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ALL HANDS

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Photo by PH1 (AC) Scott Allen

Mine Warfare School—Page 6

- | | |
|---|---|
| <p>4 Family matters
Support conference held</p> <p>6 It takes all kinds
Mine warfare students</p> <p>8 MoMAGgers
Mineman's life is a good life</p> <p>11 Mine warfare
Tobin looks ahead</p> <p>12 Waiting weapons
Ingenious world of mines</p> <p>16 EOD
Picking up mines in the Gulf</p> | <p>18 'On, Wisconsin'
BB 64 recommissioned</p> <p>20 The Navy's landlord
NavFac supports the fleet</p> <p>22 Marine marathon
12,000 in "people's race"</p> <p>26 Civil Engineering Lab
Building better "mousetraps"</p> <p>30 Navy Memorial flags
Special mementos</p> <p>32 Duel at Cherbourg
Civil War ships fight to finish</p> <p>42 Rights & Benefits
Paths to a Commission</p> |
|---|---|

2 Navy Currents / **40** Bearings / **48** Mail Buoy, Reunions

Front Cover: More than 12,000 people were on hand for the recommissioning ceremony of USS *Wisconsin* (BB 64) on Oct. 22, 1988, in Pascagoula, Miss. See story, Page 18. Photo by PH1 (SW) J. Alan Elliott.

Back Cover: Sea Cadets raise flags at the Navy Memorial. See story, Page 30. Photo by PH1 Chuck Mussi.

Navy Currents

Duty station swaps

Enlisted service members who wish to change their duty station, without permanent change of station orders, may find a "swap" is the answer.

A swap is an approved exchange of duty stations between two sailors willing to move at their own expense with no cost to the Navy. Requests must be approved by both chains of command. To be eligible to swap, both sailors must have:

- The same rate, rating and type of duty.
- At least nine months at their present command before submitting a swap request and be able to serve one year at the new command after the swap is completed.
- A projected rotation date greater than one year and expiration of active obligated service greater than eight months.
- No history of disciplinary offenses.
- The minimum evaluation marks as outlined in Chapter 16 of the *Enlisted Transfer Manual*.

For more information on swaps, consult the transfer manual or contact Naval Military Personnel Command (NMPC-471), at commercial (202) 694-4293 or Autovon 224-4293. □

'Dream sheets'

Detailers now have a tool that will do most of the billet checking and cross-checking for them — the Enlisted Personnel Allocation and Nomination System.

EPANS is a computer program that helps match people to billets. It considers the same factors a detailer would, such as duty preferences, current Navy priorities, permanent change of station funds, fleet balance, etc., and then presents the detailer with a list of people and billets that have been matched up. The final decision still rests with the detailer since there's no requirement that detailers must agree with an EPANS assignment proposal.

With EPANS, it's important that sailors maintain up-to-date duty preferences when they are due for a transfer. To keep preferences current, submit an Enlisted Duty Preference Form (NavPers

1306/63) soon after arriving at a new command, or whenever your preferences change.

Be sure duty preference forms are sent to Naval Military Personnel Command at least seven months before your projected rotation date. This is the time frame in which detailers use the EPANS to match personnel with billets.

For help in filling out duty preference forms, see your command career counselor. Send completed forms to: Commander, Naval Military Personnel Command (NMPC-471), Washington, D.C. 20370-5461. □

Adoption costs reimbursed

Active duty service members may now be reimbursed for adoption expenses up to \$2,000 per child for a maximum of \$5,000 per year. The reimbursement is part of a two-year test program recently implemented by the Department of Defense.

To be eligible, parents must adopt between Oct. 1, 1987 and Sept. 30, 1989. DoD defines the date of adoption as the completion date of the home study report or the date of child placement, whichever is later.

The program applies only to families of service members who have served at least 180 continuous days of active duty. This program covers most adoptions of children, up to the age of 18, by married couples or single service members, except for the adoption of stepchildren.

Adoption costs for children from foreign countries or with special needs are also covered. For more information, contact your legal assistance office. □

Selective reenlistment bonus

The selective reenlistment bonus program will be continued for FY89. Legislation was recently signed which authorizes and provides funds for the program. SRB requests should be made by following the latest SRB award level plan as explained in NavOp 81/88 and OpNavInst 1160.6A. □

Physical readiness results

In 1987, 94 percent of Navy service members who took the physical readiness test passed. Approximately two percent were diagnosed as obese and approximately five percent received medical waivers.

The goal of the Chief of Naval Operations is for all Navy men and women to meet PRT and body-fat standards by the end of FY89. Command PRT summaries provide the yardstick to measure physical fitness progress. Preliminary FY88 results indicate that more service members took and passed the PRT than in FY87 when only 85 percent took the test. □

Fleet 'A' school

If you are on your first enlistment and have been at your present command for at least 18 months, you may be eligible for advanced skills training at one of the 95 Navy "A" schools. Training at "A" school may incur additional obligated service. For more information, contact your local command career counselor. □

Air crew training program

The air crew training program is currently looking for volunteers. Hunting for enemy submarines, locating and destroying mines, jamming hostile missiles and rescuing downed aviators are just some of the missions of the enlisted air crew.

Enlisted air crew members serve with squadrons around the world and are eligible for flight pay, many selective reenlistment bonuses and special duty pay.

Recent changes to the air crew training program now include the opening of some NECs to women. For more information, contact your command career counselor or an enlisted air crew detailer. □

Earlier assignment notices

Enlisted detailers will begin writing orders earlier to allow sailors more flexibility in negotiating for new duty stations, thanks to recent

changes in the enlisted distribution system. New procedures will mean increased assignment flexibility, improved responsiveness and sensitivity to the needs of sailors.

Detailers had been allowed, without approval from a higher authority, to write orders anytime within a four-month projected rotation date window either at PRD, one month before or two months after. By expanding the window to five months (one month before or three months after PRD), more flexibility is available for an individual sailor to negotiate orders. This also provides detailers with a larger pool of people from which to draw in matching sailors to requirements and offers the potential for more local area moves. This results in greater opportunities for homesteading and for personal and family stability. However, the policy of rotating members assigned overseas on time will remain the same.

The enlisted requisition now looks at requirements seven months ahead, but this will be expanded to nine months. This allows more lead time to identify billets requiring high-level security clearances or long-term or specialized training, as well as allowing most personnel with PRDs that fall during or shortly after major deployments to negotiate orders prior to the next deployment.

The detailer's order-writing ability is tied to the availability of permanent change of station funds. Under the new system, if PCS funding levels are not yet authorized, detailers will be allowed to issue a guaranteed letter of intent, with funding data to be sent at a later date as authorization levels or budget approvals are received.

Based on deployment schedules, a detailing team will visit homeports before major deployments to write assignment orders for all affected personnel before their next departure.

These changes are expected to be implemented during the first detailer trip of 1989 and through the incorporation of these changes in the *Enlisted Personnel Manual*. The most effective means of ensuring the best match of people to billets remains the early submission of duty preference forms (NavPers 1306/63), but the improved flexibility in the detailing process will improve the readiness and personal satisfaction levels of the Navy. □

Family matters

Navy and Marine Corps Conference tackles tough questions about quality-of-life issues.

Story by JO1 Melissa Lefler

Top military and government leaders gathered at the Navy/Marine Corps Family Support Conference in Norfolk last November and agreed that the military cannot afford to ignore the needs of service men and women and their families. That honesty in confronting many serious military family problems was greeted with enthusiastic applause by more than 1,300 delegates from Navy and Marine Corps units and bases around the world.

"Our sailors and Marines make many sacrifices, and one thing they have a right to expect is that their loved ones are looked after," said Assistant Secretary of the Navy for Manpower and Reserve Affairs, Kenneth Bergquist, in opening remarks to the conference.

One of the conference's major speakers, Secretary of Labor Ann McLaughlin, addressed an important change in attitude regarding military families. "Never again will the armed forces operate under that old maxim that 'if they wanted you to have a wife, they would have issued

you one.'" In the future, family issues will be even more important to military operations, McLaughlin said, and she explained why.

"In the past, few wives of military men had jobs outside the home. Today, over half of all sailors' wives work, and by 1995, more than three-fourths of military wives will be working.

