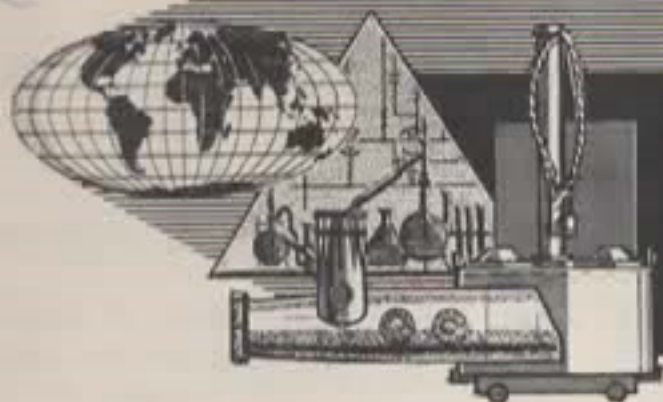


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No. 1 - 60



mine and depth-charge

THE TROUBLESHOOTER

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THE OFFICIAL JOURNAL OF THE RUDMINDE PROGRAM
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in this issue . . .

mine and depth charge

THE TROUBLESHOOTER

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Published by the Naval Mine Engineering Facility, Yorktown, Virginia

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COVER PICTURE: It's not a Mine Mk 69, but a new flotation bladder being tested for BUWEPS off Cape Henry using familiar Mine Anchor Mk 6-51. In foreground overseeing recovery is H.W. Oswald, EN 2. In background are NMEF observers Wilbur Wilburn and Charlie Davis.

The Rudminde Program is a world-wide troubleshooting campaign designed to achieve and maintain a high level of undersea warfare readiness through the discovery and correction of material defects, through refinement of weapon design, and through encouragement of the unique knowledge and skills demanded of highly specialized segments of the U.S. Navy and Coast Guard. The program is sponsored by the Bureau of Naval Weapons.

The basic instrument of the program is Navord Form 2776—"Report of Unsatisfactory or Defective Mines, Depth-Charges, or Associated Equipment"—supplies of which can be requested from NSC Norfolk or NSC Oakland. Anyone who encounters problems with these weapons is encouraged to report them to the Naval Mine Engineering Facility using this Form. Instructions for its use and handling are contained in NAVORD INST. 8500.7.

The Troubleshooter is published quarterly by the Facility's Publications Division and is printed by the 5th Naval District Printing and Publications Office using funds as approved by the Director, Bureau of the Budget, on 10 November 1958.

Contributions, questions, notifications of change in address, requests for distribution, etc. should be addressed to: Editor, The Troubleshooter, Naval Mine Engineering Facility (Ts2), U.S. Naval Weapons Station, Yorktown, Virginia.

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SOUNDINGS

The Changing Scene In Undersea Warfare

SWEEPS and SUBS

ROCK 'N ROLL, USN: In San Diego they recently made with a discussion on roll and tilt measurements on new minesweepers. A test schedule was worked out for the MSO II. Other dates for roll and tilt tests have been set for several new minesweepers.

(Confidential)

STRAY ROUNDUP TIME: Stray field measurements on MSB minesweep cables, and MCS and MSO magnetic minesweep generators, have been made. First glance indicates the faults in minesweep cable may be effecting MSB magnetic signatures, but at least one solution already has been proposed. This work marks the first step to be taken in the broad, new stray-field measurement program planned for new minesweepers.

(Confidential)

SUBS BEWARE: With ASROC (Anti-Submarine Rocket) at last being installed on destroyers, Navy claims incredibly effective defense against any type of submarine now in operation. The 75-mile-range rocket is simply fired in the general location of an enemy sub, drops off a homing torpedo which seeks out its quarry at any depth.

(Unclassified)

TEARDROP SUB COMMISSIONED: While atomic sub training has been opened up to new rates (MM, EN, IC, and EM, including Chief in each rate), a real hot diesel sub, SS-581, Bluejack, has been going through shakedown cruise.

Shaped like a teardrop and designed for real speed and maneuverability, this modern sub features quietness of operation, is equipped for ASW killer-sub work and recon tasks, will lay mines, and is expected to carry the ball when stealth, surprise, or non-detection is plan of the day.

(Unclassified)

FASTER AND FASTER: Complete firing centers from five Polaris-firing subs have been duplicated ashore,

right down to the last condenser. Costing \$1.3 million, these for-real mockups include every last navigational, firing, offensive, and defensive instrument found aboard their counterparts at sea.

The result is that ideas fresh from the drawing board can be installed in the mockup so that submariners can actuate it under actual sub conditions while location, grouping, use, etc. of the equipment is evaluated. This is a real breakthrough in the time lag between drawing board and Fleet-use.

(Unclassified)

BUT DOES IT CLEAN THE WALK?

Navy has a Rube Goldberg they can fire from a torpedo tube, under the polar icecaps. Then it waits for the sub to "get lost" before it blows a hole through the ice. Or—if it's "one of those days" and it doesn't fire—it scuttles itself. Made of stockpile parts and Mine Case Mark 10.

(Unclassified)

SONAR COMBO PLAYS NICE TUNE: A sonar-helicopter sub killer combo can work hundreds of square miles of ocean per hour, Navy says. A transducer (direction-sensitive sonar receiver) hangs from the copter on a long cable, dunks into the water, and gives a listen for vibrations. When it finds a mad dog it can dispatch a homing torpedo to make with the kill.

The entire sonar system (AN/AQS-10) weighs only 725 lbs., but equals ship-board sonar thanks to the fine art of miniaturization.

(Unclassified)

SCHOOL SCOOP

MORE SCHOOL SPACE: 4,500 square feet have been added to Bldg. 16 at the Mine Warfare School in Charleston. Equipment is reportedly rolling in as expansion of facility continues.

(Unclassified)

PORTABLE MINE WARFARE SCHOOL? A new "teaching machine" named TUTOR has recently been introduced. Called the "newest and most sophisticated concept in modern edu-

cation" by its producers, this 350-pound marvel can store 10,000 pages of information. Reportedly it adjusts to any learner's pace, presenting information at the press of a button. Later it questions the student on what he has learned, corrects his wrong answers, and explains where he's right before moving on to the next lesson!

A taped record of the student's success or lack of it, serves as a detailed "report card," and the machine is even claimed to treat each student "as an intelligent and reasoning human being."

Designed specifically for training men to repair and maintain complex equipment and weapons, TUTOR is expected to cost about \$6,500.

(Unclassified)

SHARKS and SHAPES

WATER SPORTS: "Attacking sharks always stick to their first victim," claims GEORGE LLANO, National Academy of Sciences, who just completed a close study of shark behavior patterns for the Air Force.

This "One at a time, I'll get to you later, Bub," rule of shark etiquette gives your buddy a chance to help drive off the shark, or kill it. If you get caught without that kind of buddy, you should swim slowly toward the shoreline, keeping the shark in view, and thrashing like you know what when it moves in close.

If the shark keeps coming, the good doctor says your best chance is to punch him (the shark) right in the nose. That's the only vulnerable spot you can counterattack by hand.

(Unclassified)

"O" AS IN OCTOPUS: Long known best for its ability to emulate bureaucrats (by laying a confusing screen of "ink") the octopus has now shown it can think deep when it comes to fathoming distinctions between small, letter-like shapes.

According to J. Z. YOUNG, a London University professor experimenting

(Unclassified)

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for the Air Force in Naples, Italy, with these fantastic eight-legged — or is it eight-armed — fish, the studies were undertaken in hopes of finding clues to a simplified design for an electric computer which the AF needs for aerial reconnaissance. The octopus, it seems, has a shape-recognition system far less complex than any dreamed up by men. Already the study has led researchers to a model that's almost as good as the fish.

Perhaps not surprising when you consider past reliance on techniques learned from the birds and the bees, "Project Octopus" is, in fact, only one of 140 such "nature studies" to date, including at least one with the cute twist of having cranked a bug into the system.

The bug, in this case, was the beetle. A study of the mechanics of its eyes has led to simplified circuitry for an improved type of airspeed indicator!

(Unclassified)

SEX ON RADAR: The Army has unveiled a new radar outfit which they claim is sensitive enough to distinguish a walking WAC from a walking GI, five miles away. Unification would of course have made this invention unnecessary. Sailors have had this capability for years!

(Unclassified)

UP YONDER

TINCANS GET CHOPPERS, PLUS: First to carry the latest ASW gear — a complete hangar and flight deck for helicopters — is DD HAZLEWOOD. The pilotless choppers are radio-controlled, equipped with anti-sub weaponry. Press a button, one takeoff — another button, "On Target" — a third touch and "Scratch One!" — then back to momma!

One of these days these 'copters may start transferring supplies and personnel at sea. Then the bo'sun mates can really start worryin'.

(Unclassified)

'BYE, 'BYE, NEPTUNE: Lockheed's work developing the P3V-1 Electra turbo ASM patrol plane has paid off. This plane recently made its flight-line debut and is scheduled to replace the P2Vs.

Fitted with four Allison's, she kicks up 18,000 h.p. at takeoff, flies operational at 150-400 knots, has short-field

capability for advance-base missions, and has range long enough for mid-ocean searches.

The Mercator, first of 19 coming to the Navy, has also just been wrung out in test flights. Land based, with 2,000 mile range, she will make long over-water patrols, lay mines, and make with the photoshutter. She has two jets and two reciprocating engines.

(Unclassified)

WHERE DID YOU GET THAT HAT: Aeroflot, the Soviet airline, is now testing the world's largest passenger plane. Reporters in the know claim the new jet is a modified version of a Russian bomber, which in turn is incredibly like the U. S. B-58.

(Unclassified)

WHAT GIVES?

THE SK's MAY WIN YET: Who says the Storekeepers won't win the next war? BUWEPs has announced its newly installed RCA electronic computer not only will tell them where most ships are swinging at anchor, but will produce a frequent worldwide inventory of all armament and weaponry! This means full ammo pipelines all the way from the powder factory to the missile launcher on the afterdeck, every day of the year.

(Unclassified)

CANVAS PATCHES MUST GO: Top-side ordnance equipment now covered with canvas will soon get decked out in nylon and vinyl fabrics. They're on their way into the supply line and will begin to show up in the Fleet next fiscal year.

(Unclassified)

ANOTHER RUSSIAN RECORD? Our radar net in Turkey proves the Russians are having their troubles with ICBM and space vehicles. So far our radar watchers report having "seen" 30 launching efforts hit the dust. And they don't mean star (or moon) dust!

(Unclassified)

STOW THE CHIPPING HAMMERS: Part of the ship obsolescence problem was built into the hulls before they even came off the ways, merely because so many ships were mass-produced during WWII.

Now these same ships are aging en masse as more and more warm bodies per watch know at first hand.

