Aerospace Human Factors Association

A Constituent Organization of the Aerospace Medical Association

NEWSLETTER

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SPECIAL ANNOUNCEMENT REGARDING AsHFA MEMBERSHIP DUES

A recent review of our membership records has revealed that a large number of our members owe dues...not only for the current year, but also for a much as two years in arrears. The by-laws of the Aerospace Human Factors Society state that members can be removed from the active membership list when dues are not current. We therefore strongly urge you to send your dues (both current and back-dues if owed) to the AsHFA Secretary Treasurer, Dr. Tom Nesthus.

Secretary-Treasurer
Thomas E. Nesthus
FAA CAMI AAM-510
P.O. Box 25082
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INSIDE THIS ISSUE

FROM THE PRESIDENT'S DESK…..

Greetings colleagues from sunny and hot Oklahoma City. I hope the summer has proven as enjoyable and eventful for you as it has for me. It's certainly hard to believe that we are already busily writing abstracts and deep into planning for next year's meeting in Montreal. After all, it seems like we just got back from Reno. Nevertheless, I am looking forward to visiting Montreal in the springtime. Indeed, like many of you this isn't my first visit to Montreal, so I can personally attest to the multitude of things to do during the week – after attending the daytime sessions of course...

Speaking of the meeting in Montreal, your program committee (chaired by Dr. Larry Bailey) is busy organizing several panels for next year's meeting. Several suggestions for panels were made last year in Reno and it looks like at least three of those are firming up. In no particular order, they include: 1) Implications for General Aviation Safety and Training – Organized by Scott Shappell, 2) HFACS across aviation domains – Organized by Douglas Wiegmann, 3) Shiftwork in ATC – Organized by Tom Nesthus. We still are working on a couple of panels on the topic of: 1) Human Factors in Space Flight – Organized by Dwight Holland, and 2) ATC Operational Concepts – Organized by Carol Manning and Pam Della Rocco. This could be a big year at the meeting and I hope you plan to attend these sessions should they be submitted and approved by the Executive Committee.

On a slightly different topic, I would like to take this opportunity to once again offer my personal congratulations to our recently elected officers. For those of you who missed the announcement at the meeting in Reno, Dr. Thomas Nesthus has been elected as AsHFA President for 2002-2003. This leaves us with a bit of a dilemma as Tom has been the Secretary/Treasurer for the last few years and can't hold both offices. As a result, we are looking for a volunteer to hold the position for the next 2-3 years. If you are interested, or know of anyone, please contact Tom or myself for details. That being said, I would also like to congratulate Dr. Carol Manning, our elected Representative to Council and Dr. Douglas Wiegmann, our one of three elected Members-At-Large. Please note that we will once again be electing a President to succeed Tom in 2003-2004 and a Member At-Large in the fall. If you are interested or want to nominate someone, please contact Tom Nesthus.

On a slightly different topic, I am pleased to announce that in addition to the Henry L.Taylor Founder's Award and the Stanley N. Roscoe Award for the best doctoral dissertation in the field of Human Factors, the Executive Committee has unanimously agreed to create the William E. Collins Award for the outstanding manuscript authored by an AsHFA member and published in

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FROM THE PRESIDENT'S DESK…..

(continued from Page 1)

Aviation, Space and Environmental Medicine. This year will be the inaugural presentation of the award. As with the other awards, the recipient will receive a plaque. However, a small monetary award may also be possible depending on funding. Currently, we expect to have about $900 designated for the William E. Collins Literary Award as a result of proceeds from a workshop on the Human Factors Analysis and Classification System (HFACS) held at the International Symposium for Aviation Psychology last year.

Speaking of proceeds from workshops, we have received $1000 from the HFACS workshop held at last year's AsMA Meeting in Reno, NV. The Executive Committee voted to split the proceeds evenly between the Henry L. Taylor Founders Award and the Stanley N. Roscoe Award. It is expected that additional proceeds will be obtained from similar workshops at the Human Factors and Ergonomics Meeting in Minnesota and next year's AsMA meeting in Montreal. This should go a long way toward fully funding our annual awards in the future. However, workshops alone cannot fully endow these annual awards. In fact, you have probably received in the mail a call for donations to the Henry L. Taylor and Stanley N. Roscoe awards. I would like to encourage you to participate in the fund drive that will establish these awards as permanent fixtures within AsHFA.

Finally, I would like to close this brief message with my personal best wishes for our founder, Dr. Henry Taylor on the occasion of his retirement. For those of you who may have thought that Dr. Taylor would ride off into the sunset, he is doing anything but. He will continue to do research traveling back and forth from his North Carolina home to the University of Illinois where he will remain Professor Emeritus. In addition, he will continue to be extremely active within AsHFA, AsMA and APA. In fact, Dr. Taylor has recently been elected President of APA's Division 19 (Military Psychology) and is serving as the Representative to Council for Division 21. Best of luck Dr. Taylor and I look forward to seeing you and the rest of our colleagues in Montreal.

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RECRUIT A NEW MEMBER TODAY!

The Aerospace Human Factors Association

EDITORIAL

Colleagues and friends, the unthinkable has occurred; a direct murderous attack on the United States by terrorists using commercial airliners filled with helpless passengers as their weapons. The unspeakable horror witnessed by the world this past week is a 'wakeup call' to all that we dare not remain complacent about our safety and security. Many of us have now been tasked with identifying and countering the plethora of hazards associated with terrorism. The road ahead will not be easy, and will require a great deal of commitment by us all. Let us therefore remember those many who have fallen, and resolve to use our collective resources to help keep this from happening again.

CDR Andrew H. Bellenkes, Ph.D. USN

The views expressed here reflect those only of the author and not necessarily those of the U.S. Navy, Dept. of Defense, the Aerospace Medical Association or Aerospace Human factors Association.

CALL FOR NOMINATIONS FOR ASHFA PRESIDENT **Nominations are currently being sought for the position of AsHFA President for the 2003-2004 term. If you know of a colleague (or perhaps you, yourself?) who you feel would best serve our organization in it's highest executive leadership position, please consider nominating that individual today. All nominations (and any questions about the position or nomination process) should be sent directly to AsHFA President-Elect, Tom Nesthus, Ph.D. via e-mail at sshappell@mmacmail.jccbi.gov, phone at (405) 954-4082, fax at (405) 954-4852, or normal Post to 7711 Copper Oaks Drive, Edmond, OK 73003. The nomination period will close on January 31st.**

ASHFA MEMBERS IN THE NEWS

AIR FORCE RESERVE OFFICER "JOINS" THE NAVY

By JOC Barbara Shupe, USNR

NAVAL AIR STATION PATUXENT RIVER, Md. -- In a move believed to be a first, an Air Force Reserve officer is teaching a variety of Navy personnel aspects of aircraft Crew Systems Analysis at the prestigious U.S. Naval Test Pilot School, in Patuxent River, Md. And he's there because the Air Force has authorized his attachment to a Naval Reserve Volunteer Training Unit (VTU).

Air Force Reserve Capt. (Dr.) Dwight A. Holland, son of Rod and Darhlene Holland of Roanoke, Va., began a three-year stint as an instructor at the USNTPS in May of 2000, while completing his Ph.D. in engineering at Virginia Tech. When he's not on loan to the Navy for up to 10 days at a time, Holland also holds an Air Force Reserve billet as a Program Manager for the International Office in the U.S. Air Force Office of Scientific Research-- a branch of the Air Force Research Lab -- and operates a consulting firm he and a partner founded in 1990. In addition, he also consults with NASA and other DoD entities routinely on a wide variety of problems that relate to space flight and human performance in the aviation environment.

"Right now, my Navy job isn't to teach people to fly," Holland explained. "I develop and teach short course classes in sensory processes, controls, displays and their applications to the flight test world."

"I am also upgrading and helping to review the modules of training in Human Information Processing, Situation Awareness and other related Systems/Human Factors Engineering topics," he continued. "We (faculty) critique each other's lectures and incorporate changes routinely."

This constant upgrading provides students with up-to-the-minute techniques, which enable them to better process the relentless barrage of information assailing today's aviators in the cockpit.

Established in 1945 as a short course to train Navy pilots, USNTPS has grown to embrace both fixed-wing and rotary-wing curricula and broadened its faculty and student base. An active duty Air Force instructor has been assigned to the faculty for 20 years, and each class has at least one Air Force student. The respected Navy institution recently formalized a 40-year-long relationship with the Army to become the Army's Test Pilot School as well. One distinguished graduate of the USNTPS is Marine Corps Major John H. Glenn, who went on to become an astronaut and U.S. Senator. Other graduates have served at all levels in the naval community, including some that also became NASA astronauts.

The Naval Air Systems Command's "University of Flight Test," USNTPS instructs not only pilots and flight officers, but also Test and Evaluation engineers, program managers, logisticians and others. Although NAVAIR is its main customer, students include civilians, military officers from every service, enlisted and international students that have the need to learn certain aspects of the flight test domain. The school maintains and operates more than 20 aircraft, as well as a variety of simulators. It is the only source of helicopter test pilots and engineers in the U.S. government or industry.

Capt. Dwight Holland at the Naval Air Station Patuxent River.

Military aviators, who are required to have at least 1,000 hours of flight time when the class convenes, do not immediately return to the fleet, but usually serve a tour in a Test and Evaluation role. However, USNTPS is currently is developing a program for training fleet F/A-18 pilots in direct support to "the pointy end." For now, most graduates normally serve a 24- to 30-month follow-on tour at the Naval Air Warfare Center Aircraft and Weapons Divisions applying what they have learned.

The path that lead to Holland's unprecedented reserve attachment to USNTPS began in 1985, when he met Cmdr. (Dr.) Sonny Carter, a student test pilot and flight surgeon at USNTPS. They hit it off, Holland said, because Carter also had a keen interest in Crew Systems matters. Carter later became an astronaut and Holland's mentor as well prior to his death in a civilian plane crash in 1991.

"Since meeting Dr. Carter and learning about USNTPS, I had wanted to attend or teach at USNTPS, or at Edwards AFB (the home of the USAF Test School), but there was, and still is, no 'formal' billet for my specialty here," Holland explained. Since there was no reserve unit nearby and his workload as a graduate student and Cunningham Fellow at Virginia Tech was so demanding, Holland transferred to the Air Force inactive reserve. It was during his reserve hiatus

that Holland attended a seminar in Houston and chanced to meet Dr. Jim Casler, a former Marine Corps test pilot.

"Eighty percent of mishaps involving loss of life, limb and aircraft are due to the human element," Casler said. He had taught classes designed to combat this dilemma in USNTPS's 48-week-long program and recognized the need for upgrading such training in the school's short and long courses. Casler asked Holland to join with him to help create and teach courses in the Crew Systems area that deals with Human Factors/Systems integration.

Holland agreed, but there were obstacles to be overcome. First, there had never been a Reservist attached to the staff, let alone an Air Force Reservist. Further, Holland would be required to drill for days at a time instead of the traditional one weekend a month. Lastly, there was no formally coded billet for such a position. Clearly the situation called for "out-of-the-box" thinking. Thus began the groundbreaking process of bringing Holland aboard through the joint efforts of the Air Force and Naval Reserve systems.

"The (U.S. Navy) Test Pilot School brings in guest lecturers with different perspectives from time to time," Casler said. "Commander (Dave) Woodcock, with his Reserve channel, offered an approach we couldn't necessarily have taken (with more traditional billet coding)."

Woodcock is commanding officer of the Naval Reserve VTU squadron Holland is assigned to at NAS Patuxent River.

"The Air Force assigned him to my squadron," Woodcock explained. "I'm responsible for him administratively, but, as a flex driller, his work assignments come from the school."

