Grab and GO Kit Manual

City of Surrey

separ

Surrey Emergency Program Amateur Radio

Rev. 1.0

9/11/2008

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Purpose

The purpose of this document is to provide you with the basic materials that you will require to properly operate and maintain the Grab and Go kits. We have included a Trouble Shooting Section that covers all of the known problems, and their respective solutions, that we have encountered to date. Your assistance in identifying further problems and solutions will be greatly appreciated, and will assist in the future development of this project.

Acknowledgements

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![separ - Surrey Emergency Program Amateur Radio logo]

Inventory

Radio Box

The following are mounted to the rack

1. Kenwood TS480SAT
2. Icom IC2820 H
3. Icom IC2820 H
4. Icom 91-AD handheld radio
5. Icom 91-AD Rapid Charger
6. Alinco DM 330MV power supply
7. PG 40 PWRGate
8. Rigrunner
9. SCS PTCIIpro Modem
10. Lenovo Laptop
11. Dino SWR/Power Meter
12. Dummy Loads

The following are not mounted to the rack

(Detailed inventory sheets attached to packaging)

- Manuals
- 3x Heil headset
- 2 x Sony dual headsets
- Lenovo power cord AC & DC
- CW Keyer
- CW Paddle

Antenna connectors

VHF/UHF 1

VHF/UHF 2

H

F

Top shelf (Radio Heads)

10

9

Middle shelf

11

12

Back

8

7

2, 3

5

6

4

1
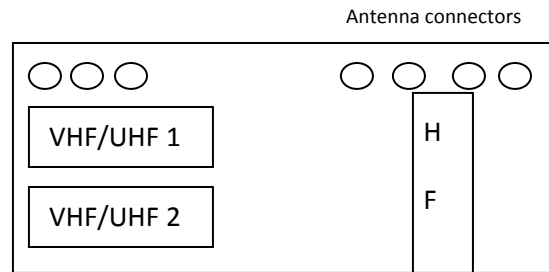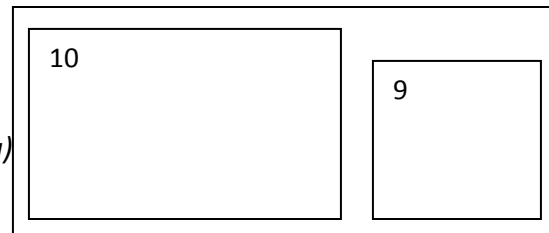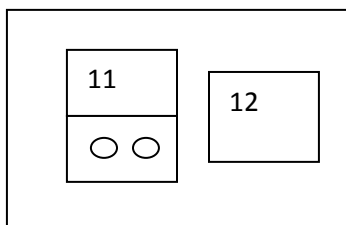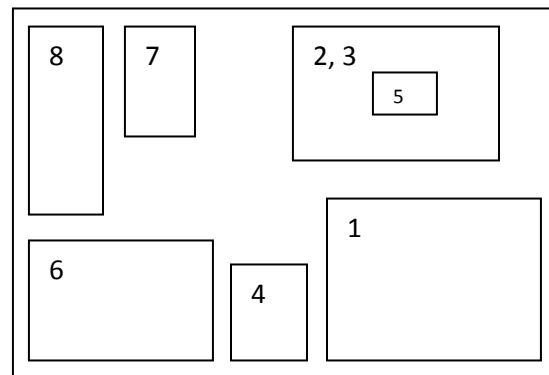
Bottom shelf

Antenna and Accessory Box

- VHF/UHF Antenna Kit
- 2x Tripods
- 2x VHF/UHF Base antennas
- Battery jumper cables
- 50' contractors extension cord
- Tool Kit
- Screws
- 2x pole supports
- 3 lb hammer
- LMR 400 Ultra flex coax cables
    - 1x 150'
    - 1x 100'
    - 1x 50'
    - 1x 33'

HF Antenna Bag

- 12x 4 foot fiberglass poles sections
- Guy ropes
- Metal tripod
- Tent pegs
- Guy rings & links

Deployment

Location Considerations

- Work with the site supervisor
  - ✓ Obtain PEP task number
  - ✓ Select an appropriate location for operating position
  - ✓ Antenna Placement
    - ➤ Check for overhead power lines and other wires
    - ➤ Survey and observe the area before erecting any antennas
    - ➤ Consider buildings and trees when erecting VHF/UHF antennas
    - ➤ **Unroll the Coax Cable by walking and playing it out as you walk,**
      Be careful not to kink the Coax as the LMR 400 Ultraflex is very easily kinked
    - ➤ Feed lines (Coax cables) must be neatly placed on the ground to ensure they are not a safety hazard and are free from any vehicular traffic
    - ➤ Use Duct Tape to hold cables in place if there is any kind of foot traffic crossing the cables
    - ➤ Any excess cables should neatly rolled and placed under the operating tables

Unpack and setup Radio's

Proper removal technique

The removal of the Grab and Go kit from its case **_requires 2 people_**.

Removing radio heads

1. Proper way to remove radio heads is to gently rock the head to loosen it from the Velcro.

    ⚠️ *Brace hands so that the control head does not suddenly come loose.* ⚠️

2. Once the head is loose carefully lift the head unit out being **careful** not to hit the frame

Antennas

VHF/UHF Antenna Setup

Inventory of Antenna parts

- ✓ 2x Tripods
- ✓ 2x Antennas mounted upside down on Tripods
- ✓ 8x Antenna radials stored in white tube
- ✓ 1x Screwdriver mounted to top of white tube
- ✓ 1x Antenna bag

Unpack and assemble instructions

- Unscrew and invert the antenna on the tripod
- Remove 4 radials from the white tub
- Insert and secure each radial into the base using the screwdriver attached to the top of the white tube
- Move the antenna to its operational position and extend the base until the lower support arms are parallel to the ground

- Attach the coax to the base of the antenna
- Rise the tripod to its operational height (try to maintain 2 feet vertical separation between antennas
- Run the coax under one of the legs of the tripod to prevent the tripod from being pulled over
- Carefully unwind the coax taking extreme care not to kink the cable or leave any loops that may kink when the cable is rolled out to the radio