But help is on the way. BUSH has started a hull program called FRAM (Fleet Rehabilitation and Modernization) that will bring specific ships in for yard overhaul, others for limited modernization, and a few per year will be completely up-dated with the newest equipment.

(Unclassified)

1965 MAGNETIC CHARTS BORN: The first 25,000-mile leg of Navy Project Magnet has been flown — leaving 550,000 more miles to go over Asia, Africa, and South America — before the world's magnetic fields will have been charted and compiled. The info will be fed into the 1965 edition of the World Magnetic Chart System, used by aviation, maritime, and scientific groups.

(Unclassified)

CALL A SPADE A SPADE: A tough order from IKE for a thorough review of air-defense plans says in effect: Cut out the blarney and report the facts. This refers to plans for knocking down enemy bombers and missiles, including submarine-launched rockets. Reportedly it's not that the President thinks anyone is lying . . . just aggravating the worth of pet projects.

(Unclassified)

NOW IT CAN BE TOLD: Advice generated by a Pentagon review of U. S. intervention in the 1958 Lebanon and Formosa crises calls for less military secrecy, not more, in limited war situations. The stated reason: early and open publicity would make U. S. plans and determinations clear to the world, avert misunderstandings that might spread the war.

(Unclassified)

TWO FACILITY STAFF CHANGES: LCDR PETER V. A. AGUR has been ordered to duty as Asst. O-in-C, NMEF, replacing LCDR PAUL D. DIAMANTIDES who has been transferred to Quincy, Mass., as Engineer Officer aboard USS SPRINGFIELD (COG-7), for fitting out and commissioning.

LCDR Agur has been aboard the Facility since August '58 as Fleet Liaison Officer. He served aboard CA-33 The Sweet Pea and CL-55 The Big C during WWII, then piled up flight time with VP-40 and VR-2.

(Unclassified)

RUDMINDE REPORT TO THE FLEET

What's Been Reported?

What's Being Done?

TRADITIONALLY January is Hot-Stove-League month. Baseball fans throughout the world move in to take over from the pigskin cohorts with cries of "Wait 'til next season" (baseball season, that is!).

Commissioner Ford Frick also times it nicely and releases the official batting averages, fielding averages, pitching averages, etc., until the pressmen run out of type and switch from "Avg." to "Pct." and back again in the statistics columns.

Names of prospective players coming up for the Big Try get a going over with an intimacy of personal detail that includes everything from what the player eats for breakfast to how much boning he does on his bat handles.

So, with a firm grip on the resin bag, T-SHOOTER offers its first sports page with a rundown on "standings"

in the Rudminde Program. Appropriately enough, the final game of the season (Oct. '57 through Dec. '59) was played Dec. 7th. Only 59 batters had appeared, but they slammed out 1,348 hits off Ruddy Rudminde's pitching slants!

So — with several new men coming up from the "miners" and Leo ("Nice

guys finish last") Durocher's counterpart getting ready to depart for spring training (Fleet Service-Mine Tests) — the coming year should see many many more batters stepping up against that perennial pitching star, Rudminde.

A baseball manual, "How to Bat" (NAVORD INSTRUCTION 8500.7) has been prepared, and it outlines a perfect form (NAVORD FORM 2776) that guarantees every batter a hit, whether he's from the bushes (Fasrons) or in Triple A ball (the Mine School). Contracts for the year have been signed and there are no holdouts as we go to press.

Next fall, though, when the Division Officer says "Let's look at the record" before he recommends you for promotion or PRO pay, it won't hurt to point out that you knocked out three or four Ruddy homers!

Send A Rudminde On A Pub?

If you did, chances are you'll find it listed in the pubs section that begins on page 14. Even if you reported faulty test sets or components, if our analysis of your Rudminde shows that it was really your pub that was at fault, the defect you found will be covered there.

AMERICAN LEAGUE						SURFACE LEAGUE		
TAB*	HITS	AVG.				TAB*	HITS	AVG.
NND Melville	220	.388	NAD 66	106	.142	PRAIRIE AD 15	4	.148
NAD Hawthorne	110	.194	NM 3002	104	.139	ROOKS DD 804	3	.111
NWS Yorktown	70	.124	MPF COMINPAC	53	.071	F. T. BERRY DDE 858	2	.074
NAD Bangor	43	.076	FASRON 112	27	.036	LUCID MSO 458	1	.037
NSMW Charleston	39	.069	NOF 214	23	.031	BRISTOL DD 857	1	.037
FASRON 3	30	.053	FASRON 110 (0305)	23	.031	CUSHING DD 797	1	.037
NAD Charleston	21	.037	NAS 3835	22	.030	FINCH DER 328	1	.037
MWE Key West	14	.025	FASRON 108	18	.024	FORSTER DER 334	1	.037
Minecraft Base Chas.	9	.016	FASRON 118 (0301)	13	.017	GAINARD DD 706	1	.037
HDU Little Creek	3	.005	FASRON Sp 201	12	.016	GREGORY DD 802	1	.037
FASRON 121	2	.004	FASRON 117	6	.008	HENDERSON DD 785	1	.037
NAS Norfolk	1	.002	NAF Det 240	4	.005	JOHN HOOD DD 655	1	.037
FASRON 2	1	.002	MCAF 955	3	.004	LESTER DE 1022	1	.037
EODU 2 Charleston	1	.002	NM 926	2	.003	MARSH DE 699	1	.037
BUORD (Malb-2)	1	.002	NAF 3867	2	.003	MULBERRY AN 27	1	.037
FASRON 109	1	.002	FASRON 120	1	.001	PASCAGOULA PCE 874	1	.037
NAD Concord	1	.002	*TAB (Rudminde Received)	747		PIEDMONT AD 17	1	.037
*TAB (Rudminde Received)	567					HUGH PURVIS DD 709	1	.037
(inter) NATIONAL LEAGUE			AQUA LEAGUE			RENSHAW DDE 499		
TAB*	HITS	AVG.	TAB*	HITS	AVG.	FORREST SHERMAN		
NOF 3923	328	.439	SEGUNDO SS 398	4	.571	DD 931	1	.037
			CHARR SS 328	1	.143	WALTON DE 361	1	.037
			SEA DEVIL SS 400	1	.143	*TAB (Rudminde Received)	27	
			TIRU SS 416	1	.143			
			*TAB (Rudminde Received)	7				

And now let's take a look at the defects you've reported since the last T-SHOOTER went to press.

DEFECTS REPORT

ITEM	USED WITH	REPORTED DEFECT	REMARKS
Anchor Mk 10 Mod 5	Mines Mk 10	Camshaft springs adrift in anchors after planting.	Looks like this may be fault of design; we're looking into it.
Anchor Mk 16 Mod 1	Mine Mk 16-1	1. Brake flanges not lubricated enough to prevent rust on flange. 2. Incorrect lubricant on pawl assembly; operation sluggish.	As of now these troubles are not widespread; if they continue, send Rudmines.
Batteries BA-250/U	Depth Charge Mk 14	History cards not received with shipment.	BUWEPS has called issue activity on this oversight. Those cards <u>must</u> be used, as explained in battery article in T-Shooter 1-59.
Batteries BA-271/U (Mk 30)	12"75 Rocket	History cards not received with shipment.	BUWEPS has called issue activity on this oversight. Although a different battery card is used for these, its use is just as important as use of the mine-battery cards explained in T-Shooter 1-59.
Cable Assy CA-93	Mines Mk 36-1; 36-3; 49-2	Will not reach TB-8 when installed in 36-1.	CA-93 should not be connected to TB-8; see instructions following the table on page 5.
Case Mk 36 Mod 1	Mines Mk 36	Cannot install bleeder assembly in this mine case.	BUWEPS is removing these cases from stock; meanwhile connect <u>resistor only</u> as follows: In Mine 36-1, to TB-8's battery terminals + & -. In Mine 36-3, to Control Box 15-0's terminals 2 & 7. (See instructions following the table on page 5.)
Clock Delay CD-14 Mod 6	Mines Mk 25-0, 1, 2; 27-3, 5; 36-1, 2; 39-0; 49-0, 1, 2; 50-0	Excess current drain during tests with Test Set 75-1.	Could be your test set. See "Calibration Modification," page 9, T-Shooter 1-59.
Firing Mechanisms A-6-3, A-8-1	Mines Mk 25-2; 49-2; 27-3, 5; 36-3	SR-9 drops out erratically; SR-9 cannot be adjusted.	We've recommended a test stand capable of holding a complete firing mechanism for use at source inspection, receiving activities, and advance-base units. This should shortstop faulty SRs before the mechs get to you in the field.
Firing Mechanism Mk 16 Mod 0	Mine Mk 51 Mod 0	Wiring breakdowns in prolonged storage require complete rewiring before mechanism can be used.	We're looking into improved, reusable packaging that will keep these mechs in better condition; more scoop later.
Microphone MI-4	Mines Mk 25-1; 36-2; 49-1	Leaks around the diaphragm.	Follow instructions in OP 1799 1st Rev., p. 40, "Inspection of Microphones." If this won't fix, keep sending Rudmines.
Mine Mk 16 Mod 1	N/A	Mines received with float turnbuckles improperly torqued; two floats fallen free from cases; mine cases separated from anchors; one mine assembly's dunnage not secured properly, so had worked loose damaging trailer bed in transport.	This kind of business shows carelessness that could be helpful only to a potential enemy. For more comment see "It Ain't Funny, McGee" in HOT STUFF, this issue.
Oven, Air Dryers	N/A	Motor would not run; door sprung; pilot light holder damaged; pilot light broken; door lock inoperative; improper splice in hot lead to motor; top badly dented.	Rudmines on plant-account equipment like this are fine, but you should also notify BUWEPS at once so they can get replacements to you pronto, also recover costs when manufacturer or shipper is at fault.

ROUGH RUDMINDE

ITEM	USED WITH	REPORTED DEFECT	REMARKS
Search Coil SC-7 Mod 0	Mine Mk 36-1, 3	Which end cap is the right one to use - DWG 1247008 or DWG 402763-1.	SC-7-0s differ, depending on who manufactured. For those manufactured by Control Corporation (NOrd 11996) use End-Cap DWG 1247008; for all other SC-7-0s use universal (4-hole) End-Cap DWG 402763-1. Any caps DWG 402763-1 with <u>only two holes</u> should be scrapped.
Tape, Battery Retracting	Mines Mk 25-0, 1, 2; 36-2	Mines Mk 36-2 shipped with retracting tapes 34" long, 2" wide, 1/8" thick.	Don't use them. DWG 1182766 specifies 36" x 1" x .045". Proper tapes are also listed in OD 12067-G, page 291, and in OD 10604, 1st Rev., sheet 60, and your General Requisites.
Test Set Mk 95 Mod 2	Clock Delays CD-1, CD-7, CD-8, CD-9, CD-12	Received sets with direct short circuits, damaged components, missing cables, etc.	In future, we think you'll find test sets have been more carefully checked out before shipment.
Test Set Mk 128 Mod 1	Search Coils SC-7, SC-19, SC-20, SC-21, SC-23	1. OP 1452, 2d Rev., and test set operating instructions do not agree on proper operation of leakage-test indicating lamp. 2. Set's circuitry differs from schematic wiring diagram in OP 1860. 3. Meter needle bent.	1. OP 1452, page 90, par. c is correct; do <u>not</u> reject search coils when the lamp doesn't light. 2. Schematic is wrong, will be corrected in new revision to OP 1860 now in production at NOL. 3. Happens a lot, usually because of pegging meter. For solution see "Blunt Shunt", page 20, T-Shooter 1-58.
Test Set Mk 177 Mod 0	Firing Condensers in Firing Mechanisms A-5 and M-11	Received with chassis securing screws and washers adrift, transformer shorted.	More poor packing! See "It Ain't Funny, McGee" in HOT STUFF this issue.