Woodcock is among those Holland credits with helping and pursuing Casler's vision for the curriculum, a vision now endorsed by John O'Conner, a recently retired Navy helicopter test pilot and new Short Course department head.

For his part, Cmdr. Rich Brasel, USNTPS executive officer and future TPS Skipper said, "The CO (Capt. Bob Stoney, USN) and I were very excited about the prospect of adding an accomplished scholar and recognized expert in Human Factors to the USNTPS staff."

Holland also recognizes Capt. Scott Beaton, USNR, commanding officer of Naval Air Facility, Washington (to which Holland's VTU squadron belongs), and Les Scott, the USNTPS civilian technical director, for their extraordinary support.

Holland says it took quite a bit of time and communication to get all of the stakeholders properly informed and comfortable, but once the decision was made to proceed, things have been "as good as they possibly can be."

"I'm a lucky guy to be doing what I enjoy," Holland said of his appointment to the USNTPS. Lucky or not, Holland was also qualified.

In addition to a civilian pilot's license (commercially rated), U.S. Air Force officer and pilot training and his Ph.D., the 1978 graduate of Cave Spring (Roanoke, Va.) High School holds bachelor's degrees in mathematics and physics and master's degrees in geophysics and systems engineering. He has logged more than 2000 hours in 35 different aircraft – both civilian and military.

Holland has authored two theses and a dissertation. Further, he has written, co-authored, chaired or co-chaired more than 60 academic or scientific articles, papers and panel presentations in geophysics, systems engineering, flying safety and human performance in a variety of environments. He belongs to eight academic, or honor/leadership societies and has held numerous fellowships, including that of NASA/Stanford Faculty Fellow. Other honors and distinctions crowd his 11-page curriculum vitae. In 1984-85, when the U.S. Antarctic Research Program, based in Antarctica, discovered the hole in the ozone and the "Mars" meteorite, Holland was there. He spent three months with the program in Antarctica in an unheated tent in a remote field camp as a technical engineer and field geophysicist.

After a year at UNSTPS, Holland said adapting to the "Navy way" has had some lighter moments. "One of the first things I had to do was ditch the (flying) scarf!" Holland said, recalling the kidding he received when he wore the customary USAF pilot's accessory to school one day. When his flight suit nametag arrived, the Air Force wings embroidered on it sported "Navy gold" thread instead of Air Force silver, a gift that he wears with pride. Then there was the Navy lexicon. Now whenever he hears Navy terms such as "deck" and "head," he knows they mean "floor" and "bathroom." "(Learning the lingo) is an ongoing challenge," Holland said with a grin.

This son of a former Navy enlisted man said his childhood interests included a rock collection, chemistry set, model ships and airplanes, and a GI Joe complete with a space suit and Mercury Space Capsule. He jokes that nothing's changed, because he still enjoys nearly all of these pursuits as an adult -- geophysicist, USAF officer, researcher, pilot and part-time Sailor! And applying to the space program, he said, remains a possibility.

In the meantime, there is no such thing as a typical day for this extraordinary instructor, and perpetual student. To keep current on how the flight test community operates, Holland often takes classes and short courses at the USNTPS on Flight Testing Techniques, Flying Handling Qualities, and Crew Systems, among others.

"I've taught, studied or worked for the Navy in some capacity nearly 80 days so far this past year," Holland said in June. "And just this month I have all of my water qualifications completed in helos, props, and jets!" With the

support and encouragement of Woodcock, his Navy skipper, Holland also completed the Navy Leadership School and qualified as an expert in the Navy Handgun Weapons course.

Holland said he hopes his Navy adventures will continue. "Serving with the officers, faculty and students in the Navy's Test Pilot School has been one of the best years in my life, and I deeply thank the officers and faculty there and in the U.S. Air Force Reserve for helping make it happen," Holland said. "Gen. Les Lyles, of the Air Force Materiel Command, personally approved my being attached here in a phone conversation this past January. Without support at that level, it might have been difficult to stay and continue my work here, given that I have other Air Force Reserve responsibilities at the Office of Scientific Research to fulfill as well, " said Holland. "I am looking forward to many more years of association with this fine school and the great people on the faculty and staff that work here --they are truly exceptional in every sense of the word -- professional, talented, and very easy to work with. Being affiliated with this school and the Naval Reserve folks in my chain such as Commander Woodcock, John O'Conner, and Captain Beaton, has been a high point second to none in my life."

ASHFA MEMBERS IN THE NEWS

Dr. Melchor Antuñano named to head FAA's Civil Aeromedical Institute. Background, CAMI research vehicle, earthbound former Air France B-747 near the Institute. FAA Photo by Roland Herwig

Dr. MELCHOR ANTUÑANO HEAD, FAA CIVIL AEROMEDICAL INSTITUTE

Reprinted with permission from MMAC ***Intercom*****,** February 12, 2001. Intercom Office of Public Affairs (AMC-5), Mike Monroney Aeronautical Center Oklahoma City, OK

Melchor J. Antuñano, MD, MS, is the new manager of the Federal Aviation Administration's Civil Aeromedical Institute (CAMI) in Oklahoma City, replacing William E. Collins, PhD, who retired Jan. 2.

Since he joined the FAA in 1992, Dr. Antuñano has served as manager of CAMI's Aeromedical Education Division, engaged in the policy development, planning, evaluating, and administering aviation medical examiners, aeromedical education programs, and aeromedical publications. The division also hosts a specialized library for aeromedical and aviation safety research.

"My new job (is) a very interesting, challenging and professionally rewarding opportunity to lead a world class team of employees," Antuñano said. The job provides "an excellent opportunity to promote CAMI's world-leading role in aerospace medicine…and to pursue collaborative efforts and establish friendships with colleagues around the world," he added.

The Civil Aeromedical Institute is the medical certification, research, education, and occupational health wing of the Federal Aviation Administration's Office of Aviation Medicine. Focus at CAMI is on the human element in flight — pilots, passengers, air traffic controllers — and the entire human support system that embraces civil aviation.

Born in Mexico City, Mexico, Dr. Antuñano is a graduate of the National Autonomous University of Mexico School of Medicine and completed post-graduate training in aviation medicine at the Mexican government's National Center of Aviation Medicine in Mexico City. He is a graduate of the Residency Program in Aerospace Medicine at the Wright State University School of Medicine in Dayton, Ohio.

Antuñano was awarded a post-doctoral research fellowship by the U.S. National Research Council of the National Academy of Sciences. He is credited with 264 scientific presentations at national and international conferences in aerospace medicine in the U.S. and abroad, and with 44 scientific articles covering a variety of aerospace medicine topics.

He is Fellow and vice-president of the Aerospace Medical Association (AsMA), past president of the Iberoamerican Association of Aerospace Medicine. He is member and selector of the International Academy of Aviation and Space Medicine, president-elect of its Space Medicine Branch, and a member of other national and international professional societies in aerospace medicine.

Antuñano is a faculty member at Wright State University School of Medicine, at the Medical Sciences Division of Oak Ridge Institute for Science and Education, at the University of Oklahoma Health Sciences Center, and at the University of Texas Medical Branch.

He is recipient of the Secretary's Award for Meritorious Achievement: Silver Medal granted by the Secretary of the U.S. Department of Transportation for "outstanding accomplishments in promoting aviation safety in the U.S. and abroad through aeromedical education."

SCHOOL OF AVIATION SAFETY FIGHTS CIVILIAN AIRLINE ACCIDENTS

by Barbara Honegger
Senior Military Affairs Writer
Naval Postgraduate School

The Naval Postgraduate School (NPS) School of Aviation Safety, a world leader in identifying and reducing military pilot and crew error, is also on the cutting edge of transferring 'human factors' lessons learned to the civilian aviation community.

Under the pioneering leadership of Prof. Anthony Ciavarelli, the School's multi-faceted effort to reduce civilian as well as military aircraft accidents includes opening its courses to commercial airline pilots and safety managers; working with major airlines, the FAA and NASA to improve commercial crew performance and crew management training; adapting its successful web-based Navy Command Safety Assessment Survey for use by civilian airlines; and sponsoring conferences that bring together leaders from the military and civilian aviation safety communities.

"With naval aircraft losses dropping substantially over the past 50 years, all the 'low hanging fruit' have already been picked, so it takes an even greater research and analysis effort to get higher on the tree and get the rate down even further," said Capt. John Ford, Director of the NPS School of Aviation Safety. "The ultimate goal, of course, is zero mishaps and a zero loss rate. But with human error still responsible for 80 percent of all accident causal factors, military and civilian, as the research and teaching side of Navy aviation safety, the NPS School of Aviation Safety has made human factors a major focus of our research and educational efforts. And that's where the bulk of our future effort has to focus also."

"Human factors, in the aviation context, is an umbrella term for a broad range of research on the human components of flight safety and risk management. According to Aviation Human Factors Safety officer Cmdr. Andrew Bellenkes, a specialist in the man-machine interface advanced weapons system design at the NPS School of Aviation Safety, "It encompasses psychological, aeromedical, engineering and performance-based descriptions and analyses of the capabilities, limits, and plethora of interactions among aircraft, aviation support equipment, and the people who use and maintain them Human factors also extends well beyond just an aircraft's crew to include all aspects of an organization's chain of command, right up to the highest management levels".

"The NPS Aviation Safety School faculty is the tip of the spear in this field," Bellenkes stressed. "We represent not just a wealth of experience in what we teach, but also in how we teach it-and in making sure it gets used. This is what makes NPS such a critical resource, both for military aviators and their commercial counterparts"."

"The NPS School of Aviation Safety is the only military academic institution with a quick, highly focused, applied course on aircraft accident prevention, investigation and analysis," said Ciavarelli, now Associate Provost for Instruction as well as Professor of Psychology with the School of Aviation Safety. "Yet when I came here in 1989, the program had no aviation human factors segment specifically dealing with human performance, organizational factors and safety risk. I developed the human factors portion of the Aviation Safety School curriculum, which was the first anywhere in the world for flying aviators. Then an integral part of our command and air safety officer courses, this new segment was taken by Navy and Marine Corps air safety officers and soon got the attention of the other services, the FAA and NASA, and reservists flying for the commercial airlines."

"The NPS School of Aviation Safety has a quid pro quo relationship with the commercial airlines' safety programs," said Dr. John Schmidt, until recently with the School's human factors faculty and now with the Naval Safety Center. "Corporate safety personnel can take the one-week command class, and commercial safety department personnel can enroll in the six-week safety officers' course."

Capt. John M. Cox, a U.S. Airways pilot, chairman of its Airline Pilots Safety Committee, and vice chairman of the Executive Air Safety Committee of the 58,000-member Airline Pilots Association, took the NPS command course three years ago. The program is designed for commanders and executive officers of aviation squadrons and activities and for senior staff aviation safety officers, but is also open to interested and qualified civilian aviation professionals.

"When I attended the NPS executive course, I was a Boeing 737 captain, had worked six major NTSB (National Transportation Safety Board) accident investigations, and was the only civilian in the class," Cox recalled. "What quickly became clear was that the military and civilian aviation safety communities have so much in common -- especially their emphasis on prevention -- and that advances in one arena are almost certain to be applicable in the other. Despite some major differences in timing and approach -- military aircraft mishap investigations, for instance, can be completed in as little as 30 days whereas a civilian accident investigation can take up to five years -- there are advantages to both depth and speed, so the exchange between the military and civilian air safety disciplines is very much beneficial to both. A large number of military aviators will end up in a commercial cockpit – up to 50 percent of commercial pilots today previously flew for the military -- so a course like this is essential and can only improve their knowledge and effectiveness as safety advocates. It's a very, very good course which provided me with an excellent background and tools that can be usefully transferred to the civilian arena."

