The Aids to Navigation Bulletin

Serving those who perform the Coast Guard's oldest mission

SPECIAL WARTIME EDITION

National Aids To Navigation School

Volume 31, Number 4

National Aids to Navigation School
U.S. Coast Guard Training Center, Yorktown, Virginia

Aids to Navigation systems of the United States and its territories are established, operated and maintained by the Coast Guard to assist mariners in locating their position and to warn of nearby dangers and obstructions. This is done for the benefit of commercial vessels, recreational boaters, and to support the operations of the Armed Forces. Title 14 of the U.S. Code makes this a responsibility of the Coast Guard.

The Aids to Navigation Bulletin is published to support the individuals and units involved in providing a reliable aids to navigation system for the mariner. The Bulletin seeks to meet the following objectives:

- To provide a means of circulating jobskill information among aids to navigation technicians.
- To increase the professionalism and knowledge of all aids to navigation personnel.
- To act as a channel for information flow amidst the aids to navigation servicing units, District Office staffs and Headquarters staffs and units.
- To publish articles and photographs about people, units or events which may be of general interest.

To satisfy these objectives, it is necessary for all who read the Bulletin to take an active part in determining its contents. If you have found a "better way" or performed a unique evolution - share it with other people in the AtoN field. Articles or ideas for articles may be submitted directly to the National Aids to Navigation School at the following address:

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Yorktown, VA 23690-5000

Submissions are welcome in any form; handwritten, typed, on a 3 ½" disk, or electronically via E-mail (address is "mmcnamara@tcyorktown.uscg.mil"). Preferred electronic submissions. All types of photographs acceptable. Please keep photographs in original electronic form, where applicable, and do not imbed or copy them into word documents. Thank you.

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CGC WALNUT in Iraqi Freedom

THE HARD NUCLEUS AROUND WHICH THE NAVY FORMS IN TIMES OF WAR

-LT Rick Wester and LTJG Brian Smicklas, USCGC WALNUT

While the deploying patrol boats and BOUTWELL were conducting send-off farewell events with the media prior to their well-publicized departures, WALNUT was quietly making monumental preparations to carry out its secret, short notice orders to Iraq.

These orders came on 14 November, midway through our annual 3-week fisheries patrol, necessitating our immediate return to Honolulu to meet the end of year target deployment date. "The spouses will be SOOOO happy!" was the Ombudsman's enthusiastic response to our cell phone call to only let her know that we were coming home early. The XO bit his tongue… if only she knew… if only we all new what lay ahead for Coalition Warship 205. The WAR-NUT. The "slow-moving Coast Guard asset."

Six weeks to prepare, over the holiday season, was unfathomable. Granted, buoy tenders had deployed with DoD in the past: SAGEBRUSH served as a mother ship during the Coast Guard's deployment in support of the Grenada operation in 1983 and in 1994, Papaw led an armada into Port-Au-Prince Harbor, becoming the first U.S. naval platform to enter the harbor. However, this was the first Out of Hemisphere war zone deployment of a buoy tender since the Vietnam War, and a lot has changed since then, especially with CBR and communications. If the 225 WLB class had been designed post-9/11, there would probably be some changes made to facilitate its stepped-up Homeland Defense mission. And if the 225 WLB had been designed for war, there would definitely be changes made – changes that we scrambled to implement prior to deployment.

Perhaps the biggest concern was communications. We knew this would be key to successfully operating alongside other Coalition units, and if nothing else, identifying our unfamiliar vessel as a member of the Coalition. The U.S. Air Force attacks on Point Welcome during the Vietnam War further underscores the importance of this. The first step was assembling three TAD radio watch standers to continually man radio in theater. Their early arrival on board also allowed them to assist with the varied installs on the bridge and in radio. Working with C2CEN, SPAWAR, MLCPAC, TISCOM, CG Yard, ATG Pearl Harbor, NESU/ESU/ISC Honolulu and a host of commercial vendors, they installed: underway internet connectivity, SIPRNET (Secure Internet Protocol Routing Network), SIPR chat (how virtually everything gets done in DOD), Satellite UHF Voice (LST-5), and Fleet Broadcast to conduct over the air transfers (OTAT) of needed crytpo.

Another concern was WALNUT’s defense. For this, we sent the entire crew to range for 9mm, M16, and shotgun, and after passing JPC, everyone was qualified to carry at least one type of weapon. This was essential not only for GQ III steaming, which we did the entire time we were in theater, but also for setting our Anti-Piracy Bill in the Philippine Sea and for high-threat inport watches in Kuwait, Iraq, Bahrain and Singapore. In addition, all watch standers also attended Armed Sentry Training at ATG MIDPAC. Also, we gave the entire crew Secret access as we needed to keep watchstanders appraised of the latest intel on various threats.

Working with the PACAREA Armory Detachment in Honolulu, we onloaded two extra .50 cal machine guns as well as extra small arms. For the first leg of our trip, from Honolulu to Guam, we embarked an ATG small arms trainer who conducted extensive weapons training, tactics and live fires, furthering our small arms knowledge and familiarity. We also conducted GUNEXes throughout the 41-day transit with .50s mounted on all four gun mounts. With our crew numbering 50 and no other places to easily add racks, we didn’t have a TAD gunners mate – our Deck Department effectively carried out all of the weapons duties instead.

The most likely threat that we figured WALNUT would encounter was Chemical or Biological weapons of mass destruction. To prepare for this danger, we obtained a TAD DC1, and sent him to school for CBR training. We also worked with MLC to receive all of the required CBR protective gear, air testing equipment, and antidotes. The 225’ WLB does not have a countermeasure wash down system installed, so we came up with a system of nozzle holders placed throughout the exterior of the ship. The 225’ is also not designed for Circle William, so the engineers came up with a system of duct-tape and plastic to isolate the interior of the ship. CBR training with the whole crew as well as the decontamination teams throughout the transit effectively prepared us in the event of CBR weapons use.

