

2015

K5NMB Communications Trailer Manual

“Or... The care and feeding of the
Communications Trailer”

Transporting the Communications trailer, setup and operations of trailer
equipment.

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Relief Communications Unit
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PURPOSE:

The purpose of this manual is to provide basic instructions and information needed for the transport, setup, operation, teardown and preparation of the mobile communications trailer (as presently configured) for storage. It cannot be, nor is it intended to be, an operations manual that is complete in any respect. It is intended to offer basic guidelines, but situations are never the same from one deployment to another and common sense must prevail in some cases. In many deployments, the person who transports and sets up the unit will not be the only one to use it, and may not be the same one who must teardown the unit and prepare for transport back. There might be yet another person who does the actual transport. During the Little Bear fire deployment in 2012 for instance, one person transported NM COM1 to the first site, others set it up and ran the unit, then moved it to the second site while a different person transported it back for repairs. Then a fourth person returned it to the new deployment site where it was operated by teams from other states as well as our unit members. The last operator on site got it ready for transport and someone else then transported it back. There were 45 amateur operators involved in the Little Bear fire communications portion of the deployment. Most of these had never seen or even heard of our unit. Training and preparation was what made the passage of 2,218 messages in 58 days possible.

- a. Transport – The action of removing from storage, preparation for deployment, connection to a towing vehicle and rules for the road in-route to the deployment site.
- b. Setup - The procedures that must be followed upon arrival at the deployment site. This includes ICS requirements as well as the physical preparation of the equipment.
- c. Operation – This includes how to maintain water and septic resources and other aspects of RV use as well as procedures for equipment operation and spiritual guidance. The South Bears web site has an extensive manual available for download that covers phonics, procedures and forms. We recommend every emergency radio operator be familiar with the material in this manual.

- d. Teardown – What is necessary to end a deployment is vital for the next deployment of the unit. Everything has its place is the key in teardown.
- e. Storage – Whether it is for long term storage for the winter or short term in the warm months, if this is not done correctly it will add a considerable amount of work before the next deployment and may affect how quickly the unit takes to become deployable.

Pre Deployment of trailer

- (1) Verify that the registration and insurance cards are located on the range hood and that they are current.
- (2) Check propane levels
 - a. Verify the levels of propane in the tanks
 - b. If required, remove tanks and fill
- (3) Charge radio batteries prior to departure
 - a. With an OHM meter, check levels on the house battery
 - i. The house battery will charge during transit.
 - b. With an OHM meter, check levels on the batteries used for the radios.
 - c. Charge batteries as needed.
 - d. Take some distilled water to resupply the batteries.
- (4) Fill water tank
 - a. Verify the water level and fill as required.
 - b. Remember, you are adding 8# per gal of water and the tank holds 30 gal.(240#)
- (5) Check air in tires
 - a. Verify all tires have a maximum of 80lbs of pressure, including the spares.
 - b. The recommended pressure is molded into the side of each tire.
- (6) De-winterizing
 - a. Flush all water lines and fill tank.
- (7) Visually verify that all exterior lights are operational.
- (8) Visually verify that all interior lights are operational.

TRANSPORTING the COMMUNICATION TRAILER

Preparing the Communications Trailer ready for transport.

The purpose of this section is to give instructions and guide lines to make our communications trailer ready to move for deployment or return to our home location. Some sections may not apply to each movement depending on the prior preparations for movement; but all sections must be verified for completion.

Warning!

It is imperative the while transporting the communications trailer on the highway, you do not exceed a 65 mph speed. The reason for this speed limit is due to the age of the trailer and the use of trailer tires on the trailer.

Definitions:

Curb side: Passenger side of trailer



Photo showing curb side of trailer

Equalizer hitch: This is an assembly that helps transfer the weight of the trailer equally to the tow vehicle.



Photo showing the equalizer hitch components

Equalizer bars: an “L” shaped round bar (two required) that works with the Equalizer hitch to transfer the weight of the trailer equally to the tow vehicle.



Photo showing Equalizer bars

Stabilizers: Jacks that are extended to level the trailer.



Photo showing Stabilizer Jack

Sway Bar: A bar assembly that can be adjusted to prevent the trailer from swaying while driving down the highway.



Photo showing Sway bar assembly.

Street side: Driver side of trailer



Photo showing street side of trailer

Jack stabilizers:

- a. There are four (4) stabilizer jacks located 1 at each corner to the trailer.
 - i. These jacks **must** be raised completely.
- b. There may be wood blocks supporting the stabilizer jacks, if so the must be stored in the compartment located at the rear of the trailer on the curb side.



