Inside this issue:

Get to Know Your Officers:  
Angel M. Millan  
2-3

Notes From the Chair  
Dennis B. Beringer  
4

ASTG Information for HFES  
Submitted by: Paul R. Havig  
4

Aerospace News Items  
Submitted by: Dennis B. Beringer  
5-6

Know it All: Aerospace Trivia  
7

Message From the Editor  
7
Get to Know Your Officers:
Angel M. Millan

1. Tell me a little bit about yourself.
I received a B.S. in aeronautical engineering from the UNEFA (Universidad Nacional Experimental de la Fuerza Armada) in Venezuela. After graduation, I worked for a year with an engineering company as lead engineer developing a conceptual design of a light STOL aircraft. The conceptual design was delivered but funding was never obtained to move forward with the project. I decided to continue my education and applied for a graduate degree at Embry-Riddle, Daytona Beach campus. I was always interested in aviation safety and accident investigation; therefore I chose to go for a Master of Science in Aeronautics with concentration in system safety. After obtaining the graduate degree, I conducted research at Embry-Riddle for a year. During this time, I was in contact with topics on ergonomics and human factors. The next logical step was to further my interests in these areas and a Ph.D. sounded like a good idea. I applied to the University of Central Florida for the Industrial Engineering program. I had the opportunity to work on several areas such as operations research, quality, reliability, simulation, human factors and ergonomics. Right after receiving my Ph.D., I submitted a proposal to the National Research Council and the Civil Aerospace Medical Institute for a fellowship to conduct research on ATC systems, NextGen and human performance at the Aerospace Human Factors Research Division located in Oklahoma City, OK. I recently finished my NRC tenure and was hired as a contractor working to support the same FAA division.

2. What made you want to pursue the career path you have taken?
I was always interested in aviation since I was a child, I guess I was just able to keep that interest alive throughout the years, because what kid does not like airplanes. I was really curious during my early time in college on topics related to safety, reliability, dynamics and the impact on humans. In retrospective, I do believe that there were some accidents that led me to this career. I particularly recall watching the Challenger accident on TV. While I was in college in Venezuela, a T-34 Texan crashed near the area I used to live. I was always interested in the interaction between human and machine. The human element is the most complex part of a system.

3. Why does aerospace human factors matter?
Aerospace operations are conducted in an extreme environment. Humans are not supposed to be flying nor leaving earth and its gravity. There is a variety of physiological, physical and environmental limitations inherent to aerospace operations. These limitations imposed special requirements on systems and aircraft operated by humans (directly or remotely). As we develop more technologically advanced systems to overcome limitations and increase our reach, we add layers of complexities that may increase incompatibilities between human and system capabilities which impact safety, effectiveness and efficiency. Therefore, human factors exist to mitigate and reduce those incompatibilities by considering the humans' skills and limitations as vital factors for the operation of the system/machine.

4. What struggles do you typically face as a human factors/aerospace professional?
Operationally speaking, I believe the biggest struggle in the field is the reactive safety culture. Additionally, as in any productivity driven environment, monetary units is the common variable, and sometimes it is hard to express safety and human factors under these terms. Moreover, the effects of safety are difficult to quantify. When we talk about research in aerospace human factors, an important concern is the need of a
representative sample. Individual variability is always a factor that is hard to reduce. Additionally, in the aerospace industry we are dealing with highly trained individuals and complex systems, access to these or simulation of these systems is not easy to achieve.

5. Where do you see aerospace human factors in 15-20 years?
I hope our field will be more integrated into other disciplines and taught to a broader base of professionals. Human factors has evolved rapidly and reached an important stage, products are being developed considering the human as the center. Product customization considers human variability and individualities. I believe aerospace human factors will be facing this customization approach. Portable devices are beginning to be used in aviation operations and the expansion of software applications to assist is already in sight. Development of aviation systems that can be rapidly assembled and customized through 3D printing might be possible in less than 20 years. All this might make flying a more attainable and widespread activity. I believe the research focus will be to maintain and improve current safety levels under a much populated aerospace with a higher variability of systems. Higher levels of automation and its contribution in human error will be still a relevant issue for upcoming years. I also believe that research will focus on systems that accounts for humans emotions and states of minds to reduce stress, maximize engagement and performance.