"Because of changing demographics, the Navy has become the nation's largest child care provider," McLaughlin said. To deal with this enormous responsibility, and other family issues, some 90 family service centers have been established at Navy bases worldwide since the first family conference ten years ago, in 1978.

The conference theme was, "Goals and Strategies for the Year 2000." The delegates brought with them a wide range of military and civilian expertise; there were physicians, lawyers, social workers, family service workers, and ombudsmen, as well as commanding officers, executive officers and lead-

ing chiefs. These representatives split into 10 "working teams," which approached this future-oriented, problem-solving agenda seriously.

In addition to child care issues, teams brainstormed for two days about housing, single parenthood, sailors' pregnancies, financial responsibility, stresses of overseas duty, military spouse employment, and child and spouse abuse, among other topics.

The groups presented their recommendations to the conference, including top leaders and congressional representatives, during a third-day wrap-up. Some recommendations were: don't send E-1s through E-3s overseas unless government housing is immediately available; deliver overseas orders to sailors and Marines no later than six months before transfer; and remove the stigma from homesteading — even to the point of encouraging detailers to allow people to homestead to create family stability in schools and jobs.

Many speakers echoed the labor

secretary's comments that the Navy had become the nation's largest child care provider and that child care was a high visibility issue. The child care group's recommendations included: converting vacant buildings to temporary child care centers, raising the pay of child care workers and establishing 24-hour day care centers overseas.

The group, recognizing that defense budget cuts would make it difficult or impossible to carry out some proposals, recommended the temporary centers and increased family home care of service members' children as an alternative to the 91 new child care centers McLaughlin had stated that the Navy needs.

But some top officials expressed concern over the trend of these proposals. ADM Leon A. Edney, Vice Chief of Naval Operations, while saying that the Navy does need to do a better job in the area of child care, also said that the idea of "warehousing" children in 24-hour child care centers made him uncomfortable.

In another issue dealing with military children's needs and rights, delegates and top leaders were able to reach a consensus. In the area of child and spouse abuse, Navy leaders immediately agreed to develop a more clearly stated family advocacy instruction with "teeth in it."

"In the area of child abuse, you will get a statement out of me about 'zero tolerance' of that performance in our Navy and Marine Corps," Edney emphatically stated. He added the Navy was willing to spend scarce money on the problem. "We are ready to trade some weapons to take proper care of our families."

Chief of Naval Personnel VADM Jeremy Boorda also expressed his determination to end child and spouse abuse when he said, "The people who work for me just need to make me smart enough to know what to do to prevent this, and I will do it."

Even in an era of "zero-growth" defense budgets, family support programs have to have top priority.

Dr. Sandra Rosswork, spouse and child abuse panel leader, offered a blueprint for a model "Parent Enrichment and Education Resource Service," PEERS for short, to prevent physical abuse of military children.

Rosswork, who presented her group's recommendations, listed some of the factors unique to military life that place military kids at high risk for abuse: teenage parents, isolation from the service member's own parents and friends, overseas duty, cultural shock and lack of education about how infants behave. The PEERS program focuses on mothers, and is proactive rather than reactive, including the services of a community health nurse, a home visitor, good prenatal education and respite care.

On the other side of the dependent care spectrum, over 14 percent of conference participants said they now "contribute significantly" to the care of aging parents, with larger numbers expecting to join that category in the next 10 years. According to a sample survey of 452 attendees at the conference, 73 percent strongly agreed that the aging parent issue will have a high impact on military retention in the 1990s.

Those same 452 survey respondents also ranked family issues such as health care, retirement, children's education, housing and spouse employment as issues that will affect voluntary separations in the year 2000, although pay was the number one factor, respondents agreed.

Master Chief Petty Officer of the Navy Duane Bushey said that sailors' financial problems create stress and hinder readiness. In some areas of the country, housing costs

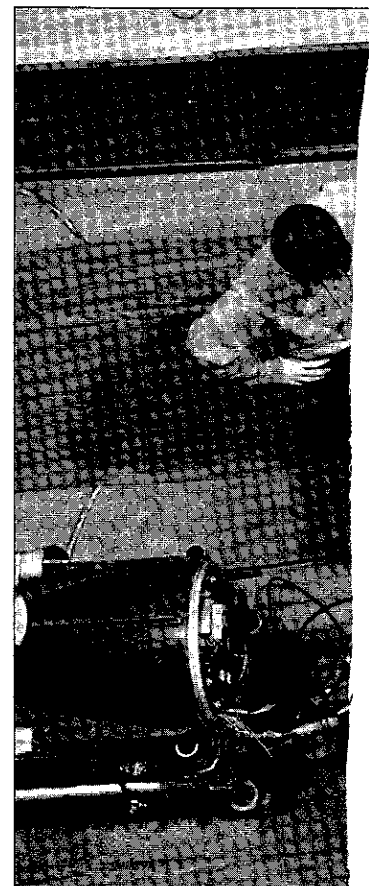
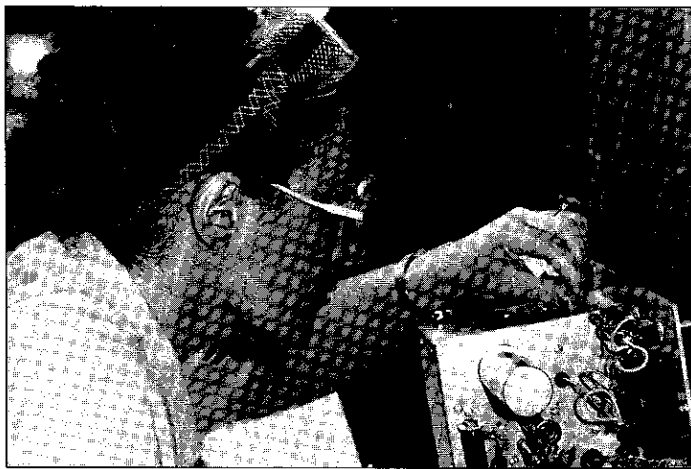
make it almost impossible for junior sailors to budget money, Bushey said.

As the Navy becomes more concerned with increasing numbers of sailors' bankruptcies, the panel on military financial and consumer education recommended a renewed commitment to sending senior petty officers for financial management training, so that they may become the command, division or department expert, similar to division career counselors.

The working group on housing proposed making housing available not according to seniority but according to need. Some chiefs suggested that in expensive housing areas, base housing assigned to chiefs and senior officers might better be assigned to enlisted people.

Edney said that even in an era of "zero-growth" defense budgets, family support programs have to have top priority because recruiting and keeping qualified people will become more and more difficult as the Navy's traditional manpower pool — young males — shrinks. And Edney emphasized that he doesn't want to see family service centers taking over the jobs that should fall to commanding officers. "This is a conference about leadership," Edney said, summing up. "Family support is not a subject that belongs only to command master chiefs, ombudsmen and clinical psychologists. These people are an important tool for the commanding officers. But they can't — and shouldn't — replace the chain of command." □

Lefler is assigned to NIRA Det. 4, Norfolk.



It takes all kinds

*Students in mine warfare
come from many specialties.*

Story by JOC Robin Barnette, photos by PH1(AC) Scott M. Allen

Mine warfare and mine countermeasures are opposing activities. Mine warfare seeks to arm and plant mines so they can only be located the hard way: by blowing up a ship or sub. Mine countermeasures seek to ferret out mines and eliminate them harmlessly.

It's ironic that the people who work in both fields are trained at the same Navy school: the Fleet & Mine Warfare Training Center in Charleston, S.C.

At F&MWTC, minemen learn the basics in "A" school, while in another class, pilots learn how to plan and set up drops for minefields. Meanwhile, officers and sailors in ratings as diverse as boatswain's mate and operations specialist study minesweeping.

The "A" school teaches aspiring minemen basic electronics, introduces them to the publications and tools they'll use in their rating, and gives them hands-on training with a variety of mines.

"I like putting the mines together, because I like to work with my hands," said one student who was

close to graduating, Aviation Boatswain's Mate (Hydraulics) 2nd Class Scott Hawkins, who reenlisted in return for a switch to the MN rating. "I plan on putting in 20 years or more as a mineman. I felt I could do more than what I was doing in my previous rate."

