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President's Corner...
A Letter From the Front

by
CDR Dave Service, MSC, USN

An email yesterday from an F/A-18 pilot deployed in support of Operation Enduring Freedom contained the following; "...We are off the coast,



taking flights into Afghanistan. So far, we each get them every four or five days. I've had four so far, my latest was last night being 6.6 hrs. A lot of it is transit just to get to the target. Time goes by fast if we are able to talk to someone on the ground (spec ops players). Can't go into much more on that front. ...We installed the new material for our seat cushions and they make a world of difference. We have also been able to undo the mod on our O2 mask which was good, I think it's the right idea but a poor design.

I had to fight to get the mask off ..."

As short as it was, that communiqué got my attention for several reasons. First and foremost, there's a war going on. Right now. Secondly, issues under our cognizance are at the center of the warfighter's existence when he or she is flying the mission. The missions are long. They're being flown almost exclusively at night. They challenge the vigilance of the aircrew to remain alert. Aircrew need to modify equipment to make the missions tolerable. Flight gear is inadequate. Wow.

The aeromedical team can't make those issues disappear, but we can certainly help ameliorate them. When the current crop of tactical jets cockpits was designed, no one envisioned strapping aircrew to an ejection seat for 6.6 hours. While we can't influence the air tasking order or the theatre of operations that make missions so long, we can educate on the aeromedical aspects of ejection, reinforce the rationale for proper fitting and wear of the torso harness, and emphasize the benefits of proper body position and seat adjustment. We can't change night into day, but we can make aircrew think we have by providing them with the devices and training they need to optimize the use of night vision goggles and sensors. We can't shorten the mission, but we can fight circadian dysrhythmia and maximize cockpit performance with consultation on fitness, sleep and rest, and diet strategies. Although we can't give'em a lawn chair to lie down on like B-2 pilots use, or Idaho-Aero foam underwear to soften the ride, we can staff improvements to ALSS that will be effective and meaningful to the man in the plane. Finally, sometimes despite our best planning and preparation we still miss the target. If the thing you make, fit, say, or do for the warfighter turns out wrong, eat that biscuit and move on. Take the criticism on board, distill the acrimony out of it, refine your product and do it better the next time. In this war and the next one, we can do a lot, and we are. Keep it up.☘

CDR Service is the Class Desk Officer for Aircrew Systems at NAVAIR.



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News of Interest

The photo above is the USS Nimitz taken from the USS Princeton. God Bless America!

FAILSAFE 2003 will be held from February 10th through the 13th in Pensacola, FL. LCDR Lenny Milligan is coordinating this year's meeting. If you'd like to be involved in the planning, please contact LCDR Milligan at DSN 437-8067 or milliganla@navair.navy.mil. More information to follow...

Congratulations to all the Aerospace Physiologists who were in zone and were selected to the next higher rank!



LCDR (sel) Dan Patterson
LCDR (sel) Debra Yniguez
LCDR (sel) Sue Jay

CDR (sel)
Jeff Andrews



CAPT (sel)
Donna Murdoch
(CAPT (sel) Murdoch
also screened for XO!)



In August of this year LT Russ Linderman and LTJG Chris Cooper took part in and won the Southeastern Adventure Challenge. The picture below comes from the Jacksonville News.

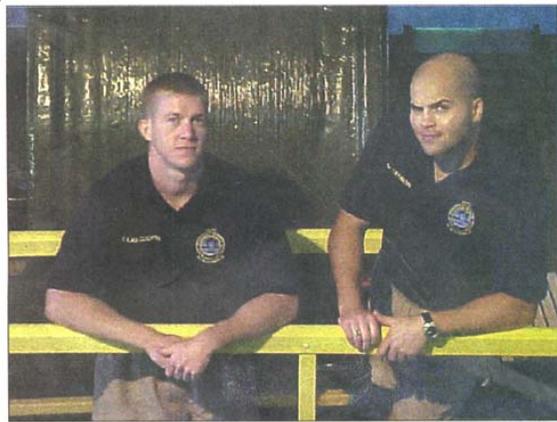


Photo courtesy of Aviation Survival Training Center
Lt.j.g. Christopher Cooper (left) and Lt. James "Russ" Linderman from the Aviation Survival Training Center also competed in the race.



LCDR Brian Swan retired from active duty on August 9th, 2002. He is back to work at NSTI Headquarters, working as an Instructional Designer for JHT Incorporated.

Congratulations to CAPT Musashe, who was awarded the Legion of Merit on 14 August 2002, during the plankowner ceremony for BUMED M3F (Fleet Operations Support). RADM (sel) Brannman is also pictured.



The SUSNAP Journal needs a name! If you have a suggestion, please forward it to the SUSNAP Journal Editor, LT Tony Artino at DSN 922-4705 or arartino@nomi.med.navy.mil. One name will be selected following a vote by the SUSNAP Board of Governors.

Board Certification in Aerospace Physiology

Board Certification in Aerospace Physiology by the Aerospace Medical Association is available to all Physiologists with at least five years of experience in the field (typically calculated from the time you were designated as an AP). The exam will be given on Sunday, May 4th in San Antonio, Texas, in conjunction with the annual meeting of the Aerospace Medical Association. Application packages will be available after 01 October. The application deadline is 01 March 2003. To receive an application package or for more information, please contact Mr. Brian Swan at bdswan@nomi.med.navy.mil. Look for a more extended discussion of the exam and application process in the next issue of this journal.

A Call for Abstracts

Please consider submitting an abstract for the upcoming 74th AsMA Scientific Meeting to be held May 4-8, 2003 in San Antonio, TX. The deadline for abstract submissions is October 30, 2002. The theme will be "Celebrating 100 Years of Flight and Aerospace Medicine Support." Please use the COS abstract management system to submit your abstract. You can go to the website at www.asma.org and click on the "Submit Abstract Online" button. The success of the meeting depends on you!

ROBD vs. LPC Operations:
Did Your Momma Raise You to
be a Chambermaid?

Editorial Comment

by

CAPT Ryan Eichner, MSC, USN

Now that LT Artino has tasked me to respond to LT Silverman's SUSNAP article, titled "ROBD VERSUS LOW PRESSURE CHAMBER OPERATIONS," I feel obligated to write a few lines. A few lines is a joke...this won't be short.

Forgive the title I chose. It's not meant to "slam" our profession or any of us. The truth is, I stole it from some USAF fighter pilots who claimed their "mothers didn't raise them to fly simulators." They were reluctant to advocate Distributed Mission Training (DMT) in networked simulators for the fear of losing flight time to the new technology. After experiencing DMT, the squadrons couldn't get enough because the technology gave them more "4 v many" engagements in one week than most of them had in their careers up to that point. Now the Navy has engaged and is knocking at the same door for that technology. I believe this ROBD "debate" fits that situation. Perhaps the correct title to this response should have been "ROBD VERSUS LOW PRESSURE CHAMBER OPERATIONS VERSUS RELEVANT TRAINING?"

One of the few comments that was correct in the preceptor's original article was the call for continued or perennial debate about the topic. The debate has continued since 1995, when a few of the "rebels" in our community (the ones who introduced NVG and Laser threat training to our community) first proposed using an ROBD in conjunction with simulator based physiology (SIMPHYS). We weren't the first to propose alternatives to Low Pressure Chamber training. Some of our predecessors had proposed "mixed gas" training back in 1991. We just renamed it because the term "mixed gas" was fraught with some misconceptions. That term would invite doctors to say we were practicing anesthesiology or it might encourage some members of the diving community to think we needed more diving rules. A memorable event happened back then. We had briefed the SIMPHYS concept to the Naval Air Training Systems Advisory Group (NATSAG) for the purposes of addressing very important threats such as Controlled Flight into Terrain, Visual Problems and Spatial Disorientation because they were relevant in today's Naval Aviation. Aviators and program managers didn't

hear the relevancy part. Instead, they focused on how we expected to do "hypoxia" training in their simulators. The disappointing message I took away from that meeting was that many aircrew think of us as "chambermaids." Maybe it was because we hard sell the hypoxia business and spend much of our resources on upgrading, maintaining and manning the chambers?

The debate shouldn't be about ROBD vs. LPC operations. The debate should be about how we provide training that is current and relevant to Naval Aviation. At the core of that debate is the question about how we prove that we can make a difference in mishap prevention and aircrew survivability. In the mid-90's, some of the "rebels" questioned what physiology training should be doing in the coming decade (the one we are already in). It was based on many years of exposure to the fleet as AMSOs, many well documented causes of mishaps or from being involved in too many mishap boards. We believed that just talking or briefing wasn't solving the problem. There was a time when some of us hoped to move on and begin training away those causes instead of placing the emphasis on hypoxia, trapped gases and decompression sickness. The threats of hypoxia, trapped gas or DCS still exist, but they are not documentable as major threats in the NAVSAFECEN or the USAF Safety Center mishap databases. Perhaps we have played a role in reducing hypoxia, trapped gases and decompression sickness to that level of insignificance, or the equipment/hardware has also improved so much that those threats are under an acceptable level of control? No one said we didn't need to continue doing that training, but the time to analyze how much of it (or how much emphasis it should have) is long overdue. Our training requirements should be based on reality and not on what we have historically done to justify our jobs.

There is a school of thought in the training world that just lecturing about spatial disorientation, controlled flight into terrain and other visual problems wasn't really training since there was no actual practice of countermeasures or no repetition of motor skills. Where is the performance aspect in that kind of training? Too many of our crucial physiology training objectives are in the form of a lecture/brief and we have operated primarily in the cognitive domain of the learning continuum. Our water survival training has moved on. It is entering the "second generation" of scenario-based training when all the ASTCs acquire the Night/Storm scenario equipment. If you read the student critiques from Night/Storm training classes, it is obvious that we are on the right track for customer satisfaction when we conduct scenario-based training. Why isn't the physiology part of our curricula scenario-based? If we

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"The debate shouldn't be about ROBD vs. LPC operations. The debate should be about how we provide training that is current and relevant to Naval Aviation. At the core of that debate is the question about how we prove that we can make a difference in mishap prevention and aircrew survivability."

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adapt ROBD training, it was originally intended to be an enabling technology that opened the door for other scenarios. If any of you have been paying attention to the Navy's emphasis on distance learning in Task Force Excel, you will see a BIG movement to change the school house mentality. The Naval Aviation Survival Training Program has distance learning as part of its strategic goals. This means that we may be pushing "lecture only" materials to the distance-learning realm. Our emphasis would then be on the performance learning objectives that require a device or hands-on training. ROBD training seems to fit very nicely in that scheme.

LT Silverman was partially correct to identify that current ROBDs may not work for large multi-crewed aircraft such as the C-130s and P-3s. However, the Australians took the ROBD concept and integrated it into their chambers while they conduct low altitude chamber runs to reduce DCS risk. The USAF R&D community is "kicking" that idea around. Incidentally, an original patent was applied for with the idea of inducing hypoxia via "mixed gas" in low pressure chambers... long before the term ROBD was born. Is the ROBD restricted to training only jet refreshers? I originally thought so...maybe not?

Pictured here is the original re-breather version of the ROBD built in 1997.

The debate about negative training with an ROBD is not new. Some physiologists believe that administering a dose of hypoxia through an oxygen mask is negative training. The rash of recent HAZREPS seems to be telling us the aircrews are experiencing hypoxia while wearing their masks. OBOGS problems in the Hornets and Tomcats seem to counter balance that negative training argument. The last Class A fatal mishap with hypoxia as a cause factor seems to indicate a need for hypoxia training in conjunction with



diagnosing and operating the aircraft systems. My read was that it appears to reinforce the need for an ROBD in simulators where the rules would change to "physiate, aviate, navigate and communicate." Some preliminary data from the NAMRL ROBD studies indicate that the "physiological altitude" we use for 25K' hypoxia demonstrations is really only about 18K' until the "box" is cross ventilated to purge out the extra oxygen that leaks in during the pre-ox period. Is that negative training? Can an ROBD simulate 35K' or 50K' Times of Useful Consciousness? Yes it can... without the additional risk or cost. Do we dare do that in the "box?"

Both sides of the debate have used the risk of DCS and cost as part of their justifications, for or against the technology. I don't believe they are crucial issues. What is worse, we seem to be the only ones concerned about DCS rates in the chambers. These metrics are a sideshow and sometimes a distraction to the original intent of scenario-based physiology training, but they are part of the game we must play to get resources. Cost estimates to operate chambers and ROBD are largely notional. We have the figures for personnel, salaries, parts and time spent maintaining chambers. We know how much the

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Aviation Career Incentive Pay (ACIP): Eligibility and Flight Time Requirements for Aeromedical Officers

by
LT Henry L. Phillips, MSC, USNR
and
LCDR Richard Jehue, MSC, USN

The purpose of this article is to outline the eligibility and flight time requirements for aeromedical officers receiving Aviation Career Incentive Pay (ACIP). Aeromedical officers include student or designated flight surgeons,



aerospace physiologists, aerospace experimental psychologists, and aerospace optometrists (OPNAVINST 3710.7S, & BUPERSINST 7220.29A). This article is presented into two sections. The first section covers requirements that must be met before an aeromedical officer logs any flight time. The second section deals with flight time requirements and rules regarding flight pay entitlement.

Eligibility Requirements

Eligibility requirements are outlined in OPNAVINST 3710.7S (Chapter 11 in particular), and BUPERSINST 7220.29A. Generally, to be eligible for ACIP, an aeromedical officer must:

1. be in a flight coded billet (2102 for MC and 2302 for MSC),
2. possess orders for duty in a flying status involving operational or training flights (DIFOPS),
3. have a current flight physical and possess a current an up-chit,

4. have current egress training for the specific aircraft in which he or she plans to log flight time, and
5. have current survival (physiology and water) training for the aircraft category in which she or he plans to log flight time.

DIFOPS Orders and Flight Coded Billet. This is normally handled by the aeromedical officer's detailer. It must be noted that not all billets available to aeromedical officers will be flight coded. Therefore, aeromedical officers should discuss with their respective detailer if the billet they are going to is coded for flight pay and that they will be on DIFOPS orders. If so, they should ensure their orders state that they are on DIFOPS orders.

Current Flight Physical and Up-chit. All personnel in flight status must have a current flight physical, which expires on the last day of the person's birth month each year and may be renewed either in the person's birth month or in the month prior (e.g., birth month is September, then flight physical can be completed between 1 August and 30 September each year). An up-chit represents certification of physical qualifications by a flight surgeon and that the recipient is not currently medically incapacitated (e.g., common colds, broken bones, etc.).

Egress Training. Egress training is good for one year and must be completed for all aircraft in which flight time will be logged.

Survival (Physiology and Water) Training. Survival training is good for four years and expires on the last day of month (e.g., training received 13 September 2002 would expire 30 September 2006). Survival training is best described in terms of initial, continuation, and refresher training requirements. Aeromedical officers going through initial flight training receive N-1 water survival and NP-1 physiology survival training. This N-1/NP-1 training must be accompanied by advanced continuation training for specific aircraft categories: N-6 for tactical jets, N-11 for fixed wing non-ejection seat aircraft, and N-12 for helicopters. Thus, to be eligible for aircrew flight time in all three of the above aircraft categories, an aeromedical officer's initial and continuation training must include N-1/NP-1, N-6, N-11, and N-12.

Note: Tactical jet aircrew shall also receive NP5 [Centrifuge-based Flight environment Training (CFET)] continuation training as soon as operationally practical. There are other advanced continuation training courses (e.g., NP6 for special operations personnel conducting

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high altitude parachute operations, N10 for aircrew utilizing CBR ensembles, etc.) that aeromedical officers might need depending on their assignments (OPNAVINST 3710.7S).

Upon expiration of initial and continuation qualifications (N-1/NP-1, N-6, N-11, and N-12), applicable refresher (R/RP) training is required: R-1/RP-1 for flight in ejection-seat equipped aircraft, R-2/RP-2 for flight in non-ejection seat parachute equipped aircraft, R-3/RP-3 for flight in helicopters, and R-4/RP-4 for flight in pressurized (oxygen available) non-parachute equipped aircraft. Therefore, when an aeromedical officer's N-1/NP-1, N-11 and N-12 training has expired they will need R-3/RP-3 training to satisfy water and physiology survival training requirements for flight in helicopters for another four years. An aeromedical officer whose initial and continuation training had expired would need R-1/RP-1, R-2/RP-2, R-3/RP-3, and R-4/RP-4 refresher training to fly in all aircraft categories.



Flight Time Requirements

There are two different categories of flight time requirements: currency/proficiency flight time requirements (a.k.a., annual requirements) and pay flight time requirements (a.k.a., monthly requirements). These requirements are addressed in three documents: DoD 7000.14-R, OPNAVINST 3710.7S, and BUPERSINST 7220.29A.

Annual requirements. OPNAVINST 3710.7S outlines annual and semi-annual flight time requirements for maintaining currency/proficiency. These requirements are specific to the fiscal year (FY). The FY minimum flight hours requirement for aeromedical officers is 48.0 hours in each FY (i.e., October – September) and 24.0 hours semi-annually (i.e., October – March and April – September). These minimum annual/semi-annual currency/proficiency flight time requirements are prorated based on each full month an individual is under DIFOPS orders. Minimum semi-annual flight hour requirements are benchmarks, but the annual flight hour requirements require strict adherence as waivers of minimum flying requirements are not authorized for aeromedical officers.

Minimum annual/semi-annual currency/proficiency flight time requirements do not apply while enroute on PCS orders, or TAD in excess of three consecutive weeks

where no flight time is available. This legal reduction in annual/semi-annual currency/proficiency flight time requirements does not reduce the DoD pay flight hour requirement (see below).

If aeromedical officers find themselves short on annual/semi-annual currency/proficiency flight time requirements, there are a couple of options available. Flight time accrued in a simulator or during leave may be used to satisfy annual/semiannual 3710.7S currency/proficiency requirements. However, neither time acquired in a simulator or while in a leave status can be applied for DoD pay flight time requirements (outlined below).

Monthly requirements. The document ultimately governing entitlement to ACIP is the DoD 7000.14-R. There are two types of ACIP, continuous and conditional. Aeromedical officers are only authorized conditional ACIP (DoD 7000.14-R, OPNAVINST 3710.7S, & BUPERSINST 7220.29A). Aeromedical officers are assigned an aviation status indicator (ASI) code of “J” which specifies entitlement to conditional ACIP and that officers must adhere to the DoD 7000.14-R flight time requirements (OPNAVINST 3710.7S, & BUPERSINST 7220.29A).

The basic DoD requirement is 4.0 hours of flight time per month. Flight time logged in any given month must first be applied to meet requirements for that month. Flight time in excess of the amount required for a given month (i.e., >4.0) may be counted toward monthly requirements up to five months ahead and is referred to as ‘excess’ flight time. Therefore, an officer not in a grace or waiver period (see below) who flew up to 24.0 hours in January could satisfy pay flight time requirements through June (Jan + 5 months). Excess hours expire if not applied before or during the fifth month beyond the month in which they were flown. Also, any hours flown in a month in which flight pay is forfeited become excess hours, and may be applied toward requirements in any of the five months beyond the one in which they were flown.