"We thought so much of one of the human factors instructors in that command course, in fact – (then) Marine

Corps Lt. Col. Robert Figlock -- that we flew him out to speak at our U.S. Airways Airlines Pilots Association annual joint safety meeting in Pittsburgh," Cox recalled. "To encourage cross fertilization between the military and civilian air safety communities, we had invited safety officers from all of the branches of the military services to attend this same meeting two years before." Figlock had previously served as deputy director of the Marine Corps War College, Marine Corps University.

"The NPS School of Aviation Safety course is on the leading edge of aircraft safety curricula," agreed Lt. Col. Jack Buckingham, USMC (Ret.), a former CH-46 and C-12 pilot who is now vice president for maintenance quality assurance at Aloha Airlines in Hawaii and completed the six-week Aviation Safety Officer (ASO) program. "The course was an excellent opportunity to meet and talk with top experts in the field and refresh all professional aspects of aircraft safety including human factors, which has grown in importance in both the civilian and military worlds. What you learn there translates well across all boundaries."

"What military aviation has to offer most is that we can push the hard edge of maximum performance much further (than commercial pilots) and can share those lessons learned in terms of how to stay within the 'safety zone' with the commercial aviation safety community,'" said Richard Healing, Director of Safety and Survivability for the Dept. of the Navy. "And what we have to share that's most unique to military aviation safety, we practice here (at NPS) better than any place else. Also, because half of all commercial airline pilots today received their pilot training in the military and came through this (NPS Aviation Safety) School because it's mandatory, a large number of our commercial pilots have received the best safety education there is."

"The NPS aviation safety faculty is the 'tip of the spear' in this field," Bellenkes agreed. "Together, we represent not just a wealth of experience in what we teach, but also in how we teach it – in imparting information to junior officers. We're dealing with an inherently risky environment and real lives, so it's essential that they not only 'get it,' but that what they 'get' gets *used*."

"Unfortunately, we don't yet know enough about risk factors to determine the relative probability of a crash happening in one airline versus another," Ciavarelli explained. "To address this need, once the human factors segments were in place in our aviation safety officer and command curricula, myself, Bob Figlock and two masters students -- Cmdr. Fred Mingo and Lt. Jonathan Held -- developed a new organizational survey to assess the safety climate, safety culture and safety program effectiveness of high-risk organizations like air safety commands. Mingo and Held developed the CSA operational software and web-based system and another student, Lt. Cmdr. Thomas Williams, did Fleet usability testing and human interface design review and analysis. Prof. John Schmidt came on board and developed the Maintenance (Safety) Climate Assessment Survey, similar to the CSA but used for maintenance personnel funded by NASA/Ames, and is now with the Naval Safety Center. Beginning last August, both of these command safety assessment surveys can now be taken, and fully automated results received, on the Internet."

"The Command Safety Assessment (CSA) Survey -- which focuses on the key organizational issues that relate to a command's influence on the chain of events that lead to an aircraft mishap -- and the Maintenance Climate Assessment Survey (MCAS), focusing on key maintenance issues relating to a command's influence on the same, have been incredibly successful," noted Figlock, professor of human factors with the NPS School of Aviation Safety. "To date, over 5,000 individuals have taken these anonymous, voluntary surveys, whose privacy-protected results can be made available to a commanding officer on line once the 60 percent response level is attained. That's one third of all pilots, aircrew and maintenance personnel in our Navy and Marine Corps squadrons, and it's only been available on line for six months."

Anyone can take a sample CSA survey and see the robustness of its automated analysis (COs can compare their unit's results with those of other squadrons and aircraft communities) by visiting avsafety@nps.navy.mil.

"Our new web-based command safety surveys have captured the attention not only of the civilian aviation safety community, but also of the Veterans Administration hospitals and the nuclear safety community, including Lawrence Livermore Laboratory," said Ciavarelli. "In response, we're developing a generic prototype survey for use by civilian airlines and others. And we've been in discussions with a major airline on applying an adapted version of the CSA and Maintenance CSA to assess their organization and operations," Ciavarelli said.

"The power of these (online automated questionnaire survey) tools is the ability to make comparisons with other squadrons," said Figlock. "Now the commercial airline community wants to be able to use them, and we need to figure out who would be able to have access under what conditions, etc. because of the greater sensitivity in the private sector to legal liability. "

"What Tony (Ciavarelli) has done with the Command Safety Assessment is unique and will be a very important tool for commercial aviation safety," said Healing. "It started here, and it was able to start here (at NPS)."

The military squadron COs can't seem to praise the new online surveys enough.

"It was amazingly simple and pain free, and took just 14 minutes," said one. "The Command is actually excited to take it, something I don't expect from a Hornet squadron," noted another.

NPS Aviation Safety School faculty are also on the road a lot.

"We produce workshops for ground crew coordination training. For example, we did one for TWA three weeks ago. We also give talks for commercial airline pilots' organizations like the Airline Pilots Association, the Air Transport Association, and the California Agriculture Aircraft Association; and for major manufacturers like Boeing," noted Schmidt, who is now at the Naval Safety Center and is working under a research grant from NASA/Ames on "Human Error in Maintenance: Risk Assessment and Strategic Interventions."

"We go to seminars and safety culture workshops and tell our counterparts on the civilian side what we're doing and why we're doing it, and the light bulbs go on," Figlock agreed.

"We awarded this research grant to NPS because the results have applications well beyond the military," said Dr. Barbara Kanki, crew factors research psychologist at NASA/Ames who oversees the grant. "When most people think of NASA they think of space and planetary science; but the first 'A' in NASA stands for Aeronautics and the work of my division in operational risk assessment and maintenance resource management is primarily directed at the commercial airlines. We share all of our program planning and review with the (commercial) Air Transport Association, and we're really keyed in to and respond to what they need."

NPS Aviation Safety School faculty also maintain key consultantships and networking relationships.

"I've consulted with the FAA's Air Transport Committee for Crew Training, and helped prepare their crew resource management training circular that suggests improvements in cockpit crew communications and sets out the criteria for advanced simulation training," Ciavarelli noted. "In the early 1990s, I also developed performance criteria checklists for United Airline's Advanced Qualification Program and its crew resource management. And I'm currently developing an online version of the human factors portion of the NPS Aviation Safety School command course."

The NPS School of Aviation Safety recently co-sponsored a high-level working conference, "Aviation Education 2020," with Embry-Riddle Aeronautical University and NASA/Ames. The goal of the workshop, held here Jan. 30-31, was to develop an actionable vision to guide aviation professional universities in their curricular, technology, facility, recruiting and financial planning for the two-decades-out timeframe; identify the human factors understanding needed by graduating aviation industry professionals 20 years in the future; and jointly vision the systemic changes needed to minimize airline accidents in 2020 and beyond. The roster of 40 hosts, panel members and participants included leaders in aviation safety human factors from the military, the major airlines, airline manufacturers, private corporations, government research laboratories, and two excited and well spoken 20-something students studying to become pilots at Embry-Riddle Aeronautical University. A key participant was former head of the NPS School of Aviation Safety and former NPS Acting Superintendent Capt. Jim Burin, USN (Ret.), currently director of technical programs at the Flight Safety Foundation.

Ciavarelli has just learned that the Flight Safety Foundation will soon be distributing an edited version of his Human Factors Checklist, used to teach aviators and flight crew about the underlying causes of aircraft accidents and help them develop preventive measures, to civilian airlines worldwide.

Portions of this article were reprinted from: Honneger, B. (2001), Sharing Safety Innovations. ***Federal Manager***, 21(3).

Spotted in a recent message to Naval Fleet Aviators:

The Electric Jet Syndrome "As recent mishaps reports show, midair collisions continue to destroy invaluable lives and aircraft. These tragedies are often associated with a breakdown in visual scan and associated workload/ cognitive processes. Scan breakdown occurs when the pilot visually "locks onto" (channelizes) either external targets (such as terrain or other aircraft) or internally onto a cockpit display. External fixation most commonly occurs during bomb runs, air combat maneuvers, and formation flight (day or night). Internal fixation is most commonly observed in aircraft with the more modern head-up displays (HUDs), multi-function television displays (MFDs), and helmet-based displays (HBDs). This "electric jet syndrome" finds the pilot relying on a particular display; doing so to the decrement of any external scan. Whether a result of external or internal fixation, the resulting channelized attention causes the pilot to miss or ignore other nearby aircraft. The answer? Be aware of the dangers of scan breakdown. In the cockpit, don't become complacent; consciously maintain your external scan as appropriate."

Compartmentalization "Some aeromedical specialists feel that compartmentalization of personal problems (that is, consciously suppressing them until they can be dealt with at a later time) is necessary for mission safety. They note that mishaps occur when compartmentalization is less than optimal. Others feel that complete compartmentalization is not possible and (whether we admit it or not) will influence our performance. These specialists suggest temporarily removing the aviator from flight status prior to dealing with the problem. In this case, the individual should not be returned to flight status until the problem has been resolved. Remember that total compartmentalization of problems may not be possible. Don't risk lives based on that assumption!"

REPORT:
DEPARTMENT OF DEFENSE HUMAN FACTORS ENGINEERING TECHNICAL ADVISORY GROUP (DOD HFE TAG) MEETING #46 14-17 MAY 2001

The 46th meeting of the DoD HFE TAG held in Colorado springs, Colorado. The meeting was chaired by Major Scott Smith, USAF, Brooks Air Force Base, San Antonio, TX. Approximately 100 people attended the meeting, representing the US Army, US Navy, US Air Force, OSD, DISA, NTSB, NOAA, NASA, FAA, academia (including the United States Military Academy and US Air Force Academy) and several human factors-related technical societies and industry associations.

Plenary Session Presentations:

Lieutenant General Roger DeKok, Vice Commander of the Air Force Space Command, Peterson AFB, CO. General DeKok provided the keynote opening for the 46th TAG meeting, the theme of which was **"Space: Meeting the Challenges for Exploitation by the Warfighter."** To set the stage, general DeKok provided some powerful statistics. There are now in excess of 700 satellites in orbit; this represents in excess of $100 billion in annual business, with more than 20,000 companies involved. In the US alone, this represents an annual impact of $60 billion per year. The US has invested more than $500 billion since 1996. In the next 10 years, between 500 and 1,000 additional satellites will be launched.

Space represents the ultimate "high ground." It allows global coverage without over-flight restrictions. Satellites are lasting between 15 and 20 years and they provide coverage 24 hrs. a day, seven days a week. While the space shuttle orbits at about 300 miles, satellites orbit from 22,000 miles to 12,500 miles.

The mission of Air Force Space Command is to provide:
- National Security
- Force Enhancement (helping the warfighter)
- Space Control (offensive and defensive)
- Force Application (nuclear strike- currently via ICBM)

The Air Force Space Command mission is continuing to evolve. In the near term, there will be GPS updates, EELV, re-usable launch vehicles, improved resolution surveillance, kinetic and laser space weapons. In recognition of one contribution of the DOD HFE TAG, General DeKok recognized that the TAG had recently convinced Space Command to implement operator rotation every 15 minutes to maintain vigilance (thanks to Dr. Jay Miller's efforts).

Major General Joseph Bergantz, Program Executive Officer for Aviation, Redstone Arsenal, AL, discussed MANPRINT efforts on the RAH-66 Comanche program. [General Bergantz was previously the Comanche Program Manager.] He explained some of the success criteria that had been established for MANPRINT on the Comanche:
- Designing for the soldier
- Optimizing operational effectiveness
- Maximizing crew effectiveness
- Minimizing crew workload
- Improving Situational Awareness (SA)
- Implementing identical cockpits, front and rear
- Improved maintenance capability
- Air Warrior Compatibility

MANPRINT had impact on the following areas of Comanche design:
- Crew station designs
- Crew station design processes
- Crew station/Crew systems tradeoffs
- Anthropometric accommodation analyses
- Control/display simulation evaluations
- System Safety working group activities
- Maintainability accessibility evaluations

Throughout the Comanche development cycle, there was a lot of soldier participation in the design process.
- Soldiers were assigned to work at contractor facilities
- Soldiers performed early operational assessments
- Soldiers provided continuous expertise directly into the design
- Soldiers served as SMEs
- Soldiers coordinated contractor/Government actions.