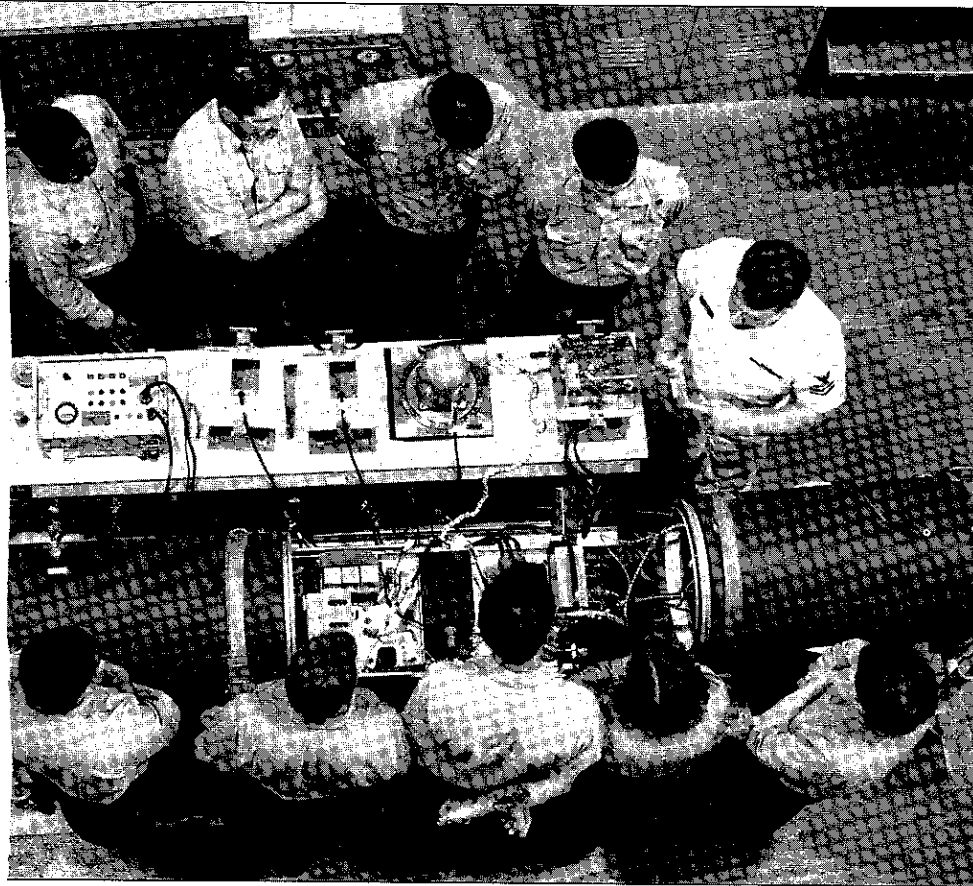
Another student, halfway through the 14-week school, echoed Hawkins' enthusiasm. "Now I'm getting into actually building mines, starting to learn all the different parts of them," said Seaman Apprentice Mike Daniels. "I like the electronics and the mines themselves — how they work in different ways to get ships. You can do all sorts of different things with a mine. I chose mineman because it seemed like something out of the ordinary, and we don't go to sea too much — I like that aspect of it."

It's true that MN is not a sea-intensive rating, although minemen do deploy aboard ships for training exercises and for ops in such places as the Persian Gulf (see *All Hands*, March 1988). However, most of their billets are overseas shore duty.

"One of the unique things about our school is that the students get a chance to pick their orders," said MNCS Arthur Raymond, senior instructor for the mining department. The detailee provides a list of available billets and the top student gets first pick, the next student the next pick and so on. The overseas billets are popular. "Believe me, I hear about it when my students don't get all overseas billets. There are some stateside billets, but for the most part the students don't want them."

Hawkins was pleased with his orders to Scotland and Daniels was hoping to be stationed in Guam. Seaman Recruit Lisa Trevino, waiting to start school, was also looking forward to overseas duty. "I would like to be stationed in Guam or the Philippines," she said.

"C" schools for MNs are taught at F&MWTC, also. A 34-week course covers test-set maintenance, mine shop administration and weapons systems. Another eight-week course focuses on the Mk 60 *Captor*, a highly sophisticated anti-submarine mine, which releases a torpedo to



Far left: A student checks a connection. Left: "A" school students prepare to operate.

chase its target.

F&MWTC also trains officers in mine warfare-related billets. These students come from all fields. Officers enter mine warfare for one tour, then return to their surface or aviation specialties.

Pilots and flight officers of P-3s, A-6s, A-7s and F/A-18s learn to drop mines into preplanned minefields. Many also study tactics — mining plans and operations — and become staff advisors for Commander, Mine Warfare Command, the fleet commanders-in-chief and other high level commands. Other officers study mine countermeasures planning and operations.

Many of the sailors who study mine countermeasures at F&MWTC are electrician's mates, sonar technicians, electronics technicians, operations specialists and boatswain's mates. They train to work aboard the minesweepers and the new *Avenger*-class minehunters.

"I love minesweeping, I love the job. There's a lot to learn," said BM1 Ronnie Ford, an instructor who has worked in mine countermeasures for

17 years. In addition to typical BM duties, BMs on the countermeasures vessels handle all the equipment on deck. They rig, stream and recover the magnetic cables, acoustic gear, cable cutters and other equipment for sweeping operations. They also operate winches, cranes and booms to deploy the mine neutralization vehicle — a remotely operated submarine outfitted with a camera — and assist in mine handling if necessary.

Sailors in the other ratings form the combined combat systems group aboard minesweepers and hunters. They operate sonar and other equipment, interpret data and maintain the gear they work with. It's also likely that a first class petty officer will be in a leadership position he wouldn't have in a shop aboard a larger ship. The job on a minesweeper is a definite challenge.

"Take an EM1, for example," said CDR Gary Hammond, director of the mine warfare department. "If he's not the leading petty officer on a minesweeper, he's the second senior electrician on board. He goes on as a 1st class and he's put in charge of all

this gear that he's never seen before or maintained. In addition, he has several people working for him who are more skilled, because they've been there longer. He has to come up to speed quickly, while establishing himself in a leadership role."

"When I was on an MSO, there were only 33 men on board," said EMCM(SW) Eddie Bridges, an instructor for the minesweeping EM's course. "You worked real close with everybody — and there were only three electricians on the ship."

The EM course, like the courses for the other ratings in the combat systems group, is in transition. The era of the older MSOs is transitioning into the new era of the *Avenger*-class and the other mine-hunting ships now being built. EMs have traditionally learned how to use and maintain the degaussing system for the MSOs and both magnetic and acoustic minesweeping systems. Future EMs will also learn the "care and feeding" of the newer ships' state-of-the-art gear, which has computerized controls and uses digital logic.

The students who pass through the training center and enter the world of mine warfare — whether it be as a mineman or in mine countermeasures — face big challenges and lots of hard work.

"Anyone who wants an easy job," said Hammond, "shouldn't be looking for a job in mine warfare." □

Barnette is the senior staff writer for All Hands. Allen is a photojournalist assigned to All Hands.

MoMAGgers

A mineman's life is a good life—if you don't mind getting your hands dirty.

Story by JOC Robin Barnette, photos by PH1(AC) Scott M. Allen

If you join the Navy and sign up to be a mineman, just what are you getting into? Sometimes that's a difficult question to answer.

"No one could tell me anything about it," said Chief Mineman Carily Whitener, reminiscing about her entry into the mineman rating in 1977.

"The recruiter didn't know anything, and the people at boot camp didn't know anything. I got to Charleston [S.C.] and I didn't know whether I'd be wandering around underground with a light on my head or what," said Whitener, laughing.

Minemen, of course, don't work underground. After graduating from "A" school in Charleston, MNs are assigned to one of 13 units or detachments in locations throughout the world to maintain and assemble mines and transfer them to delivery points — and they do it very quickly.