Requirements for partial months. In cases where flight status entry occurs after the first day of a month, or termination occurs other than the last day of the month, requirements for that fractional month are prorated (e.g., 7 days requires 1.0 hour, 15 days requires 2.0 hours, 22 days requires 3.0 hours, etc.; see Table 22-2, DoD 7000.14-R). In either case, since pay itself is prorated, the monthly DoD flight time requirement is prorated.

“There are two different categories of flight time requirements: currency/proficiency flight time requirements (a.k.a., annual requirements) and pay flight time requirements (a.k.a., monthly requirements).”

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Grace Periods. An aeromedical officer failing to meet DoD requirements for a given month is entitled to a grace period of three consecutive calendar months to make up the deficit. The month in which the deficit occurs is the first month of the grace period, so once a deficit has occurred, only two months remain in which to make up the missed flight time. If a deficit is made up in the second month of the grace period (i.e., total of 8.0 hours applied), the grace period ends after two months.

If a grace period does last three months, requirements must be satisfied for all three months (i.e., 12.0 hours applied) in order for hours flown in months two and three to be applied to the requirements of earlier months within the grace period. If an aeromedical officer enters a grace period with no excess hours and waits until month three to log flight time, that aeromedical officer would lose two months of flight pay if he or she logged as many as 11.9 hours in month three. In this example, the 7.9 hours not applied to requirements for month three would become excess hours, and could not be used to satisfy the requirements of grace period months one or two.

If a grace period ends with no loss of flight pay entitlement (i.e., if DoD requirements are met for all months of a grace period), the aeromedical officer is entitled to enter another grace period the following month if necessary. If flight pay is forfeited for any month(s) of a grace period, the aeromedical officer is not entitled to enter a new grace period, and is not entitled to flight pay until he or she meets DoD requirements for one month. Thus, if an aeromedical officer fails to apply 4.0 hours, by flying and/or applying excess hours, to the month and subsequent months following a grace period where requirements were not met for all three months, he or she will lose flight pay for that/those month(s) in addition to the pay recouped during the grace period.

Waiver Periods. If an aeromedical officer is unable to meet the normal flight time requirements due to “military operations (combat or otherwise) or nonavailability of aircraft” (DoD 7000.14-R, p. 22-12), and his or her commanding officer certifies in writing that only these conditions prevented the aeromedical officer from complying with the normal flight time requirements, the aeromedical officer may meet requirements by accumulating 24.0 hours of applied flight time over six consecutive calendar months. The accumulation of 24.0 hours of applied flight time may occur at any time during the 6-calendar-month period and in any combination of flights. These 24.0 hours may

include any available excess hours earned prior to the waiver period.

If the aeromedical officer is currently in a grace period, the waiver period begins on the first day of that grace period. Thus, if the aeromedical officer is in the third month of a grace period when the waiver is granted, the waiver period only covers an additional three months. If the aeromedical officer is already in a grace period when requesting the waiver, the waiver must be granted before the grace period expires. If the aeromedical officer is not in a grace period (e.g., knows that their operational requirements will prevent their ability to meet normal flight time minimum requirements), the waiver period does not commence until he or she enters a grace period.

Note: Available excess hours flown prior to the waiver period (which will always be less than 4.0 since the waiver period begins on the first day of a grace period) may be counted toward the 24.0 hour requirement for the waiver period.

Injuries and flight pay. If an aeromedical officer is injured or medically incapacitated during operational flying (e.g., barotrauma, sinusitis, etc.), the officer is considered to have met requirements for that month and the following two months. If requirements were already met for the month in which the injury occurred, requirements are considered met for the following three months. The aeromedical officer will not receive flight pay beyond this three month period unless incapacitation ends and more flight time is logged. An aeromedical officer injured or incapacitated not as the result of flying is only entitled to flight pay for those months where flight time requirements were already met at the time of the incapacitation.

An incapacitated aeromedical officer may remain qualified for aviation service for up to 365 days during the incapacitation. To be qualified for aviation service, an officer must be listed as Aeronautically Adaptable (AA) and either Physically Qualified (PQ) or Non-Physically Qualified (NPQ) but waived for NPQ status. Qualification for aviation service does not ensure ACIP entitlement. During incapacitation while qualified for aviation service, an aeromedical officer will receive ACIP only for those months for which requirements are met as outlined above. An aeromedical officer will be disqualified from aviation service on the 366th day of incapacitation.

Suspension. Expiration of physical exam or survival training results in the aeromedical officer being suspended from flight duties. Aeromedical officers are

“If an aeromedical officer is injured or medically incapacitated during operational flying (e.g., barotrauma, sinusitis, etc.), the officer is considered to have met requirements for that month and the following two months.”



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ineligible to receive ACIP during periods of suspension. Once a suspension is lifted, if the aeromedical officer remains qualified for aviation service, then the aeromedical officer may receive ACIP for months during the suspension in which requirements were met using excess hours. Also, expiration of annual egress training results in suspension from flight duties in that specific aircraft.

Student Status. Flight time requirements apply to aeromedical officers in student status and become effective the date of flight pay commencement. Flight pay typically begins early in Primary Flight Training, with students receiving documentation of this simultaneously with PSD. Aeromedical officers should be aware of their flight time requirements as soon as they enter flight status. With weather or flight scheduling problems, it is not unheard of for an aeromedical officer to graduate from Primary Flight Training in the third month of a grace period.

Passenger Status. In order to log flight time applicable to the pay and currency/proficiency requirements outlined in the publications, an aeromedical officer must be listed as a member of the crew on the manifest and Naval aircraft flight record (NAVFLIR), or DoD equivalent, for a flight that was completed in a DoD aircraft. Aeromedical officers are strongly encouraged to get a signed copy of the NAVFLIR. Passenger flight time, in DoD or civilian aircraft, does not count toward Naval flight time requirements.

Aeromedical Dual Designator (AMDD) Program. OPNAVIST 1542.4C outlines the AMDD Program and clearly states that AMDDs are only entitled to conditional ACIP like all other aeromedical officers. However, while filling an AMDD billet they are required to meet the flight time requirements for their aviation rating. AMDDs who possess a pilot aeronautical rating are required to acquire 100 hours/FY and 48 hours/semi-annual pilot time, including 12 hours/FY and 6 hours/semi-annual night time, and 12 hours/FY and 6 hours/

semi-annual instrument time (OPNAVIST 3710.7S and OPNAVIST 1542.4C). Fifty percent of annual FY requirements must be gained while flying and logged as first pilot time, and half night time requirements which must be unaided night vision time (OPNAVIST 3710.7S). Since the flight time minimums for those who possess a Naval Flight Officer (NFO) aeronautical rating are the same as those for an aeromedical officer (i.e., 48 hours/FY and 24 hours/semi-annual) (OPNAVIST 3710.7S), there are no unique additional flight time requirements for NFO AMDDs.

There are two other unique rules for those participating in the AMDD program. First, personnel incur the same service obligation that a pilot or NFO incurs. Second, personnel shall meet the physical standards for their respective aeronautical rating: Service Group I for pilots and Service Group II for NFOs (OPNAVIST 1542.4C).

Summary

This article has attempted to summarize the detailed information from multiple sources governing ACIP eligibility and flight time requirements for aeromedical officers. The rules governing excess hours, grace periods,

and waiver periods can seem overwhelming. Ultimately, however, in addition to being under DIFOPS orders, there are only a few things an aeromedical officer need do to ensure he or she meets both flight time requirements (i.e., for pay and for currency/proficiency):

1. Keep your physical exam current (annual) and stay in an up status.
2. Keep your survival (physiology and water) training current (every four years) for the aircraft category in which you intend to log flight time.
3. Keep your required egress training current (annual) for the aircraft in which you intend to log flight time.
4. Fly 4.0 hours every month, or ensure you fly 12.0 hours every quarter of the FY (i.e., Oct-Dec, Jan-Mar, Apr-Jun, and Jul-Sep).

Ultimately, conditional ACIP requirements only become complicated when aeromedical officers fail to follow the

“The reason aeromedical officers receive flight pay in the first place is to help them maintain an intimate familiarity with the stressors of flight experienced by their fleet customers.”



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four steps listed above. If you follow these steps, you will never lose flight pay. The reason aeromedical officers receive flight pay in the first place is to help them maintain an intimate familiarity with the stressors of flight experienced by their fleet customers. Aeromedical officers should seek exposure to as many types of flying (e.g., shipboard, over water, operational, night, BAM, ACM, etc.) as possible, commensurate with their aeromedical and security clearances. With local commander's approval, aeromedical officers are even authorized to fly in control of dual-controlled naval aircraft (OPNAVINST 3710.7S). The surest way to get that approval is by demonstrated interest and ability. Therefore, in keeping within the spirit and intent of the aeromedical officer flying program, maintain both pay and currency/proficiency flight time requirements, and never forget what a privilege it is to fly.

Disclaimer: This article is a summary of issues commonly encountered and questions frequently raised by officers on conditional ACIP. This article is not a complete explanation of all relevant rules covered in the governing publications/instructions (DoD 7000.14-R, OPNAVINST 3710.7S, OPNAVINST 1542.4C, and BUPERSINST 7220.29A). This article is not a substitute for the instructions that govern the flight pay program requirements, nor should it be referenced as a Navy instruction. Lastly, although the rules have not changed very much over the last 20 years, the information presented here is applicable only to current instructions. ⌘

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AMSO Notes: Looking Back

by
LT Cory Littell, MSC, USNR

As the AMSO for Fighter and Strike Fighter Wing Atlantic, I have embarked on some amazing journeys and done things I could only dream of prior to becoming an Aerospace Physiologist. I can remember watching Top Gun as a kid and always wondering what it would be like to fly in an F-14 Tomcat and to take off and land on an aircraft carrier. Back then those aspirations seemed so unobtainable and impossible to even imagine. It is difficult to believe that those once impossible and distant dreams have now become a reality. Before becoming a physiologist the only other country I had visited was Canada and that's because I grew up in Vermont and the border was only an hour away. Since reporting here in November of 2000 I have conducted training on the Truman twice, the Constellation and the Kennedy. My travels have taken me to Rota, Rome, Perth Australia, Diego Garcia, Singapore, Tokyo, Souda Bay Crete, Herghata Egypt, Bahrain and Puerto Rico. I've seen the Spanish countryside, the *real* Coliseum, Vatican City, the beaches of Australia. I have even had my picture taken with the Dallas Cowboy Cheerleaders in Rome's International Airport. The memories and stories from these adventures are too numerous to list in detail. For the

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sake of time and space, I'll share the most memorable to date.

September 11, 2001 impacted all of us in some way. Many of us witnessed those horrific events together in Pax River, MD. AMSO training had just begun that morning and I can still remember PRC Petty entering the conference room and telling us that a plane had just hit the World Trade Center. Initially I think we all felt it was an accident of some sort, but when he came back the second time, we all knew something had gone terribly wrong. We spent the next few hours huddled in a small conference room staring at one of the available TVs watching CNN wondering how this could have happened. We took turns calling home to let our family and friends know we were all OK but probably not able to return home any time soon. After the initial shock had worn thin and the group had formulated a plan for the remainder of the week, we were released and sent back to the Q. My room quickly became the command and control center for a small group of AMSOs. There we spent the next three days glued to CNN and eating chips and fried Italian sausages. The commissary was just about out of food within hours of the first attack and access on and off the base was limited. We all desperately wanted to be home with our families but if we couldn't, we knew we were with the next best thing. All of us who sat cooped up in that small Q room now share a special bond that will never be broken. On the one-year anniversary of that day, we all sent a short email to each other as a special reminder of the friendships that were formed and solidified that day.

For the squadrons of Carrier Air Wing 8 on board the USS Enterprise, those events resulted in an extended deployment and the opportunity to carry out the first air strikes over Afghanistan. Once CVW-1 arrived on



station, CVW-8 and the Big E headed home to Norfolk. This would bring the end of an era for Fighter Squadrons 14 and 41. This was their last cruise as Tomcat squadrons and they would now begin the long



move to Lemoore, CA to transition to the F/A-18 E/F Super Hornet. With the transition to the E/F, this left a surplus of F-14A aircraft at NAS Oceana and some were slated for AMARC (Aviation Maintenance and Regeneration Center) at Davis Monthan Air Force Base in Tucson, AZ. AMARC is sometimes referred to as the "Bone Yard" and is the home of over 4,500 aircraft from the Army, Navy, Air Force, Marine Corps and Coast Guard. (For more information, including a virtual tour, on AMARC, visit www.dm.af.mil/amarc/index.html) Taking an F-14 on its last flight, especially one to the "Bone Yard", is not a daily occurrence and is something that few Tomcat aircrew will ever experience. When asked if I would be interested in flying a jet out to the "Bone Yard" I knew this would be one flight I would never forget. LCDR "Noodle" Ludovici planned on a 3-leg flight that would put us in Tucson before AMARC closed for the day. The flights to Meridian, Randolph AFB and Davis Monthan were uneventful, which is good in a jet that old. The carrier break at Meridian was the Full Monty and I was quite sure we got the max 6.5-g allowed, if not a bit more. Once over DM airfield we were allowed to make several low passes over the field which gave us a chance to see the "Bone Yard" from above and it is unbelievable how many aircraft are parked there. We landed and taxied to our spot as the sun was setting. We took a minute to give the jet one last walk around and stopped for one last

"Taking an F-14 on its last flight, especially one to the "Bone Yard", is not a daily occurrence and is something that few Tomcat aircrew will ever experience. When asked if I would be interested in flying a jet out to the "Bone Yard" I knew this would be one flight I would never forget."

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picture before it was towed into the yard. Walking away from that F-14 with the sun setting behind it left us feeling empty and a bit sad. To think back on all the missions this jet had flown, especially the latest sorties over Afghanistan, and to realize that it has made it's last landing was very moving. It was definitely one of the most meaningful flights I've taken.

Finally, the most recent cross-deck training I have provided was on board the USS John F. Kennedy in March of this year. LTjg Sean McCarthy and I were scheduled to be on board for some routine PRC-112B training for CVW-7. The day prior to our departure, VF-143 lost an F-14 off the cat in the Mediterranean Sea and sadly the pilot did not survive the mishap. As the Wing's CACO, I accompanied the Commodore to make the initial notification to his wife and children. This was to be my second notification in the previous 6 months but it did not seem to be any easier the second time around. Prior to leaving, the Commodore somehow remembered that I was scheduled to leave for the JFK the next day. He felt very strongly that the training I was to provide on the ship was critical to the air wing and decided to turn over the duties to another CACO. Even so, I still made the trip with him to break the news and to assist the oncoming CACO with the initial paperwork. The following day, Sean and I boarded our C-9 and headed to Souda Bay where we would catch a COD out to the ship. Once on the ship it was amazing to see how the loss had affected the entire ship. The memorial service was held that night in the hanger bay and the lightning storm outside cast an even darker atmosphere on the proceedings. That entire

evening was filled with tears as he was one of most liked individuals in the air wing and as an LSO, everyone knew him. The morning came and the mood quickly changed and it was now back to the business at hand. It was the beginning of CVW-7's involvement with Operation Enduring Freedom and more specifically their support of Operation Anaconda. Sean and I wrapped up a 28-hour day that consisted of PRC-112B inspection, testing and loading, followed by squadron training. The final portion of that day/night was a meeting with the members of the VF-143 AMB. It was my second involvement with an AMB and Sean's first. We were able to handle questions ranging from ALSS and Ejection Seat parameters to ASTC training procedures and equipment. We interacted with the board flight surgeon a great deal and assisted her in the assessment of the pilot's injury patterns and how they may or may not have related to his flight gear. We grabbed what little shut-eye we could and then headed up to Vulture's Row to watch the first launch of air strikes in support of OEF and OA. That night the Red Rippers of VF-11 were the first Tomcat squadron to carry and deliver JDAM (Joint Direct Attack Munitions). This capability along with their already proficient role as FAC (A)s (Forward Air Controller - Airborne) further solidified the F-14 Tomcat as the premiere Strike Fighter in carrier aviation. Sean and I felt extremely proud to represent the physiology community as part of our country's forward deployed forces and to witness this milestone in the life of the F-14. The image of aircraft launching with a full assortment of air to ground weapons and returning hours later with only fuel tanks will remain etched in my mind forever. The next time we are all together I will share some of the stories that the aircrew from VFs 11, 14, 41, 102, 143, 211 and 213 brought back from OEF and OA.✂

*LT Littell is the AMSO for
Fighter Wing, U.S. Atlantic Fleet*





Clinical Manifestations of Hypnagogia and the NAVAIR Technical Directive (TD) Process.

by
CDR Dave Service, MSC, USN
 and
Mr. Brian Smith

Having trouble sleeping? Read this.

Naval aerospace physiologists are recognized as resident experts in aviation life support systems. One of the main reasons aeromedical officers are designated as aircrew is because of the requirement to participate in operational and training flights for the purpose of evaluating aircrew performance in the context of the aircraft, mission, environment, and *equipment*. When it's discovered that flight gear needs to be changed, either for safety reasons or general improvement, a maintenance action needs to be issued to accomplish the change. The appropriate vehicle in most cases, is a document called an Aircrew Systems Change, or "ACC". (If you're wondering why it's an "ACC" vice an "ASC", as you should be, it's because the ASC designation was already being used for Airborne Software changes.) ACC's are one of four types of Technical Directives, or "TD's", the other three being an Interim Aircrew Systems Change (IACC), Rapid Action Minor Engineering Change (RAMEC), Aircrew Systems bulletin (ACB). (The last one, the ACB, is employed to order inspections, and will not be discussed here.)

While the PR's, AME's and Marine maintainers who implement ACC's may know all about them, many modifications go unknown to aircrew right up until they notice that their gear's been changed and is now, "all messed up". (To wit, ACC 666, aka "the evil ACC" in which polyethylene shims are attached to oxygen mask bayonets and helmet receivers for the purpose of making the mask irremovable once it is connected.) That's where AMSO's, AMSE's, and ASTC staff come in; as experts who can distill the content of ACC's, and convey the ramifications of the gear changes to the aircrew who will have to live with them.

By the book, which is the NAVAIR 00-25-300, (figure 1), there are three ways that an ACC can make it's way to the fleet. The first is a formal TD, printed and distributed by the Naval Air Technical Data and Engineering Service Command (NATEC). A formal TD is the result of an Engineering Change Proposal (ECP). An ECP is required when the proposed TD will result in a change in

form, fit, or function of the equipment in question. Perhaps most significantly, an ACC (TD) is a *mandatory* change to the flight gear, not something optional like the use of soft seal ear cups in helmets. An ECP is a rather lengthy process at times, but the purpose is to ensure that all logistics and engineering support is in place.

