INDUSTRY ASSESSMENT OF HUMAN FACTORS IN AVIATION MAINTENANCE AND INSPECTION RESEARCH PROGRAM

An Assessment of Industry Awareness and Use of the Federal Aviation Administration Office of Aviation Medicine Human Factors in Aviation Maintenance and Inspection Research and Development Program from 1989 through 1998

William B. Johnson, Ph.D.
Galaxy Scientific Corporation

Jean Watson
Office of Aviation Medicine
Federal Aviation Administration

1.0 OVERVIEW

Ten years ago the Federal Aviation Administration (FAA) Office of Aviation Medicine embarked on a research and development program dedicated to human factors in aviation maintenance and inspection. Since 1989 FAA has invested over $12M in maintenance and inspection-related human factors research. The Office of Aviation Medicine has nearly lost count of the number of software products, technical publications, and public presentations delivered by the research team. With over 400 technical reports (see www.hfskyway.com) and over 15 significant software deliverables, it is time to assess the usefulness of the outcomes of the research. This report looks beyond the long list of research outcomes to assess the impact of the research in industry.

In cooperation with the US Air Transport Association (ATA), the Association of Asia Pacific Airlines (AAPA), and the Civil Aeronautics Authority (CAA) of the UK, the **FAA** researchers circulated a questionnaire regarding human factors in maintenance and inspection (see **Appendix 1**). The international industry sample of 122 respondents represented all aspects of the aviation maintenance industry. The results, described herein, show a very active interest in maintenance human factors. Most participants were familiar with the FAA research program and used many of the research by-products. The Research and Development (R&D) program received overall high marks.

1.1 Goals of the Assessment

The primary goal of the assessment is to determine the extent to which the research program has influenced human factors in aviation maintenance environments. The survey attempts to assess the current status of human factors in airline maintenance environments. The survey also attempts to achieve

a backward glance at the evolution of maintenance human factors, within the industry, since 1988. The assessment also has the goal of identifying the general category and specific projects perceived to be most useful. Finally, the assessment attempts to identify perceived needs that can be met by the **FAA R&D** program in the future.

This report will show that the assessment did accomplish these goals. In fact, many qualitative measures indicate that the **FAA** Office of Aviation Medicine research program is the very nucleus of human factors information for the aviation maintenance industry.

1.2 Assessment Instrument

A straightforward questionnaire was used to gather information from the industry. This method was selected for many reasons. First, the questionnaire would ensure standardization among respondents and that the same questions were asked of each participant. The written questionnaire also ensured that respondents would be neither influenced nor intimidated by the researcher. Due to the global nature of the aviation industry, the questionnaire format was the most economically feasible as well.

Nearly all the questions offered a five point Likert-type scale, ranging from "Strongly Disagree" (1) to "Strongly Agree" (5). Therefore, most of the numbers reported below will be between 1.0 and 5.0. Blank answers were not counted in the scale. **Sections 3** through **Section 6** of the questionnaire have an area for comments. These comments are selectively discussed in the report and included as **Appendix 2**.

The questionnaire is divided into five distinct sections as follows:

I. **General Demographic Information**

II. **Current Status of Maintenance Human Factors Programs in Your Organization**

III. **Your Knowledge of FAA Human Factors R&D Products**

IV. **The Value of FAA Human Factors Research Products**

V. **Perceived Requirements for Aviation Maintenance Human Factors Products**

2.0 DEMOGRAPHIC DATA

The demographic section has the traditional questions associated with name (optional), title, organization type, and years of experience in aviation and in human factors.

2.1 Geographical Distribution

Figure 1 shows the geographical profile of the 122 respondents. Four continents and 16 countries were represented in the sample. The United Kingdom has the highest number of respondents due to the fact that the Civil Aviation Authority was very assertive in distributing questionnaires during the 12th **FAA**/**CAA**/Transport Canada Symposium on Human Factors in Maintenance and Inspection.

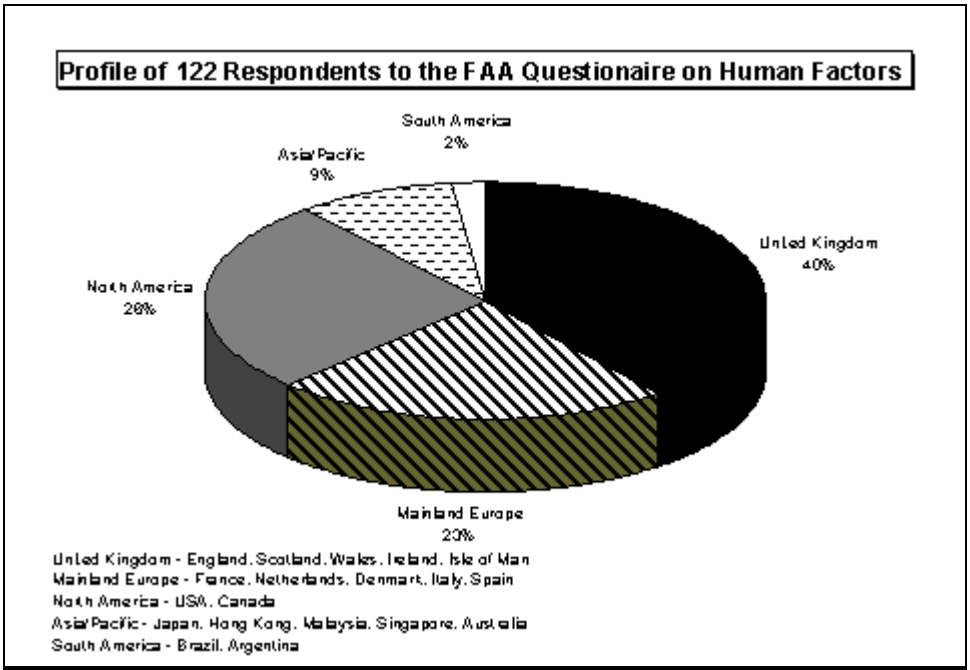

Figure 1. Geographical Profile of the Respondents

2.2 Industry Segments Represented

Figure 2 shows that most segments of the aviation industry are represented in the respondent group. Expectedly, airlines represent the largest portion of the respondents, at 48%. This is appropriate since the research program focused primarily on airline maintenance.

