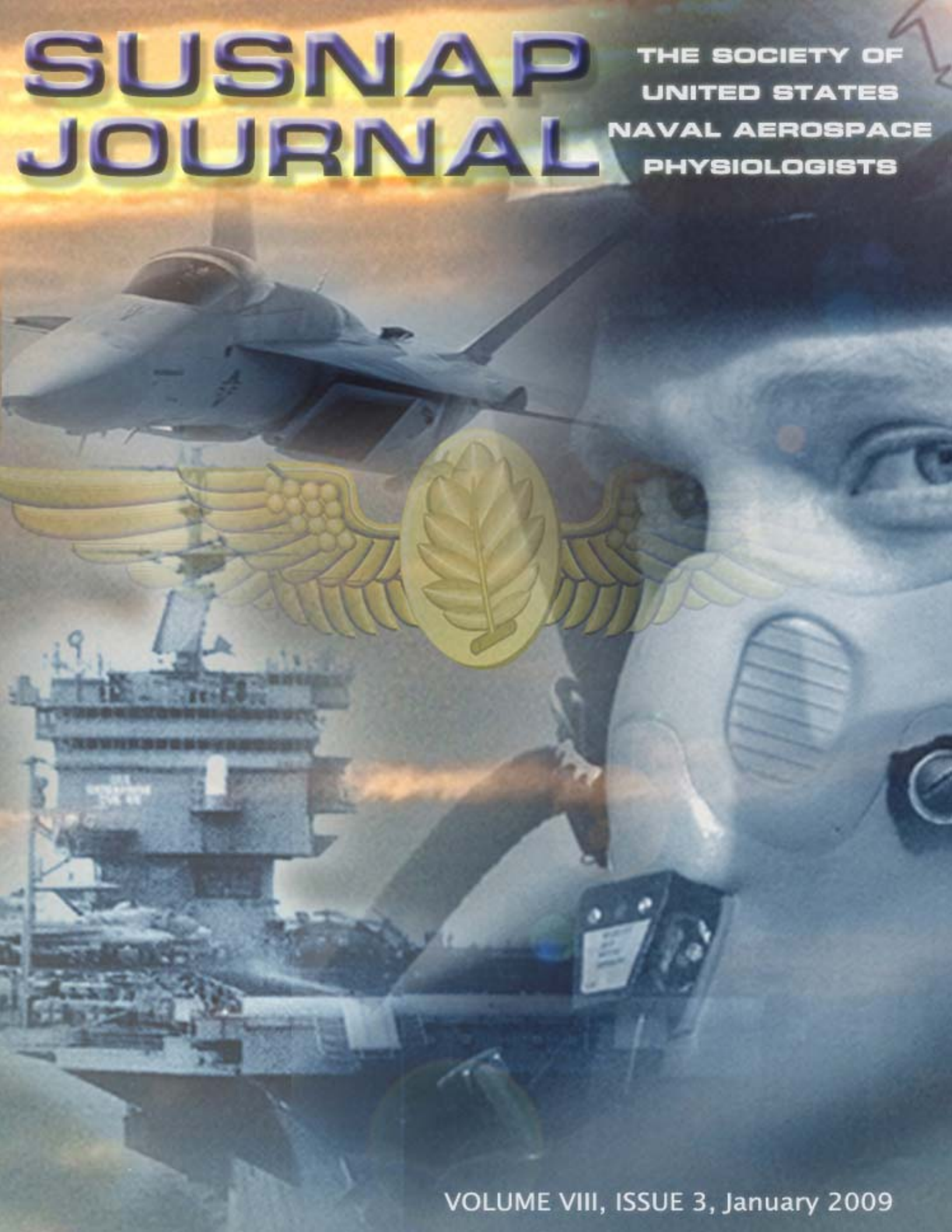
SUSNAP JOURNAL

THE SOCIETY OF UNITED STATES NAVAL AEROSPACE PHYSIOLOGISTS



VOLUME VIII, ISSUE 3, January 2009

SUSNAP JOURNAL

The Journal of Naval Aerospace Physiologists

JAN 09

Volume 8 Issue 3

Message From the President

LCDR Yniguez

SUSNAP President

It's that time of year again, to receive your New Year's addition of the SUSNAP Journal! We are so blessed to have a great country to live in, a great military to be a part of, and a great community of Aerospace Physiologists to work with!

LT Welsh has put another "excellent" SUSNAP journal together with many of our peers submitting current and interesting articles!

Some great reads are published, including a great update including awesome photos of the Navy Helicopter program, submitted by LT Angie Baker; don't miss it! Speaking of Interns, each one will be submitting an article to the SUSNAP journal as part of their Internship program, so keep those write-ups coming.

For those of you who are interested in sitting for the 2009 AsMA Certification in Aerospace Physiology, there is a step-by-step process posted in this issue. Now is a good time to start thinking about committing to study for this examination.

Any retired Aerospace Physiologist who would like to re-connect with active or retired AP's just send me an email with your current POC info (photos are always encouraged), so we can post via the new website or next SUSNAP journal.

Don't forget our forward deployed military peers; may they remain safe and protected under God's grace. Please keep LT Amy Hendrix in your thoughts! Have a great 2009, on behalf of the SUSNAP Board, may it be a great year for everyone!

Very Respectfully,

Your SUSNAP President

Custom Hearing Protection Use in Naval Aviation

Yesterday, Today, and Tomorrow

LT Andy Hayes

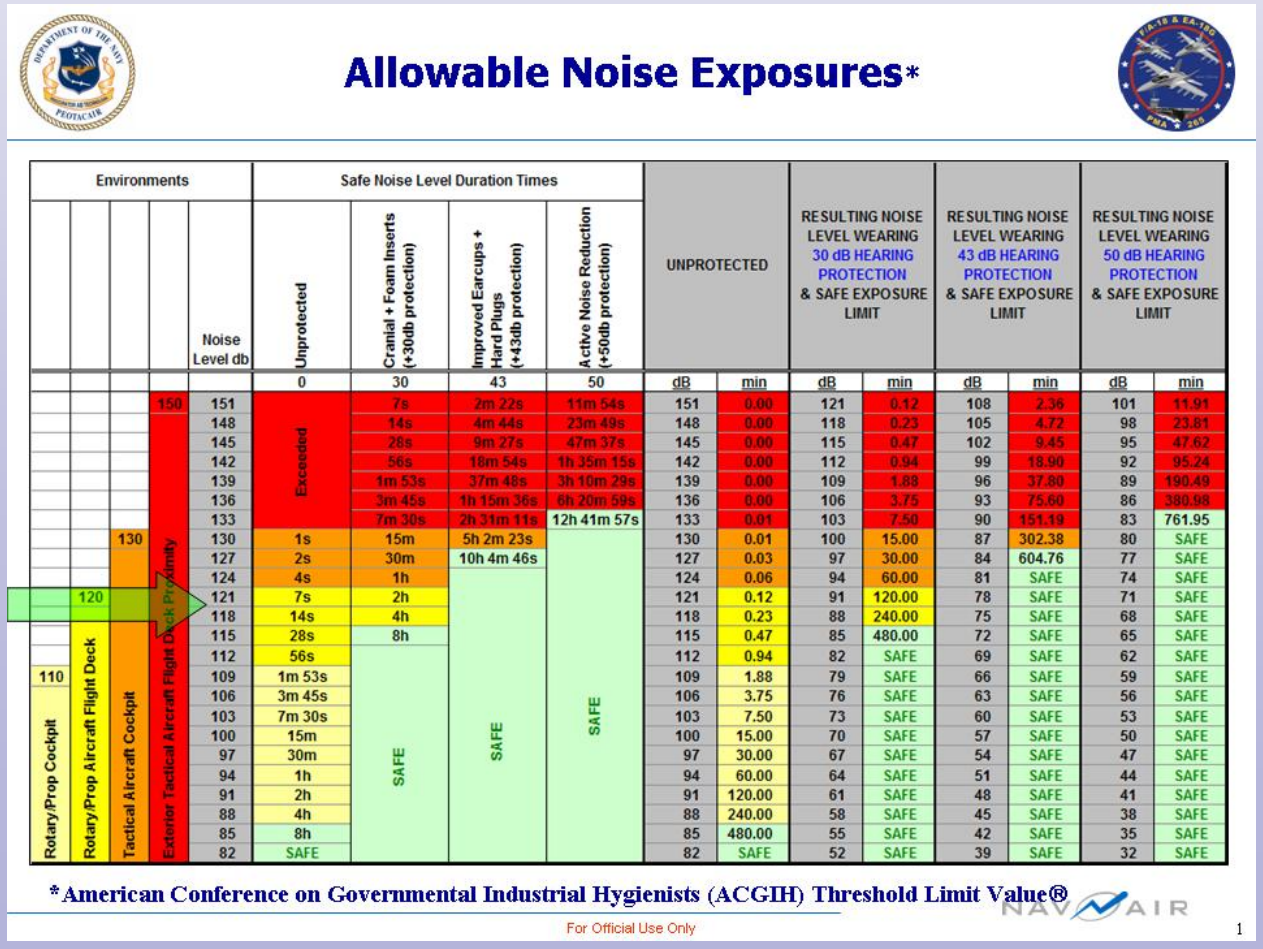
ASTC PAX River Intern

Interns assigned to our eight Aviation Survival Training Centers are presently required to complete a "special project". I have been asked to develop a brief on the "Impact on Human Performance of Aircraft Noise and Vibration Training," with associated lesson training guides, references and learning objectives. When completed, this ready-room brief and the associated instructor materials will be used to deliver the OPNAVINST 3710.7 appendix E, Level D, Naval Aviation Survival Training Program adjunctive lecture to any class of aircrew. LCDR Folga thought this would be a suitable area for me to expand upon, considering my audiology background and three-year working history with Naval Air Systems Command (NAVAIR), Personal Protection Branch, Code 4.6.7.3. My intent is to inform our community members on such matters not just to fulfill this request but also to be the go-to guy for future developments in hearing conservation issues. The following article summarizes hearing protection use in naval aviation yesterday, today and tomorrow.