The TD itself is one of the logistical items which needs to be considered. Back at NAVAIR, when an ECP is ready to be implemented it goes before a Change Control Board (CCB). This board ensures that all required logistics elements have been considered. If the ECP will be generating a TD, the TD number is assigned at that time by a NATEC representative, who is also a board member. This TD number and other pertinent data (system affected; man hours required to make the change; etc.), is passed to NAVAIR logistics for inclusion in the Technical Data Status Accounting (TDSA) system. Wha..? I was awake. At the time it is entered, the TD is assigned Index Code "A". In all, there are four TD index codes: A = Assigned-Unpublished. B = Active-Published. C = Canceled. D = Rescinded (History). One of these four codes is listed for each TD that appears on the TD tracking lists, called the "NAT01" and "NAT04". The column in which this code appears is labeled INX.



Back to the ACC itself. If the TD has made its way past the Change Control Board and is a run-o-the-mill TD, it will make it's way through the system and eventually be printed and distributed by NATEC, just like a 13-series ALSS technical manual. It will have a bar code (usually) and stock number, and be published as "ACC-XXX", (e.g, ACC-666). At the point a TD is released the index code is changed from "A" to "B" in the TDSA accounting system.

If a change is being brought about by a safety of flight issue, and is therefore urgent, then the cognizant engineering activity can request that the TD be issued as an Interim Aircrew Systems Change, (IACC). IACC's are published via Naval message and are entered in the TDSA with index code "B" (active). The thing with Interim Changes is that an ECP must be submitted to the NAVAIR CCB within 180 days of the IACC being issued to formalize the Interim TD. This ECP follows the normal process, except that the NATEC rep does not assign a new number for the TD during the board. Eventually the formal ACC is printed and distributed by NATEC. Upon issue the TDSA index code for the IACC is changed to "C" and the ACC (same number) is

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The Physiologist's Edge:
Aviators and the Oxyhemoglobin
Dissociation Curve

by
LTJG Chris Cooper, MSC, USNR

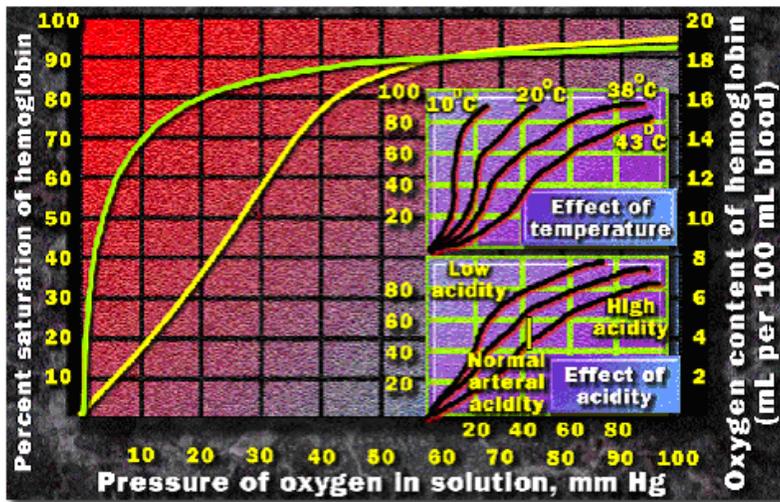
The human body's ability to adapt to almost any situation is an amazing physiologic feat. With the knowledge that we possess and the systems that we have

oxyhemoglobin releases the oxygen to sustain the needs of the tissues.

At sea level, where the average alveolar PO_2 is 100 mm Hg, hemoglobin is about 98% saturated with oxygen. There is a very positive pressure gradient of 60 mm Hg which promotes offloading of oxygen to the tissues. Applying this value of 100 mm Hg to the curve, it is clear that for every 100 ml of blood leaving the lungs, hemoglobin carries about 19.7 ml of oxygen to the body, according to McArdle, Katch and Katch (4). Any additional increase in the alveolar PO_2 has a minimal effect on the quantity of oxygen that is combined with hemoglobin, but can affect dissolved oxygen content. The plasma contains an additional 0.3 ml of dissolved oxygen for every 100 ml of arterial blood. The amount of dissolved oxygen can be increased to 2 ml of O_2 per 100 ml of blood if 100% oxygen is breathed at sea level. Thus for the healthy individuals who breathe ambient air at sea level, approximately 20.0 ml of oxygen is carried in each 100 ml of blood leaving the lungs and can be slightly increased by breathing pressurized air or 100% O_2 .

The sigmoid shape of the oxyhemoglobin dissociation curve is explained by an aspect called cooperative binding. The binding of oxygen to hemoglobin is known as cooperative binding because when an oxygen molecule binds to the iron atom in one of the four globin chains, it becomes progressively easier for the next oxygen molecules to bind. The flat, upper portions of the curve provide a margin of safety to ensure that the arterial blood is adequately loaded with oxygen. This fact is particularly important to the aviator who ascends to altitude. Oxygen saturation will stay in the 90 and above percent range until the alveolar PO_2 drops to about 60mmHg. Below that, the curve drops drastically along with oxygen saturations. At an altitude of 10,000 ft, when O_2 saturation reaches 87% or the alveolar PO_2 drops below 60mmHg, supplemental oxygen is required to continue flight operations without degradations in performance due to hypoxia according to NATOPS regulations. At 18,000 ft, O_2 saturation falls to 72% causing hypoxic symptoms to occur within 30 minutes of exposure. According to Sheffield and Heimbach (1), at altitudes greater than 25,000 ft, arterial PO_2 may actually be lower than the venous PO_2 causing a negative pressure gradient and reversing the direction of oxygen flow in the lungs to diffuse from the blood back into the alveoli. This would cause a severely sudden and profound onset of hypoxia.

As O_2 saturation percentage decreases with an increase in altitude, corresponding changes in a variety of sensory



developed to help us adapt, anything is possible. Unfortunately, those systems don't work 100% of the time. It is important for a physiologist to understand what happens to our body during extreme situations so we can instruct pilots and aircrew on symptoms to look for and how to treat any potential physiologically stressing situation. With a basic understanding of the oxyhemoglobin dissociation curve, we can explain how our body reacts to many of the stresses imposed during flight and the limits of our system's capabilities.

The oxyhemoglobin dissociation curve is a graph that all physiologists should be thoroughly familiar with. This curve illustrates the percent saturation of hemoglobin at various partial pressures of oxygen (PO_2). The right ordinate of this curve is the quantity of oxygen carried in each 100ml of blood under normal conditions. The purpose of an oxyhemoglobin dissociation curve is to show the equilibrium of oxyhemoglobin and non-bonded hemoglobin at various partial pressures. At high PO_2 , usually in the lungs, oxygen molecules bind to hemoglobin to form oxyhemoglobin. As the red blood cells travel to the tissues throughout the body, the



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and mental functions will occur. Fulco (3) states at 88% O₂ saturation, vision is degraded by a 25% decrease in light sensitivity and a 30% decrease in visual acuity. At 81% saturation, a 33% decrease in postural stability and a 15% decrease in cognition occurs. At 77% saturation, there is a 25% decrease in pursuit tracking and a 20% decrease in information recall. By the time O₂ saturation reaches 72%, there is a 25% reduction in reaction time. All of these changes will significantly impact an aviator's performance in the aircraft.

The amount of hemoglobin available to oxygen, hemoglobin's ability to bind with oxygen, and hemoglobin's ability to release its stores of oxygen to the tissues are all important to oxygen transport. A low red blood cell count (anemia) reduces the amount of hemoglobin available. High oxygen saturations matter little since very little oxygen may be available to the systemic tissues. This can be caused by bleeding, reduced red blood cell production, or other factors. McArdle, Katch and Katch (4) state that other gases binding with hemoglobin such as carbon monoxide can reduce oxygen delivered to the body but still show as high oxygen saturation. The solid line on the above graph represents the dissociation curve under physiologic conditions at an arterial pH of 7.4 and a tissue temperature of 37°C.

There are many factors that actually influence the binding of oxygen to hemoglobin as well. These factors can be viewed as having the effect of shifting or reshaping the oxyhemoglobin curve of a healthy individual. Wilmore and Costill (5) state that the standard curve is shifted to the right by an increase in temperature, 2,3-

diphosphoglycerate (2,3-DPG), PCO₂, or a decrease in pH. The curve is shifted to the left by the opposite of these conditions. This phenomenon is known as the Bohr effect and reflects an alteration in the molecular structure of hemoglobin due to the influence of hydrogen ion concentration. A rightward shift causes a decrease in the affinity of hemoglobin for oxygen. This makes it harder for the hemoglobin to bind to oxygen

(requiring a higher partial pressure to achieve the same oxygen saturation), but it makes it easier for the hemoglobin to release bound oxygen to the tissues. From the slope of the oxyhemoglobin dissociation curve it can be seen that hemoglobin releases abundant oxygen to the tissues when needed with only a small decrease in oxygen tension. Conversely, a leftward shift increases the affinity, making the oxygen easier for the hemoglobin to pick up but harder to release. The following assert the specific influences of the factors that affect O₂ affinity:

- **Variation of the hydrogen ion concentration.** This changes the blood's pH. A decrease in pH shifts the standard curve to the right, while an increase shifts it to the left.
- **Carbon Dioxide.** The influence of carbon dioxide on the oxyhemoglobin dissociation curve is of considerable significance as it influences intracellular pH. In the lungs, as carbon dioxide is released, the curve is shifted to the left so that at a given PO₂ more oxygen combines with hemoglobin. In the region of the systematic capillaries, increased tissue acidity shifts the curve back to the right, potentiating oxygen unloading.
- **Effects of 2,3-DPG.** 2,3-Diphosphoglycerate is an organophosphate that is produced within the red blood cell during anaerobic glycolysis.

The production of 2,3-DPG is likely an important adaptive mechanism, because the production increases for several conditions in the presence of diminished peripheral tissue O₂ availability, such as hypoxemia,

chronic lung disease, anemia, and congestive heart failure, among others. Dempsey (2) states that DPG binds to hemoglobin which rearranges the hemoglobin into an altered state, thus decreasing the affinity of oxygen for hemoglobin. High levels of 2,3-DPG shift the curve to the right, while low levels of 2,3-DPG cause a leftward shift.



“At an altitude of 10,000 ft, when O₂ saturation reaches 87% or the alveolar PO₂ drops below 60mmHg, supplemental oxygen is required to continue flight operations without degradations in performance due to hypoxia according to NATOPS regulations. ”

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• **Temperature.** Temperature does not have so dramatic an effect as the previous factors, but still has an influence during extreme conditions. Hyperthermia causes a rightward shift which shows its physiologic value during exercise. As the temperature of the active muscle increases, the release of oxygen to the muscle increases. Hypothermia causes a leftward shift which reduces the unloading of oxygen from the hemoglobin. This helps explain why people drowning in cold water can be saved with little or no brain damage even when they have been submerged for long periods of time.

• **Carbon Monoxide.** Smoking adversely affects the body's ability to utilize oxygen by inundating the system with CO. Hemoglobin binds with carbon monoxide 240 times more readily than with oxygen, and therefore the presence of carbon monoxide can interfere with the hemoglobin's acquisition of oxygen. In addition to lowering the potential for hemoglobin to bind to oxygen, carbon monoxide also has the effect of shifting the curve to the left increasing the hemoglobin's affinity for oxygen. So, not only does this reduce the amount of oxygen bound to hemoglobin in the lungs, it also decreases the unloading of O₂ to the tissues. With an increased level of carbon monoxide, a person can suffer from severe hypoxemia while maintaining a normal PO₂.

At rest, the blood leaves the tissues and returns to the heart with approximately 70% of its original oxygen content. This large quantity of oxygen still remaining with hemoglobin provides a reserve so the tissues can immediately obtain oxygen should the metabolic demands suddenly increase. Even during normal flight conditions, aviators and aircrew are subjected to stressful situations. During high work loads and intense situations, many of the changes in the oxyhemoglobin dissociation curve mentioned above will occur to accommodate the situation. Initially, pH drops and temperature rises, then the tissue PO₂ decreases and PCO₂ rises. All of these factors working together cause a shift in the curve to the right which in turn enhances the unloading of oxygen to the tissue. As long as enough oxygen is available, whether it be ambient or pressurized, the curve illustrates that hemoglobin will deliver the necessary amount of oxygen to accommodate any situation that presents itself. When an optimum amount of oxygen is not available, the oxyhemoglobin

dissociation curve shows how our body utilizes a natural buffer system to maintain full function, hopefully until the oxygen supply can be restored.☞

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LTJG Cooper is the Training Division Officer at ASTC Jacksonville, NSTI East.

A Note from the Detailer

If you are interested in becoming a recorder for a statutory or admin board, please email the detailer, LCDR Wheeler -

P4415J1@Persnet.Navy.Mil.

Once contacted, LCDR Wheeler will put your name into the hopper and will contact you if an opportunity becomes available.

A few things to note WRT recorder duty:

- a) You must be available upon request, and once you've committed you cannot then cancel at a later date.
- b) Recorders will be pulled from CONUS billets. Personnel in OCONUS billets are not eligible.
- c) You cannot sit on a promotion board if you are in or below zone (even if the board is not 'your' board). However, opportunities may still be available for you to sit on an admin board (e.g. DUINS).



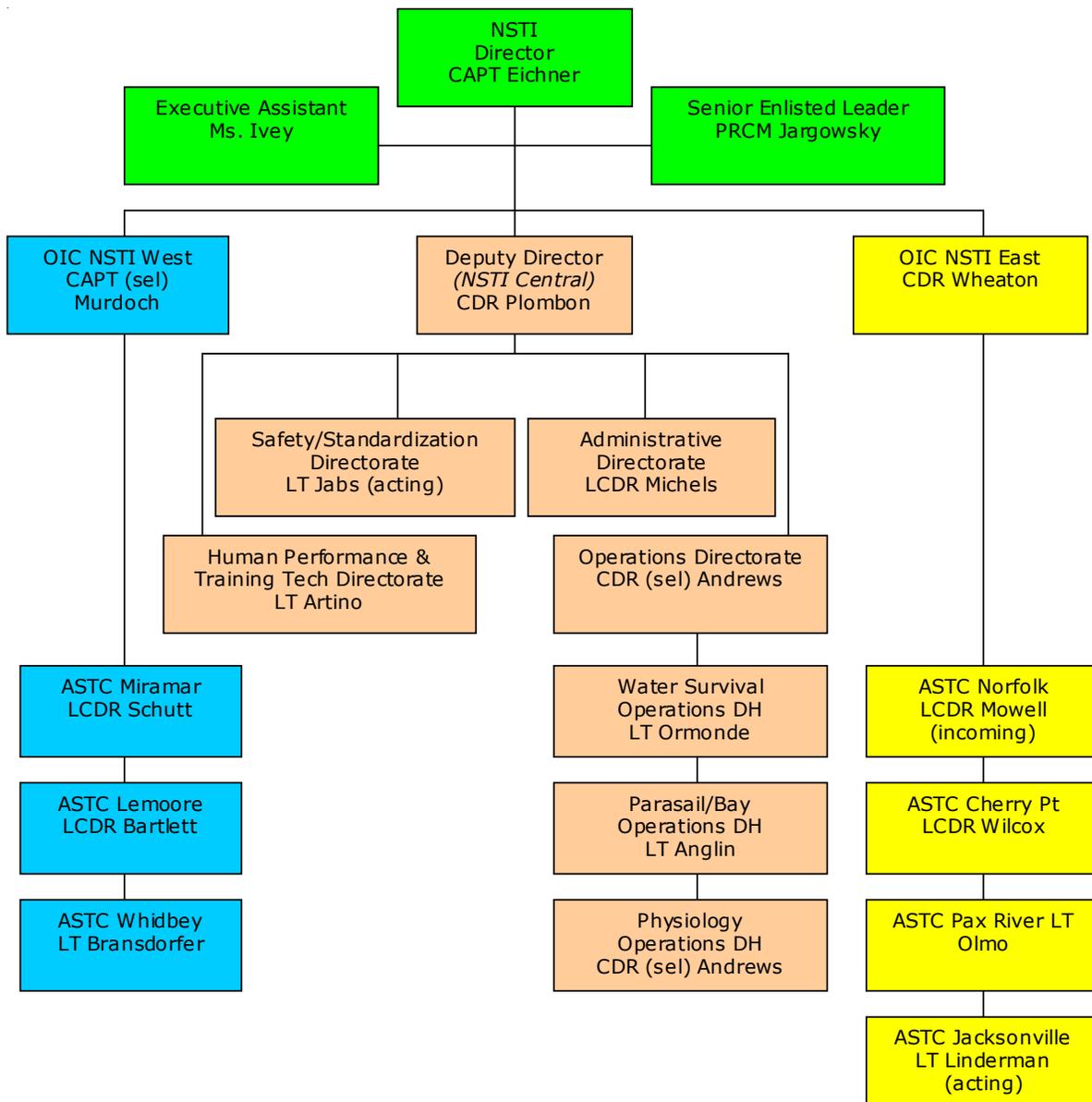
The Naval Survival Training Institute

by
LT Anthony Artino, MSC, USNR

On 13 Aug 02, the Naval Aviation Survival Training Program (NASTP) was reorganized and renamed. We are now the Naval Survival Training Institute (NSTI), a subordinate institute under NOMI. The new PLAD is NAVSURVTRAININST PENASACOLA FL and the UIC is 39677. For a few of us, this change will mean a physical move, new responsibilities, and/or an entirely new position. But for most of us, this change will be very transparent (see organizational chart below). NSTI Headquarters is currently generating a revised list of collateral duties. Once complete, it will be distributed to everyone in the organization, along with an updated phone directory. If you have any questions or concerns with the new organizational structure, please feel free to contact LCDR Adam Michels, the NSTI Admin Director, at DSN 922-2424, email ASMichels@nomi.med.navy.mil. ☞



CAPT Ryan Eichner
Director,
Naval Survival Training Institute



History of the Naval Aerospace Physiology Program, Chapter 7 Desert Shield / Desert Storm

by
CDR Jeff Clark, MSC, USN

Have you ever thought you were caught in the middle of an episode of Mission Impossible? Wait until you've heard about this one!

Operation Desert Shield was in full swing and the majority of forces were in place with 3D Marine Aircraft Wing (MAW) acting as the major aviation element within the 4th Marine Expeditionary Brigade (MEB). LCDR Chris "Abdul" Schuyler, 3D MAW AMSO, had been in continual contact with LCDR Musashe, Headquarters U.S. Marine AMSO, concerning particular aspects of the Aeromedical Readiness of the aviators in country. The stage was set for the first Global FAILSAFE Tiger Team Sweep.

