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THE SOCIETY OF UNITED STATES NAVAL AEROSPACE PHYSIOLOGISTS

SUSNAP JOURNAL

President's Corner - *Relevant Business*

by CDR Dave Service, Medical Service Corps, USN

It's been six months since the last issue of the SUSNAP Journal was published. In that short period there have been 23 Class A aviation mishaps leading to the deaths of 28 Navy and Marine Corps aircrew. Of those 23 incidents, only five did not directly involve aeromedical or human factors as the root cause. More to the point, the cause factors fall squarely under the umbrella of training, subject matter expertise, research, and operational intervention provided by Navy aerospace physiologists. Those of you directly involved in the investigations or reviews of these mishaps are aware of the litany of related issues that read like a curriculum overview for indoc phys. Factors as diverse as G-excess illusion, out-of-the-envelope ejection, crew fatigue, and black hole phenomenon have been implicated in the violent demise of our shipmates and the loss of scarce war fighting resources. If that kind of news doesn't cause one to pause and reflect on the relevance of the aerospace physiology specialty on the health of naval aviation, then one needs to descend to an altitude where there is sufficient oxygen in the atmosphere to sustain more elevated cerebral function. This is a serious business.

Like flying a training command stereo route, the oft-repetitive nature of the "phys biz" can lull us into dangerous complacency. In the same manner that our flight surgeon brethren must commit a large part of their practice to conducting "routine" flight physicals, aerospace physiologists are obligated to instill, remediate, and reemphasize the enduring threat of "routine" aeromedical hazards to aircrew. Indeed, that is the core function of the ASTC officers and AMSO's who comprise the bulk of our ranks. In this fiscal year alone, NAVAIR has investigated eight reported episodes of hypoxia in tacair aircraft. While each of these events had "happy" endings involving the safe return of the afflicted aircrew, a couple were true laundry alerts, just moments away from becoming additions to the bloody Class A scorecard. The good news is, in

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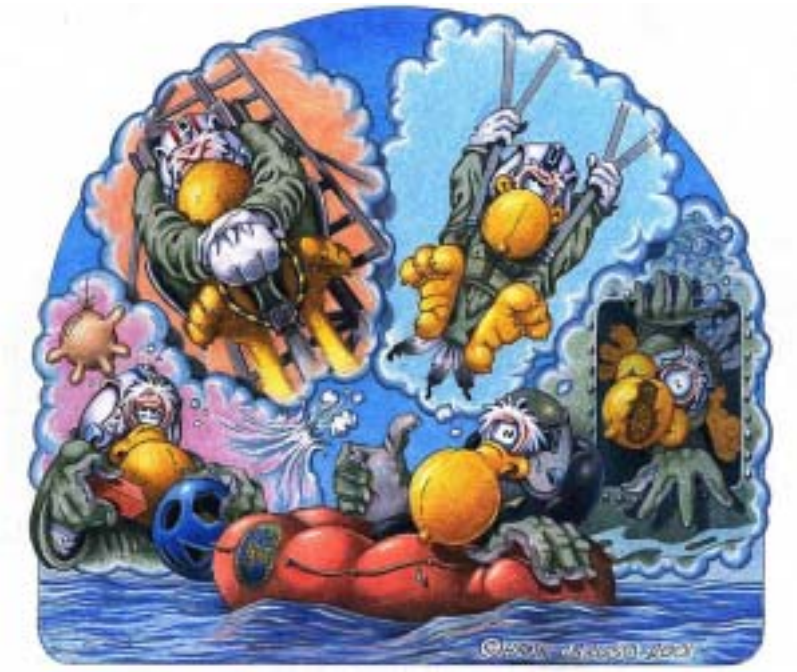
all cases the aircrew involved cited some form of aviation physiology training as being responsible for their response to the emergency. In other words, the routine training made a difference. Naval aviation is an unforgiving occupational arena in which the participants are sorted into the quick and the dead. Aerospace physiologists are charged with keeping aircrew in the first category. I consider us fortunate to be players in an arena where the role of our specialty is so defined and so relevant.

As members of the Society of US Naval Aerospace Physiologists, we're an association of colleagues who affiliate *by choice*. This journal, our journal, is a tangible means by which we share relevant experiences, insight, and knowledge to reinforce relationships and sharpen professional acumen. Thank you all for your patience since the last issue was published. To those of you who have contributed to this issue, good on you. To those who have works in progress for future issues, keep strokin'. To those who question the value of anything you might add, quit your doubting. Your work is relevant.

On a parting note, I would like to acknowledge the contributions of a friend and colleague who has served the Navy and the aerospace physiology community so well for the past 20 years. LCDR Brian Swan, the first and former president of our Society, is an officer who defined his career with relevant contributions to naval aviation, and made our whole community look good in the process. Thank you, Brian. Fair winds.⌘

CDR Service is a Department Head, Aircrew Systems Class Desk, Naval Air Systems Command

Hank Caruso Print Update



We sincerely apologize for the delay. The prints are in and have been signed by Hank. CDR Service should receive delivery of the signed prints NLT mid-July. Expect delivery of your exclusive print by early August.

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News of Interest
by LT Anthony Artino, Medical Service Corps, USN

Officer Promotions

Congratulations to
CAPT (sel) Donna Murdoch
&
CDR (sel) Jeff Andrews
on their
recent selections!

LCDR Brian Swan, pictured here with the CNO, ADM Vern Clark, will retire on August 9th, 2002 after 20 years of loyal and dedicated Naval service. The retirement ceremony will be held in the Blue Angel Atrium at the National Museum of Naval Aviation, NAS Pensacola.

DUINS News - The Aerospace Physiology community has one two-year Masters degree DUINS slot up for grabs. The start date for this billet is Fall, 2003, and, as per the message below, the application date has been extended.

from RADM Phil VanLandingham, Director, Medical Service Corps...

> *"I learned that the number of applications for DUINS have not yet met our expectations. Many of our DUINS slots are currently lacking applicants. We've extended the application deadline once - to 15 July - and many of you may be working on your packages but I want to encourage you to take advantage of these opportunities."*

Alexander William Folga
Born Thursday, April 18th at 2156
7 lbs, 9 oz

SUSNAP is proud to welcome two new members to our team:

Alexander William Folga
&
Isabella Rose Artino

Congratulations to
Rich & Susan Folga
&
Tony & Teri Artino

Great job Moms!
(you too Dads)

Isabella Rose Artino
Born Saturday, June 8th at 2148
7 lbs, 3 oz

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Career Paths

by LT Tony Artino, Medical Service Corps, USN

Have you ever wondered what it takes to make Captain as a Naval Aerospace Physiologist in the Medical Service Corps? In the few years that I've been in the program, I've heard the following phrase many times, "to be successful you must show sustained superior performance." To me, this means two things – do a good job and get good FITREPS. But what about a specific career path? Are there certain billets that will enhance your promotion success? Certainly in the line community this is the case. If you're an aviator, and you want to be the Skipper of a squadron, there are certain jobs you have to do and do well (i.e. first JO sea tour, challenging shore tour, disassociate sea tour, department head tour (preferably as the Operations or Maintenance Officer), and possibly a year at the Naval War College). Just performing these duties does not guarantee success, but without them a line officer will NOT to be selected for CO. But again, what about Naval Aerospace Physiology and the Medical Service Corps? What's the ideal career path for us? Certainly the Captains we have in our community didn't get there by accident?

So, in an effort to formulate an answer to some of these difficult questions, we decided to go to the source – the Captains in our community. Our investigation into this matter includes the following: First, we read the biographies of five of our active duty Captains and flushed out their career paths. With this information, we were able to develop a timeline of their careers and the billets they've held. Next, we analyzed this data and summarized some of their career activities and accomplishments. And finally, we asked each of them to answer the following question in three sentences or less – "What does it take to be successful as an Aerospace Physiology in the MSC?"

And here's what we found…

CAPT Eichner

YEARS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
RANK	LTJG			LT						LCDR				CDR						CAPT				
Medical Billets	NAMI																			NOMI MM				
Line Billets		AMSO			3RD MAW AMSO				4TH MAW AMSO			HQ MARINE CORPS				AFRL								

CAPT Musashe

YEARS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
RANK	LTJG		LT			LCDR							CDR						CAPT					
Medical Billets	NAMI DH		ASTC DH													BUMED PM/SL								
Line Billets					2ND MAW AMSO							HQ MARINE CORPS								JMPPM		DEPUTY DIRECT.		

CAPT Matthews

YEARS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
RANK	LTJG			LT							LCDR					CDR					CAPT			
Medical Billets	NAMI	ASTC DIVO								ASTC MIRAMAR DH				NAMI DH						BUMED PM/SL				
Line Billets			VAQ AMSO			COMFAIR AMSO											AIRLANT AMSO							

CAPT Johanson

YEARS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
RANK	ENS	LTJG		LT						LCDR						CDR					CAPT			
Medical Billets	NAMI									FTOST				ASTC DH			NOMI MM			USUHS				
Line Billets		NADC		3RD MAW			NAWC					NADC				VXE6								

CAPT Schuyler

YEARS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
RANK	ENS		LTJG		LT				LCDR					CDR					CAPT					
Medical Billets	PHARMACIST				NAMI	ASTC DIVO											DET WEST OIC				NSHS XO			
Line Billets									MAG 24			3RD MAW		AIRPAC AMSO						MCWL				

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A Look at the Numbers:

Officers that did at least one AMSO tour.....5
Officers that did two or more AMSO tours.....5
Officers that did at least one Marine AMSO tour.....4
Officers that did two or more Marine AMSO tours.....3
Officers that were the DH of an ASTC.....3
Officers with at least a Masters degree.....5
Officers with a Doctoral degree.....1
Officers that are board certified in Aerospace Physiology.....4
Average number of years spent in line billets (range was 9 to 14 years).....12.2 years
Average number of years spend with Marines (range was 0 to 11 years).....6 years
Average number of years to make CAPT (range was 19 to 21).....20 years

Words of Wisdom:

- "Attributes that I found to improve chances of success in the MSC are persistence, professionalism and pure luck. There are NO guarantees. Do your job well. Enact improvement, in both process and personal growth. Ensure your RECORD reflects your responsibilities and accomplishments."

- "I have a pretty straight line career (pun intended). Risky for senior officer promotions... but I wouldn't trade it for anything. Focus on serving the operators, looking for future improvements and then pay Navy Medicine what it's due for careerism...and you can walk away proud at the end of your career regardless of rank."

- "Vision and alignment are vital. Always keep the global, big picture in focus and make sure what we do is 100% in support of what the warfighter needs. Spend some time with the bubbas at the front. He who knows how will always have a job, but he who knows why will always be the leader. I've been successful by always looking for the opportunity embedded in every assignment."

"He who knows how will always have a job, but he who knows why will always be the leader."

- "In the early phase of your career, the most important thing to do is learn the material, i.e. understand the science/certification, get the flight time and learn how to be a naval officer. Middle phase and all phases, be totally committed to the community you serve; if it's P-3s or H-60s or F/A-18s, do everything you can to be their professional expert and advocate. As you approach your staff tours, learn to think "globally," expand from just your community, to an overall view of the Naval service with an emphasis to the Medical Service Corps."

- "Of all the commonly repeated phrases you will hear during your Naval career, perhaps the most frequent one will be "Bloom where you are planted." Strange as it may sound, I can't think of better advice if other than to do your best to be "planted with the line" whenever possible!"

When it comes down to it, I think most would agree that becoming a Captain in the Navy is no easy task. And, as I think this article has shown, there is no "standard" career path for an Aerospace Physiologist. All our Captains have had very diverse careers, with most spending at least half of their twenty plus years serving the line directly. So, does that mean if you do the same jobs as one of these Captains with the same amount of gusto that you will definitely promote? Of course not. But we can certainly learn from the successful careers of our fearless leaders, and, as one of them said, if we do our jobs well, we "…can walk away proud at the end of (our) career regardless of rank."⌘

LT Artino is the Director of Human Performance & Training Technology at the Naval Aviation Survival Training Program Directorate, Naval Operational Medicine Institute

SUSNAP Exclusive - Reduced Oxygen Breathing Device (ROBD)

THE REDUCED OXYGEN BREATHING DEVICE

by LT Merrill Rice, Medical Corps, USN

In 1991, the concept of exposing trainees to hypoxic conditions by varying the mixtures of oxygen was demonstrated successfully by Slobodnik, et al. (2). Recently, Sausen 2001, has described the use of the Reduced Oxygen Breathing Device (ROBD) as an alternative to traditional hypoxia training (1). The ROBD works by delivering a varied percentage of oxygen and nitrogen under normobaric conditions to the trainee through a standard Navy oxygen mask. The advantages of the ROBD are numerous. Because the ROBD remains at sea level atmospheric pressure there is no risk of altitude DCS or barotraumas. Weighing approximately 40 lbs and measuring 20"x 32"x 12" inches, the ROBD is extremely portable compared to a hypobaric chamber. Additionally, the manning and maintenance requirements are much lower for the ROBD, involving a maximum of two instructors to operate compared to 4 or 5 for the hypobaric chamber. Operationally, the ROBD could serve in the future in conjunction with simulators for more realistic in-flight hypoxia training. It can also serve the training needs of mountain climbers, balloonist, or anyone interested in repeated or prolonged oxygen deprivation to support physical conditioning.

