Problem Mapping is a Root Cause Analysis method that captures basic cause-and-effect relationships supported with evidence.

1. **Problem**
   - **What**: Problem(s)
   - **When**: Date, Time
   - **Where**: Facility, site, Unit, area, equipment
   - **Task being performed**:

2. **Analysis**
   - **Detailed Cause Map** - Add detail as information becomes available.

   **Effect**
   - Safety: 27 people injured
   - Customer Service: Airplane evacuated
   - Regulatory: NTSB investigation
   - Production/ Schedule: Temporary delay of flights in area
   - Property/ Equipment: Significant damage to plane
   - Labor/ Time: Rescue, response, investigation

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

3. **Solutions**
   - For a free copy of our Root Cause Analysis Template in Microsoft Excel, used to create this page, visit our web site.

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**Quick Evacuation of Plane That Caught Fire on Runway**

Pilot hailed as hero for quick stop during take-off

On September 8, 2015, an airplane caught fire during take-off from an airport in Las Vegas, Nevada. The pilot was able to stop the plane, reportedly in just 9 seconds after becoming aware of the fire. The crew then evacuated the 157 passengers, 27 of whom received minor injuries as a result of the evacuation by slide.

“The engine problem was in the high pressure compressor, which points us towards two things that might have gone wrong. One is that it failed because of age or it failed because it ingested something - it may have picked up something from the runway.”

- Dr. Colin Brown, Institute of Mechanical Engineers

**Cause Mapping**

Problem Solving • Incident Investigation • Root Cause Analysis

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In this incident, the fire was unable to be put out without assistance from responding firefighters. This is potentially due to an ongoing leak of fuel if fuel lines were ruptured and the failure of the airplane’s fire suppression system, which reportedly deployed but did not extinguish the fire. Both the fuel lines and fire suppression system were likely damaged when the engine exploded. The engine’s outer casing is not strong enough to contain an engine explosion by design, based on the weight and cost of providing that strength.