"Once a fleet commander-in-chief says when and where he wants to plant a minefield, all we need is the number of mines," said LCDR Will Dixon, operations officer for Commander, Mobile Mine Assembly Group, Charleston. "MoMAGs can immediately start building the mines, put the proper settings in them and deliver them to the ship or aircraft that will put them in the water."

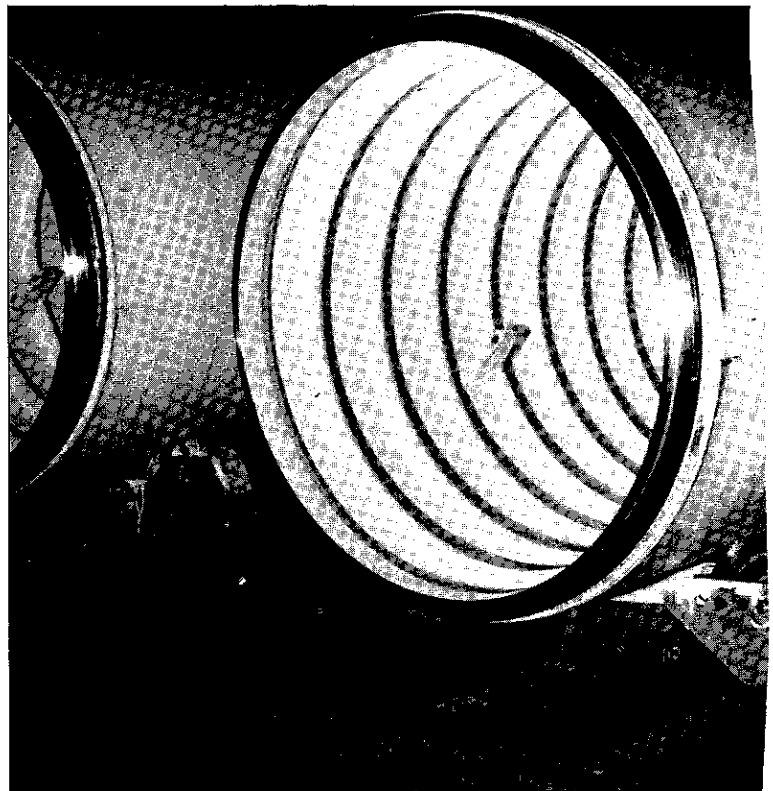
Minefields all over the world are planned in advance by the Mine Warfare Command. In the event of a war or other necessary military conflict, the MoMAGs know ahead of time what types of mines will be needed and have the supplies on hand — the computer "brains," ordnance, batteries, flight gear — to meet the requirements.

The MoMAGs regularly practice assembling mines. "We hold at least quarterly exercises among MoMAGs, building mines for certain minefields," Dixon said. "The MoMAGs are required to assemble mines at a

certain rate. We advertise those rates to the fleet CinCs, so they know how fast they can get a minefield in place."

The rate of production depends on the number of mines needed and what types. The mines are put together in assembly line fashion. "Most sites can assemble a *Destructor* mine in five minutes, so once you've got your line going, you can put them out faster than they can be loaded for shipment," said Dixon.

MoMAGs are located in Charleston, Yorktown, Va.,



Colts Neck, N.J.; Lualualei, Hawaii; Seal Beach, Calif.; Machrihanish and Glen Douglas, Scotland; Sigonella, Sicily; Souda Bay, Crete; Subic Bay, Republic of the Philippines; Kadena, Okinawa and Misawa, Japan and Guam.

Mines are versatile — they don't come "ready-made" from a factory. Using component parts, MNs build mines to meet the needs of the fleet. They can outfit a mine with a variety of firing mechanisms, sensitive to the different "influences" that enable the mines to locate a particular target. Some mines are general-purpose bombs, converted for use as mines. The *Destructor*, targeted against ships, falls into this category. However, the anti-submarine *Captor* mine is actually more like a torpedo.

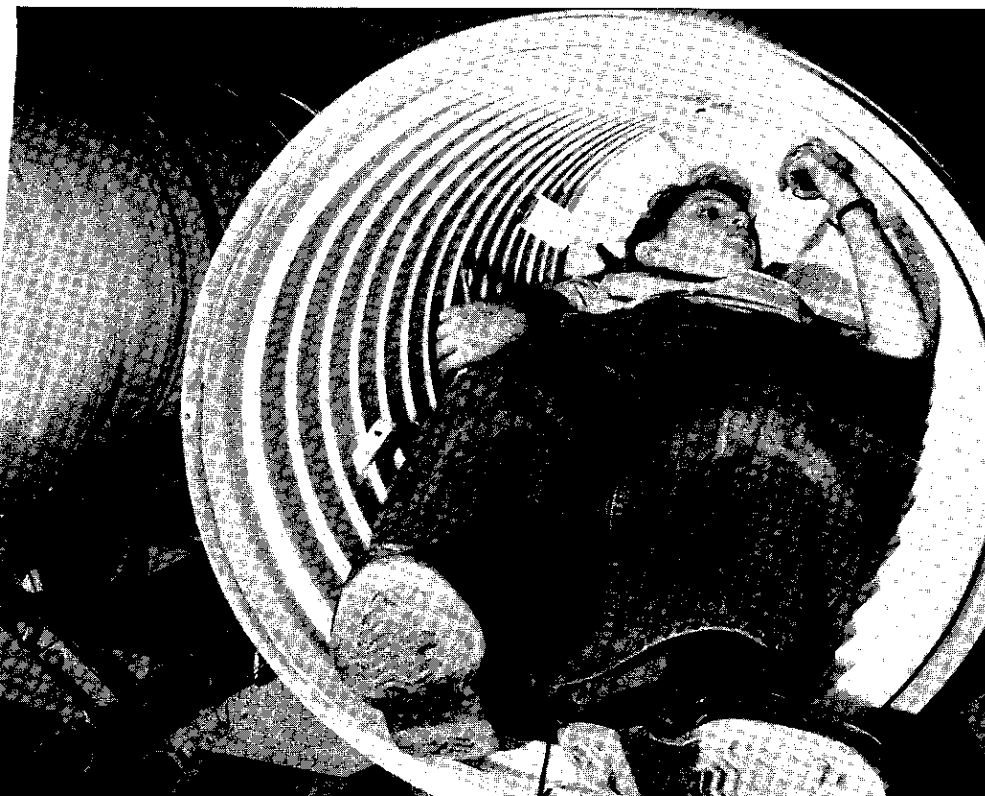
Mines can be laid by aircraft, in which case MNs must equip the mines with proper flight devices. Mines laid by submarines and ships require different preparation.

An MN arriving at a MoMAG has, of course, learned the basics of the rating at "A" school, but still faces a stiff qualification process. "It takes about six months to become fully qualified and certified," said MNCS Michael Whitener. "There's a weekly board — if MNs fail their initial certification, they have to back up and start that unit over again."

The MN community has approximately 600 members, of which less than 30 are officers. "By the time I made second class I knew just about everybody



Above: A member of MoMAG 11 sandblasts a mine casing. Left: MN3 Michelle Smith installs a hydrostatic device in the outer shell of a mine.



Members of MoMAG 11 connect the anchor to the main body of a mine.

in the community," said MNC Whitener, spouse of MNCS Whitener. "It's like living in a small town. If you're in trouble, you definitely have people coming to your aid. But it's also like a small town because there's sometimes a little backbiting or gossip. But that all just comes with it — it's got attractions and detractions."

The mineman rating was opened to women in the mid 1970s, and the community is about 15 percent female. "I have no qualms whatsoever about that," said MNCM R.D. Schommer, Force Master Chief for Mine Warfare Command and a 29-year veteran of Navy mine warfare. "The women work hard — they do their jobs. And sooner than people think, the mineman rating will be about 50 percent women, because we're a non-seagoing rating."

