WPF04	WPF05	WPF06	WPF07	WPF08	WPF09	WPF10	WPF11	WPF12	WPF13	WPF14	Grp Avg
-0.006	-0.026	-0.059	30.25	1511	1522	1404	1607	1645	1465	1629	1633	1524	1549					
-0.008	-0.027	-0.061	30.50	1513	1523	1406	1608	1646	1465	1635	1635	1526	1551					
-0.007	-0.026	-0.061	30.75	1514	1525	1408	1611	1648	1468	1640	1639	1530	1554					
-0.007	-0.027	-0.061	31.00	1516	1528	1411	1614	1652	1472	1645	1643	1535	1557					
-0.007	-0.027	-0.060	31.25	1518	1532	1412	1618	1657	1476	1648	1650	1540	1561					
-0.007	-0.027	-0.061	31.50	1521	1535	1414	1619	1662	1479	1649	1655	1544	1564					
-0.006	-0.025	-0.059	31.75	1523	1537	1418	1620	1665	1484	1652	1660	1548	1567					
-0.008	-0.028	-0.061	32.00	1525	1540	1422	1625	1668	1489	1657	1664	1551	1571					
-0.008	-0.027	-0.061	32.25	1530	1545	1425	1630	1676	1493	1661	1672	1555	1576					
-0.006	-0.025	-0.059	32.50	1534	1549	1428	1635	1682	1496	1665	1680	1560	1581					
-0.008	-0.028	-0.061	32.75	1538	1553	1433	1639	1688	1498	1669	1685	1565	1585					
-0.006	-0.026	-0.059	33.00	1541	1558	1437	1643	1693	1502	1673	1687	1571	1589					
-0.005	-0.026	-0.059	33.25	1541	1560	1441	1645	1696	1505	1678	1691	1577	1593					
-0.006	-0.026	-0.060	33.50	1542	1561	1444	1646	1697	1508	1679	1693	1581	1594					
-0.007	-0.027	-0.061	33.75	1540	1558	1444	1643	1696	1504	1677	1691	1580	1593					
-0.006	-0.025	-0.058	34.00	1535	1553	1441	1638	1690	1499	1674	1686	1576	1588					
-0.008	-0.027	-0.061	34.25	1531	1549	1438	1634	1686	1497	1672	1683	1572	1585					
-0.008	-0.028	-0.062	34.50	1530	1547	1436	1633	1682	1497	1671	1678	1570	1583					
-0.007	-0.027	-0.059	34.75	1528	1547	1434	1632	1681	1498	1672	1676	1571	1582					
-0.007	-0.026	-0.061	35.00	1527	1547	1434	1633	1683	1499	1674	1676	1572	1583					
-0.008	-0.028	-0.062	35.25	1528	1548	1436	1633	1687	1504	1676	1679	1573	1585					
-0.007	-0.027	-0.060	35.50	1531	1551	1438	1635	1689	1506	1680	1682	1574	1587					
-0.007	-0.026	-0.060	35.75	1536	1552	1440	1637	1692	1507	1685	1684	1576	1590					
-0.009	-0.027	-0.061	36.00	1538	1553	1443	1638	1694	1511	1690	1686	1579	1592					
-0.008	-0.028	-0.061	36.25	1539	1555	1445	1640	1696	1513	1696	1689	1581	1595					
-0.007	-0.026	-0.061	36.50	1540	1558	1447	1643	1700	1514	1704	1693	1583	1598					
-0.007	-0.026	-0.061	36.75	1542	1562	1450	1646	1705	1519	1711	1698	1586	1602					
-0.007	-0.026	-0.060	37.00	1544	1566	1453	1648	1706	1522	1717	1700	1589	1605					
-0.006	-0.025	-0.060	37.25	1545	1568	1456	1647	1706	1524	1722	1699	1590	1606					
-0.006	-0.025	-0.059	37.50	1547	1570	1458	1646	1707	1525	1727	1701	1592	1608					
-0.007	-0.026	-0.060	37.75	1549	1571	1461	1648	1711	1525	1733	1705	1595	1611					
-0.007	-0.026	-0.061	38.00	1550	1574	1463	1650	1713	1524	1736	1707	1598	1613					
-0.006	-0.026	-0.060	38.25	1551	1575	1466	1651	1714	1525	1741	1708	1601	1615					
-0.009	-0.028	-0.062	38.50	1554	1578	1468	1654	1717	1526	1746	1712	1606	1618					
-0.007	-0.026	-0.060	38.75	1557	1578	1470	1658	1718	1528	1752	1712	1607	1620					
-0.006	-0.025	-0.060	39.00	1556	1575	1473	1657	1714	1529	1750	1708	1609	1619					
-0.009	-0.028	-0.062	39.25	1553	1573	1476	1654	1711	1529	1749	1705	1607	1617					
-0.008	-0.027	-0.061	39.50	1551	1574	1478	1652	1710	1527	1745	1704	1605	1616					
-0.007	-0.027	-0.061	39.75	1549	1572	1479	1650	1708	1527	1744	1703	1604	1615					
-0.007	-0.026	-0.060	40.00	1550	1571	1479	1650	1706	1527	1743	1703	1604	1615					
-0.007	-0.026	-0.060	40.25	1551	1570	1479	1651	1706	1529	1744	1703	1604	1615					
-0.007	-0.026	-0.060	40.50	1553	1570	1481	1652	1706	1531	1746	1703	1606	1616					
-0.006	-0.025	-0.059	40.75	1553	1572	1483	1653	1708	1533	1749	1705	1607	1618					
-0.008	-0.027	-0.061	41.00	1554	1574	1485	1653	1711	1533	1752	1708	1609	1620					
-0.007	-0.026	-0.061	41.25	1556	1576	1487	1654	1712	1534	1754	1709	1610	1621					
-0.008	-0.026	-0.062	41.50	1556	1579	1490	1654	1713	1536	1755	1709	1613	1623					
-0.007	-0.027	-0.061	41.75	1556	1581	1492	1655	1714	1538	1757	1710	1614	1624					
-0.008	-0.027	-0.062	42.00	1557	1583	1494	1656	1716	1539	1757	1711	1615	1625					
-0.005	-0.025	-0.059	42.25	1559	1584	1496	1657	1716	1540	1756	1712	1617	1626					
-0.008	-0.026	-0.062	42.50	1560	1585	1497	1659	1718	1541	1759	1713	1618	1628					
-0.008	-0.027	-0.062	42.75	1562	1586	1497	1659	1718	1542	1761	1714	1620	1629					
-0.007	-0.026	-0.061	43.00	1564	1587	1498	1661	1718	1543	1761	1714	1620	1630					
-0.008	-0.027	-0.061	43.25	1567	1587	1500	1664	1719	1546	1761	1715	1620	1631					
-0.007	-0.026	-0.061	43.50	1569	1589	1501	1664	1721	1547	1762	1717	1620	1632					
-0.007	-0.026	-0.060	43.75	1570	1591	1503	1666	1723	1548	1763	1718	1621	1634					
-0.007	-0.026	-0.061	44.00	1572	1593	1505	1669	1725	1549	1763	1719	1622	1635					
-0.008	-0.028	-0.063	44.25	1575	1596	1507	1672	1728	1551	1761	1721	1625	1637					
-0.007	-0.026	-0.061	44.50	1577	1598	1508	1672	1729	1551	1761	1723	1625	1638					
-0.007	-0.026	-0.061	44.75	1577	1598	1510	1672	1730	1551	1763	1725	1626	1639					
-0.007	-0.026	-0.061	45.00	1576	1596	1512	1671	1729	1555	1764	1724	1628	1640					

