The
Aids to Navigation Bulletin

National Aids to Navigation School **Spring/Summer 2008**

National Aids to Navigation School
US Coast Guard Training Center, Yorktown, Virginia

AtoN 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 US Code makes this a responsibility of the Coast Guard.

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

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

To satisfy these objectives, it's 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. Submissions are welcome in any form. Articles and images may be submitted electronically to the editor via email at tracy.m.speelhoffer@uscg.mil or mailed to:

AtoN Bulletin Editor (tnaton)
US Coast Guard Training Center
End of Highway 238
Yorktown, VA 23690-5000

Electronic submissions are preferred. Please keep photographs in original electronic form, and send them as separate files; do not imbed or copy them into word documents.

The articles contained herein are non-directive and non-record material. They are published for informational purposes only.

School Telephone Numbers

(757) 856-XXXX

General Information/YN..... 2139
LT B. Huff, School Chief 2143
LT S. Kingsley, Asst School Chief .. 2509
CWO D. Merrill, Tech Advisor/
Buoy Deck Training Team…….2145
LTjg T. Speelhoffer, Operations....2350
BMCM W. Weir, Minor Aids..... 2066
EMCS K. Wiehrs, Major Aids..... 2795
Fax 2326

After Hours Technical Support Hotline

(757) 449-3681

Editor: LTjg Tracy Speelhoffer

School Home Page:

www.uscg.mil/tcyorktown/ops/naton/index.shtm

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On the Cover:
ANT Fort Lauderdale at work. See page 4 for details.
Photo by BM1 Clare Linder, ANT Fort Lauderdale

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USCGC BARBARA MABRITY conducts discrepancy response

A Note from the Editor

by LTJG Tracy Speelhoffer, NATON School

Hello AtoN community. How's everybody doing? Well we've got a good issue for you here, with some hot, current topics. I tried to go out and find information on issues that I've been hearing questions on lately, so in this issue you'll find info on GAPPS, the dive program, the Light List coming from I-ATONIS, and much more.

We just completed our last Officer Advanced AtoN class, and we'd like to congratulate the latest group of AtoN CO/OIC's and XO/XPO's as they head out and complete their reliefs. On that note, our former Assistant School Chief, LT Marshall Griffin, has headed up to New York to take command of CGC PENOBSCOT BAY, so we wish him the best of luck. LT Steve Kingsley has taken over here as our new Assistant School Chief, so feel free to stop in and greet him the next time you're at NATON.

I know you've all been busy out in the fleet, but I sincerely appreciate the response we got on our latest request for articles for this issue. The submissions I received were great, and I've included as many as I could. For some of you who sent me photos, you may not see them in this issue, but keep your eyes on the next couple of issues. In addition, and this is pretty big news, no promises just yet but we're working on developing a NATON calendar to send out with the Fall or Winter Bulletin. So a lot of the cool photos you've sent me may find their way into that. That being said, if you have some good photos and you haven't already, send them my way! And I'm always on the lookout for a good cover page. Remember, cover photos have to be taken long ways so they'll fit the page, and the higher the resolution the better.

In addition to Bulletin submission requests, many of you may have seen our recent data requests regarding our Aid Positioning (AP) course. We just completed a survey designed to collect data on what folks in the field really need to know and do with regard to positioning. The information we got from that survey will be a major factor in our updates to the AP curriculum. So thanks very much to those of you who took the time to give us important feedback that will help us improve the course.

The AP course isn't the only one undergoing changes. We recently completed an update to the Advanced Minor Aids (AC) course, the Officer Advanced AtoN (OA) course is seeing ongoing revisions as well as a formal curriculum update, C2CEN is assisting us with updating the Differential Beacon (DB) course, and we're working on making the Buoy Deck Supervisor (BDS) course exportable. And once we're done with those courses, we'll be moving on and updating others. So, we're hard at work making sure we're getting your people the best training possible.

That's about all the news from NATON. Please feel free to contact me with any suggestions about the Bulletin; I'm always looking for ways to make it better. And as always, keep sending those articles!

Cape Henry Lighthouse Trip

by EM1 Carlos Negron, NATON School

Major Aids outside Cape Henry

On March 20, the Major Aids Section of NATON visited Cape Henry Lighthouse for the first time. They were met by EM2 Stebbing from Sector Hampton Roads who, along with a lighthouse historian, gave the team a "VIP" tour of the grounds. As part of a new approach to ANC-LT instruction, the trip was the first of many to come, as in the future the course will include a trip to the lighthouse. These trips not only break up the monotony of the classroom environment but also give the students a chance to see the different types of configurations out in the field. Students beware! Ascending the stair case to reach the top is no easy feat, so make sure you are in good physical condition when you arrive at NATON. This way you won't be breathing as heavily as some in our group! Great fun was had by all and we look forward to seeing new students this year. Our next ANC-LT course is scheduled to begin on July 28, 2008—see you then!

"Where the magic happens"—the actual lighting equipment inside Cape Henry

On the Cover...

by BM1 Clare Linder, ANT Fort Lauderdale

ANT Fort Lauderdale recently visited Fowey Rocks Lighthouse. On the cover, ANT Fort Lauderdale personnel head out to the lighthouse. In the photo below, BM3 Wick Bennett conducts annual service on the VRB-25 at the lighthouse, located about 4 nautical miles east of Soldier Key, Florida. The light's First Order Fresnel Lens, which was removed in 1974, is on display today at the AtoN Museum at the National Aids to Navigation School in Yorktown, VA.

New Vega VRB-36 LED

by BMCS Mike Winans, ANT Fort Lauderdale

In the photo below, BM2 Ryan Nicholson, ANT Fort Lauderdale installs a new generation Vega VRB-36 LED lantern on New River Sound LT 13. ANT Fort Lauderdale was one of the units chosen by Headquarters as a field test unit to install 25 of these new age lights. The intensity of these lights far surpasses the traditional 155mm, and in some cases has been used to replace the 250mm and 300mm. They come in three different sizes; small, medium and large, and can be programmed to the flash rhythm as well as the intensity desired. The unit selected aids primarily located within its three major ports to test the lights as well as aids located in areas with intense background lighting.

Navy League Names ANT Baltimore's BM1 Flickinger "Baltimore Area Coast Guard Enlisted Person of the Year"

by Ms. Dottie Mitchell, CG Yard

The U.S. Navy League honored BM1 Robert Flickinger as the "Baltimore Area Coast Guard Enlisted Person of the Year" in ceremonies at the Coast Guard Yard in Baltimore, Maryland. BM1 Flickinger currently serves as the Executive Petty Officer for Coast Guard Aids-to-Navigation Team (ANT) Baltimore under the command of Coast Guard Sector Baltimore located at the Yard.

The U.S. Navy League's Baltimore and Annapolis Councils bestow this recognition annually to a Baltimore area Coast Guard member who displays "inspirational leadership in all phases of his/her duties." This year, BM1 Flickinger competed among several nominees from the various Baltimore area Coast Guard commands for the coveted title.

ANT Baltimore's area of responsibility is between the C&D Canal and Kent Island. The team's 12 crew members service 410 aids to navigation in the Upper Chesapeake Bay. BM1 Flickinger, a 12 year Coast Guard veteran, has been stationed at ANT Baltimore since 2005.

Petty Officer Flickinger conducted over 100 AtoN missions, accounting for 600 underway hours during the last year. While engaged in these often complex operations, his professionalism and assertive leadership helped achieve ANT Baltimore's zero operational mishap rating. Through long hours of classroom and underway training, BM1 Flickinger also played a critical role in ANT Baltimore's receipt of an outstanding rating during the unit's most recent "ready for operations" inspection.

His Officer in Charge, BMC Michael Brandt, comments, "Petty Officer Flickinger is that one individual in an organization whom superiors routinely rely on to supervise or solve difficult problems or demanding situations. He consistently seeks ways to improve the quality and enjoyment of Coast Guard life with an uncommon perception to the morale and welfare needs of others. BM1 Flickinger's deep personal pride and inspirational leadership identify him as an exceptional career Boatswain's Mate."

The Baltimore Area Coast Guard Enlisted Person of the Year award began in 1981 at the initiation of the State of Maryland Navy League to honor and publicize the achievements of Baltimore area enlisted personnel. Nominations concentrate on members' demonstration of leadership, Coast Guard rating skills, knowledge and core values, personal and work ethics, teamwork, and community service.