Connecting VHF antennas

1. Remove **ONLY** the Dummy Load connector for the antenna you want to connect
2. Securely connect the VHF/UHF antenna coax to corresponding connector
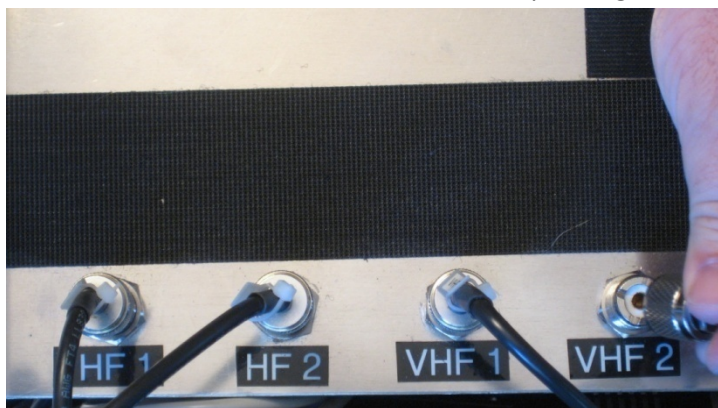
HF Antenna Setup
(Requires 4-5 people)

- One leg of the antenna is 45 ft. long and the other is 90 ft. (135 ft. overall). The antenna is fed between the two legs with a SO 239 connector located at the base of the balun. The connector is recessed and, if care is not taken, it is easy to cross thread the cable connector while installing the coax.

- The antenna sets up as an inverted V with the legs being ideally at a 120° angle to each other. This antenna performs much like a standard dipole and operates in free space.

7-Band OCF Dipole Suggested "inverted-V" Configuration

- The feed point of the antenna must be at least 30 ft. off the ground which is accomplished using the set of fiberglass poles, tripod, end supports and ropes provided in the green canvas bag.

- The antenna must be clear of surrounding objects for optimum performance however if ideal conditions are not available the radio's internal tuner will compensate for any moderately high SWR conditions (up to 4:1).
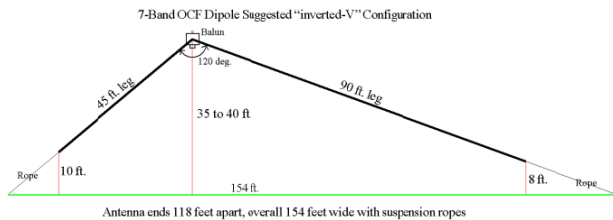
⚠️ **BE AWARE OF ANY OVERHEAD POWER LINES** ⚠️

Inventory of parts

1. 2 x Mast head poles without pulley (Rope Hub)
2. Tripod
3. 6 x pegs
4. 9 x Straight fiberglass poles
5. Mast head pole with pulley
6. Guy Ring
7. 3 x Guy lines
8. Antenna halyard
9. Off-Center-Fed (OCF) dipole
10. Coax

Assembling the Antenna

- The antenna center mast is made up of 4ft sections of fiberglass poles. Note the aluminum guy ring, the metal tripod, the top antenna support and the two rope hubs

Rope hub

- Unroll the antenna legs and lay them along the ground in opposite directions.

- Attach the LMR 400 Ultraflex cable to the balun taking care not to cross thread the connector.

- Carefully unwind the coax taking extreme care not to kink the cable or leave any loops that may kink when the cable is rolled out to the radio.

- Locate the spot where the metal tripod will be placed and using three (3) tent pegs secure the tripod using the loops at the bottom of each leg.

- Slide the first marked 4 foot section of fiberglass mast into the tripod. This is the one marked with yellow tape.
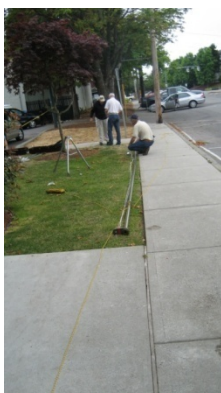
- Lay out and connect 6 lengths of the fiberglass pole sections

- At the top end of the sixth section install the aluminum ring used for the guy ropes and attach the three (3) guy ropes

- Connect the 7th mast section above the aluminum ring.

- On top of the 7th section install the pulley support, feed through the 60

foot length of rope and tie the ends together

- Have one person on each of the two guy ropes and three (3) people raising the pole taking care to keep the two guy ropes tight while the mast is being raised.

⚠️**Care must be taken when erecting the HF antenna support not to apply too much stress while standing up the main center pole as the joints are subject to breakage.**

- Once the mast is vertical one person take a position on the third guy rope and the two remaining people will lift the mast up and place it onto the mast section (#8) already installed in the tripod.

- The guy ropes should be located evenly around the 360° circle or at 120° to each other and keeping the guy lines out of the path of the antenna halyard allowing the antenna ends to be freely moved over the guy ropes.

- Adjust the guy ropes so that the mast is straight and vertical, then secure the guy ropes using the tent pegs or affix the ropes to trees or other suitable objects.

⚠️ It is also important for public safety that the ends of the antenna wires are 8 ft. or more above ground to eliminate the risk of contact with high RF voltages at the ends of the wire. This is accomplished by:

- Use one of the orange pole supports to install two (2) sections of fiberglass mast with the rope support hub on the top.

- Attach a short length of light rope to each leg of the antenna and feed the rope through the rope support hub.

- Drawing the rope tight ensure the antenna leg is not drooping and is not touching the rope hub

- Secure the rope using a tent peg behind the fiberglass support.

- The antenna is now in position and the coax should be carefully unwound and routed to the radio rack.

Connecting HF antenna

1. Locate the HF Antenna connector mounted on the Dino meter at the back of the main unit.
2. Securely connect the HF antenna coax to the elbow on the Dino meter.

Connect the HF antenna coax cable to the elbow on the Dino meter.