6. What questions are you trying to answer with your research?
We are trying to assess air traffic controllers’ performance and interaction with interfaces, systems and automation used to control and monitor air traffic. We are particularly focused in NextGen operation and systems.

7. What outlets do you use for your research?
All HFES's publications are extremely useful. I use HFES publications for general human factors and ergonomic research. For mathematical modeling, I liked some IEEEs publications and some specialized journals depending on the modeling technique. For usability, there is a variety of online resources that are extremely helpful. Government agencies’ technical reports are also an important source. I obviously attend HFES’s conferences since they are the most focused on our field. However, as an industrial engineer I attend the institute of Industrial Engineering annual meetings, some AIAA meetings for system safety and the American Society of Safety Engineers. The Aerospace Medical Association (ASMA) has an interesting annual meeting with emphasis on human factors through its Aerospace Human Factors Association.

8. What is the most exciting incident or research you have been a part of?
That will be my current research. I am part of a group at the FAA that conducts research on NextGen technologies and procedures for Air Traffic Control. We use a variety of tools and simulators to conduct human, system performance and usability experiments. Full simulation environments are used in some of our experiments and for others we conduct walkthroughs or knowledge elicitations. We are analyzing ATC tools and interface objects to extract commonalities that can be translated into requirements for both terminal and en route airspace control.

9. Is there any advice you would give to a person wanting to pursue a career in aerospace human factors?
My advice is to try to have a multidisciplinary program of study especially from engineering and psychology and social sciences. A human factor professional will benefit from having knowledge of areas such as; mathematical modeling, programming, systems engineering and even behavioral economics among others. A special interest on equipment and techniques to assess human performance is a must in our field.
This year we come to the close of yet another two-year ASTG cycle. The Program Chair has put together another good meeting program, and we look forward to seeing many of you there. We met some years ago in Chicago, and my daughter (in from Madison) and I wandered Michigan Avenue, bought a mug at Pottery Barn (I still have it), and went to a comedy club… Might have actually been Second City. I am looking forward to another good meeting week in the Windy City, but hopefully it won’t be TOO windy. Really, there are limits… I don’t fly the helicopter any time the winds are steady over 20 knots or gusting over 25… It’s just more relaxing that way.

Paul Havig, your incoming ASTG Chair, will not be able to physically attend the meeting due to travel restrictions, so we will attempt to make him accessible via telepresence. If successful, he will look just like himself. If not successful, he may have the head of a fly when he appears (did you like the original in the 50s with Vincent Price, or the remake with Jeff Goldbloom? I liked the original with the little fly with man’s head squeaking, “Help me, help me…”). Your treasurer is also unable to attend, so we will gather the reports and present the data for them. Not much has changed since last year, meaning we are in good shape all around. The TG meeting will be the usual day and time: Wednesday October 29, 3:30 to 5:30 PM.

There are some notable things happening in aerospace and I have included some of them following for your consideration as they seem to have a considerable impact on future flying (atmospheric or not) and some actually may require additional HF attention. Thanks for having me, again, as ASTG chair this time around. It is always an interesting and dynamic experience.

48 submissions total 35 accepted (73%)

Breakdown:

4 discussion panels all accepted (100%); 1 invited symposium with 6 speakers all accepted (100%); 24 papers submitted 17 accepted (71%); 14 posters submitted 8 accepted (57%

So we will have

4 Discussion panels; 1 Invited Symposium; 4 Sessions (2 with 4 papers, 2 with 5 papers); 14 posters
Longest flight from US to anywhere


Quantas just took the “crown” for the longest flight departing the U.S. to anywhere. Formerly it was Delta’s Atlanta-to-Johannesburg flight. Now Quantas is offering, on the A-380, a flight from DFW to Sydney. The flight is 7.452 nm in length, and the longer time occurs going from DFW to Sydney at 15 hours and 30 minutes.

What are the implications for everyone involved? Looks like multiple crews, and can you imagine spending 15 hours plus in an aircraft, even the A-380? Sounds to me as if some HF practitioners might have an opportunity to make suggestions to Quantas about all of this.

Wireless in the cockpit: Do we want distracted flying, too?

