

# SOUTHWEST RESEARCH INSTITUTE®

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## FIRE PERFORMANCE EVALUATION OF THE NONLOAD-BEARING SUPRESS 5/8-IN. SED PANEL WOOD STUD WALL ASSEMBLY IN ACCORDANCE WITH ASTM E 119-05a, STANDARD TEST METHODS FOR FIRE TESTS OF BUILDING CONSTRUCTION AND MATERIALS


**FINAL REPORT**  
Consisting of 14 Pages

SwRI® Project No. 01.12694.01.117a  
Test Dates: April 19 and May 4, 2007  
Report Date: June 1, 2007

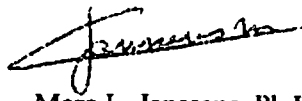
Prepared for:

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1050 Northgate Drive, Suite 570  
San Rafael, CA 94903

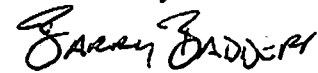
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## ABSTRACT

An asymmetric nonload-bearing wall assembly, identified as the Supress 5/8-in. SED Panel Wood Stud Wall assembly was tested from one side by Southwest Research Institute's (SwRI) Fire Technology Department, located in San Antonio, TX, for Supress Products, LLC, of San Rafael, CA. The wall assembly consisted of nominal 2 × 4-in. No. 1 Yellow Pine wood studs spaced 16 in. on center, 5/8-in. thick Supress<sup>®</sup> Sound-Engineered Drywall<sup>™</sup> fastened to one side of the wood stud framing, and 5/8-in. Type "X" gypsum wallboard fastened to the other side of the wood stud framing. Testing was conducted on April 19 and May 4, 2007, in accordance with ASTM E 119-05a, *Standard Test Methods for Fire Tests of Building Construction and Materials*.

Based on the test results, the Supress 5/8-in. SED Panel Wood Stud Wall assembly achieved a fire resistance rating of 1 hr from one side when tested exposing the 5/8-in. Type "X" gypsum wallboard side of the assembly in accordance with ASTM E 119.

## **1.0 INTRODUCTION**

A fire performance evaluation of an asymmetric nonload-bearing wall assembly was conducted for Supress Products, LLC, of San Rafael, CA, at Southwest Research Institute's (SwRI) Fire Technology Department, located in San Antonio, TX. Testing was conducted on April 19 and May 4, 2007, in accordance with ASTM E 119-05a, *Standard Test Methods for Fire Tests of Building Construction and Materials*.

This report contains a description of the test procedure followed, assembly tested, and the results obtained. The results presented in this report apply only to the assembly tested, in the manner tested, and not to any similar assemblies or material combinations.

## **2.0 OBJECTIVE**

The ASTM E 119 test method is intended to evaluate the duration for which the assembly tested will contain a fire, or retain its structural integrity, or display both properties dependent upon the type of assembly involved, during a predetermined fire exposure time.

This test measures the response of the assembly to exposure in terms of the transmission of heat and hot gases through the assembly. This standard should be used to measure and describe the properties of materials, products, or assemblies in response to heat and flame under controlled laboratory conditions and should not be used to describe or appraise the fire hazard or fire risk of materials, products, or assemblies under actual fire conditions. However, results of this test may be used as elements of a fire risk assessment, which takes into account all the factors that are pertinent to an assessment of the fire hazard of a particular end use.

## **3.0 TEST ASSEMBLY**

SwRI received the material supplied by Supress Products, LLC, on April 12, 2007. SwRI constructed two identical 12 × 9-ft wall assemblies for Supress Products, LLC. The wall assembly consisted of nominal 2 × 4-in. No. 1 Yellow Pine wood studs spaced 16 in. on center, 5/8-in. thick Supress<sup>®</sup> Sound-Engineered Drywall™ fastened to one side of the wood stud framing, and 5/8-in. Type "X" gypsum wallboard fastened to the other side of the wood stud framing. The wood stud framing incorporated a double top plate and single bottom plate. The Supress<sup>®</sup> Sound-Engineered Drywall™ and Type "X" gypsum wallboard sheets were fastened to the wood stud framing with 1-5/8-in. coarse thread drywall screws spaced 8 in. on center along the perimeter and 12 in. on center in the field of the wallboard. All joints were taped and treated with joint compound, and all fastener heads were covered with joint compound.