Measurements on flight decks have indicated that personnel can be exposed to nearly 150 dB SPL

Yesterday

Earplugs have been worn with or without ear muffs (e.g., Flight Deck Cranial; HGU-24 and HGU-25) for the past 50 years. The Flight Deck Cranial has been an approved single hearing protection technology available for Sailors and Marines since the Korean War. Very early earplug designs were simple, such as molded wax or cotton balls that filled the outer ear canal. When used with properly inserted, disposable expanding foam earplugs or triple flanged ear



Allowable Noise Exposures*

Environments					Safe Noise Level Duration Times				UNPROTECTED		RESULTING NOISE LEVEL WEARING 30 dB HEARING PROTECTION & SAFE EXPOSURE LIMIT		RESULTING NOISE LEVEL WEARING 43 dB HEARING PROTECTION & SAFE EXPOSURE LIMIT		RESULTING NOISE LEVEL WEARING 50 dB HEARING PROTECTION & SAFE EXPOSURE LIMIT	
				Noise Level db	Unprotected	Cranial + Foam Inserts (+30db protection)	Improved Earcups + Hard Plugs (+43db protection)	Active Noise Reduction (+50db protection)								
					0	30	43	50	dB	min	dB	min	dB	min	dB	min
			150	151	Exceeded	7s	2m 22s	11m 54s	151	0.00	121	0.12	108	2.36	101	11.91
				148		14s	4m 44s	23m 49s	148	0.00	118	0.23	105	4.72	98	23.81
				145		28s	9m 27s	47m 37s	145	0.00	115	0.47	102	9.45	95	47.62
				142		56s	18m 54s	1h 35m 15s	142	0.00	112	0.94	99	18.90	92	95.24
				139		1m 53s	37m 48s	3h 10m 29s	139	0.00	109	1.88	96	37.80	89	190.49
				136		3m 45s	1h 15m 36s	6h 20m 59s	136	0.00	106	3.75	93	75.60	86	380.98
				133		7m 30s	2h 31m 11s	12h 41m 57s	133	0.01	103	7.50	90	151.19	83	761.95
		130		130	1s	15m	5h 2m 23s	SAFE	130	0.01	100	15.00	87	302.38	80	SAFE
				127	2s	30m	10h 4m 46s		127	0.03	97	30.00	84	604.76	77	SAFE
				124	4s	1h	SAFE		124	0.06	94	60.00	81	SAFE	74	SAFE
	120			121	7s	2h			121	0.12	91	120.00	78	SAFE	71	SAFE
				118	14s	4h			118	0.23	88	240.00	75	SAFE	68	SAFE
				115	28s	8h			115	0.47	85	480.00	72	SAFE	65	SAFE
				112	56s	SAFE			112	0.94	82	SAFE	69	SAFE	62	SAFE
110				109	1m 53s				109	1.88	79	SAFE	66	SAFE	59	SAFE
				106	3m 45s				106	3.75	76	SAFE	63	SAFE	56	SAFE
				103	7m 30s				103	7.50	73	SAFE	60	SAFE	53	SAFE
				100	15m				100	15.00	70	SAFE	57	SAFE	50	SAFE
				97	30m				97	30.00	67	SAFE	54	SAFE	47	SAFE
				94	1h				94	60.00	64	SAFE	51	SAFE	44	SAFE
				91	2h				91	120.00	61	SAFE	48	SAFE	41	SAFE
				88	4h				88	240.00	58	SAFE	45	SAFE	38	SAFE
				85	8h				85	480.00	55	SAFE	42	SAFE	35	SAFE
				82	SAFE				82	SAFE	52	SAFE	39	SAFE	32	SAFE

Rotary/Prop Cockpit; Rotary/Prop Aircraft Flight Deck; Tactical Aircraft Cockpit; Exterior Tactical Aircraft Flight Deck Proximity

*American Conference on Governmental Industrial Hygienists (ACGIH) Threshold Limit Value®

For Official Use Only

1

plugs, the HGU-24/25 provides "double" hearing protection, to a maximum of 30 dB (Hall, 2005). If properly worn, double hearing protection devices (HPD) will protect personnel in a noise environment of 114 dBA (A-weighted decibels) for eight hours. In the 1970s, expandable foams and other polymer earplug designs became more prevalent. Noise attenuation measurements, for properly inserted earplugs, demonstrated marked improvements with these new designs but still have their limitations. For example, over 300 flight deck personnel were surveyed two years ago with results indicating that only 7% were using their hearing protection correctly. Inconsistent use of non-custom hearing protection devices has been identified as one key deficiency that may be contributing to unnecessary hearing loss for U.S. Navy personnel (Bjorn, et al., 2006).

Disability claims in the U.S. Navy and Marine Corps totaled $235,000,000 in CY 2006

It is no surprise that a recent USN report found time spent on surface warships (e.g., aircraft carriers) had the largest impact on potential hearing loss as compared to time spent on surface support ships, time spent in noisy locations in submarines, or time spent at shore duty stations (Shaw and Trost, 2005). Measurements on flight decks have indicated that personnel can be exposed to nearly 150 dB SPL (Sound Pressure Level) of jet noise during maximum afterburner conditions occurring at launch. Unprotected exposure to noise above 130 dB will sustain permanent (sensorineural) hearing loss in less than one second (figure 1).

Integration of passive and active attenuation products in a common helmet may be a reality by FY 2013

Historically, there is extensive data to indicate that better HPD products are needed for military personnel (Humes et al., 2005). The cost of noise-induced hearing loss is growing at an alarming rate. Disability claims in the U.S. Navy and Marine Corps totaled $235,000,000 in CY 2006. This staggering budgetary figure for hearing loss as a primary disability does not include additional compensation for noise-induced tinnitus, treatment, hearing aids, or hearing loss benefits as secondary claims. There is a clear and present health risk and potential loss of quality of life for veterans that call for improved HPD products for USN and USMC personnel.

Today and Tomorrow

The most recent advances in earplug designs are focused on personalized, or custom, earmold products that attempt to optimize the balance between individualized noise attenuation, personal fitment, ability to insert correctly under field use, and comfort of the earmold devices. Earmolds are manufactured two different ways; ear impression waxing or ear impression scanning. One key motivation for the introduction of digital earmold scanning for fabrication processes was the desire to control the earmolds' dimensional tolerances with higher precision than is possible with the legacy ear impression waxing processes. In other words, a digitally scanned earmold impression is more representative of the user's ear canal anatomy compared to dunking an earmold impression in wax. Another reason to scan earmold impressions has to do with readiness. For example, if an earmold is lost or damaged a replacement earmold presently can be manufactured using a stored digital scan of the original earmold impression.

Taking earmold impressions may be unnecessary in the future. NAVAIR's Human Systems, Code 4.6 is funding two Small Business Innovation Research (SBIR) projects. First, they want to develop a means of scanning the ear canal as opposed to the present technique of injecting earmold impression material into the ear canal. This has been referred to as "Direct Digital Ear Canal Capture for Deep-Insert Earplug Customization". This type of capturing would be similar to that of a Computerized Axial Tomography (CAT) scan using tomography to identify soft tissue boundaries. Critiques of such a capturing technique worry that earplug comfort and attenuation may be compromised. Stretching the ear canal's skin and cartilage is believed to be essential for optimal comfort, retention and attenuation (Pirzanski, 2006). Human Systems, Code 4.6 would then take the captured ear canal image and maintain ownership of such images in a DoD controlled database. Once developed such a database could be used to order future hearing protection as indicated based on noise exposure per occupation code or rate.

Use of custom, deep-insert earplugs for a large group of personnel began in 2006 at Naval Air Station Jacksonville. At that time participants consisted of over 300 flight line personnel and aircraft maintainers from Patrol Squadron Thirty (VP-30) and Sea Control Squadron Twenty Two (VS-22). NAVAIR choose VP-30 because it is the Navy's largest aviation squadron and as such has the largest number of maintenance personnel. It is also shore-based and for this reason more control and contact was possible with the volunteers. Volunteers were given a pair of custom earplugs tethered to a modified version of the flight deck cranial to include earcups housed with improved foam and foam-filled liners. This product has been named the "MAX-40" by the manufacture Aegisound based on a mean attenuation value of 43 dB (figure 2). The

Figure 2

earplugs are made of a soft plastic polymer that is resistant to sweat, sea water and hydraulic fluid. Volunteers from VP-30 were asked to complete a 17 question survey which focused on comfort and use. The survey results indicated an 80% preferred custom hearing protection over legacy foam earplugs.