USCGC ELM Winter/Spring Happenings

by ENS Matthew Williams, USCGC ELM (WLB 204)

Since February, the ELM has been busy with everything except "run of the mill" ATON operations. On February 27, ELM conducted a training exercise with the Spilled Oil Recovery System (SORS) in Charleston, SC. SORS is a complex system that can be deployed in response to oil spills to provide preliminary oil skimming support. As a result of the Oil Pollution Act of 1990, each Coast Guard 225-foot buoy tender is outfitted with the SORS and will be ready to respond in the event of such a disaster. The goal of ELM's exercise was not only to determine if the cutter could respond, but to also allow other Coast Guard personnel to become familiar with the SORS equipment. ELM's crew as well as members from Sector North Carolina and the new Environmental Specialist rating from the First District's Response Advisory Team (DRAT) underwent two days of pier-side training before deploying the equipment. The actual deployment was a success. The crew as well as other Coast Guard members benefited from the experience.

Not long afterwards, the ELM deployed to the Caribbean to service NOAA buoys 41048, 41047, 41046, and recover NOAA Buoy 41002. Due to a casualty to one of our engines, the crew was able to spend three relaxing days in Nassau, Bahamas.

On April 15th and 17th, ELM gave two day cruises to different second-grade classes from Beaufort Elementary school as well as members of the Navy League and friends and family of crewmembers. Before getting underway, ELM gave tours of the vessel and showed the school children fire-fighting equipment, navigation equipment and explained what the Coast Guard does on a day to day basis. While underway, a man overboard was conducted which involved CH46 Marine helicopters in the recovery.

CGC IDA LEWIS Conducts Recovery Ops in NY Harbor

by CWO4 Douglas Tribou, USCGC IDA LEWIS (WLM 551)

Brining up the "catch"

In January 2008, IDA LEWIS conducted drag and recovery operations for obstructions located in NY Harbor anchorages. STURGEON BAY and other NY-based cutters reported that their anchors had been fouled in the anchorage areas, so IDA LEWIS went to work to correct this problem. Using survey data provided by NOAA that identified two areas of concern consisting of 'large chain and cable of unknown length,' IDA LEWIS lowered a grapnel hook to the bottom hoping to hook something. The grapnel hooked on something on the first pass over one of the potential targets, and when it was brought to the surface we found we had hooked a large wire towline 2-1/2" in diameter. After securing the wire on deck it was cut at the bight and one end was secured to the chain in-haul winch, which was used to recover the wire. Once the first segment was recovered, the other segment was recovered using the forward and aft portside cross deck winches taking bites in alternating fashion since the in-haul winch was loaded to capacity with wire from the first segment. A total of 1000+ feet of wire towline was recovered and disposed of at Bayonne with the help of KATHERINE WALKER and ANT NY.

Piling the second segment up on the deck

The inhaul loaded up with the towline

KATHERINE WALKER Swaps out Seasonal Hulls

by LT Amy Florentio, USCGC KATHERINE WALKER (WLM)

In March, KATHERINE WALKER changed out 43 seasonal buoy hulls on the upper Hudson River. The winter hulls, which stand up to ice, were replaced with the summer hulls, which are easier to see, are lighted and have better radar return. We also checked our prototype year round hulls, which fared very well through the winter months. The deck force fine tuned each evolution, safely moving over 250,000 pounds of equipment across the deck. The trip up the river offered few port calls, so the buoy deck was loaded to maximum capacity each trip. During the trip, we saw the fruits of our labor as mariners plied their trade on the river. The large ships relied heavily on the buoyage system in these narrow waterways and often called on the radio to thank us for our hard work. The top exports on the Hudson are gypsum and crushed rock, which are transported by bulk carrier. Gypsum is used to make many things including drywall and cement. Gypsum, also known as Calcium Sulfite, is even used as an ingredient in Twinkies and Tofu. The biggest import on the Hudson River is home heating oil and gasoline. The use of the river as a transportation system is critical to our economy with each typical oil barge equaling 4.5 miles of tractor trailer trucks lined up bumper to bumper on the highway.

Little Goose LT "26"

by BMCS James Madsen, ANT Kennewick

On mile 96 of the Snake River in South Eastern Washington, far from civilization and a 2.5 hour truck and boat ride from the ANT, Little Goose Light "26" was in need of some attention. Due to extensive erosion of the bank on which it was situated, the light tower needed to be relocated. So, after identifying a suitable location 200 yards downstream, we got to work relocating the light.

First, thick blackberry briars and trees stood in our way and needed to be cleared out. Next we developed a template for the footings. It took a full day of hard work to dig deep enough holes in the basalt rock for the footings. Very careful attention to detail was critical in ensuring the footings were level and that the anchor bolts were exact. We hauled in 16 80-pound bags of concrete and mixed them on site to create the concrete piers.

We had to wait several days for the concrete to cure, and were further delayed by inclement weather. When we finally got some decent weather, we set out to erect the 15-foot tower. Due to the weight of the steel tower parts and the number of crew involved, it took several long boat trips back to the ramp to get all the parts and pieces to the site.

After four days of work at the site, the tower began to take shape. A new fiberglass deck was installed, which will make working the light much safer with a sturdy deck under foot. Some of the upper bolt holes did not line up well enough, but a come-a-long provided the mechanical persuasion necessary to get the job done.

After six long days of hard labor, we drove away with Little Goose LT "26" watching properly in its new home.

116-Year-Old Lighthouse Discontinued

by BM2 Michael Burgess, ANT Astoria

An HH-60 helicopter departs a 30 acre island approximately 4 nm off the coast of Washington. Six members of the Aids to Navigation Team Astoria watch as the helicopter flies out of sight, leaving them with only the sounds of the crashing waves on the rocky island.

The team begins the discontinuation of the “Destruction Island Light” as they reflect on its history.

The 94ft lighthouse began construction in 1888. The light was lit on the 1st of January, 1892. Originally the lighthouse was maintained by a lighthouse keeper and two assistants. They were able to live on the island with their families. The keeper of the light planted gardens and kept cows and chickens that gave them fresh perishables.

The U. S. Coast Guard assumed responsibility of the light in 1939. Personnel were stationed at the lighthouse for 18 months with a rotation of 6 weeks at the light and two and a half weeks off the island. It was manned until 1968 when the aid became automated.

Two days have passed, the solar array has been taken down, the VRB-25 lantern removed; the buildings have been boarded up and the lighthouse locked. All the equipment and gear has been flown off the island. With mission complete, the members of ANT Astoria can’t help but wonder if they will ever return to this place. Only time will tell. We will always remember coming here to work, and how we enjoyed a little solitude from the outside world, if only for a short time.

Aids to Navigation Team Kodiak: Not Your Typical ANT

by BM2 Jared Wike, ANT Kodiak

For many of the other Aids to Navigation Teams, being lowered from an HH-60J helicopter onto a rock jutting out into the arctic waters of the Gulf of Alaska to service an aid or loading pallets of ATON equipment onto a C-130 Hercules is unheard of, but that's just another day at work for ANT Kodiak. Aids to Navigation Team Kodiak is located on the Emerald Isle, Kodiak Island, Alaska, the second largest U.S. Island and home of the largest Coast Guard base.

We are responsible for servicing seventy eight primary shore aids and forty eight secondary shore aids. In June, when Alaska gets about twenty hours of daylight, we embark on our yearly North Slope trip to Nome, Bethel, and King Salmon in which we cross into the Arctic Circle. During this trip, which can last between three and four weeks, we service thirty six primary aids. We service our other aids through smaller week to two week trips throughout the year depending on Alaska's harsh and unforgiving weather.

At ANT Kodiak, servicing aids means dressing out in a flight suit, loading the ATON gear into a helicopter and packing our survival bags just in case the helicopter cannot make it back through the harsh conditions to pick us up. Our area of responsibility (AOR) covers much of Alaska's extensive coast. We travel as far North as the Arctic Circle and from Dutch Harbor to the Prince William Sound. Coordinating the trips to maintain our aids takes months of planning and coordinating with Air Station Kodiak and the local villages. We travel to most of our aids via the HH-60J helicopter or the C-130 Hercules, where we drop off ATON personnel and gear to service aids within our AOR, often far from civilization, as many of our aids are hundreds of miles from the nearest towns or villages.