When you build a 36-1 mine in a 36-2 case...

It used to be that the bleeder resistor, itself, was mounted on the + and - terminals of the TB-8, but that's no longer true unless you're one of the diminishing few who get caught with an old Case Mk 36-1.

With the bleeder assembly moved to the clock well, as should be done when building a 36-1 mine in a 36-2 case, CA-93 connects directly from the bleeder assembly to the batteries. But CA-93 was added after OP 1684 (2nd Rev) was published; that's why you don't have instructions for its use. The 3d revision will soon tell all, but

meantime here's how:

Pass the ORANGE (-) and BLACK (+) leads of CA-527 under the search coil housing and connect the ORANGE lead to the negative terminal of the right-hand battery; connect the BLACK lead to the right-hand battery's positive terminal. Connect the BLACK side-tap lead (-) to the left-hand battery's negative terminal; and connect the YELLOW side-tap lead (+) to the left-hand battery's positive terminal.

Next, tape the ends of the 4-inch long CA-93 leads (WH/RED &

WH/BLK) *separately* to prevent short circuiting the batteries, then connect the untaped (short) leads, at the other end of CA-93, to the right-hand battery; the WHITE/RED (+) lead to the battery's positive terminal; and the WHITE/BLACK (-) lead to the battery's negative terminal.

With this done you can pass the taped ends of CA-93 through the cable conduit to the clock well.

If you have difficulty installing the CA-93 leads at the bleeder end (flag-type lugs too wide), see *Contributions From the Fleet*, page 13, in this issue.

A POLICY in the clouds is for the birds

SOME ARGUMENTS ARE EASY, like where's Cairo — in Egypt or in Africa? You can get some folks to agree if you claim Cairo is in Illinois. Others will give you the nod if you say it's in Georgia. But you can't have a thing called "policy" and get anywhere with everyone moving it all over the map!

This brings us to the mineman who sent us a list of pubs that cover the use of a particular test set from the factory to the field . . . who wanted to know why the set's various instructions don't agree with each other.

Like plenty of others, this man was playing it straight when he asked which set of instructions he should be using. As B-Butt explained to him (see *Cool Rule*, page 6, T-SHOOTER 2-59) it makes a big difference whether you're testing the set to acceptance standards such as apply to new materiel received from a manufacturer; testing the set for issue after it's been in stock for some time; using the set to test newly manufactured weapon components; or using it to make sure stockpile components are okay to install in a mine.

Naturally, the instructions for each kind of test are bound to be different. And no wonder that those of you who've latched onto the several kinds of test instructions have been somewhat confused!

Adrift in the horse latitudes

What this business of test policy boils down to is a resolution of who does what, and where? It's easy to get off the beam when you take on work your activity isn't responsible for; easier yet to snafu an authorized task by not following the procedures that were planned to go with it.

Your answer lies in using the proper pubs, and sticking to the work responsibilities spelled out in them. It's almost as easy as that, and yet some men get lost "off limits," apparently assuming that "strict" limits are better to use than the "practical" ones generally found in the pertinent OPs.

So when strict limits are used instead of the practical ones, what happens? A lot of unnecessary re-

jects, maybe; probably a flock of man-hours spent finagling around trying to make needless adjustments; a stockpile evaluation program all loused up!

Thus an explanation of the why and wherefore of the different limits and how they're related to the various uses of the test sets should be helpful in understanding policy.

We'll define types of limits and types of test sets presently. But first let's pursue this business of policy as it applies to repair, adjustment, and replacement.

What the policy intends

Taking a long look at most of the troubles reported, confusion seems not only to involve the use of unauthorized test limits but also, too often, to be a result of going beyond the procedures spelled out in the OPs . . . making on-the-spot decisions without understanding the intent of the policy regarding repair, adjustment, and replacement.



NAVORD INSTRUCTION 8550.17 says: "All activities other than major overhaul depots who store, maintain, issue, receive, or employ mines and mine components are authorized to perform the functions of test, adjustment and replacement. Tests, adjustments and replacements of mine components for issue or use in mine assembly shall be performed in strict accordance with the applicable OP limits. The function of overhaul will not be undertaken unless specifically authorized by this Bureau (BUWEPS)."

Now, if by following the test procedure as outlined in the proper OP, some component doesn't test within the OP limits, it would seem that any simple cleaning or adjustment which doesn't involve tearing down the whole component would be okay under the policy.

But tain't so! What NAVORD INSTRUCTION 8550.17 doesn't come right out and say, but what it *intends* to set forth, is that no test, adjustment, replacement, etc. shall be undertaken unless the pub authorized for the particular task tells you that you may, *and also tells you how*. To put this another way, no activity should undertake any task unless it has a specific responsibility for such work.

Limits defined

Adding to the general confusion, some activities appear to have established "local" nomenclatures and definitions regarding types of tests and test sets. Apparently many are quite unaware that NOL investigated the operational use of tests sets back in 1954 and came up with a classification of test sets by types, based on the kinds of tests that take place and who does what, and where. But that's getting ahead of the story. First let's consider the two kinds of test limits you're most likely to encounter.

► **OS Limits:** These are the test limits found in procurement documents such as OSs (*Ordnance Specifications*), MIL SPECS (*Military Specifications*), FED SPECS (*Federal Specifications*), and RTPs (*Requirements and Test Procedures*). OS limits are usually more restrictive than OP limits and are used when testing new mine and depth-charge material at the manufacturer's plant, when accepting

it into stock, in some phases of depot or private-contract overhaul, and (sometimes) in stockpile surveillance and evaluation.

OS limits are established to insure adequate quality and dependability in hardware that may have to endure many years in stock before it is issued for use.

Naturally such hardware is bound to lose some quality during prolonged storage (in the matter of insulation resistance for example). But this is taken into account in component design. By insuring through proper specifications and tests to rigid OS limits that quality is higher at time of manufacture than proper operation will demand, there's always enough leeway on quality so that components can endure some deterioration "on the shelf" and still be okay to install in a weapon.

► **OP Limits:** These are the "practical" limits put on materiel which has been accepted into stock and is considered ready for issue or use.

Naturally, these limits are less exacting than OS limits, but they are carefully selected to check critical functions, and you'll just never go wrong using hardware that measures up to them. To decide that you in the field should impose OS limits in their place is wrong and is something you never should do. By OP limits we mean those in your *mine assembly manuals*, in OP 1452 and NOLR 1216 on *mine components*, and in the various manuals on *firing mechanisms*.

So remember this rule: *OP limits guarantee components that will perform under service conditions, and are the only limits to which you should test in the field.*

Test sets defined too

With all test limits divided into two general categories, it might seem that test sets should fall into two categories too. Instead, test sets have been divided into *three* types, according to where and how they are used, with the result that some sets may function as more than one type. If at first you find this confusing, a careful reading of the definitions of each type should help clear the fog:

► **Acceptance test sets — Type A** are those which are primarily intended to

test mine and depth-charge material to *OS limits* at the factory, or at depots upon receipt from the factory. Thus Type A sets are generally issued only to government inspection activities and to major stowage depots such as Yorktown, Hawthorne, and Oahu.

They are also issued to the Quality Evaluation Laboratories, not for testing new materiel, but for use in evaluating the quality remaining in samples taken from the world-wide stockpile . . . in short, to determine periodically the effects of aging in stock.

► **Depot test sets — Type B** are primarily intended to test components to *OP limits*. Generally, this includes all testing of components at any time after they have been "acceptance tested" and placed in stock, in order to insure that they are suitable for issue to mine assembly personnel.

Type B sets are thus used by major depots (Yorktown, Hawthorne, and Oahu) to test components before they are shipped to mine-assembly activities.

Type B sets are also used by the assembly activities when components that have been on hand for sometime must be re-tested to make sure they are acceptable for assembly into weapons.

► **Field test sets — Type C** are primarily intended for use in overall tests of complete mine and depth-charge assemblies, generally on a go/no-go basis. This, then, is the type set usually used by assembly activities for final sensitivity and operational tests before weapon use.

The following are also considered as Type C sets even though they are used to test individual components: 1) Detonator test sets and test chambers, used immediately before detonator installation to make sure explosive fittings and detonators are satisfactory and safe to install; 2) Test Set Mk 237 Mod 0, used to measure the resistance of Sterilizers Mk 11 just before installation.

Multi-purpose test sets

Naturally some test sets function as more than one type, and are used for a variety of testing operations. But whether you're testing materiel for acceptance into stock, testing

stocked components before issue, bench-testing components before assembly, or testing assembled weapons, *we repeat that the test should be conducted exactly as specified in the publication that calls for the test, and to the specific limits called for therein.*

Follow this rule and forget whatever additional testing capacities the set may have, and you can't possibly go wrong.

In a nutshell

You'll stand a better chance of following policy for test, adjustment

and replacement of mine and depth-charge material if you:

► Make sure that your activity is responsible for the task you are considering; initiative is fine but not when it means a breakdown in the system.

► Check to see that you have the OP (or other pertinent instructions) officially designated for the task; don't use an RTP or MIL SPEC to check stuff that's been on the shelf for five or ten years.

► Use only such tools, test sets, and publications specifically designated for

use in the corner where you are; they're not adequate for the job. It may be because it's a job you're not supposed to be doing.

From what's gone before perhaps you can see where policy interpretation is far from the easiest thing in the world. Nevertheless we hope we've managed to drag some of it down out of the clouds, and that you'll keep on letting us know when you have problems along this line.

We'll explain everything that we can. If we can't explain it, maybe we can get someone to simplify it enough so that we can!