⚠️ **DO NOT** use the HF1 or HF2 connectors

Power Sources

AC Power

1. Uncoil the AC Power cord located in the back left hand corner of the kit
2. Connect to a good AC power source using the extension cord provided if needed
3. Turn on the Power supply

DC Power

1. Locate the PWRgate BAT connector(Back right corner of the kit)
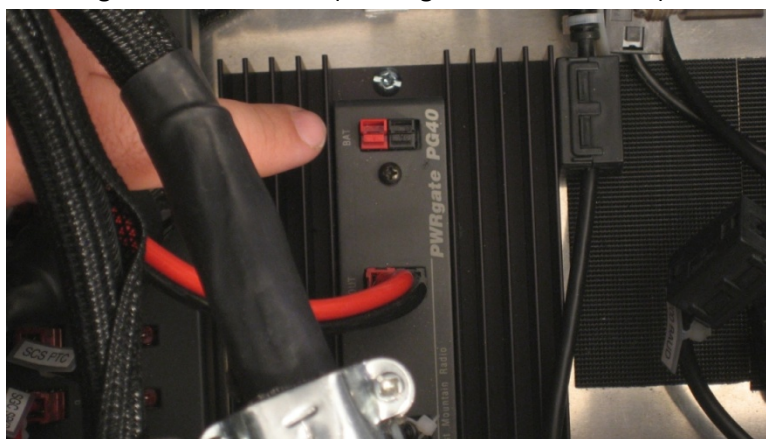
2. Connect the DC power cable between the PWRgate and the battery tether

Attaching Optional Accessories

Headphones

1. Connect the headset audio to one of the two headphone jacks

   (The upper jack allows audio to be toggled between the headset and Speaker but the bottom jack is always on)

2. Disconnect the microphone from the Jack on the side of the remote head unit and plug-in the headphone and microphone
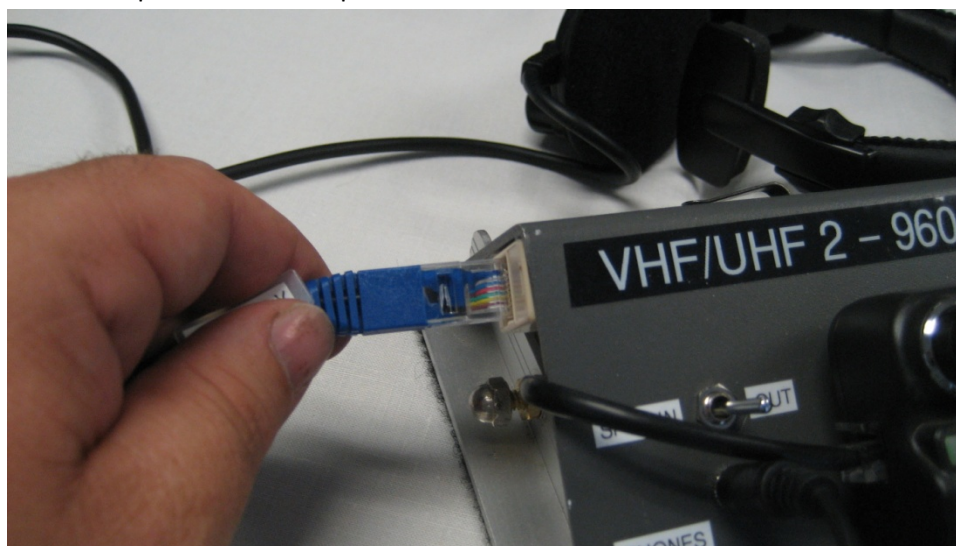
3. You will need to reduce the audio gain on the radio when using the headset mic (Refer to the radio manual for instructions)

Dino Meter relocation

This meter for HF SWR/Power can be relocated from the main rack and relocated to the remote head for convenience of operating. You will have to power it using the 12 v power cable and stereo cable that are hanging at the back of the TS 480 control head.

CW Keyer

1. Connect the CW Keyer to the CW Paddle connector on the remote head unit.
2. Connect the CW paddle to CW Keyer
3. Additional information on using CW can be found on page 41 of the TS-480 manual and Appendix A of this manual. VOX must be on to transmit on CW.

Computer Setup

Inventory of parts
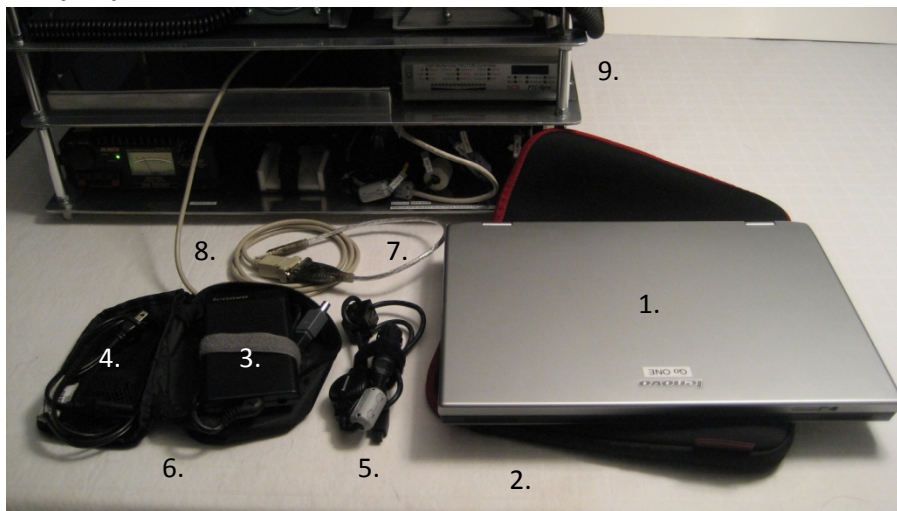
1. Computer	6. Power supply bag
2. Computer Bag	7. USB to Serial adapter
3. AC/DC power supply	8. Serial cable from Modem
4. AC cord for power supply	9. SCS Modem
5. DC cord for power supply	

Power

The computer has an AC/DC power supply. Select the appropriate cord based on your power source.