Photo of Stabilizer jack. Position one at each corner of trailer.

Sewer:

- c. There is a drain valve located near the center of the trailer on the street side.
 - i. With the sewer hosed hooked up to a certified dump station, open the valve and drain the waste tanks.
 - ii. One tank contains gray water, from the sinks and shower while the other tank contains (black) water from the toilet.
 - iii. Close the drain valve on the trailer.
- d. Disconnect the sewer hose and store.



Photo of

Sewer connection located aft of wheels on street side of trailer.

Electrical:

- e. **If you are connecting to Shore power, shut off the power at the RV pedestal.**
 - i. Open the compartment that stores the power cord for the trailer.
 - A. The electrical compartment located near the center of the trailer on the street side.

- ii. Connect the power cable to the 30 amp connector on the RV pedestal.
- iii. Close and lock the electrical compartment.
- iv. Turn on the power at the Pedestal.



Photo of Electrical connection door, located aft of the wheels on the street side of trailer

- f. Powered antenna:
 - i. As you face the command center radio table there is a switch on the wall to the right of the window which raises and lowers the powered antenna. This is the 2meter/ 70cm antenna.
 - ii. Turn on the power to the antenna switch and lower the antenna. The light indicator will change color from green to red. Indicating the antenna is in the travel position.



Photos of Power antenna and control switch, located just aft of window in radio room on curb side of trailer.

g. Tripod antenna system:

- i. Disconnect all coax antennas from the trailer, (located in the compartment located under the window under the communications table on the outside of the trailer.
- ii. Disconnect all coax antennas from the antennas, coil the cables and stow inside the trailer.
- iii. Disassemble the antennas and stow inside the trailer.
- iv. Disassemble the antenna tripods and stow on the rear rack of the trailer.

Water:

- a. The Water hose is stored in the bathtub in the bathroom.
- b. If using shore water, install a pressure relief valve between the shore water and the hose to the trailer.
- c. If using shore water to fill the holding tank, the pressure relief valve is not need.

- a. The tank will hold 30 gal. of water.
- b. Stow the Water hose in the bathtub in the bathroom.



Photo of water connection door located forward of wheels on street side of trailer.

Hitch connections:

- a. **This step is very critical.** You will be making the connection that will secure the trailer to the tow vehicle; this is the only thing that holds the trailer to the tow vehicle.
- b. Install the equalizer receiver onto the tow vehicle and install the safety pin.



Photo of equalizer receiver installed

- c. Back the tow vehicle up and align the hitch with the receiver on the trailer. (This may take two people; one spotter and one driving the tow vehicle.)
- d. Lower the trailer onto the ball of the hitch.
- e. Secure the trailer safety latch and install the safety pin.
- f. Attach the electrical connector to the tow vehicle.



Photos of electrical connection

- g. Installing the equalizer bars.
- v. These bars can be installed on either side of the hitch assembly.
- vi. Place the equalizer bar on the driver side of the hitch. It will snap into place when installed correctly.
- vii. Using the equalizer bar tool, rotate the hook assembly down on the street side of the trailer and hook the third link of the chain on the equalizer bar and rotate the hook up until it is in place.
- viii. Using the equalizer bar tool, rotate the hook assembly down on the curb side of the trailer and hook the third link of the chain on the equalizer bar and rotate the hook up until it is in place.



Photo of equalizer bar tool in use



Photo of equalizer installed, one bare located on each side of hitch assembly.

h. Installing the sway bar assembly.

- ix. Place the slider bar onto the equalizer ball; this is located on the curb side of the equalizer hitch.
- x. Install the retaining pin in the slot on the stabilizer bar.
- xi. Place the slider bar onto the equalizer ball; this is located on the curb side of the trailer frame.
- xii. Install the retaining pin in the slot on the stabilizer bar.



Photo of Sway bar installed.

- xiii. Verify that steps I through IV have been correctly completed.**

Final walk around:

- d. After completing the above steps, make a final walk around of the trailer and tow vehicle.
 - xiv. You are looking under the trailer and tow vehicle and around the site for any items left behind, trash, equipment and anything that is out of place.

END OF TRANSPORT SECTION

B. Set up

1. Now what? You have arrived on scene and checked in with the Incident Commander. He has told you where to set up. What do you do first?
2. Setting up the Mobile Communications trailer.

Caution:

You may need to negotiate with incident command where you are going to locate the Communications trailer. Remember, you need a large clear area for the HF antenna location away from metal buildings, etc.

3. Position the communication trailer in the location you and the incident commander have agreed upon.
4. Power – which do you need and where do you get it?
5. VHF/UHF Radio equipment.
6. HF Antennas – where are they, what are they and where are they going to be?
7. HF radio equipment.
8. Digital station setup – you need what? Hooked up how? Run by what?
9. Tear down – when you are ready to go home.