Insofar as the Comanche crew station is concerned, the Naval Air Systems Command (NAVAIR) is currently conducting a final anthropometric accommodation check. Tools used during Comanche crew station geometry development were: Crew Chief, TAWL, HARDMAN, TOSS, HARDMAN III and MPTQ. Currently, the Comanche is being upgraded to incorporate "Pilot's Associate capabilities and improved maintainability characteristics. Training and Human Factors Engineering were so well coordinated that it was possible to deliver the training with the first aircraft.

In summary, General Bergantz was extremely well versed in human factors engineering, tradeoffs between HFE and other disciplines, as well as the role HFE should play in MANPRINT.

Human Systems Research and Development in DoD – Commander Tim Steele, Assistant Director, Human systems, ODUSD (S&T)/BioSystems. CDR Steele provided an overview of the Human Systems R&D funding picture. Over the past 10 years, the USAF has lost some ground and the Army/Navy have gained funding. Some useful web sites for the Human Systems area are: Http://www.dtic.mil/biosys, http://www.dtic.mil/dusdst, https://ca.dtic.mil/dstp, and https://ca.dtic.mil/tara/. Two of the areas being funded under Joint Vision 2020 are related to bio systems: Cognitive Readiness (information overload,

augmented reality, training) and Smart Sensor Webs (real time imagery, etc.). Cognitive Readiness is currently emphasizing the importance of people "thinking" in war fighting; that is, focus is being directed toward ensuring that war fighters are mentally prepared and that they can perform at optimal levels. CDR Steele can be reached at: timothy.steele@osd.mil.

New acquisition regulations, such as DOD 5000.2-R, are talking about technology readiness levels (7 levels). There are changes being made to the S&T planning process, such as moving from DTOs to technology roadmaps.

The Human Systems technology area is composed of four areas: Design Integration and Supportability, Information Display and Performance enhancement, Personnel Performance and Training, and Warrior Protection & Sustainment. Human Systems R&D annual funding is approximately $300 million.

A Human Systems/Information Systems workshop will be held at MIT Lincoln Labs on July 24-27. This workshop will explore the Human Systems and Information Systems technology areas, with the objective of improving relationships.

Engineering Psychology Program at West Point Military Academy – Lieutenant Colonel Lawrence G. Shattuck, Engineering Psychology Laboratory, United States Military Academy West Point. Twenty to twenty five cadets each year major in engineering psychology, which means there are about 50 engineering psychology major cadets at the academy at any time. LtCol Shattuck reviewed the excellent curriculum in place for these junior-senior cadets. The academy has an interesting system called "pre-looks" whereby cadets may submit their papers/projects early. The professor may comment on the early submittals and the students may fix them before final submittal. LtCol Shattuck can be reached at: ll6857@exmail.usma.army.mil.

Training Human Factors Engineers for an Air and Space World – Lieutenant Colonel Daryl Smith, Air Force Academy, CO. LtCol Smith identified 12 or 13 courses for human factors majors at the Air Force Academy; five foundation courses (leadership, research, experimental design and statistics), four for "breadth," four specialty courses and one "open" course. Specialty courses are available in aviation psychology, introduction to human factors, engineering psychology and human factors in systems design. LtCol Smith can be reached at: daryl.smith@usafa.af.mil.

Human Systems Information Analysis Center (HSIAC) Spatial Disorientation – Mr. Thomas Metzler, HSIAC, Wright-Patterson AFB, OH. This presentation described the creation of knowledge "Pillar" that is accessible through the HSIAC home web page at http://iac.dtic.mil/hsic. This is the first opportunity for HSIAC to create a pillar that will have in one place all of the relevant information that pertains to a given subject area within the eight domains of HSIAC.

The eight domains of HSIAC are: Human Factors Engineering, Safety, Survivability, Manpower, Personnel, Training, Habitability and Medical. These domains, within themselves, are very wide and encompass several areas of study. Some areas such as spatial disorientation involve several of these domains so this effort was initialed to create pillars of knowledge that cut across several domains and brings together the pertinent information on a given subject. The pillars focus on issues that transcend the interest of the researcher, the acquisition/ development community as well as the end user, the war fighter. This effort is possible because of the efforts of the Air Force Research Laboratory under the direction of Major Todd Heinle, AFRL/HEM, DSN 656-7011, Todd.Heinle@he.wpafb.af.mil who has contracted with Veridian Engineering. Tom Hughes of Veridian Engineering is the Program Manager, thughes@dytn.veridian.com. Veridian is collecting the information and organizing it for presentation on the HSIAC web page. As additional pillars are created, they will be presented in a similar manner on the HSIAC site, thereby creating the opportunity for the Human Systems community to have one place to get in-depth information on special topics. This does not mean that this same information may be available elsewhere; HSIAC has over a 180 links to other web sites where additional information is presented.

The need for this effort stemmed from the realization that there has been no other centralized source of Spatial Disorientation Information. That information is not presented in a form that is easily accessed or used. In addition, material is often outdated or irrelevant. The pillar will provide a Central Source of the Spatial Disorientation Information, share knowledge across related disciplines and develop new information and presentations to reduce Spatial Disorientation related mishaps. Everyone can participate in this effort by providing information for presentation on this web site. The more our community contributes to and uses this capability, the stronger the effort will become and the potential of having a positive impact on the war fighter will be increased.

Other features will be added to the web site. It is our intention to work with MATRIS to develop a searchable database for the information being provided. In addition to contributing to this pillar on spatial disorientation, you may wish to start a pillar on a different subject area that you are pursuing. If so, contact the presenter of this briefing: Tom Metzler, Director of HSIAC, DSN 785-6623, tom.metzler@wpafb.af.mil.

Sub-Group Meetings Attended at the 44th TAG:

Design: Tools and Techniques. Mr. Lester Jee (Office of the PM, Crusader Project) chaired this SubTAG meeting. There were four presentations.

PERVISO: A Tool for Representing Decision-Making in Command and Control, Ms. Josephine Wojciechowski (US Army Research Laboratory) Ms. Wojciechowski presented work that was sponsored by ARL HRED. The

human performance modeling effort that she described focused on the predicting the level to which a new system would support decision-making. This approach simulates the information flow into the C2 organization and considers task allocation and workload when it predicts whether the right personnel have the correct information at the right time. This process is currently in a validation stage but appears to hold great promise. Ms Wojciechowski can be reached at: jqw@arl.army.mil.

Data –Driven Knowledge Engineering, Anthony Cowden (Sonalysts). This effort was supported by NAWC-TSD and ONR. Knowledge engineering is traditionally a top-down, error-prone, expensive and complex activity. Mr. Cowden described an alternative approach. Mr. Cowden can be reached at: cowden@sonalysts.com.

DAVID Anthropometric Measurement Tool, Mr. Jack L. Saxton. Mr. Saxton provided an update on the Digital Anthropometric Video-Imaging Device (DAVID). He described how DAVID works and provided comparative data between DAVID and other anthropometric measuring techniques. Advantages off the DAVID system include elimination of misreading errors, easy transfer of data to other software, and easy review of files. Mr. Saxton reported that they are currently developing a virtual fit-check system for aircraft. In the future, they would like to reduce the number of measurements/images required to assess compatibility. He described a recent Navy Bureau of Medicine and Surgery (BUMED) initiative to reduce the number of anthropometric measurements required. Mr. Saxton can be reached at (850) 452-3287, x1148 or at jsaxton@namrl.navy.mil.

Human Figure Modeling Tools applied to the RAH-66 Comanche Helicopter,
Mr. Richard Kozycki and Mr. Richard Armstrong (US Army Research Laboratory). Mr. Kozycki (rkozycki@arl.mil) described this cooperative effort between the Army Research Lab, Sikorsky Aircraft and Natick RDEC. The original Comanche requirement was to accommodate 90% of the male Army aviator population. This was later shifted to accommodate the central 90% of the female and male aviator population. The human models were fitted with appropriate life support equipment and then matched to the crew station. As a result of this work, the following recommendations were made:

- Change from a dual-axis seat to a 4-way adjustable seat
- Elevate the throttle and console
- Extend foot pedal adjustment in the aft direction
- Adjust the heel rests
- Increase the amount of available armrest adjustment
- Provide dual range collective (two different neutral positions)
- Integrate raft pack into seat back cushion.

Human Factors Engineering/Human Systems Integration: Management and Applications.

HSI in the Laundry Advanced System (LADS), Ms. Dawn Woods (US Army SBCCOM, Natick, MA). Ms Woods described a field system capable of meeting the laundry needs of 500 soldiers. It is equipped with two 200 lb. Capacity drums. As the assigned HFE specialist, Ms. Woods reviewed the requirements documents, chaired the HIS IPT, and prepared HIS planning and assessment documents. She conducted in-house evaluations, administered surveys and piggybacked on operational tests. She also prepared a performance specification for inclusion into the solicitation package, oversaw contractor testing, provided HFE inputs for combined DT/OT and prepared milestone decision documentation. The current system is noisy (>85 decibels) and hearing protection is required when near it. The control panel is difficult to see in the sun, but an awning normally shades it. Design for maintainability criteria were incorporated. Ms. Woods can be reached at: dawn.woods@natick.army.mil.

CRUSADER: US Army MANPRINT Success Story, Mr. Lester Jee (OPM CRUSADER). Mr. Jee, HSI Manager, described this HFE success story. The Crusader replaces the old M109A6 self-propelled howitzer. It is 20 tons lighter, more easily deployed and more lethal. CRUSADER consists of a self-propelled Howitzer (SPH), a Re-Supply Vehicle –Tank (RSV-T) and a Re-Supply Vehicle-Wheeled (RSV-W). Key performance parameters for each CRUSADER element is shown below, along with the Army's MANPRINT organization.

The MANPRINT investment was $64 Million and the estimated savings for CRUSADER was $ 2.4 Billion. Mr. Jee can be reached at: ljee@pica.army.mil.

Human Centered Systems Engineering Core Capability, Mr. Debbie Bardine (NSWC Dahlgren, VA). Ms. Bardine described the Naval Surface Weapons Center-Dahlgren approach to unifying the Naval HSI community and practices with the Naval Aviation process by establishing an advocacy for a Human Centered Systems Engineering Core Capability. The HSI domains coordinated by this group are Manpower, Personnel, Training, Retention, Recruiting, Habitability, Personnel Survivability, Human Factors, System Safety, Environment and Occupational Health. The initial applications of this coordinated approach are the Naval Space Command Operations Center, DD21 Integrated Command Environment and ONR Manning Affordability Experiments. Ms. Bardine's email address is: bardine@nswc.navy.mil.

Air Force Human Systems Integration Update, Major Scott Smith (Brooks, AFB). Major Smith, the current HFETAG chairman, is located in the Air Force Human Systems Integration Office. He provided an HSI update, in large part deriving from the influence of LtGen Plummer, who has required that HSI be included in their acquisition

strategy panel planning process. This includes training and potential inclusion in the Acquisition strategy Panel. The HSI Office now coordinates on documents rather than merely review them. Major Bob Lindberg is the new office chief; he can be reached at (210) 536-4457.

Human Factors In Extreme Environments.