Starting Dates at Mine Warfare School

OFFICER COURSES

Aviation Mine Warfare Familiarization: 11 Jan, 4 Apr, 11 Jul, 10 Oct, 1960; 9 Jan, 10 Apr, 1961

Aviation Mines Maintenance: 14 Mar 1960; 13 Mar, 1961

Countermeasures (14-day reserve training): 4 Jan, 8 Feb, 7 Mar, 4 Apr, 2 May, 6 Jun, 5 Jul, 1 Aug, 6 Sep, 3 Oct, 7 Nov, 5 Dec, 1960; 3 Jan, 6 Feb, 6 Mar, 3 Apr, 1 May, 5 Jun, 1961

Degaussing, Ranging and Deperming: 23 Feb, 6 Sep, 1960; 20 Feb 1961

Degaussing, Shipboard Installation and Repair: 18 Apr 1960; 12 Jun 1961

Introduction to Mine Warfare: When Requested

Magnetic Compass Compensation: 11 Jul 1960

Mines Assembly Refresher (14-day reserve training): Units I, 12 Sep 1960; II, 10 Oct 1960; III, 1 Feb 1960, 6 Feb 1961; IV, 7 Mar 1960, 6 Mar 1961; V, 14 Nov 1960; VI, 11 Jul 1960; VII, 11 Jan 1960, 9 Jan 1961

Mines Maintenance Officer: 15 Feb, 16 May, 22 Aug, 21 Nov, 1960; 13 Feb, 15 May, 1961

Mines Maintenance Officer, Reserve: Same dates as Mines Assembly Refresher, above

Minesweeping Officer: 15 Feb, 18 Apr, 20 Jun, 22 Aug, 31 Oct, 1960; 13 Feb, 17 Apr, 19 Jun, 1961

Mine Warfare Staff Officer: 18 Jan, 27 Jun, 1960; 16 Jan, 26 Jun, 1961

Prospective Engineer Officer: 15 Feb, 18 Apr, 20 Jun, 22 Aug, 31 Oct, 1960; 13 Feb, 17 Apr, 19 Jun, 1961

Senior Allied Officer: 12 Sep 1960

Submarine Mine Warfare Familiarization: 23 Feb, 15 Aug, 1960; 20 Feb 1961

Submarine Mines Maintenance: 4 Apr 1960; 3 Apr 1961

Surface Mine Warfare Familiarization: 4 Jan, 8 Feb, 7 Mar, 4 Apr, 2 May, 6 Jun, 5 Jul, 1 Aug, 6 Sep, 3 Oct, 7 Nov, 5 Dec, 1960; 3 Jan, 6 Feb, 6 Mar, 3 Apr, 1 May, 5 Jun, 1961

ENLISTED COURSES

Aviation Mines Assembly (Class C): 14 Mar 1960; 13 Mar 1961

Countermeasures (14-day reserve training): 4 Jan, 8 Feb, 7 Mar, 4 Apr, 2 May, 6 Jun, 5 Jul, 1 Aug, 6 Sep, 3 Oct, 7 Nov, 5 Dec, 1960; 3 Jan, 6 Feb, 6 Mar, 3 Apr, 1 May, 5 Jun, 1961

Electrician's Mate Ranging and Deperming (Class C): 9 May 1960; 8 May 1961

Mineman (Class A): 4 Jan (US & NonNATO), 28 Mar, 18 Apr (NonNATO), 2 May, 27 Jun, 1 Aug, 26 Sep, 17 Oct (NonNATO), 1960; 3 Jan, 6 Feb (US & NonNATO), 27 Mar, 17 Apr (NonNATO), 1 May, 26 Jun, 1961

Mineman (Class B): 15 Feb, 16 May, 22 Aug, 21 Nov, 1960; 13 Feb, 15 May, 1961

Mines Assembly Refresher (14-day reserve training): Same dates as Mines Assembly Refresher, Officer Course

Minesweeper Automatic Degaussing (Class C): 18 Apr, 11 Jul, 29 Aug, 7 Nov, 1960; 17 Apr 1961

Minesweeper Boatswain's Mate (Class C): 11 Jan, 4 Apr, 11 Jul, 10 Oct, 1960; 9 Jan, 3 Apr, 1961

Minesweeper Electrician's Mate (Class C): 8 Feb, 2 May, 20 Jun, 29 Aug, 1960; 6 Feb, 1 May, 19 Jun, 1961

Reserve Mineman (Class B): Same dates as Mines Assembly Refresher, Officer Course

Submarine Mines Assembly (Class C): 4 Apr 1960; 3 Apr 1961

get that exudate cleaned up! For this, clean hot water is okay, both for removal and disposal. Carbon tetrachloride, acetone, or alcohol can also be used as long as there's no chance of sparks or fire, and ventilation is good. But never, *never* use soap or other alkaline preparations. These usually contain hydroxide, caustic soda, or potash, very small amounts of which will sensitize TNT and cause it to explode if heated.

Anyhow, you can see that exudate is risky stuff that you should get rid of wherever you find it. And it's also a healthy practice to inspect *all* cast TNT munitions periodically to make sure exudate is not leaking. And now let's go one more step.



Telling us about the situation via Rudminde is smart, but complying with NAD/Crane Instruction 8010.3 is even more pertinent. This Instruction supersedes NAVORD INSTRUCTIONS 8025.1 and 8024.24, providing a uniform procedure for reporting ammunition that's defective, malfunctioning, unserviceable, or locally suspended.

According to this Instruction, a case leak constitutes a major defect and should be reported on Form 8010-1 via Message to NAD/Crane with copies to appropriate logistic, administrative and operational commands.

B. Arnacbutt

Unsaddle Old Paint

Dear B. Arnacbutt,

In the procedures for filling Sterilizer Mechanism SD-4 Mod 1, as spelled out on page 127 of OP 1452, we're told to write the filling date in green crayon and to paint a 1/4-inch spot of green lacquer on top of the filling plug. OP 1452 also says the lacquer will dry in 20 minutes, but I've got news: It comes already dried up in the bottle! How about that?

T.H.A., MN1

Dear T. H. A.,

What's been decided is that marking in the filling date with green crayon is enough. That other requirement is as old and dried up as your lacquer, and will be eliminated from the next revision of your OP.

B. Arnacbutt

Lug bugs

Dear Barnacles,

Why ship Mines Mk 25 with suspension lugs installed in the 30-inch spacing position? This spacing went out with World War II, yet we've been told we can't get the mines with lugs in the 14-inch positions because they won't fit the crates. Can't the crates be altered?

R.E.D. MN1

Dear R. E. D.,

You're off about the 30-inch suspension being obsolete. Aero 7A ejection racks on A-3Ds can handle both 14 and 30-inch suspensions. Furthermore, the 30-inch suspension may play an important part in truly high-speed planting now getting beaucoup attention from the men in the know.

As for crate modification for this mine, Chief R. J. SMITH, Navy 3002 recently set us straight with a well-thought-out method and sent a fist-full of pix. Trouble is, no one knows yet what the new lugs for higher speed planting may be like. And 'til someone finds out for sure, there's no

way we can decide exactly how those crates may have to be altered.

In any case don't change lugs on explosive-loaded cases until someone gives you the word.

B. Arnacbutt

All wet with dry cells

Dear Barnacles,

I was testing some CD-12s using Test Set Mk 95 Mod 2. Since the instructions in the set called for a 6-volt power supply, I hooked up a dry cell (BA-249/U). The stepping switch wouldn't cycle. Next I tried a six-volt storage battery and the switch stepped off fine. A couple of BA-249/Us in parallel worked OK too, so does this mean surplus resistance in the set, in the clocks, or what?

S.N.O., MN2

Dear S. N. O.

In T-SHOOTER 2-59 (see *Cool Rule*) I said to stick to your OPs for test instructions. And in this case the OP to stick to is 1452 which tells you on page 61 par. b to connect your set to a 6-volt storage battery, and says that use of dry cells is *not* recommended.

And speaking of test sets, be sure to read *A Policy in The Clouds is for the Birds* on page 6 of this issue.

B. Arnacbutt

The last word?

Dear Barnacles,

That T-Shooter 2-59 feature on case openings was fine and I agree minemen should keep their cotton pickin' hands off filling-hole covers. But how about us men at depots who pour explosives. How much torque should we use when we install those filling-hole covers?

Your readers might also be interested to know that somebody here decided we should coat the gaskets with silicone grease. The cold flow

that resulted was something awful.

D.K.

Dear D.K.,

Our editor thought that article would put a long-term stop to the many questions that come in about gaskets etc., but you've hit on a point that was missed. Anyhow, I can't think of any filling-hole-cover fastenings that aren't $\frac{3}{8}$ -inch diameter, so I'll say the torque should be the same as for all the other openings discussed in our article — that's 16-20 lb-ft.

I also had a reminder from way out in geisha territory that a 9-year-old Ordnance Material Letter having to do with clock- and extender-well gaskets is still in effect. To get the dope on this, be sure to read *Do You Do This Job Right*, page 21, this issue.

B. Arnacleburt

It ain't funny, McGee!

Dear B. Arnacleburt,

Here are some photos that show how service-mine compo-

nents are coming to us in very poor condition. I say this kind of nonsense must cease.

R.H.S. MNC

Dear Smitty,

Your pix speak for themselves and your Rudminde makes me wish I could get my hands on the jokers who shipped you that gear. At least you can rest assured that they've been told about it, and we're printing a few of your shots here so everyone can see what it is you're complaining about.

The story, men, is that Smitty's outfit ordered a shipment of mine components and, after a long wait, got a batch of junk! This is not very encouraging to minemen who try to keep their stock shipshape. There's nothing funny about it, and you certainly don't have to take it!

At the sending end there are endless drawings, specs, and local instructions that give adequate procedures for packaging for overseas shipment. Even without 'em, the use of simple common sense should elimi-

nate most instances of lost time, material, and tempers. In short, there's just no excuse for sending out material that's obviously unserviceable.

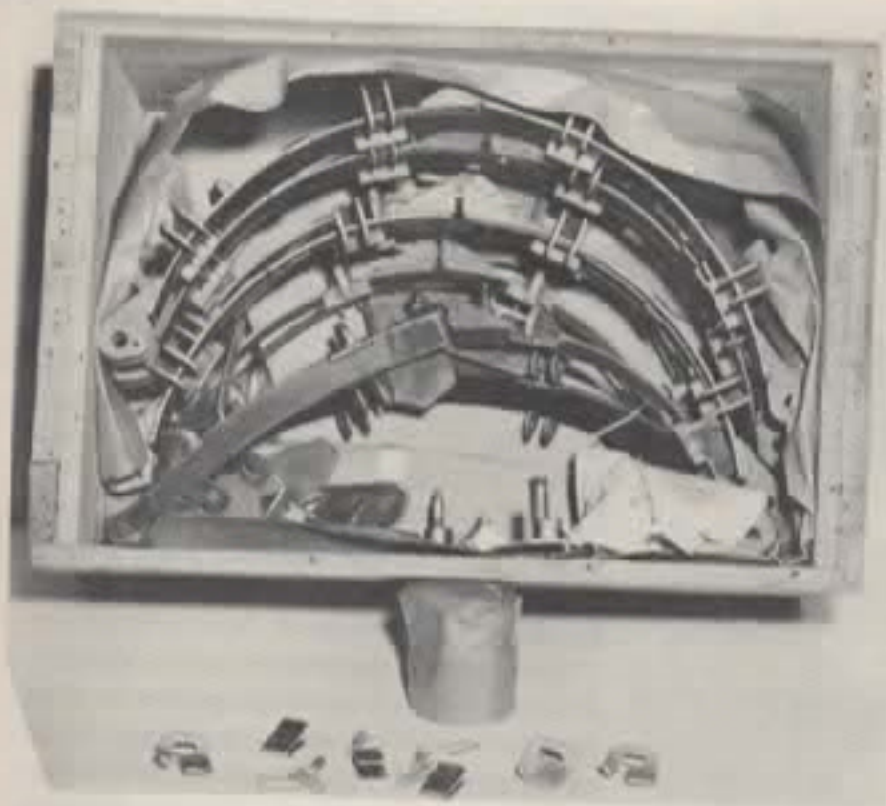
At the receiving end you can put the brakes on this kind of service by making sure it gets reported to us. And if you've thought up a better way of packaging or transporting mine material, send these ideas along to us too. By all of us working together, maybe we can brighten the picture.