In addition to the extensive training and parts onloads prior to deployment, we also started planning ahead, brainstorming possible issues. What about Navigation? Do electronic charts exist for this area? As we all know, the WLB 225’s utilize OSL electronic charts as primary means of navigation. The Navy has not caught up to us in this regard, so even when using ECPINS NG, the up to date DNC charts are not available. Instead, with C2CEN's help, we learned that the British have an excellent worldwide hydrography office. The resulting charts, both paper and electronic, are accurate and work very will with ECPINS M. Nonetheless, because we were going to be 9600 nm away from support, we needed to have all the necessary paper charts — all 3,000 of them.

Another issue with our 10,000 mile transit was where we'd stop along the way. Given the 225' carries 77,800 gallons and going below 30,000 would require the use of the lower suction units, that left 47,800 gallons to burn at approx 12.5 kts. WALNUT averages 3400 gallons per day at 12.5 kts (300nm per day); thus, we needed to refuel about every 12 days. That left WALNUT approximately 4000 miles between pit stops and Guam and Singapore matched with the mileage limitations, so that's what was arranged. After our hasty 18 January departure from Honolulu, our stop in Guam allowed us to get in some last minute range training as well as the onload of additional SORS equipment.

Another limitation not usually of a concern to a 225 is the radar's limit of 20 contacts being tracked at a given time. During our nighttime approach to the Straits of Singapore, the busiest waterway in the world with dozens of large contacts on various courses and no traffic separation zone, our conning officers had to decide which contacts weren't going to be tracked. The Rules of the Road apparently didn't apply, as evidenced by an overtaking vessel passing at 400 yards, sounding five short along the way, and in a meeting situation, the other vessel came to port after we came well to starboard, again, sounding five short. On top of it all, we also had to man our Anti-Piracy Bill in the Straits of Malacca due to the ongoing Piracy threat against small coastal freighters, which WALNUT could easily be mistaken for.

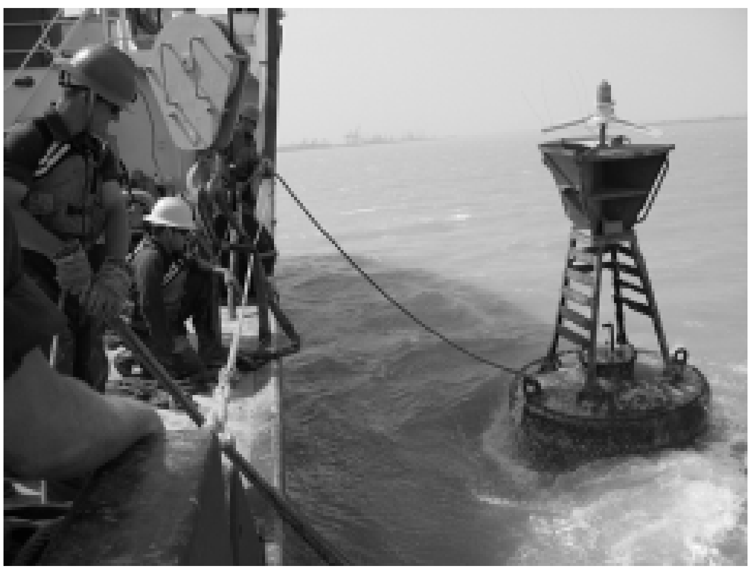
Our final destination, as we learned enroute, was Kuwait Naval Base, which we reached on February 27, 2003. WALNUT arrived at Kuwait Naval Base wearing gas masks at the hip and long sleeved shirts. The temperature was in the mid 60's dropping to the mid 40's at night. Some PSU Coast Guardsmen came by to say hello and to have a meal that didn't come out of a vacuum-packed bag. They had been living in tents since Christmas, and were eager for some non-Navy interaction. Our novelty wore off on future pit stops in Kuwait, as we tried to fuel as quickly as possible to avoid daily incoming missile alerts.

After Kuwait, WALNUT set a course along a specified carrier avoidance route to Naval Support Activity Bahrain, where we received an in brief on the current situation in the Northern Arabian Gulf. The Maritime Interception Operations (MIO) brief was given by CDR French, USCG, who eagerly inquired if WALNUT's LE team was up to CG standards because he intended to use WALNUT to assist in United Nations Security Council Resolutions (UN 986) boardings. The commercial ships were currently waiting up to three days before being allowed to, or from, an Iraqi port, and the vessels needed to be cleared before the onset of war. WALNUT's LE Team learned the regulations from CDR French and the ropes from a two-day internship with USCGC BOUTWELL's 30 member LE team, and got to work clearing vessels. WALNUT became proficient at boarding bulk cargo, tanker, and container vessels, searching for contraband going into Iraq or unapproved oil being smuggled out.

Surprising many, WALNUT completed ten UN 986 boardings on vessels no smaller than 100M in five days, greatly reducing the number of vessels in the Gulf prior to the commencement of hostilities. Eventually, WALNUT was assigned as the "guard ship" of the holding area, which, without a CIC, was a tremendous undertaking. At one point, all four VHF radios were in use by the CO, XO, OPS and the OOD to ensure vessels were in compliance with the UN Sanctions and proceeding as directed by WALNUT.

On March 18, 2003, war with Iraq had begun. WALNUT found out over SIPR chat and was later confirmed by the sights and sounds of missiles flying overhead. The UN Boardings were now suspended, and it was time for WALNUT to be on station in the event of a massive oil release by the Iraqi Regime. WALNUT has the capability to skim 420 gallons of oil per minute and had tested its SORS gear very recently during a joint exercise with CGC KUKUI and the National Strike Team in Pearl Harbor. Luckily, the environmental disaster never materialized, and WALNUT continued to conduct daily operations as ordered by her OPCON and TACON.