Briefly, the device used in our study consists of an open loop constructed of Schedule 40 polyvinyl chloride (PVC) pipe. A quick-disconnect fitting is fitted on one end of the loop, such that a standard aviator's oxygen mask can be connected exactly as it would be connected in an aircraft. The other end of the apparatus is open to the atmosphere. An oxygen sensor is mounted in the mixing loop. At the start of inspiration, room air is drawn into the loop. Computer software monitors the concentration of oxygen in the loop just downstream from a mixing fan. The measured percentage of oxygen in the loop is compared to a target level of oxygen. If the loop oxygen concentration exceeds the target value, the software controller actuates a solenoid valve connected to a cylinder of nitrogen gas. When the two values match, the solenoid valve is turned off. Conversely, if the concentration of oxygen in the mixing loop is below that of the target value, a solenoid valve connected to an oxygen cylinder is actuated, until again those values are matched.

Several safety features are built into the ROBD. The first level of safety is the volunteer. If the volunteer becomes uncomfortable for any reason, she/he can simply remove the mask, and will be instantly breathing room air. The second level of safety is the observer/device operator. If the observer/device operator feels that the volunteer is in distress, it is possible to manually activate the oxygen solenoid from the control panel, thereby enabling the observer/device operator to flood the circuit with oxygen. Note that there is no capability to manually activate the nitrogen solenoid. This minimizes the chance of an accidental or inadvertent release of nitrogen into the loop. Finally, software controls are also incorporated that reduce the chance of inadvertent hypoxia. The software has programmed limiters that prohibit the oxygen concentration in the mixing loop from falling below 6% (simulating approximately 30,000 ft.). If the level of oxygen in the loop falls below this level, the software disables the solenoids, enabling room air to enter the mask undiluted by nitrogen. An audible alarm is also incorporated to notify the observer/device operator should the inspired oxygen concentration fall below preset levels.⌘

LT Rice is a Flight Surgeon and Research Associate at the Naval Aerospace Medical Research Laboratory

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1. Sausen KP, Wallick MD, Slobodnik B, Chimiak JM, Bower EA, Stiney ME, Clark JB. The reduced oxygen-breathing paradigm for hypoxia training: Physiological, Cognitive, and Subjective Effects. Aviat Space Environ Med 2001; 72: 539-45.

2. Slobodnik B, Wallick MT, Chimiak JM. Effectiveness of oxygen-nitrogen gas mixtures in inducing hypoxia at 1 ATA. Navy Experimental Diving Unit, Report No. 04-91. June 1991

SUSNAP Exclusive - ROBD cont'd...

ROBD VERSUS LOW PRESSURE CHAMBER OPERATIONS

by LT L.P. Silverman, Medical Service Corps, USN

One of the perennial debates is the use of the Reduced Oxygen Breathing Device (ROBD). Like most contentious issues there are two firmly entrenched positions about this method of inducing hypoxia in aircrew.

On the side of the ROBD comes the idea that the quadrennial qual should be conducted by AMSO's at the squadron. The ROBD would be used in a simulator where the student becomes hypoxic and conducts a drill to solve the hypoxia problem by following the emergency procedures for the specific airframe.

On the Low Pressure Chamber (LPC) side of the house, this is the standard way we have conducted training for over forty- five years. The LPC is sealed. Air is pumped out of the box. Students remove their mask or remove it early in the flight, suffer hypoxia and treat themselves. Proponents of LPC training also point out that they train to trapped gas issues, albeit with a low injury rate. Detractors of LPC training point out that there is a risk of Decompression Sickness (DCS). ASTC Norfolk experiences a confirmed DCS incidence of less than 1 per 1000 students. The cost of running and staffing a LPC is fairly expensive.

My personal opinion is that the LPC is the best overall method to train aircrew. While the ROBD might cost less per year to administer, the value of the training cannot be purely measured in dollars. A lone AMSO going to a squadron may spend a whole day training maybe 30 people JUST FOR HYPOXIA, to say nothing of the 15 other points that need to be taught in a physiology class. I have yet to hear a good training proposal for aircrew training in a P-3 or C-130 to use the ROBD. We know exactly how the chamber works. Many years of LPC training have given us a very good universe of data to help us train safely.

I know that there are physiologists that will claim that the risk of DCS is too high. At ASTC Norfolk, this has not been the case. The most useful LPC training is one that will task the students to be aware of physiological changes in their perception and then use the appropriate emergency procedure to alleviate the hypoxic symptoms. In the words of CDR Wheaton, improper demonstrations teach our aircrew that the proper EP for hypoxia is to play pattycake. All ideas being equal, it is easier to change the hypoxia demo than dispose of the LPC. For those ASTC's using hypoxia demonstrations that do not teach about the effects that hypoxia has on vision and decision-making ability, "Shame on you!" You are blowing a great Teaching Point in the name of ease and entertainment.

Each ROBD costs $5,000 with an annual operating cost of $2,000. It would require 40 ROBD devices to outfit each AMSO at the wing and group level. The AMSO physiologists would no longer be in the field working aeromedical problems. They would spend a majority of their time providing routine training to their Sailors and Marines. NOMI would enjoy some direct savings since there would be free of 8 contracts and 150 billets. But would this mean that the ASTC would no longer be required? What about water survival training? The short answer is that we still need to maintain staffing levels at the ASTC's, if for no other reason than to provide water survival training.

I have heard mention that the ROBD would be used in the simulators, which is easy to fix if you are teaching a TACAIR class. What do you do with aircrew that don't wear masks? This could lead to negative procedural training. They would have to don a mask FIRST in order to become hypoxic. Then they would have to resolve the hypoxia emergency. Are their enough P-3 or C-130 simulators available to conduct this kind of training at the squadron level? What about C-9 aircrew, who have NO MASK AT ALL?

I feel that this discussion should spark a badly needed debate about how survival training should be conducted. I welcome any reader of this paper to respond in kind and pen an article that would clearly articulate the counterpoint. ⌘

Added Editorial Note: This article does not reflect the opinion or official policy of Detachment East, the Model Manager or the Naval Aviation Survival Training Program.

LT Silverman is a preceptor at the Aviation Survival Training Center Norfolk, NOMI Detachment East

SUSNAP Exclusive - ROBD cont'd...

MULTIPLE USES FOR THE NEW ROBD

by LT Greg Ostrander, Medical Service Corps, USN

I recently had the opportunity to utilize the Reduced Oxygen Breathing Device (ROBD), currently under evaluation at the Naval Aerospace Medical Research Laboratory (NAMRL), to assist a Student NFO (SNFO) in recognizing his symptoms for hypoxia. The device was very useful, providing the SNFO with symptoms he could clearly recognize, where the altitude chamber did not.

The SNFO experienced hypoxia during a training flight in a T-34C, and during the course of investigating the cause, I found the SNFO had participated in two chamber rides, and did not experience clear cut symptoms, and rapidly grayed out, requiring assistance from the inside observers. I thought using the ROBD to allow him to get hypoxic again would be useful in determining what the specific difficulty was, and to see if he had a problem requiring medical evaluation.

After obtaining the SNFO's consent, and approval from TRAWING SIX and NAMRL leadership, Tina Vagedes, a civilian contract researcher, and HM2 Gonzales of NAMRL provided me with the ROBD training session. The SNFO was hooked up to the ROBD, a Holter Monitor, and a pulse oximeter, then breathed 100% O2 for 5 minutes, simulating the 5 minute ascent to 25000 feet. The student was then switched over to the 25000 foot mixture, which is approximately 7% oxygen. The student's O2 saturation level remained at 100% for nearly three minutes, at which time it rapidly dropped through 87% mark. I asked the SNFO what symptoms he felt, and he responded that he felt tingling and warmth on his face. As we approached the 4 minute mark, he reported that he felt tingling in his back. We returned the mixture to 100% at 4 minutes, and the SNFO's symptoms subsided within 15-20 seconds. After talking to the SNFO about the symptoms he experienced, we decided to repeat the exposure, and let his symptoms become more pervasive. When the profile was repeated, the blood saturations remained essentially the same as the first run, but we allowed the SNFO to continue off oxygen beyond 4 minutes, where his pO2 was 74%. His symptoms were nearly identical to this point. He continued until the 4:42 mark, at which time he began to gray out, and we switched the mixture. He exhibited no further symptoms prior to gray out, and his recorded pO2 at this point was 41%.

> "I thought using the ROBD to allow him to get hypoxic again would be useful in determining what the specific difficulty was, and to see if he had a problem requiring medical evaluation."

What did we learn from this? Review of the pO2 levels, respiration rate and Holter Monitor data revealed perfectly normal physiological responses to hypoxia, albeit at a slower rate than normally expected. The conclusions we drew from this were that the student was unusually resistant to hypoxia, by virtue of excellent health and a better compensatory mechanism than is usually seen. The trade off appears to be that though his compensatory ability is better than most, it only is effective to a certain extent, and that he rapidly deteriorates beyond this point. In depth medical data was not obtained, so specific reasons due to the SNFO's metabolism, etc cannot be stated with any certainty. However, this is really not what is important. The take away information from this is two-fold: (1) the altitude chamber does not give everyone profound, recognizable hypoxic symptoms, due to the excess O2 in the chamber atmosphere. (2) the ROBD is an excellent adjunctive training device, particularly for situations like this one, where person who had a hypoxia episode may be given additional training without the risks the chamber involves.

In the end, our student was much more confident in his abilities to recognize hypoxia, and also that he rapidly deteriorates, which lets him know that when he experiences symptoms, to correct it immediately, as he will soon pass the point of no return. It was also a great learning experience, and demonstrated that the ROBD can be useful outside the normal quadrennial training cycle. I hope that all of my fellow aeromedical professionals who read this may gain something as well.⌘

LT Ostrander is the Aeromedical Safety Officer for Training Air Wing SIX

Physiologist's Edge - Caffeine & Performance

by LTJG Chris Cooper, Medical Service Corps, USN

Today, caffeine is one of the most widely used substances in the world. Its possible ergogenic effects have been studied for nearly a hundred years, focusing on improvements in strength, power and mental alertness. In the late 1970's, Costill's laboratory researched the effects of caffeine on endurance performance and found significant increases. Jackman et al. (7) suggested this occurred by increasing fat metabolism and sparing the use of muscle glycogen stores. Since then, hundreds of experiments have been performed on the use of caffeine as an ergogenic aid to performance. In the early 1970's, the International Olympic Committee banned the use of caffeine by any of the athletes. But, because caffeine is such a common substance, the IOC had to lift the ban and form a limit to its use, according to Graham et al. (4). For the same reasons, the Navy has not prohibited caffeine usage, but has put a limit on its intake. Currently, the maximal concentrations accepted by NATOPS is 450 mg/day which is the equivalent to about 3-4 cups of coffee.

Caffeine is a central nervous system stimulant that is one of a group of lipid-soluble compounds called methylxanthines found naturally in coffee beans, tea leaves, chocolate, cocoa beans, and cola nuts. It produces many effects that enhance our psychological and metabolic processes. These proven effects include increased mental alertness, increased concentration, elevation of mood, delayed onset of fatigue, decreased reaction time, increased catecholamine release, increased free fatty acid mobilization, and an increased use of muscle triglycerides, according to McArdle, Katch and Katch (9). Together, these effects produce improvements in performance. With these positive effects, there are some negative side effects, as well as a concern with over usage.

A first concern with caffeine is its diuretic effect. During exercise, hydration is subject of importance, especially during endurance exercise. At rest, caffeine has significant effects on urine production. Wemple et al. (14) found no detectable diuresis due to caffeine ingestion during the first hour of rest and no changes in plasma volume or osmolality. There was a diuretic effect that occurred from the second hour to the forth hour of rest, but did not occur if exercise was performed. Falk et al. (3) found that caffeine ingestion followed by prolonged exercise in the heat did not influence hemoconcentration or total body water loss. It is possible that during exercise the diuretic effect of caffeine may be counteracted by actions of catecholamines, which induce constriction of renal arterioles, and reduce glomerular filtration rate. Additionally, catecholamines may increase sodium and chlorine reabsorption in the proximal and distal tubules by affecting aldosterone and antidiuretic hormone, resulting in water conservation. All research that has been done eludes that caffeine only has a diuretic effect during rest and that exercise has an antagonistic effect on caffeine's normal diuretic effects on the body.

There is a significant ergogenic effect on endurance performance associated with caffeine. The question that researchers have been trying to answer is "How does caffeine affect the body's physiological processes?" According to Van Soeren and Graham (12), acute ingestion of caffeine before exercise has been shown to prolong exercise endurance, increase plasma epinephrine and serum free fatty acids, and spare muscle glycogen. Spriet and Graham (11) did show that caffeine will spare the use of glycogen during the first 15 minutes of exercise, which allows the subject to perform longer because of the higher concentrations of muscle glycogen late in exercise. Costill et al. (2) demonstrated that ingestion of methylxanthine caffeine resulted in increased endurance and power output during prolonged work. These increases were associated with increased catabolism of muscle triglycerides and reduced glycogenolysis. After caffeine ingestion, both muscle lactate and plasma epinephrine concentrations were increased, which enhanced lipolysis by having an antagonistic effect on adenosine receptors, according to Van Soeren et al (13). The enhanced availability of free fatty acids was thought to cause greater fat metabolism in the active muscle, which in turn inhibited carbohydrate metabolism and resulted in increased exercise capacity. At this point in time, researchers thought that they had caffeine's ergogenic effect figured out.

This concept was tested extensively during the 90's, but more recent research has failed to support this hypothesis. Graham and Spriet (5) demonstrated that increases in endurance are not due to the effects from a catecholamine mechanism. Low doses of caffeine caused a significant increase in endurance, but no changes in epinephrine levels occurred until higher doses were given. Robertson et al. (10) stated that if epinephrine is the critical element in the ergogenic effect after caffeine consumption, the attenuation of caffeine-induced increases in plasma epinephrine in habitual caffeine consumers may also dampen the performance and metabolic effects of caffeine during exercise. In vivo, the major mechanism through which caffeine acts is as an adenosine-receptor antagonist, and all tissues with adenosine receptors may be affected by caffeine exposure. Chronic exposure to caffeine results in increases in both available adenosine receptors and/or receptor mediated activity. It was thought that during periods of withdrawal from caffeine, acute ingestion may result in an enhancement, or upregulation of the caffeine-induced responses.