B. Arnacleburt



This is what Smitty saw when the lid of this crate was removed. NAVORD INSTRUCTION 8551.5 says: "Extreme care shall be exercised to ensure that the moisture barrier for the parachute pack container is not damaged or opened until the pack is ready for installation on a mine."

Mk 7-3 release mechanisms as "packaged": no cotter keys were included, lift-the-dot fasteners for the release paddles were missing. And what were those items shown in the foreground doing in a box of release mechanisms . . . clips from parachute packs and wire pins?



Unserviceable as received! Some of these arming-wire safety locks are corroded; others were shaken apart, the pieces adrift in the box. Dig those M-14-2 extender pins — used locks? How about those mangled warning tags? NAVORD NOTICE 8551, 25 Jun 1958, says locks that don't come in their original containers should not be used.



CONTRIBUTIONS . . . FROM THE

ON 6 OCTOBER 1958, WILLIAM B. GRAHAM, TMC, USS GEARING, placed variously treated tape coverings over face plates of A-4 mechanisms on three Mk 14 Depth Charges in stowage racks and the stern release track of the USS GEARING. This was done to test a method of protecting the mechanisms to overcome some of the disadvantages encountered when using the preservatives and procedures called for in OP 1577 and OP 669.

Until the tape coverings were removed on 27 January 1959, the depth charges were subjected to conditions of both hot and cold weather, rain, snow, and exposure to salt water.

The following procedures and materials were used in the experiment:

► Disc-shaped tape (cloth-backing tape G-8135-634-1168), with three coats of Rust Preventive Compound (Polar Type) Grade 1, was used to cover the A-4 mechanism's face plate

on a depth charge in the port stowage rack.

► Same as above but with only one coat of compound. Location: stern release track.

► Tape applied in strips with no compound. Location: starboard stowage rack.

All three procedures outlined above gave satisfactory results but the use of three coats of compound was considered best. The tape coverings in no way hindered ship-board firing-mechanism tests as required by OP 1577.

The advantages of tape covering over present procedures appear to be:

► A-4 mechanism maintenance man-hours are greatly reduced.

► Charges can quickly be made ready for use through elimination of the time required to clean face plate for optimum sensitivity.

► The number of rejects due to pitted

face plates and unsatisfactory tests is greatly reduced.

► The number of false firings due to pitted or corroded face plates is considerably reduced.

The report of Bill Graham's experiment and his recommendations have received commendations and endorsements from the CO, USS GEARING; Commander Destroyer Squadron 4; Commander Destroyer Flotilla 4; and Commander Destroyer Force, U. S. Atlantic Fleet.

NMEF is now making further evaluations of Graham's tape method and there's a more than fair chance that it will soon become official procedure via NAVORD INSTRUCTION. Meanwhile, try using the tape yourselves, and let us know how it works for you.

Chief Graham's interest and initiative in researching a basic problem shows how creative ideas can be worked out to the benefit of all of us. Bill's efforts have earned him the sort of recognition that looks fine on his record. More power to you, Bill. We hope to hear from you again soon.

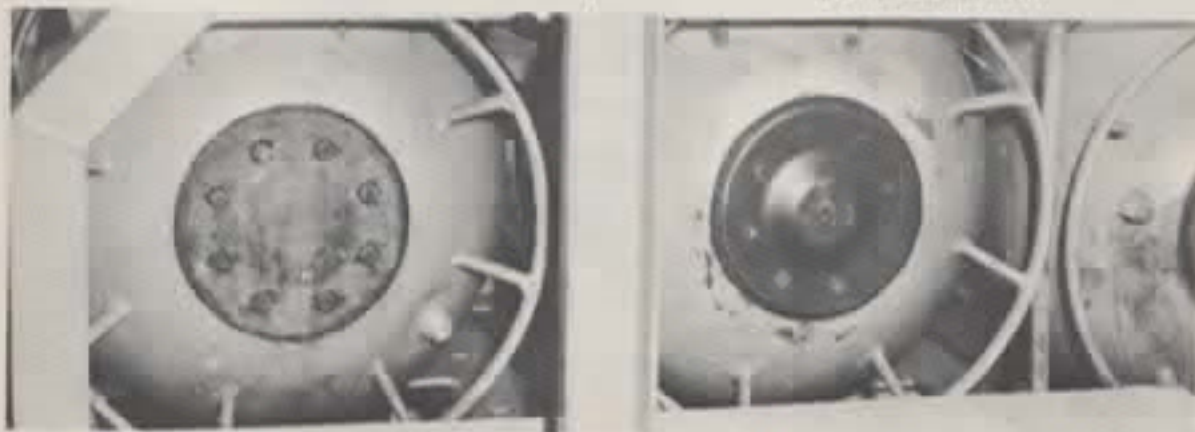
BQPI (before quiz program investigations) folks used to refer to \$64 questions. Naturally, Big Questions, by any other name, are still with us, and the one we get asked most often is "What's being done about cable lugs?" Simple as a cable lug is, there's hardly a more common complaint than the one about lugs so big they break the barriers of terminal blocks.

How come there's so much trouble is easy to answer. One reason is that contract waivers and deviations used to be granted to manufacturers without enough concern as to interchangeability. Another is that tolerances to insure troublefree mating between lugs and TBs were seldom specified.

What's been needed for some time, then, has been for someone to check samples of each and every stocked cable assembly against all the termi-



After almost four month's exposure to hot and cold weather, rain, snow, and salt water, the tape protection on the face plate of the depth charge's A-4 firing mechanism is intact. Note corrosion on the face plate of the depth charge at the left. Lower photo shows the excellent condition of the face plate when the tape was removed.



FLEET

nal blocks and other connections involved . . . actually to try them out in the mines that call for them . . . so that all the mismatches and related troubles could be listed and corrections could be provided. But why go on? It's been done!

NMEF recently checked out samples of 850 cable assemblies representing all active types except cables used only in drill mines or test sets. Each was tested in three phases:

► **Fit Tests:** First, the lugs of each cable assembly were fit-tested to the terminal blocks of the components with which they were designed to mate when installed in mines. Next, the cables and components were fit-tested assembled in service-mine cases as instructed in current OPs. Wherever trouble was met in cable fit, measurements were made and solutions provided. Discrepancies such as improper packaging, identification, or lug attachment were also recorded.

► **Specifications Search:** Next, information from the fit-tests was checked against current cable-assembly drawings, mine-assembly drawings, OPs, and General Requisites. From the comparison, it was determined whether cable-assembly descriptions and specifications in these documents were accurate, whether changes in specifications were indicated, and which stockpiled items required screening for rework.

► **Standardization Search:** Finally, without regard to mine mark or mod, all cable assemblies specified to mate with a given component were grouped, then the lugs of each cable in each group were fit-tested to that component. Based on fit and desirability of keeping changes in specifications to a minimum, a standard lug for each specific cable lead was then selected which, if used, would insure that each stockpiled cable assembly would subsequently be compatible in all mines, with all components with which its

mating is called for in current design disclosure documents.

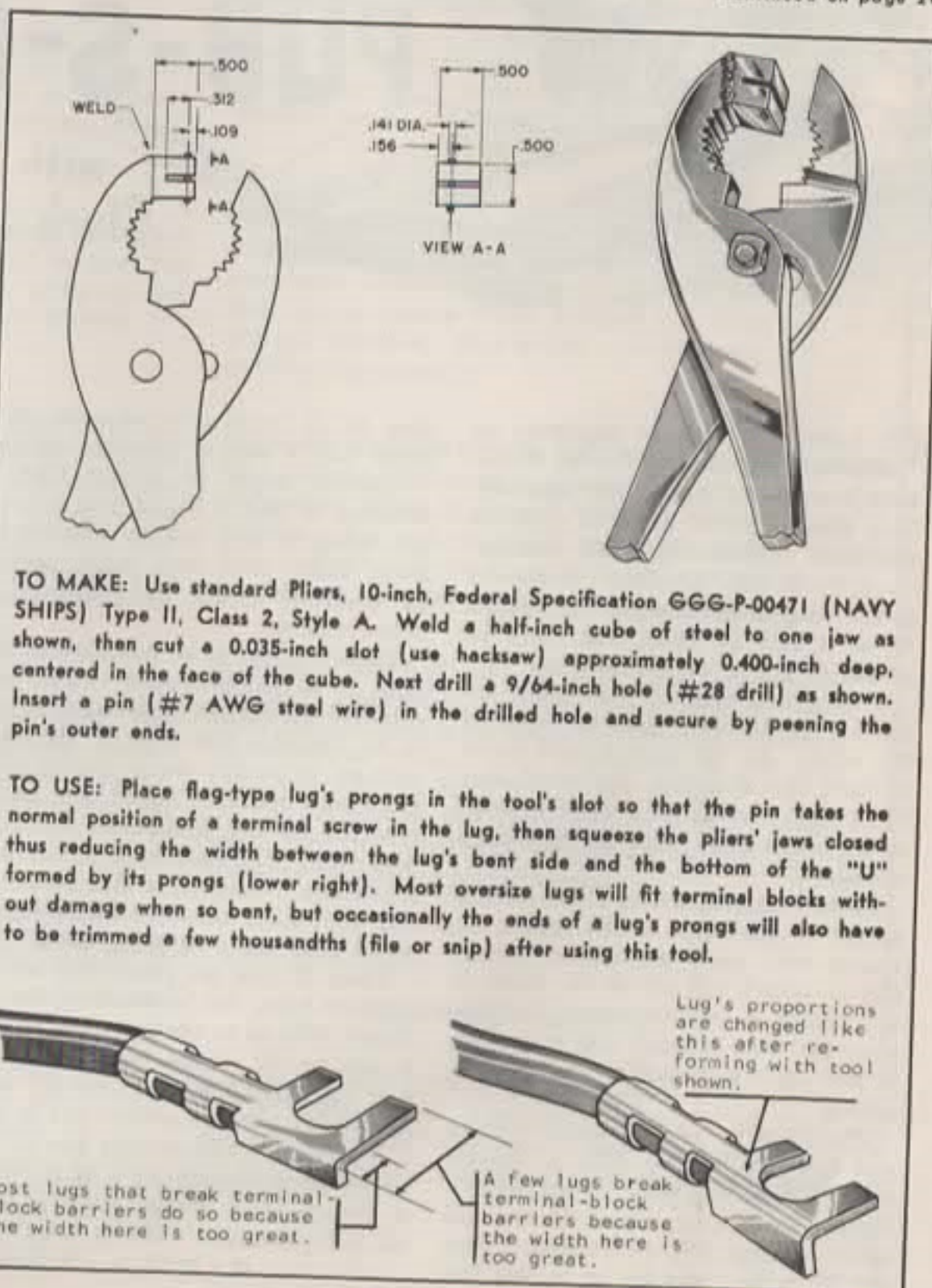
This investigation resulted in a detailed report to BUWEPs that not only describes each mismatch, but also lays the groundwork for eliminating these problems. Of course cables, terminal blocks and related parts will not be coming through matched up like they should be until present stocks are used up and new ones procured. But until this happy day comes, there's a nifty lug altering tool that you can use to eliminate the most common headache—flag-type lugs that are too wide for the terminal-block barriers.