One afternoon in early September 1990, LCDR Clark, 2D MAW AMSO, received a telephone call from LCDR Musashe that went something like this: "Are your bags packed?" From that point on – the rest is history. The strategic plan was formulated to establish three Tiger Teams made up of a physiologist and a parachute rigger. The teams were LCDR Clark, PRC Cerul and LCDR Hertan, PR1 Montero and LT Syring, PRC Kunkel. All three teams were assembled for the first time in early October at the Naval Air Development Center (NADC), Warminster, PA for two days of briefings on the current Helo CBR ensemble and the newly developed system for the fixed wing assembly. Question and answer periods ensued with the development of the presentation strategy once in country. LCDR Musashe and CAPT Cooper, NAVAIR 5311 continued to work the administrative and logistics issues surrounding this unique deployment of FAILSAFE assets.

D-day arrived – 23 October 1990, plane tickets and orders in hand the teams proceeded to Philadelphia Airport to await transportation to Dover AFB. LCDR Clark rode to Dover with LT Syring on board J. G. Executive Limo Service. Henry, our driver was my kind of guy – we stopped at the local Dunkin' Donuts for coffee half-way there. This clandestine meeting at the Dover Days Inn at midnight really triggered the thought of "Mission Impossible."

Day 2: The engineers from NADC and Patuxent River arrived for follow-up briefings and to provide some of the answers the members had previously asked. The plans to ship all the ensembles were finalized. LCDR Clark as team leader had developed administrative packages for all the teams to aid in accounting of briefings and a planning calendar for composing the reports and feedback to NADC and NAVAIR. We finished out the day with a trip to the base exchange so PRC Cerul could purchase some shower shoes.

Day 3: Launch Day. We were scheduled for a 0830 flight on a contract airliner. The processing center was a pleasant area – weathered butler building with rows of cots on one side and chairs on the other. American capitalism was alive and well. The USAF clerks were selling Desert Shield memorabilia at the current market value. We were informed that our flight had arrived, but the plane was down for maintenance with an expected delay of 16 hours (smelled like crew rest to me!). The remainder of the day was well spent. The team members got better acquainted and our thoughts focused on plans once we arrived in country. The group decided that we would henceforth call ourselves "FAILSAFE TEAM SIX" and an appropriate patch would be developed to reflect our adventure. In order to add more mystic to our journey, we decided to have the words "If I tell you, I'll have to kill you!" written in Arabic embroidered on the patch as well. This idle time we spent together helped mold us into a homogeneous group with a sense of camaraderie. Movement control has just announced a C-5 leaving at 1630 destination Torrejon AFB, Spain. LCDR Musashe began taking flack for our travelling about – see Dover, DE at \$30.00 a day. We warmly said goodbye to our illustrious tour-guide and departed at 1730 for our 7 1/2 hour flight.

Day 4: Arrived in Torrejon 0600(L). The flight was anything but uneventful. The vast majority of the passengers were Army Reservists from Arkansas. PRC Cerul quickly exposed himself as the director of entertainment. During the dinner hour (hot meals) a bleed air line had dislodged itself and began filling two rows with extremely hot air. PR1 Montero and the chief being good PRs sprang into action – within minutes, PR1 Montero had the flight crew hopping while he shouted for the specific tool to complete the job. The cover panel was removed and the connection reestablished without injury or any further discomfort for our fellow service members. Perfectly timed, the first refueling track was immediately following dinner. The old C-5 began to porpoise and the two USA colonels in front of us began to get air sick. PRC Cerul came to the rescue with comforting words to ease their troubles. He

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explained that the air leak was really part of the flight control system, and that the impact would be eased since we were over water. By this time the colonels were in the head and PR1 Montero had completed the CDI checks on the bleed air lines.

Torrejon AFB was really great. The processing center reminded me of a scene from MASH. The converted hangar had stations around the edge of the building on three sides which included drinks, donuts, sandwiches and health and comfort packages all furnished by the American Red Cross. There were towels and hot showers available as well as an adequately stocked exchange and a television room. The center was the proverbial rows and rows of cots. We departed via C-5 at 1030(L) bound for Dhahran, Saudi Arabia.

We arrived in Dhahran at 2130(L) only to be greeted by excessive heat and yet another butler building with rows of cots, except without the amenities we came to enjoy in Spain. After awhile you can actually become accustomed to sleeping on a cot.

Day 5: We discovered that the building adjacent to ours contained old airport offices which the USAF took over for base operations, although these facilities were not up to par by USAF standards. Our initial attempts to contact LCDR Schuyler were unsuccessful. The others who were awaiting transportation became intrigued with the term “FAILSAFE TEAM,” which only served to confirm our desire to have those words included on our patch.

We were able to break the code on the base bus system and find our way to the mess hall. Some things never change – this was definitely government messing. We discovered by accident the location of HMLA-269, a 2D MAW squadron who in turn gave us a contact point to communicate with 3D MAW. We now know that LCDR Schuyler was located in Bahrain a small island off the coast of Saudi Arabia. As the afternoon progressed, it was clear that this stop was by far the worst. It was hot and sand was blowing around, but the chiefs managed to provide entertainment to break the monotony. Salvation came with the word that LCDR Schuyler was on his way. He arrived around 1430 and we proceeded to the Dhahran International Airport to check on our gear – No luck!

We arrived Sheik Iza AB, Bahrain at 1630 and secured billeting for the PRs. This was the first real indication that this would truly be duty in the field – tent city. The officers went on to the BOQ. These were real buildings with showers and beds. The next surprise was that

Arabs don't have “real” commodes. They squat over a porcelain hole in the floor. This proved very interesting if you're prone to leg cramps in the crouched position.

Day 6: Just a normal day at the office – awake at 0530. After breakfast, we went to the flight line and checked in on the PRs. They had already commandeered all the essentials of comfort – short an air conditioner. We drew our pistols, ammunition, personal CBR gear and basic web gear from supply. The primary concern at the moment was to locate all the CBR ensembles, since our domestic needs had been met. LCDR Schuyler informed us that CAPT Cooper's Lieutenant was in-bound, and we needed to pick him up at the airport. Mission Impossible again – we were to look for a red windbreaker jacket.

Day 7: LT D'Andrea was welcomed to the desert in style – we got him his own set of “war-gear.” He contacted LCDR Musashe to expedite locating the ensembles. Plans were begun to contact USS Nassau to arrange briefing times and transportation. The PRs were busy with the various paralofts, and they contacted USS Iwo Jima which was in port at Mahammed, Bahrain. The report from NADC on the ensembles was they were receipted for in Cairo, Egypt and would be delivered tomorrow (30 OCT). Plans were laid to relocate two teams to JuBail (local airport used by the Marines) the next day to begin briefing the helicopter crews on the AR-5.

Day 8: We planned a 0800 launch via pick-up truck to JuBail – crossing the border between Bahrain and Saudi Arabia was always an experience. It was like the guards knew who we were and what we were doing. The plan was to leave two teams at JuBail until the ensembles arrived and then move one team to King Abdul Aziz to cover the AV-8s and the OV-10s. LCDR Clark stayed at Sheik Iza to await word on the USS Nassau and briefed all the F/A-18 squadrons on the new fixed wing ensemble.

Day 9: Received word that the ensembles would be delivered to Dhahran Airport that night. Spent most of the day with LCDR Schuyler begging for a 5-ton truck to pick up the gear at the airport and arrange for a C-130 to deliver the ensembles to King Abdul Aziz on Thursday (1 Nov). Sand storm picking up and the heat is very real. LCDR Schuyler and LCDR Clark got a treat today – LT D'Andrea bought us a pizza at the local Pizza Hut.

Day 10: Got a late start today – trouble with vehicles – no 5 ton available. LCDRs Schuyler and Clark and LT

“As the afternoon progressed, it was clear that this stop was by far the worst. It was hot and sand was blowing around, but the chiefs managed to provide entertainment to break the monotony.”

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“The truck broke down just outside the gates to the stadium, so our plan was altered – we hadn’t prepared to spend the night. LCDR Schuyler was quick to respond. We had cots, sleeping bags and a hot meal for the night.”

D’Andrea went to the airport to verify arrival and locate the ensembles. There were some problems clearing Customs, but we had to return on Saturday to complete all the paperwork. The cargo worker, Mohammed was very helpful. He talked to the government officials and for a small fee he stamped the Customs forms so we could load all the gear.

Day 11: Finally requisitioned a 5 ton and we picked up all three boxes at the airport. We departed for King Abdul Aziz by late afternoon. King Abdul Aziz was actually a soccer stadium built for the Crown Prince, but had some structural flaws, so the stadium was never opened. There was a landing strip there for the Prince’s private jet. We arranged with LT Baysinger, MAG 13 AMSO to have LT Syring and PRC Kunkel trucked from JuBail to King Abdul Aziz the next morning.

The truck broke down just outside the gates to the stadium, so our plan was altered – we hadn’t prepared to spend the night. LCDR Schuyler was quick to respond. We had cots, sleeping bags and a hot meal for the night.

Day 12: Spent the early morning hours arranging for LT D’Andrea’s return to Bahrain – he wasn’t real excited about spending the night in a tent. All the ensembles were divided by location, and we left LT Syring and PRC Kunkel at the stadium. The rest of us proceeded to JuBail only after PRC Cerul commandeered another 5 ton for our journey north. Once at JuBail their gear was off loaded, and LCDR Clark arranged for a C-130 flight back to Sheik Iza.

Day 13: LCDR Clark and PRC Cerul spent most of the day preparing for briefings. LT D’Andrea decided to pull chocks and return home. A rather slow day as days go in the desert.

Day 14: LCDR Clark briefed two F/A-18 squadrons – some good comments were given, but the usual harassment was ever present. Continued working on contact with USS Nassau without much success.

Day 15: LCDR Clark and PRC Cerul accompanied LCDR Schuyler to the Administrative Support Unit (ASU) to assist in water survival training. No word from USS Nassau.

Day 16: LCDR Clark briefed medical personnel on the CBR ensemble. Discussed alternatives for triage of medical emergencies during CBR conditions. Talked with LT Syring to discuss reception by AV-8 community – both squadrons uncommitted on flying with

ensemble. One squadron confused over altitude restrict (below 18,000’) with the fixed wing ensemble and the conflict with NATOPS oxygen usage rules. LCDR Musashe readdressed message to wave the NATOPS requirement through operational necessity.

Day 17: LCDR Clark prepared the first SITREP message to be released to CMC, NAVAIR and NADC for feedback. I gave assistance to LCDR Schuyler in the DSS office.

Day 18: Got off on a great start today – received 4TH MEB answer on request for visit to USS Nassau. The bad news is that they declined requirement for briefings. LCDR Clark established an appointment with LTCOL Owens, CO MALS 14 on board USNS Wright to discuss the LEP problem.

Day 19: Meeting with LTCOL Owens and MAJ Gough, MALS 14 ASO to alleviate the LEP assets problem between MAG 40 and the other 2D MAW units ashore. The meeting went well, and the problem of redistribution should be imminent. The schedule for the remaining F/A-18 squadrons was finalized. The A-6 community has yet to respond to scheduling requests.

Day 20: LCDR Clark made liaison with LCDR Hertan and PRC Kunkel – good feedback from briefings. The AV-8s haven’t flown with the ensemble, but the OV-10 has strong desire. LCDR Hertan has developed a flight schedule for the OV-10 squadron.

LCDR Clark prepared a letter for COL Burgess, CO MAG 40 to explain the need for CBR training and that the AV-8 squadron embarked aboard USS Nassau is scheduled to receive the ensembles. Scheduled to brief HMM-461 aboard USS Iwo Jima.

Day 21: LCDR Clark and PRC Cerul arrived on board USS Iwo Jima, but the squadron wasn’t prepared – obvious miscommunication. We spent the rest of the day arranging transportation to bring the other two teams back to Sheik Iza for a little R & R tomorrow.

Day 22: LCDRs Schuyler and Clark and PRC Cerul departed for the stadium to pick up the other two teams. It was a great reunion – sharing experiences and adventurous stories of time spent in the field. LCDR Hertan had worked extensively with the OV-10 squadron. He even arranged an interview with the Navy News team to discuss our mission.

LT Syring and company were working hard with the AV-8s. This was the toughest nut to crack, but he hung in there!. LT Syring completed a comprehensive addendum

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for the egress procedures and modified the fixed wing ensemble to aid in user acceptance and survival.

Day 23: LCDR Clark briefed the other F/A-18 squadron on the ensemble. CAPT Baker, a dual designated flight surgeon who had many hours with the AR-5 at Test Pilots School attended the brief. His personal input was extremely helpful to the cause and eased some suspicions about the equipment. I coordinated an admin meeting to discuss briefings, admin notes and inputs for SITREP 02-90.

Day 24: LCDR Clark and PRC Cerul briefed MWSS-373 and MAG 11 NBC personnel. Excellent session – interaction was forthright and recommendations offered by NBC personnel were needed to develop full scale training programs with the squadrons, to develop decontamination procedures for actions, and establish decontamination procedures for medical.

We released a message to I MEF for access to USS Nassau for training. At this point a sense of frustration has developed, but I feel there is a continuous state of confusion and misunderstanding between the MAG-40 staff, 4th MEB and the FAILSAFE teams.

Day 25: The teams took a domestic day off (laundry). Discussion for a mass debrief for all individual team reports and formulating recommendations for the SITREP 02-90.

LCDR Hertan received word that MAG-50 was standing up, and his presence was requested back at MAG-39. The plans to arrange his return flight took precedence. PR1 Montero expressed a desire to return home as well.

LT D’Andrea had introduced us to a DOD teacher in town, and all of us were invited to dinner at her house. She had invited an Arab which served our purposes well – she wrote the inscription in Arabic for our patch. It was an enjoyable evening as we discussed geopolitical philosophy, and an inside view of American capitalism and social values.

Day 26: We finally made positive contact with USS Iwo Jima for briefings at the AIMD. LCDR Clark made contact with LT Patterson on the ship-to-ship telephone/radio system. Most of the confusion surrounding the requirement to brief was cleared up, but access to the ship was denied due to operational conditions.

LCDRs Schuyler and Clark went to the stadium to present an AV-8 squadron a LASER safety brief. The brief didn’t make the flight schedule, but we used the time to follow-up on ensemble feedback.

In the Wardroom, the desserts served was a vanilla cream ice cream bar covered with chocolate called “Pirate Bar.” LCDR Schuyler had grown accustomed to having his daily consumption of pirate bars, as we all did. However, this was the third day that the supply of pirate bars was depleted. LCDR Schuyler’s behavior was markedly altered with distinct personality changes. It was the consensus of the group that a brain tumor had begun due to the biochemical shifts in the cerebral spinal fluid catalyzed by continuous exposure to the sun. This was of great concern to the team members, since LCDR Schuyler was not his “usual” self.

Day 27: The crew took LCDR Hertan and PR1 Montero to ASU to process for their return flight to CONUS. Upon return to Sheik Iza we prepared all the audio-video equipment for shipment to NADC. (Still no pirate bars.)

Day 28: LCDR Clark, LT Syring, PRCs Cerul and Kunkel debriefed the sessions and consolidated the recommendations for SITREP 02-90. (Still no pirate bars – possible MEDEVAC for exploratory surgery.)



Day 29: The remaining two teams turned in all their “war gear.” We brought the two chiefs into LCDR Clark’s room from tent city for some domestic comfort. (It’s a miracle – emergency C-5 delivery today with ten cases of Pirate Bars.)

“LCDR Clark briefed the other F/A-18 squadron on the ensemble. CAPT Baker, a dual designated flight surgeon who had many hours with the AR-5 at Test Pilots School attended the brief. His personal input was extremely helpful to the cause and eased some suspicions about the equipment.”

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“For those who read this piece who may not appreciate the gravity of this endeavor – the greatest FAILSAFE success known prior to 1990.”

Our departure flight scheduled for 2350 tomorrow from Bahrain Airport. All our orders were ready and we’re packed for a last time shopping trip to “downtown.”

Day 30: LCDR Schuyler drove us into the ASU to pick up our tickets and confirm report times for transportation to the airport. We instantly noticed that LCDR Schuyler had returned to his “usual self” after 12 hours and 4 Pirate Bars.

The chiefs treated us to a few brews at the CPO Club (alcohol was off-limits to all Marines in the country since Saudi Arabia is a dry country). PRC Cerul had just enough to pour out his heart about physiologists and the FAILSAFE program. (It’s amazing what a little atmosphere will do for one’s inhibitions.)

Our flight was World Airlines DC-10. We were served breakfast once airborne – great food!

Day 31: Our route of flight included stops at Sigonella, Naples, Rota, Lajes and finally Philadelphia. We had to disembark at each location and had to wait in the passenger terminals that were built for about half the people on this flight. We arrived in Philadelphia approximately 1830(L) and had to clear Customs. Remember the DOD directive about flying in civilian clothes out-CONUS? Well, all the uniformed personnel only had to show their ID cards and were expeditiously handled. We poor civilian clothed folks were put through the wringer! We finally cleared Customs and made our way from the International to the Domestic Terminal. We all managed to book connecting flights to our respective homes – just prior to the end of “Turkey Day.”

For those who read this piece who may not appreciate the gravity of this endeavor – the greatest FAILSAFE success known prior to 1990:

The three teams of 2 each provided briefings to 21 activities contacting 356 aircrew, 123 maintenance and 17 medical personnel in four different cities over a distance of 500 miles in a combat AOR in less than 30 days.

The true credit belongs to those who did the work: CAPT Cooper, LCDRs Musashe, Schuyler and Hertan, LT Syring, PRCs Cerul and Kunkel and PR1 Montero. It was my pleasure to have worked with them all!☘

CDR Clark is the AMSO for U.S. Marine Corps Forces Atlantic.

Lessons Learned
One AMSO’s Mission to Pakistan

by
LT Jim Hunt, MSC, USN

So there I was, comfortable in my AMSO billet, being proactive and involved in Safety. No matter how proactive safety professionals are, it seems that aircraft mishaps still occur. It was early January, and I was preparing to provide my annual Spatial Disorientation review brief at our monthly IGS class. The wing CG was expected to be one of our VIP aircrew in attendance. His aid called and informed us that the CG had something come up and would not be attending. Later I became aware that the “something” had to do with Operation Enduring Freedom. Just before I went in to teach, I found out “we” had lost an aircraft. I compartmentalized and conducted my brief, hoping “we” meant a more removed element of the US. After my SD brief, CNN was on and I found out it was a KC-130. My DOSS informed me that it was from our group. Two hours later, just before I was going to provide my Annual Egress/Ejection Seat brief to the Hornet aircrew, I found out the names of the aircrew lost. I was in disbelief. Damn, more aircrew who I knew had lost their lives. How could that have happened? I just flew with some of them over a month ago, and now they were gone. So I gathered my grief, sucked up my emotions, just as we tell aircrew to do - to compartmentalize and press on with the mission. How ironic to be briefing Spatial Disorientation, Visual Illusions and Egress hazards and mitigation methods when we lose an aircraft in an unfamiliar and difficult operational environment.