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Robertson et al. (10) found that variable periods of short-term withdrawal from caffeine had no effect on caffeine induced increases in endurance during high-intensity exercise compared to no withdrawal. Therefore, the mechanism through which caffeine acts as an ergogenic aid is unlikely to be through changes in available metabolic substrates or catecholamines, but rather is through some direct action of caffeine on tissues.

"Excessive intake can cause excitability, sleeplessness, loss of concentration, decreased awareness and dehydration. All of these can be detrimental to the performance and therefore should be regulated by NATOPS and the user."

There have also been a series of experiments done to observe any improvements in short-term performance and peak power. A few studies have actually seen improvements in running and swimming sprint times. Theoretically, caffeine induced elevations in epinephrine would lead to an increase in anaerobic metabolism resulting in a greater power output during high intensity exercise, according to Greer and Graham (6). However, this treatment effect disappeared during exercise and had no effect on power output or anaerobic metabolism. Greer and Graham (6) have shown an increased sensitivity to caffeine in slow-twitch oxidative fibers, which was due to the effect of adenosine receptor antagonism. Preliminary evidence exists suggesting adenosine receptors only exists in slow-twitch muscle fibers, so an increase in high-intensity exercise performance would not be expected.

According to Kovacs et al. (8), the ergogenic effect is due to the caffeine stimulation of the central nervous system through alterations in neurotransmitter function or through a greater recruitment of motor units because of a decreased neuronal activation threshold. This reduced threshold reduces the perception of work intensity, which may result in performance improvement by allowing subjects to work at a higher intensity at the same perceived level of effort. Cole (1) recently had subjects perform endurance cycling tests at a set level of perceived exertion. Although the subjects perceived the work to be identical according to the RPE scale, they actually generated more work with caffeine.

A major concern with caffeine is over usage. Whereas when taken in small amounts will have a positive ergogenic effect, high amounts can cause unfavorable side-effects. Excessive intake can cause excitability, sleeplessness, loss of concentration, decreased awareness and dehydration. All of these can be detrimental to the performance and therefore should be regulated by NATOPS and the user.

There has been enough research done to state that caffeine does have a significant effect on endurance performance. Although, the physiological mechanism is still not understood. Current research has disproven the prior hypotheses about caffeine's effect on the body. Future research needs to be done studying the direct effects of caffeine on muscle tissue, and also the effects on the brain's motor function. Caffeine's only ergogenic effect might just be by improving alertness and mood and decreasing the perceived level of effort. This theory would conform to all the current research, and would finally prove that caffeine, when used in the appropriate amounts, is truly an ergogenic aid.⌘

LT Cooper is a preceptor at the Aviation Survival Training Center Jacksonville, NOMI Detachment East

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Notes from NOMI, Detachment East

NOTES FROM OIC DETACHMENT EAST

by CDR Tom Wheaton, Medical Service Corps, USN

Navy training emphasizes flexibility. Marines call it Adaptability; the ability to meet the mission in the face of changing operational conditions. Det East enjoys the opportunity to put this into practice as Summer 2002 descends like a pack of hungry wolves.

ASTC Norfolk and Cherry Point each bring new training pool facilities on line before we see the Dog Days. A third MILCON project is about 7 months underway at Patuxent River. The new pool makes Pax a full capability site for the first time.

The MILCON at Cherry Point is very close to opening for full operations. NAWC-TSD Orlando engineers in concert with Contractors and the Lockheed-Martin COMS Maintenance crew moved and reinstalled the water survival training devices on the new pool deck. The classrooms and admin spaces are ready to accept furniture and Sailors. The Cherry Point crew will soon be moving in training equipment. The missing puzzle piece, as of this writing, is final plastering of the pool. LCDR Wilcox and crew expect to be training by the close of June.

Norfolk's new pool building will be accepted by Memorial Day. The move into the classroom and admin occurs the first weeks of June. The pool itself awaits devices. Per the Master Plan, Penscola's old 9D5 Helo Dunker and 9H1 Helo Hoist are in refurbishment. Norfolk will continue to use the ancient U-40 tank and devices through August, when the new "SLEP'd" devices will be installed.

> " Detachment East ASTCs will follow the lead of our Det West brethren with full implementation of the Night Storm Scenarios."

Det East anticipates a ribbon cutting and Grand Opening ceremony at each new training facility. The dates will be announced via NOMINET, Web Page, Navy Message, List Server and word of mouth. Everyone is invited to celebrate this incredible increase in our training capability.

Det East ASTCs will follow the lead of our Det West brethren with full implementation of the Night Storm Scenarios. The new facilities are perfect spaces for Night Storm. Equipment for Storm was procured through the MILCON. The remaining site, Jax, purchased gear with a grant from the NOMI Unfunded Requirements Board.

One of the truly great qualities of our NASTP curriculum is the flexibility it affords innovation at the deckplates. I am continually impressed with the talent, skills and intelligence of our Sailors and young Officers. Their ideas keep this program alive and relevant. Night Storm is one such concept. ASTC Jacksonville recently expanded the first aid and survival stations with walk-through environments (desert, winter and tropical). Cherry Point is building an outdoors first aid station in a wrecked UH-1 fuselage to increase the realism of the training. Norfolk, Jax and Cherry Point created scenario-based classroom seminars and hypoxia demonstrations.

I am not here just to toot Det East's horn. We have super Sailors and Officers at all ASTC's The program grows and improves because each ASTC finds new ways to field the curricula. They're not afraid to share those great ideas. The enthusiasm across the Program is infectious. Your Simple Acts of Training are also important. They make a difference. I was inspired one day, looking down the 9D5 bench at young Marines anxiously awaiting their turn in the barrel. These were not the faces we see in war movies; tough, hard, grizzled veterans. This was the high school football team. Instead of colored jerseys and shoulder pads, they dressed in camouflage, were armed and sent to the ultimate playing pitch, the Tip of the Spear. These young men of 19 or 20 were America's sons. We owe them the training to fly, fight, win and survive. We own them the best. Think about it the next time you meet your students in the classroom or pool deck. ⌘

CDR Wheaton is the Officer in Charge, NOMI Detachment East

NOTES FROM ASTC PATUXENT RIVER

by LT Orlando Olmo, Medical Service Corps, USN

Colleagues and friends:

I hope this letter finds you enjoying good health as well as your jobs. May 02 marks the beginning of my 24th month as Department Head of this unit, and it is truly amazing how fast time has gone by. I wish to share with you current events at ASTC Patuxent River, and perhaps even interest some of you in becoming the next Department Head of this unit upon my transfer.

Some of you already know, we are a small tenant command on board NAS Patuxent River, however, the CO of the base has always shown great interest on our readiness and our ability to train the aviators and aircrew assigned here. Our student census is quite different than those of other ASTC's. About a third are civilian engineers and scientists working on research projects for NAVAIR, about another third are Midshipmen from the US Naval Academy and ROTC programs across the United States and the last third is composed by refresher, two Test Pilot School classes, and many DOD and senior military VIP. Last summer we received two Virtual Reality trainers which dramatically enhanced the parachute descent and PLF lectures.

Our building is now ten years old and thanks to a very industrious and resourceful staff we have been able to keep it in mint condition. We received funding to replace the carpets last year, and my ingenious staff found a way to save $5,000 by doing some of the prep works themselves. Other improvement projects were accomplished by taking advantage of the Self Help program. We have created a Quarterdeck to conduct official ceremonies; we decorated our atrium with pictures of local aircraft with the respective squadron patches; added chairs and plants; and remodeled the paraloft to maximize productivity and efficiency.

"This facility will have all the training devices available at all other fully capable sites with one exception; instead of a 9D5 we will have a METS trainer. The METS is a little bigger and can be configured to accurately represent different aircraft, adding even more realism to our training."

The Water Survival training has been limited to a partial qualification due to the absence of a training pool with devices. Fortunately, for our program and us, last August we broke ground and construction of our very own Water Survival training facility began. This facility will have all the training devices available at all other fully capable sites with one exception; instead of a 9D5 we will have a METS trainer. The METS is a little bigger and can be configured to accurately represent different aircraft, adding even more realism to our training.

The pool building is scheduled for completion 21 December this year, and so far, everything is progressing as scheduled. If in fact we receive the keys to the building on time, then the Test Pilot School class scheduled for the second week in January 2003 should be the first class to be fully qualified at ASTC Patuxent River. There are a number of reasons why being 100% capable is significant to all of us: 1) It gives NOMI Det East four fully capable training centers, 2) It reduces the training loads for ASTC Norfolk, 3) It will add much needed manpower to our small staff, and 4) It reduces the chances of becoming a target of opportunity during future QDR's.

I plan to submit another update by the end of the summer or early fall and maybe I can even include a picture of the pool building. Thus far, the swimming pool only lacks the plaster coat and its perimeter wall is in place with its layer of insulation. The outer brickwork should begin this weekend. The roof should be completed by May 8th and then the pool deck can be poured. It really is an exciting time for us and I hope at least some of you can come and join us for the Ribbon Cutting ceremony (no date set yet).

Until my next update … Be safe, Have fun, Fly Navy!⌘

LT Olmo is the Department Head at the Aviation Survival Training Center Patuxent River, NOMI Detachment East

NOTES FROM ASTC JACKSONVILLE

by LT Chris Cooper, Medical Service Corps, USN

The year 2002 is the year of transformation for the Aviation Survival Training Center (ASTC) Jacksonville. While we lost many great instructors through PCS transfers, we received many new shining and motivated faces from commands of all backgrounds, ready and willing to put forth their knowledge and experiences to instruct the fleet. That is the life of a Naval Command and we are increasing our diversity of knowledge everyday because of it. We certainly have a wide array of professionals with innovation and initiative, looking for opportunities to take their jobs to the next level. This innovativeness and initiative will shortly pay off at ASTC Jax.

In our ongoing effort to increase realism of our training evolutions, we are incorporating some ideas and demonstrations received throughout the last few months. First off, Implementation of the Night Storm Scenario, as started at ASTC Whidbey Island and demonstrated during the FAILSAFE conference in MCAS Miramar, has been our top priority, since it received approval by the Model Manager. But, Jacksonville has a unique opportunity to take the scenario to the next level. We can run the scenarios straight out of the 9D5 into the main pool for life raft skills and 9H1 training. To facilitate the scenario, we will add four more water spray nozzles on our devices to cover the entire water area between the 9D5, the life rafts and the rescue area by the hoist. This will give the appropriate storm simulation without increasing the manpower involved in the scenario operation. To top it off, our indoor pool area will be blacked out.

> "Creating the realism and implementing lifelike scenarios in our training program not only creates higher quality training, but makes it more fun for both students and instructors."

The second project, involves combining the survival first aid and land survival stations. Three different walk-through sceneries are being created that will simulate a tropical environment, a winter weather environment and a desert environment. There will be animal and insect displays including both potential threats and possible food sources. We will have exhibits of both man-made and natural survival shelters as well as examples of how to use the equipment carried in the survival vest. Incorporated within these sceneries, we will also have situational accidents with injured victims that can be assessed hands-on and treated.

A third task, currently being tested and evaluated to improve the learning environment in the 9A9, is new hypoxia demonstrations and LPC scenarios that are aircraft and aircrew based. The demo includes a set of written questions and radio calls referencing the flight. This added realism gives the old monotonous LPC flight a new challenge for the students during the training evolution.

The enthusiasm and inspiration of our staff at ASTC Jacksonville is very high. Creating the realism and implementing lifelike scenarios in our training program not only creates higher quality training, but makes it more fun for both students and instructors.⌘

LT Cooper is a preceptor at the Aviation Survival Training Center Jacksonville, NOMI Detachment East

History of the USMC AMSO Program (as I remember it)

by CAPT Vince Musashe, Medical Service Corps, USN

I've been asked to give my recollections on how the USMC AMSO program as we know it today came about. As I write this almost 20 years after the fact, I don't have the luxury of going back into the files to get accurate dates and other pertinent information. Therefore, I'm relying on my long-term memory and will be guilty of several generalizations I'm sure. Every attempt will be made to remain factual, but those facts will be as I remember them. If I leave someone out, or attribute something to the wrong person, please forgive me. No slight intended. I'm sure others will remember these same events, but may see them slightly differently. I encourage those who read this and can provide amplification to please do so. The history itself is much more important than the individual author. So with that as prologue, let me begin.

Most people look to the mid 1980's as the start of the USMC AMSO program, but in reality it started much earlier than that. As with any program, it just doesn't happen. It 's the result of a continuous input process of personal effort and events over time until finally critical mass is reached and the program defines its direction and takes off. This is just such a program. For the purposes of this history, I'll call the years circa 1974 to 1984 as the developmental years. Back in the 1970's the AMSO program had its beginnings as an expansion of the Flight Surgeon program. It was begun by Frank Austin, a flight surgeon, who envisioned a team of aeromedical specialists providing direct support to the aviation community. The community that found a home with the AMSO effort was Aerospace Physiology. As these billets with the larger aviation activities developed, their benefit was slowly realized. The early AMSOs went to Aviation Safety Officer school at the Naval Postgraduate School at Monterey California. Their value to the squadrons was immediate and enormous. FAILSAFE was coming into being and the AMSO structure provided just the right vehicle to bring direct support to the fleet. However, if there was one weakness to the early days of the AMSO, it was the fact it was disjointed and non-standardized. Each individual did the job as they saw fit, with little coordination. That would be an important element in the years to come.