If using the DC power cord connect it to the Cigar type socket attached to the Rigrunner
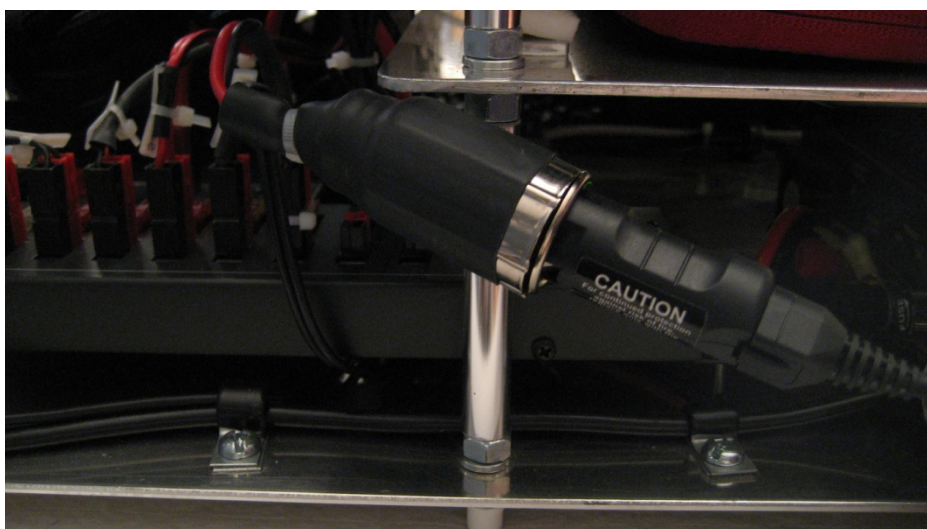
Connecting the computer to the Modem

1. Attach the modem cable to the USB dongle
2. Connect the USB dongle to the port marked SCS on the left hand side of the computer
3. Power on the Modem, the switch is located on the back right corner of the modem

Starting the Computer

1. Open the lid on the computer
2. Press the power button located on the top center of the keyboard
3. Log on using the SEPAR ID and the assigned password
4. Launch Airmail (*See digital modes – Airmail for more information*)

Operation Deployment Plans

Non digital voice communications only

- Captains and Co-Captains will determine which voice communications modes are used.
  - ➢ Simplex VHF/UHF.
  - ➢ Repeater It is recommended that all VHF repeater use start on VE7RPT 146.94- (no tone required) and then move to a suitable local repeater.
  - ➢ HF communications may be required to contact distant stations (such as the Kamloops PREOC). HF should only be used if VHF/UHF simplex communication is not useable.

Digital Airmail and CW

- Captains and Co-Captains will provide email addresses and contact information.
  - ➢ Airmail requires an address for the recipient or relay station.
  - ➢ CW requires a operators who are proficient at CW.
  - ➢ RTTY and other digital modes cannot be used without special computer software so these modes will not be used.

Standalone (No EOC)

In this mode all communications are directed at a site other than the EOC radio room. This may require the use of Airmail to send and receive information to and from specific individuals via email.

There may be communications from a portable site (go kit) and a reception center. In this case only VHF voice will be used as all reception centers have VHF only.

CAPTAINS AND CO-CAPTAINS WILL -

- Determine what communications methods are to be used and only use what is necessary to establish effective communications.

- Determine which frequencies will be used

- Determine the type of communications
  - ➢ Formal messages
  - ➢ Tactical messages
  - ➢ Airmail (email addresses are required)

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Basic Operating instructions

VHF/UHF Radios

Basic operating instructions

- Both Icom 2820 radios are setup to operate in both voice and packet. One radio is set to UHF 9600 Baud and the other is set to VHF 1200 Baud. Because the packet board in the modem is selectable from 1200 to 9600 baud only one can be used at any one time. To use UHF 9600 baud the cable from the 9600 baud radio must be moved to port 1 on the modem if 9600 baud packet is to be used. This is caused by the fact that the cables for 9600 baud and 1200 baud are different. (NOTE) we plan to add a second board to the modem which eliminate the need to move any cables however at this time it is recommended that only 1200 baud packet be used.

- All memories in both Icom 2820 radios have been programmed with both voice and packet frequencies which apply to the South West Region. Use the memory channels for selecting frequencies as CTCSS tones have been preprogrammed to eliminate confusion.

- The same frequency list has been programmed into the Icom 91AD as well as the D-Star frequencies. Use only the preprogrammed frequencies to avoid any confusion.

- A complete list of the programmed frequencies has been placed on the laptop computer as well as a printing list in Appendix B of this manual.

- Operation of all VHF/UHF/D-STAR radios must be in accordance with the operating manuals provided in the documents folder. Should there be a need to make changes other than the memory channel changes refer to the manuals provided.

HF Radio

Basic operating instructions

- The HF radio is provided to ensure communications outside the range of VHF/UHF coverage. When operating the HF radio in CW, SSB use the standard modes. The modem can operate in PACTOR III mode and should be used in that mode only unless PACTOR III is not available. Use the preprogrammed frequencies listed in Appendix B

- When operating CW you must use the external keyer (Appendix A). Local CW emergency traffic net (BCEN) can be found on 3.652 mHz at 0200Z and should be the primary link to RN7 National Traffic System. If you operate CW please remember to keep the speed down to 15 WPM.

- When operating SSB the most common nets can be found on 3.716mHz (BC/YUKON Traffic Net), 3.729mHz (BC Public Service Net) and 3.735mHz(Official PEP net). Use these nets to move formal traffic and remember the PEP net is for official government traffic only so wait to be invited to pass your traffic on this net.

- The HF radio is operated in the standard SSB modes for all amateur bands i.e. LSB for 40 and 80 meters.

- When operating PACTOR use only USB on all bands. Ensure your dial frequency is set to match the frequency of the PMBO or other station. Information on this can be found in the Airmail operating section of this manual or in the help section on the laptop.
- Radio frequency memories have been programmed with Airmail and standard net frequencies) and a list of memory channels is provided in the document pouch as well as in Appendix B.
- Refer to Kenwood TS 480SAT operating manual if needed

Noise Cancelling Speaker: If the external noise canceling speaker is not functioning at all, it probably means that the external speaker cable at the front of the Kenwood radio is not plugged in. If the controls on the noise cancelling speaker do not function, momentarily turn off, and then turn on, its power using the toggle switch on the left of the control head labeled "NC Speaker". You can then control width of filter and level of noise cancelling with the buttons on the top of the speaker.

