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March 25th, 2002

From: Dr. William K. Krebs, Aviation Maintenance Human Factors Program Manager
To: Les Vipond (AFS-300) and Rusty Jones (FSDO PIT)

Subj: Vision Standards Execution Plan

Ref: (a) Airworthiness TCRG March 5-6, 2002 meeting minutes
(b) Aviation maintenance requirement entitled "Vision Testing Requirements for Certain Persons Maintaining and Inspecting Aircraft and Aircraft Components"
(c) Communication between Dr. Nakagawara (CAMI) and Dr. Krebs (AAR-100) on 3/19/02

- 1) Per reference (a), the Airworthiness TCRG ranked the "Vision Testing Requirements for Certain Persons Maintaining and Inspecting Aircraft and Aircraft Components" (ref: b) as the number one FY02 aviation maintenance priority. The requirement's objective is to determine acceptable vision standards and procedures for personnel involved in nondestructive inspection and testing (NDI/NDT) and visual inspection of aircraft and aircraft components.
- 2) Per reference (c), Dr. Krebs and Dr. Nakagawara developed a program plan that incorporates AFS-300 and FSDO PIT comments as well as maintains the scientific integrity of the research project. The project will be executed as follows:

Phase I tasks:

- i. Develop a matrix of vision parameters that are relevant to NDI/NDT and visual inspection tasks that will be used as the basis for writing a medical standard or other guidance material such as an advisory circular as appropriate. These vision parameters include but not limited to: visual acuity, stereo acuity, color vision, peripheral vision, near and far focal length, contrast sensitivity, visual fields, eye disorders, eye diseases, medication effects, corrective lenses, colored lenses, age effects, etc.
- ii. Conduct a vision literature search to determine which vision parameters (identified in Phase I task i) have been addressed for NDI/NDT, visual

- inspection, or related tasks and whether there is sufficient information to write a standard from the investigator's findings.
- iii. Review all relevant documentation concerning NDI/NDT and visual inspection procedures and tour aircraft maintenance/manufacturing or NDI/NDT and visual inspection training facilities where these procedures are performed in order to become familiar with the scope of job/tasks and responsibilities that are demanded of NDI/NDT and visual inspection personnel.
 - iv. Review all relevant documentation concerning NDI/NDT and visual inspection job/task analysis. If needed, conduct a detailed job/task analysis. Develop a comprehensive task list that identifies which visual processes are required for safe and efficient performance in a NDI/NDT and visual inspection working environments.

Phase I deliverables:

- i. A matrix illustrating which visual processes Flight Standards can use to write a medical standard for NDI/NDT and visual inspection tasks. This matrix will identify which vision processes need further investigation or have been completed adequately enough for Flight Standards requirements.
- ii. A comprehensive task list specifying the NDI/NDT and visual inspection procedures, assessment of the visual processes required for each procedure, demographic information about NDI/NDT and visual inspection personnel, and other operating ergonomic factors with the NDI/NDT and visual inspection procedures.

Phase I termination criteria:

If Phase I deliverables determine that the previous vision research results can be used to write a medical standard for Flight Standards, then the project will be terminated. If there is not sufficient information, then the AAR-100 aviation maintenance human factors program manager will execute Phase II.

Phase II tasks:

- i. Perform a vision experiment (based on Phase I deliverable i - matrix identifying which visual processes need studied) to determine the minimum acceptable vision performance required to conduct a particular inspection procedure at an appropriate level of competency, experience, age, and other factors determined by Phase I deliverable ii.
- ii. Determine the potential impact that application of the newly developed recommended vision standard may have on the current employee population. Vision screening shall be performed on a representative sample of NDI/NDT and visual inspection personnel.

Phase II deliverables:

- i. Specific minimum visual requirements for essential tasks in NDI/NDT and visual inspections which Flight Standards can use to write a medical standard similar to Part 67 for pilots.
- ii. Establish an NDI/NDT and visual inspection industry and personnel profile
- iii. Determine the time interval for the administration of vision tests.
- iv. Develop written guidance material for organizations to establish programs for the administration of medical standards.
- v. Develop a vision standard amendment to the FAR, if needed.

Schedule:

Phase I: FY02/FY03

Phase II: FY03/FY04 (contingent on Phase I findings)