Smoke at FAA Facility Results in Major Flight Disruptions

1. Problem

What
Problem(s): Smoke in air traffic control facility, major air traffic disruption

When
Date: May 13, 2014
Time: ~12:30 P.M.

Where
Facility, site: Elgin FAA facility, airports in the Chicago area
Unit, area, equipment: Bathroom fan
Task being performed: Monitoring air traffic

Impact to the Goals

<table>
<thead>
<tr>
<th>Goal</th>
<th>Impacted</th>
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<tbody>
<tr>
<td>Safety</td>
<td>Potential risk to employee health</td>
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<tr>
<td>Customer Service</td>
<td>Major air traffic disruption</td>
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<tr>
<td>Production/Schedule</td>
<td>Potential damage to equipment</td>
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<tr>
<td>Labor/Time</td>
<td>Investigation into source of smoke</td>
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2. Analysis

A smoking bathroom fan resulted in the disruption of more than a thousand flights in the Chicago area on May 13, 2014 in a dramatic demonstration of real-time cause-and-effect. This incident illustrates how a relatively small issue can quickly grow into an expensive and time-consuming problem. In an ideal world, a smoking bathroom fan wouldn’t result in national headlines.

Why?

Effect: Building filled with smoke
Cause: Source of smoke was part of HVAC system

NOTE: Read the Cause Map from left to right with the phrase “Was Caused By” in place of each arrow.

Air traffic control center evacuated

Smoke was spread all over building
Air from HVAC system flows throughout building
Standard HVAC system design

Dust, lint debris build-up in motor AND/OR
Lint particles in air

Motor seized or stops

Fan not cleaned frequently enough

Building filled with smoke

Smoke was in HVAC system
Source of smoke was part of HVAC system

Bathroom fan motor smoking
Bathroom fan motor overheated?

Switch to fan is left on

Evidence: Building of dust or lint is the most common cause of bathroom fan motor fires.

3. Solutions

The final step in the Cause Mapping process is to develop solutions to reduce the risk of the problem recurring. Focusing on the smoking bathroom fan, there are a few fairly easy things that can be done to reduce the risk of smoke or fire from a bathroom fan. Fans should be cleaned at least annually, but should be cleaned more frequently if they appear dirty or dusty. A motor that is making unusual sounds or noise should be immediately turned off and inspected by an electrician prior to being returned to service. Any fan that isn’t making the typical whirr sound should also be powered off and repaired or replaced prior to use because a motor that isn’t rotating has a greater likelihood of overheating. Older models that aren’t thermally protected are most at risk for a fire and replacing them with a newer model with thermal protection can significantly reduce the risk of fire.