In the developmental years, there were four AMSO billets that could be construed as providing support to the Marine Corps. Those billets were located at MCAS Cherry Point NC, MCAS Beaufort SC, MCAS El Toro CA, and MCAS Futenma Okinawa Japan. The east coast billets supporting the 2nd Marine Aircraft Wing were different than the two west coast billets supporting 3rd and 1st Marine Aircraft Wing. The billet at Cherry Point was actually assigned to the Naval Hospital with additional duty to 2nd MAW. It was one of two aerospace physiologists assigned to the training unit there. The billet at Beaufort was actually the remnant of a physiology training unit that was once there. The unit closed, but the aerospace physiology billet stayed there as an AMSO billet. It was assigned to Naval Hospital Beaufort with additional duty to Marine Aircraft Group 31. It's important to note these two billets were assigned to the hospital, then ADDU to the line. The west coast billets did not have that same relationship. I'm not sure how the El Toro billet came on line originally, but it was assigned directly to 3rd MAW. No hospital relationship! This would prove to be beneficial and the model to be followed in the future. The Okinawa billet supporting 1st MAW was also a line billet, but this one was unique in that it provided direct support to the Air Force's physiology training unit at Kadena AB. Since there was a hyperbaric chamber at Kadena, the aerospace physiologist going to 1st MAW had to get the Air Force's Compression Chamber Team Training at Brooks AFB, TX prior to reporting to Okinawa. Not a bad deal for the person going out there. Also, the 1st MAW billet was a one year unaccompanied tour.

These are some of the early holders of these billets that I can remember. No sequence is implied and is not considered all-inclusive. Some folks who have served at Cherry Point in the developmental years (circa 1974 – 1984) include Glenn Armstrong, John Etheredge, Jerry Patee, and Paul Toops. Bill Little and Steve Feith served at Beaufort. Bill Little can be seen in a cameo role in the film, The Great Santini, from his days there. Steve Feith as far as I can recall was the first AMSO ordered into Beaufort as an AMSO only. The training unit was closed prior to his arrival. I remember Dave Johanson as a 3rd MAW AMSO during this timeframe, but I can't remember anyone prior to him. Some aerospace

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physiologists who served the one-year tours at Okinawa during this period were Bob Moynihan, Steve Tolan, Dan Robertson, and Tom Fleishman.

I can't stress enough that while we are credited with establishing the USMC AMSO program, what we put together was made possible by the work of the AMSOs during the developmental years I've just described. However, the USMC AMSO program as it is known today was born as a program in 1984 with the assignment of four officers of a common purpose who wanted to coordinate the Marine Corps effort and make a difference. Those four officers were Jeff Clark assigned to NH Beaufort/MAG 31, Mike Wilkinson assigned to 3rd MAW, Rick Mason assigned to 1st MAW, and myself assigned to NH Cherry Point/2nd MAW. All four officers asked for assignment to the Marines. All four wanted to serve with the Marines. In fact, Rick changed the paradigm at 1st MAW by taking a three year accompanied tour to Okinawa. Tours have been three years ever since. All four officers had a vision of how aerospace physiology could get out of the classic setting and provide direct operational support in the field. But most important of all, all four officers wanted to share information and truly have a coordinated, consolidated USMC AMSO program.

As luck would have it, Rick, Mike, and I were sent to ASO school in the same class in July 1984. Jeff had attended ASO school in the class just prior to ours. So all of us were relatively new in our jobs, and could expect to work together for the next three years. During those six weeks of ASO school, the three MAW AMSOs got together in my room at night and talked about each other's vision of what the USMC AMSO program should be. We blended our own individual visions with elements from each other to come up with a framework of a coordinated program. Perhaps the most important mutual agreement was our decision to share the wealth. We would continually and extensively communicate with each other. The whole would be greater than the sum of the individual parts. Service to the Marine Corps would be paramount. We were in communication with Jeff back in Beaufort this whole time as well and he was completely on board.

Mike Wilkinson may see it differently, but a significant event occurred during our time at Monterey that sowed the seed that blossomed into our work with NVGs and Lasers today. During our class tour of air stations (not sure they do that anymore at ASO school), Mike met with the Marine pilot who led the failed Desert 1 hostage rescue mission. There he was able to see a set of NVGs and learned what the limitations were during the mission. Since we were visiting a 3rd MAW air station, I remember Mike asking if he could come back and find out more about this stuff when he got back into his office after ASO school. I know Mike did, because he became our original subject matter expert for NVG and directed energy. More about that further on in the history.

Once back at our respective duty stations, we set about putting the USMC AMSO program into place. We knew it was one thing to talk about it, but quite another to actually do what we talked about. However it was amazing to see how everything fell into place for us, again testimony to the benefit of the work done by those who preceded us. Prior to my arrival at 2nd MAW, Jerry Patee and Sonny Carter had developed an aeromedical briefing program. This program, complete with slides and printed material covered 10 common aeromedical topics and was designed to be given in the squadron spaces. This was an annual requirement for all 2nd MAW squadrons. This program, continually modified and updated for then current physiological threats, was exported to 3rd MAW as part of a NATOPS school that 2nd MAW gave to 3rd MAW as a standardization effort directed by DCS for Aviation at HQMC. All four USMC AMSOs used this

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> "...all four AMSOs wanted to get as close to the operational forces as we could. We felt the AMSO should be in the readyroom, not bring the aircrew into classrooms."

foundation to present relevant threat briefings to our aircrew. The concept of the physiological threat brief was born out of the aeromedical briefing program. A physiological threat was any environmental or physiological condition that could serve to limit an aircrew's ability to accomplish a mission. Our intent was to look at our operating environments and tailor physiological briefings to cover that specific area of operations. We structured them just like OpsIntel briefs. These were particularly beneficial prior to and during deployments. Each AMSO would tweak the briefs, then share their thoughts with everyone else. No pride in authorship, our intent was to serve the Marine aircrew the best we could.

As I mentioned, all four AMSOs wanted to get as close to the operational forces as we could. We felt the AMSO should be in the readyroom, not bring the aircrew into classrooms. That was the mission of the physiology training units. To do this effectively, we needed to be able to deploy with our units. That was a goal all of us shared. For me, this was brought home a year earlier. During our FAILSAFE banquet that year, the guest speaker was a Major who had been in Beirut at the time of the airport bombing. At the end of his presentation, I asked him what he thought aerospace physiologists could do to provide better support to the Marines. His response was simple and stays with me as a personal motto to this very day. He said, "Spend some time with the bubbas at the front". In 1984, we had a chance to try this out. Back then, Marines trained their own helicopter aircrewmen. All of them did not go through the aircrew candidate school in Pensacola. Since there were physiology units at Cherry Point, El Toro, and Kadena, it was possible to get them trained and out to the squadrons quickly. Anyway, the composite squadron floating in the Mediterranean at the time was in dire need of additional helicopter aircrewmen and came to our office for a waiver of initial physiology and water survival training to cover the deployment. Our boss was not any too happy, was reluctant to grant the waiver, and was contemplating the cost of bringing the candidates back to the states to get trained or to send qualified aircrewmen from a sister squadron at MCAS New River NC. I remember going into his office and volunteering to go out to the ship and provide at a minimum the required didactic physiology and survival training that would hold them over until they returned from the float. He was amazed that I would even suggest such a thing, that I would be willing to go out off Beirut to the ARG and provide the training. He at first said it was out of the question, then the more he thought about it, he realized that is exactly the type of thing an AMSO could and should provide. As it turned out, the squadron pulled back its waiver request, making any thought of my going out there to provide the training moot. But another seed was planted that would blossom the very next year.

While all this was going on in the field, significant events were also taking place in Washington. Building upon the support the Marine Corps had always given flight surgeons, the Marine Corps was POM-ing for additional aerospace physiologist AMSO billets. They POM-ed for enough billets to have an AMSO at every level of Marine aviation from the Marine Aircraft Group up to and including HQMC. Tom Cooper was our program manager at BUMED at the time and was the key architect along with Tom Stoddard (MSC Manpower Officer at HQMC at the time) in getting these billets on line. With the increased emphasis on Marine aviation safety led by the tireless efforts of LTGen Keith Smith, the Marines put their money into our program. Now, once those billets were POM-ed, it was up to us in the USMC AMSO program to determine what value added they could be to the Corps.

In 1985, I was still at 2nd MAW. Since I was the senior AMSO assigned to the Marines, and since Cherry Point was the closest geographically to Washington, I became the de facto Marine AMSO coordinator. All this really meant at the time was I was the one HQMC came to for staffing AMSO issues and developing a coordinated concept of operations for Marine Corps AMSOs. Again, this was not done in a vacuum. Even though the taskers came to 2nd MAW, I continually coordinated the inputs from my other three counterparts. By this time, the Marines had a pretty good idea how to use an AMSO based on our work with the physiological threat briefs, our work with unique (at the time) equipment such as lasers

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and NVGs, and through the FAILSAFE Program. But these accomplishments only got us to the table. Now that the Marines had the billets coming on line, we had to show an even greater value added to Marine aviation. That was our task in 1985.

As I remember, we had two major tasks in front of us. First, we had to come up with a plan of how to bring the billets on line. Knowing the POM process, the billets were not coming on line all at once. They would be phased in over the course of the next six years. The first billets would come on line in 1987. We were told the billets would come on line in groups of four. We had to tell HQMC which billets needed to come on each year. I remember the original plan called for HQMC getting their AMSO billet first, followed by the FMFs (now called MARFORs), then 2nd MAW (remember my billet was a NH Cherry Point billet ADDU to 2nd MAW), and finally the Marine Aircraft Groups. Reasoning behind this was HQMC would get their billet first to be the coordinator for all that would follow. As it turned out, this is not how it came about. In fact, just the opposite approach actually occurred.
It was decided that the first billet to come on line was the 2nd MAW billet, thus freeing the hospital billet to revert back to the ASTC for use as a preceptorship billet. Once the 2nd MAW billet was in place, the MAGs would be filled first, then HQMC, then the MARFORs. After much discussion, the decision was made based on taking care of the "bubbas at the front". To the Marine Corps, it made much more sense to get this valuable asset down to the level where it would do the most good and have the greatest immediate impact. To be very honest, this would also prove to be a litmus test to the Marine Corps manpower folks. By that I mean if the Marine Corps AMSOs at the MAGs did not show any value added immediately, then they could choose not to bring the additional billets on line and reprogram those assets to more deserving programs.

That leads me to the discussion of the second major task facing us in 1985. We had to show immediate benefits to the Marine Corps to justify this expenditure of resources. We had to put into practice what we were only talking about, and expand those services we already were providing. As aerospace physiologists, we were always seeking ways to get closer to the aircrew, i.e. meet them where they work vice having them come to us. Remember the seeds that were sown in 1984 with the offer to deploy to the ARG to provide didactic physiology training to helicopter enlisted aircrew. Having AMSOs at the MAG level gave us the numbers we would need to be able to make actual deployments with squadrons and still have the basic AMSO coverage in garrison, either from the MAW AMSO or other MAG AMSOs. LTGen Smith, DCS for Aviation at the time, liked the idea of having his Flight Surgeons deploy with his squadrons and was intrigued by the possibility of having an AMSO at the front as well. Word came down to me at 2nd MAW to put together a proof of concept for an AMSO shipboard deployment. We developed a list of things an AMSO could provide a deployed squadron, as well as those things we could provide the other elements of a Marine Air Ground Task Force. Our proposal was accepted, and on 3 July 1985 I was privileged to leave Morehead City NC embarked on the old USS IWO JIMA assigned to the 22nd Marine Amphibious Unit (now MEU) as the deployed AMSO. The after action report from that deployment was sent throughout the Marine Corps and was enthusiastically received and became a template upon which all other AMSOs continued to build upon. From what I can remember, after that float it was full speed ahead in getting the additional billets on line. This was followed up by an additional float in 1988 with HMLA-167 specifically to address CBR and laser protection as well as the physiological threats of operating in the Persian Gulf.

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Getting back to Mike Wilkinson at 3rd MAW. Remember his keen interest in NVGs and lasers. While all this was going on in the east, Mike was nurturing his deep desire to expand our horizons in this fascinating new subject matter area. With the help of his boss at 3rd MAW, he was instrumental in the establishment of the very first NVG lab. This work, and the value it added to Marine aviation safety, led to the establishment of the AMSO billet at Marine Air Weapons and Tactics Squadron –1 billet at MCAS Yuma AZ in 1986. Mike Wilkinson became the first MAWTS-1 AMSO with its establishment. This billet was unique in that it could focus entirely on these new areas, allowing Mike to become the subject matter expert for NVGs and directed energy for our program.

In 1987, the POM-ed billets began to come on line as programmed. I remember Tom Cooper asking me to "PCS to my own billet", i.e. move in place, leaving my hospital billet and moving into the newly created purely 2nd MAW billet for an additional tour. I had been scheduled to move to HQMC under the original plan since I had been the de facto coordinator to bring this all on board. When the decision was made to bring the MAGs on first, I was kept at 2nd MAW to continue in that role. That year, the MAG-31 billet at MCAS Beaufort SC came on line. The vacated NH Beaufort billet was then moved to ASTC El Toro to become the preceptor billet there. In 1987 and 1988, billets came on line for MAG-14 and MAG-32 at MCAS Cherry Point NC as well as MAG-26 and MAG-29 at MCAS New River NC. If my memory serves me right, Fred Patterson was the first AMSO at MAG-14, Barbara Boyd at MAG-32, Terry Rickey at MAG-26, and Donnie Plombon at MAG-29.