A major avionics manufacturer now has a wireless interface for cockpits, Bluetooth, that can send GPS position, weather, and traffic data to an Apple or a compatible Android tablet running an app. The idea is apparently to provide these displays for “lesser aircraft” as the article calls them, that do not have panel space or have such displays installed. With their second-level interface device, one can transfer flight plans to and from the installed avionics. This, of course, raises all kinds of interesting issues involving the use of an unapproved device (which is not permanently installed in the cockpit and thus not subject to certification criteria) to potentially create and enter flight plans, the issues with the tablet physical interface with the pilot (menus, etc.), and the security issues involved in being able to transmit something into the onboard avionics. There may be potentially significant workload issues involved, but it is not apparent that workload evaluations are available.

Speaking of wireless and flight-deck impacts, it turns out that Boeing determined that some displays on 737 and 777 models, as I understand it, are subject to interference from WiFi and cellular devices, and carriers having aircraft equipped with those displays are now going to be required to replace the displays with hardware that is not susceptible. Thus, yet another possible source of the blank-screen effect, and you thought the Microsoft blue screen of death was bad… at least that usually happens at your desk, on the ground. It certainly makes one who was trained on round dials think about how simple all that was in comparison. Those displays generally didn’t go blank unless YOU did…
Is more technology always the solution? Night vision Goggles in civilian aircraft operations: Able to do more or just able to see better?

Rotor & Wing Magazine had an article in the October 2014 issue about getting night-vision goggles certified. Much has been made of authorizing the use of NVGs for HAA (Helicopter Air Ambulance) operations to ostensibly improve safety. However, the article aptly points out that approved use of NVGs per the current regulations is such that “…goggles are to be used only when conducting visual flight operations as defined by the current regulations. It will not enable any mode of flight that cannot be flown visually within the framework of the existing rules.” So, the notion that some people have that using the NVGs will allow one “to boldly go where no one has gone before” is simply inaccurate. This is, in many ways, a parallel to what we have seen with synthetic-vision displays (view of outside world derived from a database). Those are largely billed as for terrain advisory and orientation/situation awareness, not as a means to conduct nap-of-the-earth flight in civil aircraft. However, there have been misconceptions in abundance as to what one was actually allowed to do with those displays. We recently conducted some experimentation on the use of SVS for approaches and whether one could reduce the approach minima (runway visual range and decision height) when the aircraft was so equipped. Flight Standards is looking at whether or not additional credit CAN be awarded for having this equipment. There are still a number of issues associated with each that need to be resolved prior to pilots being able to do MORE, legally, when they have such equipment than if they do not. Some certifiers make the argument, “Better off with it than without it.” However, we did studies some years ago on what pilots would do with increasingly higher resolution of NEXRAD weather displays, and found that the more detail (higher resolution) in which the convective cells were depicted, the more likely pilots were to try to “shoot the gap” between cells. So, as is true of so many things in life, more is not necessarily better.

Autopilot and automated systems hit the pages of Vanity Fair


William Langewiesche just had an article on Air France 447 published in Vanity Fair. It’s always a dead giveaway when you see something in which the first section is titled, “Into the night.” As of 10/2, there were 56 posted comments replying to the posted article. So, the debate goes on regarding what might have been under other circumstances (i.e., who was or was not in the cockpit). It is, of course, very much a popular-press article, but something to which even my division manager drew my attention. Take a look at it if you have a minute.
Know It All:
Aerospace Trivia

Mystery Aircraft. Identify the aircraft below:

Please email me ericjstearman@gatech.edu with your answer and put ASTG trivia in the subject line.

I had several correct responses to the last mystery aircraft. However, the first person to correctly respond was Steven Casey. Congratulations on being last issues Know It All!!

Message From the Editor
Eric Stearman

I hope you enjoyed this newsletter. I would like to give a special thanks to Angel Millan for letting my interview him, as well as Dennis Beringer and Paul Havig for providing information for the newsletter.

If you ever come across an interesting article or event you would like to share with the members, do not hesitate to contact me at ericjstearman@gatech.edu. I would be more than happy to spread the information through the newsletter. Just make sure to include ASTG Newsletter it the subject line to make it easier for me to find.