

NOAA WIND PROFILER MODIFICATION NOTE 2
(for Electronics Technicians)

SUBJECT : Installation of GOES Coaxial Surge Suppressor

PURPOSE : Improve GOES lightning protection

EQUIPMENT AFFECTED: PROF

PARTS REQUIRED	Qty	Description
	1	PolyPhaser IS-50NX-C2 coaxial surge suppressor
	1	Brass shim (packed with suppressor)
	1	RG-8 coaxial cable, 12 in long, w/ right angle type-N connectors, Pasternack P/N PE3698-12
	8 ft	Flat ground braid
	1	No. 4 screw-type ground lug
	1	10-32 x 3/4" pan head screw
	1	No. 10 star washer
	1	No. 10 lock washer
	1	10-32 nut
	10	Nylon cable ties, 3-5" long
	4	Nylon clips with adhesive backing

MOD PROCUREMENT : The Profiler Program Office (PPO) will ship the required parts to the station without station action.

SPECIAL TOOLS AND TEST EQUIPMENT REQUIRED : Socket wrench set, box wrench set, or crescent wrench. for up to 3/4" bolt

5/16 inch hex head wrench or full set, up to 3/8"

TIME REQUIRED : 1 Work hour, plus travel

EFFECT ON OTHER : None. File this note in EHB-9.
INSTRUCTIONS

CERTIFICATION : The PPO tested this modification.

General

There have been many occurrences of lightning damage to the Geostationary Operational Environmental Satellite (GOES) data collection platform. We suspect that differences in grounding between the GOES antenna and the rest of the system expose the GOES platform to lightning-induced surges. This note provides instructions for the installation of a surge suppressor in the coaxial cable between the GOES transmitter and GOES antenna.

Because different contractors did the electrical hookup throughout the profiler network, there may be some differences between the following descriptions and your profiler site. Call the Profiler Control Center (PCC) if you have problems during the installation.

Procedure

A. Installation

To perform the installation, proceed as follows.

1. Call the Profiler Control Center (PCC) at (303) 497-6033. Request the exact universal coordinated time and set your watch. The PCC has a WWV receiver. You will use your watch time to reset the profiler after completing the installation.
2. Turn off the profiler equipment using the prescribed power-down procedure.

WARNING

In the next step we disconnect the AC power to the shelter. This turns off all interior lights. Opening the shelter door normally provides enough light to do the equipment changes. Use a flashlight if you need more light.

3. Turn AC power off at the service entrance disconnect, not just at the panel main power breaker. This removes all AC power from inside the breaker panel for your safety.
4. Remove the cover from the circuit breaker panel.

5. Refer to figure 1. Locate the incoming service ground. It should be marked with green tape and terminate at a large ground lug near the top of the panel. Please let the PCC know if there is no incoming ground wire from the AC service. You may complete this installation without the ground service. The PPO will upgrade any profiler site that lacks the 3-wire plus ground service.
6. Open the access door on the GOES equipment box.
7. Turn off the DC OUTPUT POWER SWITCH located at the top of the 3489A Uninterruptible Power Supply. Disconnect the AC power cable from the PRIMARY AC POWER INPUT (31).
8. Disconnect the RF cable from the TRANSMITTER OUTPUT (J1) on the 3422A GOES Transmitter.
9. Disconnect the data communications cable from the PROGRAMMER PORT (J1) on the 3401A Master Control Module.
10. Remove the screws holding the rails to the box and remove the entire unit. Do not disassemble the equipment from the rails.
11. Thread the flat braid up through the conduit between the GOES equipment box and the circuit breaker box. To do this, tape the end of the braid to the existing AC cord in the GOES box and pull up the AC cord in the panel enough to expose the braid. Remove the electrical tape and pull up enough braid to connect to the ground lug in the breaker panel. Route the braid so it cannot touch any AC bus bars or hot contacts. Do not loop or twist the braid. Use tape or cable ties and secure the braid to the existing ground wires inside the panel. Avoid sharp bends. Refer to figure 1 for ground braid routing.
12. Loosen the ground lug in the breaker panel. Insert the flat braid and tighten the screw lug as shown in figure 1. Be sure to replace any other ground wires that were in the lug. If there is no incoming ground service, connect the braid to the same lug as the other ground wires. Tell the PCC of the ground deficiency.
13. Replace the circuit breaker panel cover. Route the ground strap along the inside walls of the GOES enclosure. Attach it to the walls with the supplied adhesive clips. Install the GOES equipment back into the GOES enclosure and secure with the mounting screws.