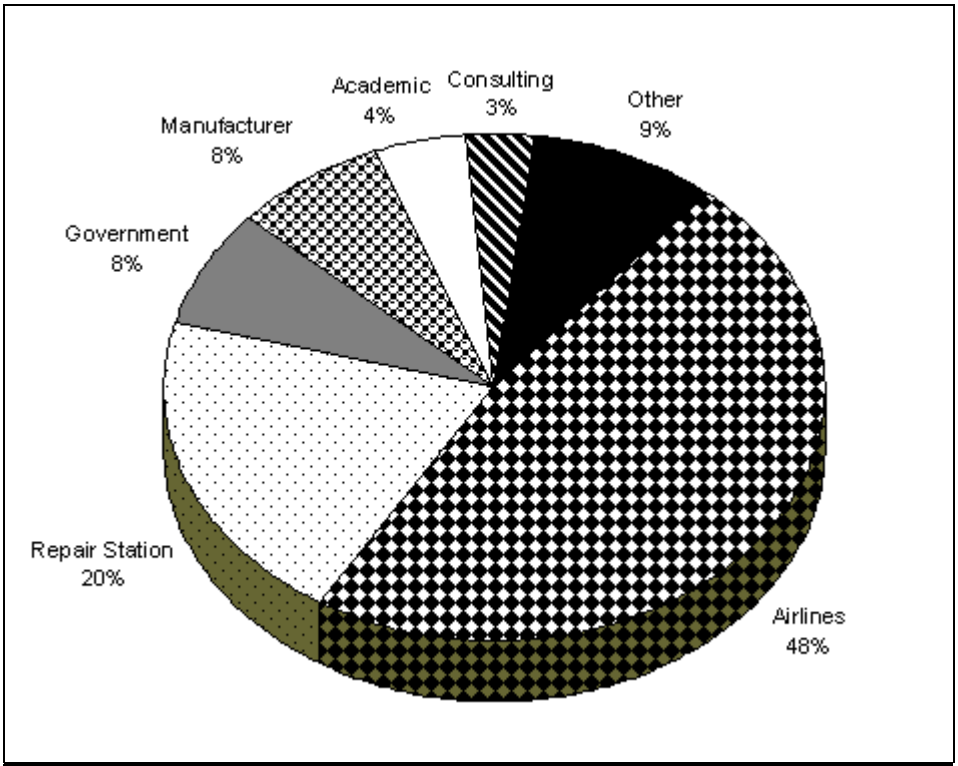

Figure 2. Industry Segments in Sample

2.3 Respondent Experience

The survey respondents have extensive experience in the aviation maintenance industry. Average experience is 25 years (SD= 11.58), with a median of 27 years. This high experience level is attributable to the fact that airline representatives to the **ATA**, **AAPA**, or at international conferences are likely to have reasonably high rank within the organization. The high experience level of respondents should help to ensure that answers are based on a very good knowledge of past, current, and planned maintenance human factors activities within the organization.

Average human factors experience was relatively low at 4 years. The majority of the respondents reported 1 to 8 years of human factors experience. Again, with the emerging interest in maintenance human factors this is an expected range. **Figure 3** shows distributions of experience by aviation and human factors experience. The groups depicted by the demographic data are especially qualified to represent the industry consensus on human factors in maintenance.

