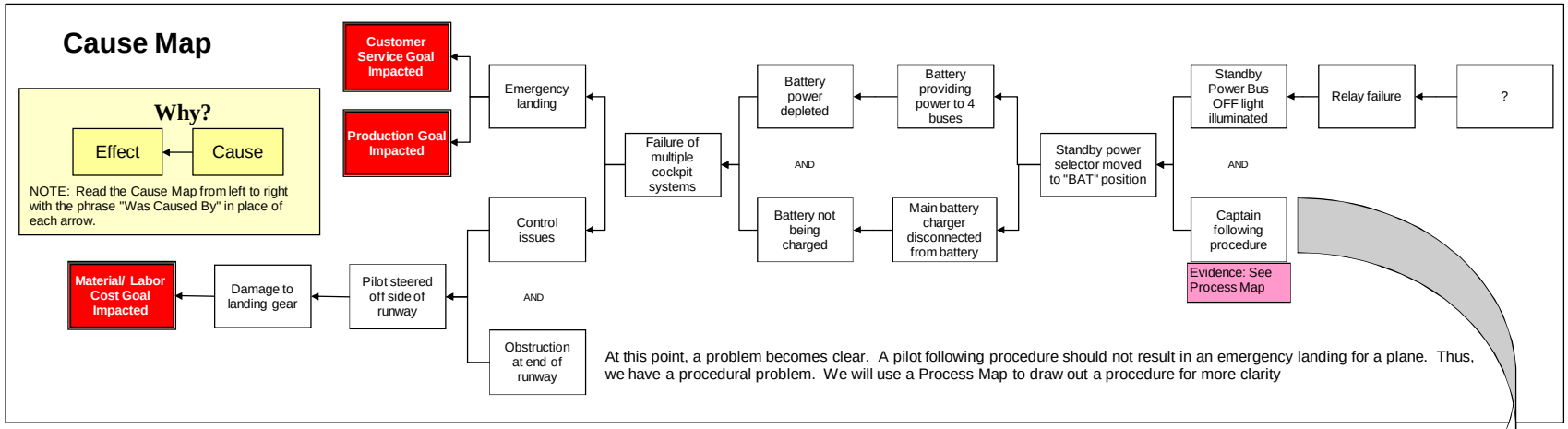
Emergency Landing of American Airlines Flight 268

On September 22, 2008 American Airlines Flight 268 en-route from Seattle to JFK Airport made an emergency landing at Chicago's O'Hare Airport. Nobody was injured, although the landing gear sustained some damage. In order to determine what went wrong, we will perform a root cause analysis. A thorough root cause analysis built as
a Cause Map can capture all of the causes in a simple, intuitive format that fits on one page.

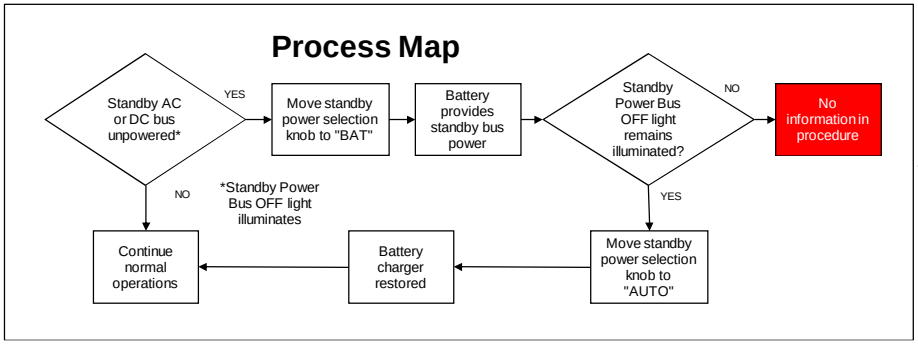
First we'll look at the impact to the goals. An emergency landing is an impact to the customer service and production/schedule goal. Additionally, the damage to the landing gear is an impact to the material/labor cost goal. We begin with the impacts to the goals, then ask "Why" questions to fill out the Cause Map. For example, the damage to the landing gear occurred because the pilot steered the plane off the side of the runway. The pilot steered the plane off the runway because of an obstruction at the end, and because of control issues, which occurred because of a failure of multiple cockpit systems. The failure of these systems also caused the emergency landing.

The failure of the cockpit systems was caused by the battery power being depleted and not being recharged. This occurred because the battery was powering four systems, and was disconnected from the main battery charger. This happened because the standby power selector switch was moved to the "BAT" (or battery) position. The standby selection switch was moved to battery because that is what procedure called for when the "Standby Power Bus OFF" light is illuminated. The light was illuminated due to a relay failure, of unknown cause.



Based on general information presented by the National Transportation Safety Board (NTSB), the illumination of the "Standby Power Bus OFF" light indicates a loss of power to the standby AC or DC bus. If this occurs, the standby power selection knob should be turned to "BAT" (battery). The battery should provide standby bus power. If the "Standby Power Bus OFF" light goes out, the standby power selection knob should be turned to "AUTO" which restores the battery charger.

Written in a paragraph, it can be difficult to see where the issue is. But if we put it in a Process Map, we see a decision box for "Standby Power Bus OFF light remains illuminated. If the answer is yes, we follow the procedure outlined above. But if the answer is no, there is no procedure to follow. This is the position the pilot of Flight 268 was in. The "Standby Power Bus OFF" light went out, so the pilot left the standby power selection knob on "BAT". This drained the battery, resulting in the failure of various cockpit systems, as discussed above.



Cause Map
Detail Level

Even more detail can be added to this Cause Map as the analysis continues. As with any investigation the level of detail in the analysis is based on the impact of the incident on the organization's overall goals.

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