#### 4.0 TEST RESULTS

The 5/8-in. Type "X" gypsum wallboard side of Supress Products, LLC's assembly, identified as the Supress 5/8-in. SED Panel Wood Stud Wall assembly was tested on April 19, 2007. The wall assembly was mounted to SwRI's large-vertical furnace, and all instrumentation connections were verified. The wall assembly was exposed to the standard temperature-time curve specified in ASTM E 119.

Present to witness the test was Mr. Bruce Donaldson of Supress Products, LLC, and Mr. Barry L. Badders, P.E. (License No. 61907), licensed in the State of Florida. The test notification number from Miami-Dade County, Florida, for this program is SWRI 07017.

The ambient temperature and relative humidity prior to the test were 72°F and 51%, respectively. Visual observations are presented in Table 1.

**Table 1. Test Observations.**

<b>TIME Hr:Min:Sec</b>	<b>OBSERVATIONS</b>
0:00	Start of test.
10:30	Light smoke/steam exiting from top-right corner of assembly.
45:00	Smoke/steam exiting top edge.
59:00	Discoloration on unexposed side above and below TC 2.
1:00:00	End of test.
Post Test	Exposed gypsum wallboard remains intact and fastened to assembly.

The wall assembly sustained the 1-hr fire endurance test without unexposed surface conditions to ignite cotton waste, and also the transmission of heat through the wall assembly did not raise the temperature on its unexposed surface more than 250°F above its initial temperature. At 59 min 40 sec, the single point temperature criteria was exceeded. The ASTM E 119 test requires results to be reported to the nearest integral minute.

Immediately following the 1-hr fire endurance test, a hose stream test was performed. The wall assembly failed to limit the passage of water to the unexposed side. An identical sample was exposed to similar furnace conditions on May 4, 2007, for the purpose of conducting a hose stream retest. The duplicate sample was exposed, on the 5/8-in. Type "X" gypsum wallboard side, to fire conditions for 30 min (1/2 of the 1-hr desired fire resistance rating) and was immediately subjected to a 30-psi water hose stream for 65 sec. Only Mr. Barry Badders was present to witness the hose stream retest. The assembly did not allow the passage of water during the hose stream test; therefore, the

wall assembly satisfied the conditions of acceptance of the hose stream test in accordance with ASTM E 119.

Select photographs are provided in Appendix A. Unexposed side temperatures and furnace temperature data for the tests are contained in Appendix B. Video documentation and photographs taken during the test accompany this report as enclosures on DVD and compact disc, respectively, and are considered part of this report.

## **5.0 CONCLUSION**

Based on the test results, the Supress 5/8-in. SED Panel Wood Stud Wall assembly achieved a fire resistance rating of 1 hr from one side when tested exposing the 5/8-in. Type "X" gypsum wallboard side of the assembly in accordance with ASTM E 119.

