

NOTICE

U.S. Department of Transportation
Federal Aviation Administration

N XX-

7/31/00

Cancellation

Date: xx/xx/xx

SUBJ: PROCEDURES FOR SCREENING AND HIRING NEW HUMAN FACTORS
SPECIALISTS IN AVR

1. PURPOSE. This notice provides guidelines to Aircraft Certification Service (AIR) field offices (i.e., Aircraft Certification Offices (ACO)) and AFS offices (?? *Note: Kathy- I was trying to do this for AVR level- not sure what appropriate AFS language is here*) regarding the Federal Aviation Administration's (FAA) roles and responsibilities, recruiting, screening, and hiring of new AFR human factors specialists. This notice contains recommended procedures for all stages in the process to hire a new human factors specialist. Guidance is included for drafting human factors position descriptions- based on appropriate roles and responsibilities for the hiring office, job announcements, associated questions on knowledge, skills, and abilities, recruiting, and the screening and selection processes.

2. DISTRIBUTION. This notice is distributed to the branch level in Washington Headquarters Aircraft Certification Service and Flight Standards (Branches?), section level in all Aircraft Certification Directorates, all National Resource Specialists (NRS), all ACO's, all MIDO's/MISO's, all Flight Standards District Offices (FSDO), and (all other Flight Standards Offices?). Additional limited distribution should be made to the [Air Carrier District Offices, the Aeronautical Quality Assurance Field Offices, and](#) the FAA Academy.

3. RELATED PUBLICATIONS.

The following is a list of source documents from which requirements and guidelines have been extracted for this notice.

FAA Notice: Roles and Responsibilities for XXX Software stuff (*Editors note- need title*)?

4. BACKGROUND.

The Agency has recently become proactive about hiring Human Factors Specialists directly into several lines of business. This notice is intended to streamline and standardize the hiring practice of new Human Factors Specialists into AVR.

Human Factors specialists have a relatively new and unique role within Regulation and Certification (AVR). Thus, it is particularly important to standardize the hiring procedures to ensure that appropriate candidates are selected, and that new specialists are placed in positions according to their knowledge, skills, and abilities. This Notice describes the roles and responsibilities for the current Human Factors Specialists in AVR, procedures for drafting position descriptions for new human factors specialists, preparing job announcements that reflect the appropriate knowledge and skills needed for various types of human factors positions, recruiting, and the screening and selection process.

It should be noted that the ultimate hiring authority rests with the hiring office. This notice specifies a standardized approach to the hiring process which is intended to facilitate the development of a consistent hiring approach. It is also intended to capitalize on the lessons learned from hiring the first set of human factors specialists, as well as reduce the workload required to bring new staff on board, by reusing staffing materials previously developed.

5. DISCUSSION: Roles and Responsibilities of Current Human Factors Specialists in AVR

(To be developed by Sharon either here or in another memo or notice- see also software roles and responsibilities notice)

Currently we have three types of human factors staff- each should be used according to the position:

- Headquarters & Directorates: Primary emphasis on policy development (FARS, Advisory Circulars, TSO's etc.- as appropriate for that office). Coordination between offices is critical.
- ACOs: Primarily support human factors aspects of certification projects. In Seattle the ACO project work is taken on by the two human factors specialists at the Directorate.
- AVR Flight Deck Human Factors National Resource Specialist: Is a resource for policy and certification human factors work for both AIR and AFS.

6. PROCEDURES.

Drafting human factors position justification and position descriptions

Several offices within the Aircraft Certification Service (AIR) already have human factors specialists (e.g., ANM-111, ACE-100, ACE-115, ASW-100, and AIR-130). Offices who have recently updated attempted to hire human factors specialists, and thus, have relatively current position justifications and position descriptions include ANM-111, AIR-130, and AFS-400. Contacting specialists in these and other offices for a copy of their position descriptions is an appropriate place to start for any office that is seeking to hire a new human factors specialist. While the position description and job announcement should be tailored towards the needs of the hiring office, they should also ensure the applicant has the required fundamental knowledge of human factors.

Job announcements and associated questions on knowledge, skill, and ability areas

The contents of the job announcement and required application materials is a critical step in obtaining candidates who have relevant, appropriate knowledge and skills, and that they are willing and able to do the job.

Need more specifics on the job announcement and required application material....

Pull in here ideas from Kathy's letter

Kathy's letter to ANM-111 (slightly modified for this Notice- needs more work):

The Human Factors Specialist position may be classified as either a psychologist or an engineer. Below is information related to the qualifications required for any human factors specialists in AIR...

The Human Factors Specialists that we hire must have significant knowledge of human factors/human performance, and be able to apply that knowledge in a manner that is objective, systematic, and valid from both a scientific and engineering perspective. This individual will be called on to answer questions about human factors, and must be credible in doing so.

The successful candidate can acquire that knowledge in several ways, hence the two classifications. Appropriate areas of psychology are clearly relevant, but a successful candidate could also have an engineering (or engineering related) education, and still have the knowledge of human behavior and performance needed for such a position. A qualified candidate could have acquired the knowledge formally, through university courses, or practically, through experience (although this latter is harder to do and takes significant time and effort)- or some combination. Of course, experience is valuable.