The Marine Corps then brought several billets on line in 1989, including the HQMC billet. I was lucky enough to move to that billet in 1989 to become the first CMC AMSO and officially be the AMSO program coordinator. During this time period, the following AMSO billets came on line. I hope I have the names right for the plankowners. They were Chris Schuyler at MAG-24 at MCAS Kaneohe Bay HI, Bob Hertan at MAG-39 at MCAS Camp Pendleton CA, Mark Baysinger at MAG-16 at MCAS Tustin CA, Keith Syring at MAG-11 at MCAS El Toro CA, Tom Wheaton at MAG-12 at MCAS Iwakuni Japan, and Lynn Wheeler at MAG-36 at MCAS Futenma Okinawa Japan.

" A very significant event occurred following the establishment of these officer billets, the establishment of the Aeromedical Safety Enlisted, or AMSE program. This built upon the successes of the parent AMSO program and tapped into the vast wealth of experience and knowledge of our HM8409/8406 community."

With the success of the MAG AMSOs, coupled with the keen interest in special areas like NVGs and lasers, the Marine Corps did a little course correction on their billet establishment plan. Rather than bring billets on at both MARFORs, the decision was made to take one of those billets and stand up a billet at HMX-1 in 1991. Mike Wilkinson, fresh from his FTOS doctorate training at Indiana University, became the first AMSO at the MCAF Quantico squadron. He built upon his experience at MAWTS-1 and brought this expertise into the world of operational test and evaluation. At this same time, the final AMSO billets to come on line were 4th MAW in New Orleans LA, MAG-13 at MCAS Yuma AZ and MARFORLANT, first in Norfolk VA, then MCB Camp Lejeune NC, and now back to Norfolk. The first AMSOs in those billets were Ryan Eichner at 4th MAW, Jeff Andrews at MAG-13 and Tom Wheaton at MARFORLANT.

A very significant event occurred following the establishment of these officer billets, the establishment of the Aeromedical Safety Enlisted, or AMSE program. This built upon the successes of the parent AMSO program and tapped into the vast wealth of experience and knowledge of our HM8409/8406 community. The Marine Corps manpower folks, seeing how much value was added by the AMSO program, found unfilled enlisted endstrength and realigned them with the AMSO billets to form a solid aeromedical team. Just as the AMSO program provided the officer community with another avenue of service, so did the AMSE provide the enlisted force with a chance to branch out into a purely operational setting.

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This was a perfect example of success breeding additional successes. Hopefully the AMSEs will capture their thoughts on what that program means to them and the aerospace physiology community as a whole.

In this short history, I have not to this point mentioned our role during Desert Shield and Desert Storm. That history has been captured elsewhere by those who actually served in theater. From my perspective as the HQMC AMSO at the time, we had over 70 percent of our Marine Corps AMSOs deployed for varying durations, providing all kinds of services from CBR protection introduction and training, FAILSAFE work, aviation survival training, as well as physiological threat briefings. The Gulf War solidified the concept of the Marine Corps AMSO program as one of service to the Corps where they live. That basic tenet continues on even to this day, and the rest as they say, is history.

Well, that's the way I saw it and as I and our many counterparts lived it. As I said at the beginning, I encourage all those involved to provide amplification and their perspective on the events depicted herein. This was truly and completely a group effort to bring this program to the lofty position it holds to this day. I am honored to provide this synopsis, but even more honored to have been an actual part of it. Semper Fi!⌘

CAPT Musashe is the Deputy Director of the Medical Resources, Plans and Policy Division, Chief of Naval Operations

A Blast from the Past - Do you recognize anyone in this photo?

picture discovered in a dusty cabinet by an unknown Physiologist

Malaria

by CDR Patrick J. Daigle, Medical Corps, USN

I have just returned from TAD after attending a three-month course in Tropical Medicine and Disaster Preparedness. After all these years I remain impressed as to how many infectious diseases are preventable and yet so prevalent in and throughout the world today. Living in North American we are only exposed to a fraction of these but could some be that far away from our own back door?

Ebola and the likes make for good Hollywood but others have been around from time immortal. With good sanitation, personal protection measures and vector control we have been able to avoided many of these. With the ban on the use of some insecticides and organisms, adapting to the newer and less effective ones, as well as drugs some are rearing their heads again with a vengeance. The one I focus on today is malaria.

This illness once rampant in the US is now mostly one of travelers and immigrants to this country. However between three and five hundred million people are infected with malaria today worldwide. The annual death rate ranges from one and one half million to three million, ninety percent of whom are children.

The classic signs and symptoms are high fever, chills, rigor, sweats and headache. These become synchronized and occur in a cyclic pattern. Depending upon the species, fever will appear every other day or third day. Other manifestations include nausea, vomiting, diarrhea, cough, arthralgia and abdominal pain. Pallor and jaundice may be present as caused by hemolysis. Hepatosplenomegaly may be present and is more prominent in chronic infections.

There are four species (i.e., *Plasmodium falciparum, Plasmodium vivax, Plasmodium ovale,* and *Plasmodium malariae)* each with it's own particulars. However, *Plasmodium falciparum* is the most lethal and resistant and must never be missed on initial diagnosis. This is done by microscopic examination of a thick and thin blood smear, preferably during fever and observing the parasite.

The following is a very broad overview of manifestations of each.

Plasmodium falciparum

1. *Cerebral malaria* variable neurologic signs (seizures, increased intracranial pressure, confusion, stupor, coma and death)
2. *Severe anemia* high parasitemia and consequent hemolysis
3. *Hypoglycemia* worsened with treatment
4. *Respiratory failure and metabolic acidosis*
5. *Pulmonary edema* (rare in children)
6. *Renal failure* acute tubular necrosis (rare in children younger than 8 years)
7. *Vascular collapse and shock* hypothermia and adrenal insufficiency
8. Persons with asplenia are at high risk of death, as are persons with chronic hepatitis B infection are at increased risk of severe disease

Plasmodium vivax
Plasmodium ovale

1. *Hypersplenism* with late splenic rupture
2. *Anemia* due to acute parasitemia
3. *Relapse* due to latent hepatic stages

Plasmodium malariae

1. *Nephrotic syndrome* secondary to deposition of immune complexes in the kidney
2. *Chronic asymptomatic parasitemia* for years after last exposure

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In 1874 dichlorodiphenyltrichloroethane (DDT) was first synthesized by German chemist Othmar Zeidler. In 1939 Dr. Paul Muller discovered the insecticidal properties of DDT, receiving the Nobel Prize in 1948.

According to the National Academy of Science in 1970: "… In little more than two decades, DDT has prevented 500 million human deaths, due to malaria." Its toxicity to humans is very low and there is no evidence that the millions of people whose house were treated are at any risk from exposure. It is used as a residual indoor spray applied every six months. It has a certain irritant effect on insects causing them to leave the treated surface soon after alighting on it, but its toxicity to most species of insects is high.
However, anxiety about the pollution of the environment by pesticides has increased during the past years to such an extent that all the virtues tend to be forgotten, while their disadvantages receive much sensational publicity.

Using the argument of 'precautionary principal', that is some technological activities pose such grave potential threats that they should not be undertaken, even if definitive scientific evidence is not available to establish that the activity will cause harm. In 1972 it was banned in the US, and presently with pressure from environmentalist encouraged to be such worldwide. In reviewing the literature there was a direct correlation with this and the return of malaria throughout the world. Increasing to this day, especially in India and Africa where the vector the *Anopheles* mosquitoes resides and flourishes.

I hope that this was thought provoking. I am sure, as with me malariae was low on your radar. Though this was brief it was presented as food for thought and discussion as you will soon be faced with protecting the force as well as maybe your own local community. If you follow the news, West Nile virus is here now. Could malaria be far behind? What and how will you respond? In future articles I will discuss preventive measures, prophylaxis and resistance. ⌘

CDR Daigle is a Student Naval Flight Surgeon at the Naval Aerospace Medical Institute

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The success of this journal depends exclusively upon member contributions. If you are involved in a special project (what AMSO/Physiologist isn't?), have had an interesting experience, find some useful gouge or training opportunities, or just have something to say, please send it to the SUSNAP Secretary/Journal Editor, LT Tony "Ragu" Artino. Ragu can be reached at arartino@nomi.med.navy.mil or DSN 922-4705. SUSNAP also welcomes photographs of any kind. Let's get the word out to our members and make the SUSNAP journal the best it can be.

Adult Learning

by LCDR Rich Jehue, Medical Service Corps, USN

Whether for personal and professional development, or as members of the Naval Aerospace Physiology Program (NAPP) continually trying to improve the training provided, possessing knowledge of learning perspectives should be a goal. Individually this involves knowing how you best learn, and as a member of the NAPP this involves knowing enough about our audience to facilitate their learning as well as augment the program's outcomes. Both of which require an integrative perspective; treating each student as an individual and using the appropriate context to assist the students in learning things that can be utilized throughout their lives (Caffarella and Merriam, 2000). In order to augment this process a basic understanding of adult learning is paramount.

Knowles (1973) posits that as people mature their self-concept moves from being a dependent personality towards that of being a self-directing person. Adults' readiness to learn becomes increasingly oriented to the developmental tasks of their social roles. Adults' time perspective change as they need to see the immediate application of the knowledge, versus a future use or application. Adults' reason to learn changes from external motivators to internal motivators, and adults' move from learning about a subject to learning how to learn and solve problems. Adult learners also accumulate a continuous growing reservoir of experience that becomes a foundation and a resource in their learning. Dirkx and Prenger (1995) suggest that the assumptions about adult learners could also mean that the adult learner will tend to be a voluntary learner and believe the decision to return to school is an important one and that education will be beneficial. Dirkx and Prenger (1995) also suggest that this could mean that the adult learner will: tend to be a pragmatic learner; study to improve their performance in other social roles; let their schoolwork take a back seat to other responsibilities, such as jobs and families; expect their class time to be well spent; and hope their courses will help them solve problems in their daily lives.

"Adults' reason to learn changes from external motivators to internal motivators, and adults' move from learning about a subject to learning how to learn and solve problems."

Others (Cross, 1981; Jarvis, 1987; Knox, 1980; McClusky, 1963) have also contributed to advancing the understanding of adult learners through their own models. However, it must be noted that adult learners in any learning environment will: vary widely in age, ability, work experiences, cultural background, and personal goals; range in educational backgrounds; and carry well-developed personal identities (Knowles, 1973).

Caffarella and Merriam (2000) present an adult learning framework which acknowledges the two primary perspectives that have historically driven the education of adults (i.e., individual and contextual) and posit advancing to a third perspective, the integrative. The individual perspective, a more psychological paradigm, focuses on the learner as an individual and assumes that learning only happens inside someone's head. Also posing that all adults can be effective learners, irrespective of their background or the situation (i.e., context), the contextual perspective acknowledges that the context is an important component to the learning process and is comprised of two dimensions, interactive and structural. The interactive perspective acknowledges that learning cannot be separated from the context in which it occurs, thus the situation is important. The structural dimension argues, usually from a feminist, critical or postmodern perspective, that gender, race and class must also be considered in adult learning. Caffarella and Merriam (2000) feel their third perspective, the integrative, which links the two previous perspectives, is paramount in moving adult learning toward a more comprehensive understanding of learning in adulthood.

Therefore, the primary task of the instructor is to create an educational program and setting in which adult students can develop latent self-directed learning skills. When teaching adults, instructors should be prepared to: establish an environment, physically and psychologically, conducive to learning; establish an environment of mutual respect among all

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participants; emphasize collaborative modes of learning; emphasize that learning is pleasant; establish an atmosphere of mutual trust; and offer support. The instructor will also find that they will be involved in a process of continuous negotiation, and that they must share responsibility for learning (Brookfield, 1986; Knowles, 1980; Merriam & Caffarella, 1999). Through participation and motivation, instructors should facilitate students in developing self-directed and transformational learning skills.

Self-Directed Learning:

When learners take on the responsibility for their own continuous learning, having control over learning becomes very important. Self-directed learning is a strategy that provides the learner with that control. Through self-directed learning, learners control what they want to learn, how they want to learn, and when they want to learn.

Grow (1991) proposes a four stage model which incorporates corresponding teaching styles to assist learners in moving from dependency to self-direction. In stage one adult learners are dependent learners who need instructors who coach. For these learners, learning is teacher-centered. In stage two adult learners are interested learners who need instructors to motivate and guide. Here learners respond to motivational efforts. In stage three adult learners are involved and need instructors who facilitate. In this stage learners begin to see themselves as participants in their own education. And in stage four adult learners become self-directed and need instructors who consult. Learners now set their own goals and standards and the teacher no longer teaches subject matter, but rather cultivates the students' ability to learn.

To augment the development of self-directed learners, educators need to use resources and materials most appropriate to the learners. By critically assessing resources and methodology of teaching practices, educators can shift the focus from content to process. Also, in assessing the competencies needed for learning tasks; teachers can help adults diagnose their learning problems, provide the appropriate training, and help learners overcome problems and weaknesses (Merriam & Caffarella, 1999).

Transformational Learning:

Transformational learning is the change in someone's perspective through a change in individual values, beliefs and worldviews. Transformational learning usually commences as a result of a triggering event that is either internal, external or a combination, which results in change that can occur suddenly or gradually. Thus, the components of the transformational learning process include a situation or event (experience), one's basic beliefs or assumptions (reflection), and changes made in one's basic belief or assumptions (development) (Merriam & Caffarella, 1999).