This past September, a custom hearing protection pilot project was initiated over four days, and targeted flight deck personnel and maintainers aboard USS Eisenhower, CVN-69 and three of Carrier Air Wing Seven's squadrons to include Carrier Airborne Early Warning Squadron One Hundred Twenty One (VAW-121), Strike Fighter Squadron Eighty Three (VFA-83) and Strike Fighter Squadron One Hundred Three (VFA-103). This pilot project included a team of four aerospace physiologists and three hospital corpsmen to include LCDR Peterson, LCDR Patterson, LT Jabs, LT Hayes, HMC Rivera, HM1 Wichman, and HM2 Christi. Our team impressed six hundred and thirty-nine volunteers who will receive the MAX-40 units for use in the environment for which it was created: an aircraft carrier flight deck (figure 3). Distribution of 600 plus MAX-40 units will be accompanied by verification testing over the next two months to determine how much hearing protection (i.e., attenuation) the end user is actually getting from the custom earplugs (i.e., Real Ear Attenuation). Two field attenuation devices are currently being evaluated by Program Manager, Air (PMA) 202 (i.e., VeriPRO and FitCheck). Verification is necessary to compare the mean attenuation (a.k.a., Noise Reduction Rating) as reported by the manufacturer to the actual protection realized by the end user. Field attenuation findings will be presented during the May 2009 Aerospace Medical Association (AsMA) conference.

PMA 202 with Human Systems (Code 4.6) and Personal Protection Branch (Code 4.6.7.3) are using engineering ingenuity, from presently four different companies, to develop hearing protection and communication technology through SBIRs. This technology includes custom deep-insert earplugs (figure 4), communication earplugs, digital noise canceling microphones, flight deck talk/listen-through technology, Active Noise Reduction (ANR) and In-Ear Dosimetry all of which will be available by FY 2010. Integration of passive and active attenuation products in a common flight deck helmet may be a reality by FY 2013 (figure 6). Each of these technologies has been briefly mentioned in Navy Times (August 11, 2008), Mech (figure 5, Summer & Fall, 2008), and Sea & Shore (December, 2008).

Note: Figures 5 and 6 located on the next page

Note: The Winter 2008-2009 Sea and Shore: The Navy and Marine Corps Magazine for Afloat and Shore Safety is dedicated to hearing protection.

Figure 3

Figure 4

REFERENCES

Bjorn, V.S., Albery, C.B., and McKinley, R.L., U.S. Navy Flight deck hearing protection use trends: survey results, Report No. NAWCADPAX/TR-2006/73, May, 2006.

Hall, J., Mobley, F., McKinley, R. and Schley, P., "New Directions for Custom Earplugs," in Proceedings of Internoise 2005, Rio de Janeiro, Brazil,2005.

Humes, L.E., Joellenbeck, L.M. and Durch, J.S., Noise and Military Service: Implications for Hearing Loss and Tinnitus, Institute of Medicine Report, 2005.

Pirzanski, C., Earmolds and Hearing Aid Shells: A tutorial. Part 1: The external ear canal and impression-taking materials, *The Hearing Review*, 13:4, pp. 10-20, 2006.

Shaw, G.B. and Trost, R.P., Statistical analysis of hearing loss among navy personnel, CRM D0011228.A2/Final, CNA report, February, 2005.

Figure 5

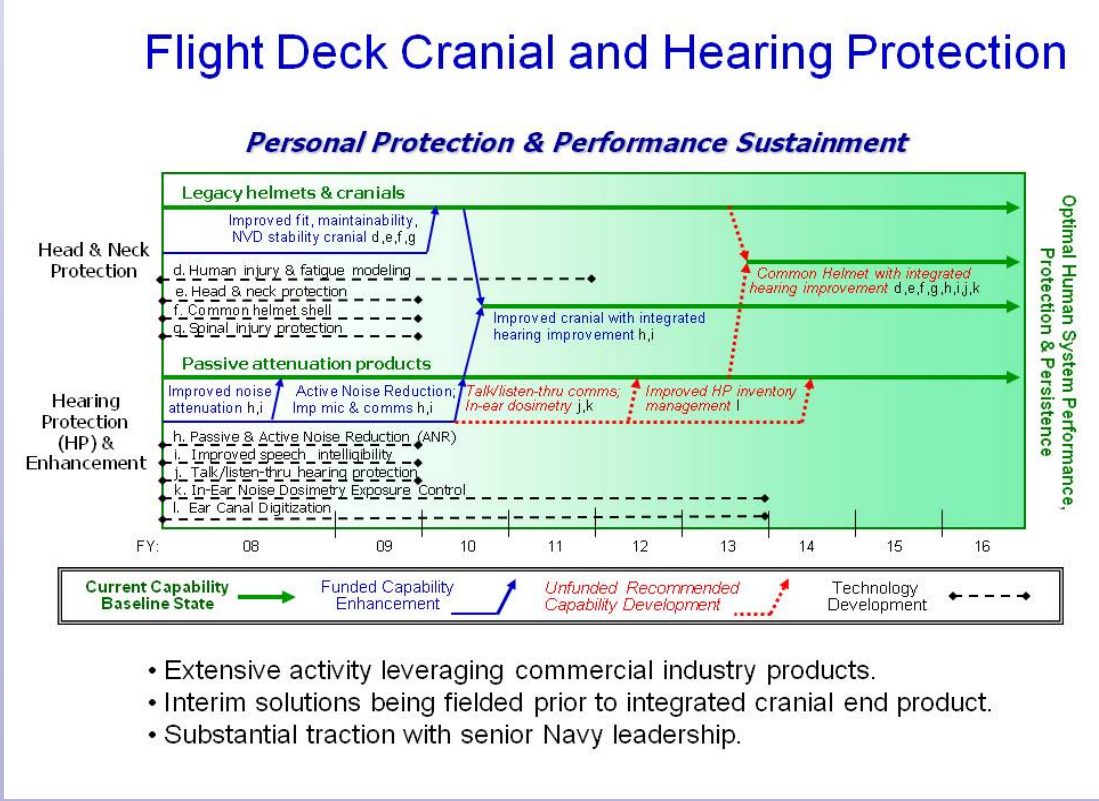


Figure 6

Human Performance and Training Technologies

LCDR Rich Folga

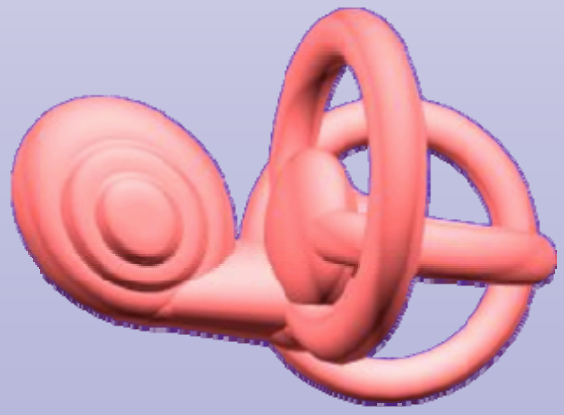
Human Performance and Training Technologies, NSTI HQ

NASTP SME Web Page

Human Performance and Training Technologies (HPTT) Directorate still plays an active role in sharing topical information from both current and former SMEs on our Navy Medicine Online (NMO) http://navymedicine.med.navy.mil//default.cfm? NASTP SME webpage. As published in previous SUSNAP articles, there is a web link that does not require NMO PKI access http://navymedicine.med.navy.mil//nastpsme/index.cfm? that links directly to the SME page. The pages are current as of September 2008. The contact info for each "assigned" SME (assigned formerly by BUMED or now informally by consensus) is generally as current as the "Phys list" from CAPT Syring.

Spatial Disorientation

In the November/December issue of Approach, one of our fellow Aeromedical advocates wrote that there seems to be a lack of meaningful effort being applied to the persistent problem of spatial disorientation in aviation. If you have been following the HPTT updates (see SUSNAP Vol. VI, Issue 3, January 2006 article titled *Human Performance and Training Technology Update* and Vol. VIII, Issue 1, June 2008 article titled *SME Program Update – No, It's Not Dead*) you are already aware we *were* working with a commercial vendor to produce new spatial awareness courseware to



be used for indoctrination of Aeromedical Officers, annual refresher training (Level A) and mishap lessons learned (MLL) products. In addition to the courseware, there was an ongoing effort to develop a simulation-based product accompanied with an instructor scenario authoring capability (ISAC) tool to organically generate MLLs in order to keep our courses current and relevant. The Spatial and Situational Awareness courseware and the ISAC tool were part of a Phase III SBIR effort. At this time, HPTT and Mr. Brian Swan are NOT reviewing these courseware modules and simulator products for the Government. No further information is available regarding the relationship with the vendor and NAVAIR for the production of spatial awareness courseware and hardware. As you may recall from the last issue of SUSNAP, CDR Prevost discussed a new combined ROBD/SD Part Task Trainer that will include some capabilities identified in the original Spatial Awareness Training System SBIR. This project is funded and has already kicked off in November.