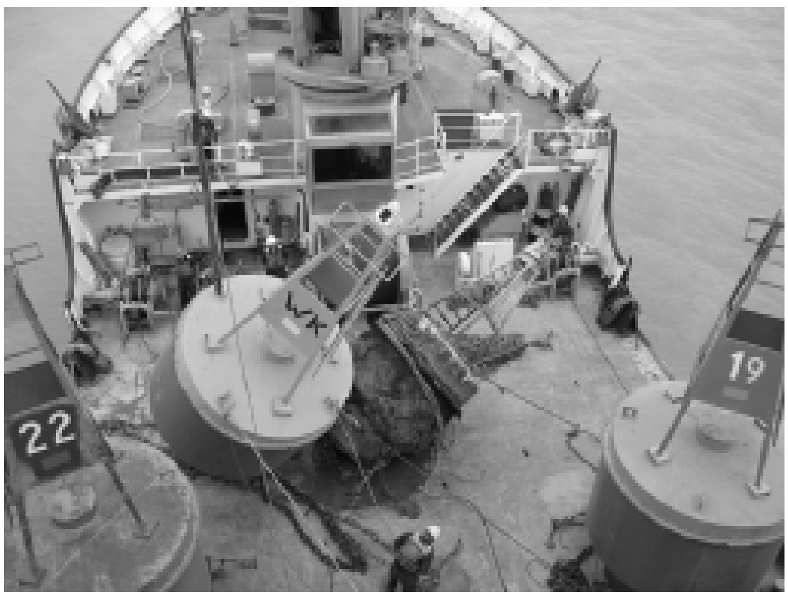
Walnut's highly maneuverable and stable characteristics also led to its assignment to a variety of other tasks, including: shipping tens of thousands of pounds of Navy equipment from Hawaii to Kuwait on its spacious buoy deck, towing a derelict barge, refueling a stranded Iraqi civilian tug, search and recovery efforts for two U.K. helos that collided, and recovering five Port Security Unit crews who had been battered in heavy seas for 12 hours aboard their 25-foot security boats. In addition, Walnut's 40,000-lb capacity crane proved useful in resupplying captured off-shore oil terminals, terminals that we were also tasked with providing security for.



Our deployment was also an exciting time for the Rules of the Road enthusiast – those pictures of lights for a vessel constrained by draft or actively engaged in mineclearance operations came to life. Although it was neat to see the three green lights in a triangle, we quickly became concerned when we realized that the minesweeper was coming towards us, leading us to assume that our area had not yet been swept of mines. On to another page of the rules… we discovered that yes indeed, you can have restricted vis due to a blinding sandstorm. We emerged covered with sand, giving us a good opportunity to test our countermeasure washdown system.

The Khawr 'Abd Allah (KAA) is a 41-mile waterway that leads from the Persian Gulf up to Umm Qasr, Iraq's only deep-draft port. We had known that it was marked by decrepit, unlit, incomplete, and off station buoys for some time – the XO had done an overflight in the HH-65. But the question remained, if tasked with replacing the 35 buoys in the waterway, where would we get the buoys and who would pay? These questions were answered when OPS and BOSN (CWO2 Paul Morgan) evaluated the buoys during an intel gathering trip up the KAA aboard CGC BARANOF, only days after fall of Umm Qasr to Coalition forces. OPS and BOSN's task was to assess the waterway and determine if a reported warehouse full of unused Iraqi buoys and ATON equipment actually existed. Although the interim "harbor masters" firmly denied any evidence of ATON equipment in a warehouse, BOSN and OPS went ashore and confirmed the rumor. The warehouse contained $1.7 million dollars worth of unused Iraqi buoy hulls (35, to be exact), chain, and sinkers. We quickly ordered 3 dozen Carmanah lanterns for pickup during our next stop in Bahrain.

After our ATON plan of attack was approved by the Coalition, we received permission to proceed to Umm Qasr to closely evaluate the ATON equipment. Other than a few minesweepers, two PC 170s, and the 4 WPBs, Coalition vessels stayed in the Persian Gulf. In addition, just prior to our transit well into Iraq, a LEDET had discovered an Iraqi weapons cache along the KAA, and the Al Faw Peninsula still had sporadic fighting. As a result, our transit to Umm Qasr was viewed as high-threat, and our four .50 cals



were ready to go if need be. However, any security concerns were quelled when we arrived in Umm Qasr only to find Navy Special Forces waterskiing, using a rope swing for a swim call, and having sail-cart races on the pier.

Some Special Forces comrades took a break from their festivities and assisted us in locating a forklift to start hauling hulls, sinkers and chain to the pier. Our further inspection also indicated that we'd need additional bridles. We onloaded four of the "Big Iraqi Style" buoys, and departed for Bahrain. Our plan was to refuel and onload stores in Bahrain while prepping the four buoys, purchase buoy bridles from MENAS (Middle East Navigation Aids Service)—a vendor that tends buoys in the Gulf—and then return to the mouth of the KAA and position our first four buoys. We would then return to Umm Qasr, spend the next day inport offloading the old and onloading/prepping the new buoys, and then underway the next day removing old buoys and positioning the new ones. We planned on repeating this cycle until all 33 buoys were replaced.

Over 25 buoys would need to be pulled, and 33 needed to be set. Approximately 10% were currently lit, and none appeared to be on station. Adding to the confusion were numerous NTM chart corrections which made so little sense, they posed a hazard to navigation. To keep the remarking as simple as possible, WALNUT was instructed to remark the channel as it was charted, in order to keep chart corrections to a minimum. For DGPS, the closest site was in Bahrain and although it was more than 265 miles away, we received a good, consistent signal. However, around lunchtime each day, the HDOP would spike to 10, and after an hour, fall back to acceptable levels.