What do you do first?

Before you deploy you should know with who you are to contact (the Incident Commander), where they are (location) and when you need to do it (date and time)

to arrive on scene). When you get on scene, the Incident Commander will tell you about the local needs. Everything you do with the equipment and antennas depends upon this information. Get it right!

Ask the Incident Commander:

a. Who does he need you to talk to? You may need to be in constant contact with the local Emergency Operations Center, Incident Command, Teams in the field, Albuquerque Operations and maintain a schedule with NAMB. This will tell you what kind of antennas and radios you will need to setup. He will not know you need more room for HF than you do for VHF. Do you need to setup the cell phone repeater on the unit to help with cell phones at base camp? If you need to talk into the next valley and there are no repeaters on top of the ridge in between (the Mogollon flood in 2013), you will need to plan how to overcome this problem. You might set a repeater on top of the ridge or you might use two HF stations with NVIS antennas, or you might make some other arrangements. *Do you have all the equipment and operators you may need?* Your Blue Hat will help you with these decisions if you are having trouble.

When does the IC need you to talk to them and what do you need to send?

You may need to have constant contact with the county EOC and IC, an hourly schedule with teams in the field, intermittent contacts with Albuquerque and a nightly schedule with Albuquerque and NAMB in Ga. You may need to send e-mails (Through Airmail) or text (PSK 31 through FLDIGI). You may only need a voice station. You need to know.

Where you are to set up.

If the incident commander wants you to set up the mobile communications trailer in a row of rv's (as happened at Little Bear in 2012) and you need to use HF

antennas, you will need to explain you need at least 100' space in every direction around the unit to operate HF (for the antennas).

What kind of power is available where you are to set up?

This will tell you whether you need a generator or not. You will also have to plan for gasoline and noise if you use the generator. Can you use the generator for a few hours a day to charge the batteries or will it need to run continually?

- e. What arrangements are there for food, water and sewage? There may be everything, some or none of these things. Plan accordingly.

- f. What schedule are local things on? Do you have a morning and evening meeting with the teams? Who are the Blue Hats on site? (Do you have contact information for them?) Are there maps of the working area? (You may need to keep track of where all teams are.) When will your day start? (It ends when you get done.) When and where do you eat? What are the sleeping, bathroom, laundry and shower arrangements? Others may ask you about these things also.

Look at the site where you are going to be. It might be right next to the building Incident Command is in with commercial (shore) power, water and sewer hookups. It may be half a mile away under power lines in a ravine. These factors must be looked at. What direction is north? Look at a map and locate Albuquerque and any other place you have been requested to be in contact with. Why? You must 'aim' your antennas. If you must contact the North American Missions Board Disaster Operations Center (NAMB DOC) on a regular basis, you may need to set up a second HF antenna to contact them. It depends upon where you are and where they are in relation to Albuquerque.

Setting up the Mobile Communications Trailer.

It is very important that it should be level. Many things depend upon this – refrigerator, water, sewer and operator comfort. None of the aforementioned items will work correctly if the van is not level, and that includes the operator. If the trailer is off level by very much, it may be easier to drive the low side wheels up onto some boards to get the trailer closer to level. Most things work better and last longer if it is stable also. When the unit is in position to remove from the tow vehicle, follow these procedures.

First chock wheels on both sides of the trailer.

Using the “X-CHOCK TIRE LOCKING CHOCKS” located inside the trailer just inside the main door. These are mounted between the tires on each side of the trailer and tighten the large nut on the top of the chock assembly to spread the chocks against the tires. This will tighten the chocks against the tires preventing the trailer from moving.