**APPENDIX A**  
**PHOTOGRAPHIC DOCUMENTATION**  
**(CONSISTING OF 5 PAGES)**

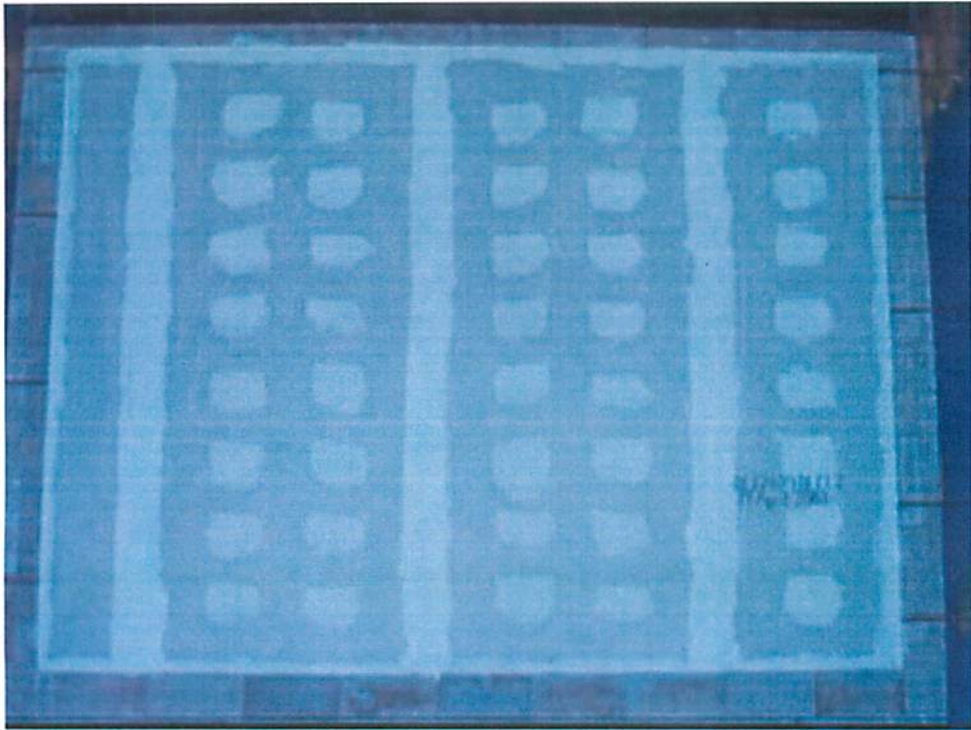


Figure A-1. Exposed Side of Assembly Prior to the Fire Test.

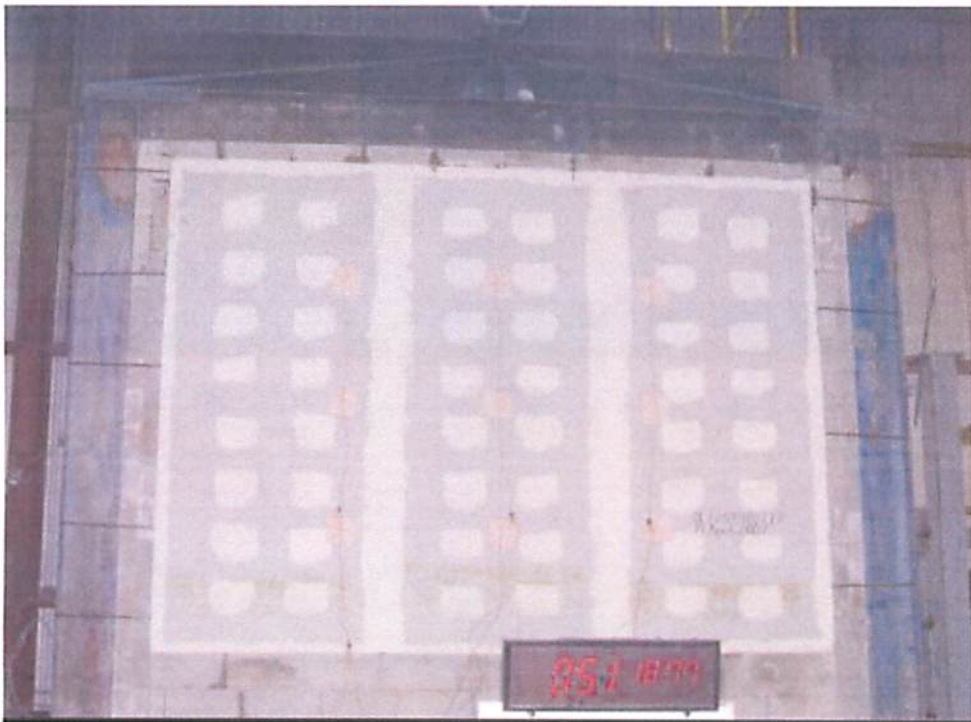
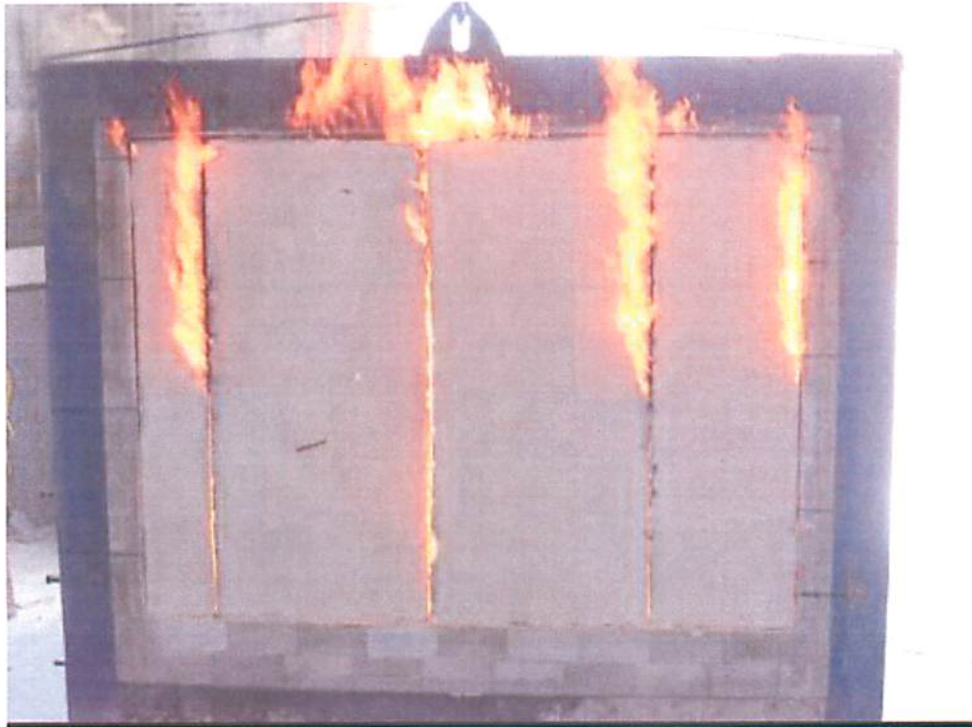