Shortfalls in In-Flight Crew Station Assessment Methods for Developmental Flight Test, Dr. James Casler (Veridian, Lexington Park, MD). Dr. Casler described and evaluated the primary in-flight crew station evaluation methods used by the US Naval Test Pilot School at Lexington Park, MD. Until recently, developmental flight-testing emphasized disciplines such as aircraft performance, stability and control and avionics performance; relatively little attention was paid to evaluation of the crew station. With this area becoming more important, the USNTPS curriculum was assessed and it was determined that there are inadequacies in terms of teaching methods for crew station testing. Further, in-flight techniques for assessing workload, situation awareness, cognitive task load and decision-making are inadequate. Current techniques include the Cooper-Harper rating scale, NASA Bipolar and TLX, modified Cooper-Harper, SWAT, SAGAT, SART, SA-SWORD, SARS and SWORD. None of these techniques is suitable for in-flight use. He recommended development of a tool set to address these shortfalls.

Human Factors in Telemedicine and Biomedical Technologies.

The SubTAG chair, LT Deniston, was not available to chair the meeting. LT Walter Carr served in capacity of chair on short notice. Consequently, the agenda was limited to four presentations. Hot Issues, membership, leadership, directions, and other issues were tabled until the next meeting of the TAG, at which LT Carr will serve as chair. [LT Walter Carr, 619/DSN 553-8408/0479/8416, carr@nhrc.navy.mil]

The first presentation was**: Tactical Medical Coordination System** (TacMedCS—a candidate system for efficient tracking of casualties from the point of injury through transport and definitive care) was presented by HM1 Michael Stiney (NAMRL).

Abstract: TacMedCS components will include an individual computer chip containing patient information (Tier-1), A hand-held unit (Tier-2) will have the capability of interrogating and updating Tier-1 components. It will also store identification, diagnostic, treatment, and location information on board for later download. Finally, it will be capable of transmitting data to a medical regulating control center, or appropriate operational coordination site, and a tactical-medical information display system (Tier-3). The research effort will include initial component assembly, parity tests, and initial operating procedure development (Year 1), functional tests under existing training and development scenarios with operating procedure refinement (Year 2), and operational tests in a deployed situation (Year 3).

The current system of medical regulating and evacuation coordination is prone to errors and is poorly suited to the expected battlefield. Degradation of the medical regulating system during battle has and will result in casualties "lost to the system." Additionally, the existing system is inherently inefficient, which wastes valuable time and resources, which could otherwise be employed to save life and limb. Paradigmatic shifts in warfighting thus compel us to consider new concepts in medical regulating, particularly at echelons 1 and 2. A flexible, user-friendly information management system for real-time correlation of tactical operations, patients, and echelons 1 through 4 evacuation and treatment resources would significantly improve medical regulating on the battlefield of the future.

The second presentation was: **The Medical Decision Support System (MDSS)— an interactive medical web application**, by LT Tamara Trank, NHRC.

Abstract: The MDSS contains advanced data analysis methods that enable the user to expedite preventive health measures. Daily and weekly rates of occurrence are calculated using Population at Risk values associated with the casualty sources (Medical Treatment Facilities, and Military Units). The Population at Risk for each source along with its position is manually entered. The dates associated with the Population at Risk and the position can be set for one-day increments. MDSS is an executive information decision support system whose database provides the medical planning staff and the operational commander with analytical assistance and decision support required in the delivery of operational healthcare.

The third presentation was: **Navy Voice Interactive Device: Applying Voice Technology to Shipboard Medical Department Administrative Functions**, by LT Tamara Trank, NHRC.

Abstract: The Navy Voice Interactive Device is a lightweight, wearable, voice-interactive computer capable of capturing, storing, processing, and forwarding data to a server will be a useful tool to aid in the environmental surveillance and preventive medicine aboard ships.

NVID will be an expert system that will focus on environmental surveillance, which can be accomplished quickly and efficiently without compromising the quality of the information. Such an interactive system, with further modifications, could be integrated with other emerging medical information elements, such as the Navy Theater Medical Information Program and other computer-based training and medical encounter systems. These tools will expand Navy medicine's ability to detect disease and injury trends early, allowing quicker intervention to prevent illness and force degradation.

The last presentation was: **Development of a Portable Forward Diagnosis, Continuous Monitoring, and Medical Information System for Casualties Ashore and Afloat** by Dr. Michael Freckleton, ASOM/TEES/Brooks AFB.

Abstract: Commercially available field medical technologies (medical data acquisition devices; e.g., ruggedized portable ultrasound devices) are identified and are then used in the field for evaluation of effectiveness. Given that chosen field medical technologies are usable and useful in the field, we further develop an integrated software backbone, "middleware," to afford device interoperability (i.e., data exchange). As warranted over the course of the award period, we integrate additional data acquisition elements into an Electronic Patient Record and build decision support, medical reference, and telemedicine capabilities.

The delivery of state-of-the-art medical care to deployed forces, in theater operations and operations other than war, continues to be a top priority for U.S. Navy and Marine Corps. A key to supporting this priority is the integration and deployment of portable technologies to assist primary health care providers in the diagnosis and treatment of injuries and illnesses at the most far forward level of care possible.

Human Factors Standardization (HFS) Mr. Alan Poston (FAA) chaired the SubTAG meeting. Following an introduction of the attendees, the SubTAG proceeded through its agenda.

a. **MIL-STD-1472:** EIA and CODSIA had attempted to elevate MIL-STD-1472 to an interface standard. The AIA objected and the effort was suspended. Recent efforts within the Army, however, may rekindle interest in changing the status of MIL-STD-1472.
b. **MIL-STD-1787**: Version 'is now in distribution. Version "D," covering rotary wing aircraft, is currently in review by the military services. It will probably be released in about a year.
c. **MIL-STD-882D:** The update to extend safety metrics to three dimensions is in the works.
d. **MIL-H-46855:** Mr. Lou Adams (GEIA) discussed efforts to convert this cancelled mil spec to an EIA best practices document, a "Bulletin." The HFS SubTAG was requested to review the draft Bulletin and provide comments by 1 July 2001.
e. **Human Factors and Ergonomics Society (HFES)/ISO/TC159:** No report.
f. **Joint Services Specification Guide:** The 2001 version on air vehicle has been published. It available on Distribution Statement D – "DoD and DoD Contractors only: contains critical technology."
g. **NASA MSIS:** Cletis Booher provided an update on this effort, which is now developing exploration class mission requirements. This class includes multi-year exploration missions. A database (HFE requirements, draft future requirements, emerging research and technology, action items, research publications and contact information) is being assembled using the Dynamic Object Oriented Requirements System (DOORS). Clete can be contacted at (281) 483-8951 or cletis.r.booher@jsc.nasa.gov.
h. **Data Item Descriptions (DIDs):** The GEIA G-45 human factors committee will not adopt the DIDs on HE Test Plan or HE Test Report.
i. **AD-1410:** Dr. Jennifer Narkovicius (ARINC, INC) will look into its status. There is some interest in making this a tri-service guidance document.

Human Modeling and Simulation.

Dynamic Operator Modeling and Workload Prediction, was presented by Ms. Susan Archer (MicroAnalysis and Design). This effort took place in the context of the National Missile Defense program, Battle Management Command, Control and Communications (BM/C^3). Original modeling had been limited to high criticality events. Depending upon many variables, between 3.5 and 20 minutes is available to the battle management staff to decide on a missile booster event. The modeling effort was expanded after 1997 to include more administrative functions (thereby increasing realism). Once the model is built, it is stimulated with a variety of scenarios to task and (maybe) overload or "break" the model. This provides a quantitative and unambiguous method for analyzing the effectiveness of C^4I systems.

A Computational Model of Recognition-Primed Decision-Making (RPD) by Ms. Patty McDermott (Klein Associates). Ms. Patty McDermott (Klein Associates) indicated that this effort was sponsored by NAWC-TSD and ONR. The key to this type of model is recognition of previously experienced situations (requires experience to function). The model has four by-products: expectancies, goals, relevant cues and actions. The goals of this effort were to:

- Increase realism in computer-generated forces
- Provide a naturalistic decision making perspective
- Model specific decisions in specific contexts
- Not be a generic computational model.

Deciding on Decision Models by Ms. Susan Archer, (MicroAnalysis and Design). This activity was based on work related to the Combat Automation Requirements Testbed (CART) effort being supported by AFRL, SAIC and MAAD. Ms. Archer reviewed the different types of decision models: deterministic, utility and probabilistic. The challenges are in communicating between models, systems and environment as well as modeling goal-oriented human performance.

Sustained/Continuous Operations (SUSOPS/CONOPS). There were five presentations at this SubTAG meeting.

The first presentation was **Summary of Human Capabilities and Limitations during Urban Combat Operations**, by Kristen Jadelis (Booz, Allen & Hamilton/HSIAC). The objective was to reveal what an urban warrior can be expected to accomplish given the extreme demands of urban combat. Through a review of military combat reports, MOUT (Military Operations on Urban Terrain) web sites, medical literature and personal accounts of retired military officers, performance criteria and associated challenges were identified. The primary difficulties that military troops encounter during combat are stress and fatigue. There are many different causes of each and their definitions should be clarified for future use. Combat stress is used as a generic term, which includes all possible reactions to the combat environment. Combat fatigue is defined as a reaction to combat stress in which the stresses of combat and other personal stressors combine to overwhelm an individual's psychological defenses and render him/her unable to perform duties. There are a number of elements, from the environment or within the human body, that influences combat stress and/or fatigue which can ultimately inhibit a warrior's capabilities to fight.

Environmental stressors include extreme temperatures, humidity, altitude, and noise in the immediate surroundings that are either continuous or overbearing, unfamiliar terrain or darkness/light. In extreme heat, dehydration is the highest risk factor to performance failure. Even highly trained athletes with appropriate hydration are not able to maintain thermal balance at temperatures greater than 95ºF (35ºC) in relative humidity of 60% or more. Dehydration inhibits critical brain functioning which is needed to carry out military operations and simply stay mobile. Humidity can stimulate dehydration even at cooler temperatures. One study has recommended that no outdoor activity take place when temperatures reach 82ºF with 70% or more humidity.

Brain function may also be affected in extremely cold temperatures, but gradually as body temperature drops. The first sign of decline is when the body's temperature falls below 96ºF and manual dexterity and fine motor control are lost. When core body temperature falls to 95ºF humans experience violent trembling and disorientation, followed by amnesia and garbled speech at 93.2ºF. Serious life threatening symptoms ensue when the body's temperature is less than 90ºF, such as loss of consciousness and muscular rigidity.

When loud (>85dB) and continuous noise is present, concentration can be hindered. This can negatively affect decision-making processes or aiming a weapon at a target. There is risk of hearing loss when a noise reaches a certain level. This risk increases if someone is exposed to a blast above 85dB and the risk becomes more significant at greater than 90dB. Peak sound pressure levels for some weapons, such as assault rifles (caliber 7.62) are 154dB at 4m from the muzzle. Large caliber weapons can reach up to 140dB from distances as great as 200m from the source.

There are generally no adverse effects on physical performance due to light exposure. The exception is environments with little darkness or when troops are forced to sleep during daylight hours. In such instances, troops experience difficulty falling asleep. It is also said that the ability to see explosions in the distance is made difficult in daylight. An extreme case of adverse light effects is exposure to laser light. This, however, had no effect on performance measures except to cause the eyes to adjust to the light.

As with light, darkness has no effect on performance measures. Physical movement and capabilities are not affected by darkness especially with the use of night vision devices. Without such technology, navigation and detection would be all but impossible. In recent urban operations, all combatants have used night vision devices for navigation and as aiming devices for weapons. This technology is not perfected and still has room for improvement as most night vision goggles provide poor peripheral vision.