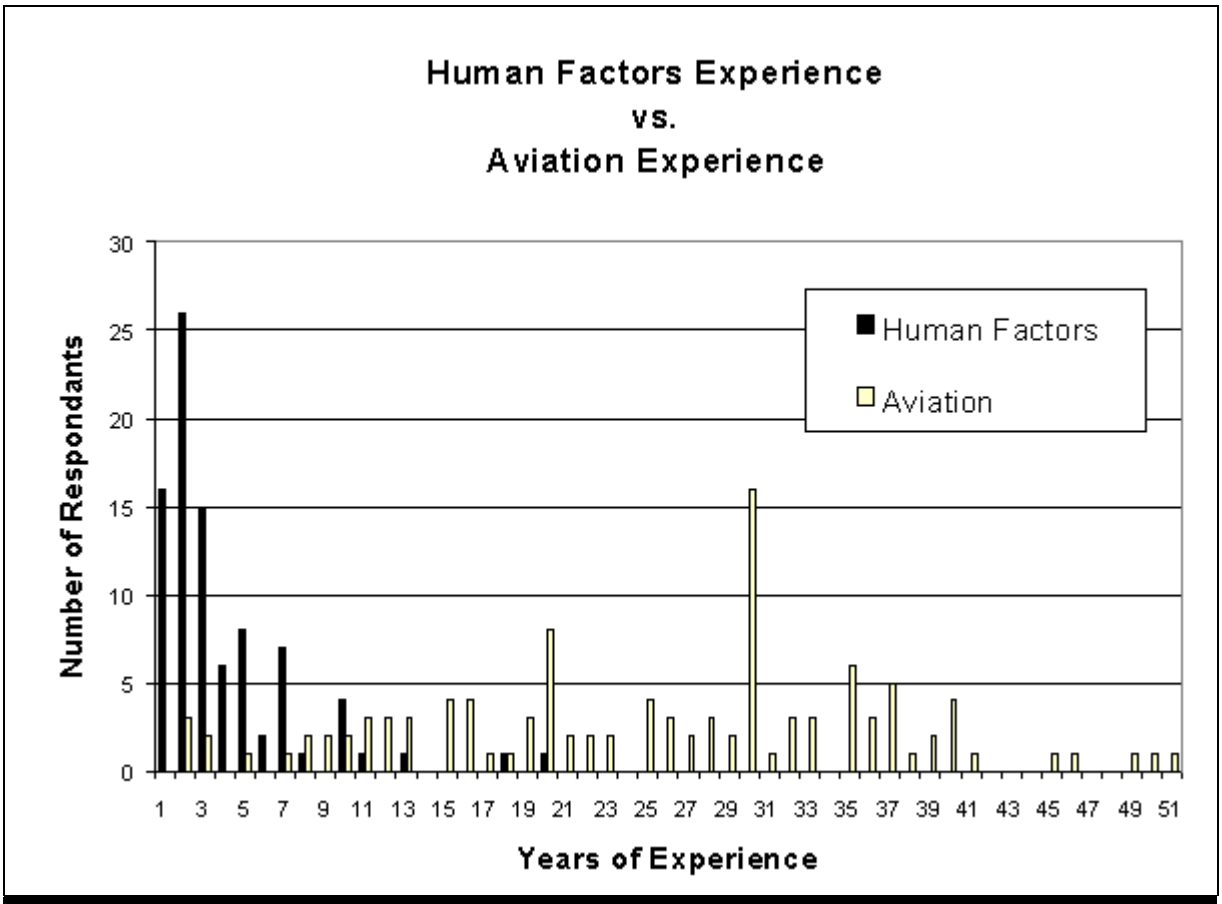

Figure 3. Graphic Depiction of Human Factors and Aviation Experience

3.0 CURRENT STATUS OF MAINTENANCE HUMAN FACTORS PROGRAMS IN RESPONDENTS' ORGANIZATION

This section establishes the existence and plans for maintenance and inspection human factors programs. The questionnaire was designed to ask not only whether the organization has a human factors program, but also what specific activities and products they are using. Use of human factors products is, most likely, the best indication of an active human factors program.

Average response to activity of a human factors program was 3.6/5.0 (SD=1.3). The industry segment with the highest activity is the airlines, as shown in **Figure 4**. More organizations are planning a human factors program with the average response at 4.0. The responses regarding maintenance and inspection human factors training programs are identical to the responses about a general human factors program. There is a high level of human factors interest, receiving a rating of 4.0/5.0 (SD=1.0).

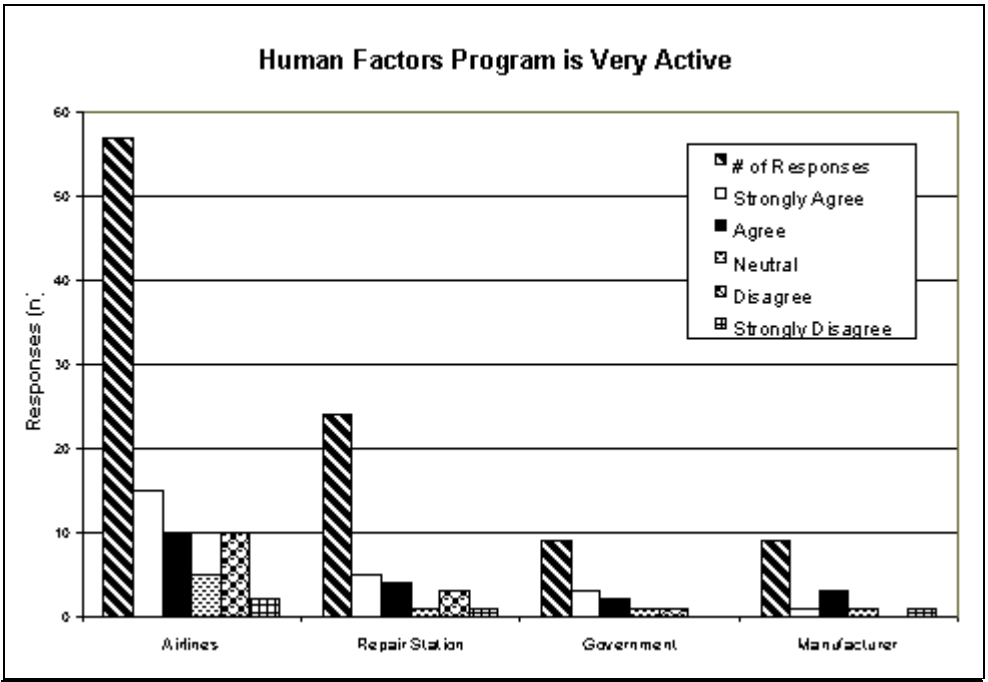

Figure 4. Industry Segments Reporting Human Factors Programs

Questions 3.5 through 3.13 were Yes-No type. **Table 1** summarizes that data.

Table 1. Status of Maintenance Human Factors Programs in RespondentsÆ Organization

Activity	**Yes (%)**	**No (%)**	**Not Sure (%)**	**No. of Respondents**
We use the “Dirty Dozen Posters” somewhere in our organization	46	44	10	119
We use information from the **FAA** Human Factors Aviation Research:				
Conferences	72	23	5	118
CD-ROMs	65	32	3	103
Reports	53	38	9	105
Website	49	48	3	112
We have sent people to specialized human factors courses	67	30	3	120
We have hired consultants to deliver human factors courses	27	67	5	120
We have a formal human factors error reporting system	34	59	7	92
We are planning a formal human factors error reporting system	63	19	18	69
We have a formal discipline system that acknowledges the importance of error reporting	50	42	8	111
We use data from our error reporting system	43	53	4	104
We have conducted a human factors audit of our maintenance organization	19	71	10	114
We plan to conduct a human factors audit	37	33	30	105

Perhaps the most interesting responses on **Table 1** are the high responses to use of **FAA** information. Assuming the sample is representative of the industry at large, over 50% of the industry is using the FAA materials. Also a very high percentage of the respondents, 67%, have sent personnel to Human Factors training. Active and planned error reporting systems also received high response percentages.