In reflective practice, judgements about complex situations are based on experience and prior knowledge. The cornerstone of reflective practice, practice knowledge, involves many kinds of knowledge: abstract theoretical, technical, tacit, wisdom, and the like. There are different beliefs about reflective practice: immediate, domesticating and liberating. Operating from the immediate belief, the process or resulting action occurs so rapidly that little or no reflective practice really occurs. When someone operates from the domesticating belief, they are typically more humanistic and stress the importance of communication and the learner. Reflective practices from the domesticating belief can be facilitated by an instrument to direct the reflective practice (technical) or through placing an emphasis on discovery and establishing personal meaning to the situation (deliberative). The last belief, liberating, contains a dichotomy of dialectic liberation and transpersonal liberation. Dialectic liberation focuses on political and social issues (limitations of authorized structures and procedures) and transpersonal liberation focuses on personal issues (from the inner perspective) (Merriam & Caffarella, 1999).

Kolb's (1984) experiential learning theory is a reflective practice model. Kolb's model posits a four stage cycle: concrete experience, reflective observation, abstract conceptualization, and active experimentation. Building on previous work, Kolb (1984) viewed the four stages as a process, in which one begins with a concrete experience and ends with

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active experimentation. At this point the action becomes a new concrete experience. Adapting Kolb's model, Barnett (1989) added another stage (planning for implementation) between Kolb's third and fourth stages, to develop a model of reflective thought and action. The goal is to provide students with an experience they can reflect on and develop, changing their lives forever.

Summary

Although every person has their own unique set of life experiences, as humans most of us have the desire to see how far we can go; growing by way of testing and expanding our personal limits. We also seek what psychologists call "peak experiences:" positive life-changing happenings that have a profound and lasting impact; and when reflected upon are considered some of the best experiences in our lives (Whitsett, Dolgener, & Kole, 1998). The NAPP provides peak experiences in the aviation survival training context during the training provided. Students often comment on the training experience as the best they have ever had, and how the training saved their lives. In order for the training experience to continually change peoples' lives, instructors need to continue to facilitate people to be good learners; taking action on the desire to test personal limits, physically and mentally, by actively seeking a peak experience. Setting goals, to include "peak experiences" and continuous learning, are also important individually. Basically the ability to learn how to be a good learner is paramount.

"In order for the training experience to continually change peoples' lives, instructors need to continue to facilitate people to be good learners; taking action on the desire to test personal limits, physically and mentally, by actively seeking a peak experience."

Like most things in life, if someone wishes to be a good learner, practice must take place. By practicing the skill of learning, people can have a clearer picture of themselves. Experiencing that although learning is serious, knowing how to laugh during the process as well as celebrate are important to the process. Through practice learning and a commitment to being a literate person, someone can learn to watch themselves learn each day.

> "Teachers who know how to listen, who incorporate the details of their observations and experience in their spoken and written language, have the tools to know how to celebrate learning. Celebrations can be as simple as a well-timed smile when both teacher and learner share an awareness that something good has happened. When it's time to celebrate, both teacher and learner, who have struggled hard to reach an objective, rest a moment and savor with a whoop or a laugh the 'crossing of the bar." (Graves, 1990, p. 119)

Graves (1990) believes that teaching and learning are two sides to one process, which are inseparable events. Rather than viewing learning as a function of maturation, instructors should use training as an important experience to augment the learning process. Thus, learning is considered a process, through an experience, which results in a change of behavior (Merriam & Caffarella, 1999).

Through the objectives of a course, the students should learn a lot about themselves and their environment. Upon completion of a course, students hopefully will have constructed their own knowledge from their experience in the immediate environment, and display an overt change in behavior. Learning should occur as a result of the interaction of each person, the environment, and the individual's behavior. Students should also learn from their internal mental processing, potential, emotions and the affect of their overt behavior. Through choices and responsibilities the students become more motivated and will feel they have more control of their lives; therefore increasing their internal locus of control. Similar to the Chinese proverb, instructors should not provide students with a fish, rather teach them how to fish.

Next issue will address instructional objectives, including their function and categories.⌘

LCDR Jehue is the Department Head of Medical Service Corps / Hospital Corpsman Training at the Naval Aerospace Medical Institute

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Naval Aerospace Physiology Program Awards

citations submitted by CDR Russ Lawry, Medical Service Corps, USN

AEROSPACE PHYSIOLOGIST OF THE YEAR AWARD
LT RICHARD V. FOLGA

FOR MERITORIOUS SERVICE WHILE SERVING AS THE AEROMEDICAL SAFETY OFFICER, MARINE AIRCRAFT GROUP 16, 3D MARINE AIRCRAFT WING, MARINE FORCES PACIFIC, FROM 1 JANUARY TO 31 DECEMBER 2001. LIEUTENANT FOLGA'S SUPERIOR LEADERSHIP AND MANAGERIAL ACUMEN WERE INSTRUMENTAL IN CREATING THE PREMIER AEROMEDICAL SAFETY PROGRAM IN THE 3D MARINE AIRCRAFT WING. HIS PROACTIVE APPROACH COUPLED WITH A TENACIOUS RESULTS ORIENTED SPIRIT PROVIDED INVALUABLE TRAINING AND THREAT BRIEFS TO OVER 4000 PERSONNEL. HIS RECOGNIZED EXPERTISE IN NIGHT VISION DEVICES, SURVIVAL RADIO SYSTEMS, LASER SYSTEMS, AIRCREW SURVIVAL VESTS, AND AS A SUBJECT MATTER EXPERT IN OVER-THE-COUNTER SUPPLEMENTS INCREASED THE COMBAT READINESS OF AIRCREW AND PERSONNEL FROM NAVY AND MARINE CORPS UNITS IN THE SOUTHERN CALIFORNIA REGION. LIEUTENANT FOLGA'S EXPERT KNOWLEDGE OF AVIATION LIFE SUPPORT SYSTEMS WAS INSTRUMENTAL TO THE ACCELERATED INTRODUCTION OF NEW AND UPGRADED SURVIVAL EQUIPMENT IN MARINE AIRCRAFT GROUP 16. LIEUTENANT FOLGA'S DISTINCTIVE ACCOMPLISHMENTS, PROFESSIONALISM AND STEADFAST DEVOTION TO DUTY REFLECTED GREAT CREDIT UPON HIMSELF AND WERE IN KEEPING WITH THE HIGHEST TRADITIONS OF THE UNITED STATES NAVAL SERVICE.

ROBERT GRAHAM ENLISTED AWARD
HMC (FMF) TREVOR DALLAS ORR

FOR OUTSTANDING PROFESSIONAL ACHIEVEMENT IN THE SUPERIOR PERFORMANCE OF HIS DUTIES WHILE SERVING AS AN AEROSPACE PHYSIOLOGY TECHNICIAN AND AEROMEDICAL SAFETY CORPSMAN AT MARINE AIRCRAFT GROUP 16 FROM 01 JAN 2001 TO 31 DEC 2001. CHIEF HOSPITAL CORPSMAN DALLAS-ORR CONSISTENTLY PERFORMED HIS DUTIES IN AN EXEMPLARY AND HIGHLY PROFESSIONAL MANNER. FLEET UNITS AND HEADQUARTERS ELEMENTS CONSISTENTLY SEEK HIS CAPABILITIES AS AN INSTRUCTOR INSIDE THE CLASSROOM AS WELL AS IN THE FIELD. DURING THIS PERIOD, HE DIRECTLY PARTICIPATED IN THE TRAINING OF APPROXIMATELY 4400 AVIATION AND MAINTENANCE PERSONNEL IN THE AREAS OF CHEMICAL, BIOLOGICAL AND RADIOLOGICAL PROTECTION, SURVIVAL EQUIPMENT, AND HUMAN FACTORS. CHIEF DALLAS-ORR'S PARTICIPATION IN THE STANDUP OF THE MARINE CORPS INTEGRATED PASSENGER HELICOPTER AIRCREW BREATHING DEVICE TRAINING AT THE FIRST MARINE EXPEDITIONARY UNIT HAS RESULTED IN THE INCREASED SURVIVABILITY OF MORE THAN 2500 NON-AIRCREW MARINES BEING TRANSPORTED BY HELICOPTERS. HIS SUPPORT TO THE NAVY AND MARINE CORPS HAS BEEN UNPARALLELED. CHIEF HOSPITAL CORPSMAN DALLAS-ORR'S EXCEPTIONAL PROFESSIONAL ABILITY, LEADERSHIP AND STEADFAST PERFORMANCE REFLECTED GREAT CREDIT UPON HIMSELF AND WERE IN KEEPING WITH THE HIGHEST TRADITIONS OF THE UNITED STATES NAVAL SERVICE.

Naval Aerospace Physiology Program Awards cont'd...

JAMES JANOUSEK ENLISTED AWARD
SM2(DV/PJ) GEORGE C. BYINGTON

FOR SUPERIOR PERFORMANCE OF HIS DUTIES WHILE SERVING AS A NAVAL AVIATION WATER SURVIVAL INSTRUCTOR, NAVAL OPERATIONAL MEDICINE INSTITUTE, AVIATION SURVIVAL TRAINING CENTER, LEMOORE, CALIFORNIA FROM 7 FEB 2001 TO 4 FEB 2002. PETTY OFFICER BYINGTON'S DEDICATION TO THE UNIT MISSION WAS INVALUABLE IN PROVIDING NAVAL AND MARINE CORPS AIRCREW WITH THE MOST ADVANCED WATER SURVIVAL TRAINING IN THE US NAVY. HE EXPERTLY RESEARCHED AND DEVELOPED A SCENARIO-BASED TRAINING SESSION TO BE UTILIZED FOR THE EXTENDED SEA SURVIVAL LABORATORY PHASE DURING REFRESHER TRAINING. THROUGH HIS EFFORTS, STUDENTS WERE PROVIDED WITH A REALISTIC SURVIVAL SITUATION HAVING TO WORK THROUGH PRIORITIES WHILE COUNTERACTING THE ENVIRONMENTAL EFFECTS OF RAIN, THUNDER, LIGHTENING, FOG, AND ROUGH SEAS. EXHIBITING TREMENDOUS SELF-INITIATIVE HE DESIGNED AND BUILT ASTC LEMOORE'S PARACHUTE LANDING FALL ROOM INCORPORATING THE PIT, PLATFORM AS WELL AS MURALS, STENCILED PLF PROCEDURES AND SAFETY PRACTICES. HIS STRONG DESIRE TO EXCEL IN ALL HE UNDERTAKES HAS MADE HIM ONE OF THE MOST QUALIFIED MEMBERS OF THIS DEPARTMENT. PETTY OFFICER BYINGTON'S INTENSE DEVOTION TO THE CONTINUOUS IMPROVEMENT OF THE QUALITY OF TRAINING REFLECTED GREAT CREDIT UPON HIMSELF AND WERE IN KEEPING WITH THE HIGHEST TRADITIONS OF THE UNITED STATES NAVAL SERVICE.

CIVILIAN AWARD
MR. JOHN KLOCZKOWSKI

FOR SUPERIOR PERFORMANCE OF HIS DUTIES WHILE SERVING AS AN ELECTRONIC INTEGRATED SYSTEMS MECHANIC, NAVAL OPERATIONAL MEDICINE INSTITUTE, AVIATION SURVIVAL TRAINING CENTER, LEMOORE, CALIFORNIA FROM 6 FEB 2001 TO 3 FEB 2002. HIS IRREPLACEABLE TECHNICAL KNOWLEDGE AND DEDICATION TO THE UNIT MISSION HAS BEEN INVALUABLE IN SAFELY MOVING THE CNO MANDATED NP5 CENTRIFUGE-BASED FLIGHT ENVIRONMENT TRAINING FORWARD IN SPITE OF NUMEROUS UNCONTROLLABLE AND UNEXPECTED MECHANICAL, ELECTRICAL, AND COMPUTER PROBLEMS AND FAILURES. HE EXPERTLY TROUBLE SHOT FAILED SILICON CONTROLLED RECTIFIERS, FERRAZ FUSES, TRI-AXIAL ACCELEROMETERS AND MULTIPLE COMPUTER ANOMALIES WITH A 100% SUCCESS RATE WHILE NUMEROUS CLASSES WERE BEING CONDUCTED THEREBY SAVING TENS OF THOUSANDS OF TAD FUNDS AND UNTOLD MAN HOURS. HIS SUPERB AND CREATIVE PROBLEM SOLVING SKILLS WERE THE KEY ELEMENT ALLOWING THE INTELLIGENT INPUT/OUTPUT CONTROLLER, VIBRATION MONITORING SYSTEMS, MOTION CONTROL UNITS AND PROFILE MODIFICATIONS TO ALL BE SEAMLESSLY INTEGRATED INTO CURRENT OPERATIONAL PARAMETERS OF THE DEVICE MOST NOTABLY WHEN TRAINING THE BLUE ANGEL FLIGHT DEMONSTRATION TEAM. MR. JOHN KLOCZKOWSKI'S PREEMINENT TECHNICAL KNOWLEDGE AND WILLINGNESS TO "GO THE EXTRA MILE" REFLECTED CREDIT UPON HIMSELF AND WERE IN KEEPING WITH THE HIGHEST TRADITIONS OF THE UNITED STATES NAVAL SERVICE.

