

# Counting the costs



The old adage, “safety costs money”, has been turned on its head.

**A**CCORDING to John Goglia, one of four sitting members of the National Transportation Safety Board (NTSB) more accidents are caused by maintenance errors than ever before. From mid-1995, the NTSB has investigated, or is currently investigating, 16 large-aircraft accidents. Seven of those involved a breakdown somewhere along the line of maintenance and maintenance-related practices.

“This is scary,” says Goglia. “This is the motivator for getting human factors in maintenance programs up and running.”

The answer, according to Goglia and other industry experts, is a radical change in the way organisations approach aircraft maintenance. Systems which seek to reduce the incidence of human and organisational errors in maintenance organisations can not only improve safety but also save money, lots of it.

**Poor communication:** Gary Eiff, head of the Aviation Human Factors Research Team at Purdue University, studied shift turnover at the heavy maintenance facility of a major U.S. carrier. He found that inadequate communication between shifts contributed to extensive double-ordering of parts, excessive levels of

---

**“ Systems which seek to reduce the incidence of human and organisational errors in maintenance organisations can not only improve safety but also save money, lots of it. ”**

---

rework, a high rate of test flights and other problems – all of which cost money.

“Our challenge was to establish a workplace where safe acts are a normative process and where safety is an operational goal.” In focusing on the shift turnover process, Eiff found there was “no consistent content or structure to shift transition information. There was little specific information about the job status. Task cards were incomplete,” Eiff said.

A new process focused on the off-going lead mechanics communicating more directly with their counterparts in the on-coming shift. With an up-front investment of about 12-man days in training and implementation, the results were dramatic. Whereas the before implementation “benchmark” aircraft required some 22,500 hours for completion of an overhaul (“D” check), better work was done with 2,500 fewer labour hours on the two “implementation” aircraft.

**Saving with safety:** Gary Eiff’s findings are by no means unique. Jim Taylor at California’s Santa Clara University found that one airline’s \$250,000 investment in maintenance resource management (MRM) training for some 1,600 maintenance technicians and managers paid for itself with an 80 percent reduction in lost-time injuries, at a saving of more than US\$1.3million. Even if a fraction of the improvement was attributed to the MRM instruction, which Taylor placed conservatively at around five to six per cent, he calculates the two-year return on investment was some 24 percent.

In 1999 the US Navy suffered 23 accidents that resulted in aircraft being destroyed (so-called “Class A” mishaps). Of these accidents, according to Commander John Schmidt, human error – in the cockpit and on the ground – was involved in 17 of these accidents. Of all mishaps in naval aviation (Class A and those of lesser severity), about one in five involve maintenance errors.

Indeed, the Navy is facing a problem very similar to that of the commercial airline industry: the downward slope of the accident curve has flattened out, but it stubbornly resists further decline. Programs to reduce maintenance errors are seen as an area where scarce dollars can be leveraged for maximum payoff.

According to Schmidt, an extrapolation of recent trends suggests that the Navy will incur more than US\$200million in maintenance-related mishap costs over the five-year period from 1998-2002.

“A ten per cent reduction,” Schmidt estimates, “would more than pay for a maintenance resource management program in the U.S. Navy.”

*Edited extract from Air Safety Week.  
Reprinted with the permission of Phillips  
Business Information Inc.*