

**CLIENT:** **TAYLOR BROTHERS DOOR LOCK, LLC**  
11701 Union St.  
Mount Morris, MI  
48458

**Test Report No: T1385-1**

**Report Date: November 19, 2019**

**SAMPLE ID:** Taylor Brothers Door Lock NightLock Lockdown hardware.

**SAMPLING DETAIL:** The test samples were submitted directly by the client. The product dimensions were compared to drawings and verified by QAI staff to meet the specifications.

**DATE OF RECEIPT:** The samples were received at the QAI Burnaby laboratory on October 8, 2019.

**TESTING PERIOD:** November 13 and 14, 2019.

**AUTHORIZATION:** QAI Test Proposal Number 2019MV0909-01, dated September 9, 2019.

**TEST PROCEDURE:** Testing to the following requirements:

- UL 10c (2016) Standard for Positive Pressure Fire Tests of Door Assemblies (UL 10c).
- CAN/ULC S104-15 – Standard Method for Fire Tests of Door Assemblies (ULC S104).

**TEST RESULTS:** The Taylor Brothers Door Lock NightLock Lockdown hardware met the requirements of the test standards for a 20 minute and 90 minute fire-resistance rating with hose stream.

**Prepared By**

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Project Manager

**Signed for and on behalf of**  
**QAI Laboratories, Ltd.**



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## Table of Contents

Introduction: .....	3
Assembly Description: .....	3
Test Apparatus:.....	4
Test Conditions: .....	5
Test Results: .....	5
Conclusions: .....	6
APPENDIX A .....	7
APPENDIX B .....	11

## Introduction:

This report documents the fire testing conducted by QAI Laboratories Ltd. for Taylor Brothers Door Lock of a NightLock Lockdown locking device in accordance with UL 10c and ULC S104. The testing was conducted on November 13 and 14, 2019.

## Assembly Description:

**Table 1: Test Assembly Description**

COMPONENT	DESCRIPTION	
<b>Door Slab 1</b>	Type:	20 minute listed hardboard flush door.
	Dimensions:	36 in. x 84 in. x 1.75 in.
	Core:	MDF.
	Skins:	Wood veneer.
<b>Door Slab 2</b>	Type:	90 minute listed steel door.
	Dimensions:	36 in. x 84 in. x 1.75 in.
	Core:	Hollow.
	Skins:	18 gauge steel.
<b>Frame</b>	Type:	16 Gauge welded steel frame.
	Frame Dimensions:	5.75 in. deep by 2 in. frame with a 0.625 in. stop.
	Opening Dimensions:	36 in. wide by 84 in. high.
	Installation:	The steel frame was installed in a concrete block wall. The frame was filled with type S mortar and 6 wire anchors were used to secure the sides of the frame to the concrete block wall.
<b>Hardware</b>	Latch:	Listed cylindrical door latch.
	Hinges:	Two 4-1/2 in. by 4 in. steel butt hinges.
	Locking Device:	NightLock Lockdown device mounting plate. The stop engaging device was through bolted to the unexposed face and the floor engaging device was through bolted to the exposed face.

## Test Apparatus:

The furnace used in the test is a mid-scale fire burning apparatus with interior dimensions of 10 ft. 4 in. (1.78 m) in height, 5 ft. 5 in. (1.65 m) in width, and 52 in. (1.32 m) in depth.

Temperatures within the furnace were monitored using eight thermocouples. The temperatures are controlled by adjusting fuel to the furnace burners to conform to the time/temperature curve specified by the test standards. Temperature measurements are recorded by a Keithley 2750 data acquisition unit (ID# DMM1) which passes the readings to a computer for graphical display and storage.

The door and frame assemblies were mounted in a vertical steel test frame. The test frame is then rolled up to the furnace and secured by chain and straps to the furnace opening.

Two pressure taps are installed along the longitudinal center line of the test assembly. The pressure taps are each attached and monitored by Setra model 264 pressure transducers (ID# Pressure T3 and Pressure T4). The furnace pressure is controlled by adjusting a damper in the furnace exhaust stack.



**Figure 1: Test Furnace**

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## Test Conditions:

The Taylor Brothers Door Lock test assemblies were constructed in a pilot-scale moveable steel restraint frame. The space between the furnace and test assemblies was comprised of ceramic fiber batt to prevent air movement.