Our personnel currently consist of a BMC (OIC), BM1 (XPO), BM2, MK2, DC2, ET2, and EM2. However, we received our first boats when we combined with Surface Operations back in May. We absorbed about seven more personnel and the Surface Operations' 41' UTB and 25' RBS. At the end of 2008 we are also scheduled to receive a new 26' TANB. This year holds many changes for us, all of which will add more responsibilities and challenges, certainly making this unit not your typical ANT.

An Airboat for Discrepancy Response...

by CWO2 Rick Clark, USCGC BUCKTHORN (WLI 642)

Here in the upper peninsula of Michigan, "old man winter" wreaks havoc over the area with bitter cold temperatures, heavy snowfall, and gale force winds. This wintry combination often leads to discrepancies requiring our AtoN personnel to brave the conditions and respond using non-traditional assets. One of those assets is an airboat, yes, an airboat.

Following a "record breaking" blizzard, I was closely watching CGMS waiting for discrepancy messages to flood my inbox; we only had one, a RFL missing its 4KRW. I made a quick call to the OIC of Station Sault Sainte Marie, and asked if his airboat crew could give us a ride out to the aid; he agreed, so our AtoN Technicians loaded their gear, donned their dry suits and prepared for a ride on the ice. The recent snowfall (about 6") provided a smooth cushion for the airboat's hull and the crew enjoyed the optimum conditions. The coxswain of the airboat made his approach to the structure, shut down the powerful V-8 engine, and the AtoN technicians scurried over the ice and up the range. They hung the board and left the aid watching properly; mission accomplished!

When the waters freeze, the boats are hauled, and "old man winter" flexes his muscles, the crew of the Cutter BUCKTHORN must adapt to the prevailing conditions to get the job done. On this day we couldn't have done it without the help of our station friends and their unique asset.

Who said "Last buoy?"

by CWO4 Rob Ratajczak, USCGC BARBARA MABRITY (WLM 559)

Two words seldom used on USCGC BARBARA MABRITY are "last buoy." Here's a good reason why… On a recent trip to Barataria Pass, an area known for a dense F/V population and plenty of mud, we were working our way through one buoy after the next.

With all but one buoy to go before heading back to Mobile, we maneuvered to service Barataria Pass B "8." We had planned for a "shave and haircut," giving us a good 30 minutes to depart the channel prior to sunset. All were good intentions…but sometimes it's better to be lucky than good.

Bringing aboard the "bonus" net and line that was hooked

As we were slewing B "8" across the deck, the aux bogged down…and we knew we had a bigger fish on the hook than we should. We had enough slack in the chain to get it to the pelican hook and switch out to the Main hook. As we slowly came up on the Main we found numerous things; some expected, some not.

The first item was a fouled mooring entangled in fishing net with line wrapped around both leads of the chain. This was going to take a while. Fortunately, the moorings were wrapped in a way that we could tell where all four parts of the chain were going. But cutting out the fishing net was going to take time.

After cutting our way through, we were able to secure the buoy and mooring on deck, making it safe and ridding us of the extras. Halfway through the second mooring, we found an old hull and half of another old hull. Throw in another fishing net, more line and a danforth anchor and we thought we had seen it all, just in time to find an old outboard attached to the rock.

The extra hulls that came up

So we finally picked up all the pieces and four long hours later we were done servicing our 30 minute buoy and headed back out once we all regained our night vision. It was a great experience (afterwards) for all involved and just goes to prove that you never know what you're going to get on a buoy servicing…especially the last one!!!

IALA – I've Heard of it, But What is it, Really?

by CAPT Wayne Muilenburg, CG-541, U.S. Councilor to IALA

Those of us with an interest in and responsibility for maritime navigation safety – pretty much the entire readership of the ATON Bulletin, I'm guessing – have likely heard of the International Association of Marine Aids to Navigation and Lighthouse Authorities … or "IALA" for short. Yes, I know the acronym doesn't exactly match the name, but when the organization started it was focused on lighthouses, and it has since expanded its role considerably. Unfortunately, "IAMATNLA" doesn't roll off the tongue as easily as "IALA," so those in charge wisely decided to keep it simple and stick with the original acronym.

But what many folks don't know is how IALA is structured, what purpose it serves, and how active the US Coast Guard is in it.

IALA is, simply, an international, non-governmental technical association charged with fostering the safety and efficient navigation of vessels through improvement and harmonization of aids to navigation worldwide. IALA membership is comprised of marine aids to navigation authorities and professionals from around the globe, manufacturers, and consultants, all of whom are committed to maritime navigation safety and protection of the maritime environment. Its members work together to foster international cooperation and alignment in matters impacting marine navigation. IALA's expertise is sought around the world to assist with ATON system design and training standards, radionavigation issues, navigation risk assessment and disaster recovery within the maritime realm.

Now, it's not <u>just</u> about the buoys that those of us with roots in the Coast Guard's black fleet care so much about. IALA takes an expansive view of "aids to navigation;" the world's various visual aids to navigation systems – buoys, beacons, lights, etc – are just one component of what IALA considers "ATON." Included in this spectrum is any maritime system or service that aids maritime navigation: Vessel traffic management (which includes VTS), a variety of radionavigation systems (LORAN, DGPS, etc), pilotage issues, the Automatic Identification System (AIS), the systems and processes involved in the emerging concept of enhanced Navigation ("eNav"), maritime risk management, ATON-related quality management systems, etc.

IALA is recognized internationally as the authoritative source for ATON information. Collectively, its members represent a body of international navigation expertise, and it has no rival in the world. Seventy-four countries are members, and twenty-four member countries – of which the United States is one - comprise the IALA Council. IALA is headquartered in St. Germain-en-Laye, France, a suburb of Paris, although meetings can and do occur throughout the world.

The "heartbeat" of IALA, as Secretary-General Torsten Kruuse puts it, are the four technical

committees (and two technical panels) that work to develop common worldwide standards, in the form of recommendations and guidelines, for maritime navigation safety: ANM (Aid to Navigation Management), VTS (Vessel Traffic Systems), eNav (Enhanced Electronic Navigation), and EEP (Engineering/ Environment/Preservation). In addition, panels were recently created to discuss legal issues (the Legal Advisory Panel) and pilotage issues (the Pilotage Advisory Forum). The U.S. (specifically, the Coast Guard) has members on all six committees, and leads two: Mr. Mike Sollosi is Chair of the VTS Committee, and Mr. Bill Cairns is Chair of the quickly expanding eNav Committee. Both work within CG-5413, Navigation Systems Division, and both have been involved with IALA for well over a decade. The Coast Guard has been a national member of IALA since its inception in 1957.

These six Committees, and the IALA Council, generally meet twice each year for four or five days; in addition, IALA organizes and hosts a multitude of symposia, conferences, and workshops for maritime navigation professionals around the world. It's an extremely busy and active association, which keeps the small Executive Secretariat hopping.

That the Coast Guard has benefited enormously from its association with IALA is inarguable. As the global maritime industry continues to evolve with rapid technological developments, ship design, and operations, it too looks to IALA to help promote standardization and lend expertise to increasingly complex navigation issues.

Further information about IALA can be found at www.iala-aism.org.

Micronesian ATON: TDDGPS, GAPPS, and Fly-Aways

by LTJG Thomas Brittingham, USCGC SEQUOIA (WLB 215)

Diving to recover a sunken hull

Tender Deployable DGPS (TDDGPS), GPS Autonomous Point Positioning System (GAPPS), fly-aways, lift bags, lift tanks, fill whips, clumps, cherry floats, tow line, calipers, and scuba gear. Are all of these familiar ATON tools? If so, you've probably worked ATON in Micronesia. USCGC SEQUOIA (WLB 215) is homeported 3,300 nautical miles west of Hawaii and 1,500 nautical miles south of Tokyo in Apra Harbor, Guam. In addition to standard WLB 225' ATON operations, SEQUOIA also uses unique positioning equipment and a dive team to work aids to navigation in an area of responsibility that includes Guam and stretches 125 nautical miles northeast to Saipan and 1,300 nautical miles southeast to Kwajalein Atoll.

SEQUOIA's ATON AOR is comprised of the Mariana Islands (including Guam, Saipan, Tinian, and Rota) and Kwajalein Atoll, located in the Marshall Islands chain. SEQUOIA's AOR for all other missions is much larger, spanning the Western Pacific from Hawaii to Asia and from Russia to Australia. Guam is a territory of the United States and Saipan, Tinian, and Rota are part of the Commonwealth of the Northern Marianas Islands (CNMI), in political union with the United States. The Republic of the Marshall Islands (RMI) was established on October 12, 1986 in a Compact of Free Association with the United States. The U.S. leases Kwajalein from the RMI and maintains the Ronald Reagan Ballistic Missile Defense Test Site (RTS) run by U.S. Army Kwajalein Atoll (USAKA). Kwajalein atoll is the largest atoll in the world, with a land mass of only 6 square miles and a lagoon measuring 665 square miles. The Coast Guard maintains federal aids to navigation in Kwajalein in support of military transport and commerce for USAKA.