14. Mount the PolyPhaser coaxial surge suppressor on the right rail using the 10-32 hardware as shown in figure 2. Install the suppressor with the ANTENNA port pointing to the back of the box and the EQUIPMENT port pointing toward you. The lettering on top of the suppressor should be clearly visible. Mount the suppressor as low as possible within the 12" length of the RG-8 coax cable between the suppressor and the TRANSMITTER OUTPUT (31) of the 3422A GOES Transmitter.
15. Cut the flat braid long enough to reach the surge suppressor with a little slack and screw it to the #4 lug. Avoid loops or twists in the braid. Connect the lug directly to the surge suppressor as shown in figure 2.
16. Connect the 12" RG-8 coax cable between the EQUIPMENT port of the suppressor and the TRANSMITTER OUTPUT (31) of the GOES Transmitter as shown in figure 3. Keep the cable connector away from the ACTIVATE button on the 3401A Master Control Module.
17. Connect the RG-8 cable from the GOES antenna to the ANTENNA port on the suppressor. Pull the foot or so of slack in the cable from the antenna out of the GOES box to the outside of the profiler shelter. Form a drip loop below the antenna cable entry to the shelter. There have been problems at some sites with water coming into the shelter through the GOES cable port.
18. Connect the AC power cord and data communication cable to the GOES unit and switch ON the DC OUTPUT POWER SWITCH on the power supply.

This completes the installation.

B. System checkout

1. Turn the AC power on at the service disconnect.
2. Turn the profiler equipment on using the prescribed power-up procedure.
3. Log into the system with the portable maintenance terminal (PMT). This may take 10 to 15 minutes because the system time from the GOES unit is not available for the data processor. Once logged on, set the system time following the PMT instructions. Use either the watch time set in step one of the installation procedure, call the PCC for the exact time, or call WWW. The WWW telephone number is (303) 499-7111. Call the PCC for help with PMT operations.

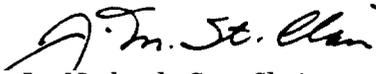
After setting the system time, select System Initialization from the system operations menu of the PMT and restart the system timing. This will force the Data Processor to communicate with the GOES unit and synchronize the two clocks.

To verify the operation was successful, go to the GOES MCM menu on the PMT and check that the parameters (next transmit time, battery voltage, temp, etc.) appear on the lower half of the screen. If the parameters are not on the lower half of the screen, contact the PCC.

4. Call the PCC and tell them that the installation is complete. Describe any problems or discrepancies with the procedure.

Reporting Modification

Target date for reporting this modification is 30 days after receipt of the kit. Report completion on WS Form H-28, Engineering Progress Report, according to instructions in EHB-4, part 2, using reporting code PROF.



