



FOCUS ARTICLE

What the Aviation Industry Can Teach Us About Safety

Why we should look at the aviation industry's crew resource management concept for other safety critical industries.

Author: Nicole Stewart

The air travel sector is a fascinating one, constantly re-inventing itself, improving technology and setting a standard for many other industries to follow. What this industry does better than most is make a continuous investment in the cycle of learning. Surprisingly, many safety critical industries seem to ignore the successes achieved by the aviation industry, missing a valuable opportunity to emulate proven safety strategies.

Aviation today has been shaped by events that marked the industry--unfavourably-- in the 1970s. This was a decade of exceptional aircraft engineering, which nevertheless saw an unprecedented number tragic accidents. While planes no longer fell out of the skies because of technical issues, the 70s still saw over 180 airplane incidents. The disaster at Tenerife Airport in 1977 when two jumbo jets collided on the runway resulting in a death toll of 583 people is one example. This incident and other similar tragedies shook the industry, which at the time attributed accidents resulting from non-technical issues to "pilot error." Officials soon recognised the need to start looking more closely at the situations categorised as "pilot error" if they wanted to help air travel become safer. What they identified were six key elements that tended to play a significant role in many of the disasters they were seeing:

1) **Leadership.**

Often they found that the captain held such authority that the co-pilot did not always feel comfortable "speaking up."

2) **Communication.**

Many incidents that were reviewed highlighted poor communication as one of the main causes for a fatal airplane crash .

3) **Situational awareness.**

Pilots were not always aware of their surroundings enough to safely control the plane. In 1972, for example, a pilot crashed into the Florida Everglades Mountains when he and the crew became fixated on a light bulb that had stopped working.

4) **Decision making.**

Often poor situational awareness led to poor decision making, particularly in emergency situations or ones unfamiliar to the pilots, leading to fatal outcomes.

5) **Workload.**

Tasks were not always being managed effectively, both when the workload was too high, as well as too low.

6) **Managing personal limitations (stress and fatigue).**

When data was analysed it was found pilots were often subjected to unmanageable amounts of pressure when a new situation arose, or when lack of sleep was a factor.

These elements did not occur in isolation. An overwhelming number of events combined two or more of these factors. The aviation industry was in drastic need of a solution. This is when cockpit management was born, now commonly referred to as 'Crew Resource Management.'

Crew Resource Management in the aviation industry and beyond Clients

There was the belief that if the crew were appropriately trained, the industry would become safer as they would be better able to deal with unplanned events. Crew Resource Management has now been successful in aviation for over 40 years, and is being utilised by some other safety critical industries. Nevertheless, industries that could benefit from it have barely heard of this concept, or have not looked at doing something similar for their organisations.

These six elements all significantly relate to issues pertinent across numerous industries: oil and gas, emergency services, healthcare, construction, mining, manufacturing to name only a few. The aviation industry has demonstrated a clear safety advantage by translating the results of their incident analysis into six categories that guide mandatory training requirements in the commercial aviation world.

Flash forward to 2009: Captain Sullenberger makes an emergency landing on the Hudson River in New York, after his plane struck a flock of geese, destroying both engines. There were no casualties when he safely landed his Airbus A320. Sully, as he is known, credited the skills he learned through Crew Resource Management training. The six elements were instrumental in this success story:

1) Sully's co-pilot, Jeff Skiles, played a major contributing role in the safe landing of the plane. In this event he immediately grabbed a safety checklist and started working seamlessly with Sully to land the plane. **Leadership played a contributing role.**

2) The voice recordings between Sully and air traffic control demonstrate efficient communication. Sully limits himself to the bare essentials, e.g. "Hit birds, both engines down, returning back towards LaGuardia". This allowed him more time to focus entirely on the situation. **Communication played a contributing role.**

3) He immediately told the crew he was turning back to LaGuardia and asked for a runway at Teterboro airport to be open for him, all the while making his way to the Hudson River, quickly calculating how much time he had left in his glide. Taking in the current ever changing dynamic environment was crucial. **Situational awareness played a contributing role.**

4) Sully's exceptional situational awareness allowed him to make the best decision. Had he attempted to glide to LaGuardia or Teterboro, simulation tests have proven he would not have made it. **Decision Making played a contributing role.**

5) Sully was able to follow appropriate procedures for water landing despite the urgency of the situation because the information was available and effectively managed. **Workload management played a contributing role.**

6) Finally fatigue and especially stress could have impeded his efforts had he not been practicing skills to effectively manage them. **Managing personal limitations played a contributing role.**

This and other examples show how Crew Resource Management skills contribute to safer outcomes. It is worth considering how similar guidelines can be implemented in other workplaces to improve safety performance, and in general how industries can share safety-related information for mutual benefit. There is extremely valuable information already being used in safety leading industries that can make us all safer. Taking the aviation industry as an instructive example, we can strive to understand and prevent industrial incidents going forward.

NICOLE STEWART

Nicole Stewart is Consultant, Assessment & Solutions at DEKRA Organisational Reliability Ltd. She has an honors Bachelor’s degree having focused her dissertation on Pilot Situation Awareness and Measurement Techniques and has completed a Master’s Degree in Human Factors in Aviation. Nicole joined DEKRA in 2011 and has a background in Psychology, having done work specifically on the Aviation Industry. Nicole has been involved in the development of training workshops, particularly around Human Factors as this is part of Nicole’s background. She has been involved in cultural change programs for 5 years holding roles in coaching, implementation of project plans and delivering training products.



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