## Furnace Pressures and Temperatures (Continued)

FURNACE PRESSURE (in. H <sub>2</sub> O)			Time (min)	WP-1950				10/4/2012				FURNACE TEMP. °F				AWC		K-1089
WPP01	WPP02	WPP03		WPF01	WPF02	WPF03	WPF04	WPF05	WPF06	WPF07	WPF08	WPF09	Grp Avg					
-0.006	-0.025	-0.060	45.25	1576	1596	1515	1671	1730	1558	1763	1725	1631	1641					
-0.006	-0.025	-0.059	45.50	1574	1594	1518	1671	1730	1558	1764	1725	1633	1641					
-0.007	-0.027	-0.062	45.75	1574	1593	1519	1672	1730	1558	1768	1725	1633	1641					
-0.006	-0.024	-0.059	46.00	1575	1594	1520	1674	1731	1559	1769	1726	1634	1642					
-0.008	-0.027	-0.061	46.25	1576	1594	1522	1676	1732	1561	1769	1729	1635	1644					
-0.007	-0.026	-0.060	46.50	1580	1596	1523	1678	1733	1562	1768	1730	1635	1645					
-0.008	-0.026	-0.061	46.75	1581	1596	1523	1679	1734	1562	1767	1730	1635	1645					
-0.007	-0.026	-0.061	47.00	1580	1595	1523	1679	1732	1563	1766	1728	1636	1645					
-0.008	-0.027	-0.062	47.25	1579	1596	1523	1679	1733	1562	1764	1728	1637	1645					
-0.006	-0.026	-0.060	47.50	1580	1597	1525	1678	1734	1564	1765	1730	1637	1646					
-0.006	-0.025	-0.060	47.75	1581	1600	1528	1678	1735	1565	1765	1731	1639	1647					
-0.007	-0.026	-0.060	48.00	1582	1601	1530	1678	1736	1565	1766	1732	1640	1648					
-0.007	-0.025	-0.060	48.25	1585	1603	1530	1679	1737	1566	1769	1732	1641	1649					
-0.007	-0.026	-0.061	48.50	1586	1602	1530	1680	1737	1567	1770	1732	1643	1650					
-0.006	-0.025	-0.060	48.75	1587	1602	1532	1682	1738	1567	1770	1732	1644	1650					
-0.007	-0.027	-0.061	49.00	1587	1601	1533	1682	1738	1567	1771	1732	1644	1651					
-0.007	-0.026	-0.061	49.25	1586	1601	1533	1681	1738	1566	1770	1733	1644	1650					
-0.007	-0.026	-0.062	49.50	1586	1601	1532	1681	1738	1566	1770	1733	1644	1650					
-0.005	-0.024	-0.058	49.75	1587	1602	1533	1682	1740	1569	1770	1734	1647	1651					
-0.007	-0.025	-0.060	50.00	1587	1604	1535	1685	1741	1571	1772	1736	1648	1653					
-0.005	-0.024	-0.059	50.25	1587	1606	1537	1686	1741	1572	1774	1737	1649	1654					
-0.006	-0.025	-0.060	50.50	1591	1607	1538	1689	1742	1573	1774	1738	1649	1656					
-0.007	-0.026	-0.061	50.75	1595	1606	1539	1690	1743	1574	1774	1738	1649	1656					
-0.007	-0.026	-0.061	51.00	1597	1606	1541	1690	1744	1574	1774	1738	1648	1657					
-0.006	-0.025	-0.060	51.25	1598	1606	1542	1692	1745	1576	1775	1738	1649	1658					
-0.007	-0.026	-0.061	51.50	1598	1607	1545	1692	1745	1578	1776	1738	1651	1659					
-0.006	-0.024	-0.060	51.75	1595	1608	1545	1692	1747	1579	1774	1739	1653	1659					
-0.007	-0.026	-0.061	52.00	1599	1611	1545	1695	1749	1581	1773	1742	1654	1661					
-0.006	-0.025	-0.061	52.25	1601	1613	1547	1697	1750	1583	1773	1743	1656	1662					
-0.007	-0.026	-0.060	52.50	1604	1616	1546	1699	1752	1583	1773	1745	1657	1664					
-0.006	-0.025	-0.059	52.75	1609	1620	1547	1701	1755	1585	1773	1748	1658	1666					
-0.007	-0.026	-0.060	53.00	1611	1621	1548	1703	1757	1586	1774	1751	1658	1668					
-0.006	-0.025	-0.060	53.25	1613	1623	1550	1704	1760	1588	1776	1754	1658	1670					
-0.005	-0.024	-0.058	53.50	1614	1621	1552	1706	1760	1588	1778	1755	1659	1670					
-0.005	-0.024	-0.059	53.75	1615	1620	1554	1706	1761	1588	1778	1756	1660	1671					
-0.007	-0.026	-0.061	54.00	1615	1621	1556	1708	1762	1590	1778	1757	1662	1672					
-0.008	-0.027	-0.061	54.25	1614	1622	1558	1708	1763	1593	1780	1756	1665	1673					
-0.007	-0.027	-0.061	54.50	1613	1622	1559	1710	1762	1595	1782	1755	1668	1674					
-0.007	-0.027	-0.061	54.75	1615	1625	1562	1713	1764	1597	1783	1758	1671	1676					
-0.006	-0.026	-0.060	55.00	1616	1627	1562	1715	1765	1596	1781	1760	1672	1677					
-0.007	-0.025	-0.060	55.25	1618	1628	1562	1717	1766	1597	1781	1761	1672	1678					
-0.007	-0.026	-0.061	55.50	1620	1630	1563	1718	1768	1599	1784	1763	1673	1680					
-0.006	-0.026	-0.060	55.75	1621	1632	1566	1719	1770	1602	1786	1764	1675	1682					
-0.005	-0.025	-0.059	56.00	1624	1635	1570	1720	1773	1603	1785	1767	1676	1684					
-0.006	-0.025	-0.059	56.25	1626	1637	1571	1722	1776	1603	1786	1770	1678	1685					
-0.006	-0.025	-0.059	56.50	1628	1638	1573	1722	1776	1605	1787	1771	1678	1686					
-0.007	-0.026	-0.060	56.75	1629	1636	1575	1723	1775	1605	1787	1771	1680	1687					
-0.006	-0.025	-0.060	57.00	1630	1634	1576	1724	1775	1605	1790	1771	1681	1687					
-0.007	-0.026	-0.061	57.25	1629	1635	1576	1725	1775	1606	1793	1770	1683	1688					
-0.006	-0.026	-0.060	57.50	1629	1637	1576	1725	1777	1608	1793	1772	1684	1689					
-0.006	-0.025	-0.059	57.75	1629	1637	1577	1726	1778	1609	1792	1773	1685	1690					
-0.006	-0.026	-0.060	58.00	1630	1637	1578	1727	1779	1612	1792	1774	1686	1691					
-0.006	-0.025	-0.060	58.25	1632	1637	1579	1729	1780	1613	1793	1776	1688	1692					
-0.006	-0.025	-0.060	58.50	1633	1640	1581	1729	1781	1615	1795	1778	1689	1693					
-0.007	-0.027	-0.061	58.75	1633	1640	1581	1729	1781	1615	1794	1777	1689	1693					
-0.006	-0.025	-0.060	59.00	1634	1641	1582	1732	1783	1616	1793	1779	1689	1694					
-0.005	-0.025	-0.059	59.25	1636	1642	1585	1734	1785	1617	1795	1780	1690	1696					
-0.006	-0.026	-0.060	59.50	1637	1643	1586	1736	1787	1619	1795	1782	1692	1698					
-0.006	-0.025	-0.059	59.75	1640	1645	1587	1740	1789	1618	1796	1785	1692	1699					
-0.006	-0.026	-0.059	60.00	1642	1645	1588	1741	1790	1619	1795	1786	1692	1700					



## Furnace Pressures and Temperatures (Continued)

FURNACE PRESSURE (in. H <sub>2</sub> O)			Time (min)	WP-1950				10/4/2012				FURNACE TEMP. °F			AWC		K-1089
WPP01	WPP02	WPP03		WPF01	WPF02	WPF03	WPF04	WPF05	WPF06	WPF07	WPF08	WPF09	Grp Avg				
-0.006	-0.026	-0.059	60.25	1642	1645	1590	1741	1791	1620	1799	1786	1693	1701				
-0.006	-0.026	-0.060	60.50	1643	1646	1590	1743	1794	1620	1798	1787	1694	1702				
-0.006	-0.026	-0.059	60.75	1646	1648	1591	1744	1796	1620	1797	1789	1696	1703				
-0.006	-0.026	-0.060	61.00	1647	1649	1590	1744	1796	1619	1798	1789	1698	1703				
-0.005	-0.024	-0.058	61.25	1647	1649	1590	1745	1795	1619	1799	1789	1699	1704				
-0.006	-0.026	-0.059	61.50	1648	1649	1592	1744	1794	1621	1800	1789	1700	1704				
-0.006	-0.026	-0.060	61.75	1648	1651	1592	1746	1795	1624	1801	1790	1701	1705				
-0.006	-0.026	-0.059	62.00	1649	1651	1593	1746	1795	1626	1801	1790	1702	1706				
-0.005	-0.024	-0.059	62.25	1648	1650	1595	1745	1795	1627	1801	1791	1703	1706				
-0.007	-0.026	-0.060	62.50	1647	1648	1597	1745	1795	1629	1801	1791	1704	1706				
-0.005	-0.024	-0.059	62.75	1649	1649	1598	1746	1797	1628	1801	1793	1705	1707				
-0.006	-0.026	-0.060	63.00	1650	1652	1598	1747	1799	1628	1800	1793	1706	1708				
-0.007	-0.026	-0.060	63.25	1653	1655	1599	1749	1802	1629	1801	1796	1707	1710				
-0.007	-0.026	-0.062	63.50	1657	1657	1599	1751	1804	1631	1801	1798	1708	1712				
-0.006	-0.026	-0.060	63.75	1658	1658	1600	1751	1805	1632	1801	1799	1707	1712				
-0.006	-0.025	-0.060	64.00	1659	1657	1601	1752	1805	1632	1802	1801	1707	1713				
-0.006	-0.025	-0.060	64.25	1661	1658	1602	1754	1808	1633	1803	1803	1709	1715				
-0.007	-0.026	-0.061	64.50	1664	1660	1603	1758	1812	1635	1806	1807	1711	1717				
-0.006	-0.026	-0.060	64.75	1663	1660	1605	1759	1811	1637	1807	1807	1713	1718				
-0.006	-0.025	-0.060	65.00	1663	1662	1607	1761	1813	1639	1808	1809	1715	1719				
-0.007	-0.026	-0.061	65.25	1664	1661	1608	1762	1813	1640	1808	1809	1714	1720				
-0.006	-0.025	-0.060	65.50	1665	1660	1610	1761	1812	1641	1809	1809	1715	1720				
-0.007	-0.027	-0.061	65.75	1666	1661	1612	1762	1813	1640	1809	1810	1715	1721				
-0.006	-0.026	-0.059	66.00	1667	1661	1612	1763	1813	1640	1812	1809	1715	1721				
-0.006	-0.027	-0.061	66.25	1667	1663	1613	1763	1816	1642	1813	1811	1716	1722				
-0.008	-0.027	-0.061	66.50	1666	1664	1612	1762	1817	1642	1813	1812	1716	1723				
-0.007	-0.026	-0.061	66.75	1668	1664	1612	1762	1817	1642	1814	1812	1718	1723				
-0.006	-0.026	-0.059	67.00	1670	1664	1614	1764	1818	1642	1814	1814	1719	1724				
-0.007	-0.026	-0.060	67.25	1671	1665	1614	1764	1818	1642	1815	1814	1719	1725				
-0.005	-0.025	-0.060	67.50	1672	1666	1616	1763	1819	1642	1815	1815	1718	1725				
-0.006	-0.025	-0.060	67.75	1671	1667	1618	1764	1821	1643	1820	1816	1718	1726				
-0.006	-0.026	-0.060	68.00	1671	1669	1618	1765	1822	1647	1822	1817	1720	1728				
-0.005	-0.025	-0.058	68.25	1672	1671	1618	1767	1824	1649	1824	1820	1722	1730				
-0.006	-0.026	-0.061	68.50	1676	1673	1622	1771	1829	1652	1826	1824	1723	1733				
-0.006	-0.026	-0.060	68.75	1679	1674	1623	1774	1830	1653	1828	1826	1724	1735				
-0.005	-0.025	-0.059	69.00	1681	1675	1625	1776	1830	1654	1831	1827	1725	1736				
-0.006	-0.026	-0.060	69.25	1681	1674	1627	1776	1830	1656	1831	1827	1728	1737				
-0.006	-0.025	-0.060	69.50	1682	1673	1628	1777	1831	1656	1834	1828	1730	1738				
-0.005	-0.025	-0.060	69.75	1684	1675	1628	1777	1830	1660	1838	1828	1732	1739				
-0.005	-0.025	-0.059	70.00	1686	1677	1630	1778	1834	1663	1838	1830	1733	1741				
-0.005	-0.025	-0.059	70.25	1686	1678	1631	1778	1835	1663	1840	1832	1736	1742				
-0.003	-0.024	-0.057	70.50	1686	1678	1632	1780	1835	1663	1844	1833	1738	1743				
-0.006	-0.026	-0.061	70.75	1687	1680	1633	1781	1837	1664	1847	1836	1739	1745				
-0.005	-0.024	-0.059	71.00	1690	1680	1635	1783	1838	1666	1849	1837	1740	1746				
-0.005	-0.025	-0.059	71.25	1691	1679	1635	1785	1838	1666	1852	1837	1741	1747				
-0.005	-0.025	-0.060	71.50	1692	1680	1636	1786	1839	1667	1853	1838	1742	1748				
-0.006	-0.026	-0.060	71.75	1693	1681	1636	1787	1839	1669	1854	1839	1743	1749				
-0.005	-0.025	-0.059	72.00	1694	1684	1637	1789	1841	1670	1857	1840	1745	1751				
-0.007	-0.026	-0.061	72.25	1696	1685	1639	1790	1843	1671	1857	1842	1747	1752				
-0.007	-0.026	-0.060	72.50	1696	1683	1640	1790	1842	1670	1856	1841	1746	1751				
-0.007	-0.026	-0.061	72.75	1695	1684	1638	1788	1843	1668	1855	1841	1746	1751				
-0.006	-0.025	-0.059	73.00	1694	1685	1639	1788	1843	1669	1859	1843	1747	1752				
-0.006	-0.026	-0.061	73.25	1695	1685	1639	1789	1843	1668	1862	1843	1748	1752				
-0.006	-0.025	-0.060	73.50	1695	1686	1639	1788	1843	1667	1863	1843	1748	1752				
-0.006	-0.025	-0.061	73.75	1694	1687	1638	1789	1842	1667	1864	1843	1748	1752				
-0.006	-0.025	-0.059	74.00	1694	1687	1638	1789	1842	1667	1864	1844	1747	1752				
-0.006	-0.025	-0.060	74.25	1692	1685	1638	1789	1840	1667	1866	1843	1748	1752				
-0.005	-0.024	-0.059	74.50	1690	1683	1637	1787	1839	1666	1869	1842	1749	1751				
-0.007	-0.026	-0.061	74.75	1690	1680	1636	1785	1838	1665	1872	1841	1749	1751				
-0.006	-0.026	-0.060	75.00	1690	1680	1637	1785	1838	1666	1875	1841	1749	1751				