CW Keyer: Many operators do not like the internal CW keyer with the TS-480 and prefer to use an external keyer or bug. If an external key, electronic keyer or bug is used, the "Key/Paddle" plug at the front of the Kenwood radio must plugged into the "key" position.   If you find the dot and dash are reversed, follow the procedure on page 41 of the TS-480 manual. The dot-dash can also be reversed at the keyer (see Appendix). VOX must be on to transmit on CW.

SSB Operation: The mic audio gain on the radio is set to the default of 50 which is about right when using the Kenwood mic. You should adjust it for your voice level anyhow, using the procedure on page 9 of the manual. If you are using the boom mic with the Heil headset, the gain is definitely too high and should be decreased to around 10 (subject to your voice).

Internal Antenna Tuner: You should always be on Ant. 1.   Ant. 2 is not used. If you are moving around the band, make sure that you adjust the tuner when changing frequency. The SWR as measured at the Dino meter should ideally not exceed 1.5 after tuning.   Procedure is on page 9 of the TS480 manual. The OCF antenna is designed to work on the following bands, 75/80, 40, 20, 17, 12, 10, & 6 meters. Note that it does not resonate on the 15 m band.

Dino Meter relocation

This meter for HF SWR/Power measurements can be relocated from the main rack to the remote head for convenience of operating. You will have to power it using the 12 v power cable and stereo cable that are hanging at the back of the TS 480 control head. *See page 2-10 for instructions on how to relocate the display*

DSTAR

- The only D-Star radio currently available with the go kit is an Icom 91AD handheld. The D-Star radio has been preprogrammed with the local area repeaters. A complete list of repeaters can be found in Appendix C

- The 91AD has two bands the "A" band and the "B" band. D-Star can only be used on the "B" band while all FM voice is found on the "A" band.

- The 91AD is fully programmed to operate as an additional VHF/UHF FM voice radio and contains the same memory frequencies as the Icom 2820 radios. The "A" band contains the South West frequencies in the "0" to "100" bank . The "100" to "200" bank contains frequencies used for cross border contacts into Washington State.

- There are two call frequencies assigned to "C0" and "C1". "C0" is the Surrey VHF repeater and "C1" is the Surrey UHF repeater frequency.

- The "B" band has the D-Star repeater frequencies for Surrey and Vancouver plus Calgary and San Francisco. Use of the gateway for contacts outside the South West Region should only be used when requested by the coordinator.

Airmail

Start **AirMail** from the Start menu or from the desktop icon and select **Allow** when prompted. This is the main **AirMail** screen with the most used features highlighted.
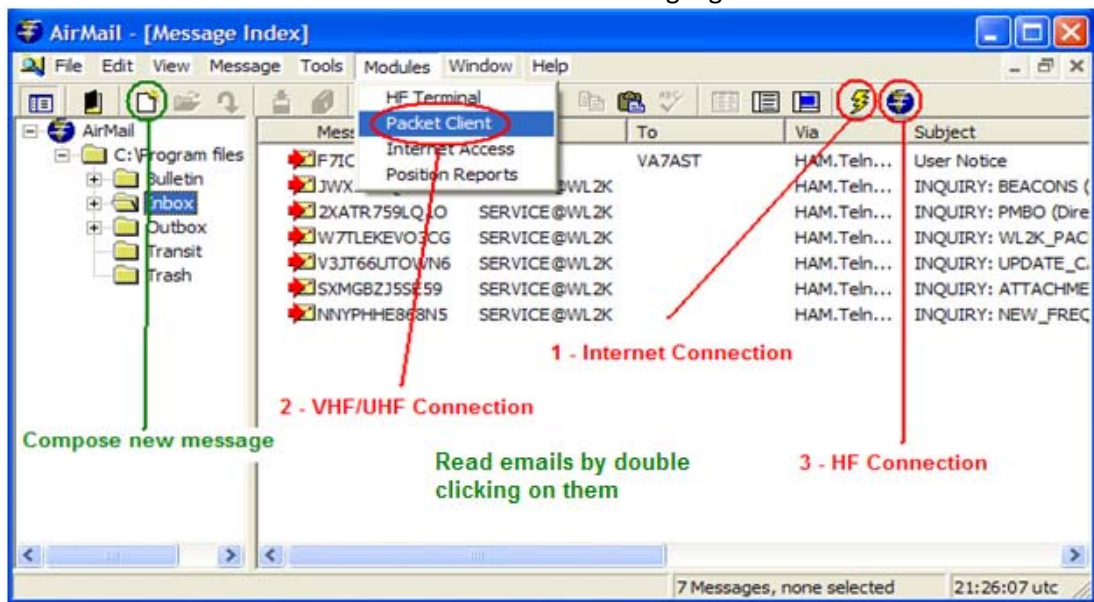
Composing a new message

1. Select the new message icon
2. Select an address from the address book or new to add an address or select cancel if you don't want to add the address to the address book
3. Compose you message like you would using any other E-Mail program
4. When you are finished composing your message press the *Post Message* button
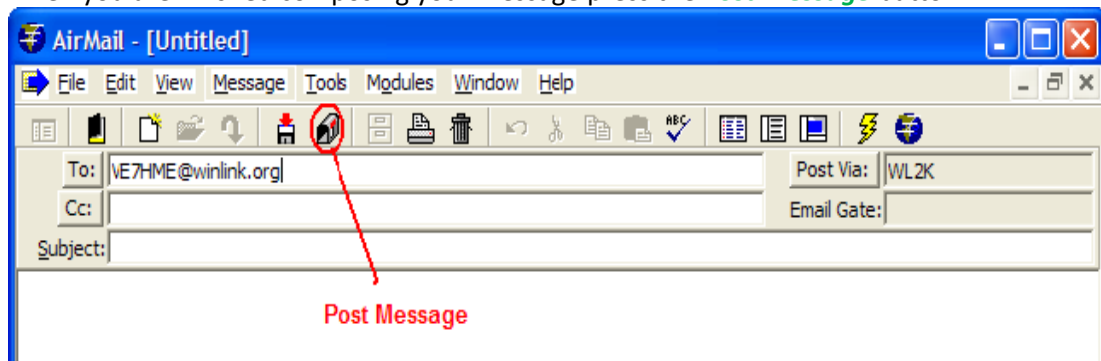
Compose and post as many messages as you would like following the above instructions.