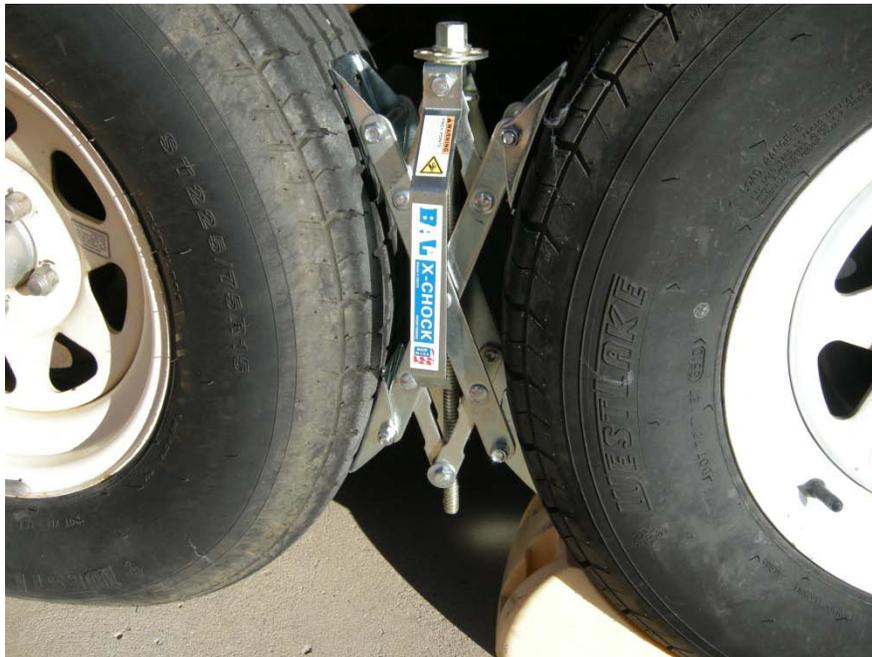


Photo of “X-chock tire locking chocks” installed, position one on each side of trailer.

Get the extension for the tongue, mounted, crank down, landing leg

This will be found just inside the main door on the floor. Place support pads on the ground and slip the landing pad over the leg and crank down the leg with the extension on it. You will find levels mounted front and rear of the van on the corners. Use these to level the unit. You can only level front to back at this time. You will need to disconnect the tow unit at this same time. Place the equalizer hitch (sway bar) under the van at the front of the unit for the time being.



Photo of Tongue down with landing leg and tongue lock installed

Get the stabilizing jacks

From the compartment forward of the rear rack and preposition one at each corner. You may also need to get wooden planks to put under the jacks to raise them and to keep them from sinking into the ground or pavement. They too are in the rack. Preposition them at each corner also. Only place the jacks on the frame of the trailer for stability. You may now start to level the unit from side to side with the jacks and wooden planks using the mounted levels as guides. The trailer should now be level and stable, meaning it does not shake when someone moves inside of it. To assist in leveling the trailer, you may need to drive the trailer up

onto some wooden blocks if the trailer is located on uneven ground (from side to side). This will help when attempting to level the trailer from side to side.



Photo of Stabilizer jack installed, position one at each of the four corners of the trailer.

Remove the doormat and place on the ground

Place the doormat on the ground in front of the door. Pull the stairs out and get them into position using support under the first step if available.

Remove the packing cases from the interior and place on the ground under the trailer to the right of the door.

Sweep the floors and wipe all counters before proceeding to the next step.

Wheel/tire covers.

Install the wheel and tire covers over the tires. By installing the wheel and tire covers, this will prevent the sun's ultra violet rays from drying out the tires and will extend the life of the tires.

Unlock the outside bathroom door. and remove the items that are on the floor.

Remove as needed, things that are stored here and place on ground under the trailer, sweep and clean here also.

There should be a white table folded up against the wall in the kitchen.

Fold down the legs and place up against the wall to the left of the main door inside the unit. If a digital radio is needed, or a place for someone to work or just space for the coffee pot and cups – this is the place. Place the folding chairs at appropriate spots.

At the front of the kitchen on the left wall is the meter to check water and sewer levels.

Make sure all is ok - what should be is full and what should be empty is empty.

You should now be ready to start the operational setup procedure.



Photo of trailer control panel located on street side forward of the stove.

Let's start with power.

All the lights, roof vent fans, water pumps, refrigerator (when set to 12 volts DC – IT CAN ALSO RUN ON 110 VOLTS AC, OR ON PROPANE GAS) and stereos run on 12 volt DC (Direct Current). The 110 volt wall plugs, air conditioning fan or AC itself and the microwave run on 110 volt AC (Alternating Current). Even when plugged into shore power, the 12 volt DC powered items run off the two batteries located on the tongue of the unit. These charge automatically when the unit is

plugged into shore power. Under the kitchen sink at the front of the unit you will find a “light switch” on the right side of the cabinet. If it is in the up position, the unit charges and runs from the battery on the right side. If it is in the down position, the unit charges and runs from the battery in the left position. To keep both batteries on the tongue of the unit charged and ready for use, you must switch both up and down (right and left batteries) on this switch and give enough time to charge the battery in that position. At a minimum it should stay in one position for at least two (2) hours to charge the battery. The batteries used are deep cycle batteries, not your standard car battery. This is true whether we are talking about the batteries on the tongue of the unit or the batteries we use to run the radio equipment. There is a battery charger on the unit, under the stereo by the main door to recharge the batteries if that becomes necessary. It can also be used to charge the RV batteries at the front of the unit. It requires 110 volt AC to work. This means either we must be plugged into shore power or we must have a generator running capable of creating 110 volt AC power. The main circuit breaker panel is located on the outside panel of the bed.