Figure A-2. Unexposed Side of Assembly During the Fire Test.



**Figure A-3. Exposed Side of Assembly Immediately After the Fire Test.**



**Figure A-4. Unexposed Side of Assembly Immediately After the Fire Test.**

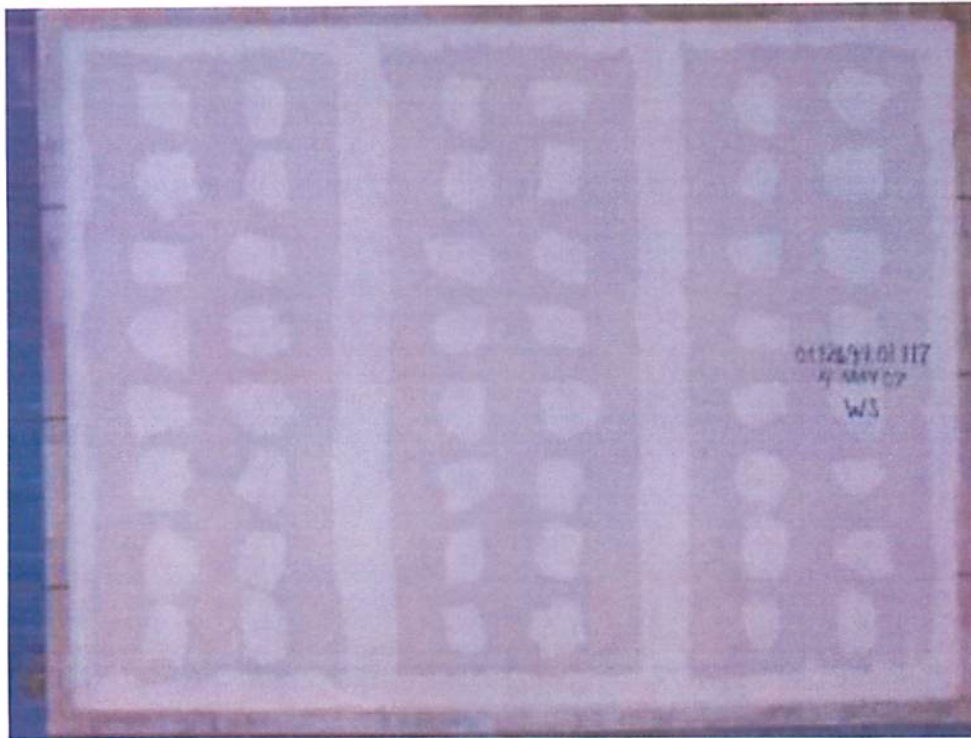


Figure A-5. Exposed Side of Hose Stream Retest Prior to the Fire Test.

