

Paper abstract submission for ISASI conference, San Diego 22 August 2017

"Investigations - Do They Really Make a Difference?"

Thinking illusions and Lost Opportunities

Andrew McGregor CPEng, Captain Simon Tapp, and Barry Hughes, PhD

We all agree that lessons should be learned from accidents and these should be implemented in order to prevent future accidents. We consider four significant cases in which, we argue, important lessons were not learned.

We argue that although thinking patterns commonly used in investigations may be grounded in experience, buttressed by high confidence levels and endorsed by others, they can be wrong. In explaining why, we introduce the concept of cognitive or thinking illusions and liken these to optical illusions, illusions to which not only pilots, but investigators may also be vulnerable.

We link four major incidents and highlight examples of lost learning opportunities. We do so with reference to the Erebus crash [Air New Zealand; Nov 1979], the Perpignan crash [Air New Zealand; Nov 2008], the Bilbao incident [Lufthansa; Nov 2014] and the crash of AF447 [Air France; June 2009].

We begin by reassessing the Erebus disaster. We apply Dekker's 'failure drift' model to show how one line of thinking — a pre-occupation with the last stages of the accident timeline— masked important contributing causes of the crash. We discuss why this may have been so. We also assess the various contributing causes in terms of their cognitive origins.

We extend this analysis to the Perpignan crash investigation reports and those of the Bilbao incident, similar incidents that occurred six years apart. We highlight the thinking illusions to which the Perpignan investigators may have succumbed, and without which the outcome of AF447 may have been different. All these highlight lost opportunities of the original investigations, opportunities which if captured, could have prevented subsequent incidents.

We conclude by showing how greater sensitivity to thinking illusions could help to construct investigative processes which are more robust and effective, and that could really make a difference.