5. You will need to connect to one of the following connections to send and receive your messages
    1. Internet Connection via Telnet Client
    2. VHF/UHF Connection via Packet Client
    3. HF Connection via Terminal window

City of Surrey
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Surrey Emergency Program Amateur Radio

How to connect to a Mail Server *(open one of the following connections)*

Method 1 – Internet Connection (Telnet Client)
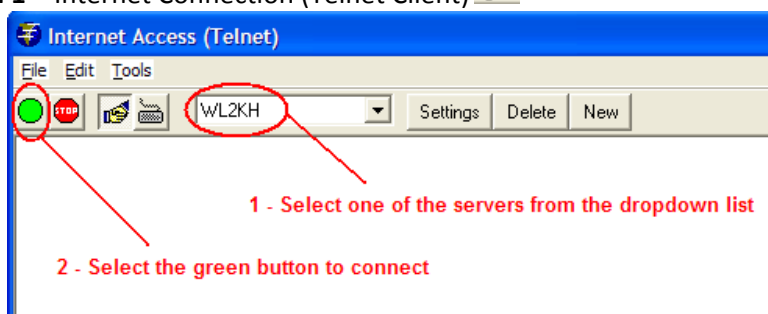
Method 2 – VHF/UHF Connection (Packet Client)
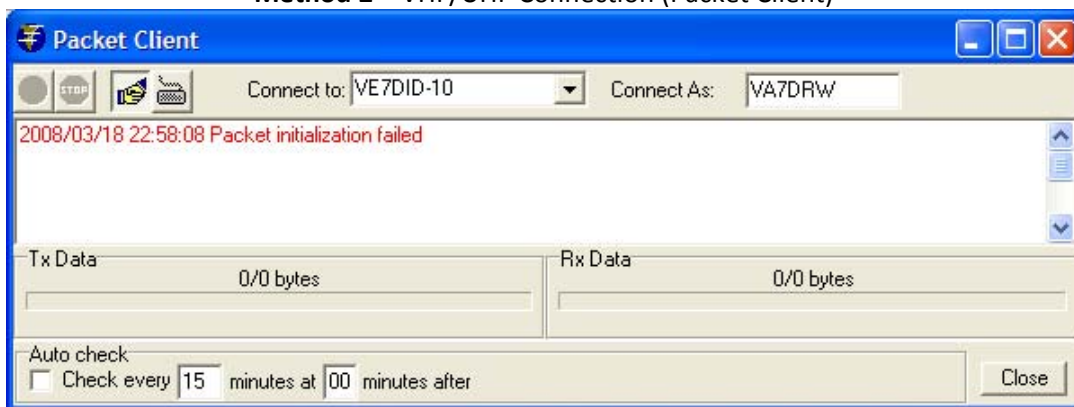
1. Select a nearby Telnet station and tune the radio to its frequency (See AirMail Station list)
2. Listen and select the green connect button when the frequency is clear
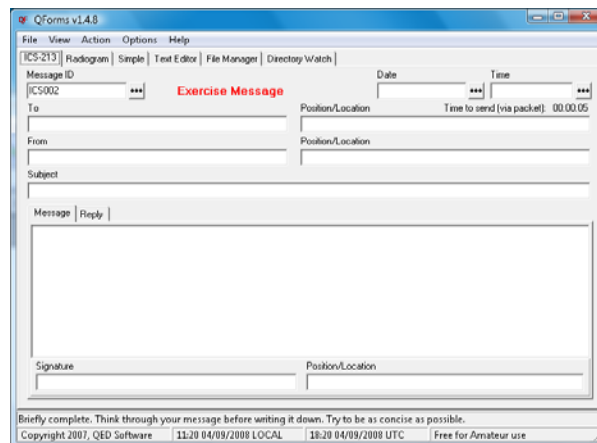
Method 3 – HF Connection (Terminal Window)
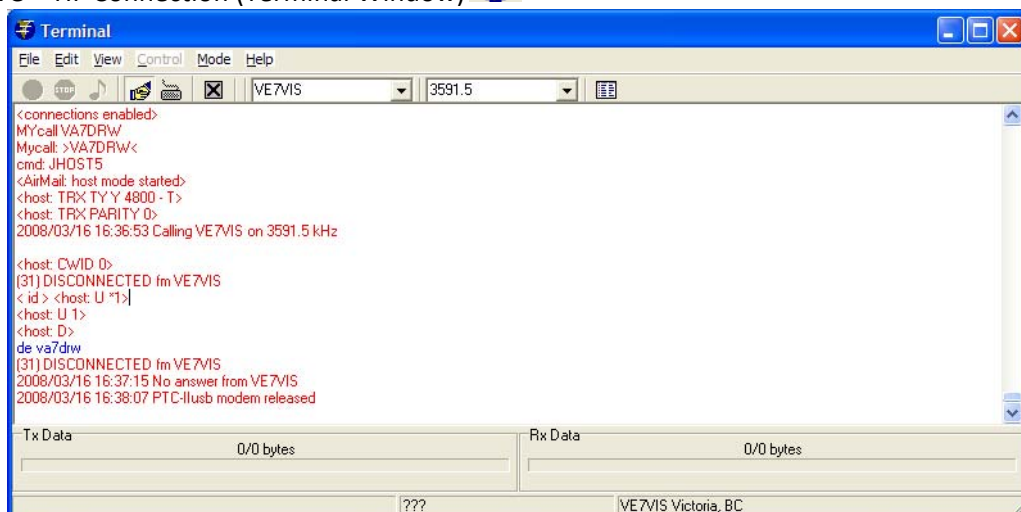
1. Select a Station from the list. F8 will bring up a propagation table to help you chose
   (VE7SCC & VE7VIS are preferred)
   *** the radio should change to the stations frequencies/band when selected if not see the trouble shooting guide***
2. Listen and select the green connect button when the frequency is clear

