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From: Aviation Maintenance Human Factors Program Manager, AAR-100

To: Airworthiness TCRG

Subj: AVIATION MAINTENANCE HUMAN FACTORS FIRST QUARTER '03
REPORT

Ref: (a) Aviation maintenance human factors execution plans

1) Per reference (a), the first quarter 2003 report for each aviation maintenance human factors project is listed below.

a) An Evaluation of Broadband Applications to Aircraft Maintenance Safety.

Literature review task: The literature review is approximately one third complete and is being coded in HTML format for easy access via the Internet. The main page of the web site will allow visitors to locate maintenance human factors research articles quickly. We are developing a searchable database that will allow visitors to search by topic keywords, author, year, or a combination of these. Additional pages will include the topic areas that were displayed on the main page. Examples include but are not limited to the following subject areas: Fatigue, technology, error prevention, training, etc. Also included on the review will be universities, organizations, and companies that are developing new technologies designed for aircraft maintenance or addressing aviation maintenance technician safety issues.

Document broadband technologies and applications task: The researchers are compiling a database of airline maintenance facilities and contract overhaul stations and with the broadband technologies being used at each facility. The database currently contains approximately twenty-five facilities. This data for each facility is obtained from phone calls, interviews, and site visits.

Identify research participants task: The researchers first three site visits are scheduled for the first week of January 2003: American Airlines, Fed Ex, and Rolls Royce. No formal research agreements are in place at this time.

All indications indicate that this project is on track to complete year 1 milestones as planned.

- b) Vision Testing Requirements for Certain Persons Maintaining and Inspecting Aircraft and Aircraft Components. Phase I report was delivered and reviewed by sponsor. Phase II kick-off meeting was held November 25th to review technical objectives for the next year.

The research team and sponsor are scheduled to visit Sandia Labs in February 2003 review the proposed Phase II methodology, define Phase II deliverables, and answer any questions pertaining to the project.

All indications indicate that this project is on track to complete Phase I milestones as planned.

- c) Language Barriers Result in Maintenance Deficiencies. The researcher completed analysis of data from a major manufacturer on language proficiency among aviation mechanics at over 80 organizations worldwide. Produced a report Analysis of Survey Data on Language Issues in Maintenance, by Colin Drury and Jiao Ma that showed that Europe and North America had higher rates of English proficiency than other regions, and that translation of maintenance documents was not a widely-used strategy for error reduction. The researcher designed the focus group methodology for collecting language error data. Tested the methodology at one site in USA, with 18 participants. Developed an initial list of error patterns, pre-disposing factors and intervention strategies. Developed modifications to the experimental procedure to ensure continued good data collection at non-US sites. Planning for non-US site trips begins in January 2003, with data collection completed by June 2003.

All indications indicate that this project is on track to complete year 1 milestones as planned.

- d) Using Technology to Support Inspector Training. The researcher conducted repeat site visits to local GA facilities in Greenville, Greer and Oconee. Conducted preliminary visits to GA repair facilities in Pickens, Columbia, St. Louis, and Oklahoma City. Started work on collecting data to support task analyses of aircraft inspection activity. The following activities were conducted as part of the task analyses: shadowed inspectors as they performed various inspection activities, conducted follow-up interviews with inspectors, supervisors and managers. Data was collected through observation and structured verbal protocols.

All indications indicate that this project is on track to complete year 1 milestones as planned.

- e) Review Amateur-Built Aircraft Accident/Incidents. Phase I tasks were completed and a PowerPoint presentation summarizing the results was sent to the sponsor. During this period of performance, the researchers: (1) Compared taxonomy of M-R causal factors for A-B aircraft to causal factors for all other GA M-R accidents, (2) All analyses were completed for A-B aircraft (fatalities, injuries, airframe time, phase of operation, and time since last inspection) were also completed for all other maintenance-related GA accidents, (3) Extended the GA database to 2001 for all M-R accidents, and (4) Compiling literature on aviation maintenance models of human error

The researchers are waiting for the sponsor to select a date to brief the phase I results.

All indications indicate that this project is on track to complete year 1 milestones as planned.

William K. Krebs