The next morning, I wondered how involved I would be in the investigation. CNN was reporting that the aircraft was possibly shot down at night because witnesses saw an explosion prior to impact. If this were true then the mishap would be an operational loss and require less assistance from the AMSO. But I was willing to assist in anyway I could, via SIPER or NIPER Net, phone, or go into the operational theater. I was mentally assessing all the information I had so far and brainstorming possibilities, preparing a list of resources I might need, WRT SD, HFACS, fatigue, combat/op stress, loss SA, no NVGs.

The Group CO was down in the DOSS shop and stated that “The AMSO is going as part of the AMB. It is

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<http://www.susnap.org>



Due to snow, we ended up staying an extra day on the East Coast of Canada. I was not well prepared for the extra day, WRT civilian clothes and poor packing. The next day we shoveled out three feet of snow, clearing a track for the wheels during taxi. During the long flight I read OPNAVINST 3710.7S, 3750.6R, KC-130R NATOPS and TACMANs to prepare for the investigation.

We arrived late in the night in Sigonella, Italy. We had some difficulties at Sig, such as transportation between the T line and our quarters, and getting locked out of our rooms. We departed the next day

easier to get him there now and back if not needed, than to send him there later.” I had 16 hours to prepare for my AMB quick reaction deployment. I knew that the squadron FS was already been there as part of the detachment, but I was not sure what resources he had with him. So the extensive preparation and panic packing began. I grabbed all that I could think of and got a lot of help from my AMSC who had many years of field experience with Marines. (Please refer to the lengthy packing list at the end of this article, which includes some of the items I packed and some I wish I had packed.) We went to the NOMI Det OIC for guidance and lessons learned from other AMSO AMB deployments. I called other AMSOs and NAPs in the local area to ask if they would cover for me in my absence.

and flew to a USAF FOB in the NAG. Customs was courteous, and so was our bus driver, a young Sgt who “hooked” us up with mid rats and nice tent accommodations. The next morning we loaded up and took off. We had more passengers onboard now. I had a Sgt sitting next to me who just took her anti-malaria medication on a near empty stomach and caused a normal no thanks reflex. She tried not to toss some spew on me but the seating was very cramped and spray was inevitable. We flew on to another USAF FOB.

We took an early morning flight to the airfield near the mishap site: we saw the rugged terrain, steep mountains, flat valleys, and nearly no water, vegetation or population, quite similar to portions of the US South West and also of the NITE Lab Terrain Board. We flew directly over the mishap site and could see fire scaring and aircraft parts strewn all over the mountain. We landed at the airfield and witnessed a memorial for the last two remains, which were load onto the plane and flown back. We meet with the camp commandant, AFIP, OFME, MEU representatives, the MS ASO and FS. We discussed the disposition of the remains, personal effects, mishap site hazards, and what the

“...we saw the rugged terrain, steep mountains, flat valleys, and nearly no water, vegetation or population, quite similar to portions of the US South West and also of the NITE Lab Terrain Board.”

I awoke early for a 0630 show time at the mishap squadron. We briefed and I meet the Jag investigators, the senior member of AMB and the MS CO. Then we loaded the aircraft. I had two sea bags, an Alice pack, the seven-cube box, plus a carry-on bag. The CG, some local media and some of the dependents of the mishap aircrew were there to send us off. It was a very emotional setting. The aircraft departed for the long trip. We flew to an Air Force Base to pick up a Hammer Ace crew and two Navy Safety Center investigators, then continued on. We had a lot of diverse experience; two H-46 pilots (one USN & one USMC), a H-53 USMC pilot, an aeronautical engineer, a USMC KC-130 Weapons/Tactics Instructor, and me. Four of us had previous AMB experience, two with class A, loss of life mishaps. Being a representative of the MS's ISIC, I felt like somewhat of an outsider, but since I had been previously flying with their squadron for 2.5 years, they didn't treat me as the enemy.

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reclamation teams had done as well as describing what had been determined and speculated thus far.

We then loaded into a CH-46 for a ride up to the mishap site. It was not far away. The helicopter circled around the site and I thought to my self, 'what a shame, had the MA been farther to the right or left or just a bit



higher it could have cleared the mountain.' In order for us to deplane, the pilot had to land the main-mounts on a nearby ridge while hovering the nose gear.

Accompanying us were a host country Army personnel, some MEU combat mountain climbers and reclamation personnel to walk us though the mishap site for familiarization. The terrain was very steep and unstable due to the loose shale rock. A singular path was used to transverse into the major portions of the site so as to minimize disturbing possible witness marks and evidence. The reclamation teams, the combat climbers, the ME and AFIP personnel had done a fantastic job of recovering remains as quickly as possible. I was



amazed at their diligence to recover so many small portions over such a large area and at such depths into the mountain and wreckage. They had completed the work within four days and were now scouring certain areas to ensure all portions and personal effects were recovered. The combat climbers had secured aircraft wreckage to the mountain and cut away aircraft parts so personnel could safely get to the mishap aircrew. The broken parts were many, large and small, burnt and not burnt, just like the ones Dr. Bank showed at ASO school, and I heard his voice say "don't put the pieces back together," his tip to not ruin the witness marks. Another tip: remember the gory photos of remains in various conditions, so you can recognize and recover them without inadvertent damage - it will be greatly appreciated by the MEs and very much so by the surviving family members.

The camp commandant provided us two tents, one to sleep in and one to work in. The AMB met and we discussed what we observed at the site. The ASO and FS began to tell what they had determined so far through MS maintenance representatives and mishap airfield witness interviews. We used a poster briefing board to begin documenting and categorizing facts and strong assumptions. We didn't yet speculate on possible scenarios or causal factors. The senior member, the FS, the ASO, and the Operations representative returned that night to the main FOB to conduct more squadron interviews. The NSC investigators, the maintenance representative and I stayed at the mishap airfield.

The next day I had my delicious MRE for breakfast and my normal cups of coffee, then we returned to the mishap site. I was now the medical representative for any injuries up at the site. So I had to recall all my first aid and CPR training. Wilderness or cold weather medicine training would have been good to have, but fortunately we didn't have any injuries. The maintenance representative and I marked, with GPS, aircraft witness marks on the mountain, as well as locations of significant parts. We began to build an understanding of where the aircraft first struck the mountain, and how it continued to scrape along subsequent ridges and then collide with the peak. The NSC investigators looked at and inspected engine and propeller components, some of which were a half hour hike down the gully; a 1.5 hour return uphill hike. At the end of the day the H-46 picked us up and returned us to the airfield.

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The next day we returned to the mishap site and did more of the same. I made two rough pencil sketches of the mishap site to include burn patterns, witness marks, remains and significant aircraft part locations. The GPS positions were used later for computer plotting. That night we updated our list of knows, don't knows, assumptions and things yet to determine.

The next day we were gathering significant aircraft parts for engineering investigation. We dug through three feet of wreckage for avionics, engine and flight instruments, flight control linkages and surfaces and engine turbine and compressor sections, bearings, propeller components, etc., and the combat climbers even cut out hydraulic boost packages for us. That night the entire AMB convened. Following our meeting, I flew back to the main FOB while the interview crew began more interviews at the mishap airfield. I thought that I, a human factors type, would be doing more with interviews than aircraft parts. Fortunately, my S-3 systems knowledge helped me to recognize and understand KC-130 systems.

The next day at the mishap site the senior member had the reclamation team collect all ordnance, such as 9mm ammo, pistols, a shotgun, and flares, for explosive destruction. The MS personnel then created a rock and cement memorial with a squadron flag and plaque of the names which won't be forgotten. I was busy at the main FOB AMB conducting investigative research. I looked at NATOPS pubs general and aircraft specific, charts, navigation plans, SOPs, SPINS, etc. I also informally talked with MS, JSRC, CSAR and USAF C-130 personnel. Hammer Ace had set up SIPR and NIPR Nets, (\$10/min satellite connection) and I liaised with AEW on a ship for witness statements. That night the entire AMB got together and reviewed and updated our lists of knows, don'ts, and maybes to formulate our plans of attack for determining what happened.

For the next few days we all went about our ways of researching and interviewing all to gather the facts. Our workdays are long, from 0800-2300 for some and 1200-0300 for others.



We NAPs teach human factors such as stress, fatigue and nutrition, but I now have a much greater appreciation of how our aircrew live in tent city during combat ops - it isn't an

easy life. But the Marines told me that the USAF tents were much better than the ones at CAX. Here are some things I noticed about tent-city. The tents were on top of one foot of gravel since the sand wouldn't support tent stakes and shear winds. The dust was controlled by



the Army who put out a glue solution each night to wet and clump the dirt on the roads between the tents. Each tent had its own air unit, which made a lot of noise and hot air, but not much cool air. This FOB was surrounded by barbed wire. There were security posts with armed guards and even .50 cal's on Hummers and in foxholes. This FOB was becoming a more populated place for the long term. So some Army and Air Force personnel were really homesteading; they built Florida rooms to their tents, wood floors, mosquito netting, beach chairs, reclining benches, bar stools, gaming tables, entertainment cabinets, book nooks and dressers for their cots, they even had mattresses. Water bulls were located "downtown" in each tent neighborhood and purified by Army IH personnel with bleach. Most MS personnel didn't like the taste or trust the Army so they drank the imported bottled water intended for aircrew

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“We started with the knows and then asked the ‘what ifs.’ We attempted to be as all-inclusive as possible. We thought about everything from what CNN reported as the possible cause, to the four Ms of man, machine, medium and mission, to the absurd of UFOs.”

use in flight. I filled up my Camelbak four or five times per day and never got sick. I used my field canteens for coffee and Gatorade. Each neighborhood had a set of tents for male/female heads and showers and one for laundry. All of these facilities were located at the other end of the neighborhood, a 1/8-mile walk each way. For recreation the FOB did allow jogging, which I only did a few times since I only had my desert steel toed flight boots. Mess hall meals consisted of red eggs for breakfast; meat, canned fruits and vegetables (no salad) for dinner and the leftovers and breakfast for mid rats. MREs were the only thing on the menu for lunch. I found out that there were 24 MREs and most were good; but two are definitely ones to avoid. I'll leave it up to you to determine which ones - good luck. I finally got my anti-malaria medication after being bit by a mosquito. The FS assumed I already had meds.

Back to the AMB: We did lots of research, interviews and deliberating. Often times we went off on tangents, duplicated work, and discussed the same things over and over in circles. What really helped us were the poster lists of know, don'ts and assumptions and brainstorming of possible scenarios. We started with the knows and then asked the ‘what ifs.’ We attempted to be as all-inclusive as possible. We thought about everything from what CNN reported as the possible cause, to the four Ms of man, machine, medium and mission, to the absurd of UFOs. We reduced the outlandish to reasonable expectations for the qualified aircrew flying an operative aircraft in unfamiliar terrain for new and difficult missions during an operational environment considered combat. The FS participated in all the debates and wrote his aeromedical analysis. We assessed a lot, but there was so little hard or documented evidence (no RADAR tapes, no cockpit or ATC voice recordings, no witness home videos, or anything too helpful), yet we were able to determine the most probable causal factors. When all is said and done, AMB deliberation is much like jury duty.

It took many days, but after over three weeks in that tent, the senior member felt comfortable with our progress in theater and decided it was time to return to CONUS. The Operations and Maintenance reps remained in theater as replacement aircrew.

The senior member, FS and I flew to the NAG USAF FOB. The senior member and I left the FS there with some gear, which we couldn't take with us on the return trip via commercial air. I had to have an ORDMOD for SATO to charge my tickets. I checked my Alice pack with canteen, sleeping bag and foam pad attached externally, and hoped I would be able to retrieve all of it when I arrived in San Diego.

We had a five-hour layover in Amsterdam. I mistakenly used a restroom near a busy terminal. When I was exiting through the long narrow hallway, I was meet by a man who had a panic look on his face and was covering his mouth. I knew this situation meant danger. I tried to give him a wide berth but was trapped. He violently vomited and spew sprayed out from between his fingers. Yuck! Vomited on again. We finally arrived in LA, went through customs and transferred to a commuter flight to SD.

The senior member, the FS, the ASO and I convened a few days later and discussed our draft SIR and what we had left to finish. We assumed we were near done and just waiting for results from the EI. So we returned to some of our normal jobs. A few weeks later we received the EI results and incorporated them into our report. Fortunately, the results were not significantly different than expected. More editing, and a month after returning to CONUS we had a smooth draft. We had the Safety Center and ASO School review and comment on our SIR. The four-man AMB did more discussing, more editing and more rewriting - long days in that conference room, similar to the long days in tent-city. The FS finished his AA and the enclosures. The ASO and I finished the SIR and gave it to the senior member for final review. Two and a half months after





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the mishap, the SIR finally hit the message board. But the work was not completely over. The ASO and I had to compile all the enclosures, organize them, label them, copy them, print photos and copy the entire package before sending it off to the Safety Center.

Hopefully you will never have to be a part of an AMB for the deaths of friends. But take some time to prepare for it. Be proactive and stay engaged for their safety. For the full story, more photos, and lessons learned please navigate to the SUSNAP web site.

What to Pack

Carry/Storage Containers

Sm Travel Suit Case w/wheels or
Back-Pack &/or
Sea bag (1), or Kit Bag, Flyers (1)
Daypack/Overnight Bag

Mishap Site Items

Personal 1st aid kit, 782 gear
Rubber Gloves, Leather Work Gloves
Compass, GPS, Whistle, Mirror
Tape Measure, Voice Recorder
Camera(s), video/still/digital
FS A/C mishap investigation pkt guide
Dust goggles, clear and neutral gray lens
Zan Goggles, clear and smoke
Lip Balm, w/SPF 15 or better
Sunscreen
Iridium Satellite phone/Cell phone
Paper Tags, Markers, Ties
Assault Climbers POC

Office Supplies

Laptop PC
Portable Printer/Ink Cartridge
Paper
Mini Battery Powered Dust Vacuum
CD-ROM RW Disk and Drive
Floppy Disks; Zip Disks, Dive
Power-Strip/Extension Cord
Scientific Calculator, Batteries
Mini Tape Recorder, >6 Tapes, Batteries
Ruler, Scissors, Post-It Notes
Paper-Clips, Stapler & Staples
Scotch Tape, Ordnance/Duct tape
Pens ,Pencils (mechanical w/extra led, 0.7mm w/tip support)
Multi-color High-Lighters

Black Felt-Tip Marker
Pocket Memo Booklet, Steno Note Pad
Hole-Punch
Manila Folders, large paper envelopes
Plastic Zip Lock Bags, large and small

References

3750 Appendix I, and All Enclosure Forms, paper and electronic vesions
3750, 3710, ORM, HFC/HFB, LASER, NVD, etc.
Orders/Instructions
DeHart &/or NASTP Curricula
POC Phone List



782 Gear

Cartridge Belt, Harness, Cartridges
1st aid kit, Canteens (2) w/Cup
Alice-Pack w/Cover
Sleeping Bag, w/Cold Wx Liner
Sleeping Pad
Ranger Roll Poncho
Rain Poncho, and cover for pack
Desert Covers for helmet, flack jacket & Alice-pack
Flack Jacket & Kevlar Helmet
Gortex Trousers & Jacket
Gortex Sleeping Bag Cover
Black Leather Gloves w/Cold Wx Liners

NBC/CBR Gear

Mark-42 Mask, > 1 Canister
Sarahtoga Suit, Gloves and Booties

Camping Gear

Camelbak (100oz Mule)
Leatherman (sm &/or lg)
Pur Water Filtration Hand-Pump
Iodine Purification Tablets
Pocket Hand Warmers
Carabeeners
Chemical Light Sticks
Para-Chord 50ft

Continued on next page



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Water-Proof Matches in film canister w/cotton swab
TP in plastic bag or coffee can
Mini-Mag Light w/Spare Bulb
Camping Pillow
Inflatable Backpacking/Camping Pad
> 4Black Straps, 30 inch, w/side buckles
Camping Chair w/back support

Personal Clothes

>1set of civilian clothes for comm travel
Running gear: shoes, extra laces shirts, Shorts, socks:
light and heavy duty, Warm & cold wx (2 sets)
Underwear, t-shirts, sweat pants, shorts

Uniform Items

ID tags
>2 flt suits (desert or forest)
Flight jacket (summer/winter/leather)
>1 set of boots (desert or forest), good tread for
hiking, steel toe for flight
>1set of utilities, (desert or forest) name tape (?)
Boonie cover (desert or forest)
Collar and cover devices (blk out)
T-shirts, green (6)
Socks, blk/grn (6 pr)
Green long underwear/thermals
Watch cap
Cold wx and normal flt gloves
Green/brown field scarf
Web belts & buckles (2 ea)
Spare boot laces (blk & brwn)
Sewing Kit

Trouser blousing bungies

1st Aid Items

Band aids
Sports med tape
Mole skin/foam
DET bug repellent
Personal meds, Vitamins
Throat lozenges, etc.

Toiletries

Shower shoes
Towel & wash cloth
Soap, shampoo
Tooth paste & brush
Shave kit
Foot Powder
Biodegradable Soap
Laundry Bag & Detergent
Nail Clipper & File

Miscellaneous Items

Calling card + country access codes
Gov Visa
Pass Port (mil &/or civ)
>2 sets of orders
Pocket disposable camera
Video camera and tapes
Sport supplement energy bars, 1 case
Entertainment: CD player/CDs, tape Player/Tapes,
DVD, cards, etc
Book(s), free reading
Plastic travel coffee mug w/lid
Gatorade powder mix in plastic jar
Coffee, tea
Breath mints, gum
Scrub brush for boots, clothes, hands...
Watch w/alarm, spare battery
Boot insoles: Sure Feet, Spenco,...
Business cards
Stationary, stamps
Pad lock
Training briefs/material✂

*LT Hunt is the AMSO for
Marine Aircraft Group 11.*

The success of this journal depends exclusively upon member contributions. If you are involved in a special project, 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.



SUSNAP Treasurer's Report

As of 13 Sep 2002, we have an account balance of \$2,647.44. The following will give you an exact idea of where our money is going to and coming from since the beginning of CY 2002. Please keep in mind that we receive interest each month, therefore, the numbers are not perfect.