![SEPAR logo - City of Surrey, Surrey Emergency Program Amateur Radio]
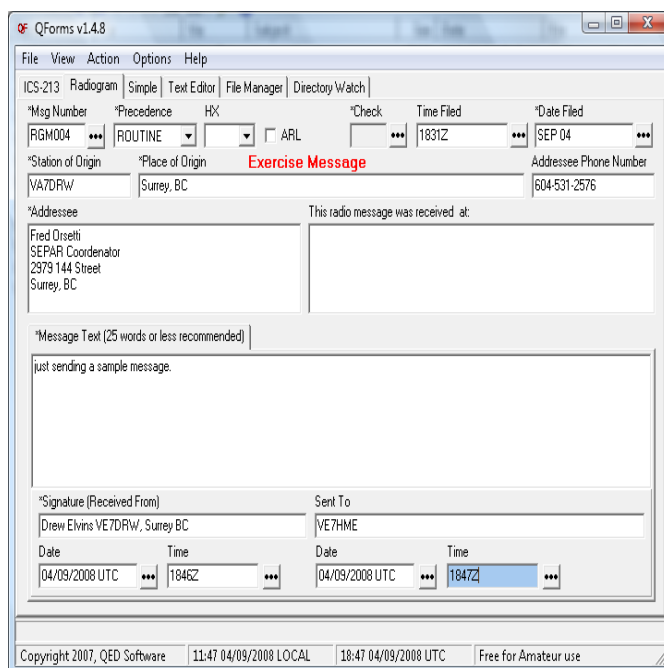
Qforms

- Standard ARRL message forms will be provided for all messages
- Qforms will be used with Airmail if available
- Airmail standard email text format messages are acceptable and must contain the preamble, addressee, date and time, signature of the originator and any special handling instructions.
- Before Opening Qforms start Airmail and start the Mail Server Module.

- Open Qforms from the desktop shortcut or from the start menu

- When Qforms starts you will be presented with the following screen.
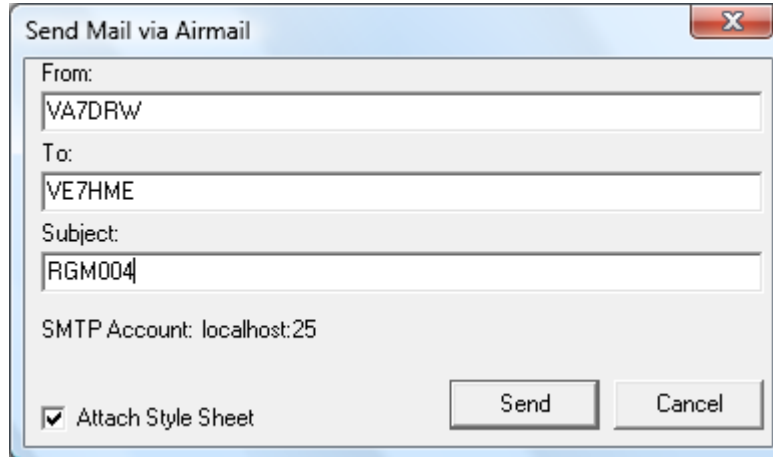
- Please note whether or not the software is in Exercise Message mode. To change the mode go into the options menu and add or remove the tick from beside Exercise Mode to put the software in the required mode.

- We will mostly be using Radiogram mode so select the Radiogram tab. Fill out the Radiogram following standard messaging practices.

- As you are filling out the form you will see instructions as to what is required in the field you are currently filling out. By pressing the **...** beside a field will auto-fill that field with the current information. Auto-fill the Check last.

- To send the message, goto Options and select send to mail server. When prompted select yes to

save the message. Name the file after the message number ie. RGM005.XML.

- You will now be prompted to fill out the email information. Please note that when sending messages between Winlink accounts you do not have to include the @winlink.org. For all non

Winlink accounts you will have to enter the full email address.

- NOTE:You must attach the Style Sheet when sending this message to people that are not running Qforms

- You should get the following message if the message was successfully passed off to Airmail.

- Now you will have to goto Airmail and select the Transit tab. You will see your message with a question mark beside it. Now double click on your message
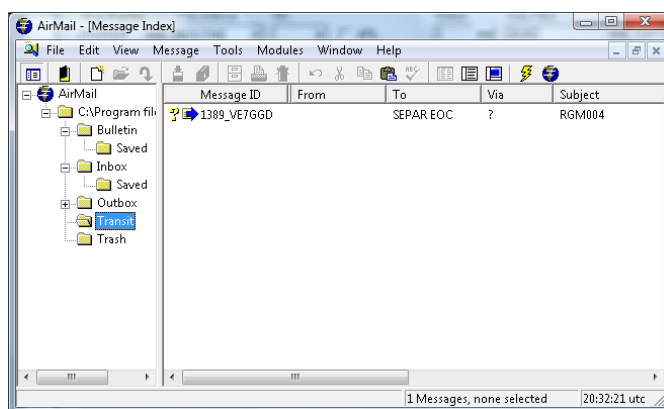
- and post it
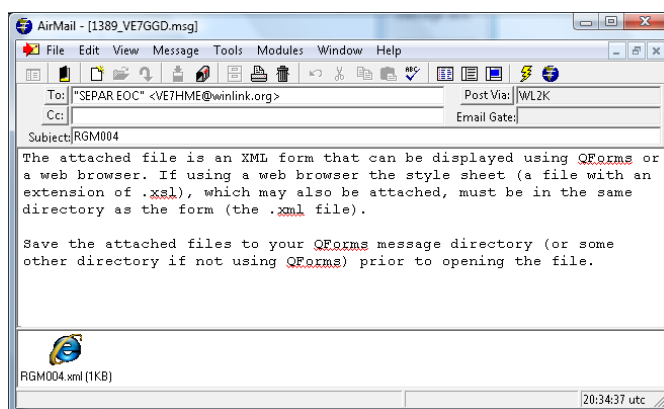
- Repeat for each message you have in Transit with the ? beside it.

- The next time you connect to a message server these messages will be sent.

This is what the sent message looks like in a browser.