J. Michael St. Clair.
Chief, Engineering Division

Attachments

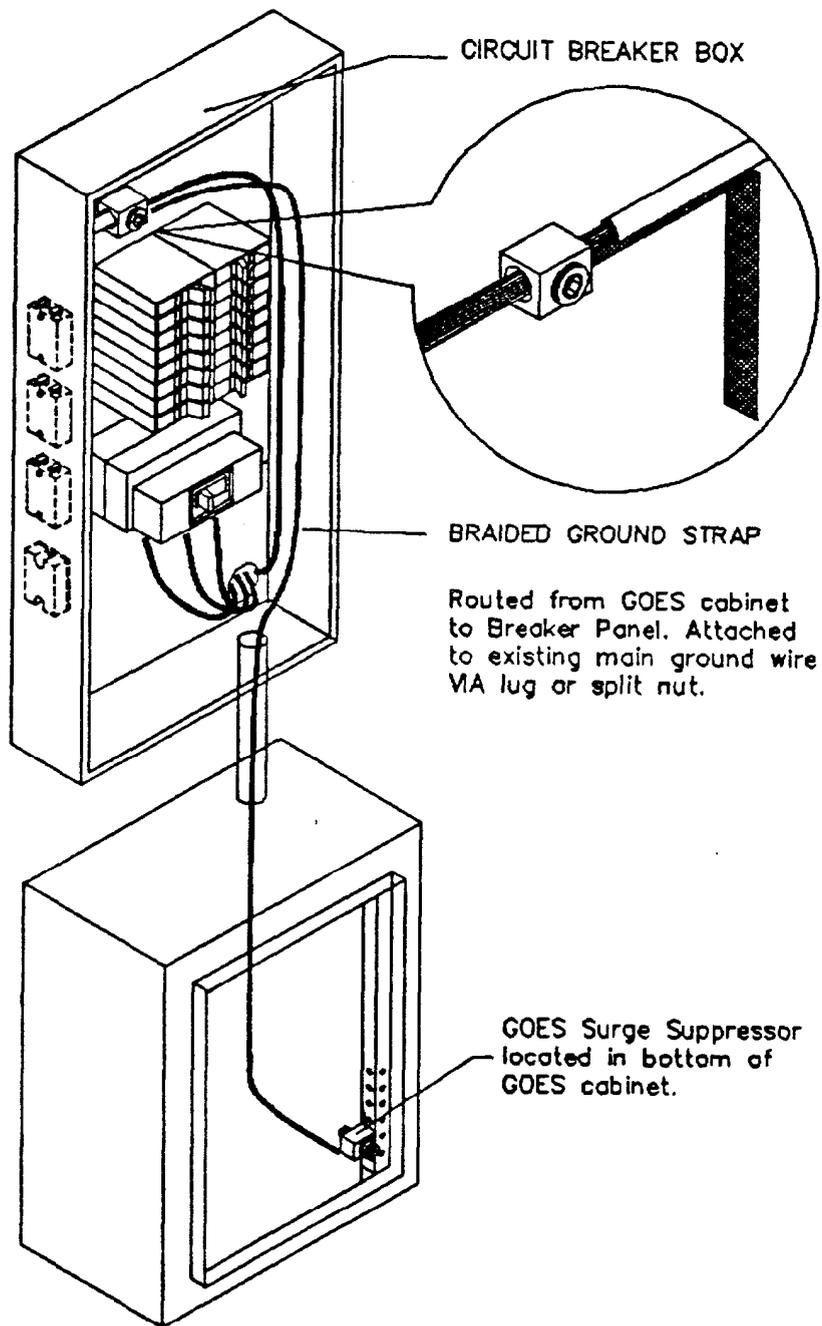


Figure 1
GROUND BRAID ROUTING

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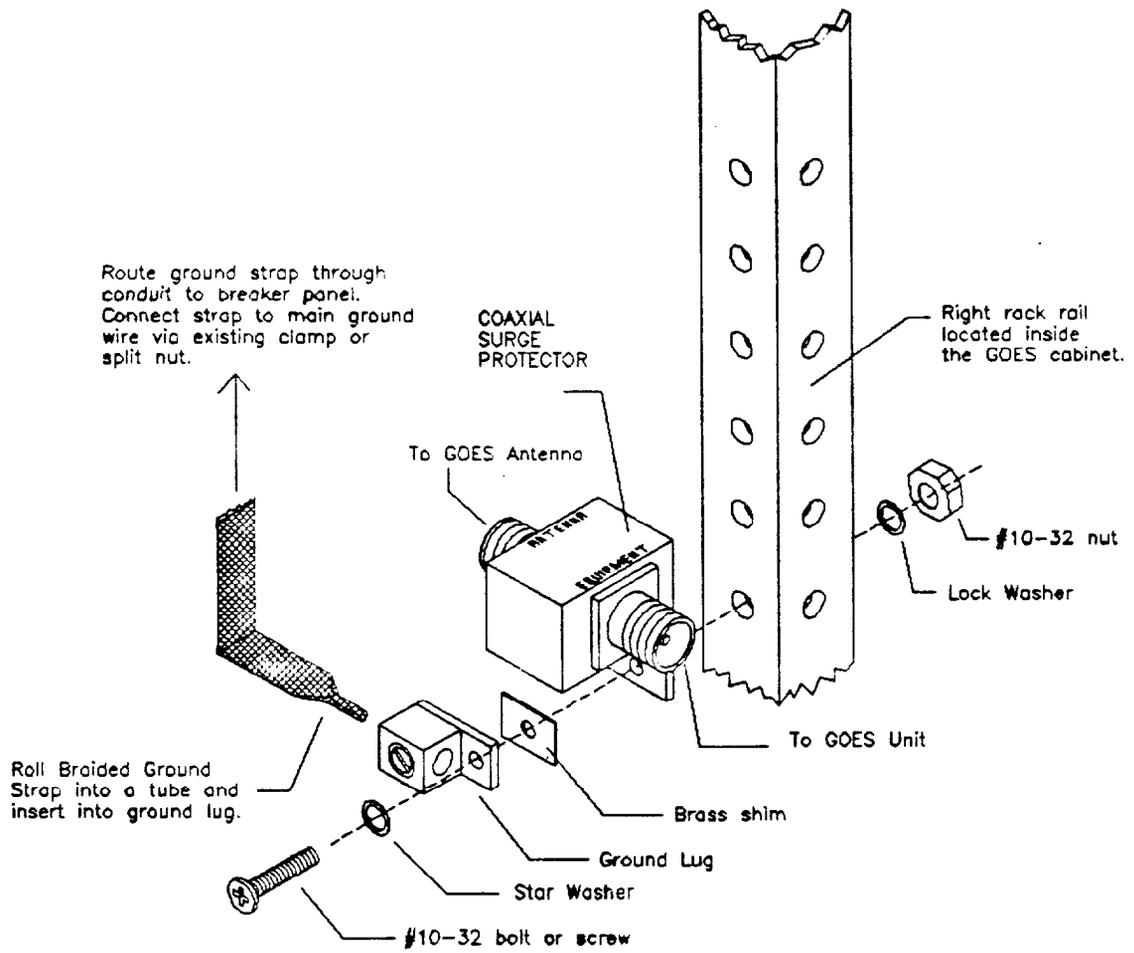


Figure 2
 SUPPRESSOR MOUNTING DETAIL

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