Now we don't claim to have in-

vented this tool. Somewhere, sometime, some mineman out in the Fleet dreamed it up, and we sure would like to know who so we could give credit where credit is due.

Anyhow, BUWEPs will have some of them made up in about six months, to be included in the Basic Tool Kit for Mines. Meanwhile we're showing the design here for the benefit of alert outfits who like to stay one step ahead. Made up and used as the illustration explains, it'll decrease the width of most flag-type lugs just enough that they won't split the TB barriers when you tighten the terminal screws.

continued on page 20





IN T-SHOOTER 1-59 we reprinted an editorial from DIESEL POWER MAGAZINE concerning instruction manuals. This piece covered a lot of possible deadends threatening such publications, from the "archives" treatment to the "dog-in-the-manger" technique. What it said in effect was don't be afraid to abuse 'em — use 'em!

This advice against preserving on-the-job publications can't be repeated too often. An OP that doesn't begin to have that familiar, dog-eared look after you've had it for a while belongs in the same class with an unblocked whitehat.

There's nothing wrong about having an OP at the scene of the grime; no reason why some amount of honest dirt shouldn't rub off on it. Sure, it will end up in terrible shape. But fair wear and tear is legal, and it isn't as if you can't get another one for the asking.

There's a lot of talk about morale and how it's tied up with a fellow's feeling that his work is important. Funny as it may sound, if we had some beat-up, finger-smudged, worn-out OP come home for us to rest our

eyes on, it would give us more of a boost than a bale of glamour pinups.

Another angle to giving OPs a workout is that a lot of you fellows are doing a real job in helping to make these pubs even more useful, by spotting errors and suggesting improvements.

There's bound to be mistakes in the pubs — a small number when you consider the raft of material that has to be issued — but even if the percentage is small, we're happy that more and more of them are being reported through Rudminde. Not only does using OPs help spot errors and spark improvements, it also occasionally highlights instances where superseded pubs are still being used.

Then, if you do your stuff at an advance base, the business of change sheets adds up to another good reason to use an OP on the job. No matter how old hat the scoop in the OP may be, change sheets contain news to use.

You wouldn't knowingly use an obsolete OP in assembling a mine. Well, a change sheet makes some part of an OP obsolete. That's why you should make it a habit to get changes

entered in your OPs as soon as they come out. If you put out SOPs, be sure *they* reflect all OP changes too.

Speaking of obsolete pubs, here's a group that should be destroyed if you still have them on hand; unless you happen to be in EOD.

OP 901 Mine Mk 12 Mods 0 and 1
 OP 903 Mine Mk 23
 OP 2421 Mine Mk 19 Mod 2
 OD 7317 Mine Mk 10 Mod 1
 OD 7322 Mine Mk 12 Mod 3
 OD 7326 Mine Mk 19 Mod 2
 OD 7327 Mine Mk 23 Mod 0
 OD 7329 Mine Mk 27 Mod 0
 OD 7330 Mine Mk 27 Mod 1

Also keep your eyes open for the revised *Bibliography for U. S. Naval Mines* which will be distributed shortly after you read this, probably as a revision to NAVORD INSTRUCTION 08550.2. It will also list up-to-date information on depth-charge pubs.

And now — before we get into the table of pubs errors reported since our last issue — here's that list of recent Ordalts, Notices, and Instructions for which so many of you have asked:

RECENT INSTRUCTIONS, NOTICES, AND ORDALTS

NAVORD INSTRUCTIONS

NAVORD INSTRUCTION 8500.7 10 Jul 1957. Change 1, 11 Apr 1959, says to include "controlled mines and acoustical systems" in these instructions concerning filling out Rudminde reports.

NAVORD INSTRUCTION 8500.9 12 May 1959. Except when authorized to reclaim explosive, do not retighten, loosen, or remove filling-hole covers on explosive-loaded mines or depth charges.

NAVORD INSTRUCTION 8500.10 9 Jul 1959. Instructions for preparation of mine and depth-charge case-gasket surfaces before loading. Previous instructions had been conflicting.

NAVORD INSTRUCTION 8510.76A 29 Jun 1959. Sets forth BUORD (BUWEPS) policy concerning rewards for the recovery of lost mines, torpedoes, self-propelled mines and major components. Cancels NAVORD INSTRUCTION 8510.76, 26 Dec 1956.

NAVORD INSTRUCTION 8540.19 12 Mar 1959. Instructions for improvement modifications of Test Sets Mk 111 Mod 1 and Mk 169 Mod 0. Modifications are concerned with changes in number of battery cells used, socket inserts, and jacket designs. Ship and shore stations not to make these modifications; test sets afloat should be turned in to nearest NAD for modified replacements.

NAVORD INSTRUCTION 8550.24 5 Jun 1959. Revised instructions for tightening mine-case water-tight openings in mines, to prevent gasket damage due to repeated applications of torque to cap screws, nuts, and bolts.

NAVORD INSTRUCTION 8554.2 9 Jan 1959. New procurement information concerning cap screws for covers and mechanisms on Mine Case Mk 18 Mod 0. Minor design changes call for different length of cap screws.

NAVORD INSTRUCTION 8560.2A 2 Jan 1959. Uniform procedure for reporting performance of controlled-mine and acoustic system material, in accordance with OPNAVINST 011151.3A, 19 Oct 1954. Subj:

Training Allowance of Equipment and Material for Harbor Defense Units. Cancels NAVORD INSTRUCTION 8560.2, 10 Dec 1953.

NAVORD NOTICES

NAVORD NOTICE 8500 5 Mar 1959 (canceled 31 Dec 59). Lists discrepancies revealed by FSMTP; sent to appropriate commands. Requests addressees to communicate contents to all personnel engaged in mine maintenance, logistics, assembly, testing, and planting. Supervisory personnel encouraged to use enclosures as guides during above operations.

NAVORD NOTICE 8500 19 Jun 1959 (canceled 30 Sep 59). Activities to provide BUORD (BUWEPS) with an inventory of mine and depth-charge tests sets and associated equipment. (Some activities have placed test sets in Station Plant Account and these sets do not get reported. This notice will eliminate this reporting discrepancy.)

NAVORD NOTICE 8551 26 Feb 1959 (canceled 31 Dec 59). Advance information concerning installation of underwater mines in aircraft, pending revision of applicable mine and assembly pamphlets and a joint BUAER-BUORD (BUWEPS) publication concerning the installation of mines in aircraft.

NAVORD NOTICE 8551 20 May 1959 (canceled 31 Dec 59). Change in assembly procedures for Drill Mine Mk 36 Mod 1, in order to prevent premature recovery-float release. This is a change to OP 1816, Drill Mines Mk 25 Mods 0, 1, 2; Mk 36 Mods 1, 2, 3. NOTE: Although the above notices have been canceled, they are listed here because the subject matter concerns continuing requirements.

NAVORD ORDALTS

NAVORD ORDALT 4205 29 May 1959. Instructions for reworking Cable Assembly CA-956 (Drill Mine Kit Mk 2 Mod 0) to eliminate cable-plug breakage. To be performed only on specific requests from BUORD (BUWEPS).

PUBLICATIONS ERRORS REPORTED THROUGH RUDMIND

PUBLICATION	USED WITH	REPORTED ERROR	REMARKS
DWG 1438419 (Schematic Wiring Diagram)	Test Set Mk 95 Mod 2	AC input circuit is incorrect.	Not on Revision H, which is the up-to-date schematic for this set.
LD 139217	Clock Starter Mk 1 Mod 9	Calls out wrong stock numbers for: 1. Screw, machine 43-S-15550 2. Lockwasher 43-W-6354 3. Ball, bronze, 1/2" G-77-B-999-57032-0200 4. Piston spring 402632	LDs give mfg. stock numbers. The ones you want are: 1. Screw, machine G5305-290-2779 2. Lockwasher G5310-262-3577 3. Ball, bronze 1/2" G3110-100-6244 4. Spring, piston ZC-5340-664-4715 (Anyone who's all shook up about the stock-number game has a right to be. Watch next T-Shooter for some effective first-aid; meanwhile be sure to quote a "12-Z" number in addition to the Fed. Stock No. in all correspondence, requisitions, etc.)
LD 169842	Clock Delay CD-12 Mod 0	Calls out wrong stock numbers for: 1. Lockwasher, steel, #8, 43-W-6224-100 2. Nut, self locking, brass #8-32, G-43-N-59946-180	Order these: 1. Lockwasher, steel, #8, G5310-194-2734 2. Nut, self locking, brass #8-32, G5310-194-8613 (Also see remarks re: LD 139217 above)
NAVORD LIST 23922	"Mine Assembly and Maintenance parts"	Several hardware and repair parts in ODs are not in NAVORD LIST 23922.	Use Navord List 23922 Revision A, 5 May 1959. Also take advantage of Note 7 on page 2 of this list, which tells you to notify BUWEPS when you find a need for additions, deletions, etc.
OD 12067-G	All Mines	1. Page 161 lists Firing Mechanism A-6-0, 1, 3 as complete but page 167 lists a adapter which must be used with this mech. 2. Page 161 lists Firing Mechanisms A-5-2, A-6-1, A-8-0 as explosive loaded. 3. Does not list Tag, Warning, DWG 443282 or Diaphragm, replacement, DWG 384856. 4. Cross reference section starting page 348 (Sequence Numbers and Federal Stock Numbers) not in numerical order. 5. Clock Starter Mk 1 Mod 12 should be listed on page 278 after Mk 1 Mod 11, not on page 119. 6. Page 119, item 7, what is a Clock Starter Mk 3 Mod 0?	1. Look again; page 161 listing is not specified as complete. Adapter on page 167 not a "must"; e.g. not used with Mine Mk 49-2 or with Mine Mk 25-2 operational assemblies 17 through 24. If adapter is not supplied with the firing mech, but is required, order separately. 2. Naturally they're not; this will be corrected. 3. They're now carried in the Ordnance Supply System: The tag is Z1350-038-7888, and the diaphragm is Z1350-038-6733. 4. Sequence Numbers-to-Federal Stock Numbers start on page 348 and are in order. Federal Stock Numbers-to-Sequence Numbers start on page 512 and are in order. 5. Next revision will fix. 6. An obsolete item; forget it.
OP 956, 3d Rev.	Mine Mk 25 Mod 0	1. Page 28 par 16b instructions for connecting CA-292 and CA-311 are wrong.	1. Connect CA-292 (black) between battery neg and neg-volt-ohms terminal of Test Set Mk 2-3; connect CA-311 (red) between battery pos and test set's pos-volt-ohms terminal. (Cont'd on next page)