It takes SEQUOIA four and a half days of transit time from Guam to respond to an aid in Kwajalein. Furthermore, there are no ANTs in Micronesia; SEQUOIA handles all ATON (floating, fixed, shore side, etc.) in the AOR. The need for quick response to any ATON discrepancies in such a large AOR created the concept of "fly-away" ATON teams who travel independently from the cutter TDY to fix an aid. A fly-away team might consist of as little as one person. This not only saves time, but thousands of dollars in fuel and other logistical costs in deploying the cutter for a week or longer to service an aid. This method of discrepancy response has spawned several advances in ATON positioning technology as well.

Positioning with GAPPS

First, there are no DGPS beacons in Micronesia. Sextant angles were used to position aids until 2002 when the Tender Deployable DGPS (TDDGPS) was fielded. The TDDGPS utilizes a portable base station and antennae that are set up ashore within several miles of an aid, in order to create a temporary DGPS beacon for positioning. The tender deployable is a great tool and a significant advance since the days of sextant angles. However, the system still has drawbacks; a crew must take the unit ashore and remain with it during setup and operation. The unit is also very bulky and must be transported in four cumbersome containers and bags by a minimum of two people. Furthermore, the base station can take hours to fix its position and provide a signal accurate enough for the cutter to utilize for positioning. The TDDGPS can be used on a fly-away, but its size makes this less than desirable.

To improve upon TDDGPS, C2CEN recently introduced a new system called the GPS Autonomous Point Positioning System or GAPPS. SEQUOIA utilized GAPPS for the first time during a deployment to Kwajalein in October 2007. GAPPS was developed to improve upon and replace the TDDGPS. The entire unit consists of a laptop computer, electronics box and antennae, both slightly larger than a typical PDA. All of this gear fits neatly into a backpack, making transport extremely easy for a single positioning technician. The unit does not require a shoreside base unit to be set up and can be used aboard a cutter or small boat to position aids due to its small size and autonomous operation.

During SEQUOIA's recent Kwajalein deployment, C2CEN provided SEQUOIA with two GAPPS units, enabling the cutter and small boat to position aids simultaneously. With the added versatility of the dive team, multiple aids in different parts of the lagoon could be independently serviced and positioned. GAPPS solves all size and ease of use issues that were present with TDDGPS. However, GAPPS is not yet approved for use and SEQUOIA returned both units to C2CEN after returning from Kwajalein.

Working an aid with the dive team

A diver gets a chafe measurement while inspecting the mooring

While GAPPS solves positioning issues in such a large AOR, it does not help with the most basic of ATON jobs: moving heavy objects both in and out of the water. To address this challenge, SEQUOIA turns to its dive team.

SEQUOIA's dive team serves two purposes; the first is to enable response to ATON with a small independent team, saving money and personnel in the same way fly-away positioning technicians save resources. The dive team can fly to Kwajalein with all necessary gear to respond to a discrepancy in a matter of hours. Second, the dive team enables the servicing of aids that are located in water too treacherous for the cutter to safely navigate. In the Western Pacific, aids often mark entrances to atolls, where depths may decrease from thousands to only a few feet in only a matter of yards. Sometimes there is no other choice than to position an aid in water only several yards from a reef line that may lie inches below (or above) the surface. Also, typhoons will routinely wash aids into a reef or near shore where recovery by divers is the only option. In addition to performing every task that the cutter is capable of, including inspections, mooring replacements, and complete hull and mooring reliefs, the dive team is also capable of salvaging sunken aids for repair and redeployment and ship's husbandry missions.

The unusual geographic and logistical challenges of the Western Pacific and Micronesia make ATON work in this region a truly unique and rewarding experience. For more information on SEQUOIA's use of TDDGPS or GAPPS contact BM1 Sean Hope (Sean.P.Hope@uscg.mil) or BM2 Charles Palmer (Charles.B.Palmer@uscg.mil). For more information on SEQUOIA's Dive Team contact LT Alan FitzGerald (Alan.J.FitzGerald@uscg.mil).

Editor's Note: *After following up with LT Krystal Kenshalo at CG-54131, the following is an update on the status of GAPPS.*

During SEQUOIA's patrol, GAPPS was in the prototype stage. This summer GAPPS will transition to the implementation stage, and will be deployed to multiple units within D14 and D17 for continued testing. GAPPS has not been fully deployed due to interface issues between AAPS and GAPPS, which will be corrected in the next release of AAPS.

A Note on Dive Ops

by HSC Phil Roy, CG-7731, Assistant Dive Program Manager

Editor's Note: *We've recently had some questions about the regulations surrounding use of divers by units without an assigned dive team. HSC Phil Roy provided the below guidance on use of divers.*

Commercial Diving Activities are regulated by 29 CFR 1910 Subpart T. Enclosure 10 of COMDTINST M3150.1B (Coast Guard Diving Policies and Procedures) gives a breakdown of the CFR that the units in the field can utilize when hiring Commercial Dive entities. There are only 3 exemptions to these CFR's and they are: Public Safety Diving (may only engage in diving in the interest of public safety and for emergency rescue), Scientific Diving (may dive in the interest of forwarding scientific knowledge and therefore must be a scientist or scientist in training), and Military Divers. Neither Public Safety nor Scientific divers may be used as working commercial divers per the CFR's. Military divers may perform all diving needs within the scope of training and qualification and are exempt from meeting the requirements of the CFR's.

So, to summarize, Coast Guard units requesting dive services need to be utilizing military divers or hiring legitimate commercial dive companies who meet the criteria of 29 CFR 1910 subpart T, otherwise they are in violation of the CFR. For more information, check out the links below.

Coast Guard Diving
http://cgweb.comdt.uscg.mil/G%2DOPC/

Association of Diving Contractors International
http://www.adc-int.org/

International Marine Contractors Association Diving Division
http://www.imca-int.com/divisions/diving/

Hanson's Method

by LCDR Kevin Hanson, USCGC BRISTOL BAY (WTGB 102)

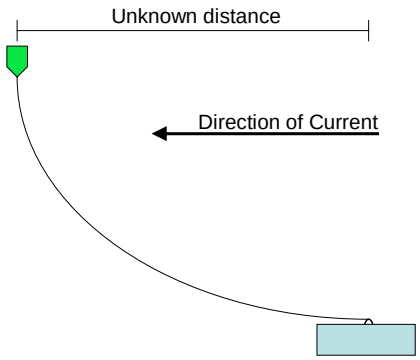
Have you ever thought to yourself: "How do you calculate the Horizontal Dilution of Precision?" Have you ever checked the formula in AAPS to ensure that the offsets are being correctly applied (mathematically speaking)? Do you get excited when the EO asks you to help him graph his engine maintenance hours?

Such is the curse of being a buoy tender skipper and a math geek. Do you want to know what has been robbing me of sleep lately? Well, I'm going to tell you anyway.

The Fraction of Watch Circle Radius method for estimating excursion doesn't accurately reflect how a buoy behaves in a current. Instead of finding the buoy hull at a distance 1/4, 1/2, or 3/4 of the watch circle away from the sinker, you should find it somewhere between the distances calculated by the 'L Method' and the 'Hypotenuse Method.' Please let me explain.