4.0 RESPONDENTS' KNOWLEDGE OF FAA HUMAN FACTORS R&D PRODUCTS

This section of the questionnaire is designed as a means to determine if the respondents are using the by-products of the **FAA** Human Factors in Aviation Maintenance Research Program.

Respondents generally agree that the **FAA** reports on maintenance human factors are useful, rating the question 3.8/5.0 (SD= .9). Satisfaction with the reports is generally shared by all segments of the respondents. **Figure 5** depicts satisfaction level based on industry segment.

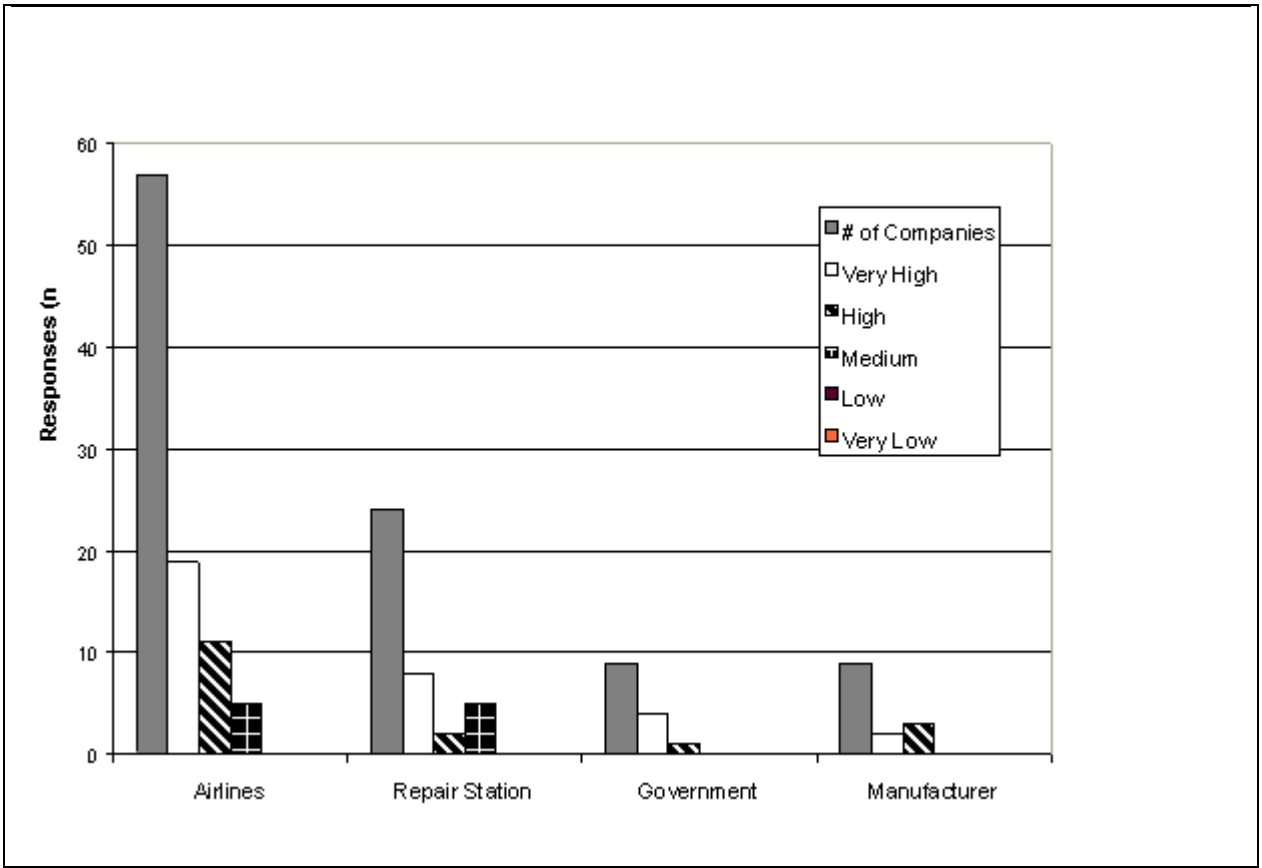

Figure 5. Satisfaction Level by Industry Segment

Table 2 shows the responses to the YES-NO format questions numbered 4.4 through 4.7.

Table 2. Knowledge of the FAA Human Factors R&D Products

Activity	Yes (%)	No (%)	Not Sure (%)	No. of Respondents
I have received at least 3 CD-ROMs from the **FAA** concerning Aviation Maintenance Human Factors	44	53	3	120
My organization has participated in at least one FAA Human Factors research activity	28	59	13	117
Have you implemented FAA Aviation Maintenance Human Factors research products/interventions?	22	62	16	116
Representative(s) from my organization has attended FAA Aviation Maintenance Human Factors Conferences:				121
0 – 3 times 52%				
4 + times 42%				
Not sure 4%				

Twenty eight percent of 117 respondents felt that they have participated in some aspect of the **FAA** Human Factors in Aviation Maintenance Research Program. This participation ranges from being a site for development and testing to merely using the documents and reports. This percentage is an excellent testimony that the program has had very good industry participation.

4.1 Comments about the Program

There were many positive comments about the program in **Section 4**. Rather than relegating all comments to **Appendix 2**, the following are particularly important.

*"I have used the materials to implement **HF** training in the USAF. Outstanding materials…"*

*"**FAA** information and products are very important and useful. FAA is a reference for my country…We need the major aviation experience from the US."*

" We are using FAA CD-ROM data in our classrooms."

"We will be implementing FAA HF research products."

5.0 THE VALUE OF FAA HUMAN FACTORS RESEARCH PRODUCTS

Table 3 lists all of the questions in **Section 5** of the questionnaire. The program products in **Table 3** are listed in descending orders of acceptance; however, there are not significant differences in the level of acceptances. Overall, respondents like all of the products.