It's important for the success of the position that the person hired truly has the knowledge of human factors necessary to be a specialist. An aero engineer who has a basic understanding of human factors is valuable (as an aero engineer), but not as a human factors specialist; significantly more knowledge is required. An analogy might be that it would not be appropriate to hire a person with only a private pilot's license and knowledge of basic aerodynamics as a flight test pilot, because they don't have the specialized knowledge and skills to do that job.

Significant knowledge of human factors is necessary but not sufficient in a human factors specialist for AVR. Our vision for human factors in FAA is to incorporate it based on rigorous, systems engineering-based approach that is primary objective, systematic, structured, and valid from an engineering and scientific perspective (as mentioned above), while taking into account subjective input (such as pilot opinion). Therefore, the successful candidate should have this type of a disciplined perspective to help move HF forward in AVR.

Of course, we do want our non-HF engineering workforce to have some basic knowledge of human factors, so they know when to ask questions and when to call in a HF specialist. This would be analogous to wanting the workforce to have a basic understanding of aerodynamics, but specialists would be called in when appropriate.

Recruiting

Once the human factors position has been defined, documented, and approved, the hiring office should work with their human resources office, as well as with existing human factors specialists to begin recruiting. Efforts should be made to recruit from companies and individuals with known ties to human factors specialists working in industry and other governmental agencies.

It is recommended that concurrent with the posting of the new position on the FAA's job vacancies WEB page, that the position be advertised in the Human Factors and Ergonomics Society newsletter (Bulletin) and/or the HFES Placement Service (jobs database). This may be done by contacting HFES at:

Human Factors and Ergonomics Society
P.O. Box 1369, Santa Monica, CA 90406-1369
Tel: (310) 394-1811 FAX: (310) 394-2410
Email: hfesps@aol.com
WEB: [Http://hfes.org](http://hfes.org)

Note: At the time this notice was prepared the cost for a job posting with the HFES Placement Service was \$300 for 3 months. This provides the ability to post jobs in the database. Each additional month that the announcement is extended cost \$100 per job per month. Additional postings cost \$75 per job per month.

- *Resume search (if you need to search for candidates from the resumes in the HFES jobs*

database) can be done unlimited times for 3 months for \$400.

- *Job posting and resume search together (3 months)= \$600.*
- *Before signing up for any of these options check with the division chiefs from each of the organizations in the following section to see if they may also be planning to hire a human factors specialist- and thus they may be interested in a joint arrangement/split cost. This may maximize the cost/benefit ratio and also provide a source for a second opinion on some of the candidates. In particular, the FAA Technical Center frequently uses the HFES job placement services (resume search and job posting).*

Once the job is announced and the announcement is posted on the FAAs job vacancies WEB page, notification of the job announcement should be sent to all the AVR and AAR-100 human factors specialists currently employed by the FAA. This will facilitate the recruiting process since the notification will alert current employees to the vacancy and they can pass on the information to other specialists interested in applying.

At the time of publication of this notice, offices with human factors specialists on staff in AVR or AAR-100 who should be notified of any new human factors job openings include:

- FAA Regulation and Certification Flight Deck Human Factors National Resource Specialist (AIR-105N)
- FAA Aircraft Certification Transport Airplane Directorate (ANM-111)
- FAA Aircraft Certification Rotorcraft Directorate (ASW-100)
- FAA Aircraft Certification Small Airplane Directorate (ACE-100)
- FAA Aircraft Certification Engineering Division- Avionic Systems (AIR-130)
- FAA Aircraft Certification Office- Wichita (ACE-115)
- FAA Research and Acquisitions Office of Chief Scientist for Human Factors (AAR-100)
- FAA AND (AND-300)

Current staff includes one National Resource Specialist (Kathy Abbott) and:

Office	Org. Code	Location	Person
Headquarters	AIR-130	Washington, DC	1. Colleen Donovan
Transport Directorate	ANM-111	Seattle, WA	2. Sharon Hecht 3. Steve Boyd
Small Airplane Directorate	ACE-111	Kansas City, MO	4. Frank Bick
Rotorcraft Directorate	ASW-100	Dallas/ Fort Worth	5. Lorry Faber
Wichita ACO	ACE-116W	Wichita, KS	6. Jeff Holland

Additionally, the branch manager for each of the FAA and other governmental organizations doing human factors work for the FAA should be notified of the announcement. This includes the managers at the human factors divisions at each of the following organizations:

- FAA Offices with Human Factors Specialists on staff including
- FAA William J. Hughes Technical Center
- FAA Civil Aeromedical Institute
- NASA Ames
- NASA Langley

- Volpe National Transportation Systems Center (part of U.S. Department of Transportation) (POC: Dr. Donald Sussman (617) 494-2413 Operator Performance and Safety Analysis Division DTS-79)
- *Note: what about recommending a contacting few other key INDUSTRY places like Boeing, Honeywell, Crown Communications, etc....?*
- *Need to resolve wether to include names and contact info.- at the least we should do web sites. Names & phone would be most “user-friendly” for the ultimate users.*

Final selection and screening processes

1. All potential new Human Factors Specialists should go through the same interview/review process.
2. A core HF team should be involved in the interview process and make hiring recommendations for all new hires.
 - This team should at a minimum consist of: Kathy Abbott (AVR NRS for Flight Deck HF), a representative from AAR-100 (R&D HF group), one other currently employed HF specialist in AIR, as well as the local hiring management team representatives and human resources personnel as required.
 - The ultimate hiring decision is up to the local office management, but should be based on input from all team members.