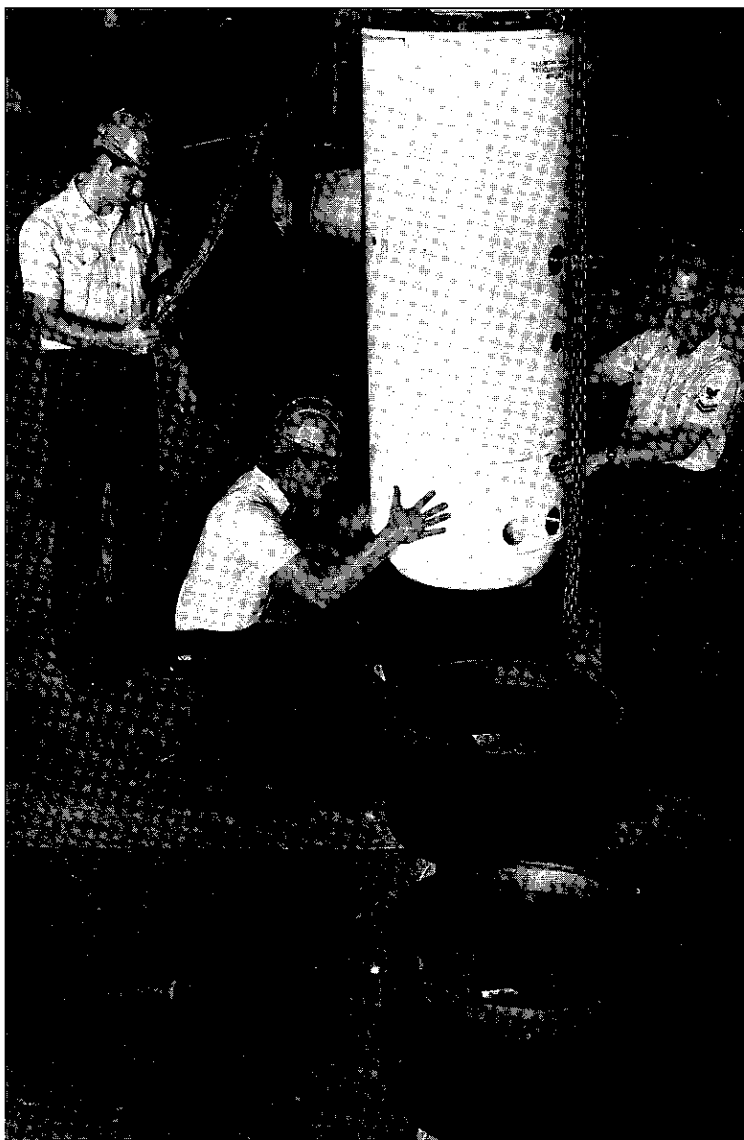
"Non-seagoing" doesn't translate into "light and easy," however. "When I first came into the rating, I succeeded because I was willing to do heavy physical work," said MNC Whitener. "When you're a seaman and you're out in the shop, you bust your butt. That's just the way it is. Everything about a mine is heavy, except for some small components. And it's dirty and greasy — and you can't worry about your nails."

"You need to be somewhat mechanically inclined, or be willing to bust your knuckles to get mechanically inclined," said MNC Coral Lee MacIntosh. "I'm still not mechanically inclined, but I know how to protect my knuckles a little better."

"It's a lot of physical work," said MN3 Carol Harvey, "but it's enjoyable to me. It's a lot rougher than I pictured it — it's not clean, not a desk job. But I don't like office work, anyway."

MacIntosh also stressed the need for MNs to work together. "You have to want to work closely with others, because we're in small units throughout the world," she said. "So if you don't get along with people, you're going to have a hard time in a unit."

MNCS Whitener elaborated, explaining that each department in a MoMAG works closely with the others. "Each shop doesn't just take care of its own when there's work to be done," he said. "We have minemen who go into the supply department, break out components and deliver them to the shops. Others go into the 'reefers' and break out the batteries for the mines. MNs go into the magazines and bring out the explosives we need. Quite often we have to furnish our own drivers, too. It's 100 percent teamwork."



The mineman rating is not exactly high profile. In fact, some sailors don't know any more about MNs than MNC Whitener did when she joined the Navy and wondered if she'd be working underground. She says that's part of what she likes about the rating.

"It's always good for conversation — you can really broaden people's horizons," Whitener said. She described an experience she had during a sailor-of-the-year competition. "I was in Washington, D.C., with a radioman, an electrician, a hospital corpsman and a yeoman. Nobody out of those four that I competed against knew what a mineman was, or had ever seen one!"

Even though the rating is little known in many circles, MNCM Schommer summed up the general outlook of minemen toward their small, close-knit community. "I think we have a damn good outfit." □

Barnette is the senior staff writer for All Hands. Allen is a photojournalist assigned to All Hands.

Mine warfare

ComMineWarfare looks to the future.

Story by JOC Robin Barnette, photo by PH1(AC) Scott M. Allen

"From the stone age to star wars" is how RADM Byron E. Tobin Jr. likes to describe mine warfare and mine countermeasures — MCM — in today's Navy.

Tobin is responsible for a wide range of mine weapons and countermeasures in his dual position as Commander, Mine Warfare Command, and the Chief of Naval Operation's Division Director for Mine Warfare.

He compared the technological differences between "old-fashioned" mines used in the Persian Gulf and the modern mines in the U.S. inventory and the modern mine countermeasures capabilities that go with them. "The nature of MCM requires assets that can deal effectively with mines built for the Czar's navy in 1908 to those using the most modern electronics, sensors and propulsion systems.

"Mines now have the capability to move from their resting place to the target," Tobin continued. "Just as a modern soldier armed with a laser range finder still carries a bayonet, technology has improved our capability in mine detection and neutralization."

Mine warfare — which includes both mining operations and MCM — is an important tool, although it often doesn't get the publicity that other types of warfare get. Tobin said, however, that mine warfare has not been neglected in the Navy.

"During the Vietnam years the Navy had to make difficult trade-offs

between decreasing resources and expanding commitments," he said. "The nature of the Soviet threat required that above all we maintain a credible nuclear deterrent, adequate power projection forces and an effective ASW capability." He said that the numbers of traditional surface



RADM Byron E. Tobin Jr.

MCM ships — minesweepers — were reduced in the 1970s, but the introduction of airborne MCM assets offset that reduction by providing a rapid worldwide deployment capability. An increased role by NATO in MCM also helped.

Beginning in the early 1980s, the Navy began to examine the needed force mix and capability for new MCM forces. "The results of the study and programs to implement it are now entering the fleet," Tobin

said. "These are the MCM I Avenger-class ships, as capable an MCM platform as any that exists in the world today, and the MH-53E Super Sea Stallion mine sweeping helicopter. Also under construction is the first MHC 51 Osprey-class coastal mine-hunting ship.

"During this period we also introduced several new mines, including Captor, which is an advanced anti-submarine mine. Further, existing mines have been continually improved as new technology became available. Even more capable mines are under development. In short, the Navy is committed to an effective mine warfare program."

Tobin looks at the future of mine warfare in two ways. "First, we will continue to improve our traditional way of doing business," he said. "That means improvements to our mine warfare tactics and equipment, support for our ship and helicopter procurement and development of new and improved mines.

"Secondly, we must chart the course for the future now," he continued. "By that, I mean the nature of mine warfare in the year 2010 and beyond. For example, even as the Avenger class is coming on line, it is not too early to begin thinking about what its replacement will be. The same is true of mines. We are limited only by our imagination." □

Barnette is the senior staff writer for All Hands. Allen is a photojournalist for All Hands.

Waiting weapons

The ingenious (and devious) world of mines

Story by JOC Robin Barnette

Mines were considered . . . well, "ungentlemanly" in Revolutionary War times. And no doubt the British used some ungentlemanly words to describe those pesky rebels who floated the first sea mines down the Delaware River into the King's fleet.

Even though this initial attempt to destroy British ships failed, the invention of mine warfare, in 1777, set in motion a chain of events that reverberates into the Persian Gulf of the 1980s.

Since then, mines have proved to be an extremely effective method of warfare. Sailors on USS *Samuel B. Roberts* (FFG 58) learned first hand that mines don't have to be sophisticated to be effective. "That was an old-fashioned mine, but it worked," said CDR Gordon Hobgood, head of minefield planning, Mine Warfare Command, Charleston, S.C. USS *Roberts* struck a mine in the Persian Gulf last April and nearly sank.

Hobgood is considered an expert in mine warfare tactics; he was a key player in the mining of Haiphong Harbor during the Vietnam War.