Physical performance stressors include carrying heavy loads for extended periods of time, sleep loss, high intensity and duration of operations and insufficient nutrition, all of which may increase the likelihood of fatigue and the inability to perform mission critical operations. Load carrying is essential to any type of warrior, mainly because each has to carry at the minimum a weapon and their related battle gear. Additionally, packs may be required that mount on the back or shoulders to carry additional gear for survival. It has been found that with loads equal to 10-40% of body weight, a person compensates walking speed or climbing rate to carry the heavy load in order to preserve energy costs. The primary weight-bearing joint that will be affected by fatigue is the knee. The knee extensors may fatigue prior to overall metabolic fatigue during load carrying and typically, a human knee's weakest angle is 60º of flexion.

Aerobic capacity will govern an individual's endurance while traversing long distances or exercising for extended amounts of time. Continuous repetition of any motion will lead to eventual fatigue of the muscle group being used. Conversely, a muscle group will be quickly fatigued if the activity is at a high intensity over a short period of time due to limited anaerobic capacity. Muscular fatigue will not only affect mobility but the accuracy to shoot a manually operated weapon.

Fatigue effects are most commonly induced by sleep loss. In a combat situation, frequently troops will be awake for 48 to 60 hours at a time. Sleep loss does not directly affect the ability to do physical work but quality or effectiveness of performance may suffer due to a person's irritability, depressed mood or lack of motivation. The full debilitating effects of the lack of sleep occur between the 36th and 48th hour of constant wakefulness. Therefore, short-term memory capacity decreases and cognitively demanding tasks

show performance decrements. Decreased auditory and visual vigilance and the speed-accuracy tradeoff typify declines in performance. A fatigued subject will sacrifice speed for accuracy to maintain control of the task. With continued lack of sleep, eventually both accuracy and reaction time will decrease. However, highly over-learned, such as routine manual, tasks may not be as affected by sleep loss.

When physical fatigue sets in, it is aerobic capacity that limits the rate of energy expended to continually perform. As work duration increases, relative energy expenditure decreases as a function of VO_2 max. Carrying heavy loads or working in thermally-stressed environments will tax energy levels of the untrained more quickly than trained subjects. Trained subjects have elevated aerobic capacities that allow them to work longer at a given rate. Increased load on work levels will lead to physical fatigue more quickly.

The studies on rations and military nutrition suggest that high carbohydrate and protein diets comprise the mainstay of sustenance. There have been many reports of weight loss in military personnel, who have been in field exercises for prolonged amounts of time, with diets that were insufficient to maintain caloric balance or were unpalatable causing the soldier to decline eating. High caloric content is suggested for both cold and hot environments due to the increases in metabolic activity to regulate thermal balance. In warmer environments, fluid intake is vital and may be a method to intake additional calories in the form of a carbohydrate or electrolyte-rich drink. Another reason for high calorie rations, besides the great demands of physical exertion, is that meals may not always be eaten at regular intervals. In high-risk or intense situations, stopping to eat may not be an option, yet it is critical to have the energy to endure such elevated stress level situations.

Military operations in urban terrain (MOUT) require soldiers and marines to move, shoot, communicate and make decisions. Some examples of these activities are to react to indirect fire, perform movement techniques, and transport a casualty. Physical requirements of these tasks may require warriors to run long-distances, sprint, crawl, carry loads on their backs or in their arms, lift a person through a window, climb stairs, carry heavy weight while walking or running or climbing, carry a heavy weight for an extended period of time or lift a heavy weight above the head. To execute these movements efficiently and successfully requires proper training and assistive gear, if available, to lessen the burden on the human body.

The biggest challenges of MOUT are a lack of sleep from "round-the-clock" wakefulness, repetition of activities such as search and clear exercises in city buildings, unfamiliarity with the surroundings, and a loss of communications. These challenges represent a combination of adverse environmental conditions; continuous operations demands and human physical limits that can all determine the outcome of a mission. To ensure the success of task performance, it is critical to avoid the decline of human performance by preventing as best as possible fatigue, slower response times, lack of concentration, and physical or mental failure.

Summary:

1. When these factors are in excess or in combination with each other the resultant may be combat stress or combat fatigue.
2. Combat stress is used as a generic term, which includes all possible reactions to the combat environment.
3. Combat fatigue is defined as a reaction to combat stress in which the stresses of combat and other personal stressors combine to overwhelm an individual's psychological defenses and render him/her unable to perform duties.
4. Purpose: to identify human physiological and bio-mechanical limits in terms of the conditions that may be confronted in an urban combat environment
5. Required tasks of MOUT: move, shoot, communicate, decide; examples react to indirect fire, perform movement techniques, transport casualty
6. Physical requirements of tasks: run long-distances, sprint, crawl, carry loads on backs/in arms, lift person through window, climb stairs, carry heavy weight while moving, carry heavy weight for extended period of time, lift heavy weight above head
7. Challenges of MOUT: lack of sleep from round the clock wakefulness, repetition of activity such as search and clear exercises in city buildings (slow, repetitive), unfamiliarity with surroundings, loss of communications that may occur with line-of-sight dependent communications systems
8. Effects of challenges of MOUT: fatigue, slower response times, difficulty concentrating, physical and mental failure

Other presentations at this SubTAG meeting included the following:

- ***New Applications and Issues in Wrist-Actigraph Monitoring***. Daniel P. Redmond, M.D., Colonel, MC, U.S. Army; Chief, Department of Biomedical Assessment, Division of Neuropsychiatry, Walter Reed Army Institute of Research.
- ***Shiftwork-Related Changes in Subjective Fatigue and Mood for a Sample of Air Traffic Control Specialists***. Tom Nesthus et al., FAA Civil Aeromedical Institute, Oklahoma City OK.
- ***A Laboratory Comparison of Clockwise and Counter-Clockwise Rapidly Rotating Shift Schedules: Effects on Performance, Sleep, and Subjective Ratings***. Crystal Cruz et al., Federal Aviation Administration, Civil Aeromedical Institute, Oklahoma City OK.
- ***Detecting Unwanted Effects of Operational Drugs: Modafinil and the Vestibular System.*** James C. Miller, Ph.D., CPE; Warfighter Fatigue Countermeasures R&D Group, Air Force Research Laboratory, Brooks AFB TX.

System Safety/Health Hazards/Survivability.

Recognizing Camouflage in Different Environments, by USMA Cadet Ryan W. Booth. Cadet Booth indicated that military operations in urban terrain (MOUT) might require improved camouflage. He researched the area of camouflage (e.g., how people organize scenes, recognize patterns, etc. He dressed subjects in available camouflage outfits: urban, BDU and a prototype. These subjects were then placed into urban and woodland settings and detectability data were gathered. The prototype provided superior camouflage in urban environments (25% detectability, versus 55% and 48% for urban and BDU outfits, respectively). This study showed clearly that the current urban camouflage suit does not work well in urban settings.

Availability of and Water Consumption by Soldiers, by USMA Cadet Wayne Sanders.
Cadet Sanders explored the effect of using "camelback" water supplies versus the traditional canteen or a water bottle. His hypothesis was that soldiers would drink more water if it were more readily available to them. Using treadmill tasks, he determined that water consumption was approximately three times higher with the camelback than with either bottle or canteen. Since his hypothesis was confirmed, additional field studies will be carried out next.

Integration of Environmental Safety and Occupational Health (ESOH) into the Army Acquisition Process, by Mr. George Murnyak (Health Hazard Assessment Program, USACHPPM). Mr. Murnyak described efforts underway in the Army to improve coordination within the ESOH in weapon system acquisition. He reported that embedding system safety into acquisition has been a slow process, that formal risk assessment has helped increase PM/PEO awareness and that placing key system safety requirements into acquisition documents is critical. The bottom line is that system safety is becoming a part of the acquisition culture.

Technical Society/Industry Sub-Group. The Technical Society/Industry (TS/I) SubTAG met twice during TAG #46 on 15 and 17 May 2001. Fifteen participants attended the meetings, representing eight societies/technical groups. The meetings were chaired by Steve Merriman (scmerriman@home.com). Attendees introduced themselves and then reviewed and updated the TS/I membership lists.

2001 GEIA Emerging Technology Conference: Human Machine Interface. Steve Merriman briefly described the white papers to be authored in support of the Government Electronics and Information Technology Association (GEIA) conference this coming Fall in the Washington, D.C. area. Steve is looking for inputs in areas of Human Centered Computing, BioMetrics for Security, Augmented Reality and Voice Interaction.

User-Computer Interface. There were four presentations at the UCI SubTAG meeting. The first presentation was:

Command 21: Decision Support for Operational Command Centers by Principal Investigator / Researcher: Jeffrey G. Morrison, Ph.D., SPAWAR Systems Center – San Diego, D44210, 53570 Silvergate Ave., A33 / 1405, San Diego, CA 92152-5143, 619-553-9070, jmorriso@spawar.navy.mil.

Abstract: The "Knowledge Wall" is one part of a concept of operations that enables "Knowledge-Centric Warfare" and increased "Speed of Command" among staff decision-makers in a command center. As implemented for the Global 2000 war game, the Knowledge wall is a web-enabled dynamic status board. The wall uses an IT-21 / GOTS-D computer with COTS video boards that allow ten-21" CRT monitors and two-50" rear-projectors (Smart Boards) to work as a single, integrated desktop. While any application that runs in an IT-21 (Windows NT) environment can be used, (e.g. C2PC, MS PowerPoint, MS Word, etc.), there is a shell application that opens up to 12 graphical browser windows, each of which is pointed to different summary page in a "Knowledge Web". Content for the wall is created at command anchor desks using several external applications that allow the command staff to create pages for the knowledge web without having to be familiar with HTML. Content is structured consistently through a template – based authoring tool, called "SumMaker". "TacGraph" allows the command staff to quickly created annotated tactical, map-based drawings to provide value-added information in a web-friendly form. Together, these tools allow information to be packaged around operational problems, and "push" that information to other decision-makers through the Knowledge Web. In effect, the Knowledge Wall captures knowledge (traditionally generated by the creation of watch turnover briefs in the knowledge web). This increases the "speed of command" by allowing the best available information to be created and disseminated in a distributed, asynchronous manner rather than waiting until the watch turnover brief every eight hours.

The second presentation was**: The Effects of Highlighting Validity on Accuracy of Memory of Text-based Displays** by Rachael L. Westergren & Heather L. Pringle USAFA/DFBL [email:Heather.Pringle@usafa.af.mil]

Abstract: In this study, we will examine the role that highlighting plays in memory. Because highlighting is used in so many types of informational displays, it is to our benefit to see how it affects our attention, and thus, our memory of material. One study found that observers have shorter search times when observing an informational display, but only if the validity of the highlighting (i.e., how likely it is that the highlighted information is the desired information) is rated as greater than 50 percent (Fisher & Tan, 1989). However, the degree to which observers recognize, or remember, the highlighted information has not been explored. We propose to examine these issues using measures of eye tracking and accuracy of memory. In this experiment, twelve participants will study forty text-based web pages, and will subsequently answer one multiple-

choice question pertaining to each previously viewed web page. Participants will be informed of the highlighting validity, 90%, 70%, 50%, or none, prior to each block of 10 trials. We expect the eye tracking data to show that the highlighting will initially attract the observers' eyes, independent of the level of highlighting validity. We also expect that the level of highlighting validity will affect the subjects' expectation that the highlighted text will more likely contain the desired information with increasing validity, and thus, will affect their dwell time on the highlighted information. We expect that the higher highlighting validity will result in longer dwell times, thus increasing memory for the highlighted information.

The third presentation was**: Human Computer Interaction & Software Development** by Walter P. Benesch, OSD/C3I (formerly with the Software Management Division).