## Furnace Pressures and Temperatures (Continued)

FURNACE PRESSURE (in. H <sub>2</sub> O)			Time (min)	WP-1950				10/4/2012				FURNACE TEMP. °F				AWC		K-1089
WPP01	WPP02	WPP03		WPF01	WPF02	WPF03	WPF04	WPF05	WPF06	WPF07	WPF08	WPF09	WPF10	WPF11	WPF12	WPF13	WPF14	Grp Avg
-0.007	-0.026	-0.061	75.25	1690	1680	1638	1786	1838	1666	1879	1841	1750	1752					
-0.005	-0.025	-0.058	75.50	1689	1680	1638	1787	1837	1668	1884	1841	1751	1753					
-0.006	-0.025	-0.060	75.75	1690	1680	1638	1787	1838	1669	1891	1841	1752	1754					
-0.007	-0.027	-0.061	76.00	1692	1682	1639	1786	1840	1670	1896	1843	1751	1756					
-0.006	-0.026	-0.060	76.25	1692	1683	1639	1785	1841	1670	1902	1844	1751	1756					
-0.005	-0.025	-0.058	76.50	1693	1685	1639	1787	1843	1671	1909	1846	1753	1759					
-0.006	-0.026	-0.060	76.75	1694	1685	1640	1789	1843	1671	1916	1846	1754	1760					
-0.006	-0.025	-0.060	77.00	1694	1684	1641	1790	1842	1671	1923	1845	1755	1760					
-0.005	-0.025	-0.060	77.25	1695	1684	1642	1790	1841	1671	1930	1845	1754	1762					
-0.005	-0.025	-0.060	77.50	1697	1684	1643	1791	1841	1670	1937	1846	1754	1762					
-0.006	-0.026	-0.060	77.75	1697	1684	1643	1792	1841	1672	1945	1846	1755	1764					
-0.005	-0.025	-0.060	78.00	1698	1684	1642	1792	1842	1673	1953	1848	1757	1765					
-0.006	-0.026	-0.060	78.25	1698	1684	1642	1792	1841	1673	1958	1847	1758	1766					
-0.006	-0.025	-0.060	78.50	1695	1680	1640	1789	1836	1670	1959	1842	1754	1763					
-0.006	-0.026	-0.060	78.75	1690	1675	1637	1784	1832	1667	1958	1839	1751	1759					
-0.004	-0.024	-0.059	79.00	1685	1671	1634	1781	1828	1664	1959	1835	1748	1756					
-0.006	-0.025	-0.061	79.25	1682	1670	1633	1779	1826	1664	1962	1833	1745	1755					
-0.005	-0.024	-0.059	79.50	1681	1670	1631	1776	1824	1662	1960	1831	1742	1753					
-0.006	-0.024	-0.061	79.75	1679	1672	1631	1769	1827	1661	1936	1834	1750	1751					
-0.006	-0.024	-0.060	80.00	1680	1676	1632	1765	1830	1661	1916	1836	1761	1751					
-0.007	-0.025	-0.060	80.25	1681	1679	1633	1763	1833	1660	1907	1837	1770	1751					
-0.007	-0.025	-0.061	80.50	1684	1678	1633	1763	1834	1659	1903	1837	1774	1752					
-0.007	-0.025	-0.060	80.75	1685	1679	1634	1763	1835	1660	1904	1838	1778	1753					
-0.007	-0.024	-0.060	81.00	1684	1679	1635	1762	1836	1662	1907	1838	1782	1754					
-0.006	-0.025	-0.060	81.25	1684	1678	1635	1764	1837	1662	1911	1838	1783	1755					
-0.006	-0.024	-0.059	81.50	1685	1680	1636	1766	1840	1665	1915	1841	1786	1757					
-0.005	-0.023	-0.059	81.75	1687	1683	1637	1767	1842	1668	1917	1841	1791	1759					
-0.006	-0.024	-0.061	82.00	1689	1684	1638	1770	1845	1670	1919	1844	1795	1761					
-0.005	-0.023	-0.058	82.25	1692	1687	1639	1771	1848	1673	1918	1847	1800	1764					
-0.007	-0.023	-0.060	82.50	1695	1688	1642	1773	1849	1677	1915	1850	1810	1766					
-0.008	-0.024	-0.060	82.75	1697	1687	1644	1774	1849	1679	1910	1851	1821	1768					
-0.007	-0.023	-0.060	83.00	1699	1688	1645	1774	1850	1681	1904	1853	1827	1769					
-0.003	-0.021	-0.055	83.25	1701	1688	1647	1775	1851	1684	1900	1857	1825	1770					
-0.005	-0.024	-0.059	83.50	1703	1694	1648	1777	1857	1690	1902	1864	1822	1773					
-0.006	-0.024	-0.059	83.75	1701	1700	1649	1780	1863	1693	1902	1870	1821	1775					
-0.006	-0.024	-0.060	84.00	1700	1703	1650	1785	1868	1697	1907	1875	1823	1778					
-0.005	-0.024	-0.059	84.25	1699	1704	1651	1787	1872	1700	1913	1880	1823	1781					
-0.006	-0.024	-0.059	84.50	1699	1707	1652	1789	1875	1699	1920	1883	1826	1783					
-0.006	-0.024	-0.060	84.75	1700	1706	1652	1788	1877	1701	1936	1884	1832	1786					
-0.005	-0.024	-0.059	85.00	1701	1707	1653	1788	1878	1703	1952	1885	1837	1789					
-0.006	-0.024	-0.059	85.25	1702	1705	1655	1788	1878	1703	1959	1885	1835	1790					
-0.007	-0.024	-0.060	85.50	1700	1704	1657	1817	1879	1704	1950	1887	1834	1793					
-0.006	-0.024	-0.060	85.75	1699	1708	1659	1833	1881	1705	1935	1891	1838	1794					
-0.005	-0.023	-0.059	86.00	1698	1712	1659	1832	1882	1704	1921	1894	1844	1794					
-0.005	-0.023	-0.059	86.25	1698	1714	1659	1825	1883	1704	1914	1895	1850	1793					
-0.005	-0.023	-0.059	86.50	1698	1714	1658	1818	1883	1706	1911	1895	1855	1793					
-0.006	-0.023	-0.057	86.75	1697	1713	1657	1811	1880	1707	1910	1894	1863	1792					
-0.005	-0.023	-0.056	87.00	1697	1711	1657	1807	1879	1706	1911	1893	1862	1792					
-0.005	-0.023	-0.058	87.25	1699	1709	1657	1806	1879	1706	1913	1894	1860	1791					
-0.005	-0.024	-0.059	87.50	1707	1707	1657	1808	1880	1706	1917	1896	1863	1793					
-0.006	-0.023	-0.059	87.75	1713	1705	1658	1808	1881	1706	1922	1898	1863	1795					
-0.005	-0.023	-0.058	88.00	1714	1703	1659	1807	1880	1708	1926	1896	1869	1796					
-0.006	-0.023	-0.058	88.25	1714	1703	1660	1808	1880	1710	1925	1897	1873	1797					
-0.004	-0.023	-0.058	88.50	1715	1707	1662	1811	1883	1711	1924	1898	1875	1799					
-0.006	-0.025	-0.060	88.75	1721	1715	1665	1816	1889	1712	1922	1905	1872	1802					
-0.007	-0.025	-0.060	89.00	1726	1723	1667	1820	1892	1713	1922	1909	1871	1805					
-0.005	-0.023	-0.058	89.25	1729	1729	1668	1823	1896	1713	1917	1912	1870	1806					
-0.006	-0.025	-0.058	89.50	1729	1731	1667	1827	1898	1711	1913	1913	1871	1807					
-0.006	-0.026	-0.057	89.75	1727	1733	1665	1830	1898	1710	1908	1913	1872	1806					
-0.006	-0.025	-0.057	90.00	1722	1734	1662	1833	1897	1707	1904	1913	1871	1805					