Table 3. Value of Various FAA Human Factors Research Products

Product	Mean	SD
Overall value of **FAA** Maintenance Human Factors Research Program	4.4/5.0	.74
The *Human Factors Guide for Aviation Maintenance* Website	4.2/5.0	.82
The www.hfskyway.com Website	4.1/5.0	.87
The annual CD-ROMs on Human Factors in Aviation Maintenance and Inspection	4.1/5.0	.88
Team Training for Maintenance Technicians (**AMTT**)	4.0/5.0	.87
The *Human Factors Guide for Aviation Maintenance* (CD-ROM)	4.0/5.0	.93
Software for Coordinating Agency for Supplier Evaluation (**CASE**)	3.7/5.0	.87
On-Line Aviation Safety Inspection System (**OASIS**)	3.7/5.0	1.07
B- 767 Environmental Control Tutor	3.6/5.0	.78
Software for Maintenance Ergonomics Audit (**ERNAP**)	3.5/5.0	1.10
System for Training FAA Regulations (**STAR**)	3.3/5.0	1.01

The highest rating on the entire questionnaire was question 5.11, which rates the overall value of the human factors research program. Response was 4.4/5.0 (SD=.74). Obviously, the research team was pleased with this vote of high overall user acceptance. A similarly high rating was given to the desire for advisory material in question 6.3 (d).

There were many positive comments about the program in **Section 5**. Rather than relegating all comments to **Appendix 2**, the following are particularly important.

" I am extremely pleased with this year's CD, especially with the training material..."

*"Thanks to the US **FAA** for leading this excellent safety improvement program."*

“*All very valuable.*”

6.0 PERCEIVED REQUIREMENTS FOR MAINTENANCE HUMAN FACTORS PRODUCTS

Table 4 shows the summary of responses in this section. The high positive answers, ranging from 3.7 to 4.6, indicate that the respondents want most aspects of the program to continue. While certain numbers are higher than others, there is not a statistically significant difference in the responses.

The response associated with the perceived need for Advisory Circulars was tied for the response highest number on the survey. This seems to indicate that industry personnel want to be told, or at least guided, by the regulations with respect to specific Human Factors requirements. The **FAA** Maintenance Resource Management (MRM) Handbook, published during 1998, is a step in the right direction.

Table 4. Perceived Requirements for Maintenance Human Factors Products

Perceived Needs	Mean	SD
Training Materials		
Hardcopy Training	4.0	.90
Computer-based Training (**CBT**)	3.9	.86
Web-based Training (**WBT**)	3.7	1.06
Job-aiding		
A. New technology hardware for maintenance environment	3.7	.99
B. New technology software (e.g., scheduling, workflow, process automation, electronic pubs, etc.)	3.8	1.00
C. Information to conduct internal human factors audit	4.1	.93
Information		
A. Enhanced Website	3.8	1.02
B. Annual CD-ROMs on Human Factors in Aviation Maintenance and Inspection	4.2	.68
C. Conferences	4.1	.82
D. Advisory Circulars for Human Factors	4.4	.68

6.1 Comments about Future R&D Projects

There were many positive comments about the program in **Section 6**. Rather than relegating all comments to **Appendix 2**, the following are particularly important.

"The advisory circulars may be very beneficial in our industry."

"We need support in most areas of human factors."

" This program is key to improving aviation safety…..it must remain."

7.0 SUMMARY AND DISCUSSION

This report has summarized the opinions of nearly 122 aviation maintenance professionals from around the world. The respondent group certainly represents the world of aviation maintenance, especially airline maintenance.

The industry places high value in past, present, and planned **FAA** research and development related to human factors in maintenance. The industry feels that it has played a major role in the research. It continues to apply the by-products of the research program. The program is a major success by all conceivable measures.

The questionnaire responses are the scientific basis for the results that are reported herein. However, one who has been involved in the program for nearly ten years notices much more than positive responses on a survey instrument. Aviation maintenance human factors was merely a concept when the researchers began "preaching" to anyone who would listen at the airlines and repair stations in the late '80s. The first **FAA** Human Factors in Maintenance and Inspection Symposium drew about 36 attendees, most of which were the speakers. Each year the Symposium has grown. Now, co-hosted with Transport Canada and the **CAA** United Kingdom, the meeting draws nearly 400 participants.

Aircraft manufactures have assumed active leadership roles in maintenance human factors by providing error reporting systems, training, and other information to their customers. Repair stations have invested in human factors audits, conducted training classes, and taken exemplary positions regarding maintenance error reporting systems.

Colleges and universities are now offering programs specializing in maintenance human factors. Students graduating from most **FAA**-approved Part 147 schools have a basic understanding of human factors. During 1999 there will be a Web-based interactive course on maintenance human factors attended by maintenance personnel worldwide.

Regulators have recognized the importance of human factors in maintenance. Joint Aviation Regulations (JAR) 66 now requires a level of human factors knowledge necessary for certification. Other regulations are likely to follow throughout the world. More impressive is the fact that many aviation organizations are recognizing the safety and financial payoff, and are implementing human factors training in advance of regulatory intervention.

Government regulators, the aviation industry, and the research team have a right to be proud of the progress made in maintenance human factors since 1989. The awareness, education, and various work place interventions are not yet complete. As long as humans are part of the maintenance equation, there will always be opportunities for improvement via strict attention to "human factors."

7.1 Continuing Research and Development

The **FAA** Office of Aviation Medicine Human Factors in Aviation Maintenance Research and Inspection Program has a legacy of success. The key factor that has influenced the success is the nature of the research, which has applied basic scientific principles to solutions for the aviation maintenance work environment. The research program has capitalized on a diverse research team comprising industry and

academia. Researchers have used the industry maintenance environments as the primary laboratory for activities. In most cases new ideas and solutions are generated and tested in concert with industry partners. Reports have been written so that they "make sense" to readers in the aviation maintenance community. The research program has published results in an integrated fashion that exists on CD-ROMs and in full-text on the Internet. Few programs have such a legacy.