In light of a change in strategy, HPTT is pressing forward to create modernized courseware using the new concepts unearthed in the first two phases of this SBIR. A new Aeromedical Officer Spatial and Situational Awareness course has been created combining draft SBIR courseware as an online read-ahead with instructor-led module delivered by LCDR Folga and CDR (ret) Fred Patterson. Aeromedical Officer students are now issued a copy of the courseware for their personal use and reference. The DOSS has approved the use of the Aeromedical Officer Course SD brief for inclusion as desired by ASTC Directors. The course was updated 14 December 2008.

For a sampling of the new spatial awareness concepts and products, use the above SME link and go to the Spatial Disorientation and Situational Awareness page. You may obtain the password to the protected documents by emailing Richard.Folga@med.navy.mil from a military account.

USAF Spatial Disorientation Training (part 1 of 2)

In early August 2008, PMA-205 contacted NSTI HPTT regarding an initiative by the USAF to purchase full motion flight simulators for the purpose of spatial disorientation (SD) training. The USAF has, in various ways, pursued the use of simulators for this purpose for over 20 years (Dr. Bill Ercoline, personal communication). Earlier acquired devices were both poor in performance and lacking in proper life-cycle management which led to their demise shortly after fielding. Currently, AFRL Brooks City Base has an Environmental Tectonics Corporation (ETC) device called the Gyroflight Sustained Operation Simulator (GSOS) that is marketed as the Gyro IPT II. This device, valued at around $1 million, is a potential candidate for a USAF

SD simulator/trainer. The GSOS is instrumented for data collection and is used for SD demonstration with School of Aerospace Medicine students, Residents in Aerospace Medicine, and of course SD research. Currently, the USAF is engaged in a Foreign Comparative Testing (FCT) project to determine if another device of similar technical design and function is a better value. This device, known as the Airfox DISO, is made by the Austrian company AMST. The USAF has traditionally found support from the MAJCOMs for advanced SD training, but a solid requirement and necessary procurement dollars has eluded them. It appears that AETC and AFRL are the lead agencies in the effort to procure SD trainers. A cocktail napkin sketch of the plan has the trainers (one each) at the major AETC training bases. The USAF has approached the Navy for hopes that joint support for the project could elevate the SD trainer procurement above the funding line. On 08 September 2008, LCDR Rich Folga and LT Tyler Scheeler conducted an exchange visit with AFRL to get caught up on the FCT project and to experience the GSOS first hand. The GSOS device, its history and that of its predecessors was introduced by Dr. Bill Ercoline.

Device, Training Setup and Scenario

The GSOS has four degrees of freedom (ETC propaganda says "4+2 DOF") with motion in the yaw, pitch, roll and heave directions. The device can rotate continuously in the yaw plane. The GSOS runs on 220 VAC and is not bolted to the floor (a hexapod base) so it is not impossible to relocate if necessary. Anecdotally, the AFRL staff indicated the device was (mechanically speaking) relatively low maintenance and on the software side perhaps not unlike our SDS products, which have a tendency to crash on occasion. The Instructor Operator Station (IOS) graphic user interface was a source of complaint, but did not seem to dramatically impact functionality. The cockpit is reconfigurable for fixed wing and rotary wing flight. We were told that the rotary wing version flies and or performs better for the SD scenarios. Three flat panel displays provide visuals, with instruments provided on a reconfigurable head down display. However, only two flat panel displays were operating at the time we took the demos. Graphic quality appeared similar to that experienced with Laminar X-Plane and Microsoft ESP, with the latter two providing perhaps better environmental (clouds and fog variability and realism) conditions. The simulator was configured as a T-6 which was comforting since both LT Scheeler and LCDR Folga had actual and simulated flight experience with the T-6. Subjects or trainees wear a headset and four point harness during flight. An infrared cockpit camera monitors the subject while an IOS displays performance data and the visual scene, including the instrument panel, in a room adjacent to the GSOS. After a brief amount of free flight for familiarization, several SD scenarios were demonstrated for both Folga and Scheeler. Each session (demonstration) lasted about 20 minutes.

Results and Conclusion

The GSOS device, while now at around fours years old, is a capable SD demonstrator and flight simulator. Neither LCDR Folga nor LT Scheeler experienced any significant motion sickness symptoms as a result of the demos. The results of the scenarios demonstrated for LCDR Folga and LT Scheeler were as follows:

- Black Hole illusion (called the "Duck-Under" by Dr. Ercoline) which Folga butchered badly due to unexpected runway geometry compared to SDS Liteflite Black Hole experience, an inadequate approach brief and lack of flying skills with the simulator. LT Scheeler "successfully" committed Black Hole approach errors twice. Folga found the SDS SPATS version of this scenario more effective. The SPATS version was designed to train the student with feedback on performance provided. However, with minor scene modifications and more briefing, the GSOS version could be equally as effective.

- The Runway Width illusion, which I found unremarkable as I was still reeling from a brutal Black Hole approach.

- False Horizon illusion which Folga found to be convincing. When using an outside perspective (spatial strategy) he would line up on the false horizon and immediately correct when switching to an inside perspective.

- Nystagmus (while not an illusion, a disorientating phenomenon) which was certainly much better than the old Barany chair. Having a simulated flight environment does enhance this demonstration.

- Somatogravic (pitch up) illusion which worked brilliantly. The urge to nose the aircraft over was definitely present.

The Graveyard Spin. Essentially, this is a T-6 spin recovery that occurs in a cloud deck. The illusion is elicited by having the student hold a spin to the right for several seconds. The student is then instructed to arrest the spin by applying the appropriate control inputs. At this time the ADI and HSI are both removed form the instrument panel. LT Scheeler ran this profile twice and on both occasions felt like he was spinning in the opposite direction. In his opinion, this demonstration was no more effective than the Barany chair. The

artificiality created by removing the some of the instrumentation took away from the realism of flying a real simulator for the demo.

Overall, having the opportunity to see what the Air Force has developed and to learn the recent history of SD research was an important HPTT task. It will be beneficial to experience the GSOS in the rotary wing configuration if the opportunity presents itself. There is some question as to the fate of the GSOS once AFRL Brooks completely shuts down. Perhaps the corporate knowledge of the GSOS will be lost with a device transfer to Wright-Patterson, if that is the destination. Regardless of the FCT results, a better working relationship has begun (again) and common training goals have been identified. The GSOS capability as an SD demonstrator was shown; however, the utility as a trainer is still in question. Demonstration does not equal training, and perhaps the entire syllabus needs to be reviewed along with FCT results before making an effective judgment on this important quality. Obtaining copies of reports documenting the studies conducted using the Airfox DISO and the GSOS will be important for in depth understanding of how aviators perceived the utility of these devices. Maintaining a working relationship with AFRL will be an important objective for HPTT from now and into the future. The new SD ideas (spatial strategies, OKCR role, perspective illusions, etc.) brought to light from the work of Dr. Fred Patterson must be included in any joint SD development, especially in a simulator.

The next installment will include FCT results, including a report from our combined CNATRA/AETC/NSTI experiences flying the Airfox Diso at the AMST factory in Austria and an update on HPTT activities on the SD front.

A Review: Acceleration Tolerance at Night with Acute Fatigue

By LT Tim Welsh

AMSO TRAWING 6

Acceleration Tolerance at Night with Acute Fatigue

By: Carol S. Ramsey, Paul M. Werchan, Wayne M. Isdahl, Joseph Fischer, and John A. Gibbons.

Aviation Space and Environmental Medicine August 2008 volume 79 issue 8.

The goal of this review is to focus on the most relevant findings of the study and bring them to the attention of the Naval Aerospace Physiology Community. This study was conducted to determine whether acute fatigue due to circadian disruption and/or sustained wakefulness increases the chance of G-LOC and observe how pharmacological intervention (a.k.a go pills) affects +Gz tolerance.

The study was completed at the Air Force Research Laboratory, Brooks City-Base, Texas and 10 active duty male subjects participated in the study. A total of 6 experimental conditions were conducted. The conditions were daytime control, night time placebo, dextroamphetamine ingestion, methylphenidate ingestion, pemoline ingestion, and modafinil ingestion. Each experimental condition was separated by a minimum of 4 days. The 5 night time testing sessions had the subjects complete an average of 22 hrs of sustained wakefulness prior to completing centrifuge testing. All night time testing was conducted during the subjects' circadian nadir.

For all experimental conditions, identical centrifuge profile were conducted without a G suit. The profile consisted of a series of rapid onset centrifuge runs between +1 Gz - +9Gz without utilizing the AGSM. This was immediately followed by the same series of rapid onset s runs, but subjects were able to utilize the AGSM. Each run lasted 15 s or until the subject experienced 100% peripheral light loss and 50% central light loss. Subjects were allowed 2 minutes of rest between all centrifuge runs. The final run for all testing sessions was set up to allow researchers to measure +Gz endurance and target tracking during 3-7 +Gz exposure. This was accomplished by having the subject track an aircraft inside the spinning centrifuge. The subjects were able to increase or decrease the amount of +Gz they experienced based on how aggressively they tracked the aircraft.