## Furnace Pressures and Temperatures (Continued)

FURNACE PRESSURE (in. H <sub>2</sub> O)			Time (min)	WP-1950				10/4/2012				FURNACE TEMP. °F				AWC		K-1089
WPP01	WPP02	WPP03		WPF01	WPF02	WPF03	WPF04	WPF05	WPF06	WPF07	WPF08	WPF09	WPF10	WPF11	WPF12	WPF13	WPF14	Grp Avg
-0.005	-0.025	-0.058	90.25	1727	1735	1660	1837	1898	1705	1902	1913	1873	1805					
-0.006	-0.025	-0.054	90.50	1748	1738	1657	1841	1901	1702	1903	1914	1874	1809					
-0.006	-0.026	-0.055	90.75	1746	1745	1655	1846	1907	1703	1905	1916	1876	1811					
-0.006	-0.025	-0.054	91.00	1739	1751	1654	1851	1913	1705	1910	1919	1877	1813					
-0.006	-0.023	-0.059	91.25	1736	1758	1653	1854	1919	1718	1912	1922	1869	1816					
-0.006	-0.024	-0.059	91.50	1744	1750	1657	1844	1913	1725	1917	1919	1860	1814					
-0.005	-0.023	-0.058	91.75	1752	1742	1662	1833	1906	1726	1915	1913	1853	1811					
-0.008	-0.025	-0.062	92.00	1761	1736	1664	1824	1898	1726	1910	1910	1848	1809					
-0.007	-0.025	-0.061	92.25	1767	1732	1664	1817	1892	1723	1903	1907	1848	1806					
-0.007	-0.025	-0.060	92.50	1770	1729	1663	1813	1887	1721	1899	1906	1844	1803					
-0.006	-0.024	-0.059	92.75	1773	1725	1663	1811	1884	1723	1899	1904	1842	1803					
-0.007	-0.024	-0.060	93.00	1776	1722	1663	1810	1881	1725	1897	1902	1842	1802					
-0.008	-0.025	-0.061	93.25	1780	1722	1661	1809	1882	1724	1894	1902	1841	1802					
-0.007	-0.025	-0.061	93.50	1780	1723	1660	1809	1883	1726	1890	1904	1839	1802					
-0.006	-0.024	-0.060	93.75	1777	1723	1660	1809	1885	1730	1885	1905	1833	1801					
-0.008	-0.026	-0.063	94.00	1774	1721	1658	1808	1883	1734	1883	1904	1828	1799					
-0.007	-0.025	-0.061	94.25	1773	1720	1656	1808	1880	1738	1884	1904	1824	1799					
-0.007	-0.025	-0.061	94.50	1774	1720	1653	1808	1882	1742	1887	1907	1825	1800					
-0.008	-0.026	-0.062	94.75	1774	1721	1650	1807	1880	1747	1888	1907	1825	1800					
-0.007	-0.024	-0.059	95.00	1773	1724	1645	1805	1880	1752	1890	1909	1826	1800					
-0.007	-0.024	-0.060	95.25	1775	1728	1642	1805	1886	1760	1890	1913	1829	1803					
-0.007	-0.024	-0.060	95.50	1775	1730	1642	1805	1892	1771	1894	1917	1832	1806					
-0.008	-0.026	-0.062	95.75	1774	1730	1643	1805	1892	1778	1895	1918	1835	1808					
-0.008	-0.025	-0.062	96.00	1773	1729	1647	1805	1892	1778	1895	1919	1837	1808					
-0.009	-0.026	-0.062	96.25	1770	1725	1656	1803	1889	1771	1903	1917	1839	1808					
-0.007	-0.025	-0.061	96.50	1768	1723	1664	1801	1886	1765	1908	1914	1845	1808					
-0.008	-0.025	-0.062	96.75	1767	1723	1669	1800	1885	1764	1906	1915	1845	1808					
-0.007	-0.025	-0.061	97.00	1766	1727	1670	1799	1890	1761	1902	1917	1843	1808					
-0.008	-0.026	-0.062	97.25	1764	1728	1673	1798	1890	1763	1901	1919	1841	1809					
-0.007	-0.024	-0.060	97.50	1762	1727	1674	1796	1888	1764	1901	1920	1839	1808					
-0.007	-0.024	-0.060	97.75	1761	1727	1675	1795	1887	1765	1903	1921	1839	1808					
-0.008	-0.025	-0.062	98.00	1760	1727	1674	1796	1887	1762	1903	1923	1840	1808					
-0.007	-0.024	-0.060	98.25	1761	1726	1672	1797	1888	1758	1901	1925	1841	1808					
-0.007	-0.025	-0.061	98.50	1762	1726	1671	1798	1890	1757	1901	1927	1840	1808					
-0.008	-0.025	-0.062	98.75	1763	1727	1670	1798	1891	1754	1900	1926	1841	1808					
-0.008	-0.025	-0.062	99.00	1764	1726	1669	1799	1893	1753	1901	1924	1842	1808					
-0.008	-0.025	-0.061	99.25	1765	1728	1669	1799	1896	1752	1899	1923	1844	1808					
-0.007	-0.025	-0.061	99.50	1765	1730	1669	1800	1897	1750	1899	1921	1846	1809					
-0.007	-0.025	-0.061	99.75	1767	1730	1669	1800	1900	1753	1898	1922	1848	1810					
-0.008	-0.025	-0.061	100.00	1769	1730	1670	1801	1902	1756	1900	1923	1848	1811					
-0.008	-0.025	-0.062	100.25	1770	1731	1671	1801	1904	1757	1899	1924	1849	1812					
-0.006	-0.024	-0.059	100.50	1772	1733	1673	1802	1907	1758	1899	1924	1850	1813					
-0.008	-0.025	-0.061	100.75	1774	1734	1672	1803	1911	1758	1901	1925	1850	1814					
-0.008	-0.025	-0.061	101.00	1776	1735	1672	1805	1913	1758	1901	1926	1852	1815					
-0.007	-0.025	-0.061	101.25	1780	1734	1671	1808	1917	1756	1902	1926	1853	1816					
-0.007	-0.025	-0.061	101.50	1783	1737	1671	1809	1923	1758	1905	1928	1854	1819					
-0.007	-0.024	-0.060	101.75	1787	1738	1672	1813	1928	1760	1915	1932	1856	1822					
-0.007	-0.025	-0.061	102.00	1790	1740	1676	1816	1935	1763	1931	1940	1858	1828					
-0.007	-0.024	-0.060	102.25	1790	1744	1679	1817	1941	1768	1942	1945	1861	1832					
-0.007	-0.024	-0.060	102.50	1788	1746	1682	1819	1940	1769	1946	1949	1864	1834					
-0.007	-0.025	-0.060	102.75	1786	1748	1682	1820	1934	1767	1946	1954	1864	1833					
-0.005	-0.023	-0.059	103.00	1783	1745	1684	1818	1925	1767	1945	1959	1863	1832					
-0.006	-0.023	-0.059	103.25	1781	1743	1686	1816	1919	1768	1946	1963	1864	1832					
-0.007	-0.024	-0.060	103.50	1780	1742	1691	1814	1919	1772	1946	1966	1864	1833					
-0.007	-0.025	-0.060	103.75	1779	1743	1695	1811	1920	1774	1944	1967	1862	1833					
-0.007	-0.024	-0.060	104.00	1779	1738	1694	1810	1921	1773	1941	1970	1858	1832					
-0.006	-0.024	-0.060	104.25	1777	1735	1691	1808	1924	1773	1943	1971	1855	1831					
-0.006	-0.024	-0.061	104.50	1776	1734	1690	1808	1928	1775	1944	1971	1852	1831					
-0.007	-0.025	-0.061	104.75	1777	1732	1691	1809	1932	1775	1945	1971	1852	1831					
-0.007	-0.024	-0.060	105.00	1777	1733	1690	1809	1932	1778	1946	1965	1851	1831					



## Furnace Pressures and Temperatures (Continued)

FURNACE PRESSURE (in. H <sub>2</sub> O)			Time (min)	WP-1950				10/4/2012				FURNACE TEMP. °F				AWC		K-1089
WPP01	WPP02	WPP03		WPF01	WPF02	WPF03	WPF04	WPF05	WPF06	WPF07	WPF08	WPF09	WPF10	WPF11	WPF12	WPF13	WPF14	Grp Avg
-0.007	-0.024	-0.060	105.25	1778	1728	1693	1813	1919	1783	1962	1953	1857	1832					
-0.008	-0.025	-0.062	105.50	1783	1730	1700	1816	1914	1792	1985	1951	1866	1838					
-0.005	-0.023	-0.060	105.75	1788	1732	1703	1821	1912	1794	1995	1951	1871	1841					
-0.006	-0.023	-0.059	106.00	1790	1732	1706	1824	1910	1795	2005	1948	1877	1843					
-0.007	-0.025	-0.061	106.25	1791	1730	1707	1826	1908	1795	2009	1947	1881	1844					
-0.005	-0.023	-0.059	106.50	1792	1728	1709	1827	1907	1797	2006	1947	1883	1844					
-0.006	-0.024	-0.059	106.75	1792	1725	1711	1827	1906	1798	2005	1949	1882	1844					
-0.006	-0.024	-0.060	107.00	1791	1724	1711	1827	1905	1800	2005	1948	1881	1844					
-0.006	-0.024	-0.060	107.25	1791	1722	1710	1827	1906	1801	2007	1948	1881	1844					
-0.006	-0.024	-0.059	107.50	1791	1722	1709	1828	1907	1803	2008	1949	1882	1844					
-0.006	-0.024	-0.061	107.75	1791	1722	1708	1828	1906	1804	2010	1949	1883	1845					
-0.006	-0.024	-0.061	108.00	1792	1722	1709	1829	1906	1805	2008	1950	1883	1845					
-0.007	-0.024	-0.061	108.25	1793	1722	1709	1829	1909	1806	2010	1953	1885	1846					
-0.006	-0.023	-0.059	108.50	1793	1720	1706	1826	1908	1802	2008	1952	1884	1844					
-0.007	-0.024	-0.060	108.75	1789	1717	1702	1823	1904	1801	2006	1950	1883	1842					
-0.006	-0.024	-0.060	109.00	1783	1713	1699	1817	1900	1799	2000	1949	1878	1838					
-0.006	-0.024	-0.060	109.25	1780	1711	1699	1813	1896	1801	1991	1945	1876	1835					
-0.006	-0.024	-0.060	109.50	1777	1710	1697	1810	1893	1803	1985	1941	1877	1833					
-0.006	-0.024	-0.059	109.75	1777	1708	1696	1811	1891	1803	1981	1939	1877	1831					
-0.006	-0.023	-0.059	110.00	1775	1707	1694	1810	1892	1803	1979	1940	1875	1830					
-0.007	-0.024	-0.060	110.25	1773	1704	1693	1808	1891	1806	1978	1939	1874	1830					
-0.007	-0.024	-0.061	110.50	1773	1703	1691	1808	1890	1803	1979	1937	1874	1829					
-0.007	-0.024	-0.061	110.75	1773	1701	1689	1809	1890	1804	1979	1935	1877	1828					
-0.006	-0.024	-0.060	111.00	1772	1700	1689	1809	1888	1808	1981	1933	1878	1829					
-0.006	-0.023	-0.059	111.25	1770	1699	1690	1808	1888	1810	1983	1937	1880	1829					
-0.006	-0.024	-0.060	111.50	1768	1700	1690	1806	1890	1814	1988	1942	1882	1831					
-0.007	-0.024	-0.060	111.75	1767	1705	1693	1806	1899	1818	1993	1960	1884	1836					
-0.006	-0.023	-0.059	112.00	1772	1709	1698	1811	1908	1821	2002	1994	1890	1845					
-0.007	-0.024	-0.060	112.25	1779	1705	1702	1817	1910	1823	2008	2013	1893	1850					
-0.007	-0.024	-0.060	112.50	1786	1704	1704	1822	1912	1828	2013	2018	1895	1853					
-0.001	-0.020	-0.054	112.75	1790	1717	1710	1827	1923	1835	2018	2023	1899	1860					
-0.006	-0.023	-0.059	113.00	1794	1726	1715	1832	1936	1839	2028	2032	1906	1867					
-0.007	-0.024	-0.061	113.25	1801	1732	1718	1843	1946	1838	2018	2032	1914	1871					
-0.008	-0.025	-0.062	113.50	1809	1734	1718	1853	1948	1836	1992	2032	1918	1871					
-0.006	-0.024	-0.061	113.75	1812	1730	1716	1858	1941	1833	1975	2026	1920	1868					
-0.007	-0.024	-0.061	114.00	1812	1728	1714	1859	1937	1833	1967	2022	1925	1866					
-0.006	-0.023	-0.059	114.25	1810	1726	1711	1858	1935	1835	1962	2024	1926	1865					
-0.003	-0.022	-0.057	114.50	1807	1722	1711	1857	1931	1838	1960	2022	1928	1864					
-0.006	-0.024	-0.061	114.75	1805	1719	1713	1856	1927	1843	1958	2020	1931	1863					
-0.007	-0.025	-0.061	115.00	1803	1713	1714	1854	1921	1845	1959	2016	1932	1862					
-0.006	-0.023	-0.060	115.25	1803	1711	1712	1852	1920	1845	1957	2017	1936	1861					
-0.006	-0.023	-0.060	115.50	1801	1709	1711	1852	1917	1845	1956	2013	1939	1860					
-0.005	-0.023	-0.059	115.75	1798	1706	1710	1849	1910	1847	1953	2005	1941	1858					
-0.006	-0.024	-0.060	116.00	1798	1705	1710	1850	1911	1848	1952	2000	1946	1858					
-0.008	-0.026	-0.062	116.25	1796	1704	1707	1847	1910	1845	1949	1998	1954	1857					
-0.007	-0.025	-0.061	116.50	1791	1700	1702	1841	1904	1839	1942	1990	1957	1852					
-0.007	-0.025	-0.062	116.75	1787	1697	1698	1837	1901	1830	1937	1987	1957	1848					
-0.010	-0.028	-0.065	117.00	1782	1696	1694	1834	1899	1824	1934	1985	1953	1845					
-0.009	-0.027	-0.065	117.25	1779	1694	1691	1831	1898	1822	1935	1981	1948	1842					
-0.010	-0.028	-0.065	117.50	1776	1695	1687	1828	1898	1824	1933	1980	1953	1842					
-0.009	-0.027	-0.064	117.75	1773	1694	1686	1829	1897	1824	1931	1976	1953	1840					
-0.008	-0.026	-0.062	118.00	1772	1690	1684	1830	1895	1819	1933	1975	1954	1839					
-0.007	-0.025	-0.062	118.25	1776	1691	1683	1829	1892	1818	1931	1966	1956	1838					
-0.007	-0.025	-0.061	118.50	1777	1690	1681	1827	1888	1818	1927	1962	1951	1836					
-0.008	-0.025	-0.062	118.75	1776	1687	1685	1824	1880	1820	1921	1956	1947	1833					
-0.008	-0.026	-0.063	119.00	1778	1686	1694	1824	1874	1820	1915	1950	1947	1832					
-0.008	-0.026	-0.063	119.25	1779	1686	1701	1823	1868	1818	1912	1945	1946	1831					
-0.008	-0.026	-0.063	119.50	1780	1684	1704	1821	1866	1819	1906	1943	1945	1830					
-0.008	-0.026	-0.063	119.75	1780	1690	1709	1822	1866	1819	1908	1943	1945	1831					
-0.010	-0.027	-0.065	120.00	1774	1698	1714	1820	1867	1822	1915	1948	1951	1834					