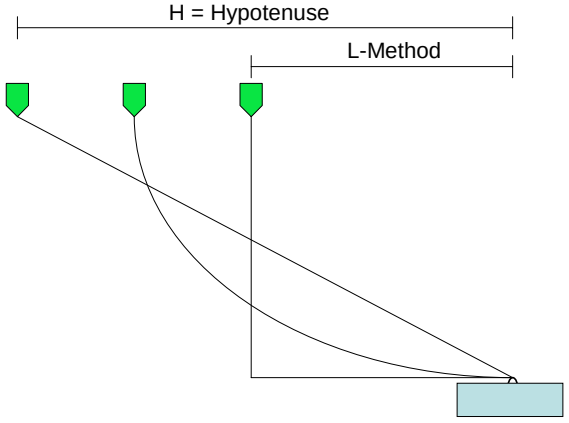
The current formula assumes that as the current gets lighter, the buoy will continue to move toward the sinker. Furthermore, it assumes that in an extremely light current, the buoy will be very close to being right over the sinker, down current of the sinker, in a predictable position. This may sound accurate, but let's think about it for a minute. When the buoy is directly over the sinker, what is holding it in place? The sinker? No. It is the weight of the chain on the bottom. In this case, the chain is not pulling on the sinker at all. So we have to ask ourselves: If the current is so light that the weight of the chain is holding the buoy in place, how do we know where the sinker is? We don't. If the weight of the chain can hold the buoy, the buoy could even be up current of the sinker. In fact, the buoy could be in any direction from the sinker. The furthest away from the sinker a buoy could get in this situation is calculated by the L-method, because anywhere outside of the L-method the chain will start to pull on the sinker. So, if we are in a situation that the current is so light that the buoy is being held in place by the weight of the chain, we are in a situation that we cannot accurately determine where the sinker is without pulling on the chain and using the L-method. When this is the case, the Fraction of the WCR method does not apply.

According to the NATON ANC-AP Workbook, the Fraction of the WCR method is to be used when the current is both strong enough and has held long enough that all the chain lies on the down current side of the sinker. So, when we are using the Fraction of the WCR method, we need to ensure that we are in a circumstance where the buoy is pulling on both the chain and the sinker with a steady tension. The buoy will look something like the figure on the next page.



The problem is that the current formula for the fraction of the WCR method often yields distances closer to the sinker than the distance calculated by the L-method. As discussed above, we should never be using the Fraction of the WCR method if the buoy is closer to the sinker than the L-method. Again, in this circumstance we cannot accurately predict the position of the sinker without pulling on the chain.

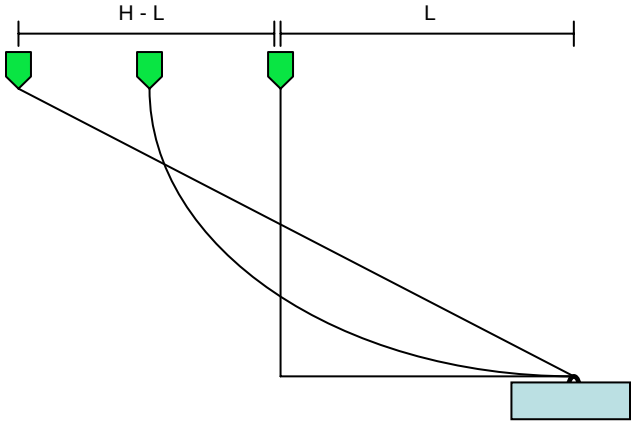
In order to come up with a more accurate formula, we must first understand what we already know. It is well established that the maximum a buoy can be from a sinker is calculated by the Hypotenuse Method. This condition only exists in an extremely strong current where the chain is pulled straight. This maximum distance is also known as the watch circle radius (WCR). As discussed above, the minimum this condition could be is calculated using the L method. This would be the lower limit and would be approached in only a very weak current. Any situation where the buoy is closer to the sinker than the L-method is a situation where we cannot accurately determine where the sinker is and must use the L-method.



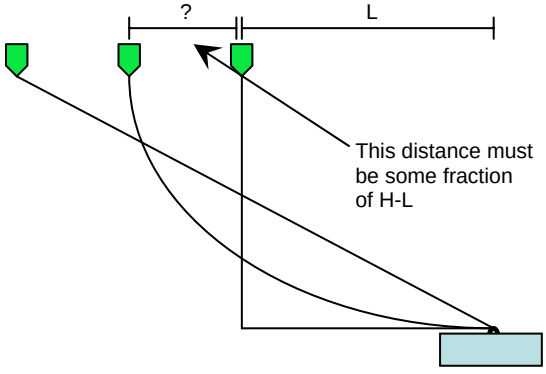
The current Fraction of the WCR Method formula establishes no minimum distance the buoy must be from the sinker. In the Fraction of the WCR Method, the WCR is multiplied by ¾, ½, or ¼ for a strong, moderate, or weak current, respectively. The problem is in most cases, ¼ x WCR is less than the distance found using the L-Method. In fact, it is possible for ¾ x WCR to be less than the L-Method. Although there are many cases in which this method is not accurate, I will demonstrate one instance which should be enough to show that there is a problem with the Fraction of WCR Method.

In the NATON ANC-AP Workbook, students are taught how to apply the WCR Method. The example given has a depth of water of 38 feet and 120 feet of chain. The WCR Method for strong, moderate and light current yield answers of 28.46, 18.97, and 9.49 yards, respectively. The L-Method yields an answer of 27.33 yards. So, according to the WCR method, in a moderate or light current, the buoy will be closer to the sinker than the L-Method. Also, in a heavy current, the buoy will be only one yard further away from the sinker than the L-Method.

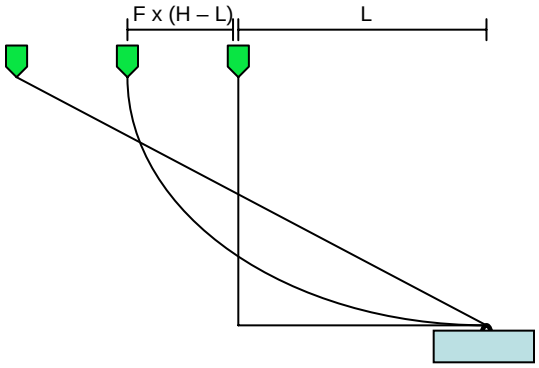
The solution is simple. The formula must incorporate the lower bound of the L-Method. We already have two distances that we know how to calculate using the Hypotenuse and L- Methods. The unknown distance is somewhere between the Hypotenuse method and the L-Method. The distance between these two methods is simply H – L:



Therefore the distance between the L-method and the unknown position is some fraction of this distance of H-L:



We can call the fraction F, which will clearly be determined by the strength of the current. I propose the most logical values of F would be ¾, ½, and ¼ for a strong, moderate and weak current, respectively.



The final formula would then be this estimated distance plus the L-method:

Distance from MPP = F x (H-L) + L

I Like to call this formula HFFCEIASC (pronounced just as it looks), or Hanson's Formula for Calculating Excursion in a Steady Current.

Of course now we have a new question to answer: How do I know if the current is strong enough to be pulling on the sinker or if the weight of the chain is holding it in place? Well, don't look at me. I am a math geek, not a physicist. I recommend making that determination based on prevailing weather conditions and experience. If in doubt, pull on the chain to see.

That's it. I should sleep better now that I got that off of my chest. I know you were hoping for more. But like I said, that's what you get when you give a math geek Command of a Buoy Tender.

Oh yeah, did I mention that I am a fitness nut as well? Really, it's just my feeble attempt to look more like a football player than a math geek. Now that I have solved the conundrum of the Fraction of the WCR method, I often find myself thinking: "How can we increase our deck force's average bench press by 25 pounds?" or "How long does an MK2 have to run before he pukes?" Strange, but true. Anyway, stay tuned for my next article: "How to get buff on your buoy deck."

Editor's Note:

The standards for positioning floating aids to navigation are contained in the Aids to Navigation Manual – Positioning, COMDTINST 16500.1C. Positioning floating aids to navigation that are not at short stay present a special situation since the position of the sinker must be esti-

mated. The policy promulgated by COMDT does not dictate a method or protocol to be used in determining buoy excursion from the sinker due to the numerous factors and conditions that may be encountered while on-scene. The AtoN professionals on scene must estimate excursion based upon their judgment and experience, and indicate the method used in the remarks section of the Aid Positioning Record (APR).

The bottom line when we're talking about excursion: it's a guess. An educated guess, of course, but still a guess. We can't see the sinker, so we're making our best estimate as to where it is in relation to the hull. When we're doing this, some assumptions are necessary, but we do the best we can with what we know and what experience has taught us.

The Fraction of the Watch Circle Radius (FCWR) method is one of several frameworks that can be used to calculate excursion distance. Different methods apply to different on-scene conditions. The FWCR method can actually be used even when all the chain isn't on one side of the sinker. This is where knowing your AOR comes into play. If you know the current has just shifted direction, even if it's a strong current, the situation may call for 1/4WCR, because although it's a strong current, it hasn't had time to move all the chain to one side of the sinker, so it's likely only as far out as 1/4WCR. This is just one example, but keep in mind that the FWCR method can be used in many different situations, depending on how well you know your AOR and how comfortable you feel in selecting the applicable fraction based on the conditions.