The pressure was continuously monitored using calibrated pressure transducers. After the first 5 minutes of the test the pressure 40 in. from the sill was set to zero for the remainder of the test.

Prior to the fire endurance test the test assembly was fastened to the front of the furnace, and the burners were ignited. The fire endurance test was initiated after igniting the burners. The temperature inside the furnace was controlled to follow the time/temperature curve within the limits described in the test standards.

## Test Results:

### Observations

**Table 2: Wood Door Test Observations**

Test Time (min)	Unexposed	Exposed
2:00	Venting from the header.	
2:50		Ignition of the skin.
3:27	Venting along the hinge side.	
4:40	Venting around the top 1/3 of the door.	
13:00	Venting from the latch.	
20:00	Test discontinued.	

**Table 3: Steel Door Test Observations**

Test Time (min)	Unexposed	Exposed
2:30	The door is bowing into the furnace.	
4:00	Venting from the hardware.	
5:25	Venting from the latch.	
7:00		Flaming at the latch.
14:20	Door skin is deforming.	
17:00	Bottom latch side is discolouring.	
20:00	The latch handle is dropping.	
30:00		The floor device is no longer visible.
90:00	Test discontinued.	

### Flaming and Penetration

There was no flaming at or around the Taylor Brother Door Lock NightLock Lockdown hardware for the duration of the tests.

## Hose Stream Test

Immediately after the fire tests, a hose stream test was conducted for 14 seconds after the wood door test and 36 seconds after the steel door test. The NightLock Lockdown hardware successfully met the conditions of acceptance for the hose stream test: no through openings were developed that would allow a projection of water from the stream beyond the unexposed face during the time of the hose stream test.

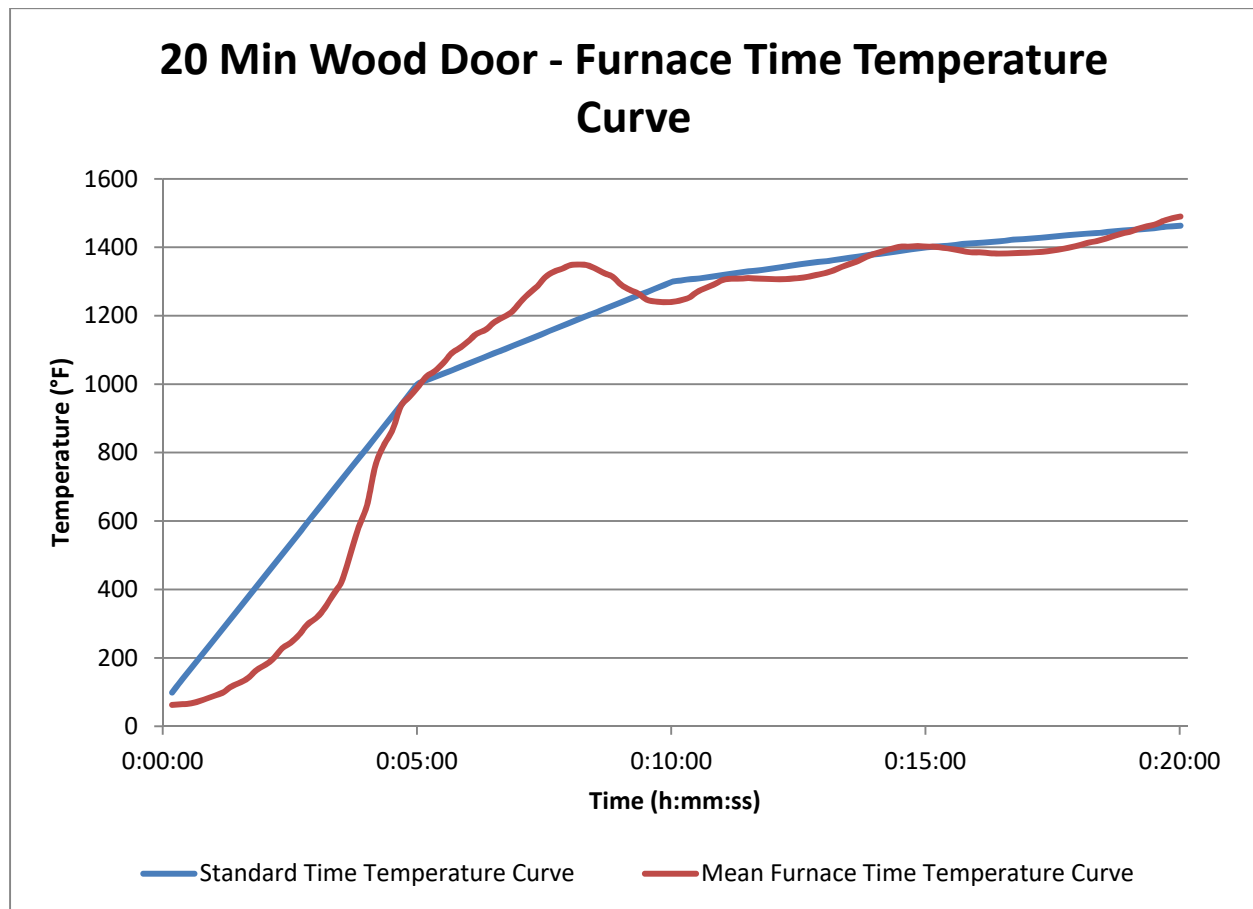
## Conclusions:

QAI performed testing in accordance with UL 10c on Taylor Brothers NightLock Lockdown devices installed on a 20 minute wood door and a 90 minute steel door.

The doors did not experience flaming on the unexposed face of the doors and no through openings formed at or near the NightLock Lockdown devices during the fire tests or the hose stream tests. The NightLock Lockdown device met the requirements of UL 10c and ULC S104 for a 20 minute and 90 minute fire-resistance rating with hose stream.

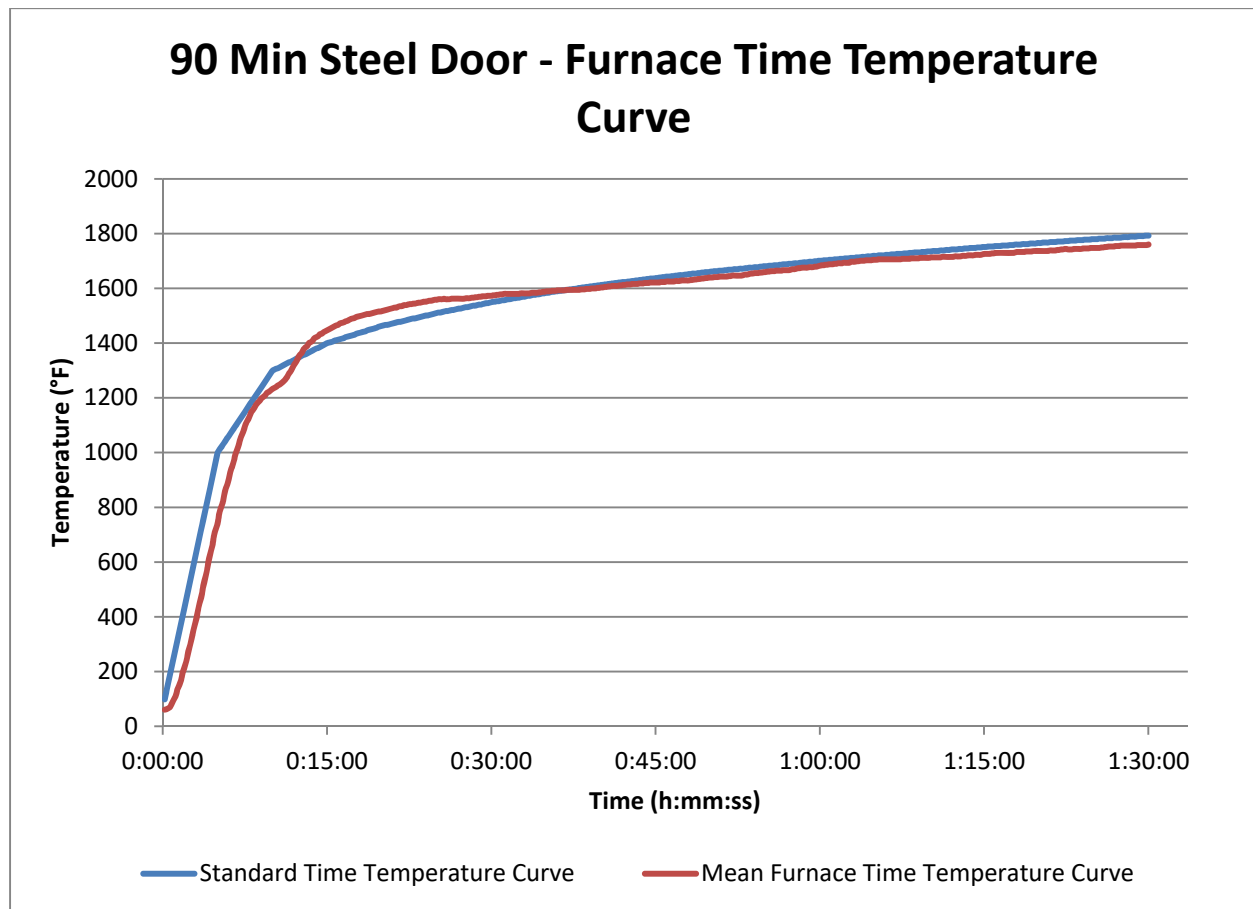