## Furnace Pressures and Temperatures (Continued)

FURNACE PRESSURE (in. H <sub>2</sub> O)			Time (min)	WP-1950				10/4/2012				FURNACE TEMP. °F				AWC		K-1089
WPP01	WPP02	WPP03		WPF01	WPF02	WPF03	WPF04	WPF05	WPF06	WPF07	WPF08	WPF09	WPF10	WPF11	WPF12	WPF13	WPF14	Grp Avg
-0.007	-0.025	-0.062	120.25	1771	1703	1720	1819	1867	1825	1916	1953	1953	1953	1836				
-0.008	-0.025	-0.063	120.50	1769	1707	1724	1818	1868	1827	1916	1957	1951	1951	1838				
-0.008	-0.026	-0.064	120.75	1775	1710	1722	1822	1872	1828	1918	1960	1949	1949	1839				
-0.006	-0.024	-0.061	121.00	1782	1710	1723	1825	1874	1831	1916	1964	1948	1948	1841				
-0.009	-0.027	-0.065	121.25	1786	1713	1724	1827	1877	1832	1914	1967	1950	1950	1843				
-0.008	-0.026	-0.064	121.50	1791	1718	1726	1831	1883	1835	1916	1972	1951	1951	1847				
-0.007	-0.025	-0.062	121.75	1791	1719	1730	1836	1888	1842	1921	1975	1955	1955	1851				
-0.005	-0.023	-0.060	122.00	1788	1721	1733	1837	1891	1846	1922	1978	1960	1960	1853				
-0.006	-0.024	-0.060	122.25	1787	1718	1737	1836	1889	1846	1921	1977	1963	1963	1853				
-0.006	-0.024	-0.061	122.50	1787	1714	1738	1832	1883	1838	1917	1974	1962	1962	1849				
-0.009	-0.027	-0.064	122.75	1790	1711	1743	1833	1879	1830	1917	1975	1963	1963	1849				
-0.008	-0.026	-0.063	123.00	1794	1712	1748	1835	1879	1828	1920	1974	1965	1965	1851				
-0.009	-0.026	-0.065	123.25	1796	1714	1754	1840	1881	1829	1923	1977	1968	1968	1854				
-0.009	-0.026	-0.064	123.50	1797	1715	1757	1842	1881	1829	1926	1979	1970	1970	1855				
-0.010	-0.027	-0.066	123.75	1800	1715	1765	1847	1881	1835	1932	1979	1973	1973	1859				
-0.008	-0.026	-0.064	124.00	1801	1713	1773	1849	1879	1838	1935	1973	1972	1972	1859				
-0.010	-0.027	-0.066	124.25	1803	1711	1776	1849	1878	1841	1936	1964	1971	1971	1859				
-0.011	-0.028	-0.068	124.50	1803	1714	1777	1849	1879	1843	1935	1958	1970	1970	1859				
-0.009	-0.026	-0.064	124.75	1805	1719	1778	1851	1879	1846	1935	1948	1970	1970	1859				
-0.012	-0.030	-0.069	125.00	1807	1719	1777	1853	1879	1846	1935	1946	1971	1971	1859				
-0.013	-0.030	-0.070	125.25	1806	1712	1777	1850	1879	1845	1931	1948	1969	1969	1857				
-0.011	-0.028	-0.066	125.50	1803	1707	1773	1848	1879	1850	1929	1950	1969	1969	1857				
-0.011	-0.028	-0.067	125.75	1802	1702	1769	1847	1878	1853	1929	1951	1968	1968	1855				
-0.012	-0.029	-0.069	126.00	1799	1700	1767	1847	1878	1855	1932	1953	1969	1969	1856				
-0.011	-0.028	-0.067	126.25	1795	1698	1768	1847	1878	1856	1932	1953	1967	1967	1855				
-0.009	-0.027	-0.066	126.50	1792	1695	1770	1845	1876	1856	1928	1951	1965	1965	1853				
-0.011	-0.028	-0.066	126.75	1791	1693	1768	1843	1874	1855	1925	1950	1966	1966	1852				
-0.010	-0.028	-0.066	127.00	1792	1692	1769	1845	1873	1853	1924	1949	1966	1966	1851				
-0.010	-0.028	-0.066	127.25	1792	1689	1767	1844	1874	1851	1925	1950	1965	1965	1851				
-0.010	-0.028	-0.066	127.50	1793	1686	1765	1844	1874	1847	1925	1951	1963	1963	1850				
-0.011	-0.028	-0.067	127.75	1793	1686	1766	1845	1876	1848	1925	1952	1961	1961	1850				
-0.012	-0.029	-0.068	128.00	1791	1686	1768	1843	1878	1849	1925	1950	1959	1959	1850				
-0.011	-0.028	-0.067	128.25	1786	1687	1765	1842	1881	1845	1924	1951	1956	1956	1848				
-0.009	-0.027	-0.065	128.50	1783	1687	1762	1842	1881	1843	1924	1948	1954	1954	1847				
-0.010	-0.028	-0.066	128.75	1782	1684	1764	1842	1876	1844	1923	1945	1952	1952	1846				
-0.008	-0.026	-0.063	129.00	1784	1682	1767	1844	1875	1842	1924	1942	1951	1951	1846				
-0.005	-0.024	-0.060	129.25	1789	1684	1774	1848	1877	1846	1928	1945	1955	1955	1850				
-0.006	-0.025	-0.061	129.50	1792	1688	1779	1852	1881	1851	1934	1948	1957	1957	1854				
-0.007	-0.025	-0.062	129.75	1795	1690	1783	1855	1883	1854	1938	1949	1959	1959	1856				
-0.008	-0.026	-0.064	130.00	1797	1690	1787	1857	1883	1856	1944	1955	1962	1962	1859				
-0.009	-0.027	-0.066	130.25	1801	1688	1793	1860	1881	1860	1949	1960	1964	1964	1862				
-0.005	-0.024	-0.060	130.50	1804	1686	1798	1863	1881	1862	1952	1961	1966	1966	1864				
-0.008	-0.026	-0.063	130.75	1806	1686	1801	1865	1883	1866	1952	1962	1970	1970	1866				
-0.009	-0.027	-0.064	131.00	1807	1685	1802	1866	1884	1862	1953	1965	1972	1972	1866				
-0.011	-0.029	-0.069	131.25	1804	1688	1800	1866	1887	1858	1954	1965	1970	1970	1866				
-0.013	-0.030	-0.071	131.50	1803	1689	1800	1865	1889	1857	1956	1965	1970	1970	1866				
-0.009	-0.027	-0.066	131.75	1803	1690	1802	1866	1890	1857	1957	1964	1968	1968	1866				
-0.011	-0.028	-0.067	132.00	1804	1688	1801	1866	1888	1857	1955	1963	1967	1967	1866				
-0.011	-0.029	-0.067	132.25	1805	1689	1799	1866	1889	1854	1955	1962	1967	1967	1865				
-0.008	-0.027	-0.064	132.50	1805	1689	1798	1867	1890	1852	1958	1963	1967	1967	1865				
-0.006	-0.025	-0.063	132.75	1807	1691	1802	1869	1892	1858	1957	1966	1969	1969	1868				
-0.007	-0.025	-0.063	133.00	1811	1693	1808	1873	1893	1864	1960	1967	1972	1972	1871				
-0.006	-0.024	-0.061	133.25	1815	1697	1812	1877	1895	1871	1963	1969	1977	1977	1875				
-0.008	-0.027	-0.064	133.50	1818	1703	1819	1880	1899	1877	1966	1974	1981	1981	1880				
-0.006	-0.025	-0.061	133.75	1822	1706	1825	1883	1899	1880	1966	1974	1984	1984	1882				
-0.005	-0.024	-0.061	134.00	1825	1707	1829	1886	1900	1883	1967	1977	1988	1988	1885				
-0.009	-0.027	-0.066	134.25	1829	1709	1833	1891	1902	1883	1969	1983	1990	1990	1888				
-0.007	-0.025	-0.063	134.50	1837	1710	1836	1896	1904	1876	1974	1988	1995	1995	1891				
-0.005	-0.024	-0.062	134.75	1843	1713	1840	1900	1904	1871	1980	1986	2000	2000	1893				
-0.006	-0.025	-0.062	135.00	1847	1716	1842	1903	1906	1870	1983	1984	2003	2003	1895				