What is Shore Power?

This is what is called commercial power, or in other words, where you can plug in. Shore power comes in three (3) variations. RV parks may offer 220 volt AC 50 amp service (a 4 prong plug, our unit does not use 50 amp service) or 30 amp service (a 3 prong plug this is the one that our unit has). The 50 amp service costs more. This uses the big plug that comes on the unit. You must have at least 30 amp services to use the air conditioner. The most frequent power source we utilize is a 10 or 15 amp 110 volt AC source. This is what you get when you plug the adaptor on the 220 volt plug that comes with the unit and plug into a wall. You may run the fans but not the air conditioning with this power. It is sufficient for everything else. We carry extension cords and adaptors to plug the unit into a wall plug.

Do we have to set out the batteries if we have commercial or “shore” power? Yes is the short answer. **If the shore power fails (and in some situations and locations it has) we will use batteries and/or generators to power our stations.** We need to have them

setup for a quick transfer of power so we do not delay our operation any more than necessary. They should be in place and ready to just connect the battery cables.

Batteries first.

In NM, in most cases, we can get away with setting the batteries on the dry ground. In humid and wet areas, setting a battery directly on the ground will allow the battery to slowly discharge. The humidity will allow charge to follow the moisture on the outside of the battery to the earth ground. To stop this, we need to set the battery up on a pair of boards or blocks – something that will break the connection between the ground and the base of the battery. The batteries are either in the rear rack or they are on the floor of the bathroom. The batteries should be placed below the access door of the unit where the antennas connect. Inside the door in the panel you will find a set of ‘modified jumper cables’. Connect the red cable to the + connector using the wing nut and the black end to the – connector. Then you may connect the battery cable clips to the proper poles on the battery. Red to + and black to -. This will power the radio stations only, not the trailer. The trailer has batteries too and you will have interior lights, fans, water even if there is no commercial power available. You will be able to operate better than 24 hours on battery power by switching to back up batteries when needed. You will need to be able to charge the batteries after that amount of time. The a/c will not function on this battery power. If you need to have full power to everything, you will need to setup and use the generator if you have no shore power.

When we are plugged into shore power, our radio equipment has power supplies that run on 110 volt ac and converts it to 12 volt dc for us to use. If we switch from shore power to battery power, we need to make sure we switch our connection also. Leaving the radio battery connected when running on 110 volt ac will ruin the battery because the power supply will also charge that battery if it is connected and there is no automatic shut off when the battery has a full charge. The trailer batteries on the tongue of the unit have this protection. Just disconnect the cables from the radio battery and leave the cables next to the battery on the ground, but not touching anything that would conduct electricity.

What equipment do you need to use on our unit?

If you are within range of the Mega Link here in New Mexico, you may only need to setup a vhf/uhf (very high frequency/ultra high frequency) station. (We used VHF only, both Trailer and mobile units, on deployments to the Little Bear fire in 2012, Ojo Encino on the Navajo Nation in 2008 and at the flooding at Hatch, NM in 2006.) If you are in Florida with local needs, you may need to setup (2) two high frequency (HF) – one for NM and one for Ga, VHF/UHF for local teams, CB (citizens band) for truckers that may be having trouble finding where to deliver supplies and FRS (family radio service) to communicate with Incident Command and generally around the base camp for local needs. (At Hurricane Ike in 2008, we used VHF for local contacts and HF to contact Albuquerque) You may need to run a net or contribute to a net run by others. If you are in a hole or too close to one of the locations you need to talk to, you may need to setup a NVIS (near vertical incident sky wave) antenna. If you are to use the program ‘AIRMAIL’ you may need to setup an inverted “V” antenna. Cell phones may work or not. We may need to set up our cell phone repeater to help around base camp. The information you have already gathered from the Incident Commander will tell you what you need to do.

The VHF/UHF radio station is first. Power is on – either 110v ac or 12v dc. The unit uses Yaesu 8800 model radios. At the main radio position, on the upper right (as you face the radio table) you will find one mounted to the bottom of the upper cabinet. (There is also one on the upper left but this is not the primary unit to use. We have hardware and software to use this as a packet or voice station while the radio on the right remains an active voice unit) It should be connected to both antenna and power connectors, but after traveling on bumpy roads they may need to be reconnected. There is a connector that runs to the power strip and an antenna coax that should be connected to the radio. On the right side of the operator position is the switch that raises and lowers the VHF/UHF antenna at the back of the unit. Make sure all connections are still in place. It too, uses the power strip. Using the switch on the right side of the window, raise the antenna. A red light will come on when it is fully extended.