Errors reported through Rudminde, continued

PUBLICATION	USED WITH	REPORTED ERROR	REMARKS
OP 956, 3d Rev. (cont'd)	Mine Mk 25 Mod 0	2. Page 42 par 39 does not give instructions for securing CA-275 strain loops. 3. Page 51 par 48e, specifies CA-711 connected to TB-19's terminal D. 4. Page 57, par 57, specifies 3/4-in. tail-cover bolts.	2. It should. Tighten a jam nut 43-N-3745-37 on each top stud, place loops over studs, then tighten another jam nut over each. (If grommet is undersize, remove it and place a flat washer over the loop. Also see "Reaming That Helps," page 8, T-Shooter 2-59.) 3. Should say CA-311. 4. Use 7/8-in. bolts 43-B-18855-159. (Next change will correct these errors.)
OP 1452, 2d Rev.	Mine Accessories	Following instructions for testing SR-9 relay on page 98 gives 100% rejects; 220,000-ohm resistor won't pass enough current to hold SR-9 open.	We checked and got same result, are now checking several possible solutions.
OP 1765, 2d Rev.	Mine Mk 25 Mod 2	1. Does not give instructions for performing mine operational test with Firing Mechanism A-6 Mod 1. 2. Page 54 par 52 steps a, b, c, d, contradict par 51.	1. This OP doesn't call for A-6-1, but use present instructions for testing A-6-1 except par 51b; mechanism <u>should cycle</u> after pressure look. 2. Paragraphs 47 through 52 and appendix D are being revised; watch for change sheets.
OP 1797, 2d Rev.	Mine Mk 25 Mod 1	Page 63, par 60d calls for 3/4-in. tail-cover bolts.	Use 7/8-in. bolts 43-B-18855-159; next change will correct.
OP 1798, 2d Rev.	Mine Mk 36 Mod 2	Specifies Air-Dryer Retainer DWG 489287.	Use Retainer, Air Dryer, DWG 1706134. "Now He Tells Us," T-Shooter 2-59, tells and shows how.
OP 1844, 1st Rev.	Firing Mechanisms A-6 Mods 0, 1 and 2; A-8 Mod 0.	1. Cannot test A-6-3s and A-8-1s using this OP. 2. Page 18, fig 15 shows MD-10 switches reading 1-2-3-4, left to right. 3. Page 13, right column, line 3 refers to appendix C. 4. Page 17, par 1 (low voltage test) indicates B lamp should light during operation of MD-10.	1. Change 2 to this OP, just out, tells how. 2. Left to right should read 4-3-2-1. 3. Should say appendix B. 4. Lamp B should light only during continuity tests of control boxes 13-1 and 15-0.
OP 1853, 1st Rev. Advance Copy	Mines Mk 6 and 16	1. Doesn't specify side-plate brake-springs on plummets to be installed opposite each other. 2. Contradicts NAVORD INSTRUCTION 8550.24 of 5 Jun '59 on torque for H-4 plugs, stuffing boxes and release pistols. 3. Instruction sheet A-1 calls out weight of Anchor Mk 6 as 816 \pm 10 pounds. 4. Instruction sheet A-4 par 8, second sentence, after Mod 4 and 11 does not include Mk 16 Mod 1.	1. Makes no difference. 2. Torque these to 20-25 lb-ft like this OP says. Also see feature on "Case Openings," T-Shooter 2-59. 3. We're changing this to 816 \pm 20 pounds. 4. We will correct this, adding reference to Mine Mk 16 Mod 1.

Millie Amps'



Look, Ma, No Lugs!

Back in April JOHN F. LOONAM, FASRON 201, received a shipment of CA 958s (used with drill kits Mk 4 and 5) but no terminal lugs or connector splices. OD 7306, Vol. 1, 4th Rev., lists these items as furnished with the cable, but John didn't get them with the cables because recent manufacturers' specs don't call for them.

We're seeing to it that the specs are revised so that cloth bags containing flag-type terminal lugs 12-Z-7001-2109 and splices 12-Z-7001-2419 will be included with CA-958s whenever more of these cables are pro-

cured. These flag-type terminals fit all applications of CA-958 except when it is used in Drill Mine Mk 18 Mod 0, for which you should install #8 ring-type terminal lugs 12-Z-7001-2056 on the CA-958's firing-mechanism end.

Meanwhile you'll just have to keep on ordering cables, lugs, and splices separately.

(Unclassified)

Love Those New Lugs

Here we go again on Cable CA-30, used in Mine Mk 25 Mod 2. LT J. R. POULIOT, NOF, Navy 3923, Rudmines

us that popular bugaboo: lug too small for battery terminal.

This fault was listed on page 4 of T-SHOOTER 2-59, where we said that #8 round-type lugs 12-Z-7001-2730 would soon be installed on battery ends of all CA-30s at Yorktown, Hawthorne and Oahu. Since then, we've also recommended that BUWEPs have CA-30s screened to replace the lugs at their *bleeder* ends with flag-type lugs 12-Z-7001-2130.

As for CA-30s you now have on hand, you can make these replacements yourselves, or — if you happen to have a pair of lug-altering pliers (see page 13 this issue) — you can modify the flag-type lugs now on the cables.

Besides, squeezing lugs can be fun. How about that, Lieutenant?

(Unclassified)

Watch That Slack, Jack

G. M. GOLLEY, MN1 at the Mine Warfare School, tells us that some of the newer men are having trouble sliding instrument racks into the tail compartments of Mines Mk 50 Mod 0. The pinch, he says, comes when cables ride out of their slots.

Of course, you could clamp the cables in place, but this seems silly when you're interested in making time.

So, like it says in OP 1811, don't try to do it alone; it takes two men, teamwork, and patience to get this

77-pound rack in right. In our own shop, for example, one man positions the rack part way in the tail compartment, then another holds the cables in their proper slots.

This way it's easy to keep the cables from getting so slack that they jump out of their slots and get pinched. Even if they do start to pinch, it'll be noticed right away and you can stop before you tear up a lot of good gear.

So there you go, Brother Golley, and I hope you'll spread the word down Charleston way. Like I always say, there's nothing quite so rewarding as helping inexperienced hands to learn how!

(Unclassified)

Better M5 On The Way

Firing Mechanism M5-2 is in production and is expected to become available for Fleet issue soon.

Actually the Mod 2s will be reworked Mod 1s in which bearings have been cleaned up, cracked jewels replaced, knife edges relapped, and bushings beefed up. They will also lack the troublesome "fallout" that got into the works of Mod 1s when screws were turned in or out of their holes.

One static- and rocking-test change of interest to depot mechanics will come up. As has been true for the Mod 1, the sensitivity of the Mod 2, firing in static conditions, must average 15 ± 3 milligauss through six measurements, with no single measurement exceeding 15 ± 4 milligauss. But spread between extremes can be up to 2 milligauss for the Mod 2, instead of only 1.5 as was the maximum allowance for the Mod 1.

Frankly I haven't the vaguest idea what all of that means, but the men who do asked me to pass it along.

(Confidential)

The Thread Is On Me!

A real man of renown is J. R. BROWN, who's made the hep step to two-star chief! Then there are seven others who stepped up to one-star chief about the same time: J. H. ALVIS, JR., J. GLOWA, J. J. IRELAND,

F. A. MCCARTHY, E. J. MILANOWSKI, G. A. MORRIS, and F. A. REID.

Then there's that old yarn about second class being the Navy's best rate. No longer tuned in are D. R. GLAZE, M. D. HORN, A. L. NEIDERBAU, and GEORGE RUSSEL, who are finding that MN1 is a pretty fancy rate too.

Now isn't news like this just the most? In all, 62 of my mineman readers are sporting new crowns and I'd give my shirt at the very least if I could have been there to "sew things up for you" — every last one!

(Unclassified)

Straps, Chaps

Seems like DOYLE R. GLAZE, MN2, Subic, had enough of cuts, nicks and scratches while working on explosive-loaded mines installed in crates. Trouble was, these mines, on account of being insulated from the crates by a non-conductive liner on the supports, had been grounded to the crates by means of ugly, heavy, stiff old wire. Yet, like it says in NAVORD INSTRUCTION 8550.6, 13 August 1954,

they gotta be grounded and that's that!

So maybe Doyle got to thinking about the flexible straps that ground automobile engines to the frames. Anyhow, he soon had his mates out at Subic making ground straps out of the same sort of flat braided copper. They just punch holes in the ends of lengths of this stuff and put in brass grommets and — Hey! Hold it! Before you make like do-it-yourself and start setting up your own little strap factory, I've got news for you.

Ready-made ground straps of galvanized steel braid complete with compression-type lugs will soon be available from stock. Thanks to Doyle's Rudminde, NMEF checked with BUWEPS and learned that the Ordnance Supply Office (OSO) will be requested to procure 3000 such ground straps. The drawing number will be 1419777, and they'll be stocked at Yorktown, Hawthorne, and Oahu.

We'll let you know when you can order.

(Unclassified)

millie ang



"It's nothing, really, just something I made out of an old parachute."

CONTRIBUTIONS continued from page 13

FRANK SEEVERS, at NAD/Hawthorne sent us a helpful Rudminde concerning the problem of the center posts breaking off on connection-box plugs DWG 1402238 used in conjunction with Test Set Mk 269 Mod 0.

It seems that when disconnecting a tested cable from the test set's plug by hand, even a slight twisting or straining often snaps off the plug's plastic center post. A good solution, according to Frank, is to use a simple extracting tool such as shown here.



No dimensions were given for this tool but it should be fairly easy to make and mighty handy to have when you're faced with this problem.