The researchers hypothesized that after 22 hours of sustained wakefulness +Gz acceleration tolerance and endurance would be reduced during the circadian nadir compared to the day time control. In addition, they hypothesized that the pharmacological agents would improve or maintain +Gz tolerance compared to the night time placebo. The results of the study did not support these hypotheses. The only statistically significant difference was the subject "felt" it was more difficult to perform the AGSM during night time non-pharmacological aid experimental condition. This means +Gz tolerance, endurance, and target tracking were unaffected by 22 hrs of wakefulness or by having the subject complete testing during their circadian nadir. Also, pharmacological aids did not improve +Gz tolerance compared to not using pharmacological aids nor did they reduce it.

It appears that the physical ability to withstand repeated exposure to +Gz forces during flight may not be significantly affected by acute fatigue caused by long periods of wakefulness. It also supports that the use of pharmacological aids by aviators doesn't provide any added +Gz tolerance benefit. Of course this is one study with a relatively small sample and we cannot make any definitive conclusions. However, the amount of +Gz exposure these subjects experienced over the 6 experimental conditions and the fact they were not as highly motivated as an aviator would be in a real or simulated operational mission leads me to trust these results. Not to mention, the theory behind why acute fatigue may not affect +Gz tolerance or endurance.

A theory discussed in the conclusions section involves a rise in catecholamines during periods of sustained wakefulness. Catecholamines increase blood pressure and heart rate, which in theory, could improve +Gz tolerance. Furthermore, the epinephrine, norepinephrine, and cortisol released during +Gz exposure could have compensated for any acute fatigue related reductions in the physical ability (e.g. cardiovascular or neuromuscular) to resist a G-LOC episode.

The researchers make a good point by stating that this study does not completely rule out acute fatigue as a causal factor in G-LOC mishaps. For example, loss of SA due to acute fatigue resulting in an unexpected rapid onset of +Gz. In this case, pharmacological aids could reduce the risk of a G-LOC due to the ability of these aids to increase alertness and therefore SA. Based on the results of this study, an argument can be made that the physical ability to prevent a G-LOC episode is not negatively affected by acute fatigue, but we cannot make the argument that G-LOC mishaps are never caused by acute fatigue. In addition, we cannot completely rule out the ability of pharmacological aids to prevent a G-LOC mishap because of their ability to increase alertness. The bottom line is that acute fatigue due to sustained operations may not significantly reduce +Gz tolerance and the use of pharmacological aids during periods of acute fatigue, may not provide any added +Gz protection.

Board Certification Announcement

By Maj TROY P. FAABORG

USAF, BSC, CAsP

The Executive Council of the AsMA acting upon recommendations of the Aerospace Physiology Certification Board grants certification in aerospace physiology. Board certification in aerospace physiology was established by the Aerospace Medical Association (AsMA) to encourage the study, improve the practice and elevate the standards of excellence in aerospace physiology. Formal Board Certification provides an avenue for professional and peer recognition in aerospace medicine, and is a worthy goal for members to attain.

This year's certification examination will be offered at the 80th annual scientific meeting of the Aerospace Medical Association on Sunday, 2 May 2009 in Los Angeles, California (USA).

Board certification is for professionals with an abiding interest and demonstrated productivity in the field of aerospace physiology. Applicants must possess, as a minimum, a baccalaureate degree either in physiology, or a closely related science. A history of significant contributions to aerospace physiology is also required. Applicants should have five years of active professional experience in an aeromedical field.

The five-hour exam contains questions covering various areas relevant to aerospace physiology including, but not limited to general human physiology, acceleration physiology, decompression physiology, impact, hypoxia, vibration and noise, operational aspects, space physiology, and spatial orientation.

Applications and letters of reference are due to the Admissions Committee no later than the close of business, Friday, 06 March 2009. Applicants should contact the Admissions Chair for an application form (available in English only). Applicants should also submit a suitable portrait photograph, a short professional biography of less than 300 words, two professional letters of recommendation submitted directly to the Board, and a one-time, non refundable Application Fee of $25 (U.S). A non-refundable $75 Examination Fee is due prior to the exam. Make checks payable to the Aerospace Physiology Certification Board. Applicants are encouraged to submit documents to the Admissions Chair in a digital format; MS-Word compatible for text documents, and high-resolution JPEG for graphics/photos.

Applications for Aerospace Physiology Board Certification are available from the Admissions Committee Chairman:

TROY P. FAABORG, Maj, USAF, BSC, CAsP

502 Westgate Drive

Warrensburg, MO 64093

Email: troy.faaborg@whiteman.af.mil (professional), or faaborgs@msn.com (personal)

Deadline for Application: 06 March 2009

Deadline for Application: 6 March 2009

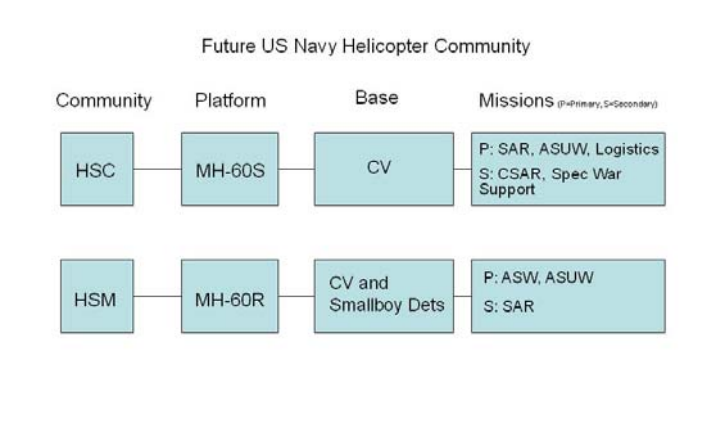
Single Multi-role Platform for Helicopter Operations

By LT Angie Baker

Intern ASTC Miramar

With the Navy going to a single multi-role platform for helicopter operations, the H-60 has become the premiere aircraft that offers the versatility needed to complete the complex missions required of our helicopter community at sea. By streamlining the Navy fleet to all H-60s there are significant savings due to parts and supplies management, maintenance, and maintenance manpower. These savings are similar to that brought about by the F/A-18 within the TACAIR community. Due to operations in the Middle East, the Philippines, South America, Africa, Europe and beyond the missions required of the H-60 are evolving and changing to meet the threat. This article gives a breakdown of what the helicopter communities were and what they eventually will be so we can be knowledgeable about the way our Navy helicopter fleet will be operating in the future.

In the past there were three distinct helicopter communities: HC, HS, and HSL. The HC community flew the H-46D, UH-3Hs, and MH-53Es that served primarily as support/logistic platforms. They were based on supply ships, Oilers or LHA/LHD Amphibs. Their main roll was logistics support, VERTREP, resupply, and passenger transfer.



The HS community has flown the SH-60F/HH-60H based off of the Carrier with the main mission of SAR for the carrier (Starboard D) while launching and recovering aircraft, and ASW/ASUW in the vital area of the carrier. The SH-60F (the Dippers) were responsible for the ASW mission, while the SH-60H equipped with FLIR and Hellfire, were utilized for the ASUW role. SH-60F/Hs should be phased out by FY15.

The HC and HS communities are combining to become the HSC community, flying the MH-60S and will continue to be based upon the carrier. They have lost the ASW role but will continue the ASUW mission. Their main role will be SAR, ASUW, and Logistics, with peripheral roles including VERTREP, passenger transfers, CSAR, special warfare support and airborne mine countermeasures (still in its infancy). For the SAR mission the MH-60S will have a SAR swimmer and carry the standard equipment of a hook, strop, and litter and optional equipment will be a quick strop and/or basket. With the new CSAR and spec war role the Sierra will begin small detachments inland on an as needed basis, equipped with FLIR, Hellfire, and window and door guns (7.62mm machine gun and a .50 caliber, respectively).

The biggest changes will occur within the HSL community. In the past, HSL (LAMPS, Helicopter Anti-Submarine Light) utilized the SH-60B for the ASW and ASUW mission and were found on board Frigates (FFGs), Cruisers (CGs), and Destroyers (DDGs). HSL squadrons are now being converted to HSM squadrons and new HSM squadrons are being created utilizing the new MH-60R. The MH-60R has all of the newest upgrades to perform all of the old Bravo missions as well as takeover of the sono (Dipper) mission from the HS community. Their main missions include ASW, ASUW, with the secondary mission of SAR. They have the ability to be equipped with a Dipper, sonobuoys, FLIR, Hellfire, Penguin, torpedoes, and door guns. Even though SAR is a secondary mission their equipment can be the same as the MH-60S, utilizing a SAR swimmer, hook, strop, litter, quick strop or basket. This community will also now be based on the carrier and will have detachments out to the small boys (FFGs, CGs, DDGs). Until all of the Romeos come online, the HSL squadrons who have not yet converted over will continue to utilize the Bravos onboard the

small boys to fill the gap. SH-60Bs should be phased out by FY17.

Ultimately, HSC, HSL, and HSM will become HSC and HSM. Everything is still in transition and due to funding cuts or other changes this plan may be modified or changed.

The US Navy Helicopter Community has been revised due to an ever-evolving mission, new diverse operating areas, and updated H-60 aircraft. With the newest additions of the MH-60S and MH-60R the Navy is streamlining the

helicopter fleet for versatility and cost/manpower savings all at the same time. Modular mission kits that can add or take off equipment in a short amount of time will immediately change the way the warfighters configure for a specific mission. ALSS and other survival and combat gear may also be looked at differently with a switch from aircraft specific to mission specific configurations (i.e. over water versus over land). This may help with current differences between Navy and USMC ALSS needs and requirements. As the Navy makes this transition there may

be a change in the way we look at training and equipping our helicopter aircrew and flexing our products and services to meet the needs of this diverse and important community.