Caution:

Raise the antenna slowly and visually check that the antenna does not get caught on the cables as it is being raised or lowered. Visually check the antenna to insure it is at full operating height.

If all is well, the next step is to find a local repeater and check that the unit is broadcasting and there are no problems with SWR (standing wave ratios). If there are no operating repeaters in the area, check with a hand held from the unit. If all is not well, find and correct the problem. Program in any frequency, tone and offset needed as per your instructions from the Incident Commander. Remember, *he will not know how to do these things* – he will only know what he wants you to do. You must determine what needs to be programmed into the radio to complete the mission he has given you. This may require you to setup a second vhf/uhf antenna. Failure of the primary antenna will also require this. The setup of the second antenna may be all that is needed or may have to be done in concert with an HF antenna. If this is done with an antenna being setup for hf, it bolts at the top of the hf antenna mast. If it is a stand alone (vhf/uhf only) configuration, most of the considerations for the hf antenna described below are still required. You must still select a site, guy the mast etc. Our vhf/uhf antennas bolt onto the mast using 2 u-bolts. The coax feeds through the bottom of the antenna and requires you to unbolt and re-bolt the bottom. Congratulations! You are finished with the first station!

Once you have basic VHF/UHF capabilities, you are ready to start putting up HF antennas if you need them.

First, how many do you need? Step outside the unit and find what direction the antenna(s) need to be pointed.

Note:

You will need to know which direction is North, and the direction Albuquerque is and any other station you may need to have contact with.

If they are within 45 degrees (if they form a 'v' with the unit at the point) or 180 degrees (if they form a straight line with you in the middle) of angle of each other, you may use only one antenna. When the unit is not at the point of a 45 degree 'v' and the other location is not 180 degrees from Albuquerque, you may need to set up two antennas. Next, look for an obstruction for radio waves. Metal buildings or power lines that are too close will cause interference. Are you closer than 80 miles to a place you need to talk to, or are you in a valley with mountains all around? Then you need an NVIS antenna. When you plan your antennas, you must 'point' the antenna by putting the long side towards the point you need to contact. Let us pretend you need only one antenna and that it can be an inverted 'vee' design. The wire antennas should be in the storage marked for antennas. There are also other items stored in the same container. There are several to choose from. One of the designs, the w5rv, is perhaps the simplest to erect. It requires an LDO or manual antenna match as the standard Yaseu match does not work with it. We will choose this one. It has only one insulator on each end with nothing but insulated wire on it. The mast tripods and mast poles are on the rack at the rear of the unit. For an inverted antenna, you will need only one tripod and one set of mast poles. Your poles should reach 10 to 15 feet into the air. It is not critical. It can be 10 or 9 or 13 feet tall. As you lay out your antenna on the ground, be sure to make provisions for guy wires on the pole (you will need three) and a stake or some other place to tie off each end using nonconductive rope. You will also need to have orange cones ready to mark the wires for safety. Remember to place the long side of the antenna facing Albuquerque or wherever you need to communicate with. Next get enough coax cable to run from the antenna to the connector box on the side of the trailer that the doors are on. As you lay out the coax, remember to place it in a fashion to minimize the risk of tripping. After everything is laid out and you are satisfied all safety precautions are in place, recheck your direction that you need the antenna to 'point' and make sure the antenna is placed correctly. The next step is to assemble the mast.

The uppermost pole should have an 'eye' hook on it to run rope through and lift your antenna with. Place the tripod and put your poles together. Run rope through the 'eye' at the top and insure there is enough rope to go from the ground to the fully extended top and back to the ground. If your pole is very tall, you may need to guy it at about one third of the way up. If it is 15 feet or less, you can guy the tripod. Insert the pole assembly into the tripod. Visually check it is straight. Tighten the bolts that hold it in place in the tripod. Next, tie one end of the rope to the center piece on the antenna. You will find a convenient tie off point. Pull the rope and raise the antenna, tying off the rope on the tripod so that it is secure and the antenna stays at the top of the pole. The part of the antenna that you connect the coax to should remain at or near ground level. Tie off each end of the antenna, making sure the end is no closer than one foot off the ground. Connect the coax to the antenna and then to the connection point (marked hf) on the side of the unit and you are in business! Descriptions of inverted "V", dipole, "NVIS" and many other antennas are on the laptop with the unit and in the ARRL antenna manual and the ARRL handbook also on the unit. **Do not forget to place orange safety cones any place that requires them – ends of the antenna wire at a minimum.**