SPECIAL AWARD IN AEROSPACE PHYSIOLOGY
MR. RAY E. SMITH

FOR MERITORIOUS SERVICE WHILE SERVING AS AN INSTRUCTOR, TRAINING SPECIALIST, AND COMMAND DIVING OFFICER, NAVAL AVIATION SURVIVAL TRAINING PROGRAM MODEL MANAGER DIRECTORATE OF THE NAVAL OPERATIONAL MEDICINE INSTITUTE, PENSACOLA, FLORIDA FROM DECEMBER 11, 1994 THROUGH DECEMBER 30TH 2001, AT NAVAL AVIATION SCHOOLS COMMAND FROM 1964 THROUGH 1967 AND 1971 THROUGH 1994, AND AT HC-5 FROM 1967-1971. DURING THESE PERIODS MR. SMITH'S SUPERB EFFORTS TRANSFERRED A FRAGMENTED WATER SURVIVAL PROGRAM WHICH WAS LOCALLY IMPLEMENTED TO AN OUTSTANDING MODEL OF EFFICIENCY AND EFFICACY USED AND EMBRACED WORLDWIDE. HIS LONG-TERM ACCOMPLISHMENTS HAVE LEAD TO THE NAVAL AVIATION WATER SURVIVAL TRAINING PROGRAM BECOMING ONE OF THE MOST RECOGNIZED AND OUTSTANDING NAVAL TRAINING PROGRAMS ANYWHERE – STUDENTS ARE BOTH CHALLENGED AND REWARDED WHILE TRAINING IN A REALISTIC WATER SURVIVAL ENVIRONMENT. HIS UNWAVERING DEDICATION AND HARD WORK HAS SAVED LIVES, ALLOWING SHIPMATES TO RETURN FROM MISHAPS TO FLY ANOTHER DAY. MR. SMITH'S EXCEPTIONAL PROFESSIONALISM AND STEADFAST DEVOTION TO DUTY REFLECT GREAT CREDIT UPON HIMSELF AND THIS COMMAND AND ARE IN KEEPING WITH THE HIGHEST TRADITIONS OF THE UNITED STATES NAVAL SERVICE.

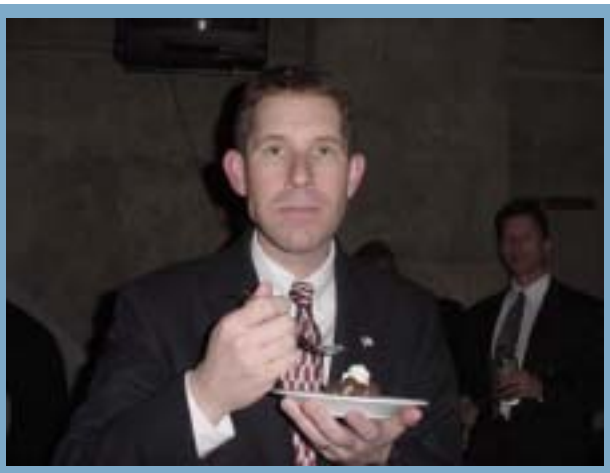
Photos from FAILSAFE 2002

photographs submitted by LCDR Brian Swan, Medical Service Corps, USN

"Me Bumbles, me hungry."

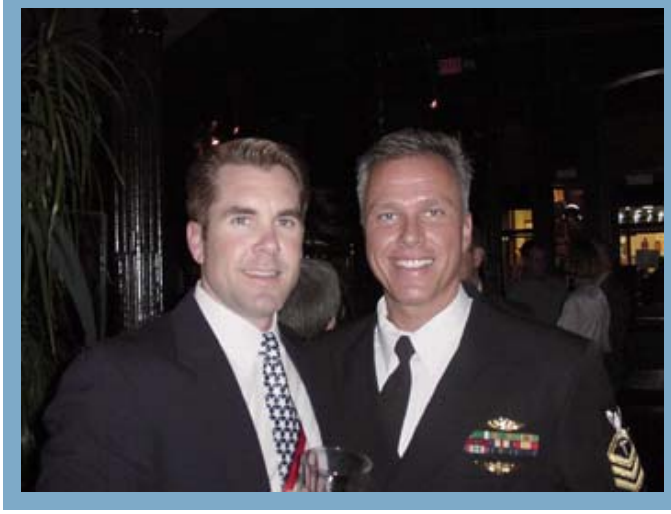
CAPT Matthews & LCDR Swan

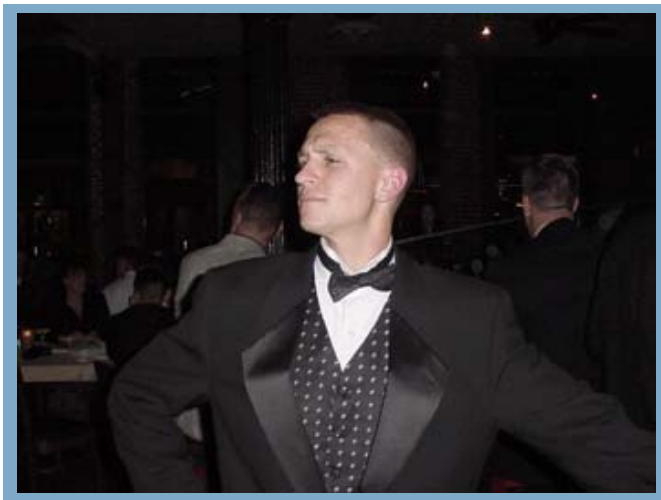
CAPT Eichner accepts the Special Award in Aerospace Physiology for Mr. Ray Smith.



Our fearless leader polishes off the last piece of cake.

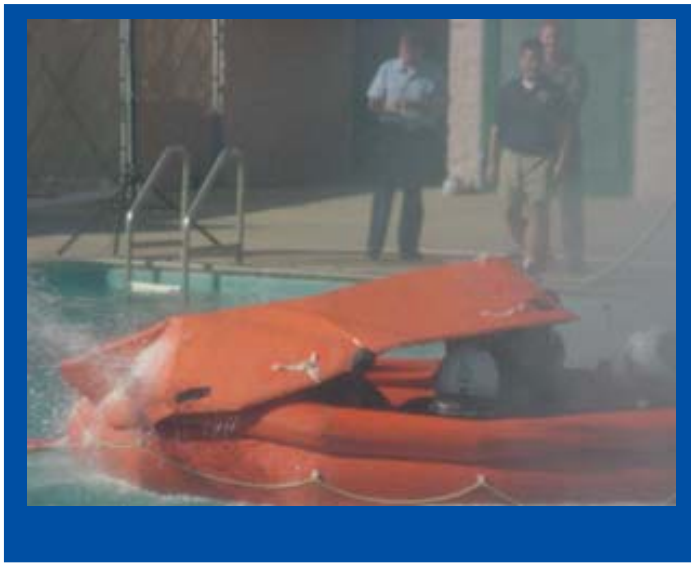
"Hey Chief, is that tan real?"





"Is that LT Folga, the Physiologist of the Year, or is that the DJ?"

Photos from FAILSAFE cont'd...Physiologists take on the STORM



Rehydration with Sports Drinks

by LT Cory Littel, Medical Service Corps, USN

All physiologic systems in the human body are influenced by dehydration. The degree of dehydration determines the extent of systemic compromise. Identifying and isolating individual physiologic responses to dehydration that can negatively impact performance is difficult. Any change in one system, (ie. cardiovascular) will have an adverse effect on other systems, (ie muscular and thermoregulatory).

The body attempts to balance increases in body heat via heat dissipation through conduction, convection, radiation and evaporation (1). The contribution of each is dependent upon ambient temperature, relative humidity, clothing and work/exercise intensity. Evaporation is the predominant heat-dissipating mechanism for those who work or exercise in warmer environments (1,4). In warm, humid conditions, evaporation can account for 80% of heat loss and in hot, dry conditions, evaporation can account for up to 98% of total body cooling (1,4,6,12). If sufficient fluids are not ingested to offset the amount of water lost via sweating, progressive dehydration can occur. The sweating response is critical to body cooling when working and exercising in an excessive heat environment. Any factor that limits evaporation, (humidity, protective clothing, dehydration), will have a profound effect on physiologic function and ultimately physical and mental performance (4,7,12).

There are several major physiological concerns when dealing with dehydration. The first is the elevation of body core temperatures. Increases in core temperature can be elevated by 0.1 to 0.4 deg C for each 1% in lost body weight through sweating (3). Previous experiments have demonstrated that increases in core temperature combined with hypohydration of 4-5% total body weight can impair gastric emptying of ingested fluids (3). Delaying the delivery of fluids leads to decrements in the cardiovascular system as well. These decrements include decreases in blood plasma volume, which leads to a decrease in total blood volume, which in turn results in a decreased cardiac output (4,6-8,12,15). Other concerns when experiencing dehydration are the increased rate of perceived exertion and the impairment of mental function (4,6,7,11,12). Dehydration also decreases the motivation to work/exercise and decreases the time to exhaustion, even in situations where muscular strength is not compromised (1,4,7,11,14,16). This is due largely to an increase in the perception of fatigue (1,4,7,12). Dehydration of just 2.5% of normal body weight can effect physical performance when operating in a hot environment, regardless of physical fitness or heat acclimation status (3,4).

"Dehydration of just 2.5% of normal body weight can effect physical performance when operating in a hot environment, regardless of physical fitness or heat acclimation status"

The primary defense against dehydration is fluid intake or rehydration. Factors that contribute to voluntary fluid replacement include color, sweetness, temperature, flavor, carbonation, salinity and viscosity of the replacement fluid (1-3,5,14). All of these physical characteristics of a rehydration beverage as well as proper education on the importance of rehydration can dramatically influence fluid replacement. The key to proper rehydration is to replace fluid levels at a rate to offset fluid lost by sweating. This will help maintain normal thermoregulatory, cardiovascular and musculoskeletal function during work and exercise in a hot environment.

The first step in the prevention of dehydration is to keep the body well hydrated prior to any physical activity in the heat. Normal sweat rates during activity in hot environments can reach .5-1.5L/hour which results in a 2-4% reduction in body weight (1,3,4,6-8,12). Hyperhydration, increases in total body water, has been proven to delay the effects of dehydration without effecting the cardiovascular or thermoregulatory system (4,6,7,12,15). Pre-exercise hyperhydration amounts are dependent upon individual requirements. A recommend protocol would include ingesting 17-20 ounces of fluid approximately 60 minutes prior to work/exercise in the heat (1).

For fluid replacement to be effective in battling dehydration, the fluid must be readily absorbable by the body. The majority of the digestive process takes place in the small intestine. Several factors influence the rate of gastric emptying into the small intestine for digestion and delivery of vital nutrients to the blood stream. These factors include fluid volume, caloric content, osmolarity (sodium concentration), temperature and pH (1,3). Increases in gastric fluid volume as well as cooler temperatures will increase the rate of gastric emptying into the small intestine. Increases in caloric density, osmolality and acidity of solutions will slow the rate of emptying and therefore slow the delivery of required nutrients (1,3).

The primary energy source for muscular contraction is carbohydrates (glucose) (1). Similar to all energy producing systems, the muscular system functions normally as long as there is sufficient fuel to support active muscles. As the available supply of fuel decreases, performance will decrease as well. Therefore, supplying the body with additional fuel in the form of carbohydrates is essential for continued maximal performance during work and exercise. When operating in a hot environment, replacing

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carbohydrates through meals may not be the optimal solution. Supplementing fluid replacement beverages with added carbohydrates is an effective method of preventing dehydration as well supplying the body with much needed fuel for energy production. The ideal form and concentration of carbohydrates in the rehydration beverage is critical for optimal delivery to the body. A 6% carbohydrate (1.75% Glucose; 3% Sucrose and 1.25% Fructose) concentration (14g/8 oz of fluid) is the optimal solution to speed delivery of both the fluid and nutrients through the stomach and into the small intestine for absorption (1-3,5,10,11,13-15). Concentrations of 7% and higher will slow gastric emptying, decrease water absorption in the small intestine and promote sodium secretion rather than sodium absorption (3). The most advantageous form of carbohydrates for increased absorption are the simple sugars. Glucose, Sucrose and Fructose in combinations will promote faster absorption when compared to individual ingestion (1,3). For example, the combination of glucose and fructose will be absorbed quicker in the small intestine than glucose alone. However, the amount of fructose must be limited to amounts less than 3% of the entire solution to avoid delays in gastric emptying and possible gastric distress (1,3).

Replacement of both sodium and potassium is also critical in maintaining fluid homeostasis. Both minerals are lost in sweat and need to be included in all rehydration beverages (9). Failure to replace lost sodium while continuing to ingest large amounts of pure water can result in hyponatremia, a decrease in plasma sodium concentration (1,13,15,17). This condition can develop during or following extended periods of work or exercise and is usually associated with working/exercising in the heat. The condition can be fatal if not accurately diagnosed and treated. Minimal sodium concentrations of .3-.7g/Liter will stimulate thirst, increase voluntary fluid intake and retention, and help prevent hyponatremia (1,9,13,15,17). Potassium is lost in relatively less amounts when compared to sodium but is just as essential for proper muscle function. Studies to determine electrolytes and their concentrations lost in sweat produced minimum losses of 28 mg of potassium per 8 oz of fluid in recreationally active males (9).

Further considerations for a rehydration beverage include the effects of carbonation and caffeine on rehydration performance. Carbonation causes bloating which limits voluntary fluid intake and also causes a decrease in gastric emptying due to the increase acidity of the fluid when compared to water or a non-carbonated sports drink (1, 3). Caffeine acts as a diuretic and inhibits fluid retention which can lead to an increase in the onset of dehydration (1,2). Caffeine does however, increase the rate of glucose absorption in the small intestine but the diuretic effect outweighs any benefit caffeine has in glucose absorption (2).