The information in the article differs from what is currently taught at NATON School, and that's because a unit found a different way to do things particular to the conditions they experience. Units are certainly permitted to devise their own method of excursion that suits the particular conditions the unit encounters, provided the unit can explain their method and it reflects due care. Keep in mind, if the fix you obtained comes into question, you'll need to be able to explain the method you used and show that you were exercising due care. If you've developed a method at your unit, please share it with NATON so we have the option of providing our students with the different methods being used in the field.

In addition, we encourage units to test themselves for accuracy in positioning with excursion. To do this, position an aid you know you'll be positioning at short stay using excursion first. Get a found fix using whatever excursion method applies, and then compare the CWC to AP distance with the MPP to AP distance you get when you position it at short stay. If you do this, please send the data to NATON. If we can start tracking real data on excursion, maybe we can develop an even better method.

I-ATONIS Update

by Ms. Marie Sudik, NAVCEN

Title 33 Part 72 Code of Federal Regulations requires the Coast Guard to publish the Light List. Since 1985 the National Geospatial-Intelligence Agency (NGA) has produced the Light List for the Coast Guard using a NGA database that houses Coast Guard maintained data. Over the years, coordinating the publishing from the NGA database has proven to be complicated.

The latest release of I-ATONIS (Version 1.5, released January 2008) includes the functionality to generate the Coast Guard Light List directly from the I-ATONIS database. The recent upgrade to I-ATONIS 1.5 allows us to finally achieve our long-standing goal of publishing the Light List directly from CG data. Beginning in 2009, all future editions of the Coast Guard Light List will be generated directly from the I-ATONIS database and published by the Coast Guard Navigation Center (NAVCEN).

As has been discussed for many years within our community, it is essential that information contained in I-ATONIS is accurate. This becomes ever more so important with the wide publication of this data through the Light List.

To ensure the data is ready for public release, CG-541 requires Districts to certify their Light List I-ATONIS data as correct for all applicable aids within their area of responsibility. Each district shall provide certification via message traffic or memo to CG-541 no later than 15 September 2008. Job-aids to assist in the certification process are available at: http://iatonis.uscg.gov/atnsweb/atonis.show_support

As a limited test of the I-ATONIS Light List generation capability, Volume V, Mississippi River System, will be published from the I-ATONIS database in order to identify and resolve any process issues that may be present. This volume will be released in Summer 2008.

The pending transition to I-ATONIS data provides the opportunity for the Coast Guard to control the entire publication cycle. Our goal is to publish the Light List annually at the same time each year. With this goal in mind, the 2009 Light List will be published in January 2009 and will include all corrections made through the final 2008 Local Notice to Mariners. It is our intention to continue this publication cycle each year into the future. Since the 2007 Light List was not published until late in the fall of 2007, the Coast Guard will not publish a 2008 Light List.

Thank you for your continued efforts to support the Aids to Navigation program.
I-ATONIS specialists from the NAVCEN Charting Team will be available to assist districts with data certification. For further information contact Mr. Gene Diotalevi at (703)-313-5847 or Eugene.J.Diotalevi@uscg.mil or Marie Sudik at (703) 313-5813 or Marie.P.Sudik@uscg.mil.

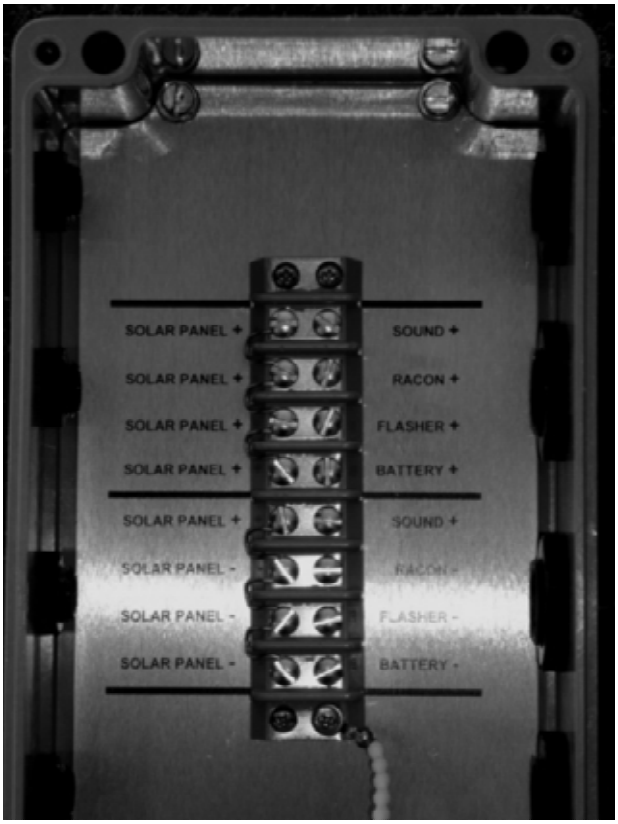
SeaBeacon 2 System 6 RACON

by EMCS Phillip McCall and EM2 Katherine Elgin, USCGC JOSHUA APPLEBY (WLM 556)

The following information is in regard to the current electrical wiring connection procedures for the SeaBeacon 2 System 6 RACON. As per the Tideland Signal Corporation installation manual, this unit is using only the mandatory minimum field wiring required to allow for proper operation of unit and to provide lightning protection for internal electronics. The Racon Power and Data Cable is currently comprised of 9 conductors, all of which could be used for various signal assignments. This unit is only using the following conductors for operation of unit:

1. Red — Positive (+) Battery
2. Black — Negative (-) Battery
3. Green — Earth Ground for Electronics
4. Ground Strap — Earth Ground for Electronics

All electrical connections, excluding the grounding strap, are made within a buoy mounted junction box that was fabricated by Delta Integration, Inc, and approved for use by the Coast Guard. The part number is BMJB 1174. Within this junction box, there are some minor flaws that will need to be addressed in order to keep the installation process easy and safe. See photos below for clarification. The flaws in question are as follows.

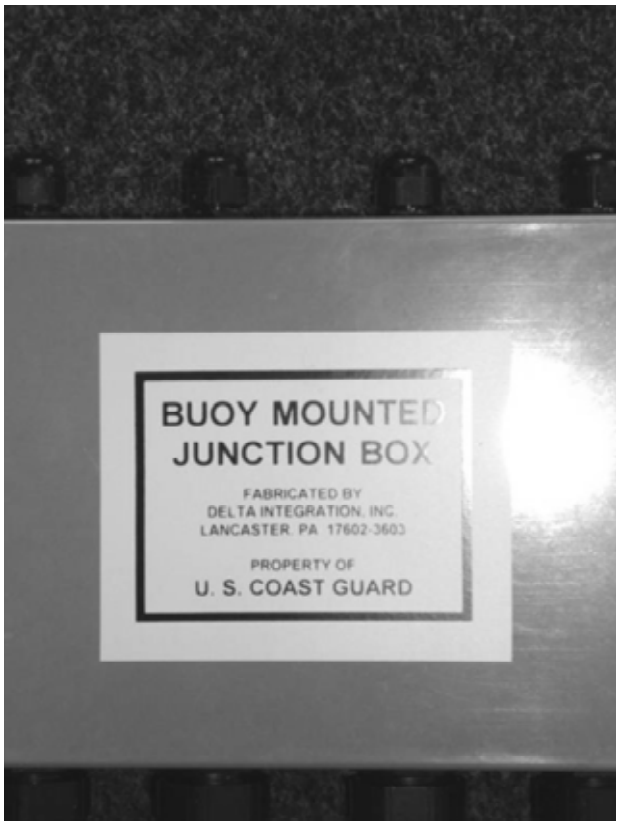


1. The terminal board appears to be mislabeled on the negative (-) potential terminals for the solar panel. One of the terminal connections is listed as positive when it should be listed as negative. The same is true for the connection of a sound signal, if required. If the technician does not catch this error in time, a short circuit could occur, and possibly cause damage to all affected equipment on the buoy. Note on the photos how each half of the terminal board is electrically connected for required voltage potentials.

The bottom half of the terminal board (bottom 4 terminals) should be a negative (-) potential. As you can see, the solar panel and sound positive conductors are incorrectly labeled. The top half of the terminal (top 4 terminals) should be a positive (+) potential. (Note the jumpers).