The mission got off to a rough start both on deck and on the bridge due the amount of time since WALNUT had worked a buoy and a DPS Hold position failure. Although the failure was later troubleshot and corrected by WALNUT's engineers, the seasoned BM's were on the buoy deck retraining the crew who had not worked a buoy in nearly six months. However, the bridge team also had obstacles to overcome.

The last afloat assignments for the DWO's who would do a majority of the conning evolutions in three knot currents and a stone's throw from land were a former 140 XO, a 210' DWO, a 378' EOIT, and a 2002 CGA grad, and that did not add up to a significant amount of ATON experience. The CO immediately showed that this was not his first time working buoys in a river with a strong current, and expertly tutored the relatively ATON inexperienced DWO's on 180' style buoy tending. Without "hold position" for the first few of our buoys, the CO deftly used the current to his advantage rather than thrusters, matched the pitch to the current using visual ranges rather than "hold position," and many other ship handling techniques that are not required in the calmer waters of the Hawaiian Islands on a 225' in DPS mode. After completing two trips, WALNUT began picking up the pace, and as the transits became shortened as WALNUT worked her way upstream, the amount of deck evolutions simultaneously increased.

Using "liberated" Iraqi ATON equipment presented some challenges. The buoy hulls located in the warehouse were approximately 10 ft in diameter, 22 ft in height, and about 12,000 lbs. With no counterweight, we could fit five standing on deck. The buoy cages were of a lighter construction than their U.S. equivalent, which was evidenced by several of the old Iraqi buoys missing their entire cage. The sinkers were 6600 lbs. of steel encased lead. They were considered quite handy, as they were easily stored on deck, taking up less room than a standard concrete sinker. The liberated chain was 1.25 inch, and of shoddy workmanship, due to noticeably weak welds. One link did part during a set, and luckily no one was injured. The use of Carmanah lanterns also seemed like a good match for the KAA – low maintenance, plenty of sun, can program charted out of the ordinary characteristics, and no need for a nominal range of more than 3 miles on the windy river. Also, locals had pilfered the batteries out of the old buoys for use in fishing vessels, and the Carmanahs are solid state, attached with theft proof bolts.

We worked closely with British Hydrography and NIMA to ensure that other mariners were aware of the ATON improvements. In all, the "liberated" equipment watches properly, and the floating ATON greatly assists in marking a channel with poor radar return and very few visual bearings other than the random war-torn wrecks from previous wars. The KAA waterway was completely remarked with floating ATON in nine trips, taking about three weeks. The whole time, Umm Qasr served as our homeport. The food and fuel we onloaded in Bahrain was enough to last until our return to Bahrain after our ATON mission was complete, and we were able to get water daily in Umm Qasr via a local desalination plant. We maintained an armed inport watch, and had a local population of feral dogs that would stand watch on the pier at night, alarming us of any activity in the vicinity.

Leaving Umm Qasr for the "last time," we planned on setting a few buoys on the way out. One had an AP particularly close to shoal water, so we timed our departure to coincide with high tide at AP (tidal range was about 16 feet during spring tide). After positioning the buoy, WALNUT began steaming into the sunset, enroute Bahrain. The XO picked up his binoculars to observe WALNUT's handiwork just in time to see the hull, then the cage, and finally the lantern sink below the surface. This of course required our return to Umm Qasr for one more time. With all of the new buoys having been used, we needed to salvage the best, or rather, the least-worst old buoy and come up with a plan for raising the sunken hull.

The buoy appeared to go straight down when it sank, and if it did, we figured we should be able to see the lantern at low tide (20 feet of water). We sent our small boat over, and sure enough, the Carmanah was peeking out of the water, winking and blinking. A boat crewman attached a marker buoy, and that night we hatched a plan to raise the buoy. We would get underway and stand off the buoy while our small boat would take our dive team to the marker. They would dive and attach a lifting strap to a bail on top and on the bottom of the buoy. WALNUT would then make its approach then lift the buoy sideways to the waters edge. Our calculations indicated that the flooded buoy exceeded the rated capacity of our crane, so we'd need to cut a hole in the buoy hull, drop in a sub-pump, and then dewater the buoy while slowly raising it out of the water. With the buoy out of the water, we would then position the replacement buoy that we had patched together.

Believe it or not, it went exactly as planned.

On our return trip, we again stopped in Singapore for a BSF, and then on to Cairns, Australia, for some well-deserved R & R. From there, it was a 4,300, 16-day non-stop steam to Honolulu. A record for a 225? Another endurance record we may have surpassed was for stores – we went 28 days straight without being resupplied.

While our KAA ATON operation played a key role in safely opening the port of Umm Qasr for commercial and humanitarian vessel traffic, it probably also marked the first and only time in Coast Guard history that ATON received national media coverage. Other than an occasional missile launch, there wasn't much for the media to see out on naval ships in the Gulf, so they readily volunteered for media ride-alongs aboard WALNUT —the hard nucleus around which the Navy formed during the Operation IRAQI FREEDOM.

Tender Deployable DGPS

-Adam Buffington, USCGC KUKUI

USCGC KUKUI (WLB 203) recently returned from servicing 41 buoys and dayboards in the 655 square mile lagoon of Kwajalein Atoll, the largest in the world. In the last 10 years, the recently decommissioned BASSWOOD and MALLOW, the SASSAFRAS, and our sister-ship WALNUT have worked the aids in the lagoon. All of these ships had to use sextant angles to position the aids because there is no established differential beacon to serve the remote Atoll. Until recently, buoy tenders in the Fourteenth District have also had to use sextant angles for positioning in Midway, Johnston Atoll, and Guam for the same reason.

