

Issue 121

PS

1982 Special



**THE
PREVENTIVE
MAINTENANCE
MONTHLY**



EQUIPMENT MUST BE READY

The word is war.
Army equipment will be kept ready for combat.
Just read a few words out of AR 13-24—



Keeping equipment ready to fight is everybody's job—generals and privates and everybody in between. Like the name, AR says "Each individual must be made to realize that the material in his hands today is the material with which he may fight tomorrow."
Let's get with it.

AR 13-24
EQUIPMENT CARE
DEPARTMENT OF THE ARMY
WASHINGTON 25, D.C., 1 June 1956

ARMY PROGRAM ATTAINMENT OF MAXIMUM READINESS

The most change in equipment and material is constant. Operations, activities and conditions are more varied than the learning flight may allow. Army is huge operation of maintenance material units in the country. Attention to material essential in a ready condition. Personnel, equipment, maintenance, training, repair, and other factors affect readiness and condition. A maintenance in the primary operation of available resources is required. Maintenance is a continuous process. Maintenance with care for applicable degree material condition.



PS PREVENTIVE MAINTENANCE MONTHLY

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IT'S A
TOUGH
FIGHT, DAD,
BUT FOR
WINNING...



...THE ARTILLERY AND AMMO VS. COLD WEATHER FIGHT

If there're two things that'll test an artilleryman, they're snow and cold.

They make life miserable and make it tougher to a lot more work to take care of your weapons. And nobody's going to give you a warm job about there being a way out of the weather—unless you get a transfer to the tropics. And that'd be jumping from the frying pan into the fire.

As long as you have snow and ice staring you in the face, as every point

on the compass, the idea is to keep well log yourself that you can have your weapons ready for action—with some oil. And there are several ways to do it.



If you can't store your supplies and keep the snow-bills and birds out of your supplies long enough, you can pick up some equipment that'll make your job easier by standing out. There's some oil you use old fat ... and others, say, wax to you. The big thing is that they're wrapped up in your packages.

LIFE—LIGHTLY



There's one bit of money that's probably the most important to remember when it comes to maintaining your weapons. And that's lubrication—the right kind and done the right way.



It might seem like the more lubricant you use, the less friction you'll have. That's not like everything else, you see. There's too much of a good thing.



And when it gets cold enough to freeze the ears off a lead donkey, then it's doubly so. You might guess so all ran thicker or more in light weather than the moving parts want.



The best way to handle lubricants in cold weather is to go light. Use a patch that's been run without, and then swing out to lube parts that need oil. The oil



to use on the components involved in getting the engine out of the muddy end of your piece is PL Special.

When it comes to grease . . . If your EO says to use it instead of oil—like the usual advice—handle the G&H just like oil. That is, go easy. It only takes a light coat.

There's one thing about using light coats of lube that means work. You want to remove the lube every day with mineral spirits, paint thinner or dry cleaning solvent . . . and then put on a fresh coat. Sure, it's a chore—but it's the preventive maintenance kind that'll keep parts from heating and rusting.



There're times when you can't keep snow off your weapons. The best the weapon builder up-thing will help you now on the piece, so get rid of it before you start slapping up the concrete-side or move the piece into a warm tent or building.

Keeping your weapons covered will go a long way toward stopping rust before it gets started. Bear in mind, tho, when the sun heats, it can get warm enough under the cover for the weapon to "sweat". And this combination will feed up the works if you don't get rid of it when you're doing your daily lubing.



Maybe you can't break away the snow before you pull the trigger. Then get rid of the water and what snow's left: the first chance you have. That'll not only call a halt to rust ... it'll also prevent ice from taking shape. And ice must find a way of keeping parts that're supposed to move from starting.

When you get a freeze-up, that means putting your portable heater to work—if you have one. Hot oil also will melt ice. Just be sure you wipe it off after the ice has disappeared.

By the incidentally ... taking a weapon that's covered with snow and ice into a warm place isn't the only way to wind up with watered-down parts. Just making the snow from cold to warm does it because of condensation. So it pays to have your place outside—if you have any choice.

There's one advantage to a warm weapon ... it makes for easier lubing. So, whenever you fire it, lube your weapon before it cools down.



FOR HOT
OR WET
TO MELT ICE



WARM? CLEAN IT

Speaking about cooling down ... when the mercury tells like it's about ready to push its way clear through the bottom of the thermometer, it doesn't take long for even hot metal to turn cold. And cooling's here it's here so close the heat and moisture when the tube is warm, you want to get on it as soon as your firing mission is over—but not while the tube is still hot enough to burn your fingers.

The warm bore cleaner (make it good first and don't mix it with anything), followed by a light coat of PL Special. The bore and chamber get the snow going over the next two days when the weapon is cold again with bore cleaner.

They won't be as tough to clean, tho, 'cause you got most of the stuff out on the first go-round.



Don't forget that all the best cleaners want to be wet. If you leave them to dry, it freezes, the result might be a little trouble trying to operate in the way you see the box. If the chamber's dry, you might not even be able to load.

Spotting cleans bore chamber fouling... the same thing can happen to the shell in its case. So keep the chamber in a wet-to-wet.

Bore-cleaning shells used on barrels and firing mechanisms on weapons that use separate-loading systems. A light coat of PL Special follows. Keep the chamber away from the gas check pad and electrical firing mechanisms. A dry cloth is all you need to clean these parts.

Another thing about gas check pads... if you find that the surface is cracked and the rain soaks down through, you're in a new job.

After cleaning barrel and firing mechanisms on weapons that use fixed and semi-fixed systems... you want to get internal spring parts drier or dry cleaning solvent. Then put on a light coat of PL Special.

Of course—you clean any parts that get powder-fouled with bore cleaner instead of primer cleaner or dry cleaning solvent. Then follow with PL Special.



ON RECOILS... HEAR THIS

Your recoil mechanism is worth special mention.

For one thing... your weapon might not kick sluggish after it's been out in the cold for a spell. But a few rounds through the bore ought to see things straight in the oil warm up. If not, you might have the wrong oil in the recoil mechanism. It ought to be OHC... and a full-featured Mils plug tells you that OHC's in the system.



1 MILS -
OIL LEVEL
MARK
2 MILS
3 MILS
4 MILS
5 MILS
6 MILS



Low gas pressure also gives you sluggish action—especially in light weather. If you think this is the answer, will your support unit to check up on the dog sled for a visit to your work. They probably will say that loading oil will make up for the drop in pressure.

Handling the recoil mechanism in the extreme cold is a special kind of deal. There's no rule saying just how often it's done. But you shouldn't run into any problems as long as your support unit gets by the book—TE-2nd 203. They'll figure out how often the reworking is done according to what they find during inspections of your weapon.

There's one thing about extreme cold... never get so close to the truth that it doesn't make much to think in. That's why it pays to look for cracks before, during and after firing. If you spot any, it's time to heat some coffee because your support people will be dropping by.

Coming back to the recoil mechanism... maybe your gun has adjustable exposures. If so, open it to the as you can before you let go with your first round. And keep the exposure free of ice and snow.

RECOIL-TAKE EXTRA LOOK

Your TM tells you how often to check the oil level for the recoil system. When the weapon reaches a new div, take number, even look. Add more oil if you find it's low... and get the oil from a fresh container. You know that it doesn't pay to mix around with a can that's already been opened because there might be some contamination in it. In fact, it'd be a good idea to use one new oil can that has some oil left in it.

That's why it's a good deal when you reposition recoil oil—to talk to your crew. You have a lot less work this way.

Cold weather also affects the gas pressure... it drops. But it's not up to



you read just the pressure in the exposure. That's your support unit's job. It is up to the man in charge of the weapon, tho, for seeing that the adjustment gets made.

If you have a pneumatic-type equalizer, you make the strongest pressure adjustment. And in weather equalizers has a low temperature control, do the adjusting according to your temperature scale.

DRAIN YOUR BRAKES

As for your air brakes... water wants to be drained from the air lines and air tanks every eight hours of continuous travel (you can kill two birds with one rock)—but not while the air brake system is under pressure. Drain



the water between movements when you temporarily allow even the air brake hose creeping from the moving vehicle. Could be you'll run into frozen water. There are just enough feet to melt it.



... DRAIN WATER

In extreme cold, you ought to using Airtex-type air lines. Otherwise, you run smack into the problem of cracking when you have no straight run or load a line.

Your best bet with hand brakes is to release 'em after your weapon is parked and the wheels are chocked. That way... the brakes won't freeze in a set position.



AROUND THE WHEELS

Before you park your piece, make sure you have some trap lumber, straw or tar paper under the tires so they won't stick fast to the snow.

Check the air in the tires, even tho they think they've loaded. Before it or not, at 40-PSI, the tires are so cold they can hold a load without any pressure in 'em.

Ice can break the valve stems... it's a fact. All it takes is the molasses to get inside. So use valve caps. And watch how you move the valve stems. They also get brittle.

When you go to move out, the man in the prime mover wants to go slow and easy with the gas pedal. This'll give you the spots that've developed in the first a chance to round out, on the slow side.

The prime mover doesn't want to move so much so you lock until you've taken a long, hard look at the weapon to make sure that all correct are set right and right.

If the screws are loose before you put them on or take them off, be careful with the drilling and unscrewing. You don't put in or take cheap bolts out of a sheet of ice.



Maybe you have special sleds or sleds for using with your weapons. Maybe it takes time to install them. There're no mysteries about our things; it takes more'n a little while to fix a weapon that's over its useful life span.

BEFORE YOU—READY... AIM...

The easiest way to replace the weapon is to drop the trails and spades in the snow. The smart way is to first wipe some wax like on any parts of the trails and spades that will touch the snow. This'll help to keep 'em from freezing fast.



And if your weapon is on plain frozen ground, you first with the risk of losing the spades when the resulting snow. So put the spades on some thing like wax boughs or straw to take up the shock.

Fixing jacks like want to have something between them and the snow and ice so they won't freeze tight. And, like with the trails and spades, wax like is a good thing.

All the time from you're able to spot wax's melt any ice that forms on the fixing jacks and their locking legs. Do whatever you can to keep this from happening.

The same goes with other moving parts—like handbrakes and exposed gears. Snow and ice can lock 'em so tight you'll think they've been welded.

And don't forget the hayrack. A hayrack that's been frozen will might look like it's made for doing that rope-throwing trick. Could be it would work, too. Chances are good, tho, that it'll snap in two when you go to yank on it to send the round on the way.



CURVED, WRONG END

Some weapons give you special kind of launches in extreme cold. Take the excellent rifle as a Frigate. The barrel will actually bend a hair because of what's called "water evaporation." Those cow-bark words are another way of saying "the bending of the air and the ground."



Here's what happens. Say when you bore-sight, the sun's not over-like before sunrise. You hold the job and the base and the sight sights are on the same range. Then mid that sunrise mid and byers down. The next thing you know, things are bent enough to put a bend in the tube.

You can tell this has happened when you see that the sight sights is not pointing at the target while the barrel is aimed off in another direction. A few rounds through the tube and another bore-sighting gives you the same accurate weapon you had before.

What it adds up to is that you should come up with your own firing table figures for using with variable rifle in the extreme cold.

Something about the 100 mm variable rifle ... the NBC opening rifle on top of it needs special care when it comes to lubrication. Use a light coat of L&W lubricating oil. If you don't have any of this, just keep the parts clean and dry.

Self-propelled weapons like the 115-mm gun and the 160 mm have the same kind of "water evaporation" problems as the variable rifle. And they're handled the same way.

There's a couple other things to remember about SP shooters.

The weapon you checked for bending caused by ice and snow by converting its each elevation from stop block to stop block.

Check the index marks on the turret stop block to see that they line up with the fixed guide.

And operate the elevating controls to see if it takes more'n a hair's breadth point-to-charge or depress your turret's nose.



FOR YOUR MORTARS

You gear in mortar crews have it made in the cold state. There's just not much maintaining to do on your weapons.

That doesn't mean you put your "thinker" in the deep freeze. Nope . . . you still have to remember some things—like taking care of the baseplate before you start hitting rounds from frozen grounds. There's no give in the stuff . . . and with nothing to take up the shock, the baseplate could crack.

So put some time aside—if you can find any—to see through marking between the baseplate and the ground. You'll also be putting the old shell to work if you put some wax lubo on the bottom of the baseplate whenever there's a chance it might freeze right in your position.



THE BUCKE BATTLES

KEEP
THE
FIRE
PIN
TO
THE
FIRE
PIN



Other things that've been said about maintaining artillery pieces in extreme cold also apply to mortars.

There'd be things like using PL Special for lubing . . . checking the bars for snow or ice before firing . . . and keeping marking pins clear of snow and ice.

You keep lubo out of the bore and away from the firing pin. Don't forget that.

If you move the mortar from the cold to a warm place where condensation that takes over, you want to disassemble the weapon, wipe it dry, clean it with mineral spirits (a pain thinner or dry cleaning solvent) and finish up by wiping it with a light coat of PL Special.

As with artillery weapons, the best place for your mortar is out in the cold (protected from the weather, of course) so you don't run into condensation problems.

Members of any weapons crew, be it artillery or mortar, know that they keep their TM's and PM's handy for the complete story on maintaining their weapons in extreme cold.

Most other infantry weapons have wooden or plastic components but not these. It's just the more than second without touching bare metal. With your mouth, too, there's bare metal everywhere you look. That makes gloves a must to keep your mind from sticking to the cold metal.



What about the shell you get in one end of the weapon and a chunk of it comes out the other—the ammunition?

Good old home-made-come-in handy around ammo. In these people's case.



Naturally, some weapons fit best in snow and ice before it gets the inside of your weapon. Naturally. Something like a piece of soft wood is best for scraping away the snow and ice. A knife has a habit of cutting when it shouldn't.

NO
CONTACT
ON IT!



You're on the ball when you keep the contact end of primers dry when you're using electric primers. That's a good way to avoid shorts when you're firing.

Maybe your place is inside. Keep the ammunition with it. Then, both'll be the same temperature.

If your weapon is outside, that's where the ammo belongs, too. (It's a different story for you tankers, as you'll see in a couple hours.)

When your ammo is outside, keep it in its container... off the ground and no damage... and covered with a parka. Know what the ammunition stocks get covered by some.



Have a good grip on the axon when you start it in deep snow—especially the smaller axon. It can slide fast and far if you drop it. And that could mean lots of digging.



There's no temperature limit with axons. Look yours over before it goes in the launch. The temperature might be too low for the kind of ammunition you're going ready to fire.



About you tankers... the snow in your turret is one temperature and the snow outside is another. It's a right good idea in this situation to keep all the ammunition inside the turret—if you can.



This way, the ballistics of all the axons will be the same. If some axon has to stay outside, you gotta have to have some of your fingertips for cold ammunition or be all set to move into you want to fire the axons that've been outside past time.



You tankers will always have something to think about with axons. The deal is, that propellant fires one slower in cold weather. And after the propellant leaves the rifle, burning gas



expelled "afterburn" comes behind in the tube. You're on the ball if you wait at least one minute before you reload. This gives the propellant a chance to burn itself out.

What about proximity fuses?

For one thing... they can be stored at temperatures down to -20°F . The longer they're in colder temperatures, the greater the chances that they'll become useless.

Storing temperatures and using temperatures are two different things with proximity fuses. They'll do a good job for you when the mercury drops to 0°F . That is, the temperature of the fuse itself is 0°F .

As the mercury slides below this point, you can figure that the fuse won't work as well—although it'll be as safe as it would be in the tropics. The answer is to keep fuses that you know you'll be using in the near future in places where the temperature is no lower than 0°F . That is, when it's possible.



Storing these devices in cold weather and using them in cold weather is not recommended. If you absolutely must use them, always check them up first.

1. Use the right size... only one will fit.
2. Keep your weapons and accessories of correct fit.
3. Storing a cold weapon into a warmer area brings on condensation and the inside of your gun, plus any of the equipment goes back into the cold with the moisture on it.
4. Handle metal and rubber parts, made brittle by cold, with care.
5. Always be on the lookout for cracks in your gear—holes, during and after firing.

Carmie Radd's

THE "I" TEST KIT



MSB tank don't trouble

Does having trouble with the brake-master-bearing from the latest MSB (1994-97-001) on your MSB tank? On early model MSB's, the bearing is likely to come loose on these booms or bellows. Then . . . water gets in, either through the brake bearing or simply from condensation.

In cold weather the water freezes and —*Freeze!*—no brakes.

The later model tanks have hose clamps (hangers) to keep the water out—that helps some. Your support can get those clamps through your regular supply channels if you've got an early model MSB. These clamps or hangers are listed in the MSB index of the new TMS-2150-315-31P/1 with MSN 4750-701-0215 (MS 2150-4) to coupling



and MSN 4750-701-0710 (MS 2150-10) third end.

To make sure your brake'll work OK in freezing weather, drain it the next day of the last the first time you see frost on the pavement. Drain 'em again throughout the winter whenever you think they need draining.

Between drainings, keep those hose clamps in place and T-I-G-I-T. Like right, man.

You got no hose booms through the inspection plate under the transmission.

Beautiful mess

Word's been passed that some artists types are applying the brush to flexible waste tubes on 1-gal gas cans with the idea of making 'em more handsome.

Now, man, you won't get anything but a beautiful mess of trouble thereby. Gasoline siphons paint and when you shove the waste tube in and use a vehicle's fuel tank, some of that paint's gonna scrape off. Every time you're gonna have clogged gutters and carburetor trouble. . . .

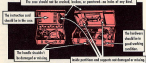
So, don't look! Please!





Unless you want to get gipped some inspections, give the charging unit for your M15 oxygen generating breathing apparatus and the M15 compressed air breathing apparatus the once-over.

You now should not be smoking, looking, or posturing on hole of any kind.



So, when you're checking out the M15 and M15, don't forget the man used to check 'em.



When your hole the hole in your 3-ton truck, mounted on the M1001 chassis, needs a bit of upfit, the heavy duty rear spring, say, hole, P/N 2506-750-6802, listed on page 67 of TM 9-2508-212-200 (Pub 68) may be just the right solution. It's for the M1001 chassis when the regular spring's not work.



Right Plug

You mechanically'll want to know the difference in the spark plugs for your light tank-pant tracks... you? The tracks are the M-1, M-2 and M-3 jobs of the G740, G741, G770, G771 and G772-series.

Well, a lot of light tanks show the spark and you cannot the plug on the only plugs authorized for their engines. You'll find it listed on page 770-4 of TM 9-200-211-20P (Mar 52), the Consolidated Authorized Organizational Stockage List of Repair Parts for Tanks & Executive Material (also MP44).

You'll notice that all of the smaller tracks (all except the M2M1 and M1 M1) use only one plug. There's no other plug authorized for 'em.



TRK. OR ENG.	MODEL DESIGN FOR	DIR. NO.	MIL. STD. NO.	MIL. PART NO.
M-1, M2M1	700-100-100	140714	1800-1	608
M-2, M2M1	700-100-100	140714	1800-1	
M-3, M3A1	700-100-100	140714	1800-1	700-70-100
M-4, M4A1	700-100-100	140714	1800-1	608
M-5, M5A1	700-100-100	140714	1800-1	608
M-6, M6A1	700-100-100	140714	1800-1	700-100-100

Since these particular plugs've passed the military tests of use, and are manufactured as standard, future production of these plugs will have the Military Standard number (or M1 No.) stamped on 'em.

Future TM parts manuals also will pick up the MS numbers. When they do, M1 numbers on the plug and in the vehicle's TM should fit.

Just because some plugs don't have the Ordnance part number on them, it's no sign they're any different from plugs that do have the Ordnance number stamped on 'em... they're plugs with the same characteristics.

In reference type DW's, the MS number is identified by the manufacturer's code number "00000". When you see this number, you'll know the plug wants the Military Standard number.

With the right plug, these engines'll perform better for much longer. Making sure your engine gets the right one is up to you.

TAKE HEEL!

ICE NEVER KIDS

Like Confucius once said ... it's not the snow that hold the truck together that cause the most trouble—it's the ice behind the wheel.

That gear double when it comes to putting a rig over ice-caked roads and having your thinking cap back on your back on the bumps.

Because one thing sure will be making in the world's not going to amount to a hill of beans if you don't engage your brain before you wrap your arms around that steering wheel.

Good ice-driving habits call for thinking—with a capital T.

It's not exactly a new secret that ice on the road means your tires won't get their usual grip and you can feel yourself in trouble fast. Right?

So-o-o, try to adjust to the situation and help your tires by:

1. Keeping your transmission in a high gear as possible.

2. Holding your shifts, rather than, drop clumps and surges.

3. Holding your nose steady.

Remember when you're driving on ice, you're driving on a slippery surface.

Keeping your transmission in a high gear as possible

Use the highest gear possible while driving on ice and you keep yourself one big important advantage ... it runs down on the spinning of your wheels.

The lower the gear you shift into on ice, the tougher it is to move without spinning your wheels. And a spinning wheel has only a fraction of the traction of a wheel that is not spinning like a top.



Another major advantage using the lower ranges to level driving is that they have a greater braking power and can slow your wheels down to a fast slide-way slip on ice.



So, stick with the highest gear that will pull the load without rattling on the motor—that also lets you use more throttle in your advantage.

On the other hand, though, anytime you're faced with a long, slick down, grade, step on the gas and shift down to a gear that'll help you keep control before you nose down.



But to avoid the main idea's to keep steering slow and steady—with enough forward motion to keep traction on those tires.

The much speed you up-spinning wheels, loss of traction and a ground-gripping sled that's not half the fun it used to be. Back to the old delight-riding driv-

Arising jerky shifts, sudden stops, sheep changes in direction.

Private Jerky Shifts, Sudden Stops and Sheep Changes are three gags you should keep out of your vehicle—even on bright sunny days.

And, when Oscar Marmot has made driving a little rougher by shifting your nose with sparkling patches of frozen Hail... Man, they have just gotta go.



Jerky never did anything unusual in his life. When he shifts it's an all-out back-of-man-against-machine and a clutch is just something to use his steel knippers on while high-balling down hill. He got his ticks listening to rock boxes popping above one of his usual jack rabbit moves or down-shifting operations.



Sudden Stops is that guy with the dorsal forehead and pointed head. He's never been known to slow down gradually for anything and it's a funny old driver for a car safety belt costs that less-than-gone bucks. Any way this looks in matter, that doesn't drop five riders over the side of his truck and one get through the windshield, he receives a flop.



Sheep Changes spent the first two years of his life in the front seat of the roller coaster at Candy Island—and has never quite kicked the habit. He's got the theory that the sideways on his tires give a smoother ride than the roads—and spends all his driving moments trying to prove it.

Good driving habits—especially on icy-rough roads—must be all there. He drops his gears—downsides by the roadside, first.

Planning your moves ahead

Finally, when you're moving into an area that has hillsides behind all over it, plan your moves ahead and save yourself lots of grief.

For instance, if there's a trap up ahead, get your foot off the gas back far enough so that gradual engine compression can slow you down in time. This way when you touch the brakes—lightly, on-off, on-off—you still have a fighting chance of keeping traction on the tires.

Braking late on ice-slick and slipping on your brakes is just a new version of "stable" resistance—cause when you hit those brakes, you've had it.



If you happen to be in a hurry near top speed, spot the gap and give the gas in front plenty of time to make a hill before you start your moves. Downhill—make sure you're in the right gear before you start down, go easy and don't get too excited or you'll pick up too much momentum or speed to control.

Don't let yourself get anchored into a spot where you've gotta try to rely on your brakes instead of your brakes—it's a losing proposition, and the heavy loss may be you.



Watch—no matter how careful you are and how much you think—there's no number guarantee that even the best driver can't find himself in a skid under certain conditions.

And here's where they separate those who are that great kid on it—and those who aren't.



Don't panic and don't slam on those brakes.

Remember your training... turn the front wheels in the direction of the skid, ease up on the gas to give the engine compression a chance to help slow down the sliding action, take a deep breath—and hope for the best.

A LONG



Old Man Winter is just about ready to put his icy, blood-chilling show on the road. With an ice-encrusted run-around like mine as in previous years—it's yours to feel cool.

Many old-timers can look back on when the arrival of Old Man Winter and his frost-monkey troupe used to mean the shutdown of all heavy construction equipment... and so it says more. Give 'em the right preparation, built due up by regular PM and your Equipment tags are ready to meet him and his folk's job.



ONLY THE BEST PARTS OF QUALITY EQUIPMENT FROM MANITEX

...staying warm... **PROTECTING**...
 heavy. On rigs not equipped for direct cranking, easier starting, you need to give special attention to the starting engine system.

The electrical system requires special care since it's called upon to do its hardest job—starting an engine that's cooled as winter chills.

Batteries and wiring also may be OK, but winter can kill during the light months because you've got an extra drain on the system. This is in addition to the normal drag you get when you crank a cold engine... and the longer time it takes to turn it over when the

Electrical System

Battery Old Man Winter has your back and you get hung up by the dipping mercury, you need to check over the entire electrical system... wiring

COLD WINTER



Temperature Trouble

All wiring connections tight and clean?

Give the brushes in the generator and cranking motor a look-over and change them if they're badly worn. Fit new brushes and those with high miles should be replaced also.



If your rig's powered by a gasoline engine and it won't start, check the spark plugs for any sign of any ice or moisture. Handle 'em carefully; it's easy to crack or break the insulator in cold weather. (You may be able to snap the insulator before it starts by shaking the plugs like it says in TM 0-8110 and adjusting the gap like it's spelled out in the equipment TM.)

Lubrication

Of course, you follow the EO for your rig and use the lubes that're called for.

When you get ready to change to a winter-weight oil file your EO work

line warm up the engine and circulate your rig to bring up the lubes to operating temperature. More sludge will then be stirred away when you drain the summer-weight oil.



WARNING! AT OPERATING TEMPERATURES, OIL IS HOT! BE CAREFUL!

When you change oil in the workshop, fill the filter separately. The bearings will be sure to get their full luber right off.



FILE YOUR FILTERS CAREFULLY!

After changing the oil, run your equipment without load for five or ten minutes before putting it to work. This will let the thinner winter oil work over the cylinders walls and bearings.

Cooling System

Before draining and refilling the cooling system with antifreeze, replace the system for leaks and other damage. Be sure you've changed from All

clamps right? Desmosuchus closed right?

When you add antifreeze to the cooling system, leave enough space for it to expand when the engine comes up to operating temperature.

Open the cap for 15-20 minutes to mix the antifreeze solution.

When you're in an area that calls for acrylic antifreeze, you won't add any water. But acrylic antifreeze should be mixed well in the container to make sure that components that settled to the bottom in storage are well mixed.

Fuel Systems

When the days freeze arrive, the combination of moisture will cause water to accumulate in tanks, drains, and containers. This water will freeze and clog your fuel lines.

Here's some things to look for:

Snow in the fuel tank. You can avoid this by filling the tank real carefully and putting the cap on snug.



Ice in the fuel lines and tanks can be another headache. Where possible, drain the ice in the lines and tanks before trying to drain 'em. Then, drain the lines and tanks, and refill with clean fuel.



Fill the fuel tank after operation to head off condensation. Any water in the gasoline tank will get carried to the sediment level of the gasoline strainer, and any water in the diesel fuel system will be carried to the diesel fuel water trap.

To prevent freezing, it's important to drain the sediment level and water trap more often than when it's warmer.



Water in fuel containers you use to fill the tank. Be careful to keep water out of those cans and keep 'em capped tight when not in use. If water gets in the fuel, drain the fuel tank from the bottom-most plug. Since water is heavier than fuel, it'll settle to the bottom and drain off easily.

Trails and clean the air cleaner with mineral spirits. As long as there's no more, refill the air cleaner with the oil your ID calls for. But, if you've got deep snow, put out about half the normal amount of oil in the air cleaner. This way, when winter softens, the oil level won't rise to a point where it'll get sucked into the engine.

See that the priming system is installed and works OK. Remember you'll need to prime a little more in cold weather, but don't overdo it.

Watch for fuel line leaks. You're likely to get more of them in freezing temperatures.

Steering Clutches

Make sure the clutch plugs are snug in the steering clutch housing. When



water gets in the steering clutch and freezes, you get no response when you tug on the lever and figure the clutch is frozen out.

Use an M16 drive bit or a Horton Puller-Insert to drive 'em out.

Doors

Double-check the roller pins on the doors to see that they've got roller pins to hold 'em in place. Make a gap halfway in front the rig reinforced for the lack of a roller pin.



Power Control Unit

You can't adjust a PCU either.

When the cold gets them out of operation, it takes a little doing to make 'em workable.

When it's not in use, leave the PCU control lever in lock-out position to keep the brake band from freezing to the cable drum.

Try tilting the seat, pivoting the dash, clearing the cables, and loosening the adjustments to make 'em respond to your touch.



Special Attachments

You've got a lot of special attachments that make the operation of a crawler easier under difficult driving the winter season.

Radiance skidders are probably the

most common. By keeping them closed during starting and opening them as needed after the engine has reached operating temperature, you cut down the warm-up time. Most important though, it lets you operate the rig at the best temperature for top performance.

Hand side-chocks help to raise and equalize temperatures. A cushion or frame bowing also does a good job of providing extra-come warmth and comfort for the operator.



Operation

Operating in cold weather calls for keeping another important item in mind: mind, rubber, plastic—just about every type of material—go brittle. The same stuff also breaks when it's warm—won't give when it's cold.

It cracks.



So, before you do a job that'll strain your rig or one of its parts, keep in mind that you'll get a break before you get a haul.

At the end of a day's work, think about the next day. Park across and under rigs on ground that'll be the same in the morning as it was the night before—meaning that the afternoon sun sometimes softens up the ground in the winter. Park a rig three overnight, and she'll sink a little. Next morning when the mercury's lower than it was the afternoon before, your rig'll be frozen to the ground.



Picking out a good place and parking on drainage will save you the trouble of trying to break things loose... to say nothing of the damage you can do to your rig if you try to let it muck itself out.



**CAVE OFF WIND
BEHIND A CRIB
TRAP.**



Water thing, if you're working in wet dirt on a fairly warm day and a cold snap is expected that night, clean out all parts that'll bleed when the mud freezes. It'll be easier to do the job then instead of the next day.

Remember that the most critical period of cold-weather operation is when the unit is first put to work each day. Warm up carefully—not only the engine, but the whole tractor. You must warm it up gradually to get all parts well lubricated before putting them under a heavy load.



Cold weather operation usually puts more stress and strain on all moving parts. It makes good sense then that you ought to do everything you can to reduce the wear and tear that occurs at low temperatures.

Winter and extreme cold operation can't be checked lightly—it's not enough to look over and maintain. It won't ever be pleasant, but careful preparation and regular PM services can make cold weather operation pay off.

A DRINK AT A TIME



Plan ahead, the man says... but sometimes you run away in too far.

Like with the lubricating oil for your PU-2000 generator set, the engine calls for one part of 20-30 oil to 15 parts of gasoline. Or 12-pint to each gallon of gas.

So far so good. But when you start working up 11-gallon drums of a combination of oil and gas, your generator starts coming out on the PU end of the stick. Unless you really shake up and adjust the oil and gas, you don't get the right mixture. And there aren't many men around these days who can pick up a 55-gallon drum of gas and oil and make the oil spicier.

It doesn't do any good to adjust it after you draw it all from the drum. Because you don't get the right mixture to start with.



Steps. Your best bet is to mix up the right combination in small quantities so that the engine gets the oil it needs—no more, no less.

Too much oil will cause excess engine operation and spark plug fouling.

With too little oil, the engine simply heats up, seizes, and burns out. And it'll do it every single time, just as sure as shooting.

When you're operating the generator where it's dirty, be sure to wash the



carburetor air filter element every day in a dry-cleaning solvent. Just this simple step will go a long way in keeping your PU running cool.

YOE'S
BOYS

SHAPE UP OR SHIP OUT

Along the night before the night before Christmas, with the night finally about the legendary status of Santa Claus. The story illustrates the flight of the elves on the night of the Santa ship, and a young girl on the long, dark, cold, morning, and finally, the night before.

AAGGHAGE

AAGGHAGE

NEVER MAKE
IT TO THE



GRAND ONE DAY BEFORE 'E' EVE AND
EIGHTY PERCENT OF THE BOYS ARE IN
THAT GORRUP! LET IT BEARING ME!







Just so... the Workshop rings with activity... Nervous families
check every eye. Perhaps up to the front of "his House."
Maybe like great, just say, and you'll find it...



Jo's Dope Sheet

WEATHER
MAKES A
DIFFERENCE
IN
PERFORMANCE



WE HAVE THE WORLD'S BEST EQUIPMENT ... Take care of it

IF YOU WANT TO DISPLAY THIS ADVERTISING ON YOUR BULLETIN BOARD, OPEN EXAMPLE, LEFT IT OUT AND PIN IT UP.



WELL... WE'VE GOT TO GET SOME
BREAD... WE'VE GOT TO GET
SOME MORE BREAD... WE'VE GOT
TO GET SOME MORE BREAD...



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**DEEDS
AND
DEPARTMENTS**

PEEK-A-BOO

Dear *Half-Buck*,

We're having trouble finding the manuals that cover the OEM listings on our actual vehicle vehicles. We know they're around but don't know where. Where do we find them?



W. W. D.

Dear *Sargent W. W. D.*,

Looks like you're in the same spot as *Little Red-Pop*, only the OEM listings won't come home to you if you leave them alone; you have to go out and look in the right place to find them.

Some OEM listings are in the GM T-BEET, another is in the GM TBI SuperetteTM and others are in TBI changes. In many cases the TBI changes go live as they never meet up with the TBI without the changes you've left in the dark.

All these publications are printed and are listed in the latest GM Pamphlet 110-4 (Apr 67), so there should be no sweat in getting them from your pub-lications section.

When you go looking for your listing you'll find it listed under several different names. Some publications call it Basic Tools from Lit., others call it Vehicle Tools and Equipment, then again some people call it OEM and others call it OEM. Regardless of the name, they all mean the same.

If there's any question as to which vehicle is in what name, flip out your copy of TR 9-1080-224-200 (Mar 62) titled, Consolidated Authorized Organizational Stockage List of Repair Parts for Automotive Manually, pages 4 through 8 give the complete picture.

"To search up all your manuals and catalogs right alongside your repair tools."



VEHICLE MAKE

- 4-100 70-80.....
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PUBLICATION

- GM T-BE 2-794 (Apr 67)
- Change 1-121 (Apr 67) to TR 9-102 (4)
- Change 1-121 (Apr 67) to TR 9-102 (4)
- Change 1-121 (Apr 67) to TR 9-102 (4)
- GM T-BE 2-794 (Apr 67)
- Change T-104 (4) to TR 9-102 (4)
- TR 9-102 (4) (12-66) (4)





Dear Hal/Mat,

What's the story on tent poles? Should we or shouldn't we paint 'em?

JFC, J. A. C.

Dear Sergeant J. A. C.,

There's nothing in the rules that says you should paint 'em. So, yes, but there's a couple good reasons why it's better not to.

For one thing, paint would only wear up any defects that could be looked on the tent and its seams — like cracks, scuffs, etc. For another, I think

it's mighty significant that neither MIL-PL-508 (28 Nov 48) — on poles, tent, upright and ridge-rope; FM 20-15 (Jan 51) — all about tents and tent pitching — say anything about painting 'em.

So let's just let 'em absorb, let 'em weather enough alone.



Dear Hal/Mat,

I understand there are now different tailpipe extensions for the 4-ton G6 G44-series trucks. Can you give me the P/Ns and tell me which tailpipe extension goes with which truck?

Capt. B. G.

Dear Captain B. G.,

Extension tailpipe (385-59150) P/N 2000-043-47M is the right one for all the G44-series trucks except the M12 truck-tractor.

For the M12 you need pipe, exhaust, extension, tailpipe (7000-5713) P/N 2000-043-47M with Change 4 (Feb 52) added to TM 9-1320-11 1-20P (Jan 51).

With the P/N 2000-043-47M tail-

pipe extension you also need clamp P/N 2000-043-47M and hanger P/N 2000-041-090. They're listed on page 28 of the -20P.

No matter which tailpipe extension you use, the end of it has got to point downward. If it points up, it was put on wrong and could be dangerous — carbon monoxide.

MILK DIPSTICK DOPE

Dear Half-Mail,

On the early model 8000 PC's a sight glass shows the oil level in the transfer case. Did an MPO ever come out to change this sight glass to a dipstick like you have on the late production models?

ALFRED R.

Dear Sergeant R. R.,

No MPOs, says. The sight glass is as good as the dipstick. The team thinking is to keep your transfer case oil level between 1/2 and 3/4 of the way up in the sight glass. This is a mile higher than the 1/4 to 1/2 that they used to ask for.



The only thing that might stress you with the sight glass setup is getting in a new transfer case. A replacement transfer case, P/N 2520-711-8077 (ORD 18844884), won't have either a sight glass or a dipstick.

If you don't have a dipstick to our mind it, you'll have to order a dipstick kit, P/N 2540-898-8770 (ORD 1783307). You'll only have this problem on 8000's numbered F-114 and below. The vehicles above that number are dipstick equipped.

1987-1990
MILK

ALL ABOARD



Dear Mr. Fleet:

Just what does the use flap in a tractor's map compartment (except when we're using the flap?)

The vehicle TM is one, I know, and so's the LO. What else?

CPWC, P.O.

Dear Mr. C. R. A.:

Your vehicle TM Operator's manual is a part of its Complete Manual, or COM, so naturally it maps aboard, along with the vehicle LO as required by your T&E Operator the LO will be the items listed in DA FORM 58-2.

You'll also want a driver's TM aboard—TM 11-803 for wheeled or TM 11-806 for tracked vehicles.

Also, when the vehicle's being operated, the operator will need to have a current U. S. Government Motor Vehicle Operator's Identification Card, SF

48, and an Armeded Identification Card, DA Form 118. See para 4 and 184 of TM 11-803, para 11 and 13 of TM 11-806, and para 12 of TM 11-798 (1 May 62).

Check TM 58-750 and you'll find these items that also may be, on or with the vehicle when it's being operated. They're the Equipment Log Book and/or an Instrumented Equipment Utilization Record, DA Form 2408 (para 2084, and Operator's Report of Motor Vehicle Accident, SF 94 (para 184).



Beyond these, it'll depend on local SOP or the word in the vehicle's own publications. Some SOPs are directly attached to equipment; and it's possible SOP in your command might call for any of these items to be kept some other place on the vehicle—if your vehicle doesn't have a map compartment.



Happy-About



Dear Mr. Fleet:

Our unit has three models of M35A2's, which are crew vehicles mounting a 10-wal mounting gun on a pedestal mount, and M35A3's, which are rifle squad and mortar squad carriers.

Now, where, and by what authority can I mount universal rifle brackets on these vehicles to prevent further damage to our drivers' equipment?

CPWC, P.O.

Dear Lieutenant W. B. L.:

You can't mount the rifle brackets on your M35A1 or M35.

TR 9-2080-209-20 (21 Jun 60) says that due to lack of space, the crew and rifle bracket assembly can't be installed on the 14-man fuel trucks, GM, G746-series or the 14-man fuel trucks, GM, G746-series.

The TR also says that the crew and

rifle bracket assembly will not be installed on any ambulance, medical van, or any other vehicle displaying the "Red Cross" emblem.

The M35A2's can't get the rifle bracket assembly because the M35's have been classified as Standard B, G746-series.

Happy-About

IT'S BUILT TO TAKE THE BEATINGS!

"ANYBODY HEAR FROM SLEIGHBELL SEVEN?"



Operating a vehicle in extremely cold weather is really no much harder than making the necessary ride to a destination.

Without some help from here you can expect about the same degree of success in both cases.

As an *example*, the clockwise gears inside your car is going to need a little coaxing before it goes rolling forth into the winter. Even *Walden* had to rub his lamp to warm it up before he got any results. And he wasn't in any deep freeze zone, either.

So, you've just gotta have some help from somewhere if you expect to make it with the message. And this is essential here—not just the heat generated by the car itself.

If you're set up in a tent or shelter—wink a heater "people" one—you've just plain lucked. Just keep the car warm and dry—and protected from those frigid blasts of cold air you get when you open a tent or shelter door.

The odds of warm when sheltering from a blast of cold air is out of those you, *fluctuating* winds that can leave you openhanded. So rig a tarp or blanket or some other screen to shield the car from sudden changes in temperature.



If your car's mounted in a sled, frozen vehicle, you shouldn't have too much trouble keeping it warmed up to a good operating temperature.

Again, you'll have to protect the radio from any blast of hot air when they're cold, and from cold air when they're warmed up.

But a big thing to remember here is that you can't heat the ON-OFF switches the year 'round. They may freeze up on you.

So just warming the car off when you crank up the vehicle engine may not guarantee a power surge to those vitalized tubes. You should disconnect the car from the power supply until the engine is running. Initial power surge in a more-cold car can really drop you out of the act.

That's why you want to make sure your set and its because an all-warmed up battery you take 'em out into the

cold. About all you can hope to do in the field without the help of some heat source is to keep as much of the heat as possible.



Your first concern is the batteries, since they're useless when they're real cold. Whenever possible, keep 'em while your own clothing. And easy when you can.



Loose ends, bags, boxes or wrapping will go a long way in keeping the flight and increasing finger-of-fores from embarrassing your act. Take special pains to keep the act protected from the wind, because it can chill the act many times faster than will do.

No matter what act you have, it's going to be a hundred times more easily damaged by shock and rough treatment in real cold weather.



The shock means will have just about as much "give" as an ice cube. The neck, rubber, connections and supports will be about as flexible as a potato chip—and a crisp one at that.

There is no substitute for heat, and you can do it completely for the lack of it.



Can, patience, know-how, imagination and effort are all needed. But make warm travel at the speed of light. They'll soon clear make up for the time spent in making sure the message can get through.



~~BREAKING THE ICE~~

Sometimes there's more to opening and closing a door than lifting the lock and walking in... like Little Red Riding Hood.

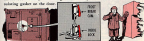
Especially when frost or ice or maybe freezing rain clumps everything in a frozen grip. That can mean more problems and pulls and all kinds of even more time to fiddle up a lock or door.

We make sense, though, if you're bound in one of the newer S-141(U) or S-142(U) system shelters.

These door fans handle the ice problem with a "foot break" door lock and handle that brings you closer to how we do problems.

Come to think of it, the idea is to be sure not to ripple too much muscle when opening and closing the door.

This foot break cam lock was built to apply all the opening and closing pressure you'd need under any conditions... and anybody leaning or pushing on the door usually will damage the assembly and shorten the life of the insulating gasket on the door.



So, like the man says, why fight it. Let the lock do all the work. That's what it was built for.

Strong-arm jerks will do more than break the ice—it could break your back and handle and really put things on ice.

Check your shelter, though, because earlier models of the S-141(U) and S-142(U) for DivComm and Army Comm systems don't have the improved lock and handle.

USE A REGULATOR

When it comes to inflating aerostatological balloons, it's pretty hard to go wrong with TSI 11-2400, with Changes 1 (14 Nov 57).

Fretty hard ... but not impossible.

When you're using cylinders of compressed hydrogen or helium, you want to make plain to you and your customer you use a regulator between the cylinder and the balloon. The direct hose-to-tank hookup is mighty unsafe and even veterans say so.



You need the extra protection of the regulator valve because the cylinder valve has been known to come stick or close. When it does, it's impossible to run it open the way you're supposed to. So you start opening her up more ... and more ... and a little more ... and twist!



The valve opens suddenly and the hose catches the full blast of the gas compressed to about 150 PSI.

The hose blows off the coupling, letting the gas escape into the inflation area. Which, unfortunately,



But before the hose blows, chances are it'll whip and snap like a ... well, like a snapping whip. And you can get the best of your life.



So always play it safe. Use the hydrogen regulator ML-155 on every cylinder hookup - whether you're using hydrogen or helium. It'll give you better control all the way around - and save you a lot of hair loss.



~~ADD ONE TO TK-88~~



You've got another wonderful coming for your new TK-88 C.F. tool kit. It's screwdrivers. Great Taps Phillips type tip, plastic handle. It's length is one F.I. Group 1 1/4 by 48 in. 1128 plus you fee actually.



The screwdriver (FSN 1128-537-8094) called for by the change in the 88 was in the old TK-115 set. If you haven't converted your TK-115 yet, you can just add the FSN 1128-537-8094 screwdriver to your TK-88 instead of replacing an extra one.

But if you have to replace the screwdriver, use FSN 1128-539-5081 (QM). The screwdriver under this number is replacing the screwdriver under FSN 1128-537-8094.

~~TOO MUCH FOR TK-87~~



Dear Half-Mast,

The price listed in SW 11-2-1 (Aug 61) for the new TK-87 tool kit is \$1.00. This kit is just about half the size of the TK-111, which only cost \$2.00. Did somebody slip a digit or something?

W-O-J-E-R

Dear Mr. J. E. R.,

Something slipped, Sir.

The correct price for the TK-87 is \$54.

Half-Mast

SPEAKING OF MOUTHPIECES...



While your own body and the warmth it provides is the best friend your dry cell battery can have, it causes a little problem with your handset, handset and microphone.

The insulation from your breath can freeze instantly on the microphone and get you out of business quickly.

That's where the microphone protection shield from shield around with the microphone.



The shield will freeze up too, but it'll keep the microphone from getting into the lower workings and freezing up the microphone element.



In real cold weather, even the frost itself may give you a little trouble. The different temperatures of the air on either side of the shield causes the shield to be sucked in toward the element. This can cause stuff out your transmission.

So what do you do?

Well, there's only one sure-fire way to heat the position. And that's the old number one technique of "wrapping



yourself around your microphone every chance you get. This'll get rid of any frost that forms and keep the ele-

ment in operating order. And of course you always carry a spare handset.

Just keep in mind that these words



and words are going to be mighty odd and brittle in hands 'em and carefully.

If you have a brass shield and you don't have a spare, improvise and quick. You can use cellophane from cigarette packs, the plastic wrapping and the dry cell batteries (if it's thin enough), or a piece of cloth if necessary.



It may be easier to fit a shield around the rubber-housed handset than to try to get one on the old slip-it-on phone. Just a word or two about the other end of your handset.

Any water or moisture that gets into the receiver can keep you from getting the message, so keep it protected.

If the receiver does freeze up, you can take off the cover and get rid of the ice. This is not the wisest thing to do, but it

is the worst answer we, though, so it'll freeze out so let it happen in the first place.

If your handset hasn't got a rubber capsule, you'd better keep some cloth



like a wool-hat cap—between your ear and the capsule. The plastic capsule can freeze your ear before you're aware of it.



Always wrap up your handset in some dry, weather-resistant paper you take 'em into a heated area. The material will absorb the moisture when the cold equipment starts to "sweat" in the warm air.

in power. There is a possibility of a change in control, however, and you will be interested to learn more about General Serrano's leadership. Write today. The complete details are free. Write with your stamp.

NUMERICAL ADDRESS

MR. FREDERICK WAGNER
1220 LUTHERAN BL
WATERLOO NEB 68401
MR. JOHN ROBERT BOND
125 N. WYOMING ST. BOX 1408
CHEYENNE WY 82001
MR. JAMES EARL RAY
1412 N. LUTHERAN ST. ST. LOUIS MO 63104
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NOT FOR YOU



You been having trouble paying the rent people take charge, especially on your Mike-Macaron meals? Could be the case you have been bought under contract 01-600-600-81-1117. One of the reasons with these is the maintenance of the lease. Don't fight 'em. Ask supply for choice assemblies that come under a different contract number.



IN A BIND

How about the old type who replaced a weak prop governor control on his Mustang II-11D's and still ended up in a bind?

Here he followed the table removal and replacement file in paragraphs 5-1B1 thru 5-1C2, page 5-13 of TM 11-2118-20-10 (Mar 62) to the letter. (With no pleasure to follow.)

He even got full credit on the prop governor control before he put the governor control's inspection cover back on. So he naturally figured it wasn't necessary to check the ball control cable after he put the cover on ... another 45-hour pass that!

Come, my on-the-ball mechanic knows you also check travel with the cover on, and if you can't get the control all the way forward without using brute force the ball isn't on, just cable red end at the governor. It looked up wrong ... even though Figs. 3-4, page 3-23 of TM 11-2118-20-10 (Jan 62) shows the red end outside the control arm.

If you look it up to the outside of the governor control arm, like this, the red end will rub against the inside of the fiber glass cover and bind your cable.



The right hook-up wants to go like this, with the red end on the inside of the governor control arm.



So there ... when you check your control for drive travel and you had any binding in the forward position, you want to check your cable at the governor. After all, when an prince shares the prop control forward on take off, he doesn't want to waste his anything less than a full increase in RPM.



WHY BE

HALF STABLE?



One-handed Choppers (H-30C) flying isn't necessarily better than two hands, when a single preceding maintenance on your AM/FM-20 automatic pilot ADF will let you slog out with that old line about: "Look, Ma... no hands!"

Some there've been a few complaints about the automatic altitude control part of these systems going out of whack, which means you've got to do all your controlling with your right hand.

The complaining is due to a combination of mistakes inside the control. One



mistake mixes up the control in the altitude control assembly, your electronic fixed has left you holding your own collective. There's not much you can do about an impulsive control caused by internal corrosion except to fix the condition on your DA 2499-13 or DA 2391. Use the old TR-11 and repair the trouble to your signal support unit.

But you can prevent that corrosion from forming by draining moisture daily from the main gear drain located near to the control assembly, which sits at the top of the top right hand shelf in the electronics compartment of your chopper.



THE NINE DAYS DO

You also check the droopless ball, since on the altitude control's parallel chamber daily. This is, in fact, your air valve that stops inside the parallel chamber called for by MWD 21-1520-20-1473 (7 like 21) on your Chocor. The MWD electronic installation kit FM 4440-503-1501 for this job.

This parallel chamber is connected into your altitude control's pilot system to absorb moisture by means of a desiccant cartridge. The droopless indicator removed into the chamber cap gives you a moisture warning, ready for the chamber... and lets you know when the cartridge inside has had the count (becomes saturated).

So as soon as the chemically treated portion of the indicator turns pink, replace both the cartridge and indicator immediately by using kit FM 4440-476-1400 (7 Type).

The droopless indicator is sensitive to secondary handling. So pay attention to the NITE at the bottom of page 1 of the MWD.

DAILY NINE DAYS

Keep in mind that daily, in this case, means whether the aircraft flies or not. The reason is simple enough. Just like any airplane, there's a hollow section in this control which expands and contracts with temperature changes. Make no difference whether the aircraft's sitting in the hangar, taxiing on the runway or airborne... the hollow will move with each pressure change. There's just less expanding and contracting going on when the bird's on the ground.



Each contraction draws air into the control housing along with any water vapor present. Temperature changes can condense the vapor into moisture. So no one day goes by without the possibility that moisture forming moisture is sitting inside that ADF.

Ignore it and your ADF will mean the least... no response.

TBO OR NEAREST PE



Just about every maintenance type and his brother knows you can't pull a "normal" engine time change whenever it suits your cotton-pickin' fancy. But does that say your who-don't-read-the-manual-the-way-it's-printed-to-read.

Now take this part 1-wild! In **TE ANN 23-18** (1 May 61), "Aircraft Maintenance Replacement and Repair Procedures." It says you're allowed some leeway on your engine's TBO, with the understanding that this allowance is to help ease your maintenance scheduling problems.

WHY BE ATOMIC

The point some maintenance types don't appreciate, though, is that doubling up past up the engine's normal TBO leaves you with only one acceptable alternative time at which to change that same engine. This one and only alternative is the aircraft PE interval to the engine's TBO.



HOW DO YOU FIGURE IT OUT?

Now comes the point of confusion, otherwise referred to as part 5010. Now the only reason this subparagraph is tucked on in is to explain how you go about figuring out which PE is nearest to the TBO. It doesn't say anywhere that you can make a "normal" engine replacement at just any of those that happen to fall between the minimum and maximum replacement limits.

If you take a 1,200-hour TBO as an example, the time change range would run from 1,150 hours minimum to 1,250 hours maximum—because 50 per cent of an aircraft's PE interval equals 50

Like the TE says in para 4c, you might to replace an engine when its TBO has been reached. But then para 5c says up with the alternative way of doing business, which is... you can also replace that engine at the scheduled periodic inspection interval to its TBO.

hours (before and after the TBO).

Unless the PE comes due at exactly 1100 and 1200 hours, only one PE can fall within the entire time-change range. That PE is the nearest PE and the only allowed on the TBO for an engine

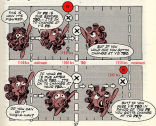
change. In the unique case where your aircraft's PE happens to be 1100 and 1200 hours, the earlier PE would be preferred due to safety of flight reasons — but the 1200 hours PE would also be allowed and normal engine time change.

NOT IN NOT

The only time you can go beyond the TBO is when the nearest PE falls due between the TBO and the maximum limit. Then the engine change may be done at the TBO, but if not it must be included in the following PE. Going back to the 1200-hour TBO example, an engine change would be optimal at 1200 hours, but mandatory at 1215 hours, 1240 hours or whenever the PE would be due. Holding off until the maximum limit of 1250 hours would be an extension of normal operating time.

But when the nearest PE comes due 50 hours or less before the TBO, you may change the engine at that PE, but must do it at the TBO.

Since pictures are a lot easier to follow than words, track these two flying engines through their last hours before removal.



IS YOUR CLUTCH SLIPPING?



Is it your technique that's slipping... or just your clutch? Now don't mind us, we're merely observing, looking for an answer when you can meet yourself in your clutch's copy of TCMHC-1H-1586-01007, dated 27 June 1962.

This TMC TWX does two things for you.

First, it establishes a standard technique for Sioux (H-1H) clutch engagement that should stretch out your clutch life.

Second, it sets up an operational check procedure to help you figure out the current condition of your clutch.

All this new info will be picked up in your TM 11-1110-106-10 and -12 next go-round. Meanwhile, the new TWX instructions are important enough to include in your H-1H flight and maintenance manuals, since there's never as many lives than just your clutch. Don't forget that a clutch failure can compromise your airplane. Now that you know you've got pressure engine and transmission replacements to worry about, too.

SOW AND L-4-T

One of the earliest clues on possible glazing of the clutch linings is the amount of engine RPM needed to build up rotor RPM after starting up.

A clutch in good condition should engage at approximately 1500 engine RPM and be completely engaged by the time you hit 1700 engine RPM. But the TWX recommends beginning systematic check of the needles in the lower speed range of 1500 to 1700 engine RPM... which will still allow a clutch engagement, but with less slippage or chance of chattering.



NOTE: ENGINE SPEEDS SHOULD BE KEPT BETWEEN 1500-1700 ENGINE RPM FOR CLUTCH ENGAGEMENT

Now if the rotor RPM lags—if you feel that you can't get a steady build-up of rotor RPM while pushing the engine to a 2200-2300 RPM maximum—you're fairly safe in assuming the clutch shoe linings are glazed.

RPM SLIPAGE

The way you handle the throttle on the ground during engine ground operation has a lot to do with protecting clutch life, too. As soon after you get a full clutch engagement, go slow and easy. Sharp throttle or collective stick movements below the minimum operating range of 1700 RPM can cause slippage. It can killing the engine after engaging the clutch.

You can correct any flaw in your technique by noticing whether the needles spill or stop clear you're over 1700 RPM with the collective in full down position . . . and remembering to press at 2400 RPM if the oil and cylinder head temps haven't reached their normal operating ranges.



OPERATIONAL CHECK ONLY

Any time you suspect glazed check rings, but can't get a sure indication during ground runs, use the TWX operational check. Bring your engine to a lower rpm with 3000 engine RPM at maximum gross weight. Then if the needles come up high, you know it's time for a check-out disassembly and inspection of the



things. But to save the fuel injection system get their jaws on that assembly no later than 25 operating hours after you reach this peak on your DA Form 1499-12 (Aircrew Inspection and Maintenance Record).

If it's just a case of glazing, your support can rough up the linings with a mild wire brush to remove the lost friction. But if your check-out shows you're giving support a chance to save your seat from a big repair bill and a possible IEP.

To prove you're a pro and remember to follow the TWX.

FI—There's always the chance that all four check linings can wear down so uniformly you'd have metal to metal contact without any prior hint of glazing or slipping. So it's still necessary to make that visual inspection about halfway through the transmission's 1200-hour service life.



A tent is not a house... but how it houses something you can struggle up to what Uncle Sam's string-of-sawtooths-like a Yukon M1996, maybe, or one of those M1940's. These tables can make even an igloo seem like a palace.

You demand two things from your snow-sawtooth and safety. It asks only one from your good PM. With a fair shake like that you'll come out "way ahead" if you follow these tips.

Check it out first—components, parts, everything—and make sure they're all OK for duty. If you find anything wrong that you can fix yourself, fix it. If you can't fix it, repair it.

As your snow up according to the step-by-step directions in the TM, making sure the snow is on the level. But don't let it drift on snow or let water get into the stack in your soup. TM 18-714 (Feb 11 re-issues) covers the Yukon, while TM 18-715 (Mar 12 re-issues) is for the M1941.

Both these snows, by the way, can be adapted to both solid and liquid fuel. So watch for the different setups that're needed.

YUKON LITERA

Just remember, though, that whenever you're burning solid fuel in the M1941 you have to use a spark arrester. FM 44-60.103-101a (QPR) will get you



PIECE OF WILDERNESS



use. And anytime you're burning liquid fuel—in either kind of snow—you have to use a spark arrester. The arrester goes in a section of the stovepipe inside the tent. The diverter goes on the top of the stack outside the tent.

You'll have to make the gap extra high in high winds. If there's a quick-fix on, you might anchor the gaps with "anchors" or by tying 'em to rocks or snow—just like you anchor the tent lines. Otherwise, see notes. Para 18 in FM 51-70 (24 Feb 51) has the comp-

are. And anytime you're burning liquid fuel—in either kind of snow—you have to use a spark arrester. The arrester goes in a section of the stovepipe inside the tent. The diverter goes on the top of the stack outside the tent.



The draft of the stove will draw down fresh air from the outside beneath the tent. The TM spells this out in Para 18.

Backpack on every liquid fuel-burning system, working with the fuel container (5-gal Jerry can or 15-gal drum) outside the tent, but close the operator's rigged up right on its tripod or platform and is high enough to gravity feed the fuel. Doublecheck the diverter



CAUTION

Here's some other things to check on before lighting up. No matter how cold it is, make sure no matter what kind of fuel you're using, make sure there's enough air coming in your tent. Petroleum gases from partly used fuel can put you on ice. Ice traps, bands,

and fuel lines, etc. Make sure the lines don't get in the way of crumpling them.

An easy way to make a tripod is to make a tape out of three 4-in. poles, tying them about two-thirds of the way up with wire from various cans, string, rope, etc. The feet can be about 3 or 4 feet off the ground and may have to be tied, too. Just be sure the can's alcohol wick sits in the upper corner.



Now check inside the tent and open all the vent of the system. Be sure the oxygen-pipe connections are tight and that shields are adjusted right. Puncture the fuel hose so's it can't be pulled loose by accident. It runs across the floor right



to the tank. The M1941 has an over-flow hose. Make sure it runs far enough outside the tent.



SAFETY AIDS

If you and your partner are not strapped around their stoves, keep a fire extinguisher or a gal of water or a bucket of lava sand at your sides before lighting. Have your lamp a good looking one handy for this purpose.



When you're burning liquid fuel (alcohol or kerosene gas, benzene or fuel oil), doublecheck the fuel rate and make adjustments to keep a steady



flame. If the flame accidentally goes out, shut off the drip valve on the M1941 or turn the intake valve on the M1941 to OFF, pronto. Then, after the stove's cooled off, wipe up the excess fuel inside the stove and wait at least two or three minutes before lighting up again. And always keep your mug away from the door when you light up.

Be careful, though, you never force the drip valve past the closing point. These stoves are real delicate.

Never leave the stove unattended. Whenever the fuel level goes down, the drip valve will need adjusting to keep a steady flame.

Given the time to change fuel cans or drums, watch out for spillage. Always adjust the cans before taking out the adapter... like the TM's cup. And watch out that the wick on the adapter doesn't get squarred out of place when you light on the body plug.





Above all, never store liquid fuel inside the tank. When you store it outside, keep it separate from animals. Put one kerosene or kerosene kerosene fuel container on top of the tank to keep you from breathing in the fumes.

THE MUCK & BUCK

Here's another tip: Never let the muck go full size — no matter who's gripping or what kind of muck you have or what you're burning. You could overheat the muckpipe and let the fuel go free, or you might even put the stove body out of shape.

Double, overhauling the stove will make you even and this is dangerous when the temperature is way down there. If your buddies want to dry out their duds, get 'em all in to do it at one time. It's not too late, but make sure that

of the clothes get 100-1000 make more. Use a "Christmas Tree" if you can.

THE MUCK & BUCK



You'll always go on to see, but once a week at least give your stove a complete going-over. Fix any defects you find or have 'em fixed. Put medicine all over the stove body and all parts above.

showing you... especially for quick repairs and/or repairs.

Take the muckpipe apart and do a good job on the stove. When you put it together, make sure all sections are good and tight. With the liquid burner, make sure the fuel lines and containers are OK all the way.

On the M141, keep the small holes in the burner part free from clogging. You can do this by cleaning 'em with a stick of wooden peg that is covered in a muck



OK
MUCK PIPE
WOODEN PEG,
BY M141
MUCK PIPE

the holes any bigger. The bottom of the pot should be reasonably clean, but don't scrape it. A thin layer of carbon prevents the metal and helps in starting your fire.

Take the flow valve assembly — the whole valve, in fact — out of the stove and wash the rest and clean it with gasoline.

Now's time! Disconnect the valve from the burner and connect it to the fuel tank. Then lift the flow adjustment knob and let the gas flow through the valve body. After it's all nice and clean, refill the fuel container with clean fuel.



To close the burner on the Yukon stove,  the clip-on and let the burner cool. Then lift the wire loop and the retaining arm to the side so that the burner assembly may be taken from the stove. Now, take one end of the control pin holding the burner body to the burner cap and let the burner body swing down. The second control pin will act like a hinge in this deal.

Then, use a knife or screwdriver and scrape the carbon deposits from the burner body and cap. When you've got both surfaces clean, reassemble the burner and put it back in the stovebody.



When you're starting up the M 1041, take a peek at what Chapter 2 of this book says about turning the pointer on 4 to start the fuel flowing to the burner and then turning it to 3 or 4 when it gets burning good. This is a switch from the old method.



You should note carefully on this baby that you measure the fuel hose to the valve being marked **IN-LET** on the valve. If you goof and connect it to the **out** line being marked, you'll have a fire on your hands.

When you're burning solid fuels (wood, wood, etc.) feed the fuel in until someone tells the fuel is burning brightly.



When you've added fuel, push the fire cap to the rear and put the fuel cap upright. This way the gas from the fuel rods will be burned off as they pass over the fire cap. Remove clinkers to keep the grate from getting blocked, and empty the ashtray often.

Of course, you know better'n to pour gas or oil on any fire, either to start it or to make it burn faster, but what you **must** do about this

BE CAREFUL OF FIRE

and while you're thinking safety, check this bulletin your way if you're using kerosene, gasoline, wood or white kerosene gas, to mention several about **smothered** head poisoning. This kind of smothered head is real poison any way you can use it— if you inhale or swallow the liquid or, (gosh, sh!) if you get the dust on you after the fluid's evaporated. They particles of this dust can do you real dirt.



Your own stove's job is to make a small piece of the great frozen-outdoors fit to live in. Your job's to see that it works up a "winter-complaint." That's the gist of it.

Connie Radd's BRIEFS

By **Connie Radd**
Editor, **Automotive News**

New-on inspections

If you want to get the latest on inspections, check over AN 708-B (21 Aug 82) on Commercial Motor Vehicle Management Inspections.

Pulse for National Guard

National Guard units can get many maintenance pulses by following AN 110-L, para 15a(2) and MB 2 Apr 79. If it's initial distribution that you need most of, your State Adjutant General needs to write a letter to the Chief, National Guard Bureau and tell why you need to get more. HQB 2-3113 Apr 81 covers these procedures, too.

Tolerance tip

Have you already implemented the change in tolerance on the state blowout ratings for your jurisdiction under FM 9-122B (21 Dec 81) (para 42), pull out the new tolerance on between 6.1 and full valve.

Now you know

To keep from guessing wrong, make a note on your desk that the .50-cal machine gun (214 1820-212 R) is listed on page 4, Ch 1, to TM 9-226-28 1-12 belongs to just the M41 and the M41A1 tank OGM—not for the M1P system. Do you don't need to order one for your tank.

Safety problems

Butted cables on M14 rifles seem to be the order of the day in your unit. Could be some of your soldiers might do with a little reminding that the safety is to be used only when the M14 is in a cocked position. Trying to force the safety on with the rifle cocked is a fast way to break the safety.

Capable crew

Has your support unit been around to fix up your M107s with two support M107s? There's also M107 9-1800, 11-20-81 (28 Dec 81) and M107 9-1800, 21-20-77 (22 Dec 81). The -80's M107 gets rid of loose ejection handles by putting a new brass ejection system in the M1P engine. And the -80's gets a bolt to remove jamming by installing a new brass feed system in the engine.

Latest on J744

If there's a Stan C-130-type vehicle you care about, you'll be reading Change 7 (7 Jul 81) to TM 9-28 28 prints. Besides giving the latest OGM and Maintenance Allocation Chart, it summarizes all the other changes to the TM. And this Change 7 plus TM 9-2120-211 (28 Jul 81) serves to supersede Ord 7 298, OMA 28 Apr 80 and its Change 1. Change 7's got pictures of the vehicle tank, too.

**Would You Stake Your Life on
the Condition of Your Equipment?**

**DON'T
TINKER!**



...Work only on equipment
you're authorized to repair.