2. There should be a provision within the CG junction box for connection of the earth ground for the electronics. This unit is currently grounding the negative potential on the terminal board in the junction box to the buoy hull via a separate conductor from the junction box. The Tideland Standard JB-5R Junction Box has this feature installed.

As always, we have managed to work around these issues to make the equipment perform as required. Feel free to contact CGC JOSHUA APPLEBY with any questions.



The junction box has 4 large stuffing tubes for the larger power cables, four stuffing tubes for the solar panels, and a vent plug. It appears to be capable of protecting the electrical connections from the elements.

The Terminator

by Mr. Jon Grasson, CG-432 and BMCM Bill Weir, NATON School

Improperly installed wire terminations on lighted aids to navigation can fail, prematurely causing a discrepancy that is difficult to troubleshoot. The use of self contained lanterns will solve many of these problems, but many aids, including lighthouses, ranges and medium intensity signals will still use legacy components requiring quality terminations at the battery and equipment.

Stranded copper wire is the preferred conductor on lighted aids due to its low electrical resistance, flexibility and wide assortment of sizes. Bare copper wire in a marine environment will oxidize (that greenish coating on the wire strands), which acts as an insulator on compression-type lugs. This oxide will wick up the conductor and make it difficult to make a new crimp termination when the old lug is cut off. When this oxide forms inside a spade or ring lug, the electrical resistance increases, limiting the current through that connection to the point that voltage drop is severe enough to cause the component to fail to operate. Tinned copper conductors offer superior protection to environmental corrosion; tin will still oxidize, but at a lower rate and the tin oxide does not act as an insulator so voltage drop through the lug is not an issue. So, for wires that are terminated in the field, only tinned copper conductors (wire strands appear silver instead of copper) should be used. Bare copper can be used if the wires are soldered to the lugs or a closed end lug is sealed with heat shrink tubing after being crimped. For units using a district-supplied lantern stand where the wire length is known, the best scenario is to make up some 12/2 SO cables of the appropriate length with soldered lugs at each end. If this cannot be done in-house, I can provide a suggested source of supply. Additionally, lugs can be soldered on the solar panel leads, but care must be taken to ensure that the stuffing tube can be slid over the lugs; otherwise the stuffing tube can be assembled on the cable before the lugs are attached. Wires that are terminated at devices with a clamp-pad or clamp-screw terminal (Range Power Box, Range Switch Box, etc,) should use tinned copper conductors.

Lugs are available in tinned copper, which avoids the corrosion issue at the crimp and under the screw terminal and battery lug. Lugs can be purchased insulated or non-insulated. Insulated lugs are generally used if they are crimped in the field. Non-insulated lugs are used if heat shrink tubing is applied over the termination after the lug is crimped and/or soldered. When soldering, slide a piece of heat shrink up the insulated conductor, apply a liquid or paste rosin flux to the wire, insert into the lug, apply heat to the barrel of the lug and insert solder into the

end of the barrel until it is drawn into the strands. Slide the heat shrink over the barrel after it cools and use a heat gun to shrink the tubing in place, sealing the insulation and lug to prevent moisture from wicking up the conductor.

Insulated Spring Spade

Non-insulated Ring

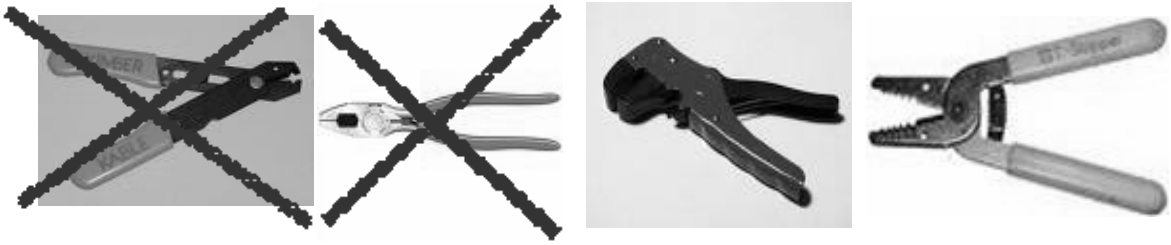
Closed End

Four things must be considered when ordering lugs: wire size, insulated or non-insulated, type of lug and size of lug. With the exception of oversize lugs (for 8 AWG wire are larger), lugs are divided into three general sizes; 10-12 AWG, 14-16 AWG and 18-22 AWG. If insulated, they are color coded as yellow, blue and red, respectively. The proper size lug must be used; too large and the crimp will not contact all the strands and may be loose; too small and some strands will be broken or rejected when the wire is inserted. For components like flashers and lampchangers, I like to use the spring-spade or locking-fork lugs. The locking-fork looks like a spade or fork lug, but will clip in around the screw, allowing you to tighten it without holding it in place, yet also allowing easy removal. All of our flashers use number 8 screw terminals, so lugs should be sized accordingly. Minor aid batteries have either 3/8" studs (Delco) or 1/4" bolts (Sunlyte). Ring lugs work best on these applications.

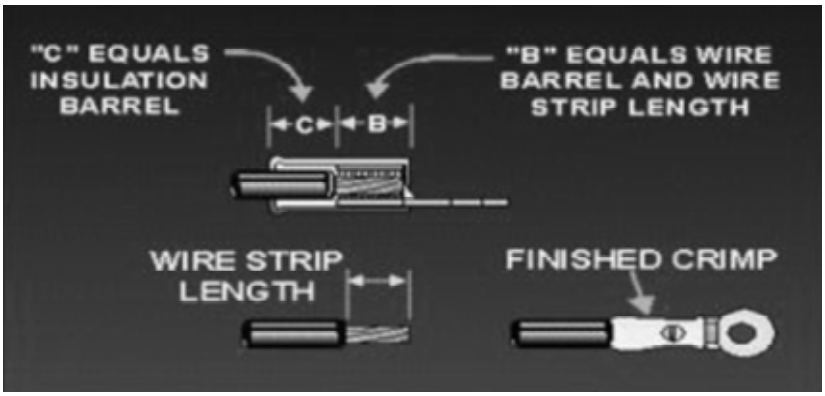
Barrel Crimper

AMP ProCrimper III

The proper crimper must be used when making field connections. An inexpensive "barrel" type crimper will not provide a suitable termination in the marine environment. The suggested crimper is the AMP ProCrimper III which accommodates all three insulated terminals discussed above. Different dies can be purchased if non-insulated lug terminations with heat-shrink tubing are made. Due to the difficulty of changing dies, more then one crimper should be purchased and labeled for the intended purpose (insulated lugs, non-insulated lugs, 10-22 AWG, etc.).



Wires must be stripped with the proper tools. Linesman pliers, dykes and non-adjustable wire strippers can damage insulation or cut or nick wire strands which may prevent a complete crimp because the lug is sized for a specific range of wire diameters. Self-adjusting or stepped wire strippers (above) protect the conductors and provide a clean, square cut of the insulation. The amount of insulation removed from the wire should equal the barrel length "B" shown below. Removing too much insulation exposes the wire strands to the environment and removing too little may not allow an adequate crimp.



Lugs for 6 AWG and larger conductors should not be soldered as it is difficult to apply enough heat for a good connection due to the mass of the lug and conductor. Use closed end lugs to seal the end of the conductor and apply heat shrink tubing to seal the insulation to the barrel. The compression lugs are easy to use in the field, but must be sized for the specific conductor and lug. Large closed end lugs require a specific crimping tool to ensure an adequate connection. Consult with the manufacturer's recommendations when purchasing lugs.

Closed End Lugs

Compression Lug

Crimped & Heat Shrunk

Now go out there and terminate properly, or you'll be back!

User Activated Sound Signals

by BMCS Eric Smith, ANT Coos Bay, Mr. John Barbieri, D13, and Mr. Jon Grasson, CG-432

ANT Coos Bay recently installed a new VOSS (VHF Operating Sound Signal) system on the Chetco River Fog Signal. This was part of a widespread operation in District 13 to replace the VM-100 fog detectors with VOSS units.

The VOSS system allows waterway users to activate a sound signal by keying their VHF radio as specified in the Light List, which contains comments in the remarks column with activation instructions. The signal will sound for the programmed time as advertised. All waterway users may activate the fog signal, but are not required to do so.

This is a huge improvement over the VM-100 fog detector, which would activate due to dust, moisture or dirty sensors even on crystal clear days, spawning numerous complaints from those who live and play around the water.