DATE	DEPOSIT/WITHDRAWAL	BALANCE
Jan 15 th		\$ 500.00
Feb 15 ⁿ	+225.00 (dues/prints)	\$ 725.00
Mar 15 ⁿ	+20.00 (dues)	\$ 745.00
Mar 20 th	-100.00 (memorial charity)	\$ 645.00
Mar 25 ⁿ	+1,376.00 (transfer savings/dues)	\$ 2,021.54
Mar 29 ⁿ	+210.00 (dues)	\$ 2,232.61
Apr 15 ⁿ	+37.00 (T-shirt payment/dues)	\$ 2,269.61
May 1 ⁿ	+107.00 (dues)	\$ 2,378.46
Jul 3 ⁿ	+260.00 (dues)	\$ 2,642.44
Jul 8 ⁿ	-100.00 (Caruso art closeout)	\$ 2,542.44
Jul 8 ⁿ	-97.00 (AsMA lunch programs)	\$ 2,445.44
Jul 25 ⁿ	+60.00 (dues)	\$ 2,505.44
Aug 22 ⁿ	+100.00 (dues)	\$ 2,607.44
Sep 13 ⁿ	+40.00(dues)	\$ 2,647.44

If you have any questions about this report, please contact LT Debra L. Yniguez, DSN 582-5010 or COM 252-466-5010. Additionally, if you have not yet paid your 2002 dues, please send them to LT Yniguez at the following address: Commanding General, 2nd MAW, AMSO/LT Yniguez, PSC Box 8076, MCAS Cherry Point, NC 28533.

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contractors charge for the chamber maintenance and support. We know how many staff are required and how much time it takes to do a chamber run. Until we implement ROBD or SIMPHYS training, we won't be sure about the actual costs. The "devil is in the details" about how to implement that kind of training. I'd prefer we spent our time debating how to implement it vice "if" we should use ROBDs in scenario-based training. Better yet, I'm looking for people with answers and solutions!

At face value, the ROBDs are far cheaper. The data I've seen from NAMRL indicates the hypoxia symptoms are more intense and reliable if an ROBD is used. The current devices are portable and there is hope they will scale down even more. The real cost question is the manning required to conduct ROBD or SIMPHYS training. The original trial of SIMPHYS at MAG-39 was conducted and extended for over a year using only the AMSO and AMSE. They handled that training load, which is larger than many Navy Air Wings. Except for Pensacola, the class size is the real driving force behind manpower expenditure in the ASTCs. It is very inefficient to conduct training, especially chamber ops, for a small class. Yet, we have some sites where the average class size is less than ten students. Student-to-instructor ratios are the same if you need two people for the simulator/ROBD experience, or 20 staff for an ASTC class of ten students. It would be very wrong to assume that just the AMSOs, or the just the ASTC staffs, would conduct training in simulators...it would take a team effort from the entire community to meet the diverse

scheduling and manning issues. It is equally wrong or premature to assume the chambers or the ASTCs would go away. If anything, the manpower we have might be better justified because of scenario-based training.

Enough of the debate! We're moving on with integrating ROBD and other training technologies into our curricula. It's already authorized in OPNAVINST 3710.7S. Please notice the new NSTI organization in another section of this SUSNAP publication. You will note that we have a new group...the Human Performance and Training Technology (HPTT) Directorate. This is where we intend to foster change and have dedicated resources to try new concepts. Their mandate is to help formulate ideas and test technology to address the training issues in NASTP. We hope to have the pilot curricula ready by Fall of 2003 or sooner with the ROBD. It's up to you younger ones to embrace and institutionalize change. One of my primary goals, as the Director of NSTI, is to remove obstacles to progress. I'll personally be getting out of your way within a year. Before I go, let me say this... My Momma didn't raise me to be a chambermaid! Did yours? Share your bright ideas and where you think we should take this program with the Head of the HPTT Directorate. LT Artino is the point of contact (tasker back to you Ragu, Pitbull out!).☘



CAPT Eichner is the Director of the Naval Survival Training Institute.

Task Based Curriculum Development Course Think your MTS Quality...

by
HM2(FMF) Shane T. Burt, USN

If you're considering shooting for Master Training Specialist (MTS) or heading out to the NOMI Model Manager shop, you should consider attending the CNET-approved Task Based Curriculum Development Course (A-012-0052). I recently completed the seven-day course at Fleet Training Center San Diego. I had no idea



what I was getting into, but when I left there seven days later, I had a better understanding of how a course is put together and what all that paperwork actually means. This course is great for those aspiring to become a MTS as well as those that already have the qualification but did not attend a formal course.

Look in your MTS sign-off sheets under Module 3, it covers all the tasks required to complete Task Based Curriculum Development. Now if you were like me, it probably didn't make much sense, that is until I attended the course. The course explores, in-depth, NAVEDTRA 130 and you actually complete each section of the Task Based Curriculum. Areas specifically covered include:

- Training Project Plan (TPP)
- Course Training Task List (CTTL)
- Curriculum Outline of Instruction (COI)
- Training Course Curriculum Document (TCCD)
- Testing Materials
- Lesson Plans
- Trainee Guides
- Instructional Media Material (IMM)
- Pilot Process
- Course Implementation
- Surveillance and Training Materials Modification

To attend the course, you must meet the prerequisites - be an Aerospace Physiologist, Aerospace Physiology Technician or NEC 9502. POC number for FTC San Diego is COMM: (619) 556-9181 or DSN: 526-9181. I

recommend you take your own copy of NAVEDTRA 130, Volumes 1-3 to put notes in; you will have one for the class, but you don't get to keep it. Another good reference to have is NAVEDTRA 135.

The next four classes will be held on 3 Oct 02, 31 Oct 02, 18 Nov 02, and 12 Dec 02. Contact the schoolhouse for more dates.

This was a fantastic course that I recommend for all instructors. CNET also offers a Performance Based Development course which covers module 4 of your MTS sign-off sheet. I plan to take that course soon, so look for another article in a future issue. Good luck and keep up the good work.✂

*HM2 (FMF) Burt is the AMSC for Helicopter
Anti-Submarine Wing, U.S. Pacific Fleet.*

SUSNAP Web Update

A quick note from the Web Amateur (I haven't yet earned the title of master, but am working through the JQR towards that designation)...

Some of you may be aware of the fact that SUSNAP has a web site. Some of those may be aware of what is on the site. And, a few of those have actually viewed the site. In fact since I added a hit counter in August, the site has been visited a whole 14 times. Of those fourteen visits, I made 4 visits to check the changes and assess the counter status. It doesn't take much of a statistician to see the site isn't used by the majority of our members.

What can be done to increase the number of visits the site gets? First you all need to type the following into your browser's address bar:

[http://members.tripod.com/
Aerospace_Physiology/](http://members.tripod.com/Aerospace_Physiology/)

Then press Enter. Next, go to the Favorites menu and select Add to Favorites. Now take a look around the site. You can see we have the Class A update on the What's New page. This will be updated as Class A's are reported. Please allow for a 3 day delay (or longer if I'm TAD).

Also note that on every page is a link to e-mail the "Web Master". If you see an error, want to have an item added, or just want to wish me good luck on my Web Master designation, this link is for you. This web site is for the SUSNAP members. Without your participation, I may just make it into a tribute to our newest civilian member, Mr. Brian Swan. Seriously, SMEs, AMSOs, Old, Young, Everyone, let me know what you want to see on Our web site. This is a great place to put useful gouge, without the hassle of Nominet.

Sincerely,
LT Leslie "Woodpile" Kindling



“Impact Protection in the State of Denmark” & Subsequent Lessons Learned

by
LT Jim Balcus

It is about time for my first foray into documenting the trials and tribulations of an AMSO still green about the horns. Many of the lessons learned for me in this first year in one way or another revolve around ear cups. You may ask or may be afraid if you are aware of the politics associated with this issue, what big picture AMSO lessons could one yield from ear cups? Many.

The Aviation Safety Team (AST)

Initially, when I walked through the doors of MAG 39, the problem with the ear cups at the time were that aircrew were dissatisfied with the crushable semi rigid ear cups, so a commercial source was found to provide a product that sated the aircrew’s desire for improved SA, comfort, and more fitting options. Of course nothing being “easy” where NAVAIR is involved, the first IRAC was issued with several mistakes that allowed rotary wing personnel to wear the authorized fixed wing ear cup. Rotary wing types are not allowed to use the fixed wing ear cup due to compromised lateral impact protection, so said NAVAIR. LT Folga led the charge to rectify administrative deficiencies and to educate aircrew as to what was authorized. He then turned the ear cup and NAVAIR fire hose on me to educate me as quick as possible to ensure MAG 39 aircrew were wearing the authorized modification. Unfortunately, NAVAIR left Pandora’s box open too long and the ear cup virus spread through Camp Pendleton’s squadrons and the rest of the fleet I suspect as well.

Lesson Learned:

The autonomy of being an AMSO is dependent upon working with other AMSOs to ensure the safety of all our aircrew.

Answering the Mail

With the IRAC mandating my aircrew remove soft ear cups they had come to enjoy, I proceeded to inform them they had to discard the soft, commercial ear cups and replace them with the semi rigid crushable ear cups. Boy, that was fun. I had COs tell me they did not want hear it, they were going to do what they wanted, and they can. However, I had others who asked “Can I see the results NAVAIR found on the ear cups and who came up with test parameters?” Simple enough I thought, I’ll just ask NAVAIR to “Show Me the Data”.

One year later, I received my copy of the impact study, procurement document, and the operational requirements document.

During the interim, I started to gather data from the US Army Aeromedical Research Laboratory web site (www.usaarl.army.mil) and through conversations with the Helmet “Team” I began to see how this situation has come to be. The Helmet “Team” was the source of the helmet system requirement “to withstand a rotor blade slap to head”. I had heard other AMSOs mention this requirement, but found it as unbelievable as the aircrew did. When the helmet “Team” rep said it was true and physiological consequences were not considered when this requirement was mandated, it appeared to me that something was rotten in the state of NAVAIR.



Lessons Learned:

1. When NAVAIR is not forthcoming with data, alternative sources exist on flight equipment. Although the systems may be different, intent is ultimately the same and can therefore further your research effort.
2. NAVAIR may mandate policy on flight equipment, but they may not always know why. The “rotor blade slap to the head” is pure lore dreamed up from the recesses of a place only senility or corporate memory loss

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yield. The standard used in the engineering of the current helmet systems actually stems from an Army technical report that utilized an ANSI standard for motorcycle safety as a reference, not an intended set safety factor for helmet design or safety policy.

3. NAVAIR statements are only as good as the data generated and the test criteria selected. The helmet ORD references the ANSI for motorcycle helmet safety. This is a very stringent criterion for a helmet system, but how applicable is this to military aviation? No one knows. Will it be sufficient to counter the impact forces sustained in a mishap? Again, no one knows. Have we selected a criterion where the safety factor is inhibiting other requirements of the ORD such as comfort, fit, and speech intelligibility of communication systems?

The aircrew will tell you that NAVAIR has. If it is in the ORD, then the Fleet must have identified this requirement at an OAG, right? There is no evidence to support the application of motorcycle safety standard originated from any Fleet input.

While we're on that subject, has the HGU/84 afforded us the level of protection we expected it to? An analysis of mishap helmets would provide an answer to this question, but who does that? These are issues I plan to take on as "My Summer Project", but welcome any support from my peers. I already have a pilot/mechanical engineer and flight surgeon on board.

We are NAVAIR representatives. As bitter a pill that is to swallow, it can be tempered with the fact we are also the operator's representatives to NAVAIR. The messenger that can be slain on both fronts, the hero to each, or any mix there of. As many of senior AMSO will profess, chose your battles wisely and have multiple strategies in place to tackle the same issue. There is more than one way to skin a FE dilemma and half the fun is looking for the road less traveled or pounding a new one altogether.

As NAVAIR representatives and taxpayers we are entitled access to reliable and up-to date information and so is the Fleet. This access should include a web page with

engineering research data similar to the US Army's web page.

Sorry PMA-202s page doesn't provide what the Army's does, scientifically written

technical reports. We are the portals for this information and when NAVAIR can't explain it in terms the aircrew can understand (or their own engineers), we help translate.

As you can see many lessons learned from just asking for some information and even when you don't get that information, it still leads to more questions.

Where have all these lessons gotten me? Besides spinning my wheels? The standard ALSS IMP chits,



TPDRs, IRACs, and not so standard point papers have NAVAIR finally listening. The Helmet "Team" is planning to test a new commercial ear cup that has passed the manufacturer's testing. The collateral benefits

have been solidifying my local AMSO/FE relationships, a terse understanding of how NAVAIR is supposed to support the Fleet and the reality, a lot of disgruntled looks when I explain that all my effort so far still hasn't allowed NAVAIR to see the logical basis for my questioning, and semi rigid crushable ear cups for my aviators, not the ones they want.

I may not have 100% resolution on the issues above, but I will before my PRD. I end with the following quotes, one might be applied to the relationship of NAVAIR & AMSOs and the other how AMSOs would like NAVIAR to apply to it's engineering design solutions.

Words of Wisdom:

"He who lives by fighting with an enemy has an interest in the preservation of the enemy's life."

- *Nietzsche*

"A good solution applied with vigor now is better than a perfect solution applied ten minutes later."

- *General George S. Patton, Jr.* ☘

*LT Balcius is the AMSO for
Marine Aircraft Group 39.*



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assigned index code “B”. The formal TD (ACC) always cancels and supercedes the Interim Change (IACC). In theory, TD’s don’t last forever. For all changes, there is some future point in time at which all affected gear should have been modified in accordance with the ACC. This point is called the Target Completion Date, and can be up to eight years following the release of a TD. As a TD nears its Target Completion Date, it is supposed to be reviewed by the logistics manager for that system. He is supposed to decide whether the TD is moved to Index Code “D” (history), or needs to remain active. If the determination is made to keep the ACC active, then an amendment is issued to extend the Target Completion Date and the TD stays as index code “B” (active).

As a reason why you should even care about ACC compliance and target completion dates, consider the following example. In November 1999, Aircrew Systems released ACC-659, an urgent change to put improved seals and O-rings into SRU-40/P HABD bottles to keep them from leaking in cold temperatures. ACC-659 had a target completion date of 30 June 2002, meaning that all older HABD bottles should have had the improved seals installed by early last summer. However, NAVAIR engineers recently investigated a helicopter mishap that occurred in the winter of ‘02 in which the HABD bottle of a drowned crewmember was found depleted of air. In the course of the engineering investigation (EI) it was discovered that ACC-659 had not been made to the bottle, despite the fact that the TD had been on the street for almost a year and a half. Although the fatality was eventually attributed to other factors, the investigation drew attention to the fact that the squadron was not in compliance with the TD, and that consequently, their aircrew were at risk.

In addition to ACC’s and IACC’s, the third way that a change TD gets into the fleet is via a Rapid Action Minor Engineering Change (RAMEC). To qualify as a RAMEC, certain conditions must be met. In keeping with the name, the change should be simple; one that can be accomplished quickly and easily at either the O or I level. (Trust us.) Also, all parts required for the change must be readily available in supply, (as opposed to being part of a kit, like the ACC-659 HABD cold weather seals). There are also certain cost thresholds that can’t be crossed. The total cost for materials should not be more than \$1,500 per change, and the cost of updating drawings and tech manuals can’t exceed \$25,000. There are a few other criteria, but I can’t think of them at the moment. Anyway, the RAMEC works its way through the system like a regular ECP. It goes in front of the NAVAIR CCB and is assigned a TD number by the

NATEC rep. A TD which is generated by a RAMEC is published via Naval message, just like an IACC, however, where the IACC is eventually formalized, the RAMEC TD never is. It’s born as a Naval message and dies as a Naval message.



Now, you’ve read the gouge, but real experts need to be able to cite their source. The latest version of NAVAIR 00-25-300 is dated March 2002, and can be found on the official NATEC Web site, <http://www.natec.navy.mil/>. In particular, Section III has some good dope and is only about ten pages long. You’ll need to request access to enter the NATEC web site, but it’s quick and easy, and having an account will also get you access to all the aircraft NATOPS manuals. As with most PMA 202/NAWC 4.6 products, amplifying information can be found on the NAVAIR web page [HTTPs://PMA202.NAVAIR.NAVY.MIL](http://PMA202.NAVAIR.NAVY.MIL). Under the section “Tech Data” is a link that connects with a complete directory of Aircrew Systems Changes. Check it out. Zzzz....☞

“Now, you’ve read the gouge, but real experts need to be able to cite their source. The latest version of NAVAIR 00-25-300 is dated March 2002, and can be found on the official NATEC Web site, <http://www.natec.navy.mil>”

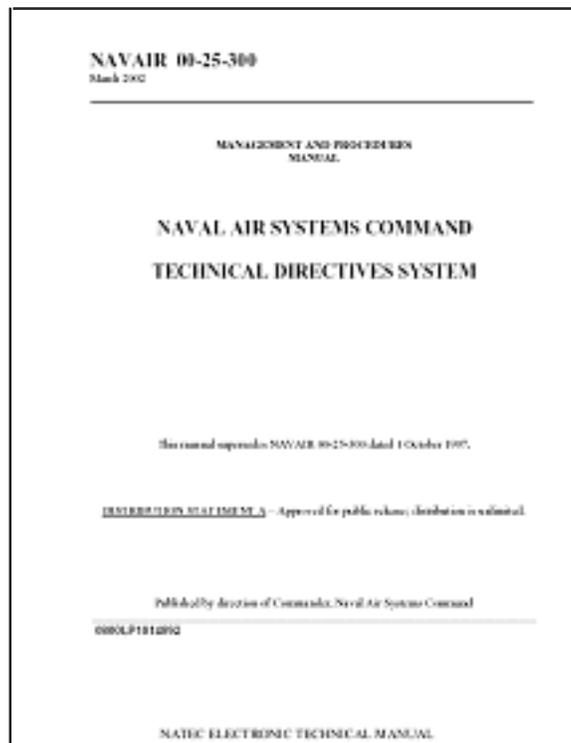


Fig. 1. Clinical protocol for AMSO insomnia

CDR Service is the Class Desk Officer for Aircrew Systems at NAVAIR and Mr. Smith is Information Technology Manager for Fleet Support at NAVAIR.

AsMA Annual Meeting - Montreal - May 2002
photos courtesy of LCDR Brian Swan, MSC, USN (ret)



The Queen Elizabeth Hotel



Marche de Bonsecours - the market in Old Montreal

**La Basilique
Notre-Dame
de Montreal -

Notre Dame
Basilica in
Old Montreal**



<http://www.susnap.org>



The Olympic Tower & Stadium



Place du Cartier - the public square in Old Montreal



Aerospace Physiology Society
Luncheon

U. S. Navy
Luncheon



Billet Highlight: STRATCOM “Aerospace Physiology Opportunity in Omaha”

by

CDR Jim Norton, MSC, USN

Question:
‘What does an
Aerospace
Physiologist
do at
STRATCOM?’

Answer:
‘Learn, learn,
and learn!’

Located in the Cornhusker State (Go Big Red!) is the United States Strategic Command who’s motto is “**Peace is our Profession**”, who’s Command Mission is to “**Deter a military attack on the United States and its allies and should deterrence fail, employ forces**”. Besides statewide mourning of a Husker loss to Penn state, I aim to inform you of what is happening in our community in Omaha (specifically Offutt AFB in Bellevue Nebraska). Answer: ‘One of the best jobs in the military!’ Question: ‘What does an Aerospace Physiologist do at STRATCOM?’ Answer: ‘Learn, learn, and learn!’