Instead of using sextant angles like our predecessors, we were able to receive a DGPS signal using the new Tender Deployable DGPS (TDDGPS). The system uses a collapsible, temporarily placed antenna to provide a differential signal to the ship with a range of about ten nautical miles. After only 12 hours of receiving and averaging GPS signals, the beacon is ready to transmit a differential signal that the ship can use to position AtoN. Using the differential signal, were able to work every aid in the lagoon in just 10 working days, a job that would have taken twice as long if we still had to use sextant angles.

COAST GUARD LEVERAGING TECHNOLOGY IN AIDS TO NAVIGATION

-Article provided by D17 Public Affairs

KODIAK, ALASKA - The Coast Guard is investing in brighter and longer lasting lanterns to improve both fixed and floating aids to navigation. This newer technology will be more cost effective for the public and more reliable for the mariner.

The Coast Guard Cutter SPAR, home-ported in Kodiak, recently replaced the standard lanterns on Cayane Rock Buoy 15 and Saint Paul Entrance Buoys 2 and 3 with state-of the-art Light Emitting Diode (LED) lanterns. LED lanterns have a luminous range of four to five nautical miles, which is equal to or better than the range of most standard lanterns. The lanterns are brighter and more distinctive than standard lanterns, but they do have a higher initial set-up cost.

In the long run, however, LED lanterns are more cost effective for the taxpayer than standard lanterns because LEDs do not burn out while lamp filaments in standard lanterns burn out every one to two years. Though the intensity of an LED will degrade over time, the frequency for replacement will reduce drastically, saving money and time. LED lanterns on lights and buoys in Kodiak ensure brighter, longer lasting and more reliable aids to navigation.

The Coast Guard believes that LED lanterns are the best choice for the harsh Alaska maritime conditions. The Coast Guard plans to replace standard lanterns with LED lanterns on most buoys in Kodiak and throughout Alaska. The LED represents exciting advancements in technology that will continue to improve navigation in Alaskan waters.

MAXIMUM CAPACITY 225' WLB TOWING: LESSONS LEARNED

The CGC SASSAFRAS and its 55-person crew recently completed one of its last major trips before decommissioning and eventual replacement in early 2004 by the new 225, CGC SEQUOIA. On the afternoon of Sunday, November 3rd, Sassafras took a break from it's exhausting duties as the primary Maritime Homeland Security asset for Apra Harbor, Guam and departed for a three week trip to the islands of Yap, Ngulu atoll, and Palau to service aids to navigation, conduct maritime law enforcement training and provide medical assistance to those in need in support of "Operation Pacific Compass-2002."

During SASSAFRAS's 10-day visit to Palau, the ships deck force and dive team carried out the ships primary mission in Palau of repairing aids to navigation with materials provided by the Government of Australia. This was the first time in over 3 years that Palau had seen ATON assistance from the United States and the main shipping channel was in desperate need of attention. Led by the 1st Lieutenant, CWO Mark Crysler, 17 aids were repaired, moved, or established allowing for night time transits of the South Pass of the Eastern Approach to Malakal harbor in Koror.

Through cooperation with the Palauan Government, Royal Australian Navy, and SASSAFRAS, aids were serviced, law enforcement training conducted, medical assistance provided, and community service completed. Not only did the crew work hard, but they also found time to surf, dive, fish, and experience the culture of some of the most unique and remote places the Coast Guard visits. On the 18th of November, Sassafras began its return trip to Guam, leaving Palau, Yap, and Ngulu a little better than they found it. After weathering a tropical storm at sea that later turned into a typhoon, SASSAFRAS moored to it's home berth in Apra Harbor on the evening of the 21st.

I-ATONIS FEAR THIS - (NOT)

-BM1 Lucas, NATON School

This is the first opportunity I've had to place an article in the bulletin s and I would like to introduce myself as one of the Aid Positioning Instructors at NATON School. My name is BM1 Chris Lucas and I've been stationed at NATON for about a year. My last unit was SEDGE, which was decommissioned just before I reported to NATON School. Having used sextant angles to position, as well as DGPS, I hope to bring a good insight to the job as well as keep progressing on new processes like I-Atonis.

Integrated Atonis (I-Atonis) sets off alarms every time I start the discussion in class. so I figured it was a good topic to cover in the bulletin. BM1 Thigpen, another Aid Positioning instructor, and myself regularly attend JADRADs (joint application development) meetings at OSC to pass the input input we get from the fleet to the program designers. I-Atonis originally started as an upgrade to Atonis with the goal of automating Local Notice to Mariners (LNM), which was mandated by Congress. When complete all individuals and organizations that use LNM's will be able to access corrections easily and quickly on-line. The project is not as far along as expected but is filtering through several program language and migration problems discovered after the original program was designed and built.

The system cannot be real-time because there is no fleet wide connectivity. When implemented, I-Atonis will not greatly affect the way the fleet does its work. The AAPS program and the I-Atonis program will be two separate systems and have two separate icons on the desktop. The policy on inports and exports will remain the same.

One of the biggest problems is the migration of data. Data migration is the transfer of information from one database to another. When databases are identical, data migration is very easy. However, when many databases are used for migration, the migration becomes complicated. In the case of I-Atonis, data is being polled from Atonis, NIMA, and NOAA. With over 50,000 aids in Atonis to be migrated, it takes time to accurately capture the data. Unfortunately, we have some inaccurate data in Atonis whi ch will inevitably show up in the I-Atonis database after migration. To minimize this problem, all units should verify Atonis info, as states. However, the correcting of data will not stop in I-Atonis. Without fleet connectivity we will not be able to make certain changes to the database on-scene. Therefore, it is very important that units conduct pre-trip verification of L/L, Chart, Coast Pilot, and I-Atonis, and correct errors at the unit level or contact district to have them make the needed changes.