## Furnace Pressures and Temperatures (Continued)

FURNACE PRESSURE (in. H <sub>2</sub> O)			Time (min)	WP-1950				10/4/2012				FURNACE TEMP. °F				AWC		K-1089
WPP01	WPP02	WPP03		WPF01	WPF02	WPF03	WPF04	WPF05	WPF06	WPF07	WPF08	WPF09	WPF10	WPF11	WPF12	WPF13	WPF14	Grp Avg
-0.005	-0.024	-0.062	135.25	1849	1719	1846	1904	1911	1870	1987	1989	2007	1898					
-0.003	-0.023	-0.059	135.50	1850	1717	1856	1905	1912	1869	1991	1989	2009	1900					
-0.008	-0.027	-0.065	135.75	1850	1715	1871	1907	1911	1870	1992	1988	2010	1902					
-0.003	-0.022	-0.059	136.00	1850	1713	1878	1908	1911	1870	1990	1990	2009	1902					
-0.002	-0.021	-0.057	136.25	1850	1714	1876	1907	1912	1870	1990	1991	2007	1902					
-0.001	-0.021	-0.057	136.50	1851	1720	1885	1910	1915	1876	1994	1992	2004	1905					
-0.004	-0.023	-0.060	136.75	1856	1722	1889	1911	1916	1879	1995	1996	2000	1907					
-0.004	-0.023	-0.061	137.00	1858	1723	1890	1911	1916	1878	1995	1997	1996	1907					
-0.008	-0.027	-0.066	137.25	1854	1721	1881	1908	1912	1875	1992	1993	1993	1903					
-0.004	-0.023	-0.059	137.50	1850	1718	1871	1904	1908	1869	1993	1990	1989	1899					
-0.005	-0.024	-0.061	137.75	1847	1715	1868	1902	1908	1863	1991	1988	1983	1896					
-0.005	-0.024	-0.061	138.00	1842	1712	1867	1897	1907	1861	1987	1987	1979	1893					
-0.005	-0.024	-0.062	138.25	1838	1709	1868	1895	1905	1860	1982	1985	1977	1891					
-0.006	-0.025	-0.063	138.50	1839	1707	1863	1896	1904	1858	1979	1983	1976	1889					
-0.005	-0.025	-0.062	138.75	1836	1711	1860	1894	1905	1857	1975	1985	1975	1889					
-0.004	-0.023	-0.060	139.00	1833	1712	1858	1893	1906	1858	1974	1985	1976	1888					
-0.004	-0.024	-0.060	139.25	1831	1710	1857	1891	1904	1857	1972	1983	1975	1887					
-0.003	-0.022	-0.058	139.50	1830	1707	1855	1891	1903	1856	1970	1980	1973	1885					
-0.008	-0.027	-0.065	139.75	1827	1707	1848	1888	1906	1851	1969	1983	1970	1883					
-0.008	-0.026	-0.065	140.00	1824	1712	1850	1887	1910	1851	1972	1987	1971	1885					
-0.008	-0.026	-0.064	140.25	1822	1711	1852	1885	1907	1852	1973	1987	1972	1884					
-0.002	-0.022	-0.057	140.50	1820	1705	1853	1883	1903	1850	1973	1984	1971	1883					
-0.005	-0.024	-0.062	140.75	1822	1702	1854	1884	1899	1855	1972	1981	1974	1883					
-0.007	-0.025	-0.064	141.00	1826	1702	1852	1888	1897	1859	1972	1980	1977	1884					
-0.006	-0.025	-0.063	141.25	1828	1706	1852	1890	1902	1861	1978	1981	1979	1886					
-0.006	-0.024	-0.061	141.50	1830	1709	1851	1891	1902	1863	1980	1984	1981	1888					
-0.007	-0.026	-0.064	141.75	1831	1714	1851	1892	1906	1866	1983	1985	1986	1890					
-0.007	-0.025	-0.064	142.00	1833	1715	1855	1893	1907	1871	1984	1985	1989	1893					
-0.004	-0.023	-0.060	142.25	1834	1715	1855	1893	1906	1871	1984	1984	1991	1893					
-0.004	-0.023	-0.061	142.50	1834	1712	1856	1892	1905	1868	1983	1983	1993	1892					
-0.006	-0.025	-0.062	142.75	1833	1715	1854	1892	1908	1870	1983	1986	1994	1893					
-0.006	-0.025	-0.062	143.00	1833	1714	1851	1891	1906	1867	1985	1987	1993	1892					
-0.006	-0.025	-0.062	143.25	1835	1714	1850	1891	1906	1864	1987	1987	1993	1892					
-0.008	-0.027	-0.065	143.50	1837	1714	1848	1894	1908	1864	1990	1988	1992	1893					
-0.006	-0.025	-0.062	143.75	1836	1711	1848	1893	1906	1864	1991	1990	1992	1892					
-0.007	-0.025	-0.063	144.00	1835	1712	1848	1893	1907	1862	1992	1991	1991	1892					
-0.006	-0.024	-0.062	144.25	1834	1714	1845	1892	1909	1862	1990	1992	1993	1892					
-0.003	-0.022	-0.058	144.50	1833	1717	1840	1890	1912	1861	1988	1990	1993	1892					
-0.006	-0.025	-0.063	144.75	1834	1718	1841	1892	1913	1861	1998	1990	1992	1893					
-0.006	-0.025	-0.062	145.00	1834	1719	1842	1891	1914	1860	2004	1994	1993	1894					
-0.009	-0.027	-0.065	145.25	1834	1718	1842	1889	1914	1859	2002	1996	1991	1894					
-0.006	-0.024	-0.061	145.50	1833	1717	1842	1889	1915	1858	2000	1997	1991	1894					
-0.006	-0.025	-0.063	145.75	1830	1714	1843	1888	1914	1859	1996	1996	1988	1892					
-0.005	-0.024	-0.062	146.00	1830	1713	1842	1889	1912	1857	1994	1997	1990	1892					
-0.005	-0.024	-0.061	146.25	1828	1711	1844	1888	1911	1857	1992	1996	1990	1891					
-0.006	-0.024	-0.062	146.50	1828	1712	1845	1888	1911	1858	1994	1994	1988	1891					
-0.006	-0.024	-0.062	146.75	1827	1711	1847	1886	1909	1862	1993	1990	1989	1890					
-0.005	-0.024	-0.061	147.00	1823	1711	1845	1884	1908	1860	1990	1990	1989	1889					
-0.005	-0.024	-0.060	147.25	1823	1708	1840	1883	1909	1857	1986	1991	1987	1887					
-0.006	-0.025	-0.062	147.50	1823	1707	1839	1885	1908	1854	1985	1993	1986	1887					
-0.008	-0.026	-0.064	147.75	1824	1711	1841	1888	1911	1855	1990	1994	1989	1889					
-0.007	-0.026	-0.064	148.00	1827	1714	1842	1892	1914	1856	1996	1997	1990	1892					
-0.007	-0.026	-0.063	148.25	1832	1715	1844	1898	1918	1857	2000	2002	1992	1895					
-0.007	-0.025	-0.063	148.50	1835	1718	1846	1900	1922	1858	2004	2011	1993	1899					
-0.004	-0.023	-0.059	148.75	1837	1720	1848	1904	1922	1860	2009	2024	1993	1902					
-0.006	-0.024	-0.061	149.00	1839	1720	1847	1912	1925	1863	2022	2033	1995	1906					
-0.006	-0.025	-0.063	149.25	1845	1722	1846	1923	1926	1865	2030	2035	2001	1910					
-0.006	-0.025	-0.062	149.50	1853	1724	1848	1931	1929	1866	2032	2036	2005	1914					
-0.007	-0.026	-0.063	149.75	1858	1725	1850	1933	1930	1866	2033	2036	2008	1915					
-0.005	-0.024	-0.061	150.00	1859	1724	1851	1930	1928	1864	2031	2034	2007	1914					