"The objective of mining is to alter the geography of the ocean in your favor by either denying an area to the other side, or by forcing him to come to where you have the advantage," Hobgood explained. "For example, in the ocean there are areas in which I cannot hunt for submarines,

because the water conditions work against me. I want to deny that area to the other guy, so I mine there and force him out into better water."

The term "mine" might conjure up a mental picture of the typical World War I era weapon. "Everybody has this idea that a mine is a round basketball-shaped thing with horns," said Hobgood. "Iran happened to use that style in the Persian Gulf and that has reinforced the concept."

This older style weapon is a moored contact mine. The "horns" that jut out from its body are made of a soft material such as lead, and contain either a chemical or wiring that acts like an on-off switch. Hobgood explained that if you strike the horn — break it or bend it — you've completed the firing circuit for the charge, and the mine explodes.

"Contact mines have pretty much gone out of the U.S. inventory," said Hobgood. "We have gone to influence mines — magnetic, acoustic, pressure, seismic or a combination of those."

An influence mine doesn't need physical contact with a target — a ship or submarine — to trigger an explosion. The mine is equipped with a detector — for example, a magnetic influence mine has a magnetometer. The magnetometer acts something like a light switch: it is sensitive to the changes in the lines

of magnetic force caused by a large metal object such as a ship moving through the water and closes the electric firing circuit when it recognizes a target.

An acoustic influence mine is sensitive to noise. The prop on a ship makes noise, as do engines, fans and other equipment. The detector "hears" a ship and sends an electrical signal to the firing mechanism for processing and analysis. The mechanism is programmed to evaluate the signal and determine if it is from a valid target. Noise from marine life and other sources not likely to be useful military targets is ignored.

"We're looking for a specific noise," Hobgood said. "If we know that the target has a piece of equipment that operates at 200 revolutions per minute, that can be figured out mathematically to a value and I can set my mine for that target."

Distance from the mine to the target is also a factor that must be taken into account with an acoustic mine. "If the ship is too far from the mine, you won't have enough explosive force to have the desired effect," Hobgood said. The acoustic detector has settings from "coarse" to "sensitive." "If it's too coarse, the target may get through because it never satisfied the sound value the mine was looking for," he said. "If it's too

sensitive, the mine may fire too soon and I'll get nothing." That's what happened when mines were laid in the Red Sea by terrorists in 1984. Apparently those mines were set too sensitive, because they went off before ships got close enough to be damaged.

Influence mines can also be pressure-sensitive. As the hull of a ship goes through the water, the bow and stern create a positive pressure in the water, while the body of the ship exerts a negative pressure. The pressure mine has a detector that is pro-

grammed to look for a pressure pattern. "It's looking for two things — a positive and a negative," said Hobgood. "So wave action or a storm won't cause this mine to go off. It's also looking for a specific interval, its timing — how long it takes to go from positive to negative. If it doesn't meet the time parameters that I've set in it, the mine decides it's not a target."

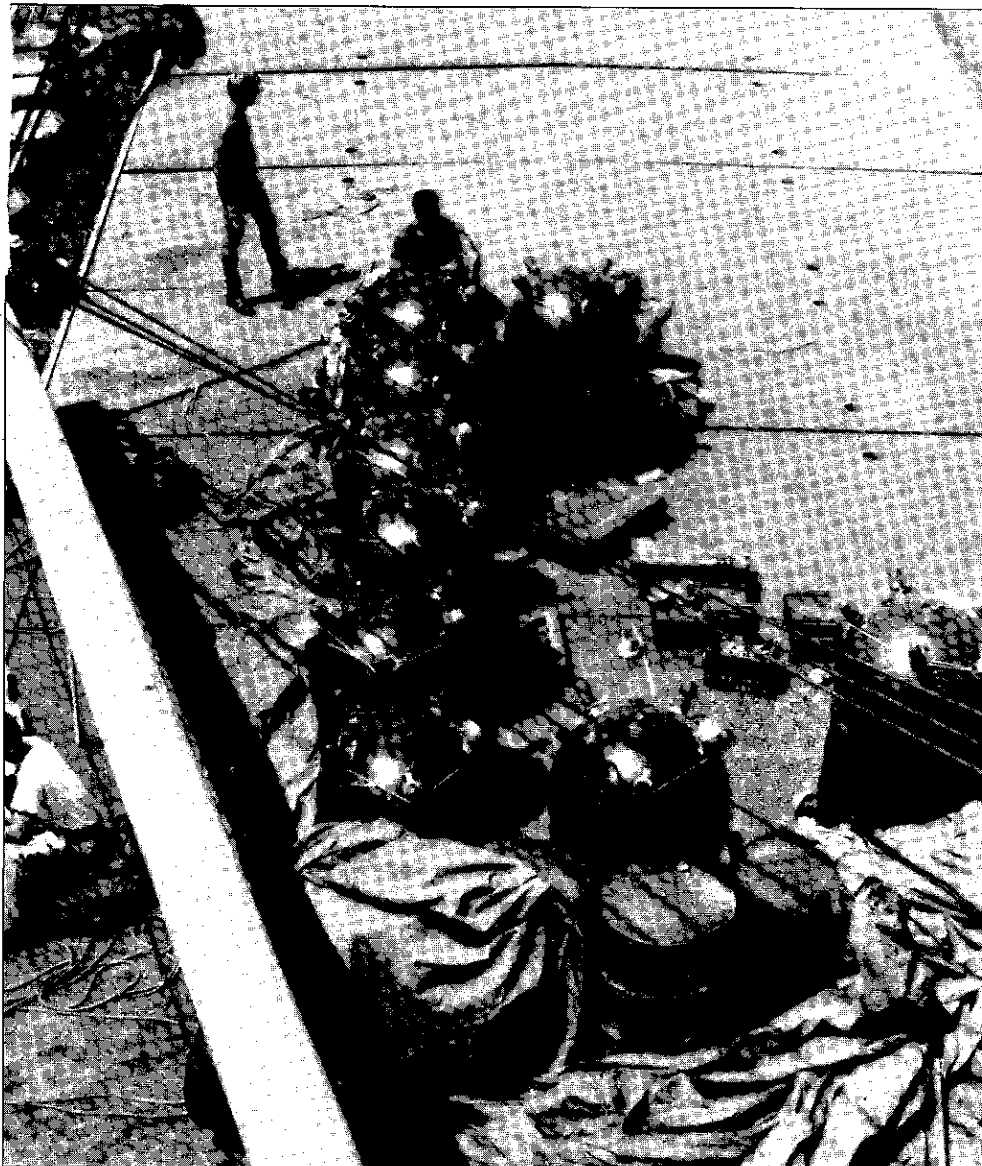
These influence mines — magnetic, acoustic and pressure — have all been used since World War II. The seismic influence mine was devel-

oped during the Vietnam War. "The seismic works on the same principle as the mechanisms for detecting an earthquake," Hobgood said. "The mine is looking for movement of the earth. If you're standing by the road and a big truck goes by, the pavement shudders a little bit. What a seismic mine requires is that the ship pass in close proximity." A violent storm won't satisfy the mine's seismic requirement because the wave action is on the surface: the bottom of the river or harbor doesn't move. The bottom *will* move, however, when a large ship passes through shallow water.

Mines can be sensitive to a combination of influences: magnetic and acoustic, or seismic, magnetic and acoustic, for example. By using several parameters, it's possible to aim for a specific target.

But the very characteristics, and combinations of characteristics, that make mines so effective when used offensively also make them difficult to defend against. "Sweeping these sophisticated weapons can be a real chore," said Hobgood. "We have devices that we can tow, either by ship or helo, over a suspected minefield. Those devices can mimic the influence that the mines are targeting — magnetic, acoustic, whatever. But some influences are harder to mimic than others," he added. "Take for example pressure influences — about the only way to imitate the pressure created by a 10,000-ton ship is by sending a 10,000-ton ship through the mine field. That usually means expendable vessels — 'guinea pigs,' you might say. It's a tough problem."

Another option in mine warfare is use of controlled mines. These mines are planted in the mouth of a harbor and a person onshore deton-



U.S. Navy photo

Left: Several contact mines on the deck of the captured Iranian mine-laying ship *Iran Ajr*.