Now that you have your antenna setup,

You will be using a YASEU Model 897 radio for HF communications. This will be found in the plastic storage tub (it seems to change where home is). Make sure you get the one used for voice communication as the one used for digital has no microphone attached. Place it at the operating position and connect the power (red to red, black to black), antenna and the antenna tuner. If the radio you are using has an LDG tuner on the side, you are good to go. If it has a YASEU tuner, you will have to either use the separate LDG tuner or a manual tuner. I personally prefer the manual. It is faster and simpler to use. Whichever tuner you choose, each time you switch frequency, you must match the antenna to the radio. Turn on the unit and check the standing wave ratio or SWR. The SWR must be low or the unit will not function – it has built in safety features to protect the radio.

Now let us turn our attention to the digital station.

Set up the folding white table and chairs at the front of the unit if not already done. Get the laptop in the vinyl case (the one in the fabric case is for another use) and its power supply, the Rigblaster and the model 897 Yaesu radio without the microphone. The box for the Rigblaster has a diagram of how to hook up the wires. Microphone on the laptop to the external speaker jack on the radio. The audio in on the Rigblaster to the headphone jack on the laptop. There is a cable that runs from the Rigblaster's RS232 serial out to the laptop and there is only one place it will plug in. The microphone out on the Rigblaster goes to the microphone plug on the radio. The last connection is for the power on the Rigblaster. The radio plugs into the power strip on the wall. The Rigblaster and the computer require 110v. This can also be setup at the operator's position if it is so desired. That would simplify the antenna connection. Check swr and you are ready to go. The software is on the laptop. Plug the laptop power supply in. The password to get into the laptop is K5NMB – the same as the call for the unit. If the radio is correctly connected to the Rigblaster and to the laptop, turn the radio on before the laptop is turned on. The radio will click as the laptop starts up. The software of choice is fldigi and flmsg. Fldigi runs the radio and flmsg has all the forms we use with the exception of the SBDR daily report form. That is also on the laptop.

OPERATION

Trailer Power

As stated above, the trailer uses AC or Alternating Current to run the Air Conditioner, the micro wave and charge the on-board trailer batteries. All lights, stereos and ceiling vent fans run on 12 volt DC or Direct Current provided by the on-board batteries. The radio batteries are not automatically charged and a battery charger must be used. This charger is located under the stereo next to the door inside the cabinet.

We also have a 6500 watt power generator that is not usually transported with the unit unless we know it will be needed. The generator is electrically started and both the

gas and the ignition must be on for it to start. It uses about 1 gallon of gasoline per hour to run and presents a new series of challenges if used. It is not safe to run radios or computers directly from the unit. It can be used to power the trailer and the battery charger to maintain readiness.

Water and sewage

At the beginning of a deployment, the fresh water level should be full and the gray and black water levels should be empty. The trailer has a capacity of approximately 40 gallons of fresh water. This is used in cooking, cleaning and the bathroom facilities. In a city situation, the average person uses 100 gallons of water per day. You can imagine how quickly a three person team would go through the 40 gallon storage if normal procedures were followed. Extreme conservation methods must be employed if water is limited to the aforesaid 40 gallons!

Likewise the sewer storage capacity is also 40 gallons. Care must be taken to monitor water and sewage levels. Gray water is what comes from a sink or bath tub. Black water issues from the toilet facilities.

At the front of the trailer, to the left of the sink, are meters for checking fresh water, gray water and black water. These levels should be checked daily.

Propane

There are two 5 gallon propane bottles mounted at the front of the trailer on the tongue. These must be checked before any deployment for (1); Fuel level, (2); being secured to the trailer and (3); the valves are turned off for transport and on if the deployment will be long.

Batteries Maintenance

The batteries are low maintenance batteries, both at the front of the trailer are power for the trailer. This means you do not have to check the water and sulphuric acid levels weekly. Charge levels must be maintained to ensure the longest life possible from these batteries. Any time the trailer is plugged into shore power, the trailer

batteries are charged if selected. Under the kitchen sink on the right side is a switch that must be used to select which battery is being used to power the trailer. The battery selected will be charged. This requires operators to daily switch the trailer over to the other battery via the under counter switch.

Before deployment (if possible), the radio batteries need to be charged using the charger in the cabinet by the door. As one battery is used on deployment, the other should be charged and they should be rotated daily if used.