I-Atonis will be Internet based when it is deployed, but the system will be set-up to restrict the user base to Coast guard ATON units. One of the advantages of being logged into an online application is the ability to instantaneously change your data. Over 40 units have online Atonis access now to OSC Martinsburg, VA, and many of them have commented that they have been able to correct 99% of their incorrect data (i.e. data that got lost in exports to OSC). I-Atonis will be better because each unit will have online access and be able to have multiple online accounts. I-Atonis was contracted to have the same functionality as Atonis so if you can work one you will be able to use the other. The screen colors will be the same. White fields can be changed if the unit has an association with an aid (i.e. primary, secondary, other). Gray-ed out fields cannot be changed. Drop down selections will remain the same.

Test web-site at... <http://iatonis.uscg.gov/atnsweb/atonis.show_home?p_body_name=CG>.

The way you log on is go to this site, choose CG sign-in, user name and user password for both will be { u } (for user) {your district #} user, ex. { u5user } and if you are a district you insert { d } (for district) where the { u } for user is. This database is a test database, so you cannot hurt it. This site is down periodically for the programmers to make changes and updates. If you can't login, try it later. This system will be deployed to the fleet, so take the time to look at and work with the application and provide essential feedback. It would be a good thing if all the Cutters and ANT's ensure the positioning teams are logging on and trying this system. Keep in mind that within months of the deployment of I-Atonis, Atonis will be shutdown. As a matter of fact, Atonis will be a read-only application when I-Atonis is deployed.

The replacement AAPS has been written by contractors at OSC Martinsburg, VA and is very similar to the AAPS portion we use now, unfortunately there is no accessible test site for this. The info required to position is the same. The screens look almost identical and the small changes you will notice will be beneficial. There will be some info that when you get back to the unit will need to be input into I-Atonis (ex. - tech name) but all the chain lengths, etc. will be accessible and savable on-scene.

I hope this article answers some questions I have heard from the fleet. This program is scheduled to deploy in October 2004. Feel free to contuct BM1 Thigpen or myself for any further questions.

Calibrating the Fluke 77 Series III

-BM1 Carnegie, NATON School

You go out to work those lights from day to day. You get your Fluke Multimeter 77 Series III to measure the voltage output of the battery and solar panel(s). Are you positive your meter is properly calibrated? Or, when was the last time your meter was calibrated?

The Fluke Corporation suggests your meters be calibrated on an annual basis. You send the meters in to the Fluke Corporation and they measure them and report their value to you. If your meters require repair, arrangements are made with you to most effectively bring your meter back to standard specification.
The following are the prices for calibrating the Fluke 77 Series III:

Traceable calibration (standard) is	$72.00
Z540 calibration without the data report is	$76.00
Z540 calibration with the data report is	$98.00

The above prices are if your meter does not need any repair. Should your meter need repair not in warranty, the prices are:

Flat rate repair & traceable calibration is	$118.00
Flat rate repair & Z540 calibration without data report	$122.00
Flat rate repair & Z540 calibration with data report is	$144.00

The cost of this calibration service is high, but from a liability standpoint, you must keep your meters calibrated. Should a court case arise in your area you must then have a firm basis for your measurements.

The 77 Series III multimeter's accuracy of 0.3% is the highest value that will provide decent readings. There are other low cost meters out there that have worse accuracy than the 77Series III, but those are not suitable for our servicing personnel.

Also the Fluke 77 Series III Multimeter are equipped with two fuses. There is a .44A Fuse for the 300 mA source on the meter, and a 11A fuse for the 10A source on the meter. To test the fuses, place your meter in the ohm position (Ω) on the dial selector. Place the probe of your red lead in the 10A source, the reading on the LED screen Should be between 2.2 and 5.8 ohms. Then place the probe of your red lead in the 300 mA source, the reading should be between 00.0 and 00.2. If either of the readings are outside of those parameters or reads O.L, replace the fuse.

.44A fuse, part # 943121 @ $3.00 ea
11A fuse, part # 803293 @ $4.50 ea

Fluke Corporation
Ph. 888.993.5853
Fax 425.446.6161

The better care you give your equipment, the longer you can continue to provide the mariners the outstanding service you do.

VM-100 Fog Detector: Relay contacts Settings

-ET1 Diggins, NATON School

Upon receipt of a new VM-100 fog detector it may be necessary to set jumpers J1 and J2 on the Relay Contacts Interface CCA. The adjustments made will depend on the type of category of lighthouse. The Alarm Relay K1 and System Fail relay K2 relay contacts are user configurable and must set up for proper operation of the fog detector depending on your particular application.

The Relay Contacts Interface CCA can be easily identified by the operation toggle switches and LED display. Caution must be used when removing and reinserting the card to avoid damaging it.

For use in AC lighthouses category 1 and II. J1 will be set to normally open by shorting jumper pins 2 and 3. J2 will be set to normally close by shorting pins 1 and 2. : Refer to Tech Manual diagram set up for 2 alarms.

For use in solar powered category I and II lighthouses. The jumper settings will be the same as used in AC lighthouses 1 and II.

For use in solar powered category III lighthouses. J1 will be set to normally open by shorting pins 2 and 3. J2 will be set to normally open by shorting pins 2 and 3. : Refer to Tech manual diagram set up for 1 alarm that works with open.

Lifting Hooks and Alloy Steel

-BM1 Darsch, BUSL STAN Team

During some of our recent inspections we have come across a problem in the field that we would like to clear up.

Please take a look at all your lifting hooks and related gear and ensure it is made of Alloy steel. There are a couple of ways to verify this. Some manufactures mark their equipment with a "C" for carbon or "A" for alloy. Crosby hooks you may see a "JC" or "JA". You should refer to the manufacturers catalog for specific marking or ID's, some hooks may not be marked. It is best to check the certificate that came with the hook. If you didn't retain the certificate in your rigging log, it is time to replace it.