User activated sound signals were authorized for all Districts by CG-PWN (now CG-54131) in 2004 and again in 2007 in the Maritime Short-Range Aids to Navigation Strategic Plan. The Strategic Plan called for reduction of fog detectors by 50% (based on 2005 levels), either through switching to user activated sound signals or through discontinuation, by 2015.

To date, D13 has discontinued 24 fog signals and the all remaining fog signals have had the VHF call up devices installed. There are no VM-100 detectors remaining in D13. Additionally, all remaining fog signals have been turned down to the 1/4 mile setting and all have been "baffled" to landward. Fog signal complaints are now non-existent.

Pelican Hooks

by BM1 Chris Wilcox, NATON School

Most of the 175 WLMs and 225 WLBs have pelican hooks that were handed down by the 180, 157, or 133 that they replaced. Depending on the quality of the old ship's rigging log, you may or may not have much information about these hooks, including the size and manufacturer. Pelican hooks typically have a very long service life and just because your pelican hook is old doesn't mean it's not safe. That being said, there are a few units out there that have recently had a few problems.

Unlike regular weight handling hardware, there are no published guidelines regarding the wear of a pelican hook. As in all rigging hardware, we at NATON recommend no more than 10% wear. To measure the wear, first close the pelican hook and set the bale. Pull up on the hook until it firmly contacts the bale. Take your calipers and using the inside diameter reading, measure the distance between the inside edges of the hook. Be sure to measure where the chain normally sits in the hook. If you know the original size of the hook, you will be able to determine the actual wear. Don't forget to measure the wear points on the eye of the hook. If you don't know the original size of your pelican you can still determine if the pelican is serviceable. To inspect, ensure the pelican hook is operating correctly, that it passes a visual inspection, and securely holds whatever size chain you use with the hook.

Unlike many of our ANT boats, one size doesn't work for all applications on a tender. The majority of tenders should have at least two different size pelican hooks. The size of these pelican hooks should be based upon the sizes of chain you might encounter. IAW the AtoN Tech Manual, buoy chain ranges from ½" up to 1 7/8". Pull a TRLB for an ANT and you might encounter ½" chain. Transiting offshore, you could encounter 1 7/8" chain. Only you can make the determination of what your unit needs. To aid you in determining what sizes might be best for your unit, we have included a sizing chart that was provided to us by one of the largest suppliers of pelican hooks, Washington Chain & Supply. This chart is a representation of most of the pelican hooks available in today's market. The important point is using an improperly sized pelican hook could result in running chain. This recently occurred on one of our WLMs during a test of the emergency lowing function of the inhaul winch. With a test load of 16,500 lbs applied to the winch and the hydraulic chain stopper in the up position, the hydraulic pressure was increased using the emergency hand pump. As the pressure built, the hydraulic brake released and the inhaul winch began to pay out. A pelican hook had been set as a back-up, but because it was sized wrong for the chain that was being used, the chain ran through the pelican hook until the test weight hit the bottom! The good news? Nothing broke and no one was hurt. As always, someone else's MISHAP becomes a wake-up call for the rest of us.

If you're in the market for a new pelican hook you have several options. Of course we at NATON don't recommend one supplier over another, but these three are a good place to start. http://www.blueoceantackle.com, http://www.listerchain.com, http://www.wachain.com. The stock system also carries pelican hooks, but it's very difficult to ensure that you're getting the

right pelican hook as information in FEDLOG is sketchy at best. No matter where you go, we recommend that you use the sizing chart that we've provided to order the correct sizes for your unit.

Chain Size	A	B	C	D	E	F	G	H	Proof Test Lbs.	Weight Lbs.
3/4HS* & 3/4	7/8	7/8	2	2	1	10	1-1/4	3/4	34,000	12
7/8HS & 7/8	1	1-1/8	2-1/4	2-1/4	1-7/32	12-11/16	1-3/8	7/8	46,000	16
1HS & 1, 1-1/4	1-1/4	1-1/4	2-3/4	2-1/2	1-17/32	16-11/16	1-5/8	1-1/8	92,200	32
1-1/4HS – 1-5/8	1-1/2	1-1/2	3-1/4	3	2	18-7/16	1-7/8	1-1/2	153,000	53
1-5/8HS – 2	1-3/4	1-3/4	3-1/2	3-3/8	2-7/16	21-1/4	2-1/8	1-1/2	192,000	77
2-1/8 – 2-1/4 – 2-3/8	2-1/4	2-1/4	4-1/4	4-1/8	2-9/16	25-9/16	2-1/4	1-1/2	220,000	151
2-1/2 – 2-3/4HD**	2-1/2	2-1/2	4-5/8	4-1/2	3-1/8	29-1/2	2-3/4	1-7/8	290,000	195
3HD & 3, 3-1/4	2-3/4	2-3/4	5-1/8	5	3-3/8	32-1/2	3	2	300,000	263
3-3/8 & 3-1/2	3	3	5-1/2	5-1/2	3-7/8	35-3/16	3-3/8	2-1/2	350,000	265
3-1/2HD & 3-3/4	3-1/2	3-1/2	6	6	4-1/2	37-3/4	4-1/4	2-7/8	400,000	285
4-3/4	3-1/2	3-1/2	6	6	5-3/8	46-3/8	4-1/4	2-7/8	450,000	350

Dimensions in inches, weights in pounds.
*HS = High Strength Chain
**HD = Heavy Duty Chain

Fiege or Electroline Fittings

by BM1 Chris Wilcox, NATON School

Recently while conducting some research on Esmet's Electroline (Fiege) fittings, we discovered an interesting problem that we'd like to share with the field. We were reading an article on Esmet's website http://www.esmet.com titled, "Mechanical Wire-Rope in Military Applications." The article stated that the Electroline fittings are 1.3 to 2.0 times the strength of the attached rope, depending on the fitting grade, and are rated to Improved Plow Steel (IPS) or Extra Improved Plow Steel (EIPS) ratings, depending on desired strength. After reading this we got to thinking, if there is such a variance in strength from IPS to EIPS, what would happen if we were using a higher grade such as Extra Extra Improved Plow Steel (EEIPS) or High Strength (HS)? We e-mailed Esmet's engineers with the question, "What if a higher grade of wire rope is used such as EEIPS or HS?" Esmet's response was when EEIPS rope is required, Esmet's policy is to move to the next size up in fitting strength and modify the sleeve to fit the required rope. An example of this would be if you had a 1" EEIPS rope, Esmet would recommend a 1 1/8" fitting and custom manufacture the sleeve to a 1" internal profile. Esmet would use the charts for rope strength from their catalog to verify the next size up fitting falls within the R.B.S. (catalog breaking strength) of the EEIPS wire rope that you were using.

So, you ask, what should we in the field do? We recommend that when you call Esmet to order an Electroline fitting, ask for the correct fitting for your wire rope size and grade to meet the required 5 to 1 safety factor. Don't call with the model number of the fitting that you think you require. Place the responsibility in the hands of the Esmet engineers. These guys are the experts and they will know what you need. Again, always ensure that what you are using conforms to the 5:1 safety factor that is designated by COMDTINST. Electroline fittings are excellent products. We do not want them to be pulled from service because we were using the wrong fitting for the wrong application.

Photo Hunt!

This edition of Good Times was contributed by LTJG Jeannie Killen from CGC JUNIPER. See if you can find the 10 differences between these two shots of the buoy deck!

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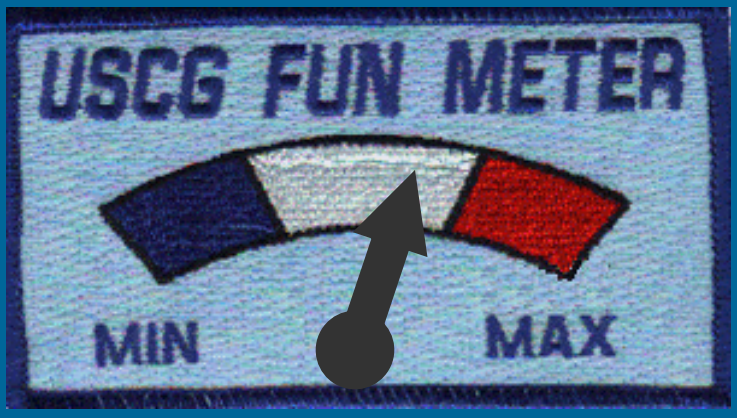

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