The research program is unique because it has never lost focus on who the customer is. The primary customer is the aviation maintenance community comprised of technicians and managers. This primary customer values the work and applies the results.

Occasionally the research program has received criticism--some constructive--from academic researchers, both within and outside of the **FAA**. Comments have focused on the applied nature of the program's techniques and products. Since the inception of the program, the FAA program managers have never lost sight of the importance of basic scientific principles, but have committed the program to applied results. The value of this firm commitment, by the Office of Aviation Medicine, to applied human factors research has been validated by this industry assessment, thereby demonstrating the right balance between science and practice.

To ensure successful contribution to safety and efficiency in aviation maintenance, the human factors research program should capitalize on the philosophies and practices that have worked so well for the first decade of the program.

8.0 ACKNOWLEDGMENT

The authors gratefully acknowledge the industry associations, numerous airlines, manufacturers, governments, and individual aviation maintenance professionals who have contributed to the success of this research program.

Appendix 1 Questionnaire with Selected Summary Data

Questionnaire on Human Factors in Maintenance and Inspection

Section 1. General Information

Date:_____ Name (optional):_____

Title (optional):_____

Organization (optional):_____

Type of Organization (check only one):

- θ Airlines
- θ Manufacturer
- θ Repair Station
- θ Supplier
- θ Government
- θ Academic
- θ Consulting
- θ Other _____

Years of Human Factors experience _____Years of aviation experience_____

Section 2. Purpose of this Questionnaire

The purpose of this questionnaire is to assess the following:

- Current status of Human Factors maintenance programs in your organization.
- Your knowledge of FAA Aviation Maintenance Human Factors research products.

- Your perceived requirements for FAA Aviation Maintenance Human Factors research.

Section 3. Current status of Human Factors maintenance programs in your organization

Please add comments at the end of the section.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
3.1a Our maintenance Human Factors program is very active	O	O	O	O	O
OR					
3.1b We are planning a Human Factors program for maintenance personnel	O	O	O	O	O
3.2a We have an active Human Factors training program being delivered to maintenance personnel	O	O	O	O	O
OR					
3.2b We are planning Human Factors training for maintenance personnel	O	O	O	O	O
3.3 Our organizations has at least one person with full time responsibility for maintenance Human Factors	O	O	O	O	O
3.4 Our organization has a high interest in maintenance Human Factors	O	O	O	O	O

	Yes	No	Not Sure
3.5 We use the “Dirty Dozen Posters” somewhere in our organization	O	O	O

3.6 We use information from the FAA Human Factors:			
CD-ROMs (comment below)	O	O	O
Hard copy reports (comment below)	O	O	O
Website (comment below)	O	O	O
Conferences (comment below)	O	O	O

Please add comments at the end of the section.	**Yes**	**No**	**Not Sure**
3.7 We have sent people to specialized Human Factors courses	O	O	O
3.8 We have brought in consultants to deliver Human Factors courses	O	O	O
3.9a We have a formal Human Factors error reporting system	O	O	O
OR			
3.9b We are planning a formal Human Factors error reporting system	O	O	O
3.10 We have a formal discipline system that acknowledges the importance of error reporting	O	O	O
3.11 We have data:			
From our error reporting system	O	O	O
Showing how Human Factors related errors raise costs	O	O	O
Show how Human Factors interventions lower costs	O	O	O
3.12 We have conducted a Human Factors audit of our maintenance organization	O	O	O
3.13 We plan to conduct a Human Factors audit within the next 18 months	O	O	O

Explanations, comments, or suggestions for Section # 3

Section 4. Your knowledge of the FAA Human Factors R&D products

Please add comments at the end of the section.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
4.1 I am knowledgeable about Human Factors conditions that existed 10 years ago	O	O	O	O	O
4.2 I am knowledgeable about Human Factors conditions that existed 5 years ago	O	O	O	O	O
4.3 I find the FAA reports on the Maintenance Human Factors program very useful	O	O	O	O	O

	Yes	No	Not Sure
4.4 I have received at least 3 CD-ROMs from the FAA concerning Aviation Maintenance Human Factors	O	O	O
4.5 My organization has participated in at least one FAA Human Factors research activity.	O	O	O
4.6 Representative(s) from my organization has attended FAA Aviation Maintenance Human Factors Conferences:			
0 - 3 times	O	O	O
4 + times	O	O	O

Please add comments at the end of the section.	Yes	No	Not Sure
4.7 Have you implemented FAA Aviation Maintenance Human Factors research products/interventions (comments)	O	O	O

Explanations, comments, or suggestions for Section # 4

Section 5. The value of various FAA Human Factors research products

Please rate your familiarity and value of the following FAA Human Factors research products

Please add comments at the end of the section.	Very Low	Medium	Very High	N/A

5.1 B-767 Environmental Control Tutor (1994)							
Familiarity	O	O	O	O	O	O	
Value	O	O	O	O	O	O	
5.2 System for Training FAA Regulations (STAR)							
Familiarity (1996)	O	O	O	O	O	O	
Value	O	O	O	O	O	O	
5.3 Team Training for Maintenance Technicians (AMTT)							
Familiarity (1997)	O	O	O	O	O	O	
Value	O	O	O	O	O	O	
5.4 Software for Coordinating Agency for Supplier Evaluation (CASE) (1997)							
Familiarity	O	O	O	O	O	O	
Value	O	O	O	O	O	O	
5.5 Software for Maintenance Ergonomics Audit (ERNAP)							
Familiarity (1996)	O	O	O	O	O	O	
Value	O	O	O	O	O	O	
5.6 On-Line Aviation Safety Inspection System (OASIS)							
Familiarity (1995)	O	O	O	O	O	O	
Value	O	O	O	O	O	O	
5.7 The *Human Factors Guide for Aviation Maintenance* (CD-ROM version) (1995-1997)							
Familiarity	O	O	O	O	O	O	
Value	O	O	O	O	O	O	

