

## **5.Recommendations**

### **5.1 New Recommendations**

The National Transportation Safety Board makes the following recommendations to the Federal Aviation Administration:

Establish duty-time regulations for maintenance personnel working under 14 *Code of Federal Regulations* Parts 121, 135, 145, and 91 Subpart K that take into consideration factors such as start time, workload, shift changes, circadian rhythms, adequate rest time, and other factors shown by recent research, scientific evidence, and current industry experience to affect maintenance crew alertness. (A-13-01) (Supersedes Safety Recommendation A-97-71 and is classified “Open—Unacceptable Response”)

Encourage operators and manufacturers to develop and implement best practices for conducting maintenance under 14 *Code of Federal Regulations* Parts 135 and 91 Subpart K, including, but not limited to, the use of work cards for maintenance tasks, especially those involving safety-critical functions, that promote the recording and verification of delineated steps in the task that, if improperly completed, could lead to a loss of control. (A-13-02)

Require that personnel performing maintenance or inspections under 14 *Code of Federal Regulations* Parts 121, 135, 145, and 91 Subpart K receive initial and recurrent training on human factors affecting maintenance that includes a review of the causes of human error, including fatigue, its effects on performance, and actions individuals can take to prevent the development of fatigue. (A-13-03)

### **5.2 Previously Issued Recommendation Reiterated in This Report**

Safety Recommendation A-04-16, to the FAA, is reiterated in section 3.2.3 of this report.

Require that 14 *Code of Federal Regulations* Part 121 air carriers implement comprehensive human factors programs to reduce the likelihood of human error in aviation maintenance.

### **5.3 Previously Issued Recommendation Reclassified in This Report**

Safety Recommendation A-97-71, to the FAA, is classified “Closed—Unacceptable Action/Superseded” in section 3.2.1.2 of this report. The recommendation is superseded by Safety Recommendation A-13-01 above.

Review the issue of personnel fatigue in aviation maintenance; then establish duty time limitations consistent with the current state of scientific knowledge for personnel who perform maintenance on air carrier aircraft. (A-97-71)