USSTRATCOM is one of 9 Unified (Joint) Commands. As of September 2002 the Joint Commands consisted of 4 Regional Commands (US Southern Command, US Central Command, US European Command, US Pacific Command) and 4 Functional Commands (US Special Operations Command, US Space Command, US Strategic Command, US Transportation Command) and 1 Func-Regional Command (US Joint Forces Command (regional jurisdiction of Atlantic area). Each Joint Command is headed by a Combatant Commander (or IFNAC - i.e., Individual Formerly Known as CINC) who is a 4 star flag officer recommended by the President and Confirmed by the Senate. The flag officer heading up the Command can be from any of the 4 military services.

With the new Unified Command Plan (UCP) taking effect October 1st 2002, some re-arrangement is taking place. There will be 5 Regional Command (US Northern Command, US Southern Command, US European Command, US Pacific Command, US Central Command) and 4 Functional Commands (US Strategic Command, US Special Operations Command, US Transportation Command, and US Joint Forces Command). October 1st 2002 is a big day for the military, two Joint Commands will be disestablished (US Space Command and US Strategic Command), two new commands will be established (US Northern Command and US Strategic Command) and there will be a Change of Command Ceremony at US Joint Forces Command. The local significance of this is that on October 1st 2002, USSTRATCOM’s role, mission, and contribution to national security vastly expands as the Command becomes exponentially more operational and active.

As further background, STRATCOM was the newest of the Joint Commands, evolving in 1992 from the USAF Strategic Air Command (SAC) and a USAF/USN Joint Strategic Target Planning Staff both located at Offutt AFB (note, SAC was the premier USAF command, the legacy lives on, the pride runs deep!). With the establishment of STRATCOM in 1992, for the first time in history, the planning, targeting and wartime employment of strategic forces (i.e., think nuclear triad) came under the control of a single commander while the day-to-day training, equipping, and maintenance responsibilities for its forces remained with the services (the Air Force and Navy). When generated, the assigned Task Forces report to COMSTRAT covering missile, bomber, submarine, recon, tanker, and communication elements. On October 1st 2002 that function is retained, but additionally the command will be involved in Global Strike missions (using conventional means), Information Operations, Space Operations (communications and reconnaissance), and Ballistic Missile defense. STRATCOM will truly be a full-time global operator for the President and Secretary of Defense.

Key to our attaining an Aerospace Physiologist billet at STRATCOM was then LT Gail Hathaway who was co-located here in 1992 at the time STRATCOM was established. She instrumented the establishment of the 0-4 billet in the STRATCOM Command Surgeon’s Office leaving behind a tour with the 55th Medical Group. Following her in assignments and prior to my arrival here in January 2001, were CDR Steve Feith (1993-1996), and CAPT Steve Matthews (1996-2000). From their collective outstanding efforts, the job in the Surgeon’s Office has evolved to an important position within the command and I believe within the Aerospace Physiology community.

As a Navy 0-5, I am the junior officer in this office suite (of course I make the coffee, I also drink most of it - come to think of it, I also made most of the coffee in the MM shop in P’cola!). The Command Surgeon shares the office suite with the Command Chaplain (we are the ‘heel and kneel’ shop) who is a USAF Colonel (currently two chaplains onboard during a 90 day turnover period, both Colonels), a reserve (IMA) USAF Chaplain also drills here periodically, he is also a Colonel. Of note, when we did a Change of Command ceremony last November, the only people ‘on stage’ were ADM Mies (outgoing CINC), ADM Ellis (incoming CINC), GEN Meyers (Chairman Joint Chiefs of Staff) and the Command Chaplain from this office

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(and he did get a dig in concerning the Army-Navy game during his blessing).

The Command Surgeon office structure consists of the Command Surgeon (USAF Colonel, MC, FS), a USAF BSC Officer (LtCol (0-5) billet, currently occupied by a new Col (credentialed and licensed Social Worker Ph.D.)), a Navy MSC Officer (Aerospace Physiologist - me!). We are also supported by a reserve Navy Doctor (CAPT, MC) and reserve USAF Doctor (Col, MC, FS) who both periodically drill with us. Additional office support is provided by an USAF Msgr (E-7) and an office secretary (GS-5). We are a small staff compared to other Joint Commands but the office environment is outstanding, a very professional but relaxed atmosphere. Currently 'the Navy guy' also serves as the Executive Assistant (Officer) to the Command Surgeon.



The current mission of the Office of the Command Surgeon (SG) is responsibility for planning and executing medical support and advising the Combatant Commander USSTRATCOM on the medical effects of nuclear, biological, chemical and directed energy threats

Different from several of the other Combatant Commands, the Command Surgeon is part of Special Staff (J0 - our code is J080) so my authority chain goes from me to the Command Surgeon and then depending on the issue, the route may be via the Chief of Staff, the Deputy Commander (0-9) or possibly directly to the Combatant Commander (currently ADM James Ellis). My first FITREP was signed by the Combatant Commander last August (ADM Mies (0-10)), this FITREP will be signed by the Deputy Commander (LtGen Goslin (0-9)). However, many tasker responses actually leave this office and go directly to either Joint Staff (J4- Medical Readiness Division) or the Assistant for Health Affairs with a 'cc' to the front office. As we become the new STRATCOM on October 1st, we will be in an 'Interim Operational' mode for one year to establish the most effective and efficient command structure prior to becoming a Fully Operational Command on October 1st 2003. During this interim period some 'structural' changes in the command wiring diagram will occur, the extent of effect on the SG office is unknown at this time.

to enhance survivability. The Command SG coordinates all medical matters with USSTRATCOM staff, component commands, supporting/supported unified Combatant Commands, National Command Authority, and federal agencies. Additionally, the SG advises the Combatant Commander on all issues affecting the health and readiness of assigned or attached forces. The SG also conducts wellness activities to enhance the effectiveness of all USSTRATCOM personnel. So what does this all mean, well for one thing you do not deal in the traditional Aerospace Physiology arena, that is, no flight equipment issues, no OPNAVINST 3710.7S issues, no CNET, no 'level offs', no NAVAIR, and no NASTP SOP. However, you are the Navy 'go to' guy/gal for any and all medical issues (so yes you will deal and advise concerning flight physicals, waivers, medical boards, who can fly, etc.), you are a planning, operations, and medical intelligence officer (POMI). You will become a policy expert and knowledgeable on CBR issues and chop DoD implementation plans and

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“This billet is truly amazing, you will have the opportunity to participate and be in updates and meetings that have the equivalent of 8 or 9 flag officers around the room or their Senior Executive Service (SES) equivalents.”

polices. You will need to get Top Secret, Sensitive Compartmental Information (TS-SCI) clearance involving a Single Scope Background Investigation to be able to do your job here. You will also need to complete the Joint Medical Planners Course (JMPC). Completing the Strategic Medical Readiness Contingency Course (SMRCC) along with US Joint Forces Command Task Force Surgeons Course would also be very beneficial in carrying out the following list of this office’s duties.

USSTRATCOM Surgeon’s Office responsibilities and functions:

- Senior Battlestaff Member (when generated, the SG (or his/her representative) is part of the senior Battlestaff manning the Command Center and the Mobile Consolidated Command Center, e.g., when the President visited, the doc was there, if it had been your turn ‘down in the hole’ you would have been there instead)
- Executive Medical support, Medical Liaison (support the flags with their medical needs, issues, and concerns).
- Medical plans and policy review (tasks originate within house, and from DoD, SECDEF, Office of Health Affairs, Joint Staff, etc.) (this is ‘POMI time’).
- Medical Operations and Logistics Support for Operations Plan (the words ‘Annex Q’ will develop meaning to you, in a nutshell it is the Health Services Support for contingency and operational military plans).
- Human Factors support (CBR research and advisor).
- Personnel Reliability Program (PRP) security clearances review (very important where strategic weapons are concerned).
- Health Services Support and Force Health Protection (includes Suicide Awareness Training, CPR, Wellness Programs, Automated External Defibrillator (AED) Training, fitness testing support, etc.,).
- Information Operations Human Factors/ Systems effects.

The billet provides the opportunity to visit all elements of the former strategic triad (nuclear subs (SSBNs), B-52s, B-2s, ICBM missile sites). As an Aerospace Physiologist you will bring operational experience and knowledge to the job plus a science background that will allow you to spool up and contribute very quickly. Flying is available locally on the USAF C-21 (8 passenger Learjet), US Navy E-6B (Boeing 707-

Airborne Command Post (ABNCP)) or E-4 (Boeing 747 - National Airborne Operations Center (NAOC)). As the only MSC Officer, FITREPs are ‘1of 1’, and with the outstanding caliber of officers assigned to STRATCOM your boss’s cumulative average will reflectively be higher. The Omaha area is wonderful place for family and friends (it is not a desolate prairie but actually much of the immediate area is wooded and hilly). In fact you will find that many of your USAF brethren work hard to ‘homestead’ here (of course the alternative is Minot North Dakota).

This billet is truly amazing, you will have the opportunity to participate and be in updates and meetings that have the equivalent of 8 or 9 flag officers around the room or their Senior Executive Service (SES) equivalents. Bottomline, what does the Aerospace Physiologist do at STRATCOM? Learn, learn and learn some more as you contribute to National policies and plans impacting the health and safety of all citizens of the United States and its allies.✂

CDR Norton is the Executive Assistant, Command Surgeon’s Office, U.S. Strategic Command.

“Carrier Air Wing Fam”

by
CDR Dave Service, MSC, USN

Tactical aircraft squadrons are deployed on board aircraft carriers as part of the carrier air wing (CVW). While the term “CAG” is still traditionally used to refer to both the air wing and the air wing commander himself, it is an out dated term with no formal use.

Air wing composition is not rigid, nor is wing affiliation with a particular aircraft carrier. In particular, the gradual transition of F-14 squadrons to flying F/A-18E&F Super Hornets has led to some significant shifts in squadron location and air wing association.

The following two charts are designed to provide some situational awareness of CVW composition as of Fall 2002. The charts are organized by region, with one depicting Pacific Fleet air wings, and the other depicting those assigned to the Atlantic Fleet. Not included on the charts are the VRC squadrons, VRC-30 in NAS North Island CA and VRC-40 in NAS Norfolk VA, that assign detachments to each air wing to provide crucial carrier onboard delivery support.

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“Life After the Navy”

by

CAPT Jerry Patee, MSC, USN (ret)

Retirees are frequently asked two questions:

“Do you miss the Navy?”

We don't miss the Navy, because we never left it. The friends you make in the military become your Navy family, and you take them with you when you are piped ashore.

and

“Is there Life After the Navy?”

“You bet there is!!!” We talked for years about our retirement plans...and now we have the time to do it.

In the article I was asked to address two topics, (1) provide an update on what I have been doing since my retirement in August 1999, and (2) to provide a little advice on how the Navy prepared me for “Life After the Navy.” I will attempt to do that.

A brief history of my career, for those who don't know me, would be summarized very easily:

“I never had a bad duty station.”

I enjoyed every tour, I always regretted leaving, but I also looked forward to my next set of orders. As most of you know, being part of the Aviation Medical Community as an Aerospace Physiologist is one of the greatest jobs in the world. My career took me to the East, West, and Gulf Coast, serving both the Navy and Marine Corps, working in APTU'S at NAS Miramar twice, NAS Barbers Point, and MCAS El Toro, assigned operationally as the 3rd MAW, 2nd MAW, and TRAWING 6 AMSO's, at BUMED as the Aerospace Physiology Specialty Leader/OPNAV Program Manager for Physiology and Water Survival Training, in executive medicine positions as the executive officer and commanding officer at Naval Aerospace Medical Research Laboratory, and finishing back at BUMED as Deputy Director, Medical Service Corps.

“One piece of professional advice.”

Take advantage of ALL the different types of duty stations the program has to offer. If you don't know what your choices are or what to do next, ask your

Specialty Leader, Detailer, or Mentor. The AvPhys Program was a pioneer in the mentoring/preceptorship program. The one constant through all the years I was on active duty and still true today, is solid performance under a variety of duty stations. The AvPhys Program is very fortunate to have such a variety of assignments and duty stations. Take full advantage of them. You will never regret it. Talk to Gail Hathaway for your next great duty station!!

“One piece of personal advice.”

Most of you already know this...but, make lots of friends, take lots of pictures, and go to all the Navy and Marine Corps Balls you can...it is fun to dress up. It is something people don't do anymore...which is a too bad. Develop friends outside the community to find out what they do to support the Navy/Marine Corps Team. The memories and the friendships are made to last a lifetime.

“What have I been doing since my transition a.k.a. retirement?”

First, we took time off!!! To be exact, we took off two months, to travel, to visit family, to relax, and to move into a new house. It really helped us put a fresh perspective in taking that next step in life. How much you take off is up to you, but put some distance between your military career and your post military life. There is both internal and external pressure to get right back to work, if you can afford it, TAKE SOME TIME OFF. Remember you earned it and deserve it.

“What are you going to do when you get out of the Navy?”

This is the most frequent question people ask, just before you retire. In that regard I always said “I want to teach.” I have a degree teach Biology and Chemistry, so my next decision was, where to teach. When asking advice regarding teaching as a second career, I was given some good advice, which I took. “Substitute teach first, to see if you like it.” I was accepted for a position in Falls Church, Virginia at George Mason High School. It was a little scary at first, but I liked it. How did I manage? The Navy prepared me well. Remember, when facing a class full of high school students it is no different than facing a bunch of aviators...don't show any fear and remember their names!!!

Another facet of teaching helps just as much as being in front of the class – get involved outside the classroom. See the kids doing something they like doing. So Jeannie and I became actively involved with all the school activities to include chaperoning school

“I enjoyed every tour, I always regretted leaving, but I also looked forward to my next set of orders. As most of you know, being part of the Aviation Medical Community as an Aerospace Physiologist is one of the greatest jobs in the world.”

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“Lesson learned, after 31 years – I really did not want an entry-level, full time job. That is fine if you are only in the Navy for one tour, or retiring after 20 years, but we had other priorities. The nice thing is, our Navy retirement allowed us to make that choice.”

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dances, attending school plays, going on field trips and watching sporting events. I found out ‘Kids are still kids, they like structure in their lives, and they really just need a place to be themselves.’ With 9 weeks remaining in my first year, I was asked to take over the 9th and 10th grade Family Life Education (FLE) class, because the teacher quit. For those who forgot, that was Sex Education when I went to school. What had the Navy taught me to prepare me for this assignment? Actually, it was what the Navy taught my wife, who is an OB/GYN Nurse Practitioner, since my first class was on STD’s and Birth Control. There is a lot more I could say about teaching, especially FLE, but I won’t. However, I was hired the following year to teach FLE and PE full time.

It was not long before I realized, teaching full time was not for me. I completed the school year, but what I really wanted was more of a part time job, to take advantage of other interest we had developed while living in D.C. I did return the third year at George Mason as a full time permanent sub, which was perfect for me, and something I really love doing.

Lesson learned, after 31 years – I really did not want an entry-level, full time job. That is fine if you are only in the Navy for one tour, or retiring after 20 years, but we had other priorities. The nice thing is, our Navy retirement allowed us to make that choice. Since retiring, we have both done volunteer work at the National Geographic Society and White House Correspondence Office. With the summers off we had time to actively participate as team members on three Church Mission trips to Honduras, traveled to the Far East to visit friends, celebrated our 25th anniversary in Hawaii, visited family back in the Midwest, and I finally went to Philmont Scout Ranch with my brother in law and nephew... a life long dream, and on my “Life’s list of things to do.” These are all things we could not do while working full time.

Is there a lesson here?? There was for us, but the real question is: “What are you going to do with your life when you retire?” No one can answer that for you. But whatever you decide, if you plan it right, you will still have the time, energy, and health, to enjoy the many benefits of ‘Life After the Navy.’ Good Luck with your choice!!!

Recommendations

1. If you only stay in for one tour and go back to the civilian sector, stay in the reserves; you will never be around a finer group of people than those who choose to serve their country. You also have the rest of your life

to devote to the career of choice and be proud you served.

2. If you want to get out and start a second career, stay for 20 years. You will be young enough to make a good transition for a solid second career, and enjoy all the wonderful benefits of a Navy retirement.

3. However, if you want to get out and do what you want to do, stay in for 30 years. I love being able to do the things we are doing, now that we have the time.

Conclusions

I appreciate LT Artino’s invitation to say a few words about “Life after the Navy” from a recent retirees perspective. As many of you know, Jeannie and I relocated to Pensacola in April of this year. We loved all the excitement of living in D.C., but it was time to move on. We love being back in Pensacola in our beautiful house and yard. We enjoy being a part of the Pensacola Navy community, and reacquainting ourselves with our former neighbors, our Navy friends stationed in the area. What’s next for us? Stay tuned, that will have to come out in a later article.

If you have any questions or comments, please call or email. If any of you are in the Pensacola area, please give us a call. The door is always open.

5219 Pale Moon Drive
Pensacola, Florida 32507
kjpata@aol.com

CAPT Patee retired from the Navy after 31 years of dedicated service. He currently resides in Pensacola, FL with this wife, Jeannie.

Congratulations!

SUSNAP sends its congratulations to LT Greg Ostrander for his selection to Full Time Outservice Training (FTOST). LT Ostrander will begin his second Masters degree at the Uniformed Services University of the Health Sciences (USUHS) in the Fall of 2003. This one-year program in Applied Human Biology leads to a Master of Science in Applied Human Biology, with an emphasis in Aviation Physiology. For more information about future FTOST opportunities, please visit the MSC homepage at <https://bumed.med.navy.mil/med00msc/>.



Weight Loss Calculation System

by
LT Cory Littell, MSC, USNR

There are numerous articles published on the adverse effects of dehydration and most relate those effects to the percent body weight lost as a result of hypohydration. The hypohydration levels studied are most often induced by extensive bouts of exercise or by placing subjects in extreme heat conditions. These experiments produce similar findings and cite that losses of as little as 2.5% body weight can negatively affect some aspects of performance. The results are useful but not always easy to calculate. Daily fluctuations in weight make determining the exact amount of weight lost during exercise difficult, and tracking these losses can be even more so. Some workouts may result in a 2-3% loss in body weight while others may produce decrements approaching 6-7%. Seasonal working conditions and workout programs also produce varying amounts of daily weight loss.

For supervisors of student or remedial PT programs, monitoring individuals who may be prone to exertional heat illness is often an arduous task. The goal for these supervisors is to have the individual monitor their own weight gains and losses. The Excel spreadsheet that accompanies this article is a color-coded weight chart that allows for easy monitoring and tracking of daily weight losses as a result of work or exercise. The system is easy to use and allows supervisors to identify those individuals who may not be rehydrating properly during strenuous work conditions and/or exercise. The goal is to keep individuals in the acceptable 2-4% range for body weight lost through sweat. The color code is:

- Green: 98 percent body weight or greater;
- Yellow: 97 to 97.9 percent body weight;
- Orange: 96 to 96.9 percent body weight;
- Red: 95.9 percent body weight or less.