Radios

Our Mobile Communications Trailer currently uses the Yaesu Model 8800 Dual Band radio for vhf/uhf operation and the Yaesu Model 897 radio for hf operation. There are both operation manuals and ‘shortcut’ NIFTY Notes for both in the cabinet over the bed in the portable file box. We have Packet, PSK31, RTTY, MT63, AIRMAIL and many other digital modes available to use via Modems from West Mountain Radio and SSL. While we currently have only two laptops and three modems on the trailer, the third modem would be considered backup at this time. In addition we have Yaesu and Kenwood portable (handheld and mobile) equipment as well as FRS radios on board.

Connections

Care should be taken to ensure that any adaptors used to connect to shore power are returned to the trailer. We have both 50 ampere 220 volt to 30 ampere 220 volt and 30 ampere to 20 ampere 110 volt adaptors located in the electrical compartment on the left side of the trailer. In addition we have a 30 ampere service extension cord of 25 feet with an additional 220v to 110v adaptor located under the bed inside the trailer. We also have (2) two 100 foot 110 volt 15 ampere extension cords. (The pink one is on loan from Howard Burchett, KE5INC) These are located in the storage boxes marked as such. Anytime the connectors are used, care should be taken to protect from moisture – ground water, rain etc.

All grounds, coaxial connectors, battery connections etc. should be double checked for polarity and mechanical security.

TERMINATION OF OPERATIONS

Radio operations should cease when the On-site Unit Director, in consultation with the Coordinator and/or the State Disaster Relief Director, advises the site operator and Net Control that their services are no longer needed. At that time it is the responsibility of the site radio operator(s) to dismantle all antennas and account for all equipment listed on the inventory sheet. In addition, it is the terminating radio operator's responsibility to insure that all radio equipment is returned to the proper source or owners.

D. TEARDOWN

When you tear down to go home, be careful as you pack up. You may be the next one to take the unit out and if everything is put away where it is supposed to be, everything you need, will be there when you need it! If you are not the next one to take it out, the one which does will be able to find it also.

1. Have a check off list. You need to be sure you do not forget anything. How is the gray and black water? Does it need to be dumped? If so, be sure to get it done. How are all the kitchen things stored? Coffee pot, cups, water etc. Are all trailer things in place? Is it clean? Are the radios stored in their correct place? The digital with the digital box? The laptops in their place? Are all doors secured and all equipment boxes closed properly? Is the power cord and any adaptors coiled and locked up? Are the spare keys hanging in the cabinet under the stereo? Did you check that the propane is turned off? A list helps.
2. Start with the small stuff first. Put away pens, clipboards and other small items in the radio area. Move to the kitchen and bathrooms. Put away all items. When you load the equipment boxes, it will hamper doing this later, so do it now.
3. Unplug the laptop(s) and after putting them in their respective cases (vinyl case for black and nylon case for silver), put them in the cabinet marked laptop opposite the radio position.

4. Disconnect the batteries used to operate the radios and store them on the floor of the bath room.
5. Take down any antennas (lower the vhf/uhf), coiling the coax and wires, and place them in the proper marked boxes.
6. Tie the mast into the bundle tied by cords but do not put the bundle into the unit yet. Wait until everything else is done to keep them out of your way.
7. Take down and store the hf radios (897) and place them in their respective containers. Make sure any accessories are stored also. Double check please.
8. Take down and store any tables you set up to use. This includes any extra chairs. The small table has a box and is stored in the bathtub, while the bigger one is folded up and placed against the wall to the left of the door.
9. Next stack the equipment boxes against the table to keep it from shifting while traveling. The folding chairs go between the equipment boxes and the kitchen counter to keep them in place also.
10. After double checking all things are put away and stowed properly, bring in the antenna mast bundle and place on the floor in front of the sofa in front of the door.
11. Secure all doors on the outside, close and secure all windows and roof vents. Place the mat on the floor inside the door and stow all stairs. If you are transporting the Mobile Communications Van at this time, you need to hook to the tow unit, remove all blocks and stands and store in their proper place before securing all doors.

E. STORAGE

The trailer is currently stored at the Golden Target Storage facility on Montgomery, just east of Wyoming Blvd. You will need a pass code to get in and the current parking space number to park the trailer.

If trailer is to be located in one location for any extended period of time, install the wheel/tire covers. The wheel/tire covers prevent the sun from dry rotting the tires and will extend the life of the tires.

If winter is approaching you will need to drain all water from the tanks and lines and open all valves inside the trailer. If winter is still a long time coming, the lines may be drained at a future date.

The trailer needs be only near level for storage. It must have the tires chocked in place and all locks and doors double checked. Store the tow sway bar equipment inside the trailer, just inside the front door before final lock down.

Prior to leaving the trailer parked for an extended period, place tire covers over the tires. This will protect the tires from sun rot.

