



1.3 Setting up an RTI remote radar and transmitter in the field

Materials:

- Cruiser vest
- Cell phone
- RTI remote radar mounted on a dry wall lift
- Level
- Three carbuncles
- Two U-bolts

Procedure:

- 1. Choosing a location for the RTI remote radar**
 - a. The terrain around the radar should be relatively flat and stable to allow for the dry wall lift to be steady
 - b. The landscape should be flat with as few obstructions as possible
 - i. Obstructions that block radar signals include buildings, forests, hills, and highly reflective structures such as cars (do not place the radar close to a parking lot)
 - ii. If an obstruction occurs to one side of the radar, the radar will be blind to clear spaces beyond the obstruction
- 2. Accessing the radar location at airports:**
 - a. Put on a cruiser vest
 - i. Most airports require this for security reasons
 - b. Access the infield where the remote RTI radar is located
 - i. To access the infield, you are required to notify and obtain clearance from the airport radio towers using codes
 - ii. Airports will usually send an employee to escort researchers out on to the tarmac where the radar is located but through some airports, it is possible to take a course in radio air traffic control communications. This will allow researchers to proceed without escorts
 - iii. In cases where the remote RTI radar is located in an area inaccessible to cars, it is also possible to use ATVs at airports provided researchers take a course in ATV operation
 - c. Before entering the field, make sure to have your cell phone and the numbers of the appropriate contacts to return from the tarmac
 - d. If you are driving your own vehicle, most airports will require hazard lights to be turned on
 - e. *Never approach the tarmac without permission or an escort!*
- 3. Setting up the RTI remote radar**
 - a. Lift the RTI remote radar mounted on the dry wall stand so that it is upright



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- b. Turn the prongs of the dry wall stand so that the front of the radar is facing
- c. exactly North
 - i. The sticker on the base of the radar indicates North (Fig. 1)



Figure 1. Image of sticker indicating front of radar that should face north.

- ii. Use a compass to align the radar with North (this can be corrected after the radar has been set up if a dry wall stand is used)
- d. Use a level to ensure the radar is horizontal
- e. Secure the dry wall lift to the ground using dog leash anchors (Fig. 2) or other strong pegs that will stay in the ground



Figure 3. Image of a dog leash anchor used to secure the dry wall lift to the ground



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- i. Strap cables or guy wires across each of the three legs of the dry wall lift and bolt them to chosen pegs in the ground
 - ii. Bolt guy wires attached to three anchors in the ground to three of the dry wall prongs to make a tripod-like secure structure
 - f. Use carbuncles on each of the guy wires to tighten them
 - g. Place the radar pelican case underneath or near the tripod with a cover to protect it
 - h. Attach to appropriate cords to the sockets in the side of the pelican case (Fig. 4)
- 4. Using an inverter (needed if the power source is a solar panel)**
- a. Place an inverter inside one of the slots in the wooden grate so that it will not move around and damage equipment when transporting
 - b. Take the black alligator clip of the inverter and clip it to one of the negative (black) battery posts on the batteries
 - c. Make sure connection is snug and will hold when the pelican case is closed
 - d. Take the red alligator clip and clip it to the positive (red) battery post on the other battery to ensure energy is drawn from all the batteries (Fig. 5)
 - i. However many batteries the researcher chooses to use, the inverter clips must be at opposite ends of the batteries connected in parallel to receive charge from all of them
 - e. Plug the power bar into the inverter
 - f. Switch on the inverter