Waiting weapons



Left: Germans lay mines in Norwegian waters during World War II.

ese troops was a prime example of the psychological effects of mine warfare. "We went in to mine, let them see us do it and then made an announcement about it," Hobgood said. "Ships did not come or go from the harbor after that, because they knew mines had been planted. In a case like this, I don't really care if I catch anything. You know something is there, you take your chances if you decide to transit the area. The enemy usually won't take that chance unless he is desperate."

The United States is a signatory to an international treaty that calls for the nation that laid mines to come in and sweep them, once hostilities have ended. But the Haiphong mines continued to play an important role after the cease fire was signed. When the Vietnamese government was reluctant to release U.S. POWs, the Navy stopped the minesweeping effort in Haiphong. "Vietnam said, 'Hey, we really want you to come back and finish this.' We said, 'No, we're not coming back until you start giving us our POWs back,'" said Hobgood. "The psychology was very real to them, and to the world. No insurance company would insure a ship to go into Vietnam. Vietnam had to give us what we wanted before we would give them what they needed. We saw psychology at work, not against the hulls, but against the country."

But the bottom line of mine warfare is action against hulls. What happens when a ship actually triggers a mine? How is it damaged when the mine doesn't touch the hull?

When the explosive chain occurs, there's an initial gas expansion. The size of the expansion is based on the depth of the mine and the amount of explosive weight. "It expands very rapidly," Hobgood said. "But pres-

ates them manually. "There are wires running out to each one of the mines. If one of our ships comes by, we let it through," said Hobgood. "But when an enemy ship comes through, a switch is thrown to close the contact — that's a controlled mine. You can't very well do it in open ocean, but it works fairly well in harbors."

Mines can also be set to count ships. "Let's say I pick the number five," Hobgood said. "The first ship through, the mine doesn't see, so that didn't count. The next one through it sees, but it doesn't explode. The counter moved one click down. Then the minesweeper comes out — it thrashes around the mine and it gets two more clicks. That's

three. A destroyer comes out, which satisfies the mine's setting and that's my fourth click. Now the carrier comes out — the mine is satisfied and it goes off."

Mine warfare can effectively destroy or disable ships and submarines. But it also works well in psychological warfare. "I don't have to sink a ship," Hobgood explained, describing how the mine community defines success. "In World War II the Army Air Corps counted the number of bombs dropped. In Vietnam the press got the Army into body counts. But we don't talk in terms of tonnage sunk. We don't have to sink *anything* to be successful."

The mining of Haiphong Harbor to prevent resupply of North Vietnam-

U.S. Navy photo

sure, due to depth, is acting against that expansion." He compared the gas expansion in the water to blowing air into a balloon. You can only blow so much air in before the skin of the balloon bursts, or the air rushes out into your face.

"It reaches a point where the water pressure is greater than the gas pressure. That forces a reversal of the process — a contraction of the gas bubble," he continued. "At certain water depths, this occurs several times before it comes in contact with the ship. The bubble increases momentum each time this happens. It gets faster and faster, which means that it's going to hit harder." When the gas bubble reaches the ship, there's nothing to absorb the shock except the hull.

"It can blow a hole in the side of the ship — it can break the keel — it can disrupt the machinery," Hobgood said. "It might knock the propeller shaft four feet over, or the boiler may be shifted so the pipes are ruptured and there's live steam going into the ship. Maybe I didn't get lucky enough to sink him, but I knocked out all his electronic gear, because it's very sensitive to movement. Now he's not a combatant anymore. I didn't have to sink him."

Mines can be moored — anchored

to the ocean floor with the mine floating at a pre-set depth — or rest on the bottoms of harbors or rivers. They can be buried in the bottom, also. Mines can be planted by aircraft, ships or submarines for defensive or offensive purposes. In defense, for example, mines can keep unfriendly forces from entering friendly ports; friendly forces can follow a secret path through the minefield. Used offensively, mines can keep an enemy from exiting or entering his own ports.

No war lasts forever, of course, and minesweeping is a slow, costly process that doesn't guarantee all mines will be found. This lesson was learned following World War I — the British and Americans laid over 72,000 mines in the North Sea Barge across a 250 mile stretch from Scotland to Norway against German U-boats (see *All Hands*, April 1986, Page 16). All those mines have not been recovered, and some could (theoretically, at least) still be a threat.

To ensure that modern mines aren't a permanent problem, they are programmed to scuttle after a certain period of time. "Scuttle means nothing more than having it fill up with water and drift to the bottom," Hobgood said.

An even better way to eliminate the threat is to instruct the mine to self-detonate at a certain point, for example when the battery has drained sufficiently so that it can't perform its mission. "Electrical power forces two contacts apart, and when the power drains, the contacts close and the mine goes off harmlessly," Hobgood said. "I may wish to detonate, or 'sterilize,' a minefield because I achieved my objective during a conflict, and I presumed we were going to win. Now I want to send our landing force over there, and I don't want to lose anybody. So now at a pre-set time — not exactly noon — but I can safely say after a certain time, there should be very minimal risk."

All ships and submarines are vulnerable to one extent or another to mine warfare. "That's what scares people most — there's nobody pulling the trigger on the gun," said Hobgood. "A mine doesn't know a friend from an enemy. But a smart minefield planner does," he added.

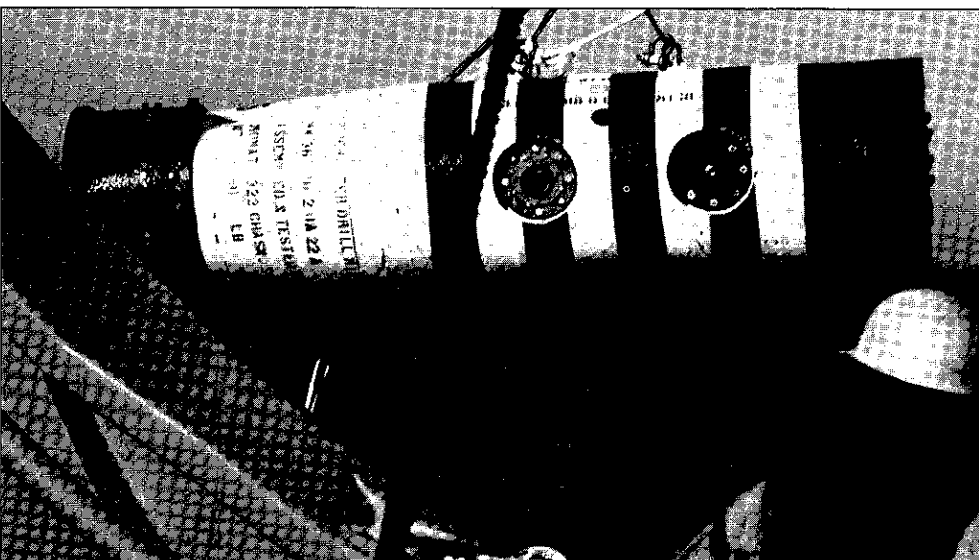
Mine warfare has come a long way since those first "ungentlemanly" sea mines were set adrift in 1777. It has played an important role in every major war the United States has been involved in, from the Civil War right through the Vietnam War. And mines are bound to play a role in conflicts around the world for years to come, just as they've been a key part of events in the Persian Gulf.

"Mines are cheap," concluded Hobgood. "They're what I call the poor country's weapon of choice. And a mine doesn't *have* to be sophisticated — it just has to work."

Ask the sailors of "Sammy B." □

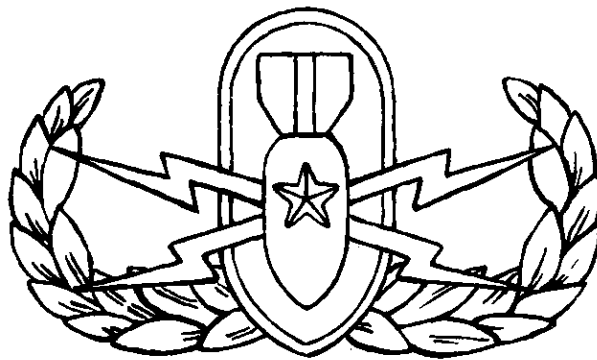
Barnette is the senior staff writer for All Hands.