## APPENDIX A

Page	Title
8-9	Furnace Time Temperature Curve
10-11	Furnace Time Pressure Curves

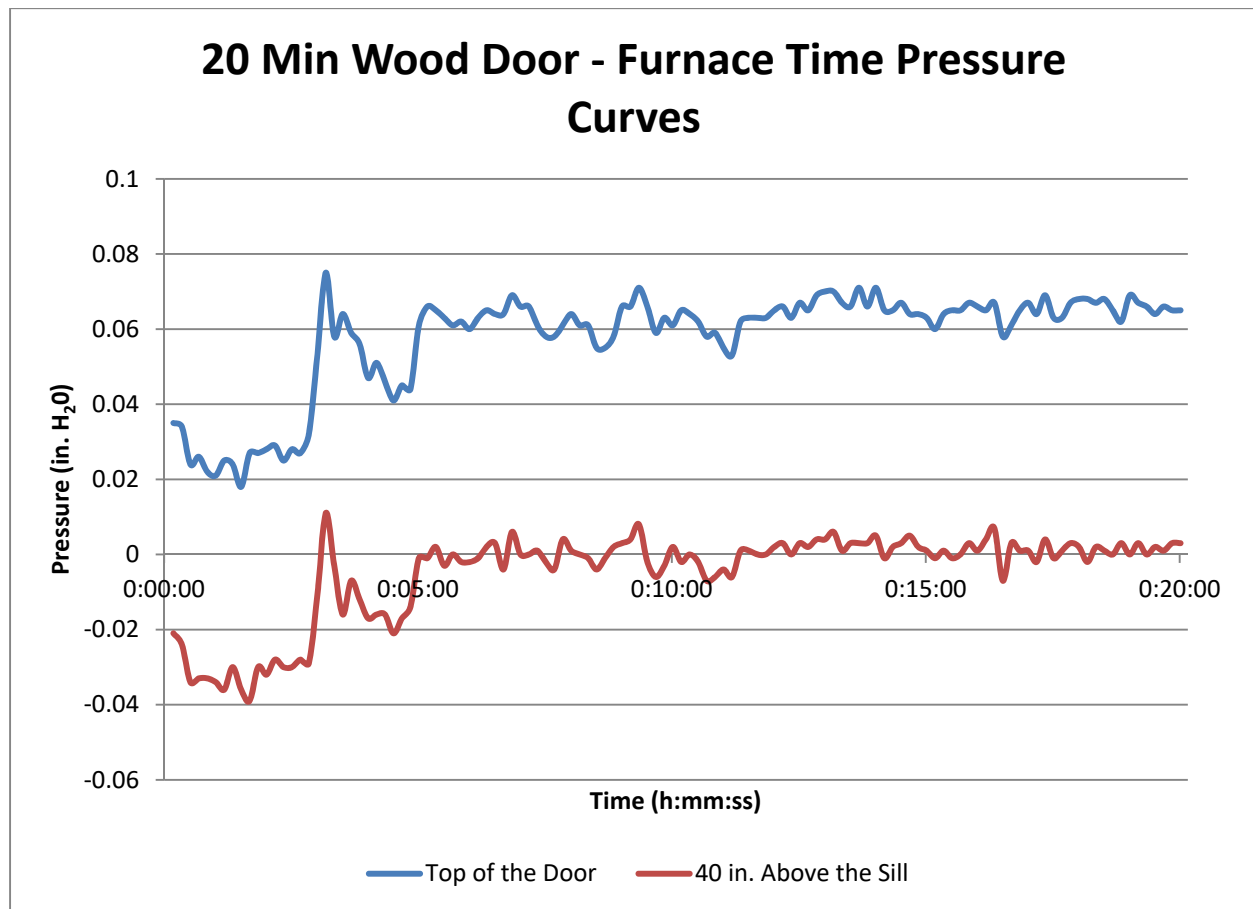


**Figure 2: Furnace Time Temperature Curve.**

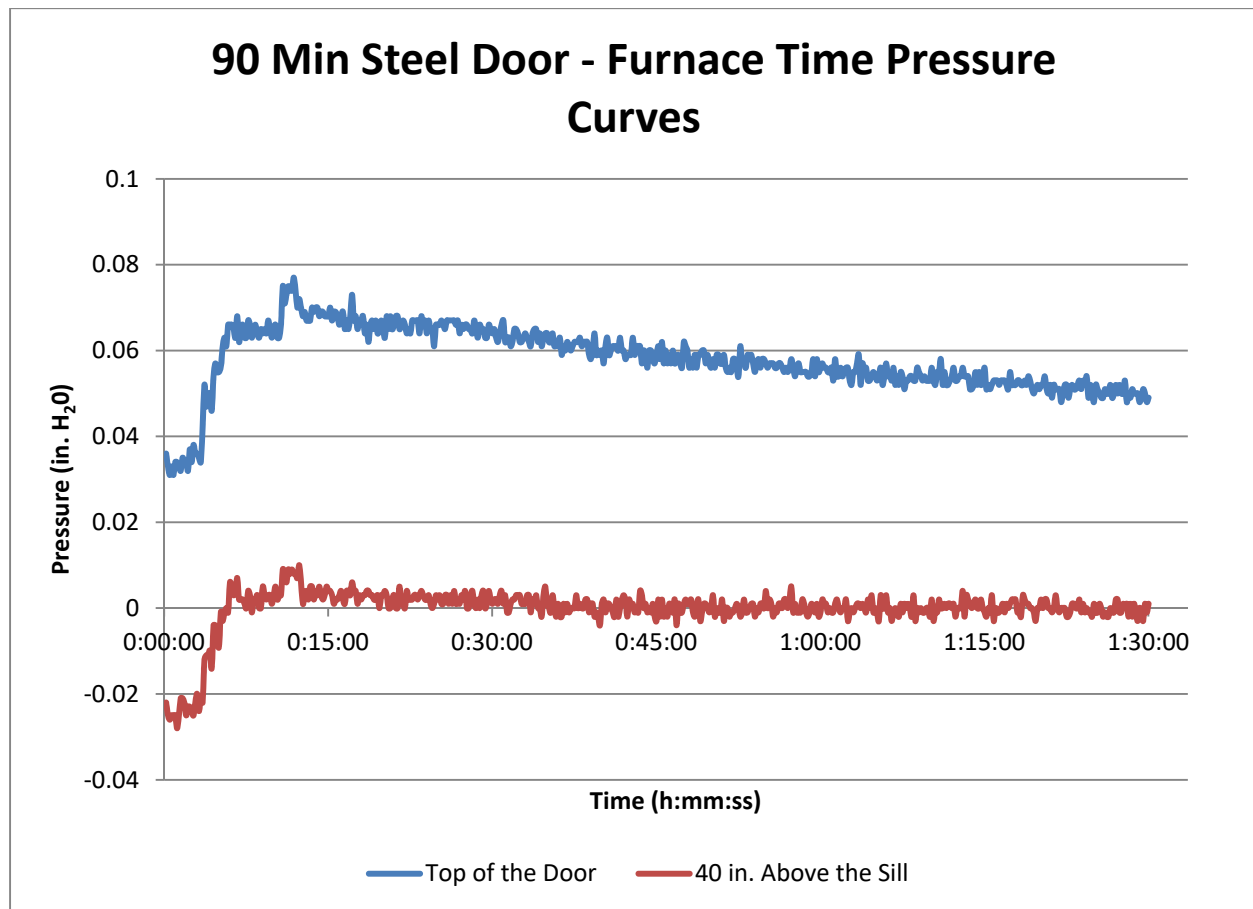




**Figure 3: Furnace Time Temperature Curve.**



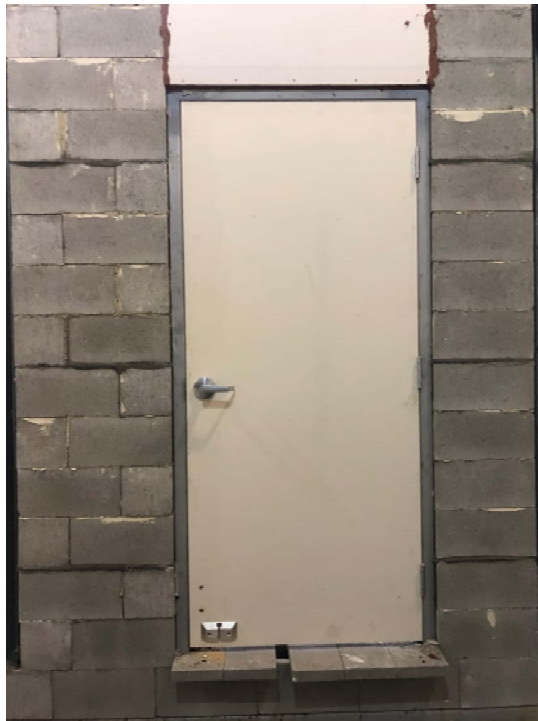
**Figure 4:** Furnace Time Pressure Curve.



**Figure 5:** Furnace Time Pressure Curve.

## APPENDIX B

Page	Title
12-17	Test Photos



**Figure 6:** The exposed face of the wood door test assembly prior to the fire test.