So that leaves the big question, why should we replace the hook if it is over rated for the load being lifted?
Reason ONE: **The Commandant said so!** Only Alloy steel shall be used. (Ref: ATON seamanship manual 2-39 par: O)
Reason TWO: In the unfortunate event of a catastrophic failure, carbon steel will break. With a load hanging in the air, this is never a good thing. Alloy steel is designed to bend thus giving you time to place the load safely on deck.

If you have any questions give us a call.

Edison ED Series Lighthouse Standby Batteries

-Jon Grasson, COMDT (G-SEC-2A)

The Edison ED80, 240 and 400 NiCad batteries traditionally used to provide 12VDC standby power at CG lighthouses will no longer be made by SAFT, Inc. after 1 Jan 2004. The recommended replacement is the SAFT SPL series pocket-plate NiCad batteries. These batteries are physically larger than the ED series and new racks will be required. The SPL and ED cells are not compatibly with each other, therefore if one ED cell fails the entire battery will have to be replaced with SPL series batteries. The new batteries have the following characteristics:

Part #	Replaces	Capacity	Length	Width	Height	Weight
SPL 80	ED80	80 ah	2.67”	7.56”	13.86”	15.2 lbs
SPL 250	ED240	250 ah	4.29”	7.68”	15.98”	30.4 lbs
SPL 420	ED400	420 ah	6.65”	7.68”	15.98”	49.5 lbs

Order directly from SAFT, Inc. Contact Naomi Silver, phone: 229-245-2893.

If you need assistance, contact your Training Team Chief, the NATON School, or COMDT (G-SEC-2A).

LED LANTERN FIELD TEST

-Jon Grasson, COMDT (G-SEC-2A)

CG Headquarters has expanded the field test of LED lanterns to include products from Automatic Power, Inc., and Tideland Signal Corporation. API’s version uses a sealed, clear 155mm lantern outfitted with a LED assembly that replaces the conventional flasher, lampchanger, lamps and daylight control. Tideland’s version uses an array of LEDs mounted on a disk and housed in a new lantern housing. Both lanterns offer increased vertical divergence to make buoys more conspicuous at night, use less power than a comparable incandescent lamp and decrease the servicing requirements of the light. They will be deployed on aids capable of triennial service visits. Additional information, including operating instructions, is contained on our website: www.uscg.mil/systems/gse/gse2.

We also plan on outfitting RL14 range lanterns with LED retrofit kits developed by API that will replace 12 volt, 0.25a lamps in an effort to increase the intervals between service visits. These kits are similar to the StaBrite assemblies, but contain fewer LEDs and consume less power. This should help alleviate the quality problems associated with 0.25a lamps, especially at sites with high duty cycles that require frequent relamping. Installations are slated for later this summer and will be announced by a detailed COMDTNOTE.

Lastly, Sabik Oy of Finland developed a robust LED lantern suitable for use on 7x20 LI ice buoys. This lantern does not use the conventional cut-down 140mm lens and lexan dome. Instead, it relies on a cast magnesium alloy housing that is able to withstand prolong exposure under an ice flow. The intensity and vertical divergence are significantly improved over the old version, increasing the conspicuity of these aids with their reduced radar signature (because of lack of radar reflectors). We plan to convert all 231 active ice hulls over a three-year period. A COMDTNOTE will be issued this year.

SABIK MPV-LED ICE BUOY LANTERN INSTALLATION INSTRUCTIONS

-Jon Grasson, COMDT (G-SEC-2A)

The Coast Guard has purchased LED ice buoy lanterns from Sabik for installation on 7x20LI buoys. These lanterns replace the conventional lampchanger, lamps, daylight control, bracket, cut-down 140mm lens and Lexan dome. The lantern is designed to survive under an ice flow and pierce through the ice when it becomes thin enough without the use of the conventional Lexan ice dome.

Installation

Unpack the lantern from the shipping container and check for damage. There is a red, green, white or yellow insert on the top of the lantern that indicates the color of the LEDs. All lenses are clear, so it may be worth writing with an indelible ink marker the LED color inside the base of the lantern. This will save time later as the lanterns will be stored upside down.

Remove the flasher brackets from the parts package and attach to the threaded holes in the base of the lantern, as shown below. Be sure that the slots in the bracket are seated against the bolts and visually look down at the top of the brackets to be sure that the slots for the flasher are opposite each other. Use the lock washer to keep them from vibrating loose. The Allen head bolts should be tightened with a 6mm Allen wrench. At this time install the O-ring gasket in the groove. Be sure that it's fully seated.

Attach a CG-181 or CG-493 flasher with four 10-32 x ½" stainless steel screws and split lock washers. Note the orientation of the flasher, as the leads from the LED driver will not reach if installed in the opposite direction, as shown on the next page.

Attach the 5 color-coded leads from lantern to the flasher and 2-3 feet of 12/2 SO cable to the (+) and (-) leads of the flasher, as shown below.

Set the flasher to the desired rhythm (if programmable flasher is used). Apply 12 VDC to the black (+) and white (-) leads of the 12/2 SO cable and check for proper operation. Since the daylight control is located inside the lens, you will have to wrap a rag around the lens or operate in a darkened room for the light to turn on.

A custom stainless steel adapter plate (shipped separately) was fabricated to mate the lantern to a 7x20LI. The lantern contains an O-ring that seals it to the plate. The bolts securing the lantern to the plate should be installed with Loctite 242 (blue) thread locker to prevent vibration from the ice flow that may loosen the fasteners. A ¾" socket wrench may be used to tighten the bolts. Due to the difficultly in aligning the lantern to the plate, it is suggested that the lantern & plate be installed as one assembly. The plate is sealed to the buoy with the gasket intended for the ice dome (the ice dome is not used). Additional sealing can be obtained by running a bead of RTV around the base of the lantern.