The early signs and symptoms of dehydration include thirst, general discomfort and complaints followed by flushed skin, weariness, cramps and apathy. At greater levels of hypohydration the following symptoms are present, dizziness, headaches, vomiting, nausea, heat sensations on the head or neck, chills, and decreased performance (1). The degree of dehydration, mental status and the general medical condition of the individual will dictate the mode, amount, type and rate of rehydration. Early identification of the signs of dehydration can limit the onset and degree of exertional heat illnesses.⌘

"The ideal form and concentration of carbohydrates in the rehydration beverage is critical for optimal delivery to the body. A 6% carbohydrate (1.75% Glucose; 3% Sucrose and 1.25% Fructose) concentration (14g/8 oz of fluid) is the optimal solution to speed delivery of both the fluid and nutrients through the stomach and into the small intestine for absorption."

LT Littel is the Aeromedical Safety Officer for Fighter Wing, U.S. Pacific Fleet

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Beverage Comparison Chart

Ingredients per 8 oz.	Carbohydrate Content %	Carbohydrate (g)	Carbohydrate Type	Calories	Sodium (mg)	Potassium (mg)	Carbonation	Caffine
OPTIMAL formulation for a sports drink →	**Less than 7% Carbohydrate**	**14g**	**Sucrose, Glucose, Fructose**	**50-60 Calories**	**at least 100 mg**	**At least 28 mg**	**NO**	**NO**
SPORTS DRINKS								
GATORADE The Gatorade Company	6%	14	Sucrose, Glucose, Fructose	50	110	30	NO	NO
ALL SPORT PepsiCo, Inc.	8%	20	High Fructose Corn Syrup	70	55-80	50	YES	NO
CeraSport Cera Products, LLC	7%	16	Maltodextrin	76	102	37	NO	NO
ACCELERADE Pacific Health Laboratories	7%	17	Sucrose, Fructose, Maltodextrin	93	127	43	NO	NO
ENDUROX R4 Pacific Health Labs	15%	35	Crystalline Fructose, Glucose	187	153	93	NO	NO
EXTRAN THIRST QUENCHER Nutricia	5%	11	Fructose, Maltodextrin	45	3.3	2.8	NO	NO
Cytomax CytoSport, Inc.	6%	15	High Fructose Corn Syrup	80	70	77	NO	NO
HYDRADE Hydrade Beverage Company	4%	10	High Fructose Corn Syrup	55	91	77	NO	NO
Met-Rex ORS Met-Rex, Inc.	8%	19	Fructose, Glucose	75	125	40	NO	NO
Metabolol Endurance Champion Nutrition	7%	16	Maltodextrin Fructose	133	140	200	NO	NO
Powerade The Coca-Cola Company	8%	19	High Fructose Corn Syrup, Glucose	72	53	33	NO	NO
PowerBar Perform PowerBar, Inc.	7%	16	Glucose, Fructose Maltodextrin	60	110	35	NO	NO
Pro-Hydrator InterNutria, Inc.	0%	0	Glycerol is primary ingredient	0	2.5	4.5	NO	NO
Revenge Champion Nutrition	4%	10	Maltodextrin, Fructose, Glucose	50	48	80	NO	YES
Ultima Ultima Replenisher	2%	4	Maltodextrin	16	8	16	NO	NO
NON-SPORTS DRINKS								
COCA-COLA The Coca-Cola Company	11%	27	High Fructose Corn Syrup, Sucrose	100	35	0	YES	YES
ENDUROX Pacific Health Labs	15%	35	Maltodextrin, Fructose, Glucose	187	180	93	NO	NO
MOUNTAIN DEW Pepsi Co, Inc.	13%	31	High Fructose Corn Syrup	110	50	0	YES	YES
ORANGE JUICE	11%	27	Sucrose, Glucose, Fructose	112	7	446	NO	NO
PEDIALYTE Ross Laboratories	2.5%	6	Glucose, Fructose	24	248	187	NO	NO
REHYDRALYTE Ross Laboratories	2.5%	6	Glucose, Fructose	24	407	183	NO	NO
RED BULL Red Bull North America, Inc.	11%	27	Glucose, Fructose	108	207	0	YES	YES
WATER	0%	0	None	0	0	0	NO	NO

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Reflections on a Holiday Season Directing the Naval Aviation Choir

by LCDR Brian Swan, Medical Service Corps, USN

Looking back over the month of December, and the whirl of activity and choir performances, it is difficult for me to describe the sights, sounds, excitement, and emotions that I experienced while directing the Choir at the White House, with the Washington DC Navy Band and Sea Chanters, and at the Citrus Bowl on New Years Day. What follows is my attempt to put into words some of these experiences…

The Holiday Season started for the choir with a performance at the Navy and Marine Corps Relief Society Holiday Party, at Quarters A – home of VADM and Mrs. Harms. As it turned out, this was the only local Holiday performance given by the choir. The warmth of the Harms' beautifully decorated living room provided a wonderfully intimate setting, and the close interaction with the Society Executive Board and volunteers (and their families) was the perfect kick-off for the season. It was also the last time that "intimate" or "personal" would be applicable adjectives…

The choir's first trip of the season started with a 0500 muster at Pensacola Regional Airport on Dec. 6th, for the flight to Washington DC. Things went (more or less) as scheduled, and at 1100 we landed at Reagan Intl. in DC. We were met by 2 vans with drivers from the Navy Ceremonial Guard who would become our transportation and tour guides for our three days in DC. We were also met by 3 recent choir alumni who came to DC at their own expense (from as far away as San Diego) to join us for the weekend With almost no delay, we were whisked directly to the White House for our two performances there.

The White House. The home of the President. The seat of power for the strongest nation in the world. And we were about to perform there. No matter who you are, the absolute prestige of that venue leaves you feeling nothing but awe. Two years ago, I had performed there as a member of the choir – this time I was going to be directing. Even though we knew that there would not be a Presidential audience, anyone in attendance was, by definition, a VIP, which could include virtually anyone from the Federal Government.

After clearing the security checkpoint (and believe me, airport security is nothing compared to White House security) we were met by several White House staff members and were escorted to a waiting/reception area. After a chance to clean up and straighten up a bit, and warm up, we were escorted to out first venue – The East Foyer. This relatively small room houses the collection of Whit House Christmas cards and a tree decorated with ornaments made by schoolchildren from DC area military bases. The acoustics in the marble room are bright, and from the first downbeat I knew that the choir was really "on" for the performance. We sang for 40 minutes as numerous invited guests came through looking at the displays and listening to us perform. At the conclusion of our "set" we were escorted back to the reception area and were treated to punch and cookies made by the White House chef. After this short break, we were escorted up to the "big" venue – The East Room - with it's history of state dinners and meetings, not to mention musical performances by the world's leading performers, from all musical genera..

As pictures of the White House decorations were widely shown on TV this year, I will not go into details; suffice it to say, that actually standing amidst the 14 foot trees that were studded with golden birds and fruit, and covered in "snow" goes way beyond seeing pictures of them on TV. We took our places on the risers, and once again gave a 40 minute performance. Following this performance we were given a guided tour of the remaining rooms that were open for viewing. During this tour we did see the President – outside, just finishing a jog with the two "first dogs". I was told later, by one of the staffers, that Mrs. Bush heard us from upstairs, but, for security reasons, did not come down during the "tour" hours. Following the tour, we were thanked repeatedly for coming, and were escorted back out of the east appointment gate.

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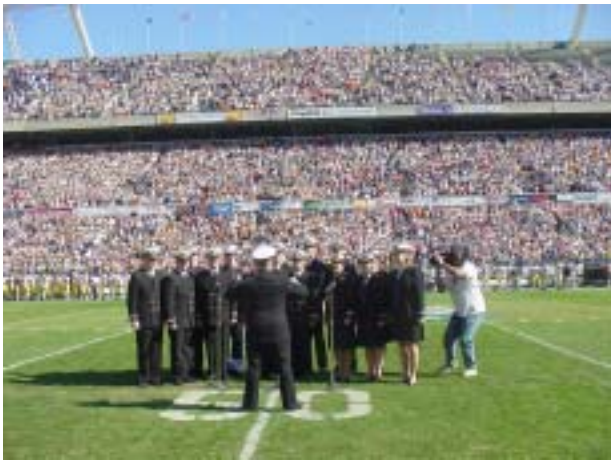
Saturday's activities kicked into full gear at 1400 when we arrived at DAR Constitution Hall (a magnificent 100 year old building remodeled on the inside to a state-of-the-art 4,000 seat concert hall) for the dress rehearsal with the Navy Band Washington and the Sea Chanters. Right up front I need to say that these musicians are awesome; the finest that the Navy has, and amongst the finest that I have worked with – ever. We were going to augment their forces (which is somewhat of a misnomer, as there were 16 Sea Chanters and 23 of us) during the big opening and closing numbers, and would be performing a "solo" number in the middle.

The stage for an event like this is always a jumble of chairs, stands, instruments, and microphones, but as the concert was going to be televised, the stage was also a tangle of wires, cables, cameras, lights, and technicians. The rehearsal went smoothly (we seemed to spend more time practicing our entrances and exits that our music), and by 1700 we were done. After a dinner break we came back and changed into mess dress, waiting for the show to start. The performance went very well, and there is something about a standing ovation from a sold-out house of 4,000 that just can't help but make you feel good.

On Sunday we gave a second performance of the concert, with one major difference: this one was going to be televised, live, to nearly 10 million satellite TV subscribers, as well as to every ship and base in the Navy (and, via tape delayed broadcasts by local cable channels throughout the country, to thousands of others, many times during the holiday season). Another added level of importance to this concert was that the CNO, SECNAV, and MPON were all in attendance at the event. After the concert (an even bigger success that the previous day's) I had the honor to accept, on behalf of the choir, their personal thanks for a job well done.



After a quick change out of uniform, we boarded our vans for one last time for an express trip to the airport for our return flight home. We got back to Pensacola at 2230 that night, but we all agreed that this would be a weekend that would never be forgotten.

As if all of that wasn't enough for one month, two weeks later (on December 31st) we reassembled for our second trip of the season – to sing the National Anthem and participate in the half-time show at the Citrus Bowl. After the 8 hour van drive to Orlando, we checked into our hotel, and collected our performers' packages from the show's producers. Included in those packages were passes into Universal Studios, so we were able to toast in the New Year there.

The next morning started bright and early with a bus ride to the stadium and the final "rehearsal" for the show. The 1200 girls and young women who were also part of the show (pom-poms, batons, flags, etc) had been in Orlando practicing for 3 days, and other than in the lobby of the hotel, this was our first opportunity to "meet the cast". After a couple of run-throughs on the practice field of what we were going to do, we went into the Citrus Bowl itself for a final walk-through. After we were finished with that, we had an hour or so to relax before the pre-game started.

What the Citrus Bowl perhaps lacks in prestige (compared to the White House and Constitution Hall), it certainly makes up for in size and spectacle. Even though several months before most of the choir had done a similar performance at Raymond James Stadium in Tampa for a Buccaneers game, nothing will stop the adrenaline rush you get standing on a field, surrounded by 50,000 cheering fans, performing the National Anthem (knowing that it was being broadcast, live, to millions of viewers on network TV). After the anthem was over, we went up to our seats (or back to our semi-private dressing room) to wait for the half-time.

The half time show was 7 minutes long and featured 1200 girls in red white and blue with pom-poms and flags forming "USA", stars, and an American Flag on the field, pyrotechnics, firefighters, EMTs and policemen, Jack Kapanka singing his "What They Gave to Me", two "card stunts" (one entire side of the stadium holding up colored cards creating two 100 yard long murals) , a fly-over, and

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at the height of the finale – us. Once launched, it all ran with the precision of a machine, and needless to say, the ovation as we were leaving the slightly wobbly portable stage at the end was thunderous.

After the half-time we were free to either stay for the end of the game or go back to our hotel (both options were chosen), and we had the rest of the day and evening free to enjoy Orlando. We boarded our vans for the trip home at about 1100 the next morning, and rolled back into Pensacola later that evening – exhausted, but still exhilarated at the experience that we had.

So now, several weeks later, how do I sum all of this up? Overwhelming is probably the best word. Any one of these events, alone, would have been the highlight of the season; all of them in just slightly over two weeks is almost too much to fully assimilate. What meant the most to me out of all of this, though, is easy to identify. It wasn't the Christmas trees or the buildings, the thousands of fans or the national TV coverage. It was the comments from some of the choir members, such as "Thank you, sir, this was the most incredible day of my life" or " I'll remember this for as long as I live". Knowing that I was able to help make these things possible for them was, without a doubt, the highlight of this great Season of giving.⌘

LCDR Swan is the Head of Safety & Standardization at the Naval Aviation Survival Training Program Directorate, Naval Operational Medicine Institute

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SUSNAP Treasurer's Report

by LT Debra Yniguez, Medical Service Corps, USN

As of Feb 2002, I assumed the position of SUSNAP Treasurer. There was some confusion with bank statements and they have never been delivered to the previous Treasurer or myself. I believe the situation has been rectified as of May 1, 2002.

The following will give you an exact idea of where our money is going and coming from since the beginning of this CY 2002. Please keep in mind that we receive interest each month, therefore, the numbers will never be perfect.

DATE	DEPOSIT/WITHDRAWAL	BALANCE
Jan 15th		500.00
Feb 15th	+225.00 (dues/prints)	725.00
March 15th	+20.00 (dues)	745.00
March 20th	-100.00 (memorial charity)	645.00
March 25th	+1,376.00 (transfer savings/dues)	2,021.54
March 29th	+210.00 (dues)	2,232.61
April 15th	+37.00 (T-shirt payment/dues)	2,269.61
May 1st	+107.00 (dues)	2,378.46
June 20th	+210.00 (dues)	2,590.48

If you have any questions regarding this report, please contact LT Debra L. Yniguez, DSN 582-5010 or COM 252-466-5010.

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