5.8 The *Human Factors Guide for Aviation Maintenance* (Website version) (1998)						
Familiarity	O	O	O	O	O	O
Value	O	O	O	O	O	O
5.9 The annual CD-ROMs on Human Factors in Aviation Maintenance and Inspection (1992-1997)						
Familiarity	O	O	O	O	O	O
Value	O	O	O	O	O	O
5.10 The www:HFSKYWAY.com website (1996-1998)						
Familiarity	O	O	O	O	O	O
Value	O	O	O	O	O	O
5.11 What is the overall value of the FAA Maintenance Human Factors research program	O	O	O	O	O	O

Explanations, comments, or suggestions for Section # 5

Section 6. Perceived requirements for Aviation Maintenance Human Factors products

Please indicate your agreement or disagreement with the following:

Please add comments at the end of the section.	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
My organization needs Maintenance Human Factors support in the following areas:					

6.1 Training Materials	O	O	O	O	O
Hardcopy training	O	O	O	O	O
Computer-based training (CBT)	O	O	O	O	O
Web-based training	O	O	O	O	O
6.2 Job-aiding					
A. New technology hardware for maintenance environment	O	O	O	O	O
B. New technology software (e.g., scheduling, workflow, process automation, electronic pubs, etc.	O	O	O	O	O
C. Information to conduct internal Human Factors audits	O	O	O	O	O
6.3 Information					
A. Enhanced Website	O	O	O	O	O
B. Annual CD-ROMs on Human Factors in Aviation Maintenance and Inspection	O	O	O	O	O
C. Conferences	O	O	O	O	O
D. Advisory Circulars for Human Factors	O	O	O	O	O

Explanations, comments, or suggestions for Section # 6

Once you have completed this form, please return to:

Ms. Kiesha Higgins
2130 LaVista Executive Park Drive
Tucker, GA 30084
Phone: (770) 491-1100
Fax: (770) 491-0739

e-mail: Kiesha.Higgins@GalaxyScientific.com

Are you on the FAA Mailing List for Human Factors in Maintenance (Y/N)_____

To be added, send name and address to:

Ms. Sonya Meadows
2130 LaVista Executive Park Drive
Tucker, GA 30084
Phone: (770) 491-1100
Fax: (770) 491-0739
e-mail: Sonya.Meadows@GalaxyScientific.com

Appendix 2: Written Responses Classified by Question Number

	Basic Information	Section #3	Section #4	Section #5	Secti
1	Event UK Country USA Type of Organization. Government/Academic **HF** Experience 2 Aviation Experience 15	Outstanding sources for instructional information! Will be adding causes and corrections to database system that is visible to all maintenance personnel. System just reports cost, location and when error occurred now.	I have used the materials to implement HF training in the USAF outstanding material	I am extremely pleased with this year's CD especially with the training material. The more personnel trains in HF, the safer the Aircraft Maintenance world will be	
2	Event ATA Country USA Type of Organization Airlines HF Experience 2 Aviation Experience 30	The commitment for Maintenance Human Factors Awareness and training is not shared by Sr. Mgt. Due to low perception of it's R.O.I. IE: It will cost to implement but has no concrete payback period		Research will be of more value once we get Human Factors program up and running. Without a program the research has low value.	Advi will way the n Hum Prog finan Mgt. Busi will outli prog look
3	Event UK Country UK Type of Organization Regulatory Authority HF Experience 30 Aviation Experience 40		We do our own research in UK CAA		

4	Event UK Country UK Type of Organization Regulatory Authority HF Experience --- Aviation Experience 29				Prod help, Facto cultu not t in th issue

5	Event UK Country ------- Type of Organization Repair Station HF Experience --- Aviation Experience 32	We are starting to recognize Human Factors influence in incidents-informall y it has been recognized as a problem		Our company does not allow employees access to the web only individual Email addresses	
6	Event UK Country UK Type of Organization Repair Station HF Experience 1 Aviation Experience 23	Company has a audit scheduled for Mid-march 98		FAA Research products were not available at our company last year	All a mair prod addr use l Oper nes. cons issui Repa Over facil yes, us k
7	Event UK Country Wales Type of Organization Repair Station HF Experience --- Aviation Experience ---	Our company has been refreshed in one previous HF course. We are currently reviewing our approach to HF especially now that **ICAO** charges are imminent	Our company has not yet adopted any formal journal monitoring of HF issues nor have we promoted HF issues within the workplace	With the exception of **CASE**. We as a company have not reviewed the research products	Guic how impl audi whic chec be u
8	Event UK Country USA Type of Organization Repair Station HF Experience 18 Aviation Experience 41			If it were not for this program activity on MHF the US would be 100% less. We would be far behind the rest of the world.	This impr aviat The can impr this is an rema

9	Event UK Country USA Type of Organization Manufacturer HF Experience 3 Aviation Experience 12	We have not yet brought in consultants to deliver HF courses A formal discipline system is in development and we are planning a HF audit	We will be implementing FAA HF research products		