There are three easy steps to complete the weight monitoring system.

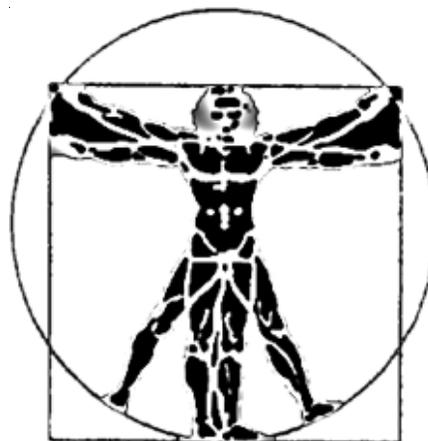
1. Attach green, yellow, orange and red highlighters to the wall close to the scale used by the participants along with a pen for

recording both the pre and post event weights. Instruct the individuals to record their weight both before and after work or exercise.

2. After recording the post event weight, have the participant find their pre event weight in the white column on the chart and then read across to find the post event weight, making note of what color column the post event weight is located.
3. The individual returns to the spreadsheet where the pre and post event weights are recorded and highlights their post event weight with the appropriate color obtained from the weight chart

EXAMPLE

LCPL Smith weighs in before morning PT, recording his weight of 185 pounds on the spreadsheet. Following PT, LCPL Smith weighs out at 180 pounds. He looks at the color-coded chart and finds his pre event weight of 185 pounds, then scans the row to see what color category his exit weight of 180 pounds falls in. He then notes that it's in the yellow category. LCPL Smith records his weigh-out weight of 180 pounds on the spreadsheet and then highlights it with the yellow highlighter.



Following the session, the supervisor would review the weigh-out chart and take note of all the orange and red highlighted weights and seek those individuals out and counsel them on the importance of fluid replacement. It also allows supervisors to monitor which workout sessions and which conditions produce the greatest amounts of weight lost due to sweating. If the program and environment result in 75-80% orange and red highlights, the supervisor could then modify the program in the hopes of producing more green and yellow numbers vice the oranges and reds. There are many uses for the weight monitoring system. How you choose to employ it is up to you.

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THE SOCIETY OF U.S. NAVAL AEROSPACE PHYSIOLOGISTS

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Carrier Air Wing	 CVW-2	 CVW-5	 CVW-9	 CVW-11	 CVW-14
Aircraft Carrier	 CV-64 USS Constellation	 CV-63 USS Kitty Hawk	 CVN-70 USS Carl Vinson	 CVN-68 USS Nimitz	 CVN-72 USS Abraham Lincoln
F-14 Tomcat	 VF-2 (D's)	 VF-154 (A's)	 VFA-102 (F/A-18F)	 VFA-14 (F/A-18E)	 VF-31 (D's)
F/A-18 Hornet	 VFA-137	 VFA-27	 VFA-146	 VFA-41 (F's)	 VFA-25
F/A-18 Hornet	 VFA-151	 VFA-192	 VFA-147	 VFA-94	 VFA-113
F/A-18 Hornet	 VMFA-323	 VFA-195	 VMFA-314	 VFA-97	 VFA-115 (E's)
EA-6B Prowler	 VAQ-131	 VAQ-136	 VAQ-138	 VAQ-135	 VAQ-139
E-2C Hawkeye	 VAW-116	 VAW-115	 VAW-112	 VAW-117	 VAW-113
S-3B Viking	 VS-38	 VS-21	 VS-33	 VS-29	 VS-35
H-60 Seahawk	 HS-2	 HS-14	 HS-8	 HS-6	 HS-4

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Carrier Air Wing	 CVW-1	 CVW-3	 CVW-7	 CVW-8	 CVW-17
Aircraft Carrier	 CVN-65 USS Enterprise	 CVN-75 USS Harry S. Truman	 CV-67 USS John F. Kennedy	 CVN-71 USS Theodore Roosevelt	 CVN-73 USS George Washington
F-14 Tomcat	 VF-211 (A's)	 VF-32 (B's)	 VF-11 (B's)	 VF-213 (D's)	 VF-103 (B's)
F/A-18 Hornet	 VFA-82	 VFA-37	 VF-143 (F-14B's)	 VFA-22	 VFA-34
F/A-18 Hornet	 VFA-86	 VFA-105	 VFA-131	 VFA-15	 VFA-81
F/A-18 Hornet	 VMFA-251	 VMFA-115	 VFA-136	 VFA-87 (C's)	 VFA-83
EA-6B Prowler	 VAQ-137	 VAQ-130	 VAQ-140	 VAQ-141	 VAQ-132
E-2C Hawkeye	 VAW-123	 VAW-126	 VAW-121	 VAW-124	 VAW-125
S-3B Viking	 VS-32	 VS-22	 VS-31	 VS-24	 VS-30
H-60 Seahawk	 HS-11	 HS-7	 HS-5	 HS-3	 HS-15

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Pre and Post Event Weight Sheet

Pre Wt	>	Post Event Wt		<		Pre Wt	>	Post Event Wt		<
100	98	98-97	97-96	96		148	145	145-144	143-142	142
101	99	99-98	98-97	97		149	146	146-145	144-143	143
102	100	100-99	99-98	98		150	147	147-146	145-144	144
103	101	101-100	100-99	99		151	148	148-146	146-145	145
104	102	102-101	101-100	100		152	149	149-147	147-146	146
105	103	103-102	102-101	101		153	150	150-148	148-147	147
106	104	104-103	103-102	102		154	151	151-149	149-148	148
107	105	105-104	104-103	103		155	152	152-150	150-149	149
108	106	106-105	105-104	104		156	153	153-151	151-150	150
109	107	107-106	106-105	105		157	154	154-152	152-151	151
110	108	108-107	107-106	105		158	155	155-153	153-152	152
111	109	109-108	108-107	106		159	156	156-154	154-153	152
112	110	110-109	109-108	107		160	157	157-155	155-154	153
113	111	111-110	109-108	108		161	158	158-156	156-155	154
114	112	112-111	110-109	109		162	159	159-157	157-156	155
115	113	113-112	111-110	110		163	160	160-158	158-156	156
116	114	114-113	112-111	111		164	161	161-159	159-157	157
117	115	115-113	113-112	112		165	162	162-160	160-158	158
118	116	116-114	114-113	113		166	163	163-161	161-159	159
119	117	117-115	115-114	114		167	164	163-162	162-160	160
120	118	117-116	116-115	115		168	165	164-163	163-161	161
121	119	118-117	117-116	116		169	166	165-164	164-162	162
122	120	119-118	118-117	117		170	167	166-165	165-163	163
123	121	120-119	119-118	118		171	168	167-166	166-164	164
124	122	121-120	120-119	119		172	169	168-167	167-165	165
125	123	122-121	121-120	120		173	170	169-168	168-166	166
126	123	123-122	122-121	121		174	171	170-169	169-167	167
127	124	124-123	123-122	122		175	172	171-170	170-168	168
128	125	125-124	124-123	123		176	172	172-171	171-169	169
129	126	126-135	125-124	124		177	173	173-172	172-171	170
130	127	127-126	126-125	125		178	174	174-173	172-171	171
131	128	128-127	127-126	126		179	175	175-174	173-172	172
132	129	129-128	128-127	127		180	176	176-175	174-173	173
133	130	130-129	129-128	128		181	177	177-176	175-174	174
134	131	131-130	130-129	129		182	178	178-177	176-175	175
135	132	132-131	131-130	129		183	179	179-178	177-176	175
136	133	133-132	132-131	130		184	180	180-178	178-177	176
137	134	134-133	133-132	131		185	181	181-179	179-178	177
138	135	135-134	134-132	132		186	182	182-180	180-179	178
139	136	136-135	135-133	133		187	183	183-181	181-180	179
140	137	137-136	136-134	134		188	184	184-182	182-180	180
141	138	138-137	137-135	135		189	185	185-183	183-181	181
142	139	139-138	138-136	136		190	186	186-184	184-182	182
143	140	140-139	139-137	137		191	187	187-185	185-183	183
144	141	141-140	140-138	138		192	188	188-186	186-184	184
145	142	142-141	141-139	139		193	189	189-187	187-185	185
146	143	143-142	141-140	140		194	190	190-188	188-186	186
147	144	144-143	142-141	141		195	191	191-189	189-187	187

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Pre and Post Event Weight Sheet

Pre Wt	>	Post Event Wt	<	Pre Wt	>	Post Event Wt	<		
196	192	192-190	190-188	188	248	243	243-241	240-238	238
197	193	193-191	191-189	189	249	244	244-242	241-239	239
198	194	194-192	192-190	190	250	245	245-243	242-240	240
199	195	195-193	193-191	191	251	246	246-243	243-241	241
200	196	196-194	194-192	192	252	247	247-244	244-242	242
201	197	197-195	195-193	193	253	248	248-245	245-243	243
202	198	198-196	196-194	194	254	249	249-246	246-244	244
203	199	199-197	197-195	195	255	250	250-247	247-245	245
204	200	200-198	198-196	196	256	251	251-248	248-246	246
205	201	201-199	199-197	197	257	252	252-249	249-247	246
206	202	202-200	200-198	198	258	253	253-250	250-248	247
207	203	203-201	201-199	199	259	254	254-251	251-249	248
208	204	204-202	202-200	199	260	255	255-252	252-250	249
209	205	205-203	203-201	200	261	256	256-253	253-251	250
210	206	206-204	203-202	201	262	257	256-254	254-252	251
211	207	207-205	204-203	202	263	258	257-255	255-252	252
212	208	208-206	205-204	203	264	259	258-256	256-253	253
213	209	209-207	206-204	204	265	260	259-257	257-254	254
214	210	210-208	207-205	205	266	261	260-258	258-255	255
215	211	210-209	208-206	206	267	262	261-259	259-256	256
216	212	211-210	209-207	207	268	263	262-260	260-257	257
217	213	212-210	210-208	208	269	264	263-261	261-258	258
218	214	213-211	211-209	209	270	265	264-262	262-259	259
219	215	214-212	212-210	210	271	266	265-263	263-260	260
220	216	215-213	213-211	211	272	267	266-264	264-261	261
221	217	216-214	214-212	212	273	268	267-265	265-262	262
222	218	217-215	215-213	213	274	269	268-266	266-263	263
223	219	218-216	216-214	214	275	270	269-267	266-264	264
224	220	219-217	217-215	215	276	270	270-268	267-265	265
225	221	220-218	218-216	216	277	271	271-269	268-266	266
226	221	221-219	219-217	217	278	272	272-270	269-267	267
227	222	222-220	220-218	218	279	273	273-271	270-268	268
228	223	223-221	221-219	219	280	274	274-272	271-269	269
229	224	224-222	222-220	220	281	275	275-273	272-270	269
230	225	225-223	223-221	221	282	276	276-274	273-271	270
231	226	226-224	224-222	222	283	277	277-275	274-272	271
232	227	227-225	225-223	222	284	278	278-275	275-273	272
233	228	228-226	226-224	223	285	279	279-276	276-274	273
234	229	229-227	227-225	224	286	280	280-277	277-275	274
235	230	230-228	228-226	225	287	281	281-278	278-276	275
236	231	231-229	229-227	226	288	282	282-279	279-276	276
237	232	232-230	230-228	227	289	283	283-280	280-277	277
238	233	233-231	231-228	228	290	284	284-281	281-278	278
239	234	234-232	232-229	229	291	285	285-282	282-279	279
240	235	235-233	233-230	230	292	286	286-283	283-280	280
241	236	236-234	234-231	231	293	287	287-284	284-281	281
242	237	237-235	235-232	232	294	288	288-285	285-282	282
243	238	238-236	235-233	233	295	289	289-286	286-283	283
244	239	239-237	236-234	234	296	290	290-287	287-284	284
245	240	240-238	237-235	235	297	291	291-288	288-285	285
246	241	241-239	238-236	236	298	292	292-289	289-286	286
247	242	242-240	239-237	237	299	293	293-290	290-287	287

FY02 Aviation Class Alpha Flight Mishaps
Updated 11 Sep 02

by
CDR Dave Service, MSC, USN



23 OCT 01
F/A-18C VFA-105
INFLIGHT FIRE DURING
DAY LOW LEVEL
NELLIS AFB, NV
PILOT EJECTED OK



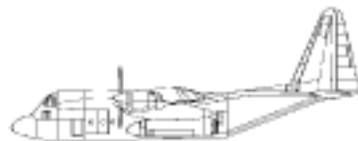
15 NOV 01
EA-6B VAQ-129
CRASHED INTO MOUNTAINS
ON DAY TRAINING FLIGHT
OLYMPIC PENINSULA, WA
ALL 3 CREW EJECTED OK



21 NOV 01
EA-6B VMAQ-1
CRASHED INTO WATER ON
DAY TRAINING MISSION
CHERRY POINT, NC
ALL 4 CREW EJECTED OK



06 DEC 01
UH-1N HMM-365
CRASHED DURING BROWNOUT
TAKEOFF ON NVD'S
AFGHANISTAN
ALL 4 CREW OK



09 JAN 02
KC-130R VMGR-352
CRASHED DURING
NIGHT APPROACH
PAKISTAN
ALL 7 CREW FATAL



16 JAN 02
F/A-18A VFA-203
DEPARTED RUNWAY
ON DAY LANDING
SAVANNAH, GA
PILOT EJECTED OK



20 JAN 02
CH-53E HMH-361
LANDED HARD IN MOUNTAINS
ON DAY MISSION
AFGHANISTAN
2 FATAL, 5 INJURED



07 FEB 02
CH-46D HC-6
CRASHED INTO WATER
DURING DAY VERTREP
AOE-3 / VA CAPES
ALL 4 CREW OK



11 FEB 02
UH-1N HMM-165
STRUCK GROUND
DURING DAY MISSION
KENYA
CREW INJURED



11 FEB 02
KC-130F VMGR-252
CRASH LANDED
DURING DEPARTURE
29 PALMS, CA
5 CREW OK, 1 INJURED



14 FEB 02
UH-1N HMM-166(REIN)
CRASHED DURING
NVG LOW LEVEL
CHOCOLATE MTNS, CA
2 FATAL, 2 INJURED



17 FEB 02
F/A-18D VMFA(AW)-533
DEPARTED RUNWAY
FOLLOWING DAY LANDING
29 PALMS, CA
WSO FATAL, PILOT INJURED



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02 MAR 02
F-14B VF-143

AIRCREW EJECTED ON
DAY CARRIER LAUNCH
CV-67 / MEDITERRANEAN
PILOT FATAL, RIO OK



07 MAR 02
AV-8B VMA-214

AIRCRAFT CRASHED INTO
WATER DURING DAY CQ
LHA-1 / SOCAL
PILOT EJECTED OK



08 MAR 02
F-14A VF-211

HOOK SEPARATED
ON NIGHT TRAP
CVN-74 / ARABIAN SEA
PILOT & RIO EJECTED



09 MAR 02
HH-46D MCAS BEAUFORT

CRASHED INTO WATER
ON DAY SAR MISSION
ATLANTIC / GEORGIA
1 FATAL, 1 INJURED, 3 OK



12 MAR 02
SH-60B HSL-46
CRASHED INTO WATER
DURING DAY FCF
DD-997 / MEDITERRANEAN
ALL 3 LOST AT SEA



15 MAR 02
F/A-18A NSAWC
CRASHED DURING
1 V 1 ACM
FALLON, NV
PILOT EJECTED OK



28 MAR 02
HH-1N VX-31

CRASH LANDED ON DAY
MISSION OVER MOUNTAINS
SIERRA NEVADAS, CA
2 FATAL, 4 INJURED



02 APR 02
MH-53E HM-14
LANDED HARD FOLLOWING
INFLIGHT FIRE
BAHRAIN
6 CREW & 12 PAX OK



20 APR 02
QF-4S VX-30
CRASHED DURING
AIRSHOW
POINT MUGU, CA
PILOT & RIO FATAL



04 MAY 02
SH-60B HSL-49

CRASHED INTO WATER
DURING NIGHT APPROACH
DDG-80 / SOCAL
ALL 3 CREW OK



08 MAY 02
T-39N's VT-86
DISAPPEARED FROM RADAR
ON DAY TRAINING MISSION
GULF OF MEXICO
ALL 7 LOST AT SEA



06 JUN 02
F/A-18A NSAWC
CRASHED DURING
1 V 1 ACM
FALLON, NV
PILOT EJECTED OK

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13 JUN 02
UH-1N NAS LEMOORE
SAR HOIST FAILED DURING
DAY MOUNTAIN RESCUE
YOSEMITE, CA
1 CIVILIAN FATAL, HM INJURED



22 JUN 02
AV-8B VMA-231
CRASHED INTO WATER
ON NVG CARRIER APPROACH
LHA-4 / VA CAPES
PILOT EJECTED OK



27 JUN 02
MH-53E HC-4
MADE HARD LANDING
DURING DAY FLIGHT
SIGONELLA, ITALY
ALL 5 CREW OK



27 JUN 02
AH-1W HMM-264(REIN)
WENT DOWN IN TREES
ON DAY FLIGHT
CHERRY POINT, NC
PILOT & COPILOT INJURED



05 JUL 02
UH-3H HC-2
LOST TAILROTOR AUTHORITY
AND WENT OVERBOARD
DD-985 / PERSIAN GULF
CREW OK



08 JUL 02
F-14B VF-101
CRASHED DURING
DAY TRAINING MISSION
VA BEACH, VA
PILOT & RIO EJECTED



22 JUL 02
AV-8B VMA-231
CRASHED INTO WATER
ON DAY TRAINING FLIGHT
CHERRY POINT, NC
PILOT EJECTED OK



26 JUL 02
F/A-18A VMFA-312
CRASHED DURING
DAY INTERCEPT
SHIRLEY, AR
PILOT EJECTED, INJURED



06 AUG 02
T-34C VMFAT-101
CRASHED IN MOUNTAINS
ON DAY FLIGHT
BIG BEAR, CA
PILOT INJURED



16 AUG 02
TH-57C CTW-5
CRASHED DURING DAY
EMERGENCY LANDING
MILTON, FL
BOTH IP's INJURED



06 SEP 02
SH-60B HSL-43
STRUCK MERCHANT SHIP
AND CRASHED INTO WATER
CG-53 / ARABIAN GULF
1 PAX FATAL, 3 CREW + 1 PAX INJURED



10 SEP 02
S-3B VS-22
FAILED TO RETURN
FROM NIGHT MISSION
CVN-75 / CARRIBEAN
ALL 3 LOST AT SEA