Abstract: Continued advances in technology have heightened the need for the United States Office of the Secretary of Defense (OSD) to develop policies addressing Human Computer Interaction (HCI) and Human Factors (HF) concerns. Thousands of work hours are wasted due to poor HCI and HF design considerations. Increasing workloads and a downsized Department of Defense (DoD) require applications, programs, and technology to increase productivity, not slow the workforce to a crawl. Up front HCI and HF analysis in Department of Defense (DoD) projects must be made mandatory. OSD should implement HCI policies to avoid the increasing danger and possible lethal events resulting from poor HF engineering design considerations. This presentation is a product of the experiences and efforts of the Software Management group within the Office of the Secretary of Defense, Command, Control, Communications, and Intelligence (C3I); it discusses some of the problems that are result from poor HCI considerations. It suggests actions to ensure future software development adequately addresses HCI concerns.

The proposed HCI design would be characterized by:

- The active involvement of users and a clear understanding of the user, the organizational goals, and the task requirements to achieve those goals;
- An appropriate allocation of functions between user and system;
- The iteration of HCI design solutions; and,
- Multi-disciplinary HCI design process teams.

The possible impact and difficulties of emerging technologies are discussed in terms of HCI concerns. The conclusion is that HCI design must be considered up front and be supported by management.

The last presentation was: **3D Touch for Visually Impaired** by Sudhanshu K. Semwal, Department of Computer Science, University of Colorado, Colorado Springs.

Abstract: We provide a systematic study for generating interactive, virtual environments for the blind. We present our system as a tool for shape recognition and mobility training for the blind. In our system, head movement can be detected to indicate horizontal and vertical motion. Audio feedback is used for reinforcement. Our experiments for shape learning can guide the user in tracing the surface of a sphere by using audio feedback. We also present a compelling case for using force feedback devices for the visually impaired, and our experience with the PHANToM(TM) force feedback device is summarized. Some recent results in the area of way finding in virtual environments will also be presented.

THE OPERATIONAL RISK MANAGEMENT FOR AEROMEDICAL PERSONNEL (ORM FOR DOCS) APPLICATION COURSE IS NOW ON-LINE

OPNAVINST 3500.39 directed the Navy and Marine Corps to establish Operational Risk Management (ORM) as an integral part of USN/USMC operations, training, and planning at all levels in order to optimize operational capability and readiness and to enhance mission accomplishment. In response to this direction, the Navy Aerospace community developed a strategic goal to ensure that all aeromedical personnel would have standardized training in ORM by the end of CY-2002.

During 2000, a team of representatives from each of the aeromedical specialty areas developed a standardized 1-day 'ORM for Docs' course. The program included an intensive survey of ORM with emphasis placed on those issues and areas specific to aeromedicine. 'Field Classes' were taught by the N09K ORM instruction team and administered to aeromedical specialists already assigned to operational units (USN/USMC), training facilities, clinics, and other activities to which aviation Medical and Medical Service Corps personnel had been assigned. NAMI classes were (and continue to be) those taught to members of Student Flight Surgeon and RAM classes held during this reporting period at the Naval Aerospace medical Institute, Pensacola. Based on responses from the latest ORM survey responses from Fleet aeromedical personnel, to date approximately 75% of all Flight Surgeons, 95% of all Aviation Physiologists, and 25% of Aerospace Experimental Psychologists reported having received ORM training. These figures strongly suggest that we will reach our goal of having all aeromedical personnel ORM trained by the end of 2002. However, our attaining this goal requires full participation by all Navy and Marine Corps Aeromedical Personnel.

To facilitate this effort, the Naval Aerospace Medical Institute (NAMI), working in collaboration with the Bureau Of Medicine And Surgery and the School of Aviation Safety at the Naval Postgraduate School, has developed an on-line

version of the ORM for Docs course. By virtue of this course being on-line, all aeromedical personnel can now receive required ORM instruction ***at no cost*** to their command working on their command computers or on home computers possessing access to the World Wide Web. The course can be accessed at the following NOMI website address:

http://www.nomi.med.navy.mil/NAMI/Training/ORM%20for%20docs-slideshow-2_files/frame.htm

All medical personnel are strongly encouraged to take this on-line course. Lessons learned about applying ORM principles can be used in optimizing operational capability and operational readiness for their commands. It is requested that upon completion of the course, all participants should notify the point of contact (shown below) at the NPS School of Aviation Safety; noting the date and place that the on-line course was completed. To gain the full benefit of this training, it is highly suggested that students read **OPNAVINST 3500.39** thoroughly prior to beginning the class. This reference can be accessed at: http://neds.nebt.daps.mil/directives/3500_39a.pdf

Point of Contact for any questions regarding this training is:

CDR Andrew H. Bellenkes, USN
School of Aviation Safety (Code 10)
Naval Postgraduate School
1588 Cunningham Rd., Rm. 301
Monterey, CA 93943-5202

Voice: (831) 656-2581 (DSN: 878-2581)
Fax: (831) 656-3262 (DSN: 878-3262)
E-Mail: ahbellen@nps.navy.mil

SPECIAL REMINDER FOR THOSE AsHFA MEMBERS WHO MAY STILL OWE ANNUAL DUES:

Your annual dues are essential for the continuing function of this organization, your organization. However, a number of members are in arrears not only for current year's dues, but for past years as well. Kindly remit said dues to the AsHFA Secretary Treasurer, Dr. Tom Nesthus (address on first page). This newsletter notice serves as an announcement to the general membership and additional reminders will be posted on all renewal and new membership forms. I think we all agree on the important role that this constituent organization plays within the Aerospace Medical Association and agree that its mission should continue. Thank you for your support.

A NOTE TO PROSPECTIVE MEMBERS

Dear Colleague!

Allow me to briefly introduce you to the Aerospace Human Factors Association (AsHFA). AsHFA is a constituent society of the Aerospace medical Association. The AsHFA is a rapidly growing, dynamic organization. It's membership boasts a large and varied range of professional interests and expertise in human factors; reflecting the notion that "Human Factors" is an umbrella for a plethora of engineering, aeromedical, physiological, and psychological approaches to the human-machine interaction.

AsHFA grew out of a request from AsMA to form a standing committee to formulate positions for AsMA on aerospace human factors issues and develop panels and exhibits to educate AsMA members about aerospace human factors. That committee, the Aerospace Human Factors committee (AsHFC) still exists, and its function remains the same. In the process of formulating the AsHFC, Dr. Henry Taylor saw a need to establish a constituent organization that would better meet the needs of the aerospace human factors community within AsMA; ergo the creation of AsHFA.

The goals of AsHFA are: 1) to encourage human factors considerations in the development of aerospace systems, 2) to apply our knowledge of human performance to system development, 3) to promote research on factors affecting human performance, and 4) to exchange information with other groups having similar interests. In this regard, AsHFA has established liaison with organizations such as APA Division 21 (Applied Experimental and Engineering Psychology), the Human Factors and Ergonomics Society, DoD HF Technical Group, SAE G10, SAFE, and others. Further, AsHFA sponsors a number of highly regarded scientific and technical sessions each year at the AsMA Scientific Meeting.

AsHFA members prepare and present point papers on timely and critical human factors-related issues, and have participated on a host of committees that continue to define international aerospace policy.

Our membership continues to grow. Of those of you who are not yet AsHFA members, we ask you to consider joining as many of your colleagues are active participants in this organization. The annual costs are minimal and the rewards great. To become a member of AsHFA, you must first be a current member in good standing of the Aerospace Medical Association. Members of AsMA who are interested in joining AsHFA will find an application in the newsletter or on the AsHFA Membership Committee page of the AsHFA website. If you have any questions about AsHFA, contact our Membership Chair, Arnold Angelici, M.D. at the following:

Arnold A. Angelici, M.D.
4140A Indian Runn Drive
Dayton, OH 45415
FAX: (330) 686-4220
E-mail: aaangel@ibm.net

CALL FOR AsHFA FELLOW NOMINATIONS

The Aerospace Human Factors Association (AsHFA) has many members who have inspiring records of accomplishment in applying human factors knowledge and methods to enhance safety, effectiveness, and efficiency in a wide variety of aerospace activities. The AsHFA calls for you to nominate your colleagues in AsHFA that meet the requirements for Fellow described below, and whom you would like to recommend.

Fellows of the AsHFA shall be persons who:

(a) are also members of the Aerospace Medical Association,
(b) have been AsHFA Members for at least five years,
(c) have contributed significant service to AsHFA,
(d) have had five years work experience related to aerospace human factors,
(e) have been endorsed by at least three Fellows of the AsHFA,
(f) have been selected by the Fellows Review Committee for unusual and outstanding contributions or performance in the field of Aerospace Human Factors
(g) have been elected by a majority vote of the Fellows of the AsHFA.

Those submitting nominations should compile the nomination form (see next pages), supporting documentation, and three recommendations from Fellows and send them to the Chair of the Fellows: Carol Manning, FAA CAMI AAM-510, P.O. Box 25082, Oklahoma City, OK 73125, carol_manning@mmacmail.jccbi.gov. The Fellows Review Committee will be sent copies of these materials. The nominator may submit paper or electronic copies of forms. Contact the Fellows Chair to receive copies.

DEADLINE FOR RECEIPT OF NOMINATION MATERIALS IS FEBRUARY 19, 2002.

Reserve your seats early for the Annual AsHFA Business Luncheon Meeting. It is to be held on **Monday, May15, 2002.** Dr. Dave Schroeder will present the Henry Taylor Founder's Award lecture and seats will be extremely limited.

Current AsHFA Fellows

Albery, William	Hoffman, Ronald	Nesthus, Thomas
Alkov, Robert	Jones, David	Pongratz, Hans
Austin, Frank	Kakimoto, Yukiko	Schroeder, David
Billings, Charles	Kennedy, Robert	Singer, Timothy
Chelette, Tamara	Kimball, Kent	Taylor, Henry
Choisser, Donald	Lederer, Jerome	Voge, Victoria
Cohen, Malcolm	Lilienthal, Michael	White, Stanley
Collins, William	Manning, Carol	Wilson, Glenn
Cowings, Patrica	Mertens, Henry	
Della Rocco, Pamela	Montgomery, Robert Jr.	

AsHFA Members Eligible for Selection as Fellows in 2002

Aarnell, Gorian	Foley, Mary	Merchant, P. Glenn
Alsten, Chris	Frazer, William	Merriman, Stephen
Anderson, George	Frazier, John	Miller, James C.
Antunano, Melchor	French, Arthur J	Miller, William
Augter, Gary	Garber, Mitchell	Morphew, M. Ephim
Baghdassarian, H. Jack	Gawron, Valerie	Moser, Royce
Bagian, James	Ginsburg, Arthur	Myer, K. Jeffrey
Baker, Susan	Gross, Leroy	Noonan, Raymond
Banta, Guy	Grost, Michael	O'Donnell, Robert
Barker, Charles	Hansen, Stephen	Oman, Charles
Barnes, Paul	Hardicsay, Gabor	Orlady, Harry
Baumgardner, F. Wesley	Hawkins, Michael	Perkins, Herbert
Bellenkes, Andrew	Hayes, Carolyn	Phelan, James (Jay)
Bjorn, Valerie	Heil, John	Phillips, Chandler
Bodegard, Magnus	Holland, Dwight	Rapmund, Garrison
Boyd, Jacqueline	Hopkins, Elwood	Ray, Marilyn
Brinkley, James	Hrebien, Leonid	Rayman, Russell
Cammarota, Joseph	Hyle, John R.	Reed, Ronald
Ciancio, Vincent	Jessup, J. Milburn	Rupert, Angus
Cima, Miguel	Johanson, David C.	Saboe, Gerald
Clark, Jonathan	Kajornboon, Sutuspun	Samel, Alexander
Comperatore, Carlos	Kanas, Nick	Shappell, Scott
Contiguglia, Joseph	Katoh, Zojiro	Sharif, Omar
Damos, Diane	Kay, Gary	Snyder, Quay
DeHaan, Warren	King, Raymond	Stone, Shepard
DeVoll, James	Knox, Francis (Ted)	Storm, William
Diamond, Stanley	Koonce, Jefferson	Stuster, Jack
Diedrichs, Ronald	Krueger, Gerald	Tripp, Lloyd
Diesel, Donald	Laub, James	Trumbo, Richard
Dobie, Thomas	Lebegue, Breck	Ungs, Timothy
Dodd, Lloyd	Lee, Yong Ho	Vereen, H. Stacy
Dodwell, Peter	Lestage, Daniel	Veronneau, Stephen
Draeger, Jorg	Little, James	Villaire, Nathaniel
Duley, Jacqueline	LoFaro, Ronald	Webb, James T.
Ebenholtz, Sheldon	Mappes, Timo	Welch, Robert
Eckert, Thomas	McCarthy, Geoffrey	Wichman, Harvey
Elliott, Robert	McCormick, James	Wildzunas, Robert
Ercoline, William	McFadden, Kathleen	Young, Laurence
Erickson, James	McLean, Garnet	Zeller, Anchard
Feith, Steven	McNish, Thomas	Zellers, Robert "Joe"