When we investigated the possibility of having such a tool supplied with the test set, we found that the problem of weak center posts had been caught early in the production of connection boxes. As a result, Mods 0 of Connection Boxes Mk 13 through Mk 23 have since been replaced by Mods 1, equipped with plug assemblies 12-Z-7133-6709 which have metal center posts. These metal posts are strong enough to take any strain ordinarily exerted when disconnecting a cable from the plug, so that extracting tools are not needed.

But, like we said, if you need such a tool for any Mod 0 connection boxes, it's not much trouble to make one for yourself from an extra screwdriver.

—And thank you, Frank. Good ideas are good ideas even when the problems they solve are only temporary!

(Unclassified)

SR Limits Relaxed

AS EXPLAINED in our feature *A Policy in the Clouds*, components are bound to deteriorate after considerable time in stock.

A case in point is the recent, unnecessarily high reject rate among sensitrol relays. Costly enough by themselves, the pill becomes even harder to swallow when a faulty SR is an integral part of an expensive firing mechanism and the whole works must be tagged for reject.

Now, fortunately, help has come. For some SRs it's been seen fit to relax test limits for both pre-assembly (depot-type) tests, and mine operational or sensitivity (field-type) tests, with the result that Table 16 of OP 1452 has just been changed and all affected mine-assembly OPs will soon follow suit.

Meantime we're also publishing the new limits here, not only for your convenience, but to clear up a misunderstanding for those of you who test M9-2 firing mechanisms or the Mine Mk 18 that uses them.

The new 1452 table (see Change 3 to 2d Revision, page 96) gives the equivalent of depot and field limits for testing SRs with various shunts applied externally by Test Set Mk 4. This has led some of you to believe that you should test SR-5s to

these limits when as a matter of fact you should not. SR-5s are not issued to the field except as integral parts of M9-2 firing mechanisms, and all M9-2s include an 820-ohm internal shunt.

But let's get this straight. By internal we mean that the shunt is part of the M9-2's normal circuitry. In new M9-2s this shunt is provided by an 820-ohm resistor mounted inside the M9's case, while in M9-2s that have been converted from M9-0s, the resistor is placed on the terminal board outside the case. Yet in both instances this 820-ohm shunt is considered internal. That's because it's part of the M9's standard circuitry, as opposed to a shunt applied for test purposes from an external test set.

From this you can see that any external shunt you apply would be in parallel with the M9's internal shunt, in which case you'd have to work out some new limits of your own to keep from rejecting acceptable units.

Better you should forget all about external shunts for SR-5s in M9-2s. The limits named here for no shunt are compensated for the 820-ohm shunt that's built in, as are the third set of limits in OP 1452. They're the only limits to use.

Relay	Used with	External shunt	Depot Limits ①	Field Limits ②
SR-5 Mods 0 and 1	Firing Mech M9-2	None ③	0.65 — 4.5	0.65 — 4.7
SR-6 Mods 0 and 1	Mine Mk 36-1	None	1.8 — 7.5	1.2 — 8.2
SR-7 Mods 0 and 1	Mine Mk 27-2	None	1.3 — 5.6	1.0 — 6.0
		1100	1.4 — 6.0	1.1 — 6.2
SR-7 Mod 2	Mines Mk 25-2, 27-3, 36-3, 49-2	None	1.4 — 5.5	1.2 — 5.8
		1100	1.5 — 5.9	1.3 — 6.1

①—These terms are not used in OP 1452 2d Rev. but will be used in subsequent revisions; for explanation read *A Policy in the Clouds*, p. 6, this issue.

②—SR 5s built into M9-2 mechanisms have an 820-ohm internal shunt. Never apply additional external shunt from a test set when testing M9-2 mechanisms or mines that contain them.

(Confidential)

Do You do this Job Right?

AS B-BUTT SAYS in his item *The Last Word* in this issue, I thought our article on case openings in No. 2-59 would shortstop the flow of questions we'd been receiving about gaskets and torque.

I should have known better. While the printer's ink was still wet, in came a letter from afar about a mysterious unidentified object that could be only one thing — a cloth-press type gasket. These, in case you don't know, are birds so rare that we thought they'd all been cast out of the mine stockpile years ago, so had purposely not mentioned them in our *Openings* article. Oh well, we shrugged, there's probably not three left in the whole world-wide stock.

Then came a request from BUWEPS telling us to pick up some subject matter from a nine-year-old Ordnance Material Letter and incorporate it in the OPs for all mines that use clock starters and extenders. Now that's a raft of OP changes to have to get out, and you can be sure those men with the purse strings wouldn't be telling us to do it unless they were convinced that the need was real. Imagine our chagrin, then, when the subject turned out to be those same cloth-press gaskets! Apparently they still turn up from time to time. So — until the scoop shows up in your OPs — here, friends, is the word.

How to tell 'em

As near as I can find out, these gaskets were made only for clock starters and extenders. They get the name "cloth-press" from the fact that they are vulcanized under pressure between layers of cloth in the manufacturing process. After forming, the rubber is of course separated from the cloth mould, but an impression made by the cloth's weave remains on the surface of the rubber. So if you pick up a gasket whose surfaces are a little rough — have a pattern that reminds you of the texture of cloth — you know that gasket is what we mean by "cloth-press."

What to do with 'em

Surveillance tests at the QE Lab, Yorktown, have shown that no cloth-press gaskets are reliable enough for use in mines under service conditions. That, to

me, seems reason enough to do exactly what NAVORD OML M2-50 says you should do: Check your stocks and dispose of all cloth-press gaskets as unclassified, unserviceable property without further reference to the Bureau. (A request to the Bureau will get you replacements.)

Helpful hints

The OML we're talking about ends up with some reminders to those of you who are responsible for the storage and issue of rubber gaskets. Because the OML is virtually extinct and will soon be cancelled, and because the hints will continue to apply not only to gaskets, but also to all components that have rubber parts (hydrophones, microphones, extenders, etc.) I'll pass them along to you here.

▶ Whenever possible, store rubber products where the temperature is between 50° and 68° F. This will increase their useful life considerably.

▶ Store rubber products in the dark. Any arrangement you can cook up to keep light away from them will add plenty to your stock's life expectancy.

▶ Stow your gaskets flat, stacked on top of each other. Storing them on edge or in such a way that they can take on a deformed shape, will contribute to the possibility of leaks when they're put into use.

▶ Eliminate any possibility of rubber coming in contact with grease, oil, gasoline, or solvents. Even constant exposure to fumes from such stuff spells short, unreliable life for anything made out of rubber.

So much for gaskets, cloth-press and otherwise. Added to our 2-59 article on case openings, the scoop here exhausts both my knowledge on the subject and the space in this issue. So now — before anything to change this fine state of balance hits my desk — I'm going to grab Millie and head for a pub.

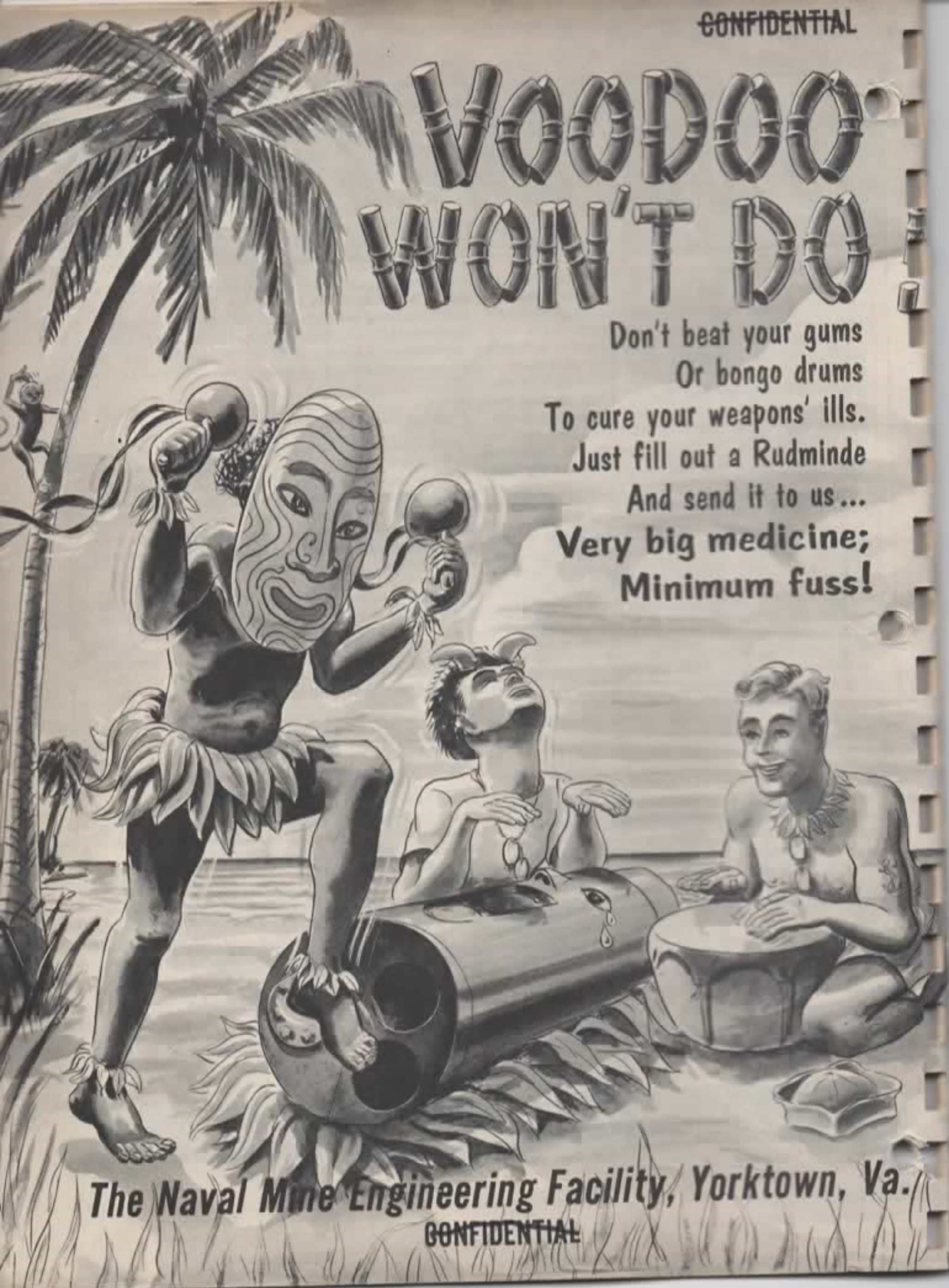
The Editor

We have the world's best weapons — Use 'em right!

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VOODOO WON'T DO

Don't beat your gums
Or bongo drums
To cure your weapons' ills.
Just fill out a Rudminde
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**Very big medicine;
Minimum fuss!**



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