10	Event UK Country Brazil Type of Organization Airlines HF Experience 1 Aviation Experience 12	I knew about HF programs in aviation maintenance last year during a maintenance training conference in Germany Since then I got very interested and I'm getting more involved in this subject. My aim is to have some implementation in the near future. By the moment I'm doing my best to apply some fundamentals on my day-to-day business and to my subordinates	FAA information and products are very important and useful. FAA is a reference for my country. We don't have a very developed industry within our country. We need experience. The major aviation experience comes from US	I would suggest a kind of "**MEDA**: software to be included in the CD. That would be a guide for incident investigation within components of the same time. It could be a source for a database that could be used to determine the HF main issues within the organization. The results could be retrieved by the FAA as part of your research and for information share.	But v proc diffu princ cultu orga have level
11	Event UK Country UK Type of Organization Confidential Reporting HF Experience 2 Aviation Experience 40	Our organization is a confidential reporting agency (similar to ASRS)	UK based organization is involved with UIC research		
12	Event UK Country UK Type of Organization Repair Station HF Experience 2 Aviation Experience 16		We have requested CD-ROMS but have not received them for the London office		

13	Event UK Country France Type of Organization Repair Station HF Experience 1 Aviation Experience 20		Implementation in progress	Thanks to US organization for leading the excellent safety improvement program	

14	Event UK Country UK Type of Organization Commercial Operator HF Experience 2 Aviation Experience 30	Paucity of information on documented rotary incidents on maintenance errors	Specialist courses on rotary aircraft maintenance would be helpful		
15		This is a new area for us which we are just beginning to look at-this applies to all questions			
16	Event UK Country UK Type of Organization Airlines HF Experience 5 Aviation Experience 35	Although we recognize the cost issues, we do not as yet have an effective means of measuring them, or a desire to.			
17	Event UK Country USA Type of Organization Manufacturer HF Experience 2.5 Aviation Experience 11	We are more active in supporting our external customers than we are internally to date. We can't seem to get the factory and flight line signed up to MEDA type systems.	The FAA supported the development of **MEDA**	For the things that I am not familiar with, I cannot evaluate their value. We do distribute the FAA CD's to our MEDA customers.	The circu very our i
18	Event UK Country UK Type of Organization Repair Station HF Experience 2 Aviation Experience 30				Our decis polic deter

19	Event UK Country UK Type of Organization Academic HF Experience 1 Aviation Experience 30	We will be delivering a basic training program on HF as educationalists we are well aware of HF influence. Training programs in accordance with JAR66 module 9		My intent is to use some majority of these products for the design and delivery of HF training programs. Please keep me informed	I hav disc muc the i we c Avia Mair Hum prod
20	Event UK Country Ireland Type of Organization Airlines HF Experience 6 Aviation Experience 46			Did not know about it	
21	Event UK Country Hong Kong Type of Organization Repair Station HF Experience 2 Aviation Experience 25	Our program is just starting up.		Section not completed as I have not used these systems or websites	
22	Event UK Country UK Type of Organization Government HF Experience 3 Aviation Experience 25	Lots of these are not entirely relevant to the CAA's role. CAA is actively exploring initiatives to encourage industry to address HF issues	12th Symposium held in UK is proof of CAA commitment to HF		All i share is be Long posit web inter still non- supp Coor globa stanc the w set th

23	Event UK Country UK Type of Organization Airlines HF Experience --- Aviation Experience 27	As a UK operator "Human Factors" is something we are all aware of. But to date have not focused on			Early our c but t symp gene know moti intro mana our c
24	Event UK Country USA Type of Organization Airlines HF Experience 3 Aviation Experience 13	FAA Materials are excellent	Using CD-ROM data in classrooms	Please explain computer HF requirements for CD version on website	
25	Event UK Country UK Type of Organization Repair Station HF Experience --- Aviation Experience 28	We have completed two product and process audits to date of own design	Knowledgeable of Human Factors conditions by experience only and would like to study the FAA reports further	We have not at this time reviewed any of the listed data	At th do n acces capal
26		This symposium is our company's introduction to Human Factors in the Maintenance Environment. However a number of related duties and tasks performed by different individuals within our organization made some of the requirements of Human Factors very loosely.			

27	Event France Country France Type of Organization Manufacturer HF Experience 20 Aviation Experience 49	Not sure of the accuracy of hard Copy reports		All very valuable	
28	Event Qantas Country Malaysia Type of Organization Airlines HF Experience --- Aviation Experience ---	We have not sent people for specialized HF courses, but have a few who have attended short **ATA** courses as well as Int. Fed. of Airworthiness (IFA) conferences. We have brought in HF specialists from Boeing to conduct HF Awareness and **MEDA** course. We plan to bring in Dr. William Johnson from Galaxy Scientific Corporation	Our usage of the FAA products is limited to HF guide for Aviation Maintenance, AMT, and HF in Aviation Maintenance and Inspection	We definitely find the products available to us very useful, but we certainly lack exposure to most, including access to website. As we have limited PC terminals that are linked.	Self – We supp areas
29	Event France Country France HF Experience 10 Aviation Experience 30	Being a vendor training organization, we do not offer the maintenance staff, we cannot therefore easily monitor but have been looking to offer HF training			Bein US, t has r readi we h chan

30	Event France Country France Type of Organization Airlines HF Experience 3 Aviation Experience 30	4000+ **AMT-T**'s attended HF workshop QA Department using **MEDA** for incident/accident investigations Coop effort/team consisting of Mgt. + union			Althe are n of th prod do ap FAA and c of m time cons MED initia Train

31	Event ATA Country USA Type of Organization Airlines HF Experience 3 Aviation Experience 9	We have openly invited Non-NWA employees to attend our seminars, other Airlines, Military, Grey Owl, doors are open.			

32	Event ATA Country USA Type of Organization Airlines HF Experience 2 Aviation Experience 30		All research products that had US Airways involvement (**MRM** training, design development, document design aid, etc.) were fully implemented. This research was invaluable	Although CD-ROM's provide research tools (hyperlinks) I believe documents like the Human Factors Guide for Aviation Maintenance should be available in hard copy.	The expa resea in hu issue their been to th The resou incre conti the p date. curre at US 1. Hl (Rob 2. Rc probl 3. Us Docu Desi (Dru 4. Ev MRM (Tay 5. "H Q.A, safet 6. Gr dama colle 7. Pa prog probl