NOMINATION FORM FOR AsHFA FELLOWS CANDIDATE

DEADLINE FOR RECEIPT OF NOMINATION MATERIALS IS FEBRUARY 28, 2002

1. Name of candidate _____

2. Date of birth _____

3. Present Position _____

4. Organization _____

5. Business Address _____

6. Business telephone number _____

7. Home Address _____

8. Home Telephone Number _____

9. Education:

Institution	Degree (year)	Major field

10. Professional work history

From start year to finish year	Organization, City	Position held & Responsibilities

11. Technical Publications with References (List three most significant reports first. Then list additional publications. Use additional Sheets if necessary.) Also, send one copy of each of the three most significant publications authored or co-authored by this candidate with nomination form.

12. Year nominee joined AsHFA _____ AsMA _____.

13. Continuous AsHFA member since _____.

14. AsHFA/AsMA society involvement. (For example, elected or appointed offices, committee service, evidence of annual meeting involvement, publication in Aviation, Space, & Environmental Medicine, paper presentations at annual meeting. Please give dates of service.)

15. Other significant human factors professional involvement, recognition, and leadership. (For example, pioneering work in education program development, service to national or international advisory boards such as ICAO, NATO, NSF, NAS-NRC, honors and awards related to our profession, exceptional service to related professional organizations.)

16. Special contributions of candidate. The most significant contribution that qualifies the candidate for Fellow is:

17. Other significant contributions are:

18. Names and addresses of three Fellows who will recommend the candidate: All must be AsHFA Members in good standing. The nominator is responsible for soliciting the three nominations. The recommendations should be prepared using the standard form "RECOMMENDATION FOR FELLOW" and submitted with this nomination form.

a.
b.
c.

19. Candidate nominated by:

Name: _____

Address: _____

Telephone number: _____

If publications are considered to be a major contribution of the nominee, then one copy of each of the three most significant publications authored or co-authored by the candidate should be furnished. Other evidential information that will attest to the achievements of the candidate should be furnished to aid the Fellows Selection Committee in their deliberations. Those submitting nominations should compile the nomination form, supporting documentation, and the three Fellows recommendations and send them to the address below.

No limitation is placed on the number of times a Member may be nominated for election to Fellow status.

Please return this form to:

Dr. Henry W. Mertens
FAA CAMI AAM-510
P.O. Box 25082
Oklahoma City, OK 73125
Henry Mertens@mmacmail.jccbi.gov

RECOMMENDATION FORM FOR CANDIDATE FOR FELLOW

(Confidential)

Candidate: _____

Name of Reference (Member) _____

Your name has been given as a reference to evaluate the above candidate for the status of Fellow in the Aerospace Human Factors Association (AsHFA). For your convenience, the AsHFA criteria of eligibility for Fellow status are listed on the other side of this page.

If you feel qualified to evaluate the candidate, please check here ____.

Was a copy of the completed nomination form included for your information? Yes ___ No ___
If so, was the candidate's case adequately presented? Yes ____ No ____

Please furnish below (and on a separate sheet of paper, if necessary) any additional data that you feel will be helpful to the Fellows Review Committee. Particularly, what are the candidate's outstanding characteristics and significant contributions on which his or her recommendation is based?

Do you unequivocally recommend the candidate for Fellow status? Yes ___ No ___

Date _____ Your signature _____

Address: _____

Telephone Number: _____

E-mail address: _____

Please return this form to:
Dr. Carol Manning
FAA CAMI AAM-510
P.O. Box 25082
Oklahoma City, OK 73125

DEADLINE FOR RECEIPT OF NOMINATION MATERIALS IS FEBRUARY 28, 2002.

Your humble Editor needs your assistance! I seek news of members for publication in this, *your* AsHFA Newsletter. If you know of someone (come on now…don't be modest…write about yourself!) whose professional accomplishments should be recognized and placed in print, then why not wax poetic and submit a few paragraphs about that individual. Describe their work, awards, and any other type of recognition they may have recently received. Review a conference, provide abstracts or book reviews, include a brief biography of that individual; all will be most acceptable. You need not possess the clarity of Dickens nor the erudition of Goethe; just jot a few jots and send them off to me. I will suitably embellish them with a flourish of laudatory adjectives worthy of your comments. You will shortly thereafter find your prose in print. If you wish to heed my call, then kindly forward all correspondence to my address listed at the front of this newsletter. Your help with this would be most appreciated! – CDR Andy Bellenkes, Editor

The University of Illinois Institute of Aviation has established an Aerospace Human Factors Association endowment to fund a new award, the **Henry L. Taylor Founder's Award,** for outstanding contributions in the field of aviation human factors. The Aerospace Human Factors Association will annually solicit nominations for the award. The criteria for evaluating the nominations are as follows: (1) research and publications; (2) special original contributions, e.g., equipment, techniques, and procedures; or (3) general leadership in the field, e.g., teacher, director of laboratory, officer scientific societies, etc. Recipients of the Paul T. Hansen Award will not be eligible for consideration for the Henry L. Taylor Founder's Award. The Institute of Aviation will annually provide a $500 honorarium to the selected participant, whose name will be announced at the annual business meeting of the Aerospace Human Factors Association. The recipient of the award will present the Henry L. Taylor Founder's Lecture at the annual AsHFA business meeting in May 2002, and will then receive the honorarium and a plaque. AsHFA members who would like further information about the award should contact the AsHFA Awards Committee Chair noted below.

Nomination Form

Henry L. Taylor Founder's Award

FOR Outstanding Contributions in the Field of Aerospace Human Factors

I nominate:

Present Position:

Business Address:

Please support your nomination by attaching documentation indicating outstanding contributions your nominee has made in the field of Aerospace Human Factors. Outstanding contributions in the following areas will be evaluated by the Awards committee: (1) research and publications, (2) special original contributions, e.g., equipment, techniques and procedures, or (3) general leadership in the field, e.g., teacher, director of laboratory, officer scientific societies, etc. Please provide the necessary documentation of how your candidate is outstanding with respect to one or more of these criteria. Three letters of endorsement with supporting evidence are required. Further, ensure that your nominee has not previously been a recipient of the Paul T. Hansen Award; recipients of the Hansen Award will not be eligible for consideration for the Henry L. Taylor Founder's Award. The Henry L. Taylor Founder's Award will be presented at the annual business meeting luncheon of the Aerospace Human Factors Association and will include a plaque and an honorarium of $500.

Recipients of this award will deliver a lecture at the Annual Business meeting of the Aerospace Human Factors Association to be held in May, 2002. The presentation will address a scientific or technical topic, provide an historical review of the recipient's area of expertise, or describe personal reflections on important events in the development of the field of aerospace human factors.

Date:

Signed:

Title:

Address:

Return this form by March 1, 2001 to:

Dr. Pamela S. Della Rocco, Awards Chair
FAA William J. Hughes Technical Center
ACT-530, NAS Human Factors Branch
Atlantic City Airport, NJ 08405

The Aerospace Human Factors Association (hereafter AsHFA), a constituent organization of the Aerospace Medical Association, announces the availability of its **STANLEY N. ROSCOE AWARD** for the best doctoral Dissertation written in a research area related to Aerospace Human Factors.

AsHFA recognizes the need to foster and support our growing Graduate Student membership through a program of proactive mentorship. One critical facet of this effort is an annual formal recognition of scholarly achievement in human factors. This takes the form of AsHFA's annual presentation of the Stanley N. Roscoe Award for the best Doctoral Dissertation written in a research area related to Aerospace Human Factors. Named for the distinguished scientist and educator, the Stanley N. Roscoe award is administered through the University of Illinois Foundation. This year's award will be presented at the Aerospace Human Factors Association's annual business meeting and luncheon in May of 2001 in Reno, Nevada and will include a plaque and an honorarium of $500.

It is essential that our finest young researchers be recognized for their outstanding efforts. We therefore invite you to help us in our efforts to sustain this highly prized award. Contributions to support the Stanley N. Roscoe Award can be made to the University of Illinois Foundation, Aerospace Human Factors Association account at the following address:

University of Illinois Foundation
Attn: Stanley N. Roscoe Award
Harker Hall, MC-386
1305 West Green Street
Urbana, Illinois 61801

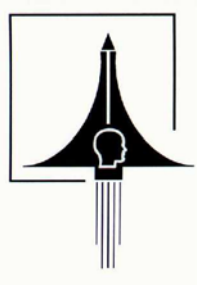
Criteria for judging the thesis/dissertations include

(a) significance of the problem and innovativeness of the approach
(b) review of related research
(c) effectiveness of the research design and analysis
(d) interpretation of results
(e) theoretical and practical value of the work
(f) clarity of writing.

To be eligible for this award, the dissertation must have been completed and accepted by the sponsoring department between October 1, 1999, and September 30, 2000. To have their dissertations considered for this award, please encourage your recent graduates to submit a cover letter, three copies of their dissertation, and a letter of recommendation from their faculty advisor. All material must be postmarked **no later than February 15, 2002**, and sent to the current chair of the Awards Committee of the Aerospace Human Factors Association.

If you have any other questions concerning this or any other AsHFA award, please contact the 2002-2003 Awards Chairman

Dr. Pamela S. Della Rocco, Awards Chair
FAA William J. Hughes Technical Center
ACT-530, NAS Human Factors Branch
Atlantic City Airport, NJ 08405



Application/Renewal of Membership in

Aerospace Human Factors Association

☐ Membership Renewal: I wish to renew my membership in the Aerospace Human Factors Association. I am a current member of the Aerospace Medical Association. I am enclosing $15.00 (U.S. funds) for annual dues with this application.

☐ Full-time Student

Name: _____

Title: _____

Name of Highest Degree:_____ Year: _____

Preferred Address: Home Business (circle one)

_____

_____

_____

Preferred Phone:( ) _____ Home Business (circle one)

Fax Number: ( ) _____

E-mail address: _____

Please complete the printed form then mail it with a check for $15 (payable to Aerospace Human Factors Association) to:

Dr. Thomas E. Nesthus
FAA CAMI AAM-510
P. O. Box 25082
Oklahoma City, OK 73125

If you are applying for membership for the first time, please use the application form found at http://www.asma.org/ashfa/memapp.htm

Aerospace Human Factors Association

A Constituent Organization of the Aerospace Medical Association

AsHFA Newsletter

AsHFA Newsletter
Dr. Henry L. Taylor, Director
Institute of Aviation
U of I-Willard Airport
1 Airport Road
Savoy, IL 61874

ADDRESS CORRECTION REQUESTED

Mailing Address
Street Number and Name
City, State 98765-4321