

# HUMAN FACTORS NEWS

Issue 7

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## THEME — DECISION MAKING

### Welcome

Unbelievably, it is almost Christmas and we would like to thank everyone for another successful and enjoyable year. This year has seen Engineers and Ground Handlers start their human factors training programs and the first incident investigation course run.

This newsletter is going to focus on decision making. Every day we need to make many large, small and even unnoticed decisions as we continuously evaluate situations and the world around us.

Mostly we are able to handle the sheer volume of decisions with automatic, effortless, intuitive and instant decision making, which allows us to bypass slower conscious reasoning, logic and analysis.

Sometimes though, we can feel overwhelmed by difficult decisions that are high risk, involve a high degree of uncertainty or have huge consequences for failure. We can feel paralysed by too much choice, too much information or too many unknowns. It is at these times that effective decision making becomes a truly valuable skill.

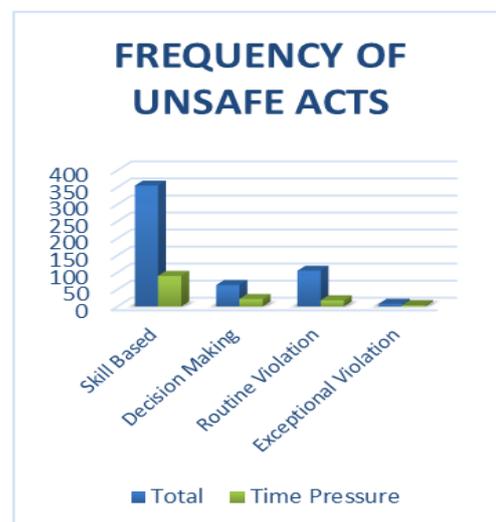
*In any moment of decision the best thing you can do is the right thing, the next best thing is the wrong thing, and the worst thing you can do is nothing. Theodore Roosevelt*

### Time Pressure and Decision Making Errors

Human factors researchers at the University of Illinois studied several hundred maintenance-related incident reports for instances of unsafe acts and undesirable outcomes.

The results of this study are displayed in the adjacent graph. As shown, time pressure is a significant cause of all errors (35% of decision making errors).

As discussed in the training module on decision making, two key decision making errors are rushing a decision or failing to review a decision. Establishing a decision making process that you use every time will help reduce the risk of error.



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## Stress Affects Decision Making

**A new study suggests that cognitive stress, such as distraction, can influence balanced, logical approaches to decision making.**

We are faced with making decisions all the time. Often, we carefully deliberate the pros and cons of our choices, taking into consideration past experiences in similar situations before making a final decision.



Psychologists Jane Raymond and Jennifer O'Brien of Bangor University in the United Kingdom wanted to investigate how cognitive stress affects rational decision making. In this study, participants played a simple gambling game in which they had to recognise faces. Sometimes volunteers were distracted during

this game while other times they were not.

The results reveal that distractions significantly impact decision making. When volunteers were not distracted while playing the game they later tended to excel at correctly choosing faces. However, when they were distracted during playing, they subsequently only recognized faces that had been associated with winning.

The authors note that when we are stressed and need to make a decision, we are "more likely to bear in mind things that have been rewarding and to overlook information predicting negative outcomes."

This finding was reinforced in an article published in *Current Directions in Psychological Science*, which found people pay more attention to the upside of a possible outcome. So, for example, someone who's deciding whether to fly with less than required fuel reserves will favour the advantages of saved time over the disadvantages of running out of fuel.

## Next Incident Investigation Course

Our next Incident Investigation Course will be held in Brisbane on February 5-6 2014. This two day course is designed to give practical investigation skills to Safety Managers and/or Investigators.

By the end of two days, participants will be able to conduct an effective interview, consider the relevant human factors aspects of the investigation, know how to gather different data sources and write a thorough report.

If you are interested in attending the course, please contact Alison Meyer at [infor@hfts.com.au](mailto:infor@hfts.com.au) or 0421 580 302 to book a place.

**February 5-6 2014  
Brisbane**

## Poor Decisions Cost Four Lives

On August 26 2011, a Eurocopter AS350 B2 helicopter was despatched to transport a patient from Harrison County Community Hospital to Liberty Hospital in Missouri (USA).