**Figure 7:** The unexposed face of the wood door test assembly prior to the fire test.

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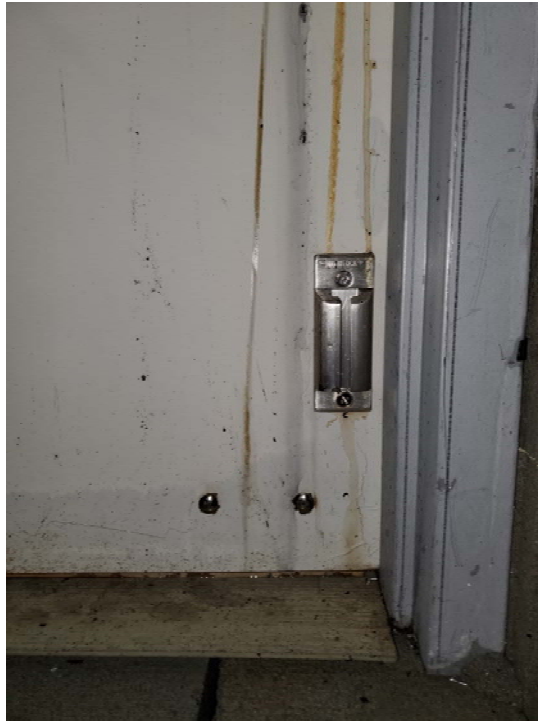


**Figure 8:** The exposed side of the NightLock after the fire test.



**Figure 9:** The exposed side of the NightLock after the hose stream test.

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**Figure 10:** The unexposed face of the wood door test assembly after the hose stream test.



**Figure 11:** The exposed face of the steel door test assembly prior to the fire test.

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**Figure 7:** The unexposed face of the steel door test assembly prior to the fire test.



**Figure 8:** The exposed side of the steel door assembly after the fire test.

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**Figure 9:** The exposed side of the steel door test assembly after the hose stream test.



**Figure 9:** The unexposed side of the NightLock after the hose stream test.

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