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Shutdown

VHF/UHF ANTENNAS

- Lower the tripods
- Remove the base radials by loosening the setscrews
- Tighten the setscrews to ensure they do not get lost
- Remove the antenna from the mount and reverse it so it points down then retighten the wing nut
- Adjust the tripod so it fits into the black bag
- Insert the base radials into the 1" white plastic sleeve and install the cap with the screwdriver attached
- Make sure both antennas are properly stored in the black bag
- Fold the bag and secure with the Velcro straps

HF ANTENNA

- Lower the center of the antenna from the main support by using the rope
- Disconnect the Coax cable
- Disconnect the center balun from the rope
- Lower the ends of the antenna and remove the ground support pipes from the ground
- Remove and store all pegs
- Roll each leg of the antenna starting at the center and working towards the ends
- Tape the first loop at 12" and roll each leg into a 12" roll and secure with tape
- Roll the Coax cable by taping the first loop at 20" and roll into a 20" circumference MAKING SURE NOT TO KINK THE COAX CABLE and secure with tape

DISCONNECTING THE POWER

- Disconnect power source first
- Disconnect the battery from the Power Gate
- Roll the power cords and store in the radio rack

DISCONNECTING THE RADIOS

- Disconnect Coax cables from the VHF/UHF radios
- Connect each VHF/UHF radio to the corresponding connection on the dummy loads

COMPUTER SHUT DOWN

- Disconnect the USB cable from the computer and serial cable
- Roll the serial cable and store in the radio rack
- Shut down the computer using the standard shutdown procedure
- Close the computer and store in the black and red sleeve
- Store the USB/SERIAL adapter in the black and red sleeve

REPACKING THE RADIO HEADS

- Place the microphones on the head mount
- Place the head mounts on the main frame making sure they are positioned clear of any other metal.
- Carefully roll the umbilical cords and secure with the attached Velcro straps

OTHER ITEMS

- Store the headsets and all other loose items in the zippered black storage bag

LIST MUST BE DATED AND SIGNED AND RETURNED TO THE ZIPPERED STORAGE BAG

USING THE CHECK LIST PROVIDED CHECK THE PELICAN STORAGE BOXES FOR MISSING ITEMS. THE CHECK

NOTE ANY REQUIRED REPAIRS AND IF YOU ARE MISSING ANY ITEMS CHECK THE SITE CLOSELY IF THEY STILL CANNOT BE FOUND NOTIFY FRED ORSETTI AT ve7io@arrl.net IMMEDIATELY.

CHECK THE SITE FOR CLEANLINESS AND MAKE SURE ALL ITEMS ARE READY FOR TRANSPORT.

Calibrate following are mounted to the rack

1. Kenwood TS480SAT
2. Icom IC2820 H
3. Icom IC2820 H
4. Icom 91-AD handheld radio
5. Icom 91-AD Rapid Charger
6. Alinco DM 330MV power supply
7. PG 40 PWRGate
8. Rigrunner
9. SCS PTCIIpro Modem
10. Lenovo Laptop
11. Dino SWR/Power Meter
12. Dummy Loads

The following are not mounted to the rack

(Detailed inventory sheets attached to packaging)

- Manuals
- 3x Heil headset
- 2 x Sony dual headsets
- Lenovo power cord AC & DC
- CW Keyer
- CW Paddle

Antenna connectors

VHF/UHF 1

VHF/UHF 2

H

F

Top shelf (Radio Heads)

10

9

Middle shelf

8   7   2, 3   5

6   4   1

Bottom shelf

11

12
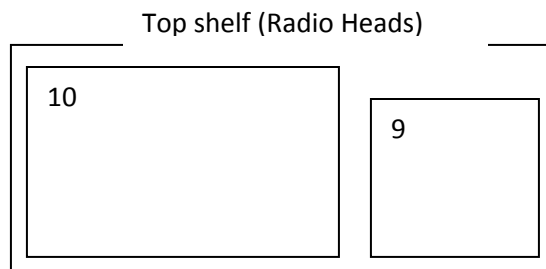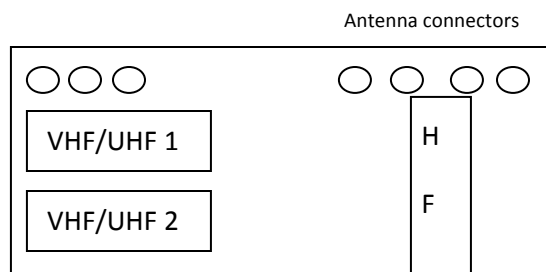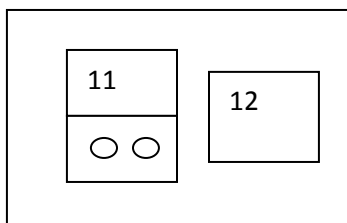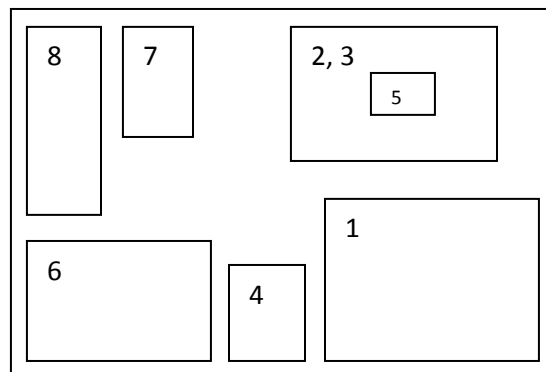
Back of Rack

Antenna and Accessory Box

- VHF/UHF Antenna Kit
- 2x Tripods
- 2x VHF/UHF Base antennas
- Battery jumper cables
- 50' contractors extension cord
- Tool Kit
- Screws
- LMR 400 Ultra flex coax cables
    - 1x 150'
    - 1x 100'
    - 1x 50'
    - 1x 33'

HF Antenna Bag

- 12x 4 foot fiberglass poles sections
- Guy ropes
- Metal tripod
- 2x pole supports
- Tent pegs
- Guy rings & links
- 3 lb hammer

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Maintenance

Quarterly Maintenance

- **Battery service**

  - ➢ Batteries are sealed and maintenance free

  - ➢ Check battery connection cables

  - ➢ Check fuses located at each battery

  - ