

*mine and depth-charge*

# THE TROUBLESHOOTER

- ▶ Camouflage paints
- ▶ Mine Warfare Div  
has new home
- ▶ BA-251/U fit problem



**AN OFFICIAL NAVORD PUBLICATION**

*in this issue . . .*

*mine and depth - charge*

# THE TROUBLESHOOTER

Published by the Naval Mine Engineering Facility, Yorktown, Virginia

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**COVER PHOTO:** Rear Admiral E. B. Hooper, Commander Service Force, U. S. Pacific Fleet, receives a briefing on mine facilities from LTJG B. P. Hernandez, OIC MOMAT 0302 at NAVMAG, GUAM. Others in the photograph are the Commanding Officer, CDR D. G. Bonewits (right), and Ordnance Officer LT C. R. Sutton (left). The mine group, comprising MN1 T. E. Hogan, MN2 G. A. Clark, MN3 W. D. Voyles, MN3 A. A. Bauer, MN3 N. T. Oldér, MN3 T. L. Vandevender, MN3 P. D. Jones, MN3 T. E. Blandford, MN3 R. W. Vermette, and MNC R. T. Million, received a 'well done' for its work in support of PACFLT.

1 OCTOBER 1966

The Troubleshooter, an official NAVORD publication, contains technical information pertinent to the assembly, testing, and delivery of US naval depth charges and mines. It is both authoritative and directive in nature, and reference may be made to a particular issue as the authority for adoption of ideas promulgated therein.

Troubleshooter is also the official journal of the Rudminde Program a world-wide defect-reporting campaign designed to promote a high level of undersea warfare readiness in US naval depth charges and mines. The Program's basic instrument is NAVORD Form 8500/5 (1-63). Everyone who encounters problems with these weapons should report them via this form direct to the Naval Mine Engineering Facility as prescribed by NAVORDINST 8500.8.

### ARTHUR R. GRALLA

*Rear Admiral U.S. Navy  
Commander, Ordnance Systems Command*

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**THE OFFICIAL® JOURNAL OF THE RUDMINDE PROGRAM**

# RUDMINDE REPORT TO THE FLEET

## A giant step

By 1968 the first new book to be published in 1967 by NMEF may well have become the most-used manual on the mineman's bookshelf. Designated NAVORD OP 3504, it will be entitled Authorized Configuration Data For Underwater Mines.

What kind of a title is that? A good one. According to our deskside Webster the word configuration, in this context, means "the relative disposition or arrangement of parts; the interrelationship of constituent elements." And it is mine information of this sort that OP 3504 will provide . . . more of it, we think, than anyone in the mine force has ever before had at his fingertips or anywhere else.

To make all this possible, though, it's going to be necessary to get used to a new set of numbers. But don't groan. OP 3504 is an almost completely automated product of modern electronic data processing which can easily be purified (made error-free) and can be completely revised by machine as often as necessary, and it is that which has made this new kind of item numbering necessary. The new numbers are called the Material Management Code (MMC) and every last mine part in the supply system now, or introduced into it later, from actuation to zipper, will have an MMC number. Actually, there will be some real advantages in this, not just to the data machines but to mine shops as well. For one thing, MMCs will be 100 percent in NMEF's control, whereby we can insure that they will not be subject to change and that no MMC will ever be used a second time.

That being the case, MMCs are the numbers that we will be using as identifiers in all future mine publications. Why? Not only because the MMC will not be subject to change, but because an MMC, plus OP 3504, will tell you just about anything you want to know about every part so identified: its current FSN, its DOD generic code, its DOD-standardized name, its older or more common name, its current drawing and LD numbers, the component or components in which it is used, the mine or mines in which it is used, the quantity per component or per mine, the assembly conditions to which it applies (A, B, C, D), whether it applies to service or drill or both, whether it is expendable in drill plants or reusable, and more. Ultimately, in fact, that MMC will even lead you to an illustration that also shows exactly what each item looks like and how it is used.

## Farewell, General Requisites

We say "ultimately" because the very first release will not be that complete. Gradually OP 3504 will evolve into six volumes that will not only do all we have outlined above for mines, components, and hardware, but will also include complete information on spare parts, repair parts, tools, test sets, and bulk materials, and even a volume on reference documents that will take the place of the familiar Mine and Depth-Charge Bibliography.

So when is ultimately? Within the year we think the

info in OP 3504 will be pretty much complete but that doesn't mean you'll have to wait a year to put this OP to work. Within 30 to 45 days from the time you read this you will receive three initial volumes which, in addition to the kind of data we've cited above, will include a complete bill of material for every OA of every drill and service mine in the business. In this first release alone, then, you will find more data and, we hope, better data, than is currently to be found in OD 10604 and all of your present 40-odd mine general-requisite ODs put together. For that reason, this first release will cancel and supersede every last one of those ODs in one fell swoop!

## So what else is new?

There are two innovations, in addition to the introduction of MMC numbers, that warrant a word of explanation here. First, the OP binders. Mine shops will receive the binders and their contents as separate items of issue, because the contents will be revised and reissued regularly (present plan is to do so twice a year) whereas the binders will be usable indefinitely. This should pose no inconvenience at time of initial distribution. Simply remember that receipt of empty OP 3504 binders will not be evidence of an April Fool's prank; the contents will follow in a few days. Vice versa if you should receive contents without binders.

This will also apply when you order any extra copies of OP 3504 through the Cog-I system. An order for contents will automatically provide you with changes, and binders too, but you may receive them in separate packages. You will also be able to order binders or changes alone, if you wish.

Speaking of changes, the change system for OP 3504 will also be unique. In order to take full advantage of the automated system through which the OP is being produced there will be a section in Volume 1 entitled "changes"; and it is here that you will insert all changes, for all six volumes. They will not be like our permanent changes to other OPs, which provide you with replacement pages, and they will not be like our interims, which tell you by page and paragraph where the OP is in error. Instead, they will merely list MMC numbers and tell you what information on that item needs to be corrected.

Using this system you would look up whatever information you require, in any of the six OP 3504 volumes. When you find it you'll find an MMC number with it. To find out if the info you've found is completely current you then simply turn to the "change" section in Volume 1 and see if any correction is listed for that MMC number.

## Faith, hope, charity, please!

If such a change system sounds complex remember that with semiannual revisions (new contents) changes will not be extensive, that the system will be simplified

(continued on page 7)

# MINE WARFARE DIVISION AT NOSC HO

**T**HE MINE WARFARE DIVISION has been established as a division of the Underseas Warfare Directorate (ORD-05) under the Naval Ordnance Systems Command and includes the functions of the Mine Warfare Support Office previously located at NOL, White Oak, Maryland, which has been disestablished. Captain C. L. Scherrer is Director and Project Manager of the new division. Offices of the division are located in the Munitions

Building, Constitution Avenue, Washington, D. C., occupying rooms 2507 through 2517. The division has responsibility for planning and directing the definition, development, test and evaluation, acquisition, and support of mines and depth charges. The headquarters organization, with desk codes, names, phones, and Munitions Building room numbers, is:

OFFICE	NAME	CODE	PHONE	ROOM
Mine Warfare Division	C. L. Scherrer, CAPT	053	62828	2517
Deputy	E. F. Kenney, CDR	053A	62778	2517
Senior Engineer	W. E. Land	053B	67503	2517
Administrative Assistant	M. E. Marvin	053C	67503	2517
Financial Assistant	R. Buchanan	053F	67531	2511
Secretary	A. Denton	053S	67503	2517
Development Branch	J. E. Shreve	0531	67450	2511
Project Engineer	R. G. Schuetzler	05311	67531	2511
Secretary	D. Coslov	0531S	67450	2511
Projects Branch	H. A. Mackey	0532	67759	2511
Secretary	R. L. Baquial	0532S	67450	2511
Asst. Project Mgr.	L. E. Wheat	05321	67759	2511
Project Engineer	J. M. Von Sas	053211	67759	2511
Operational Systems Branch	D. R. Traina	0533	68176	2507
Secretary	B. Baumgart	0533S	68176	2507
Procurement Section	H. H. Halfpap, Jr.	05331	68176	2507
Readiness Section	J. Nicolai, Jr.	05332	68258	2507
Project Officer	T. H. Roberts, LT	053322	68258	2507
Project Officer	R. F. Dredger, CWO	053323	68176	2507
Special Warfare & EOD Br.	C. P. Nicholson	0534	68440	2507
Project Officer	R. D. Gleason, LCDR	05341	68440	2507
Project Engineer	B. H. Tabb	05342	68440	2507
Project Engineer	G. M. Studds	05343	68440	2507

## MARK 10 ANCHOR MAY POSE PROBLEM

**D**URING FINAL PREP of twenty Drill Mines Mark 10 Mod 3 (dummy) MOMAT 0321 found eight whose anchor starting levers would trip even with safety screws and tags installed. When tripped, this lever disengages the starting rod from a cam, frees the locking lever, and allows separation of anchor and mine case. In seven others of the twenty mines, the starting lever had enough free movement that a severe jolt could probably have tripped the mechanism, with the same result.

This is not good. When anything comes adrift prematurely it is bad but when that something is a thousand-pound anchor the results can be disastrous, especially if it should occur while the mine is being loaded into a submarine.

At MOMAT 0321, starting-rod length was adjusted to the limits permitted by the design before the locknut was tightened. When this was found to provide no correction, a bolt 1/2-inch-13 NC by 2-1/4-inch was substituted for

the safety screw. This permitted the starting lever to hold the starting rod firmly against the cam.

Although NMEF has not been able to duplicate this malfunction in a sampling of Mine Mk 10 Mod 3 stocks at NWS/Yorktown, the study will continue. Meanwhile all hands should be alert for similar instances, taking precautions as follows:

- ▶ Check safety screws (DWG 180342-6) to verify that they measure two inches from base of wing head to end of screw shaft. If under-size, replace.
- ▶ Inspect screw holes in anchor cases for foreign material. If not clean, chase with a 1/2-13 NC tap.
- ▶ When marriage of case and anchor is complete (with safety screw installed) suspend mine with anchor about 1-inch from deck. Station a man on either side of the anchor to steady it and attempt to trip starting lever. If starting lever moves replace the safety screw with a 2-1/4 x 1/2-inch 13 NC-2 bolt and repeat the above test. If the lever still moves, reject the anchor.

Also be sure to report any such failures to NMEF.

# PAINTS TO HIDE BY



A CONSIDERABLE SELECTION of colors in quick-drying lusterless enamels have been established in the supply system to meet mine camouflaging requirements. In practice, of course, any lusterless colors on hand and appropriate to the camouflaging problem can be used, but the paints we list here have been especially earmarked in the supply system for this purpose.

According to OP 2637 the decision to camouflage or not to camouflage rests with the mine-field planner, the need being dictated by the ease with which the planted mines will be visible. When the bottom cannot be seen from the surface it is not necessary to camouflage bottom mines or the anchors of moored mines, even though the cases anchored to them will be visible. Also to be considered is the fact that a soft bottom (mud) will hide a mine in a short time, while a hard bottom (sand) will not.

Any area to be mined presents its own problems of water and bottom appearance, bottom color and texture being the first consideration for bottom mines and water color and transparency the first consideration for moored mines.

The general rules for camouflage color selections are not hard to remember. The purpose of camouflage is not to make a mine invisible, which is impossible, but to deceive the observer by preventing its outline as a shape from standing out as foreign to its surrounding, — conversely — to cause the mine to blend with the color of water or bottom material that surrounds it. Both ends are obtained by camouflage paints.

Breaking the outline is accomplished by applying colors in patches to simulate the appearance of the bottom, or in wavy strips to simulate wave shadows and

patterns. Alternating colors should blend one with the other (no sharp lines), which can be done by bleeding one color into another and smudging the overlap with dry brush or rag while the paint is still wet. Feathering the edges when using a spray gun will do the same thing.

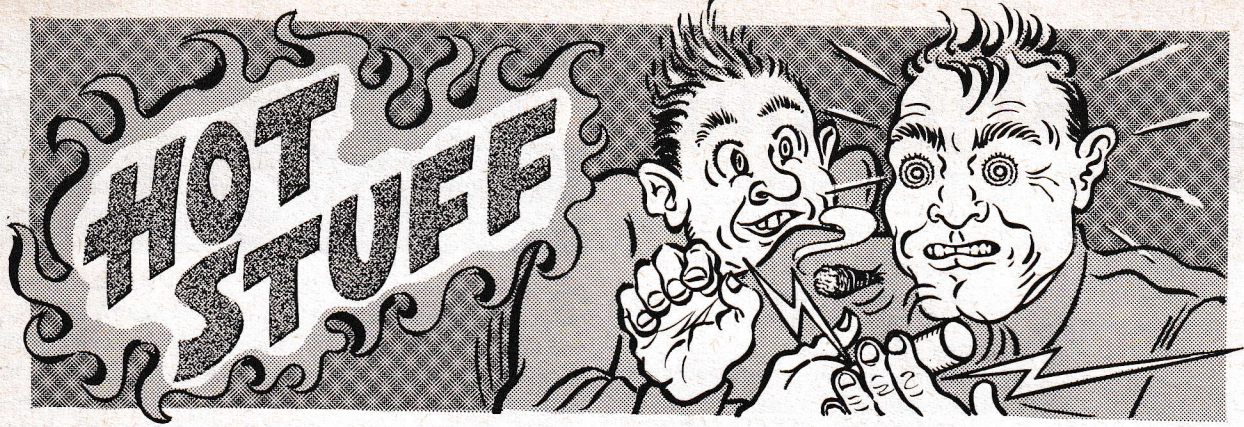
The degree to which the colors used match those of bottom or water governs the success with which the mine will blend into its background. The colors for mine camouflage purposes are:

Color	Color No.*	Stock Number
Dark Olive	30118	8010-927-7529
Light Olive	30277	8010-927-7530
Green (Dark)	34108	8010-297-2118
Brown Black	30045	8010-927-7533
Red (Light Pink)	31668	8010-577-4937
Dark Red	31136	8010-297-2114
Purple	37144	8010-927-7534
Blue (Medium)	35109	8010-297-2119
Gray (Blue)	36213	8010-297-2120
Yellow	None	8010-285-4899
Light Buff	33617	8010-927-7531
Cream White	37855	8010-927-7532
White	None	8010-285-8293
White (Insignia)	37875	8010-297-2111
Black	None	8010-290-4247

\*Color numbers per FED STD 595

Robert B. Walker, TMCS, inspects members of MOMAT 0321 who paraded in his honor during ceremonies that marked his departure from active duty 23 September 1966. Lieutenant L. M. Stryker, OIC, was present to give him his orders to the Fleet Reserve. Chief Walker, who spent more than 23 years in the service, dons civilian clothes but will remain in familiar surroundings in the employ of the Ordnance Department at NWS, Yorktown.





## Shocking!

Dear B.B.

Those OP warnings of shock hazard in handling charged 125-mike firing capacitors has caused some head scratching around here. Some places we are warned not to touch pins 1 and 5 while others call out pins 1 and 3, and 1 and 5.

Any omission of a hazard potential in a warning gives a false sense of security. That's why we like the warning in OP 2567 that covers the waterfront:

"When the capacitor is charged, dangerous potentials exist on the capacitor terminals which can cause electrical shock. Avoid touching the terminals of the capacitor."

DRJ, MN1

Dear DRJ

So do we. Henceforth, until pertinent OP changes are introduced, all hands should consider all warnings as blanket warnings to keep hands off the business end of any firing capacitor without regard to pin this and pin that.

The way this alternate pin business came about, by the way, is that at one time some firing mechanisms using the 125-mike capacitor required use of pins 1 and 3, some 1 and 5, and some 1, 3, and 5. Capacitors now in use have pin 1 negative and pin 5 positive in all cases. A further help is the fact that Test Set 177, which forms the 125-mike capacitors, is now equipped with micro switches which automatically discharge the capacitors as they are removed.

In other circumstances, though, how do you know if a capacitor is charged or not? Only by shorting pins 1 and 5, and also 1 and 3 just in case. As a further caution, do not discharge a capacitor by using a short circuit (plain length of wire, etc.) because with no resistor in the circuit you may damage the capacitor (1000-ohm resistors are used in Test Set 177.)

You should also know that a discharge lasts for only a short time. When the dielectric strain of the charge

is relieved the capacitor begins a process of self charge and can attain a dangerous charge just sitting on the bench for a few minutes. Also the metal case can become hot in relation to the pins.

One more "don't" and I'll quit: Don't ever touch a firing capacitor and a mine component other than the mechanism in which you are installing it at the same time.

*B. Armacle butt*

## Mixed nuts

Dear Barnacles:

When we ordered KZ-Cog hex nuts 5310-260-7895 we got 3/8-16UNC nuts all right but they measured 9/16-inch across the outside of the flats, vice 5/8-inch as specified. The nuts were returned as not in accordance with specifications.

We thought you should know that stocks are apparently contaminated.

NTY

Dear NTY:

The answer to this discrepancy is a case of standardization, not unlike the bolt standardization reported in our last issue. In short, the military specification under which nut sizes from 1/4 to 5/8-inch are procured allows manufacturers the latitude to use either interim dimensional tables (unfinished or semifinished nuts) or unified standards (finished nuts). The result is that 3/8-inch nuts can vary by 1/16-inch across the flats or 1/64-inch in thickness, depending on their being considered finished or unfinished. The physical properties (holding power) for both classes of nut, though, are identical.

When the effects of standardization actions are complete there will be no unfinished or semifinished nuts in the supply system, hence no variations of the kind you report. But until that time stocks will include both classes and they can be used interchangeably. Wrenches to handle both size flats are in standard mine-shop tools.

*B. Armacle butt*

# To spark or not to spark

Dear Chief Butt:

Faced with the task of renovating service-mine cases we are also faced with conflicting information on the use of hand tools, standard or spark proof, to do the job. We feel that we should not be required to hold any anti-spark tools while certain references in OP 5 and OP 3379 would indicate the contrary. Would you please give us some ground rules to make all this clear, including the use of sand blasting?

WAP, MNC

Dear WAP:

To use or not to use anti-spark tools on explosive-loaded mine and depth-charge cases is a question that can be simply answered: the Mine Mark 6, any mod, requires them. No other mine does. This satisfies the OP 5 requirement that non-sparking (safety) tools are

required when working on explosive-loaded ammunition when the explosive is exposed (e.g., inside the Mk 6 case).

As for sand blasting, it rates as a safe and economical method of preparing explosive-loaded mine and depth-charge cases for painting, although it is only justified when the condition of the case warrants renovation rather than touch-up painting.

To use sand blasting, of course, explosive-loaded cases must be grounded. Also for spray-painting operations. And that's not all. The use of solvents and spray paints results in the presence of explosive vapors, and this constitutes a hazard that does prohibit use of sparking tools in the working area. There's also a provision that renovation should be performed in a revetted area, except under extraordinary conditions.

Eventually the mine and depth-charge assembly manuals will be brought into agreement with this policy, including Troubleshooter 4-65 where we erroneously called for use of non-sparking tools in the renovation of suspension lugs on Mk 36 Mod 2 mine cases.

*B. Amalebutt*



The men of the Mine and Torpedo Division, and MOMAT 0304 at NAVMAG Subic make an imposing sight when they pose for a photograph. Bob Greene, who is division officer and OIC, and an old friend of the Troubleshooter from the days when he was stationed at NWS, Yorktown, sent us the photo along with his regards to all his friends at NMEF. He is very proud of his hard-working outfit, as well he should be. Members, left to right, are:

Front row: MNC G.C. Pecuch, TMC G.E. Malvey, MNC D.E. Wheelock, Division Officer LTJG R.F. Greene, MNC F.A. Eck, MNC W.R. Smith, MNC M.E. Sanborn, MNC R.R. Anderson.

Second row: MN3 J.I. Faith, TMSN J.A. Riedy, MNSA T.F. Gibbons, MNSA R.E. Hearn, ETRSN W.T. Gorman, TM2\*J.B. Young, TM1 J.B. Ramsour, SK3 A.S. Acosta, MN1 E.L. McMillan, TM1 T.E. Lambeth, MN2 H.M. Beausoliel, MNSN G.F. Shirey, TM3 R.M. Taylor, MN3 C. Reynolds, TM1 T. Rivera

Third row: MN2 T.F. Carter, MN3 F.C. Bergey, MN1 B.L. Bishop, MN1 W.R. Segesser, MN3 J.L. Schmidt, TM3 D.A. Merkt, MNSN J.K. Polk, MNSN B.L. Macha, TM2 L.T. Monette, TM2 R.D. Brecke, MN3 R.B. Brown, TMSN D.E. Heckman, TMSN C.G. Mayfield.

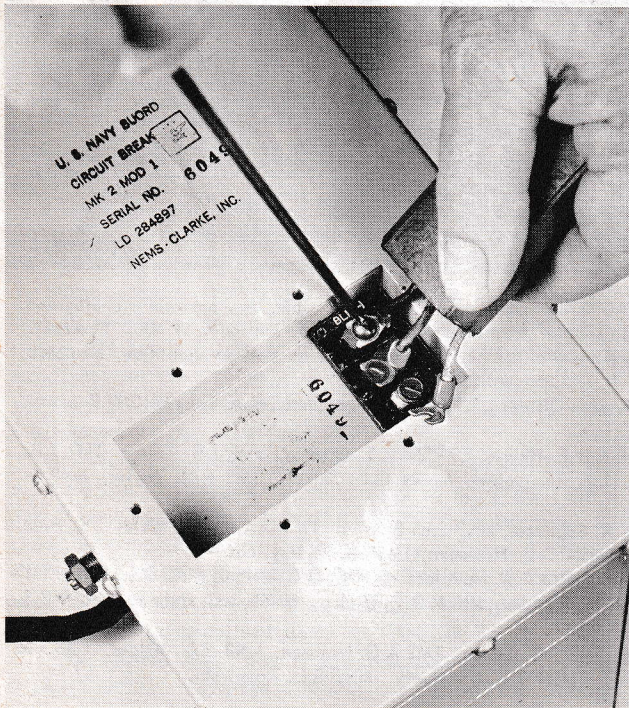
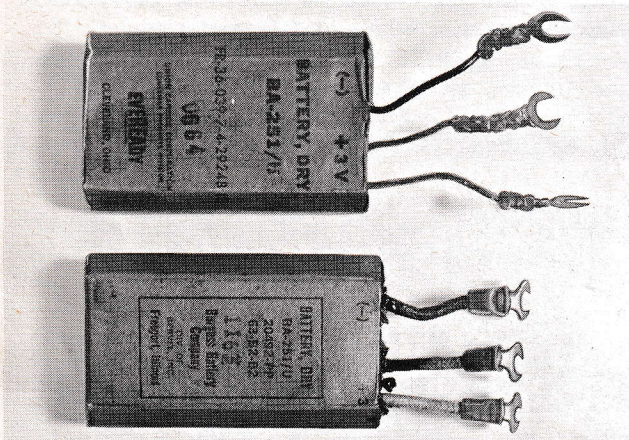
Fourth row: TMSN W.V. Harmsen, MN2 B.J.C. Notgrass, MN3 R.N. Stevens, MN3 A.W. Huddleston, MN2 D.C. Wright, MN2 D.L. Hull, TM2 R.G. Stuart, MNSN P.V. Lumpkin, MNSN A.M. Jacobs, MN2 L.J. Merz, MNSN N.T. Older, MNSN R.F. Bieber, MNSN J.C. Palmer, MNSN E.S. Hutsell, MNSN W.V. Pfarr, MNSN T.B. Rutherford.

Also, but not shown in the picture: MN1 R.C. Chapin, MN2 W.H. Hewett, TM2 S.E. Tyson, TM2 A.G. Newman, MN2 E.H. Wilder, TM3 J.M. Fuchs, MN2 R.L. Vines, MN3 W.E. Dixon, TM3 R.W. Smith, TM3 A.D. McCoy, TMSN B.L. Lansberry, MNC S.L. Kosewski.

# SOLVING A BA-251/U FIT PROBLEM

**A** NEW LOT OF BATTERIES BA-251/U, all about 1/8-inch taller than the older BA-251/Us, have appeared in the supply system. This extra eighth-inch may not be much, but it is enough to create problems when a BA-251/U is installed as the balancing battery in Circuit Breaks Mk 1 Mod 0 and Mk 2 Mod 1. In addition to added length, the new batteries also have a heavier gage lead (stiffer wire) and a crimped lug which compound the difficulty.

As a result the installation procedure that works for the older BA-251s just doesn't work for the new ones, which literally have to be stuffed into the battery compartment of the Mk 2 Mod 1 circuit breaker, or under the housing of the Mk 1 Mod 0. Instead . . .

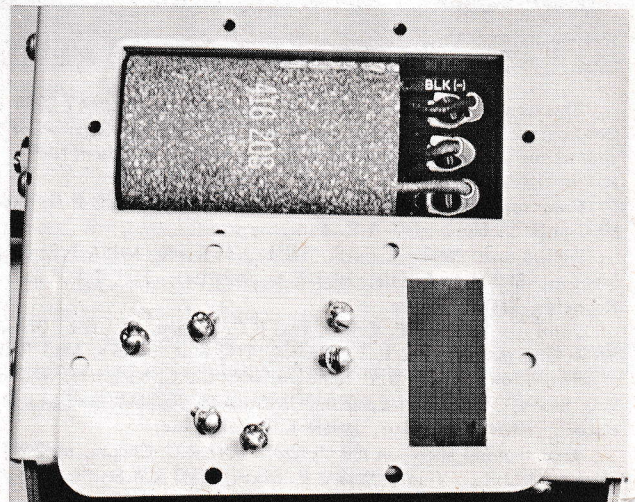


- ▶ Bunched leads get forced into the battery potting creating a possibility of internal damage.
- ▶ Severe bends at the terminals cause the crimped lugs to come adrift. (Lugs on older BA-251s are soldered.)
- ▶ Leads may be compressed against the circuit-break cover plate or housing, causing a short.

Now that this discrepancy has been uncovered revised specs will correct the difficulty for future battery procurements. Meanwhile the oversize batteries can be installed without too much trouble like this:

- ▶ Hold the battery, label up, with leads straight out, grip each lug in turn about 1/8-inch back from the inner curvature of the lug tongue, and bend down 90° (carefully, or you may fracture the lug.)
- ▶ Loosen terminal screws. Then, holding battery at a right angle to the terminal block, insert lugs under designated terminal screws, with open end of lugs pointing toward open end of lug recess. (This is the reverse of normal practice.)
- ▶ Inspect to be sure lugs are seated, then tighten terminal screws firmly to withstand the pull of bending leads.
- ▶ Turn the battery over by bending leads, not lugs, so that battery, label up, fits into battery compartment or under battery housing. Leads will now pass over terminal screw heads and should clear cover plate or housing.
- ▶ Stick a length of plastic electrical tape across the circuit-break cover or housing where it will electrically insulate the lugs when installation is complete.
- ▶ Continue with installation of the battery insulators and secure cover or housing as directed in OPs for the affected mines: OP 956 for Mine Mk 25 Mod 0, 1807 for Mine Mk 49 Mod 0, or 1736 for Mine Mk 39 Mod 0.

So much for oversize batteries in the circuit breaks. Battery BA 251/U is also used as a balancing battery in the Mk 11 Mods 4 and 5 but there is no fit problem in this installation.





# INTERIM CHANGERS, HEAR THIS

**M**N2 W. S. FORTNER, with Don DeCrona's group at USNAF San Fran 96670, raises some very apt questions about the right way to handle interim OP changes. Citing apparent conflicts in instructions etc., what he asks in essence is this: Are we supposed to merely reference corrections received via interims . . . or can we write them right into the page with pen and ink?

The best answer we know of is to be found in the official report of HQ, Naval Ordnance System Command's September 1966 mine readiness inspection of the Naval Weapons Station at Yorktown. On the subject of publications maintenance the report, after commending the station for general conditions and practices, states as follows: "It was noted, however, that operating personnel were in many instances forced to turn from procedural instructions . . . in a manual to an interim change in the front of the manual, and back, in order to observe corrections to the procedures."

The report thereupon makes this recommendation: "While the station's manner of applying interim changes (merely making references - ed.) was in no way inconsistent with official instructions for their use, it is nevertheless recommended that, where practicable, (the underscore is ours) corrections received via interim changes be actually written into the text of copies that are used as "working" copies in the shops, thus reducing chances of error and also harassment of the operator."

So do you "refer," or do you "write in?" The system was purposely made flexible enough to provide up-to-date info in everyone's OPs either way. In fact it must be flexible if it is to meet that objective in reference libraries, laboratories, mine shops, supply stocks, and everywhere else that OPs are to be found . . . with the fine details of method in each case left to the preferences and dictates of the man in charge at the scene.

That, we feel, is as it should be. If an interim says the third paragraph on page 212 should read 50 where it now reads 20, we'd object to anyone saying we were not free to take pen and change 20 to 50 right on the page of our working copy, naturally making it legible and identifying the interim from which it had come. By the same token, if the next interim included four typed pages of narrative text to be added after the fourth paragraph on page 28 we'd object loudly to being compelled to do more than "reference" it, especially if we were responsible for 15 or 20 copies that were not in regular use.

So that, in effect, is what the NOSC inspection team said to NWS/Y and that's what we say too: 1) get a copy of each interim in its proper place in each book — that's what's really important; 2) transfer info directly to the affected page wherever you feel it will make your working copy easier to use — your work more accurately performed; 3) use common sense in deciding where it would be better simply to make a pen-&-ink reference

to a change. Decide whether, in the corner where you are, you can afford to devote large blocks of man hours to making lengthy write-ins, especially if they involve a book that is seldom used, knowing in all cases it's only a matter of time before a permanent change or new revision will come along giving you new pages with the work already done for you.

In no way, as we see it, does this pose any conflict with the instructions printed on interim changes released since August 1966.

## MAGNETIC RUBBLE

Good housekeeping in the mine business is more than just keeping the place looking nice for visitors. Tests at NOL White Oak show that dust inside mine cases and on mine components can definitely retain an appreciable amount of residual magnetism, varying according to locale.

That being the case, reasonable precautions should be taken to prevent accumulations of dust on components and inside mine cases, especially those used with the newer magnetic mines. This is not to say you should maintain "white-room" conditions, but it would surely pay to wipe everything clean, paying particular attention to magnetometer housings.

Also important: get rid of any stones or pebbles that find their way into the cases.

## Rudminde Report

(continued from page 1)

by the fact that each change will completely supersede and replace its predecessor, and that any more orthodox system could become an unmanageable monster in an OP of six volumes containing thousands upon thousands of entries.

Also remember that these several thousands of entries have been made by a hard-pressed team of human beings who are just as conscientious—and also just as capable of making errors—as yourself.

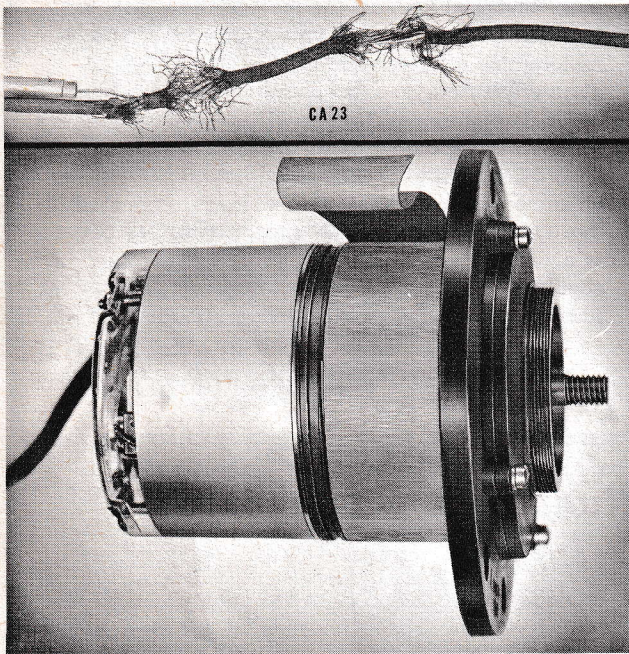
So at first, friends, errors you will surely find. When you do, don't growl at fate, kick a door down, beat your wife, or write poison-pen letters to the publishers. Just report it in the usual way and relax in the knowledge that the error you've found will soon be gone for good. That's the beauty part of this whole 3504 system: one correction on an item anywhere corrects that item (via its MMC number) in every last place it appears throughout the entire six volumes . . . automatically, simultaneously, and once and for all.

You'll like it, we bet.

# CABLE SAVER COMES IN ROLLS

Some years back R. L. Johnson, then a MN2 at Whidbey, suggested use of an aluminum guard to be fitted around several mines' clock/clock-starter joints, to close the void between these two components, thereby keeping cables from getting caught in the void and torn to shreds as a result of repeated short-time clock removals. Finding masking tape cheaper, more generally available, and equally effective, we stated as much in an article featuring Johnson's idea, published on page 16 of T-Shooter 4-60.

In the years that have passed T-Shooter 4-60 has become obsolete but Johnson's idea has not. So here it is again . . . with our hope that all hands, including Johnson himself, will continue to use it in good health.

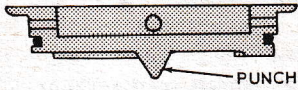
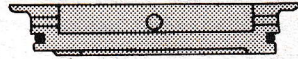


## DRILL SIGNALS MK 40, 43 OBSOLETE

Back in T-Shooter 4-64 we reported some EOD tests in which a group of drill-mine signals had failed 100 percent, pointing the cause as use of the wrong signal-tube caps when installing the signals in the signal tubes of Drill Floats Mks 15-1 and 17-0. As we said, these caps are not interchangeable in use, a fact that bears close scrutiny because one type (punch) is supplied with the floats while the other type (plain) is supplied with the signals . . . a fault that NMEF has corrected for new procurements, but which could easily lead assemblymen up the garden path when using stocks on hand.

To help, we published a table which many have found helpful, but which now should be changed to reflect the

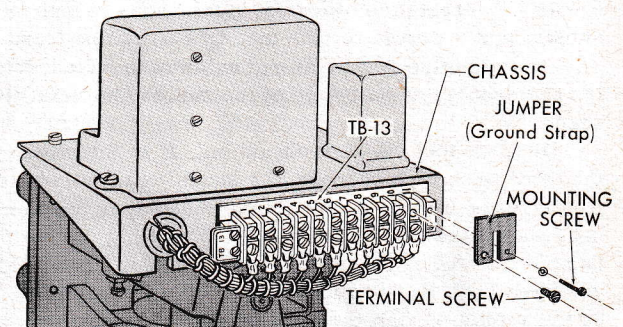
fact that Signals Mk 40 Mod 0 and Mk 43 Mod 0 have been declared obsolete. Signals Mks 40 and 43 (green and red smoke, respectively) had a 38-second delay time; Signals Mks 39 and 44 (still in use, same respective colors) have a delay time of 72 seconds.

TYPE CAP	SIGNALS	FLOATS
PUNCH: DWG 1276168*  1350-512-7335	MARK 25 (Gray)	MARK 15 MOD 1 MARK 17 MOD 0
PLAIN: DWG 1635685*  1350-969-1086	MARK 39 (Green)  MARK 44 (Red)	

\* Caps are identified by drawing number. All marked with drawing numbers other than these cited here are for obsolete Mk 15-0 floats and are also obsolete.

## CURING A SHOCK HAZARD

Everything is okay with the Depth Control Unit (Vehicle Mk 1 Mod 1), used in the Mine Mk 27 Mods 2 and 3, until it is mounted on the Test Stand Mark 4 Mod 0. Then, when the power source is connected to the test setup a 115-volt, 400-cycle potential suddenly appears on the chassis of the unit . . . a nasty shock hazard to say the least.



The trouble, we find, is the ground strap that ties terminal 11 of TB-13 to the chassis of the control unit, and thereby to one side of the power source. The remedy is to remove the upper screw from terminal 11, and the mounting screw of the TB-13, and lift off that U-shaped ground jumper. Next, you must put back the terminal 11 screw, not because absence of the ground will interfere with the test, but so the test stand's cable-fanning strip can be attached to the TB-13.

Thanks go to the crew at NOF YOKOSUKA who suggested this solution. They also suggest you not forget to replace that ground jumper when you remove the depth control unit from the test stand.

# Do You do this Job Right?

## EXTRACTING THE RELUCTANT CD-14

THE PRACTICE of dusting talcum powder in the felt-lined clock-delay wells in Mines Mk 25 and Mk 49 has been discontinued. The reason: the fine powder had a way of seeping through the clocks' case openings and fouling the mechanisms, eventually resulting in the malfunction of the clock delay. Any instances of calling for talc in assembly manuals are being removed.

Without the talcum, of course, there will be times when it will be difficult to get a CD-14 out of its well, and the result may be broken finger nails, and foul tempers, and maybe even some instances of pulled cables. Better than any of these would be a gadget like those which we pass along here.

Perhaps the simplest device to come along is that made by MOMAT 0321 from a scrap of 3/4-inch flat steel strapping about 9 inches long (the kind that comes on shipping cartons and crates). The first step is to make a right-angle bend 3/4 of an inch from each end. Then, with the bends up, grab the strapping in the middle and make an easy bend downward to accommodate your fist. Finally drill a 1/4-inch hole centered in the now bent-out ends. You can flex the resultant strap so its holes will fit over the ends of the clock's pillar studs, run down nuts a few threads, and thereby have a bail handle that will pull out the most stubborn clock delay. If you have tender hands you can tape the center section where you grip it.

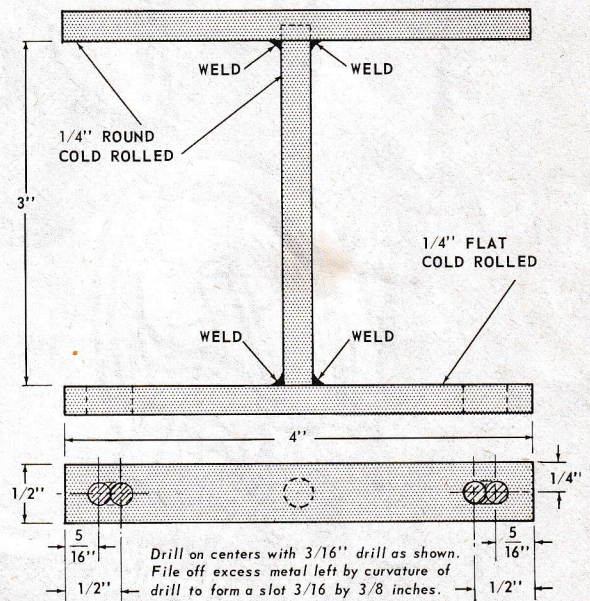
A variation of this design is to use two shorter pieces of strapping (about 2 inches) bent at right angles to form a 3/4-inch leg and a 1-1/4-inch leg. Drill two 1/4-inch holes in each angle about 3/8-inch from the ends, bolt a 9-inch piece of plumber's chain to the long leg of each angle tying them together, and the tool is complete. The holes in the short legs go over the studs, to be held by nuts, whereupon you pull the chain to bring out the CD-14.

Your editor's choice is a 10-inch piece of 1/8-inch braided nylon or other cord, such as that used for strain loops. Take a snug turn about the CD stud so that a loop is formed on each end of the cord with about 1-1/2 inches of the cord turned back on itself. Hold the loop by serving with tape or twine, or both. The loops, pushed all the way down on the studs, will hold snug without use of nuts when you put a strain on the cord, yet will remove easily when you slide only one at a time.

The most elaborate gadget we've seen is made from 1/4-inch round and 1/4-by-1/2 inch flat cold rolled

steel. Its manufacture requires cutting, welding, and drilling, with the pieces going together as shown here. In use, the slotted openings go over the studs, the nuts go on, and you have a T-shaped handle to pull on. This one really does the job right.

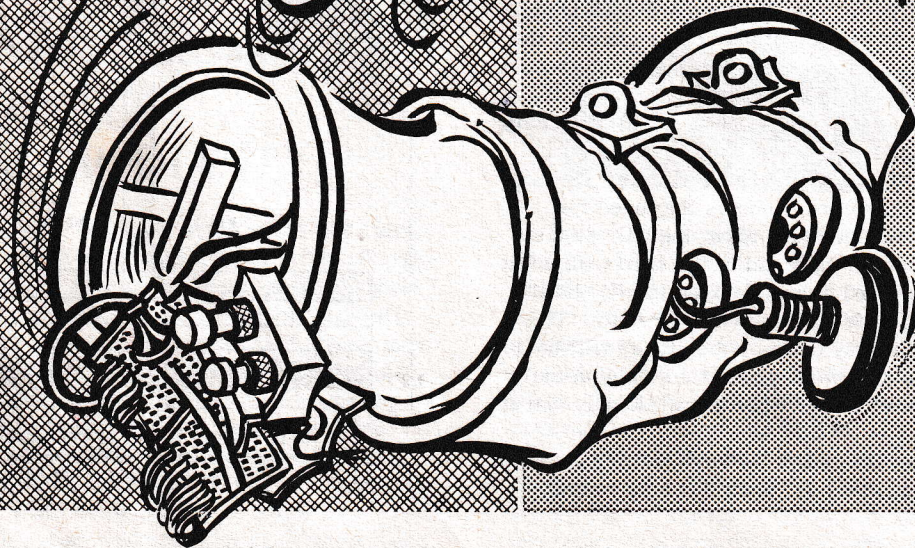
*The Editor*



If your gear's  
not in shape,



There's no  
need to go  
ape...



**RUDMINDE!**