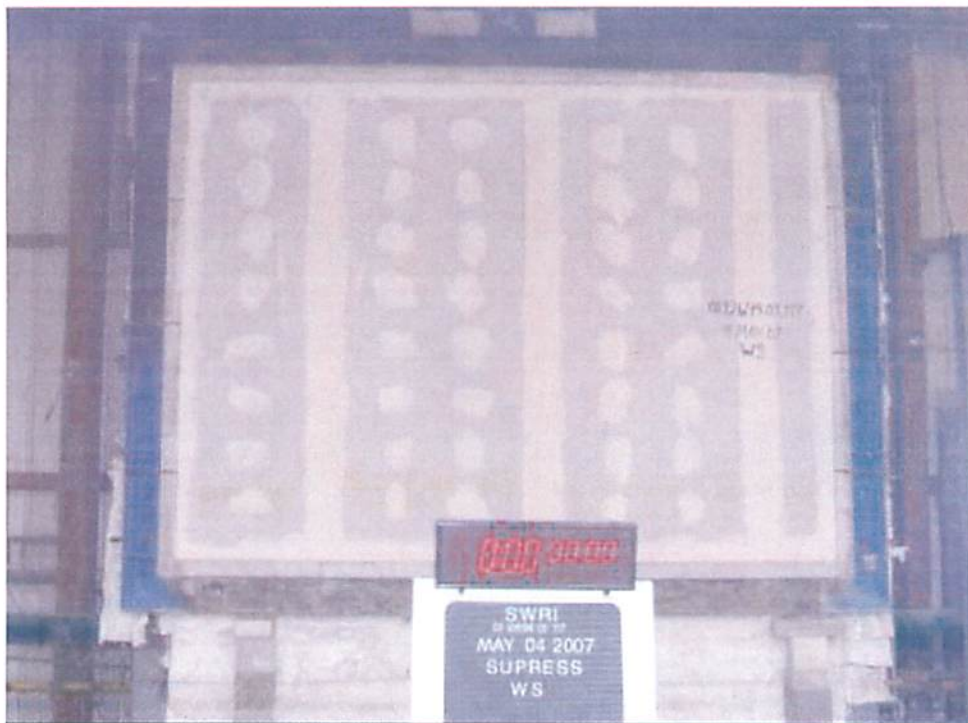
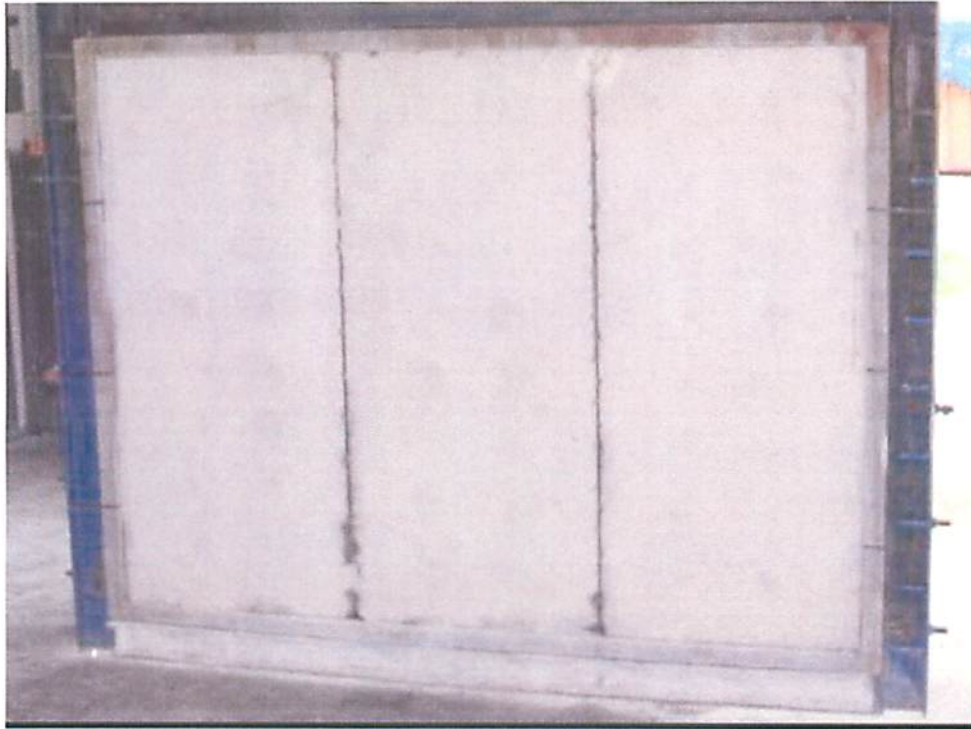


Figure A-6. Unexposed Side of Hose Stream Retest Prior to the Fire Test.