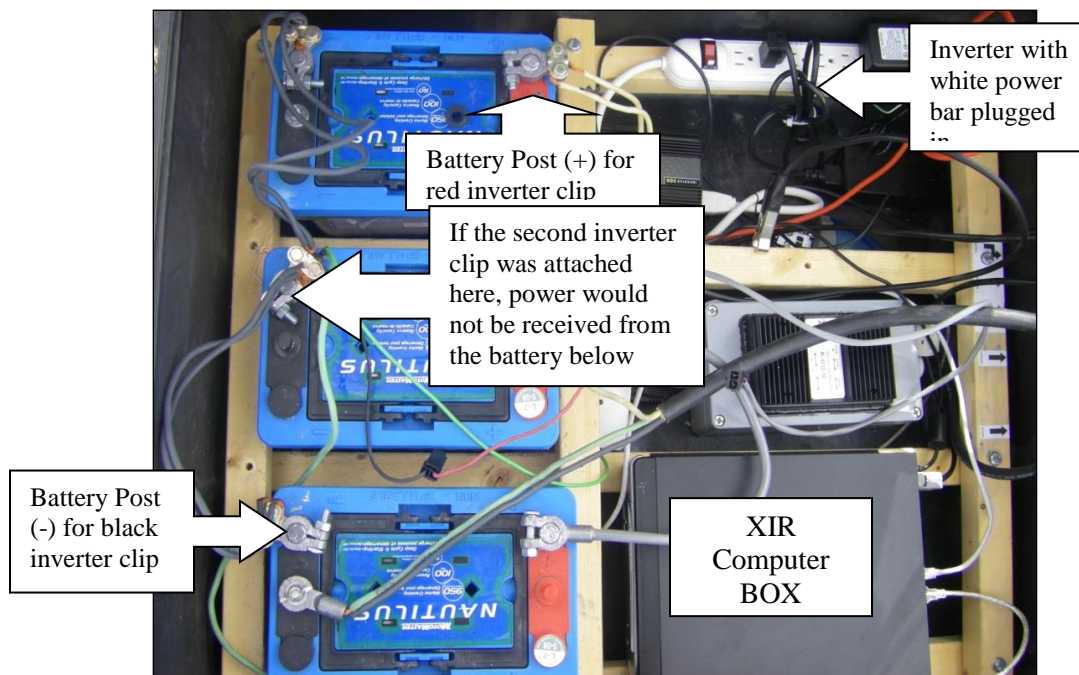


Figure 5. Radar pelican case showing how inverter clips must be attached to either end of a set of parallel batteries to receive the charge from all of them



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5. Without an inverter:

- a. Plug the power bar into an extension cord running from an outlet
- b. Ensure that the connection between the plugs is inside the pelican case, or if not possible, make sure the connection is sealed
 - i. This can be done with electric tape, a plastic bag, then duct tape
- c. Make sure length of extension cord is lined with red flags so vehicles or lawn mowers not pass over it (Fig. 6).



Figure 6. Radar with red flags lining extension cord and tarp covering pelican case.

6. Attaching the transmitter

- a. On one of the legs of the dry wall lift, attach the radar transmitter using U-bolts or another method
- b. Ensure that the transmitter is oriented towards the site in which the receiver will be located (usually where the researcher will be taking observations)

7. Turn power bar on

8. Push the power for the XIR Box

- a. A blue light will come on

9. **Clip the radar to the power source** via the little black clips (one black clip is attached to cords coming from the hole in the pelican case and one attached to the batteries) (Fig.7).



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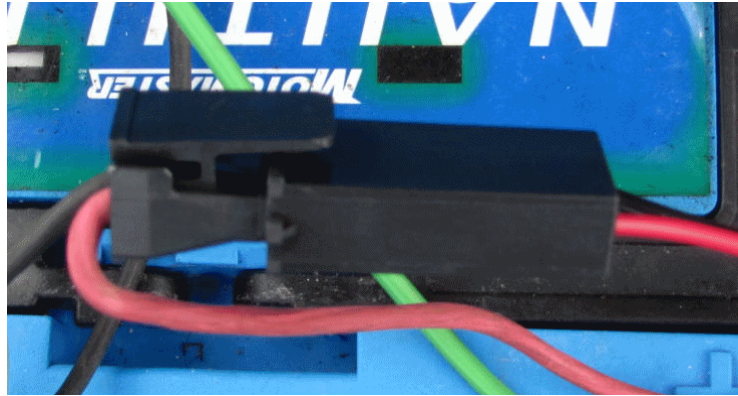


Figure 7. Battery power for radar clipped in (overtop batteries).

10. Ensure that the lights on the back of the transmitter (white box attached to the leg of radar) are turned on and that signal reading is strong (lots of green)
11. Close the pelican case, and if it is raining or you will not be returning at the end of the day, replace white tarp and bungee cords (Fig.6)
12. To shut down the system, push and hold down the XIR power button for two seconds to put the computer in shutdown mode and plug in the battery charger if disconnected/needed