WELCOME AND MEETING OBJECTIVES

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At this third meeting on Human Factors in Aircraft Maintenance and Inspection, I am pleased that I see a number of familiar faces from our previous two meetings. As you recall, our first meeting was general in nature and attempted to identify key issues to be addressed in greater depth. The meeting several months ago addressed one of these topics, that of Communications and Information Exchange.

The purpose of these human factors meetings is to facilitate an exchange of information among those in industry and Government concerned with maintenance and inspection in aviation. These individuals include maintenance managers in the air carrier industry, manufacturers responsible for detailing maintenance requirements, those who establish maintenance training programs, and others with similar responsibilities. We plan to continue holding these human factors-oriented conferences for the foreseeable future. As I have noted at previous meetings, we in the FAA are interested in your ideas for the content of these meetings and will be soliciting your input concerning worthwhile topics for the next meeting.

The theme of today's meeting is training. It is my personal feeling that training may prove to be one of the most important methods for dealing with future problems in aviation maintenance. One of these problems is the shortage of maintenance technicians, which is very real and will become crucial. My sense is that many people are not aware of the looming problem concerning the availability of personnel with the required skills. These people are not going to be there in the future.

At this time, we already are seeing a shortage both of experienced and inexperienced workers in maintenance. As the overall level of experience of the entry maintenance workforce diminishes, it will be up to the training industry and training institutions to bring maintenance technicians up to speed rapidly. The latest statistics from the industry support this. Hiring in the air carrier industry has risen steadily from 5,600 people in 1985 to 12,500 in 1989. The Air Transport Association estimates that there is already a shortfall of about 4,000 workers, with a projected need for 50,000 additional mechanics over the next ten years. Also, compounding this situation is the fact that we have an aging workforce. The present workforce totals 63,000 maintenance technicians. Of these, fully 60 percent may retire within the next ten years.

The changing world scene represents another issue to be taken into account. In previous years, the military has proven to be a relatively dependable source of experienced technicians for the airline industry. All of this may change. At this time, the Air Force regularly contracts about 40 percent of its maintenance work, costing approximately $1.2 billion per year. Many of the airlines are no longer willing or able to do this work. One airline, for example, is planning to phase out $150 million in contract maintenance for the Air Force because they need these people for their own work. Their fleet is growing, and it is the same across the industry.

The framework which we in the Office of Aviation Medicine of the Federal Aviation Administration are using to address these issues and some of the accomplishments we hope to achieve are shown in Figure 1, which describes our R&D program. We are seeking input to our program from many sources, not the least of which is industry. We need to learn from industry the kinds of human factors problems that can be addressed through research. We also are looking for input from Government agencies, primarily DoD and NASA, as well as the private sector. We are seeking this input through avenues such as this conference as well as through workshops and site visits. Some of you are quite familiar with this process and have been very cooperative by allowing our people into your facilities for site visits. This has been most helpful for us in understanding how maintenance is accomplished and what the problems are. The information we obtain through such visits is being fed into our program management office in the Office of Aviation Medicine, where it is used in the development of work statements and research protocols.

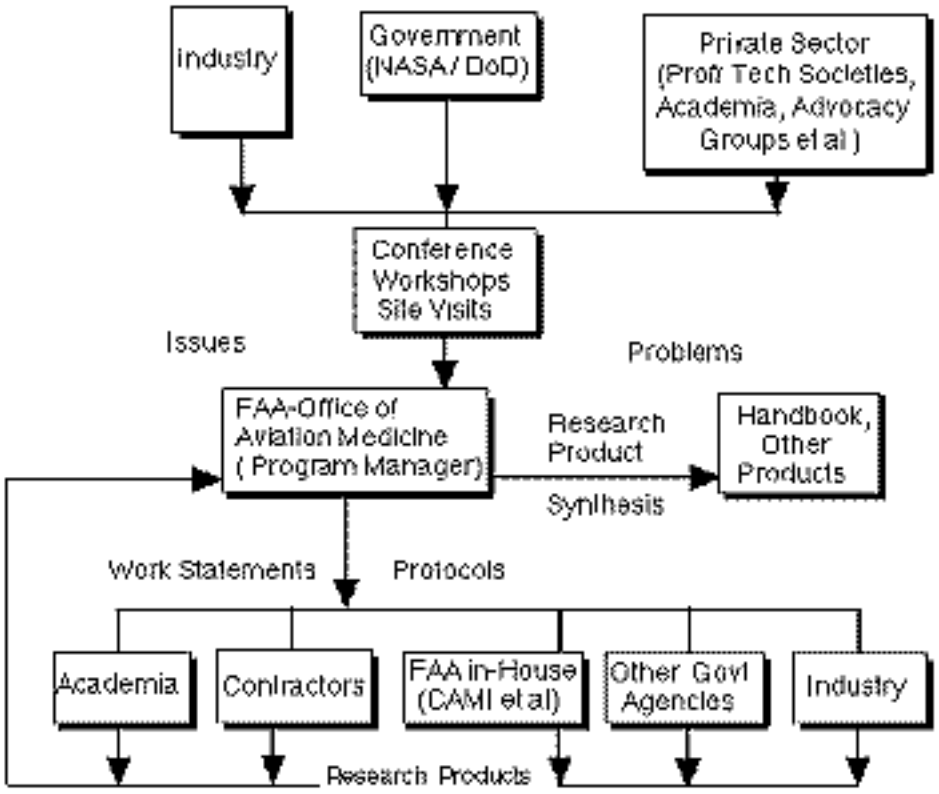

Figure 1 FAA Office of Aviation Medicine R&D Program Supporting Human Factors in Aircraft Maintenance and Inspection

The lower portion of Figure 1 shows the key participants who are accomplishing our research work. The emphasis in our research is on information. Products of the research will include a human factors handbook, or perhaps a series of handbooks, directed toward identified maintenance issues. We also may produce video tape instructional materials. The role of the FAA here will not be to develop regulations. Instead, we wish to provide as much information as possible to the maintenance industry and to our own FAA inspectors to help both sides address current human factors problems and those likely to appear in the future.

Figure 1 presents the thrust of our R&D program. However, we are open to any suggestions or inputs that any of you might like to provide, since you know what the real world problems are. We welcome your ideas and suggestions so that we can structure a research program that will provide most benefit for all parties.

Since we plan to continue holding these human factors-oriented conferences for the foreseeable future, we would like for you to include among your suggestions any ideas concerning appropriate topics to be covered during our next meeting. Planning for this meeting will begin shortly and your suggestions will be used as guidance for us.

During our meeting over the next two days, you will hear from a number of speakers who are familiar with the maintenance industry, its training problems, and its training initiatives. You also will hear from three members of the FAA Human Factors Team who are working at this time on the research program I described. Dr. William Johnson, whom many of you know, will speak to us tomorrow about his findings on the status of computer-based training in the aviation industry. He will also provide some details on a prototype intelligent tutoring system under development. This system is representative of the new technologies being brought to bear on maintenance training.

The meeting also will be addressed by Dr. James Taylor, who is developing unique insights into the effects of organizational variables on maintenance productivity, and Dr. Colin Drury, who is using a task analytic approach to develop basic information concerning the performance of maintenance technicians. Such data will be invaluable as we proceed toward specific end products in our research activities.

Again, the theme of this meeting is "Training." We in the FAA consider this to be a very important topic and are looking forward to the presentations and to your discussions as a significant step toward the development of improved training procedures and technologies and, as a consequence, a more productive maintenance workforce. I welcome you to the third FAA Human Factors Meeting.