References:

MH-60S Knighthawk - Multi-Mission Naval Helicopter, USA. (2008). http://www.naval-technology.com/projects/mh_60s/ accessed 12 Dec 2008.

MH-60R Seahawk [ex Strikehawk]. (27 Apr 2005). http://www.globalsecurity.org/military/systems/aircraft/sh-60r.htm accessed 12 Dec 2008.

Pontrello, J. (16 Dec 2008). Interview.

Saenz, T. (02 Dec 2008). Interview.

PPBE for Dummies…..continued

By LCDR Debra Yniguez

SUSNAP President

Programming:

The goal of the programming phase is to define those programs (hardware, acquisition, technological development, force structure, logistics posture, manpower requirements, training needs, supporting infrastructure, C4I capability, operating tempo, etc) that will best meet the needs articulated in the planning phase within the fiscal constraints provided. No small feat. Of benefit to the programmers is that given the magnitude of the department of defense, much of the change from year to year is modest and incremental.

During programming, sets of sponsors responsible for advocating certain positions or needs, meet to negotiate the best mix of programs. While close-air-support, nuclear deterrence, and networked healthcare systems all have value, it's not obvious nor universally held which is more important and what the relative value of each should be. So a system has been devised that stimulates the conversation, that demands rigorous analysis, that holds that analysis accountable and –hopefully-results in the best set of programs, for the right cost, that meet national security needs as defined by the President and will withstand the scrutiny and approval of Congress.

Navy **Resource Sponsors** are responsible for an identifiable group of resources constituting certain warfare and supporting warfare tasks, such as air, surface, or subsurface warfare. One of the responsibilities of these sponsors during the programming process is to ensure an effective and balanced program within assigned fiscal constraints. During internal budget reviews, the sponsor provides assistance to accommodate facto-of-life pricing and funding increases in order to maintain a balanced program.

Navy resource sponsors are supported by a series of program sponsors for managed items. A program sponsor is responsible for determining program objectives, time phasing and support requirements, and for appraising progress, readiness and military worth for a given weapon system, function or task. The program sponsor is the primary Navy or Marine Corps spokesperson on matters related to the requirement for the particular weapons system or program.

Capability Sponsors are responsible for developing and maintaining CNO approved Naval Capability Plans (NCPs) within designated capability domains to identify and prioritize future war fighting, readiness and support requirements. NCPs are defined in terms of outcomes and are derived from rigorous analysis based on approved models, scenarios and assumptions.

Warfare Integration compiles the NCPs forming the basis for Mission Capability Packages (MCPs) which are then aggregated by SeaPower-21 pillars. In short, Capability Sponsors articulate what the program achieves in terms of output metrics, compares that to requirements in the DPG and identifies any gaps to facilitate trade-off decisions. Capability Sponsors include: readiness, logistics, infrastructure, war fighting, manpower and training and education.

The **Appropriation Sponsor** is the senior executive in the DON responsible for supervisory control over a designated appropriation with broad decision-making authority on matters relating to the appropriation. This involves assisting in solving funding deficiencies during budget formulation, testifying before Congress, and recommending the reprogramming of funds within the appropriating during budget execution. They are responsible for reviewing Committee reports and for preparing consolidated appeals for their appropriations and submitting them to FMB in accordance with FMB guidance and schedules.

As you can see there is great overlap in this arrangement. A given resource sponsor is responsible for allocating funds across multiple programs all of which use multiples appropriations and must meet capability requirements all within a fiscal constraint. As one sponsor adjusts the mix of resources, programs or funds, they drive changes in the plans of other sponsors, requiring them to re-balance. No one acts without affecting the plans of others. This is designed into the system to maximize the most efficient, effective, economical mix of money, manpower, hardware and capabilities success in the end.

What is the result? The Program Objectives Memorandum (POM) is the end product of the programming phase. The POM is a plan for allocating resources across a six-year period. It mirrors the Future Years Defense Program (FYDP). The POM is built in even numbered years, and reviewed during odd numbered years, in order to reflect fact-of-life changes, Congressional actions, and world events. Odd-year reviews, called Program Reviews, only consider the last five years of the POM.

Leadership Lessons Still Needing To Be Learned

By: Anonymous

I think I may be failing at leadership. This week, I wrote my first page 13 entry on a Sailor. It is the right thing to do for the Navy, the command and the individual, but it was a challenge for me. Why could I not motivate this Sailor to complete tasks on time and on target? Why did he not see that he was not meeting the standards at this command? What have I done wrong?

Well, I will start with my failings. First, I have been enabling him. For example, I corrected every piece of correspondence he submitted. I told him exactly what to do on each line to fix the format and to write in a more military manner. I never asked him to figure out what was wrong—and he never felt compelled to look for these errors, knowing I would be there to catch them before the document went further.

Second, I have not been telling him he is not meeting the standards. I thought his evaluation should be scored like my Fitness Report. I found out the Commanding Officer's average and placed him there or above. This was what I had done in the past. In fact, I have meant to write about the issue of how to write evaluations since I first wrote one. Though I still feel I am unqualified to write such an article. By the bullets on the Evaluation, my Petty Officer is hardly a 3.0 Sailor. Yet, I was scoring him significantly above 3.0. How was that helping anyone? It was not helping.

Third, I must be lazy. I have been frustrated by his performance, but find my self "too busy" with my responsibilities to take care of one of my responsibilities. (Yes, I meant to write it that way.) Sure, my job can be busy, especially since I have been saddled with several collateral duties. But, part of the job is being an Officer in the United States Navy, being a leader. And sadly, I was not leading this Sailor. I was doing his work for him, because it was quicker for me to correct his errors than for him to look for them as if it were a scavenger hunt.

<u>The turning point, or when I finally decided I had enough and needed to take action</u>. I can tolerate little errors now and then. We are human and subject to some level of human error, if we allow ourselves. Dr. Tony Kern suggests we can overcome this tendency with discipline and win the war against human error. This is when I stop tolerating the human error. If you always send your e-mails without the attachment, you should simply change your habit pattern to insert the attachment as soon as you write, "Please note the attached." Stop right then! Insert attachment. Then, continue with the sentence.

So, how does this relate to the topic at hand? My Sailor does not forget attachments, but he does forget to proof his work, to actually read his e-mails before sending them, and to ensure he has typed the words he intended. How hard is it to read what you have written? How many times do you need to have this pointed out to you before you take ownership of your errors and work to correct them? In his case, it took more prompting than I thought was appropriate.

And then, it was Thursday again. Thursday in in our command is synonymous with Field Day. Seeing the rest of the command Field Day did not seem to cause my Petty Officer to think, what I would consider a logical thought, "Everyone is cleaning, I should be cleaning." So, after having to prompt him to clean, for not the first time, I decided to check his work. I had checked his work on past Field Days. I had even provided verbal critique at times. I inquired if he was done with his Field Day. He said he was. I said I would check his work. He then recanted and said he was not done. To be honest, this made me want to find something wrong by the time he finally announced that he was done.

Not surprising, I found some low dust. He cleaned again. I again found some more low dust. I conducted verbal counseling. He cleaned again. I found dust, right there on the desk top, and therefore prepared my first written counseling for his file. His corrective action was to conduct a thorough Field Day. I showed him where the dust remained, where the attachments on the vacuum could be used.

Meanwhile, he showed some poor headwork in other areas. He failed to keep the chain of command informed on some significant issues. His uniform looks as if it is kept in a ball on the floor each night. He talks to the senior enlisted leader (SEL) as one would talk to their high school buddy. His classroom presentation is often similarly unprofessional.

In discussing these issues, the SEL and I determined that the cause could either be attitude or aptitude. I believe this is the standard SEL question. Pulling the Petty Officer's Service Record, we checked his Armed Services Vocational Aptitude Battery (ASVAB) scores. He is not stupid. So, it must be attitude. When asked about it, he indicated that the issue was with his previous leaders. (Great, and here I am just another bad leader in a long line of bad leaders in this Sailor's career.) But wait, he is in a command

with plenty of good leaders of all ranks and rates. He has surely had the opportunity to see how others look and act and note that his appearance and actions do not mirror theirs. Perhaps just as I do not like to bring the hammer down on him, he does not like to bring the hammer down on himself.

So, due to his need for additional instruction on cleaning, his failure to inform his chain of command, and his laziness in the area of military courtesies, I wrote my first page 13. I think I could have done better somehow. As a result, next time, I will be more honest in my evaluations. I will be less of an enabler. I will do my best to be a better leader.

Death by PowerPoint: Help Avoid Casualties From Your Briefs

-A Book Review-

By LCDR Dustin Huber, PhD
ASTC Cherry Point

"You can't speak with the U.S. military without knowing PowerPoint." -Margaret D. Hayes, National Defense University

The best presenters I have seen, especially in the crucibles of squadron spaces, forego PowerPoint presentations altogether and rely only on their expertise and experience in public speaking to communicate critical information to a potentially hostile audience. For the rest of us, PowerPoint (or Keynote for the Mac users) presentations are a necessary evil.