Interview topics

3. A core question bank should be used during all interviews to ensure knowledge and expertise in Human Factors, not just in “humans.” This core set should be developed by the team identified above in #2, which may be based on the question set developed during the recent HF hirings in Seattle.

7. SPECIAL CONSIDERATIONS.

8. CONCLUSION.

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 Aircraft Certification Service

Appendices: *(Editors note: insert sample position justifications & position descriptions from AIR-130 (Colleen’s write up for another AIR-130 person, AFS-400 (Colleen and Kathy provided input to this one), and ANM-111).*

Appendix A: Sample Draft Position Justification done by C. Donovan for AIR-130 on 1/28/99

Requesting Organization: AIR-130
Position Category: Human Factors Specialist

FY-99 Justification for Position

1. **Position Requested:** Human Factors Specialist

2. **Justification:**

Currently there are only seven Human Factors Specialists who are responsible for supporting over 1,000 employees in Aircraft Certification. Of these Human Factors specialists, only one works at FAA Headquarters (HQ) where major FAA policy and funding decisions are made. This HQ person works in the Avionics Systems Branch (AIR-130) and is responsible for developing policy and guidance material for major communications, navigation, and surveillance (CNS) systems which are critical to National Air Space (NAS) modernization, which is one of our Administrators key agenda items.

Over the past year, it has become increasingly clear that this single Human Factors Specialist in AIR-130 cannot adequately support the requests from headquarters, much less from the Aircraft Certification Offices (ACO) branch offices in the field who routinely seek assistance on specific certification projects for systems on which no FAA policy or guidance exists. It is critical that both the headquarters needs, to develop policy and guidance, and the field office needs, to support specific certification projects, are met.

Over the past year, major milestones have been met including the development of policy and guidance material for the Global Positioning System (GPS) and Wide Area Augmentation System (WAAS), data link, Cockpit Display of Traffic Information (CDTI), and moving map displays were drafted and coordinated with industry. However, other major programs, such as Enhanced Ground Proximity System TSO development and certification projects on head-up displays and night vision goggles, received no support due to lack of resources. Systems such as EGPWS will be around for decades to come and if the proper policy is not included up-front (prior to system design and development) it is of no use later. Late policy is costly to manufacturers, who may potentially have to redesign systems, and costly to FAA employees, who have difficulty imposing design guidance after the fact and systems are on the airplanes.

In addition, Jane Garvey's new "Safer Skies" agenda and RTCA Task Force IV to "Streamline the Certification Process" has recently added significantly to the workload of the Certification Human Factors Specialists, particularly at HQ. The Safer Skies agenda identifies 16 Joint Safety Analysis Teams (JSAT's), each of which requires human factors support. With only seven Human Factors Specialists in all of Aircraft Certification, one of whom cannot travel due to medical reasons, it will be very workload intensive to support these teams. The AIR-130 Human Factors Specialist has been put on the weather JSAT, which is expected to last 8 months and take no less than 25% to 50% of her time. It is clearly impossible to support sixteen such teams at this level, and yet that is what is anticipated for the additional JSATs which will be chartered over the next two years. Even without these additional Garvey initiatives, it was not possible to support all of the critical Human Factors project work.

3. **Impact of Not Filling Position:**

Several projects which are critical to NAS modernization will not be adequately supported if additional human factors support is not received. This includes the development of avionics guidance and policy for:

- Data Link (AC 20-DC and new C SOIT Human Factors group)
- Weather
- Cockpit Display of Traffic Information (SAE G10 group and RTCA SC-186)
- Multi-Function Displays (SAE G10 policy being developed)
- Enhanced Ground Proximity Warning System (EGPWS/TAWS)
- HF Team Report Implementation

4. **Assessment of Other Options for Meeting Need:**

The workload required far exceeds all overtime possibilities. The AIR-130 Human Factors staff has requested support from the Human Factors specialists in the field offices. This has provided some assistance, but the level of support required is far in excess what the field offices can support given their own field office needs. The

AIR-130 staff has also requested and received partial support from AAR-100 (the research and development human factors branch), however this group does R&D, not applied policy and guidance development, nor support certification projects, thus the support is of limited usefulness. The two human factors groups (Aircraft Certification and AAR-100) supplement each other, but clearly have different roles and responsibilities. In addition, this R&D group (AAR-100) only has a staff of five, and their resources are also maxed out by the new Garvey initiatives. Other short term alternatives include obtaining a human factors intern or getting one of the human factors specialists to agree to take a detail to AIR-130. While either an intern or additional staff on detail would help, it would not solve the long term need.