Attach approximately 3 feet of 12/2 SO cable to the ice buoy battery using ring lugs sized for a ¼" stud. Install the battery in the pocket and attached the Ice Buoy Battery Clamp. Install a new gasket on the pocket cover. Pass the cable through the stuffing tube in the pocket cover and secure to the pocket. Do not over tighten as if the studs snap they are difficult to replace.

Support the MPV-LED lantern on a work stand under the buoy. Install a new rubber gasket on the studs in the buoy used to mount the ice dome. You have the option of using a waterproof connector, in-line crimp connectors, or connect the leads directly to the flasher. Two people may be needed to lift the lantern into place. Be sure to watch the pinching points between the flange and buoy. Feed the cable into the buoy and align the lantern onto the studs intended for the ice dome. Secure with flat washers and stainless steel nylon locking nuts.

Cover the lens with a jacket and after a few seconds, the lantern should start flashing on-rhythm.

Install one or more bird spikes in the top of the lantern. These spikes are sacrificial and will break off if the buoy is pulled under the ice. Extra spikes are provided with the lantern and in the spare parts kit. To remove broken spikes, heat the tip of a small screwdriver and press into the plastic to create a slot. When cool, try to remove the broken spike. If that doesn't work, then the spike must be drilled out with a 13/64" bit and retapped with a 6mm – 1.0 hand tap.

Power System

The lantern draws 3-Watts of power (4-Watts for Yellow) during a flash, therefore the Rated Battery Discharge Time (RBDT) is:
Current (amps) = Wattage/12-volts
Current (amps) x (duty cycle) x 13 hrs/day (night operation) = amp-hours/day
RBDT = Battery AH (320) / amp-hours/day

The red, white, green and (yellow) LED lanterns have the following RBDTs:

FL4(.4), FL6(.6) – 984 days (738 days)
FL(2+1)6 – 656 days (492 days)
FL 2.5(.3) – 820 days (615 days)
Q, Mo(A) – 328 days (246 days)

You will note that the RBDTs are in excess of our needs. We will be working with the battery manufacturer to reduce capacity (and cost) after all ice buoys are converted.

Internal Components

The lantern consists of three components; the LED circuit board assembly containing the LEDs, a LED Driver and daylight control. There is a precision resistor across the "Current Settings" terminals of the LED Driver that determines the intensity of the lantern. This resistor must be installed on the LED driver if it is replaced. The resistors are as follows:

Red LED lantern - 3300 ohms (orange, orange, black, brown, brown)
Green LED lantern - 3300 ohms (orange, orange, black, brown, brown)
Yellow LED lantern - 5110 ohms (green, brown, brown, brown, brown)
White LED lantern - 3570 ohms (orange, green, violet, brown, brown)

Contact COMDT (G-SEC-2A) if additional intensity is required for a special application as the resistance values can be changed to increase the range of the lantern to 5 nautical miles.

Spare lanterns and parts were purchased for each Cutter. The spare parts kit is comprised of:

12 O-Rings
24 M12x50 Captive Metric Bolts
24 Plastic Washers for above
50 Bird Spikes
4 LED Drivers
12 Current Setting Resistors (for red & green)
6 Wire Harnesses
12 Flasher Brackets
24 M5x15 Allen Bolts for above

Requests for additional parts should be made to COMDT (G-SEC-2A).

Performance

The lanterns have a 6-degree total divergence to 50% of peak intensity. The effective intensity and (range in nautical miles) are tabulated below:

	Effective Intensity in candela			
Rhythm	White	Red	Green	Yellow
Fixed	66 (5)	54 (5)	77 (5)	58 (5)
Q, FL(2+1)6, FL2.5(.3)	39 (4)	32 (4)	46 (4)	34 (4)
Mo(A), FL4(.4)	44 (4)	36 (4)	51 (4)	38 (4)
FL6(.6)	49 (4)	40 (4)	57 (5)	43 (4)

For rhythms not listed above, the effective intensity can be calculated by the following equation:

Effective Intensity (candela) = [Fixed Intensity x flash length (sec)] / [flash length (sec) + 0.2]

Servicing

Servicing is not necessary during a routine ice season. Based on past performance, the operating temperature and the drive current of the LEDs, this lantern can remain in service for 20 ice seasons (possibly longer) if the lens and housing are still in good condition.

If an unscheduled visit is made to the aid, ensure that the lens is clean. Wipe with a cloth dampened with mild soap and water, if necessary. Cover the lantern with an opaque cloth or jacket to ensure that the lantern flashes on rhythm. Check to be sure all LEDs are lit through the lens of the lantern. Dark sectors indicate that some LEDs have failed and intensity will be reduced in that direction (there is enough overlap between LEDs to provide coverage if a few LEDs fail). If failure of the lantern is noted, or if any LEDs fail, replace the lantern and contact Commandant (G-SEC-2A) for its disposition.

Troubleshooting

No light.

-Check battery voltage at flasher input terminals. Minimum voltage is 10 volts for our flasher to operate. No reduction in LED intensity will occur at this voltage. Replace wire or battery, if necessary

-Cover the lens and measure voltage between flasher (L) and (-) terminals. If no voltage (on rhythm), disconnect daylight control leads. If still no voltage between (L) and (-), replace the flasher. If voltage is present, the daylight control in the lantern is bad. Since these are not serviceable either the lantern must be replaced, or the daylight control may be left disconnected. The low power consumption of the lantern will allow 24 hr operation without failure during a typical ice season using a 320 AH battery.

-If the flasher has output voltage, then replace the LED Driver. Note where the wires and jumpers are attached and either a new current setting resistor or the one from the old LED Driver must be installed.

-If a new LED Driver does not solve the problem, replace the entire lantern.

Improper rhythm

-Replace the CG181/493 flasher.

Various LEDs out (dark sectors)

Replace lantern.

Please report all problems to COMDT (G-SEC-2A)

Crew of USCGC WALNUT. Supporting Operation Iraqi Freedom.

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