And yet, a simple computer program can't by itself be malicious or malevolent without input from the user (older readers can debate about HAL or WOPR; younger ones can worry about SkyNet and the Matrix). That's why it is critical for any of us that use this technology to do so responsibly and with an eye towards our audience. PowerPoint can be an impressive tool when used effectively, but nearly deadly when used poorly. So how can we avoid becoming oral executioners?

Michael Alley's *The Craft of Scientific Presentations* (Springer, 241 pp., 29.95$) is a book that I recommend to anyone who wants to learn how to give survivable (and memorable) presentations – even unplugged ones. I read this book as I prepared my AP interview brief. I had given many oral briefs in both the scientific and military world before, but Dr. Alley's book was paradigm-shattering in how I thought about presenting my information, persuading my audience and organizing my slides. I have no doubt that utilizing Dr. Alley's practices made it as strong as it could be.

Not only that, but the book is a good read. Dr. Alley is an engineer and educator at Penn State University, and no stranger to presentations of challenging information. He doesn't just give bullet points to tell what makes up the good and the bad, but pulls in stories from colleagues and the writings of famous scientific presenters – most notably, Dr. Richard Feynman, one of the architects of the atomic bomb, investigator in the Space Shuttle Challenger mishap, and arguably one of the greatest modern teachers of complex topics. Newer officers will obtain critical skills that will help them create and deliver excellent presentations, and more experienced officers will enjoy the anecdotes and horror stories that come from trying to communicate to any group of people.

The book itself is broken into an introduction, conclusion and four other chapters (Speech, Structure, Visual Aids and Delivery) which form the meat of his advice. There are also appendices which include an excellent section on poster presentation and links to helpful templates and examples (which I have included below). Honestly, I can't do the subject justice in just a couple of pages. But, I will do my best to give you some points from

chapters 4 (Visual Aids) and 5 (Delivery) that can immediately help with your own presentations:

1. *Ignore the PowerPoint template*. There are a number of reasons to abandon the default format handed to you by Microsoft. Most importantly, adopting a new design can significantly improve audience comprehension and retention. Stop using fragmented words and phrases to title your slides. Use a complete short sentence instead, one that completely describes the key idea that you are trying to get across. This forces you to consider the Bottom Line Up Front (BLUF) with every slide. Second, ditch the topic/sub-topic routine. Instead, back up your BLUF with evidence, primarily VISUAL evidence, that will serve to convince your audience.

We have to be comfortable enough to be able to talk to the point without bullet lists – which requires patience, practice, and being the subject matter experts that we are.

2. *Use the slides for what they are: a visual media*. Pictures, graphs, videos, drawings, and other visual information can and should be used to help your audience understand and accept your BLUF. Cutting and pasting clip art doesn't count – unless it helps you prove your point. Use words as needed, but anchor them to visual cues (and keep creating complete sentences!). This design style has proven advantages over the traditional PowerPoint template in terms of audience understanding and information retention.

3. *Know your material*. This may come as a shock to some of us struggling with new material as it is, but we have to be comfortable with what we're teaching when departing from the traditional slide set. Removing bullet points means that we can't use the slide as a crutch to pull out, sometimes word for word, the subject matter for that particular slide. We have to be comfortable enough to be able to talk to the point without bullet lists – which requires patience, practice, and being the subject matter experts that we are. Knowing the material means knowing when NOT to have the audience focus on the slides, but on you instead. Remember, if we only needed to be there to advance slides, we could create an NKO course with bad narration instead. Make the slides your tool, not the other way around.

4. *Tell a story*. No, not the one about you being naked on the flight line, but close. A great story is one that people will pay attention to and remember. Great stories have a strong beginning (to include your overall assertions and training objectives), a descriptive narrative (think back to creating a visual experience through your slides), and most importantly, a strong ending (to summarize, conclude with your assertions again, and then your overall conclusion). Perhaps as important as what you say for each slide is what to say between the slides, in order to make smooth transitions between ideas.

Do the above recommendations require extra effort on our part? You bet. But don't be content with handed-down slides. Make your presentations an effective part of communicating and persuading our audience.

So grab a copy of Dr. Alley's *The Craft of Scientific Presentations* for yourself, since I'm tired of lending out copies and not getting them back (you know who you are). Once you read it and practice the basic principles, your audiences will thank you for it. I firmly believe that every new SNAP recruit should receive a copy of their own. But even if you don't feel like reading the book, if nothing else review Tables 4.2 and 4.5 below and follow the links listed at the end of this article for further (and better) exploration of the better brief.

Table 4.2 Guidelines for slides at a scientific presentation. From: The Craft of Scientific Presentations, p. 116. Reprinted with permission.

Typography

Use a sans serif typeface such as Arial

Use boldface

Use type sizes at least 18 points (14 for references)

Avoid presenting text in all capital letters

Color

Use either light type against a dark background or dark type against a light background

Avoid red-green combinations (many people cannot distinguish)

Layout

Use a sentence headline for every slide but the title slide

Left justify the headline in the upper left corner

Keep text blocks, such as headlines and listed items, to no more than two lines

Keep lists to two, three, or four items, make listed items parallel, avoid sublists if possible

Be generous with white space

Style

Include an image on every slide

Table 4.2 continued….

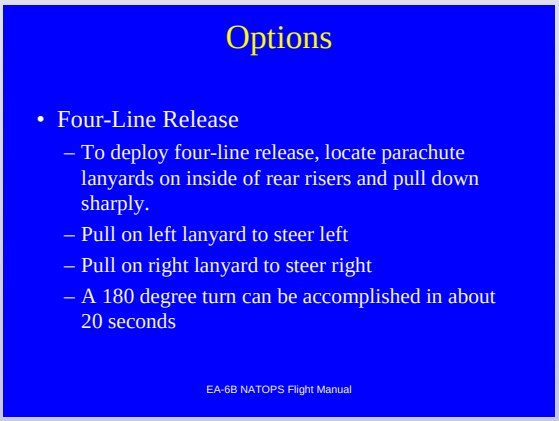
Make the mapping slide memorable

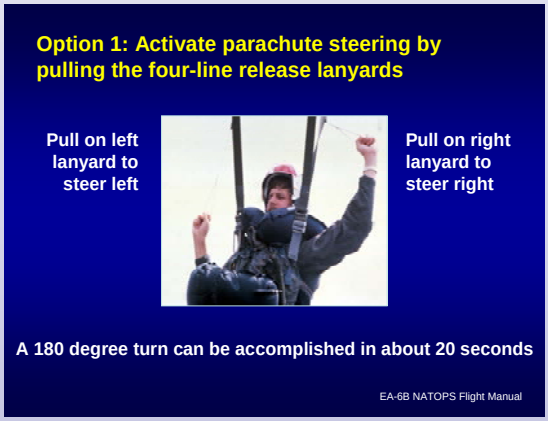
Limit the number of items on each slide

Limit the number of slides so that you can dedicate at least one minute to each

Table 4-5, Format defaults in Microsoft's PowerPoint that should be challenged for slides in scientific presentations. From: The Craft of Scientific Presentation, p. 138. Reprinted with permission.

Format	PowerPoint Default	Suggested Change
Typeface	Times New Roman	Arial Boldface
Type in headline	Centered	Left-justified
	44 points	28 points
Type size in body	32 points	24-18 points
Separation indicator		
Main item	Bullet	Vertical white space
Secondary item	Sub-bullet	Indent
Entry animation	Fly from left	Appear
Background	Various templates	Light color (dark typeface)
		Dark color (light typeface)





Above: A representative ALSS slide presented in both Bullet/Sub-bullet and Assertion/Evidence styles. In addition to the above slide on the right, it is a simple matter to copy the picture, flip it and add a simple animation to give the illusion of a 180 degree turn within the picture itself, further strengthening the third point with a visual aid.

From Dr. Alley's website:

http://www.writing.engr.psu.edu/speaking/rethinking_penn_state.pdf

http://www.writing.engr.psu.edu/slides.html

Slide templates:

http://www.writing.engr.psu.edu/speaking/slide_template.ppt

Further reading:

"Order a PowerPoint Stand-down", Captain E. Tyler Wooldridge III, U.S. Navy (Retired), *Proceedings*, December 2004:

http://www.military.com/NewContent/0,13190,NI_1204_PowerPoint,00.html

Joining A Professional Society

THE AEROSPACE MEDICAL ASSOCIATION (AsMA) AND THE AEROSPACE PHYSIOLOGY SOCIETY (AsPS)

By LCDR Sean Lando

Dept. Head ASTC Pensacola

Why Join the Aerospace Medical Association as Your Professional Society?

The personal benefits of belonging to a professional society will become apparent from active participation. Personal growth and professional development are achieved by being an active participant and not a bystander. It is that commitment and perseverance that will challenge your outlook towards membership.

Membership in our professional society offers individuals the opportunity to support or be actively involved in applied research, communications and programs in the field. Meetings and conferences are held to provide a way to share information within your field. One of the most important aspects of membership that is often forgotten or not addressed is networking with your professional peers.

Personal growth and professional development are achieved by being an active participant and not a bystander.