Left: A Mk 36 bottom influence mine is hoisted over the side of a minesweeper during operations off the coast of Charleston, S.C.



U.S. Navy photo

EOD



When explosive ordnance disposal units went to the Gulf, they had their hands full.

Story by PH1 Chuck Mussi

During World War II, the Navy laid dozens of floating contact mines along the U.S. Atlantic Coast to protect our own ports from enemy incursion. Almost forty years later, in 1979, one of those mines was caught in a Chesapeake Bay fisherman's net — ominous testimony to the perseverance of a weapon that waits (sometimes for decades) for its victim. A Navy explosive ordnance disposal team came to the rescue, disarming the mine and averting a potential disaster.

Nine years later, CWO 4 Stephen Neill, wiser for that Chesapeake Bay incident and many similar experiences, found himself leading another EOD team against some mines not so different from the one he faced in Maryland waters. But this time the stakes were higher — the team would be diving on freshly laid foreign mines, something a Navy EOD team had not done since the Vietnam conflict. And the scene of operations was halfway around the globe — in the Persian Gulf.

Neill and his detachment of six enlisted men from Naval Amphibious Base Little Creek's EOD Mobile Unit 2 set out to meet the challenge. They traveled, not on a regular Navy vessel, but on a "craft of opportunity." Neill and his men would be

charged with support of mine-hunting and neutralization efforts necessary to keep the Persian Gulf open. They were key players in the success of Operation *Earnest Will* — U.S.



U.S. Navy photo

Navy ships escorting reflagged oil tankers.

Neill's unit was one of four that served in the Gulf in search of mines. Unit 6 of Charleston, S.C., Unit 5 from Subic Bay, Republic of the Philippines and Unit 3, San Diego, all rotated through duty in

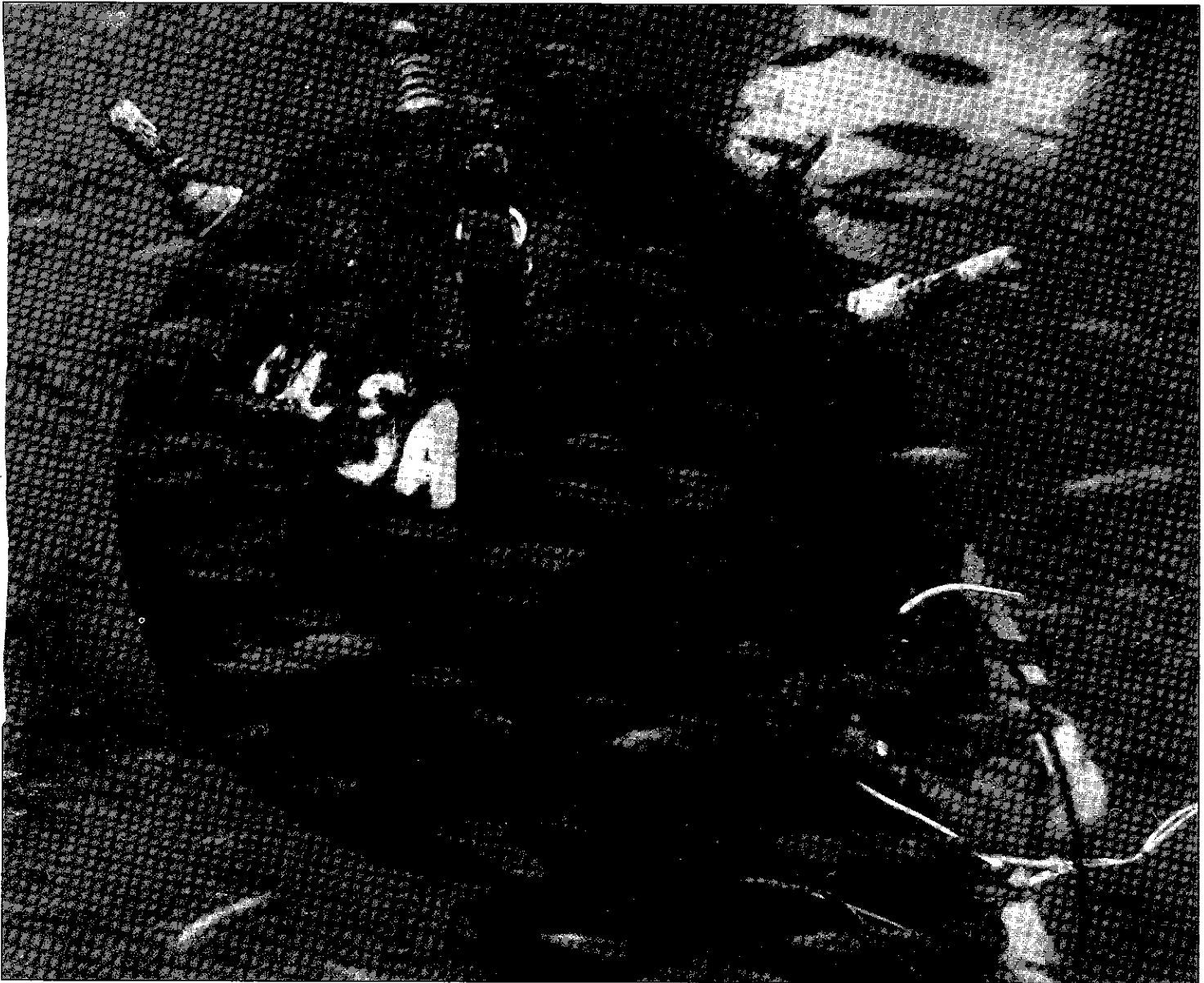
the Mideast, serving anywhere from 30 days to six months at a time.

At stake were millions of gallons of oil and, more importantly, the lives of thousands who shipped or escorted that oil down the narrow track along the edge of the Iran/Iraq war zone that the tankers can use for passage through the Gulf.

Some of the mines that had to be disposed of had broken their moorings and were floating in the sea, making the job of placing an explosive counter-charge on the mine an extremely dangerous operation. In addition, the team was required to make deep dives to locate and dispose of improperly moored mines still attached to their anchors on the bottom. These dives proved invaluable as the first operational experience with EOD's new Mk 16 underwater breathing apparatus, a closed-circuit, mixed-gas scuba, enabling users to dive down to 200 feet.

Even with the latest equipment EOD team members must handle mines with extreme care. Salt water can cause the lead horns of a contact mine to become brittle; the slightest brush against them by an unwary diver can mean certain death.

But mines aren't the only dangers for swimmers in the Gulf. The waters are infested with six-foot-



U.S. Navy photo

long poisonous water snakes with venom deadlier than a cobra's.

And, of course, diving itself, even under the best of circumstances, is always risky business.

Clearly, looking for mines in the Gulf was a deadly affair.

Yet Neill and his people not only looked, they found what they were looking for. A total of 16 mines were discovered in 90 days. In one day, the Unit 2 team found and destroyed five mines — thereby breaking a record for live mine counter-detonation that had stood since World War II. As one EOD team member said, "It was great to finally get the opportunity to

do what we have been training to do for years."

Careful — and thorough — training is the key to success in this business. The training is long, the dangers are real and the duty is hard.

But the rewards are there — not just in special pays, but also in the form of shared *esprit de corps*. The ultimate reward comes from performing a difficult mission well.

"The hands-on experience — operating 90 days in a war zone — that we have received will be of tremendous value to us and the Navy in the future," said Neill. "We were just happy to get a chance to do it." □

Opposite: Mobile EOD Unit 2 team member gets hands-on experience. Above: An EOD technician dives on a mine marked by the Iranians for the "USA." The mine was laid at about the same time as the mine that nearly sank the USS *Samuel B. Roberts* (FFG 58).

The EOD community is seeking dedicated, aggressive men and women. Call ENCM Thiel (NMPC 401D) at AV 224-1091 (commercial (202) 694-1091). Officers call LCDR Destefano (NMPC 413) at AV 224-8327.

Mussi is a photojournalist for All Hands