**Figure A-7. Exposed Side of Hose Stream Retest Immediately After the Fire Test.**



**Figure A-8. Exposed Side of Hose Stream Retest Immediately After Hose Stream Test.**

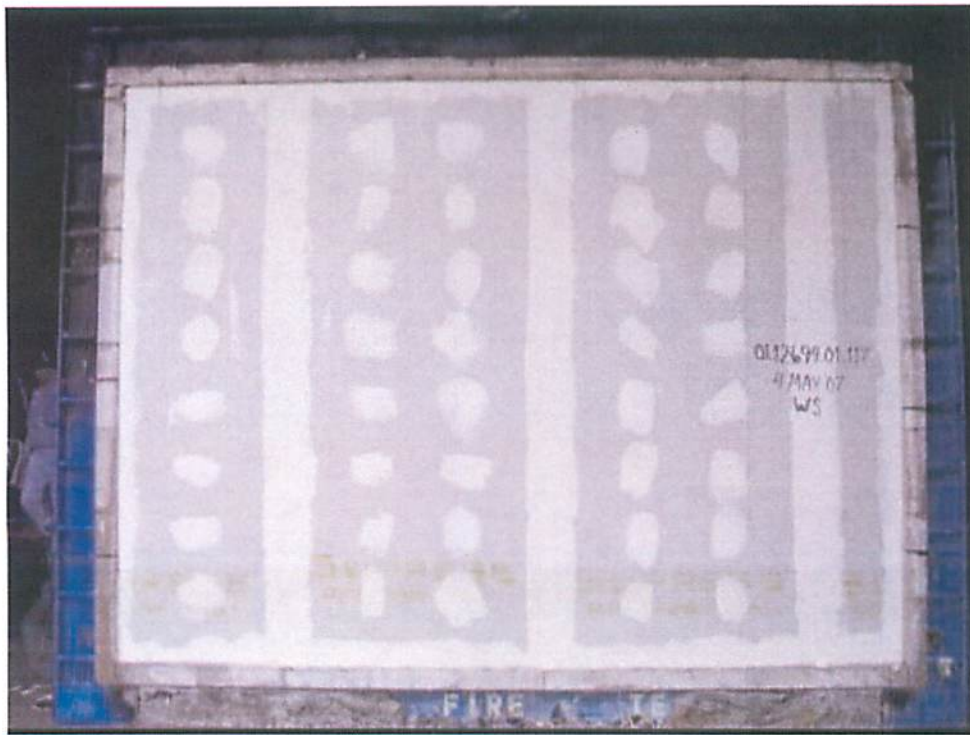
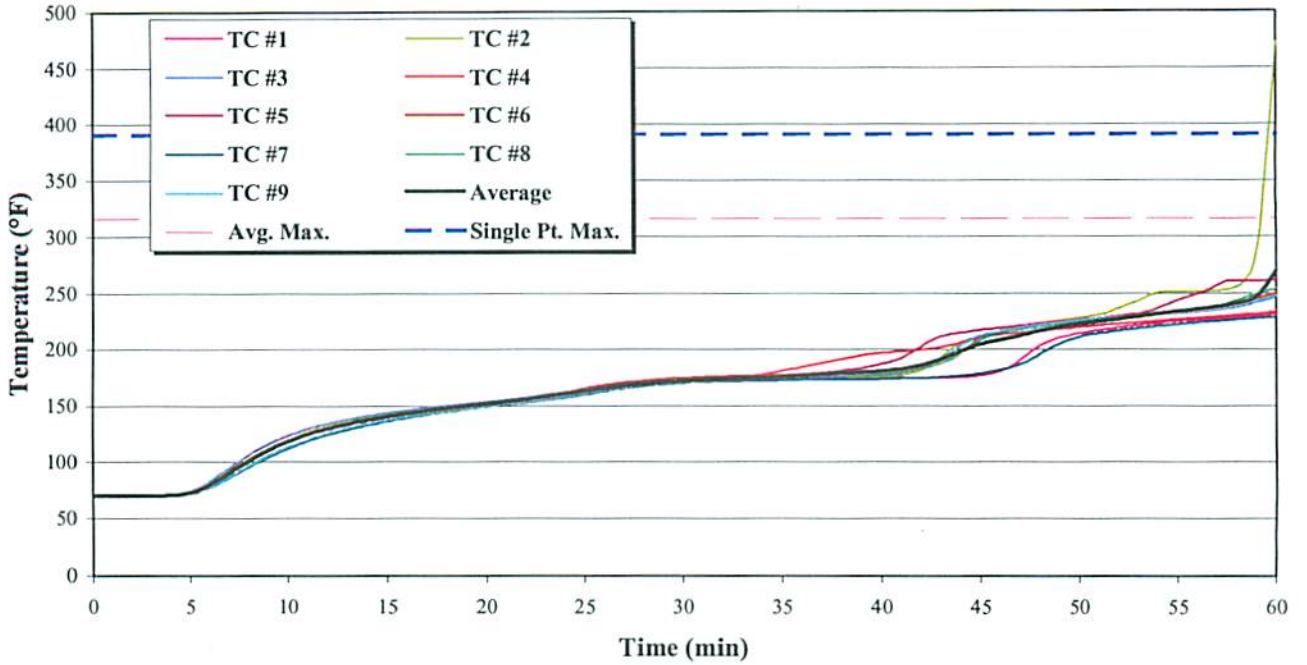


