Date: Thu, 15 Dec 1994 00:09:34 GMT
From: dgf@netcom.com (David Feldman)
Subject: FYI: Fixing dead Bird 43 slug

[If anyone thinks this should be added to the various mod-servers out there, please feel free, but let either of us know where it's been posted so we can submit correction! This is the first posting of this message, on 14-Dec-94, so it is subject to update.]

DEAD SLUG

Dead Bird slug? Bird says buy a new one. Gordon (WA9SLU) and Dave (WB0GAZ) say try to fix it, but remember, you're already working on a dead slug, so there's nothing to lose and no guarantees!!!

Tools: You'll need a small flat-blade screwdriver, about 1/10" sharp end (like in a Radio Shack screwdriver kit), a medium-sized flat-blade screwdriver,
a pair of pliers, a soldering iron, an ohm-meter, a small vise, a couple of small rags, and (for testing and recalibration) a working Bird meter and appropriate slug. If you haven't done one of the slugs before, I'd also suggest a pad of paper, a pencil (to take notes and make sketches during disassembly), and perhaps an instant camera (if you really want to remember how things looked before the butchery began!)

Important: As usual, please read the whole write-up before proceeding - it really helps to know what you may be up against before getting out the oxy-acetylene torch... Also, this note was compiled on 14-Dec-94, and has not been extensively reviewed, so there may be errors or unforseen circumstances.

Other note: There are no really tiny parts in any of the slugs I've seen so far, but if you're not comfortable replacing or adjusting the small screws in a pair of eyeglasses, you may find working on the slug frustrating.

Input gratefully accepted, to dgf@netcom.com or glsmith@koess1.delcoelect.com

1. Does your slug's metal label have two small pins in it that look like rivets, but are about 2mm diameter? If so, these need to be removed first (the fasteners are about 1/4" long and friction-fit into the slug's body). As they have a smooth top and no easy way of removing, you can proceed to step 2 if you can't get them out.

2. Hold the slug in a vise (be careful the two electrical contacts, and don't squeeze hard enough to distort the cylinder), label plate up. Use a small screwdriver (I used a jeweler's screwdriver with about a 1/10" wide end) to pry away the metal label plate. If there are no pins (item 1 above), the plate is held in place by a tacky glue. If there are pins, only the pins hold the plate in place. If you can't get the screwdriver under the edge of the label plate, try hitting the end of your jeweler's screwdriver with a pair of pliers or something else to dig a bit deeper into the gap between the plate and the body. You may need to pry up in a few places. Try to be careful to preserve the plate's cosmetics (Bird won't sell you a new one). If you bend

the plate, don't worry - just put it between two flat pieces of metal, put the sandwhich into a vise, and squish. If you have the pin-style attachment (as item #1 above) and you didn't remove the pins, you need to pull HARD on the label plate to start the pull-out the two pins, then as soon as the pins are a bit loose, grab onto the end of the pins with needle-nose, and pull out while twisting. Remember, a bent plate is not the end of the world. Save the pins. If you've worked with JONES PLUGS you know what kind of pin I'm talking about.

3. You MAY see a small trimpot thru an access hole near the large center assembly screw. The access hole would be about 1/8" diameter. An observed failure mode is poor operation of the trimpot (intermittent). Put the slug into a meter, and attempt adjustment of the trimpot. Remember if you play with the trimpot you'll lose calibration and will need an independent way of re-establishing calibration. Replacing the pot with different one may be necessary. Replacing the pot with different value may give method of changing the slug's operating range (I don't suggest this, but it's possible...) If adjusting the pot fixed things, then you might want to quit while you're ahead, and proceed to step 12, then step 14, for reassembly. If you don't feel comfortable with this fix or it didn't work, proceed with the next step. By the way, the trimpots I've seen are pretty common looking.

4. Got this far? Unscrew the large center screw and lift away the cover plate it's holding in place. Unsolder the trimpot or bend it's leads to remove out of the way (if not a pot, perhaps another calibrated resistor; in any event there is a screw under the pot/resistor you need to get to). If a pot is present, there may be a small piece of fish-paper (insulating grey paper) under the pot. Remove it (just sits in place, probably no glue). Now you will see two small screws (recessed). Remove them. They may be rather long (some older styles use these screws to hold the back white teflon cover in place; other screws are shorter and just hold the electronics to the slug body).

5. If the two recessed screws were about 1/2" long, the back teflon cover may come off on it's own. Set it aside.

6. You may be able to pull the electronics out (use needle nose pliers and handle with care) now. If successful, proceed to step 8.

7. You may need to remove the teflon cover for access to the back of the electronics module. If it didn't come off by now, you need to pull it off. This is difficult and you can't avoid denting the slug cover. I used a pair of slip-joint pliers, padded with a rag. The cover was friction-fit into the end of the slug body; the friction-fit depth is about 2mm. It is possible to destroy the cover; really be careful! Presuming you got the cover off, remove the electronics module.

8. Now you have the electronics module free from the body. Inspect for loose metal (I have found this in one of my slugs - it was rattling around; Gordon WA9SLU reports finding a metal thread shorting out the diode, and the thread was easily removed, altho before finding the thread, the diode looked bad).

9. Check the diode (use an ohm-meter). If the diode is dead, it will need to be replaced but I have no idea what kind is needed. Reheat solder joints (there are about a half dozen solder joints, one might be intermittent.)

Be careful when re-heating solder joints not to disturb the geometry of the parts on the module. Possible that other parts have failed, but mostly they are resistors and bypass caps and unlikely culprits.

10. Reassemble, in reverse order of disassembly, EXCEPT if your slug has the press-fit teflon insulator, leave that off for now. Also, don't replace the label plate yet. As you reassemble things, be careful to see that there is an orienting pin that MUST be respected (that is, there's only one way to fit the module back into the slug body before you screw anything down). Also, if you have the screw-retained teflon insulator (with the two long screws), you need to use the insulator at this point because it's what the screws attach to. You should have the two small retaining screws back in place now. Finally, before you replace the big screw, make sure you've replaced the small insulating fishpaper under the pot's leads (if there was same in your slug), CAREFULLY reposition the pot, and note that the body of the pot needs to line up with a hollowed-out area in the screwed-on cover (where the access hole was found). Look things over carefully before you apply any significant torque to the big screw. Be particularly wary of the pot's (or other parts in this area) leads shorting against the body.

11. Install, test, and re-calibrate as needed. If slug is still dead, you're on your own (but let either of us know how you fixed it or what you found!!)

12. Replace label plate. OBSERVE POSITION, THERE IS ONLY ONE POSITION THAT IS CORRECT!!!!!! Push pins back in if this was the attachment method, otherwise, use a NON-hardening glue SPARINGLY in case you need to re-open the slug in the future. I suggest NOT using RTV, but rather a glue intended for subsequent removal, such as that used for holding sandpaper discs onto a power sander. My glued-on plate stayed in place just by pushing it back against the glue residue that was already there.

13. Re-install teflon insulator cap if it's the press-on type. This is unfortunately no easier than removal. It likes to wedge itself into place "off angle". Just proceed slowly, and use a DULL end-tipped instrument to press into place where it's not going willingly. Very easy to puncture... There is a reason this is step number 13!!!

14. As WA9SLU says:

> "I'm sure my plastic cover has the same dent yours has.
> Consider it a "badge of honor"....wear it proudly....
> the few, the proud, the Bird slug repairers!"

73,

Dave WB0GAZ dgf@netcom.com (and now the owner of an extra 50H slug...)
Gordon WA9SLU glsmith@koess1.delcoelect.com (the pioneer who inspired me!)