After the helicopter arrived at the Harrison helipad, the pilot reported that the helicopter did not have as much fuel on board as he originally thought. Operations asked the pilot if he could make it to Liberty Hospital. When advised that the distance was 62 nm, the pilot stated, "That's going to be cutting it pretty close. I'm probably going to need to get fuel before that."

*"That's going to be cutting it pretty close. I'm probably going to need to get fuel before that."*

Operations found that the only airport with Jet-A fuel along the route of flight to Liberty Hospital was GPH, which was 58 nm away. When told this the pilot stated, "Fifty-eight nautical miles. So it would save me 4 nautical miles and 2 minutes. I think that's probably where I'm going to end up going." (Are alarm bells starting to ring here???)

The aircraft crashed following a loss of engine power as a result of fuel exhaustion near the Midwest National Air Centre (GPH), Mosby, Missouri. The pilot, flight nurse, flight paramedic, and patient were killed. The wreckage was located in a farm field about 1 nm from the approach end of runway 18 at GPH.

The pilot undoubtedly knew that his decision to proceed with the mission was risky. He was new to the company and might have been concerned that aborting the mission as

a result of an error during pre-flight preparation would negatively affect others' perceptions of his reliability as an employee. In addition, aborting the mission would likely have involved inconveniences (such as waiting at the hospital for fuel to be delivered) that the pilot probably preferred to avoid. Finally, he might have been influenced by time pressure associated with the urgency of the patient's medical condition and the implications of a delay in treatment.

During the flight, the pilot was likely monitoring the fuel gauge closely. As he approached GPH, the indicated fuel level would have approached zero. This might have prompted the pilot to consider landing the helicopter somewhere off-airport as a precautionary measure. However, by the time the fuel gauge was near zero, the airport was in sight and the pilot was very close to successfully concluding the flight, and he may have been reluctant to land because it would have revealed his noncompliance with the 20-minute fuel reserve requirement. (cont. next page)

The FAA's *Risk Management Handbook* (FAA 2009) calls this type of decision error "get-there-itis" and describes it as an error in



which “personal or external pressure clouds the vision and impairs judgment by causing a fixation on the original goal or destination combined with a total disregard for alternative course of action.” Human factors researchers (Orasanu, Martin, and Davison 2001), who call this type of error “plan continuation error,” have postulated various causes for it and determined that it is more likely to occur near the end of a flight. The NTSB concluded that self-induced pressure likely caused the pilot to fixate on his intended refuelling point and continue the flight rather than make a precautionary landing as the fuel gauge indication

approached zero.

The pilot had previously served as a military helicopter pilot, was highly regarded by operational and training personnel at the company as very professional and competent, and had no history of previous violations or training/operational difficulties.

Read the full report at:

<http://www.nts.gov/doclib/reports/2013/aar1302.pdf>

## Cool Heads in Austrian Alps

We are trying to negotiate a high mountain pass on a narrow path covered with treacherously loose scree, and suddenly find ourselves above a yawning abyss. We steel ourselves to walk across it, hoping the route ahead will be less threatening. Instead, it looks even more dangerous.

Now we have to decide whether to press on or risk going back across that nasty section. We reassure each other that it may not be as bad as it looks. We're all experienced hikers. The return trip will be uphill, which will give our boots better grip and make balancing easier. We could probably cross it without stumbling nine times out of ten. But the consequences of one slip don't bear thinking about.

This is only day two of our trek. We have a week's route planned out and accommodation booked in mountain huts. If we don't cross the range today, we'll need to organise a new itinerary.

Some of my hiking friends have legs and nerves of steel. Others in our group, myself included, have legs that turn to jelly as they

approach precipices and nerves of thin custard. Fortunately, our steely legged friends also have cool heads, and never push us to take risks we're not comfortable with.

We decide that turning back is the **least worst choice**. The footing over the chasm is indeed a little better climbing than descending, and we make it to solid ground. And hug each other.

**Richard Tulloch in the Austrian Alps**  
*Sydney Morning Herald 13th April 2013*