Figure A-9. Unexposed Side of Hose Stream Retest After Hose Stream Test.

**APPENDIX B**  
**TEMPERATURE DATA**  
**(CONSISTING OF 2 PAGES)**

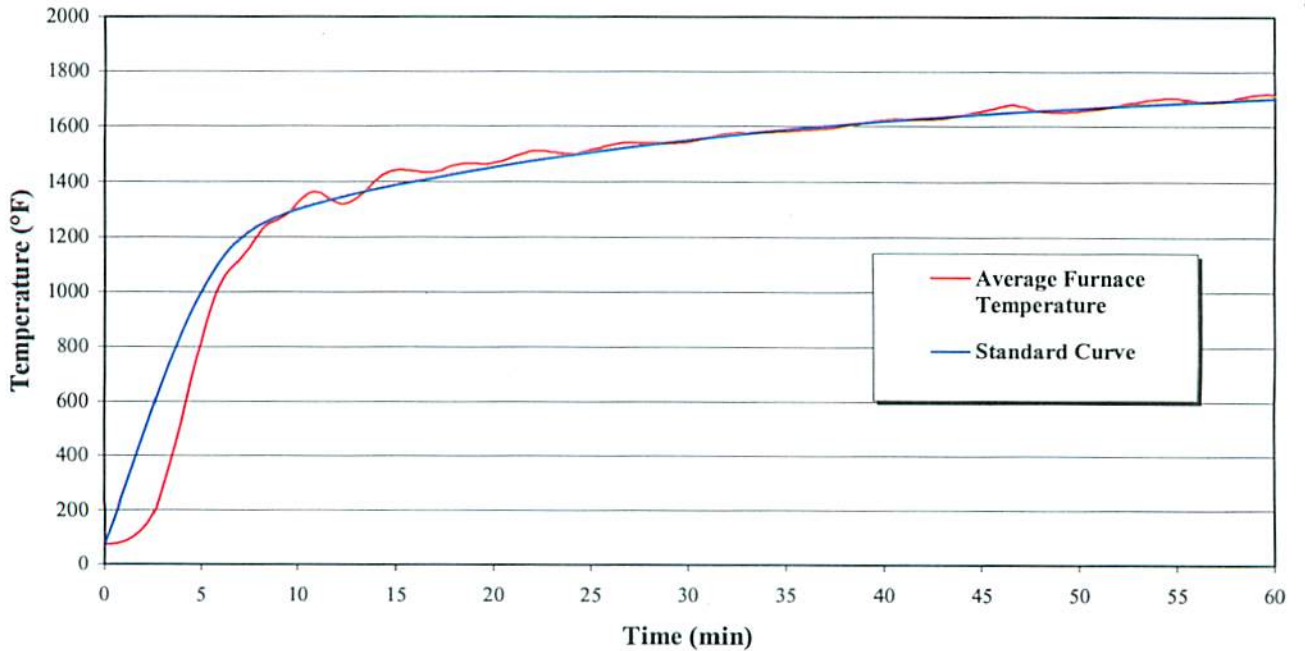
Supress Products, LLC  
 SwRI Project No. 01.12694.01.117a  
 Test Date: 4/19/2007  
 Test ID: 07-109Sup117.csv

### Unexposed Surface Temperatures



Supress Products, LLC  
 SwRI Project No. 01.12694.01.117a  
 Test Date: 4/19/2007  
 Test ID: 07-109Sup117.csv

### Average Furnace Temperature



Supress Products, LLC  
SwRI Project No. 01.12694.01.117a  
Test Date: 5/4/2007  
Test ID: 07-124SupWS.csv

### Hose Stream Retest Average Furnace Temperature