## Furnace Pressures and Temperatures (Continued)

FURNACE PRESSURE (in. H <sub>2</sub> O)				WP-1950	10/4/2012				FURNACE TEMP. °F				AWC	K-1089
WPP01	WPP02	WPP03	Time (min)	WPF01	WPF02	WPF03	WPF04	WPF05	WPF06	WPF07	WPF08	WPF09	Grp Avg	
-0.005	-0.023	-0.060	150.25	1857	1724	1854	1925	1927	1865	2023	2032	2007	1913	
-0.004	-0.023	-0.060	150.50	1858	1725	1856	1927	1928	1868	2014	2031	2007	1913	
-0.005	-0.024	-0.061	150.75	1858	1724	1852	1929	1928	1867	2011	2031	2008	1912	
-0.005	-0.024	-0.060	151.00	1860	1724	1853	1927	1929	1870	2010	2031	2011	1913	
-0.005	-0.024	-0.061	151.25	1861	1726	1856	1923	1929	1871	2008	2030	2013	1913	
-0.005	-0.024	-0.061	151.50	1863	1728	1856	1922	1931	1871	2009	2030	2015	1914	
-0.005	-0.024	-0.060	151.75	1867	1731	1855	1924	1932	1875	2010	2030	2023	1916	
-0.003	-0.023	-0.059	152.00	1868	1732	1857	1925	1933	1879	2013	2032	2028	1919	
-0.005	-0.024	-0.061	152.25	1870	1733	1859	1926	1934	1881	2010	2033	2029	1920	
-0.005	-0.024	-0.062	152.50	1871	1734	1856	1926	1935	1880	2008	2034	2027	1919	
-0.005	-0.024	-0.061	152.75	1873	1734	1855	1926	1935	1879	2006	2034	2026	1919	
-0.004	-0.023	-0.060	153.00	1878	1733	1856	1930	1937	1881	2008	2036	2030	1921	
-0.005	-0.024	-0.061	153.25	1881	1734	1858	1932	1940	1881	2012	2040	2031	1923	
-0.006	-0.025	-0.063	153.50	1881	1736	1858	1932	1943	1881	2013	2041	2030	1924	
-0.005	-0.024	-0.061	153.75	1881	1737	1859	1932	1944	1881	2015	2042	2027	1924	
-0.004	-0.023	-0.061	154.00	1880	1737	1862	1932	1945	1882	2017	2043	2028	1925	
-0.002	-0.022	-0.058	154.25	1880	1739	1864	1934	1948	1885	2019	2047	2029	1927	
-0.002	-0.022	-0.058	154.50	1881	1743	1868	1935	1950	1886	2018	2048	2029	1929	
-0.005	-0.024	-0.061	154.75	1881	1745	1870	1935	1949	1886	2018	2052	2029	1930	
-0.004	-0.023	-0.059	155.00	1879	1744	1871	1935	1947	1888	2019	2051	2027	1929	
-0.004	-0.023	-0.060	155.25	1879	1744	1870	1935	1947	1887	2017	2051	2023	1928	
-0.005	-0.024	-0.062	155.50	1877	1745	1868	1933	1947	1883	2013	2049	2021	1926	
-0.006	-0.024	-0.062	155.75	1874	1743	1865	1929	1946	1880	2010	2044	2019	1923	
-0.006	-0.024	-0.062	156.00	1873	1743	1866	1928	1945	1880	2009	2043	2018	1923	
-0.003	-0.022	-0.059	156.25	1872	1743	1868	1929	1946	1879	2012	2047	2014	1923	
-0.001	-0.020	-0.057	156.50	1873	1743	1871	1930	1945	1881	2011	2047	2011	1924	
-0.002	-0.021	-0.058	156.75	1875	1745	1873	1934	1945	1882	2015	2045	2013	1925	
-0.001	-0.020	-0.056	157.00	1872	1745	1871	1937	1945	1881	2016	2045	2014	1925	
0.003	-0.018	-0.052	157.25	1866	1742	1864	1933	1943	1876	2013	2041	2010	1921	
-0.001	-0.020	-0.056	157.50	1861	1737	1856	1925	1941	1870	2003	2040	2003	1915	
-0.003	-0.022	-0.059	157.75	1854	1731	1851	1916	1936	1865	1995	2034	1994	1909	
-0.004	-0.023	-0.060	158.00	1849	1726	1849	1911	1933	1860	1988	2032	1989	1904	
-0.002	-0.021	-0.057	158.25	1838	1727	1847	1907	1931	1857	1993	2031	1984	1902	
-0.003	-0.022	-0.059	158.50	1829	1732	1845	1905	1932	1854	1999	2031	1987	1901	
-0.002	-0.022	-0.058	158.75	1824	1729	1841	1902	1930	1850	1995	2027	1986	1898	
-0.005	-0.024	-0.061	159.00	1823	1721	1837	1897	1923	1845	1982	2020	1980	1892	
0.001	-0.019	-0.055	159.25	1819	1715	1831	1891	1916	1841	1974	2014	1972	1886	
-0.003	-0.022	-0.058	159.50	1814	1710	1822	1885	1913	1834	1967	2010	1965	1880	
-0.006	-0.024	-0.062	159.75	1807	1704	1813	1878	1907	1827	1961	2004	1962	1874	
-0.002	-0.021	-0.056	160.00	1801	1698	1807	1871	1901	1820	1952	1998	1954	1867	
-0.007	-0.025	-0.064	160.25	1797	1694	1805	1868	1897	1818	1948	1994	1949	1863	
-0.005	-0.025	-0.062	160.50	1793	1694	1802	1864	1895	1817	1943	1990	1947	1861	
-0.007	-0.025	-0.063	160.75	1788	1693	1798	1859	1895	1814	1939	1985	1942	1857	
-0.006	-0.025	-0.062	161.00	1783	1694	1794	1856	1900	1811	1941	1986	1941	1856	
-0.005	-0.023	-0.060	161.25	1780	1691	1791	1854	1905	1809	1940	1992	1939	1856	
-0.005	-0.024	-0.061	161.50	1777	1689	1791	1851	1907	1806	1939	1994	1937	1855	
-0.006	-0.024	-0.062	161.75	1774	1691	1792	1850	1901	1807	1938	1985	1933	1852	
-0.005	-0.023	-0.060	162.00	1771	1692	1792	1845	1889	1807	1933	1966	1931	1847	
-0.006	-0.025	-0.062	162.25	1767	1690	1788	1838	1882	1806	1926	1959	1927	1843	
-0.006	-0.025	-0.062	162.50	1766	1687	1789	1836	1879	1805	1921	1956	1928	1841	
-0.005	-0.024	-0.062	162.75	1763	1684	1789	1832	1873	1806	1914	1954	1927	1838	
-0.004	-0.023	-0.060	163.00	1760	1682	1790	1828	1868	1807	1909	1951	1924	1835	
-0.005	-0.024	-0.061	163.25	1757	1683	1790	1826	1866	1808	1908	1949	1923	1835	
-0.004	-0.023	-0.061	163.50	1755	1687	1791	1825	1866	1807	1907	1942	1923	1834	
-0.004	-0.023	-0.060	163.75	1753	1687	1794	1826	1863	1809	1909	1936	1923	1833	
-0.003	-0.022	-0.059	164.00	1752	1689	1797	1827	1864	1812	1913	1935	1927	1835	
0.000	-0.020	-0.056	164.25	1758	1699	1807	1837	1875	1824	1922	1947	1938	1845	
-0.002	-0.021	-0.058	164.50	1767	1711	1820	1849	1888	1837	1935	1959	1951	1858	
-0.001	-0.021	-0.057	164.75	1775	1721	1830	1858	1901	1848	1947	1971	1960	1868	
-0.001	-0.021	-0.057	165.00	1782	1732	1838	1867	1911	1853	1956	1979	1965	1876	



## Furnace Pressures and Temperatures (Continued)

FURNACE PRESSURE (in. H <sub>2</sub> O)			Time (min)	WP-1950				10/4/2012				FURNACE TEMP. °F			AWC		K-1089 Grp Avg
WPP01	WPP02	WPP03		WPF01	WPF02	WPF03	WPF04	WPF05	WPF06	WPF07	WPF08	WPF09	WPF10	WPF11	WPF12		
0.000	-0.020	-0.057	165.25	1790	1740	1845	1876	1917	1857	1963	1980	1969	1882				
0.000	-0.020	-0.056	165.50	1797	1746	1852	1881	1921	1863	1968	1981	1974	1887				
0.001	-0.020	-0.056	165.75	1801	1747	1855	1884	1923	1866	1969	1980	1978	1889				
0.002	-0.018	-0.054	166.00	1805	1749	1857	1886	1925	1870	1969	1982	1981	1891				
0.001	-0.019	-0.055	166.25	1808	1751	1858	1889	1927	1870	1973	1986	1983	1894				
0.000	-0.020	-0.057	166.50	1812	1753	1859	1892	1932	1871	1978	1991	1985	1897				
0.001	-0.019	-0.055	166.75	1814	1753	1861	1896	1936	1869	1982	1994	1986	1899				
-0.001	-0.021	-0.057	167.00	1818	1754	1859	1900	1938	1869	1987	1995	1986	1901				
0.001	-0.019	-0.055	167.25	1821	1755	1859	1903	1939	1869	1989	1996	1988	1902				
0.001	-0.019	-0.055	167.50	1821	1755	1862	1904	1940	1870	1990	1997	1989	1903				
0.002	-0.019	-0.054	167.75	1822	1757	1865	1903	1941	1870	1990	1997	1991	1904				
0.002	-0.018	-0.054	168.00	1824	1758	1866	1903	1941	1872	1992	1995	1992	1905				
0.001	-0.019	-0.055	168.25	1826	1758	1864	1905	1943	1871	1992	1994	1992	1905				
0.002	-0.019	-0.054	168.50	1827	1757	1863	1906	1944	1871	1994	1996	1991	1906				
0.002	-0.019	-0.054	168.75	1826	1757	1865	1906	1944	1872	1996	1996	1990	1906				
0.003	-0.018	-0.053	169.00	1828	1757	1864	1909	1947	1873	1997	1999	1991	1907				
0.002	-0.018	-0.053	169.25	1830	1758	1862	1911	1950	1871	1994	1999	1989	1907				
0.001	-0.019	-0.055	169.50	1832	1759	1861	1911	1954	1871	1993	2001	1988	1908				
0.001	-0.019	-0.055	169.75	1833	1761	1858	1912	1955	1870	1996	2000	1989	1908				
0.001	-0.019	-0.055	170.00	1834	1761	1860	1913	1956	1873	1998	1999	1991	1910				
0.000	-0.020	-0.056	170.25	1833	1761	1863	1913	1957	1874	2002	2000	1994	1911				
0.004	-0.017	-0.051	170.50	1833	1760	1862	1914	1958	1870	2003	2001	1994	1911				
0.001	-0.019	-0.055	170.75	1833	1761	1864	1914	1957	1872	2003	2001	1994	1911				
0.001	-0.019	-0.055	171.00	1833	1760	1866	1914	1956	1875	2003	2001	1995	1911				
0.001	-0.019	-0.055	171.25	1834	1761	1867	1915	1956	1877	2005	2004	1998	1913				
0.002	-0.018	-0.054	171.50	1834	1761	1866	1915	1960	1878	2007	2008	1999	1914				
0.003	-0.017	-0.053	171.75	1834	1762	1864	1916	1960	1878	2006	2008	2001	1914				
0.002	-0.018	-0.053	172.00	1835	1764	1864	1918	1965	1879	2008	2009	2001	1916				
0.003	-0.017	-0.052	172.25	1836	1766	1865	1919	1966	1881	2006	2009	2001	1917				
0.001	-0.019	-0.055	172.50	1835	1767	1861	1919	1965	1881	2005	2010	2002	1916				
0.002	-0.019	-0.054	172.75	1834	1766	1861	1918	1966	1881	2005	2012	2001	1916				
0.001	-0.019	-0.055	173.00	1832	1767	1860	1918	1967	1880	2007	2014	1999	1916				
0.002	-0.019	-0.054	173.25	1831	1766	1862	1915	1962	1879	2005	2013	1998	1915				
0.000	-0.020	-0.056	173.50	1829	1768	1861	1914	1962	1877	2004	2015	1997	1914				
0.001	-0.019	-0.055	173.75	1828	1767	1860	1913	1962	1876	2006	2015	1995	1913				
0.000	-0.020	-0.056	174.00	1827	1766	1863	1913	1962	1875	2007	2015	1993	1914				
0.002	-0.018	-0.053	174.25	1829	1764	1865	1914	1960	1879	2006	2017	1994	1914				
0.001	-0.019	-0.055	174.50	1831	1762	1863	1917	1959	1879	2007	2016	1997	1914				
0.000	-0.020	-0.056	174.75	1832	1763	1862	1918	1959	1879	2007	2016	1997	1915				
0.001	-0.019	-0.055	175.00	1833	1764	1865	1919	1960	1883	2007	2017	1997	1916				
0.001	-0.019	-0.055	175.25	1835	1765	1867	1920	1962	1886	2009	2017	1999	1918				
0.002	-0.019	-0.054	175.50	1835	1766	1865	1920	1962	1885	2008	2018	1998	1917				
0.000	-0.020	-0.056	175.75	1836	1766	1865	1920	1961	1884	2007	2020	1998	1917				
0.001	-0.019	-0.055	176.00	1836	1767	1869	1919	1961	1885	2008	2021	1998	1918				
0.004	-0.017	-0.052	176.25	1839	1776	1871	1921	1962	1885	2010	2018	1997	1920				
0.001	-0.019	-0.054	176.50	1843	1780	1878	1923	1962	1888	2010	2013	1998	1922				
0.001	-0.019	-0.055	176.75	1847	1779	1881	1927	1962	1891	2011	2014	1999	1923				
0.002	-0.018	-0.054	177.00	1850	1775	1882	1928	1960	1892	2011	2013	2001	1924				
0.001	-0.019	-0.055	177.25	1852	1775	1879	1928	1959	1890	2010	2011	2000	1923				
0.001	-0.019	-0.055	177.50	1852	1775	1880	1929	1959	1888	2010	2011	2000	1923				
0.001	-0.019	-0.055	177.75	1852	1775	1877	1928	1960	1885	2010	2014	1999	1922				
0.001	-0.019	-0.055	178.00	1853	1774	1877	1929	1960	1886	2011	2015	1999	1923				
0.001	-0.019	-0.055	178.25	1852	1777	1878	1930	1961	1887	2014	2014	1997	1923				
0.003	-0.018	-0.053	178.50	1851	1777	1882	1929	1961	1888	2014	2013	1997	1923				
0.004	-0.017	-0.051	178.75	1852	1775	1884	1927	1959	1888	2013	2013	1997	1923				
0.001	-0.019	-0.055	179.00	1851	1773	1884	1925	1958	1887	2012	2012	1997	1922				
0.002	-0.018	-0.054	179.25	1848	1770	1881	1924	1957	1886	2012	2010	1997	1921				
0.002	-0.018	-0.054	179.50	1847	1769	1881	1924	1956	1885	2012	2009	1996	1920				
0.002	-0.018	-0.053	179.75	1847	1768	1882	1924	1955	1885	2011	2007	1996	1919				
0.004	-0.017	-0.051	180.00	1848	1768	1878	1923	1954	1883	2010	2007	1996	1918				