Aerospace Medicine is our profession! Aerospace medicine concerns the determination and maintenance of the health, safety, and performance of persons involved in air and space travel. Aerospace Medicine, as a broad field and, offers dynamic challenges and opportunities for physicians, nurses, physiologists, bioenvironmental engineers, industrial hygienists, environmental health practitioners, human factors specialists, psychologists, and other professionals. Those in the field are dedicated to enhancing health, promoting safety, and improving performance of individuals who work or travel in unusual environments. The environments of space and aviation provide significant challenges, such as microgravity, radiation exposure, G-forces, emergency ejection injuries, and hypoxic conditions for those embarking in their exploration. Areas of interest range from space and atmospheric flight to undersea activities and the environments that are studied cover a wide spectrum, extending from the "microenvironments" of space or diving suits to those of "Spaceship Earth". Listed below are two Professional Societies that we as Aerospace Physiologists should consider joining.

AsMA

The AsMA is the largest, most-representative professional organization in the fields of aviation, space, and environmental medicine. It is an umbrella group providing a forum for many different disciplines to come together and share their expertise. The Association has provided its expertise to a multitude of Federal and international agencies on a broad range of issues including aviation and space medical standards, the aging pilot, and physiological stresses of flight. The Association's membership includes aerospace medicine specialists, flight nurses, physiologists, psychologists, human factors specialists, and researchers in these fields. Most members are with industry, civil aviation regulatory agencies, departments of defense and military services, the airlines, space programs and universities. Approximately 25% of the membership is international.

Through AsMA, qualified aeromedical professionals can seek Board Certification in Aerospace Physiology. No other organization offers such an opportunity for recognition of professional achievement as aeromedical experts.

AsPS

The AsPS is a constituent organization of the AsMA. Members of AsPS must be AsMA members first. The majority of our Societies' membership is made up of active duty Navy and Air Force Aerospace Physiologist. The mission of AsPS is to encourage, promote, and advance the science and practice of aerospace physiology by:

- Establishing and maintaining cooperation between aerospace physiology and other scientific disciplines
- Stimulating and accomplishing physiological investigation, studying and disseminating pertinent knowledge and information through teaching and participation in scientific and technical meetings

Professional Development

- Increasing the professional stature of Aerospace Physiologists and associated disciplines within the Aerospace Medical Association
- Providing a single unified voice within AsMA to present the views of the Society

The next annual AsMA scientific meeting will be held at the Westin Bonaventure, Los Angeles, Ca. May 3-7, 2009. For information on Board Certification in Aerospace Physiology please contact CDR Tom Wheaton, Thomas.wheaton@navy.mil. For information regarding joining AsPS please contact LCDR Rich Folga, rich.folga@med.navy.mil or LCDR Sean Lando, sean.lando@med.navy.mil

"If you think you can offer something to this organization and membership is for you, I wholeheartedly encourage you to join"

ASTC Intern Biographies

ASTC PAX River Intern LT Hayes

Lieutenant Andrew M. Hayes a.k.a LURCH was born in Fort Wayne, Indiana. Following graduation from high school in Onsted, Michigan, he completed his B.S. in Audiology and Speech-Language Pathology from Western Michigan University, an M.A. in Audiology from Michigan State University and the Au.D. in Audiology from Salus University.

Commissioned into the Medical Service Corps in 2001, his first assignment was Naval Branch Health Clinic, Iwakuni, Japan where he served as Audiology Department Head. His second assignment was at Naval Hospital Jacksonville in 2004 as the Director of Operational Audiology for Occupational Health and Preventive Medicine Services. He received his MSC Wings of Gold in 2008 and is currently an intern at the Aviation Survival Training Center at Naval Air Station Patuxent River, Maryland.

Lieutenant Hayes' awards include the Navy and Marine Corps Accommodation Medal and the Navy and Marine Corps Achievement Medal various service awards.

ASTC Pensacola Intern LT Pickerill

I am Grey Pickerill originally hailing from Glenvil, NE. I attended the University of Nebraska - Lincoln during the glory years of the late 90's and was commissioned out of ROTC Dec 18, 1999. During this time I also met my lovely bride and we had our first of three boys. I reported to Pensacola shortly after for API, Primary, and Intermediate Naval Flight Officer training in VT-4. I was selected for the mighty E-2C Hawkeye and completed training at VAW-120 in Norfolk, VA, March 2002.

Shortly after transferring from VAW-120 to VAW-113 in Pt Mugu, CA, I began a record-long nearly 10-month deployment on CVN-72, the USS Abraham Lincoln. During my time aboard, we participated in Operations Northern Edge, Enduring Freedom, Southern Watch, and finally Iraqi Freedom. Upon our return, our CVW transferred over to CVN-74, the USS John C. Stennis where we completed a full set of work-ups and a "short" 5.5 month cruise around the Pacific including Victoria, Canada; Sasebo, Japan; Kuala Lumpur, Malaysia; and Perth, Australia. I'm also proud to say that during this work-up period I was part of the last F-14 Tomcat TOPGUN class as an Air Intercept Controller. Completing my tour with VAW-113, I transferred to VAW-120, this time as an Instructor NFO.

Looking ahead to my future in the E-2C community as an NFO led me realize I needed more challenges, more time with my family, and I wanted something more akin to my undergraduate studies in Neural Behavioral Psychology. My squadron Flight Surgeon suggested USUHS, but made sure to let me know that Aviation Physiologists often have a lot more fun and excitement in their careers. After interviewing several FS's and AP's while stashed at the Naval Safety Center, I think she led me true.

As I wrote earlier, I have three sons now aged 11, 8, and almost 6. My family is the center of my life and I try to spend as much time as I can with them out in the yard or at the beach. Most of my studying during the SNAOP program has been done on the side of a football field during my eldest's practices and soon I'll also be found with book in hand next to a soccer field for the other two boys.

As I begin a new chapter in my Naval career, I am excited seeing all the places that AP community can take me. Having worked with AMSO's and other AP's out in the fleet, I understand the difference a good one can make. Mostly, I am looking forward to bringing knowledge back to my brothers-still-at-arms in the fleet that will ensure that they are safe -or at least know how to handle situations when they are not.

Community Photos

ASTC Lemoore training the Blue Angels

July 2008 ROBD training at Meridian. From left to right: LT Hayes, LT Brighton, LTJG Boggs, LTJG Quebedeaux, LT Scheeler, LT Rathke, and LCDR Folga.

Community Photos

HM2 Teodore and LT Rathke from ASTC Pensacola flying with the Blues

ASTC Lemoore won 1st place in the NAS Lemoore Triathlon on 25 Sep 08. Staff members participating from left to right in the photo are AW1 Bowles, ND3 Crawford, LCDR Kavanaugh, LT Tapia, HM1 Rhymes, and HM2 Mills

Community Photos

LCDR Peterson presenting HMC(FMF) J. C. Rivera with a Navy COM for his EOT award.

LT Cooper AMSO COMVAQWINGPAC

LT Welsh before his flight in Fat Albert

Inside Fat Albert

MSC Seabag

The MSC Seabag is a tool developed by the Professional Development Committee to provide information and guidance for junior officers. It is an excellent starting point to focus discussion and dialogue with our newest MSC members.

Directions to Find the MSC SEABAG

1. Log into NKO: www.nko.navy.mil
2. Select the MSC Homepage from your bookmarks
3. Scroll down to the announcements section and click on MSC SEABAG

Up coming meetings:

Annual FAILSAFE Conference 9-12 March 2009: At the Desert Star Club, Luke air Force Base, Glendale, AZ 9-12 March 2009. To register go to PMA-202 website https://home.navair.navy.mil/pma202.

Annual Aviation Life support Systems In-Service Management Panel (IMP) 6-9 April 2009: At the Renaissance Worthington Hotel Ft Worth, TX. The purpose of the IMP is to provide an opportunity for all ALSS maintainers and aircrewmen to identify and provide first hand input on issues that impact their ability to effectively maintain and utilize ALSS. To register go to PMA-202 website https://home.navair.navy.mil/pma202.

Joint Deficiency Reporting System (JDRS) 20—24 April 2009: At the Silver Legacy Hotel in Reno, NV. The JDRS is a cross service web enabled automated workflow/tracking system designed to initiate, process, and track deficiency reports from the warfighter through the investigation process. To register go to http://www.jdrs.mil/.

Directions for Authors

1. Submit articles as Word documents only
2. 10 font Times New Roman
3. Single spaced justified text
4. List your name, rank, and current billet. Your picture is encouraged, but optional.
5. If using references use the following style:

   Gore C.J., Hahn A.G., Scroop G.C., et al. (1996). Increased arterial desaturation in trained cyclists during maximal exercise at 580 m altitude. Journal of Applied Physiology, 80, 2204-2210.

6. When submitting photo or image, make sure the pictures are in the order you wish them to be presented and list them with a figure number (i.e. Figure 1). ***No PDF images please.***
7. It is your responsibility to ensure spelling, grammar and style issues are resolved prior to submission. SUSNAP Journal Editors will review your article for errors to the best of their ability, but there is no guarantee that they will catch all mistakes.
8. Once your article is submitted changes may be made concerning grammar, spelling or cosmetic issues, but content will not be modified
9. Articles can be submitted via email to LT Welsh. Timothy.T.Welsh@navy.mil
10. Please provide email address