## Furnace Pressures and Temperatures (Continued)

FURNACE PRESSURE (in. H2O)			WP-1950	10/4/2012				FURNACE TEMP. °F			AWC		K-1089
WPP01	WPP02	WPP03	Time (min)	WPF01	WPF02	WPF03	WPF04	WPF05	WPF06	WPF07	WPF08	WPF09	Grp Avg
0.001	-0.019	-0.055	180.25	1849	1768	1875	1924	1954	1882	2008	2006	1994	1918
0.002	-0.018	-0.054	180.50	1850	1768	1872	1922	1953	1879	2005	2004	1991	1916
0.000	-0.020	-0.057	180.75	1848	1765	1873	1921	1948	1880	2008	1999	1992	1915
0.002	-0.018	-0.053	181.00	1845	1763	1875	1921	1948	1880	2013	1999	1995	1915
0.000	-0.019	-0.056	181.25	1843	1763	1874	1921	1947	1879	2015	1997	1994	1915
0.000	-0.019	-0.056	181.50	1841	1761	1871	1921	1944	1878	2018	1997	1995	1914
0.001	-0.019	-0.055	181.75	1839	1760	1868	1919	1942	1879	2014	1996	1995	1912
0.001	-0.019	-0.055	182.00	1838	1760	1869	1916	1943	1880	2010	1997	1993	1912
0.001	-0.019	-0.055	182.25	1840	1765	1870	1917	1946	1881	2009	2000	1992	1913
0.001	-0.019	-0.054	182.50	1841	1767	1869	1918	1947	1881	2010	2000	1991	1914
0.001	-0.019	-0.054	182.75	1840	1770	1867	1918	1948	1880	2007	2000	1990	1913
0.001	-0.019	-0.055	183.00	1841	1768	1866	1917	1947	1879	2005	1999	1989	1912
0.001	-0.019	-0.055	183.25	1842	1766	1866	1918	1946	1880	2004	1997	1991	1912
0.002	-0.018	-0.053	183.50	1843	1766	1863	1922	1949	1877	2005	1999	1990	1913
0.000	-0.020	-0.055	183.75	1845	1767	1862	1922	1950	1874	2003	1999	1987	1912
0.001	-0.018	-0.054	184.00	1845	1766	1862	1921	1949	1872	2004	1998	1985	1911
0.002	-0.018	-0.054	184.25	1845	1765	1860	1922	1949	1870	2004	1998	1984	1911
0.002	-0.018	-0.053	184.50	1845	1764	1858	1921	1948	1870	2003	1998	1983	1910
0.000	-0.020	-0.056	184.75	1845	1764	1859	1921	1948	1869	2002	2000	1984	1910
0.004	-0.017	-0.051	185.00	1846	1765	1859	1923	1951	1871	2005	2001	1985	1912
0.001	-0.019	-0.054	185.25	1847	1767	1862	1925	1955	1873	2006	2004	1985	1914
0.004	-0.017	-0.051	185.50	1850	1769	1866	1927	1957	1876	2008	2007	1987	1916
0.004	-0.017	-0.052	185.75	1855	1770	1876	1932	1955	1883	2011	2006	1992	1920
0.006	-0.015	-0.049	186.00	1857	1766	1882	1934	1949	1887	2010	1999	1995	1920
0.008	-0.014	-0.047	186.25	1858	1762	1886	1932	1942	1890	2008	1989	1998	1918
0.009	-0.013	-0.046	186.50	1856	1759	1887	1932	1936	1894	2007	1982	2002	1917
0.008	-0.013	-0.046	186.75	1856	1758	1884	1932	1935	1897	2008	1981	2007	1918
0.009	-0.013	-0.046	187.00	1856	1759	1884	1932	1936	1900	2009	1982	2011	1919
0.009	-0.012	-0.045	187.25	1857	1760	1888	1937	1939	1909	2014	1986	2019	1923
0.010	-0.012	-0.045	187.50	1859	1762	1891	1943	1942	1918	2019	1990	2025	1928
-0.034	-0.045	-0.093	187.75	1862	1763	1892	1946	1945	1922	2022	1993	2030	1931



## Photographs

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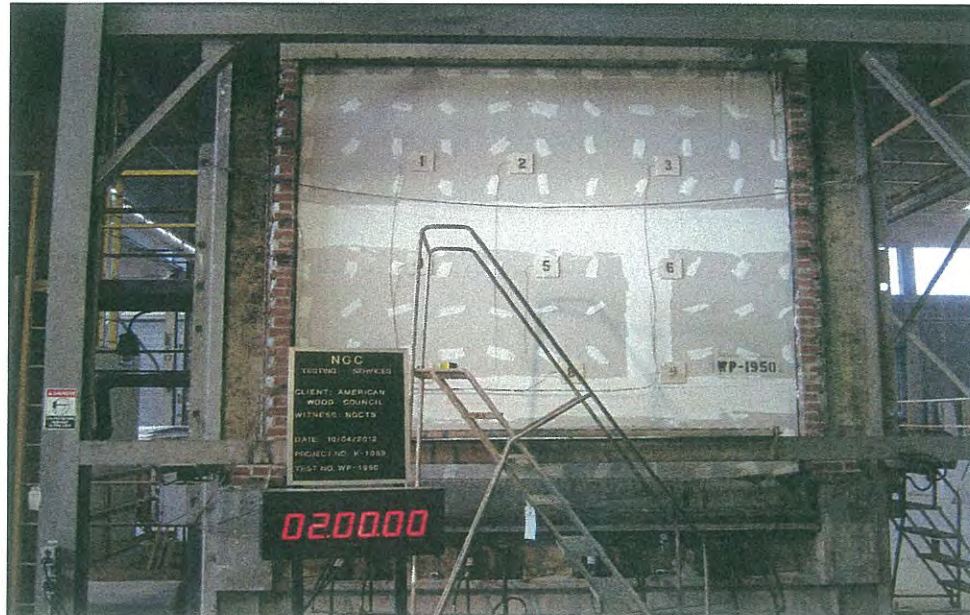
Exposed Side – CLT Wall Construction



Unexposed Side – Start of Test

## Photographs (Continued)

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Unexposed Side – Test @ 2 Hours



Unexposed Side – Flaming at Wall Assembly Perimeter

## Photographs (Continued)

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Unexposed Side – Increased Flaming at Wall Assembly Perimeter



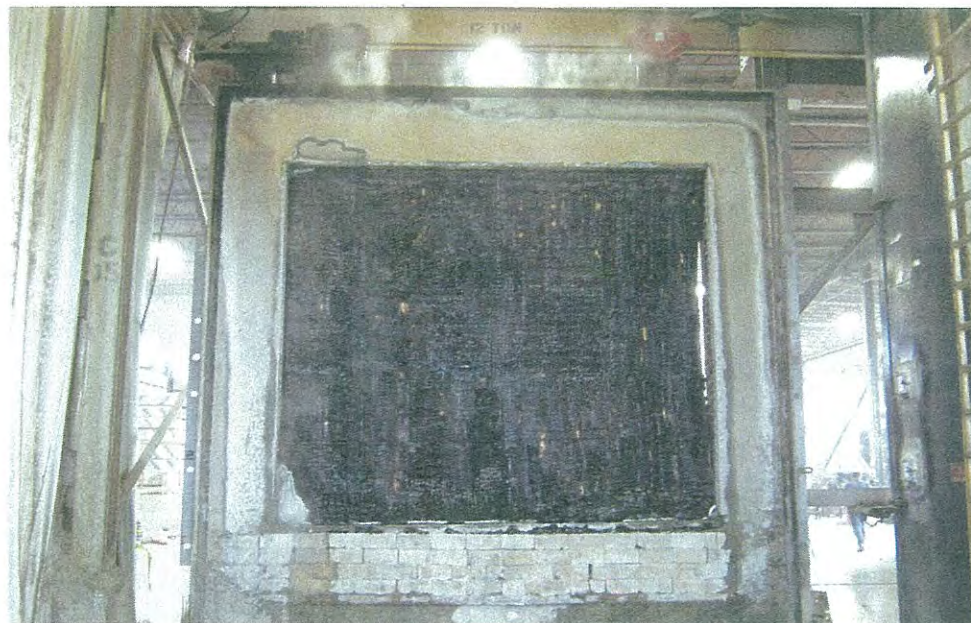
Unexposed Side – Test Termination

## Photographs (Continued)

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Exposed Side – End of Test (Removing from Furnace)



Exposed Side – Post Test



## Revision Summary

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DATE	SUMMARY
October 15, 2012	Original issue date. Original NGCTS report WP-1950.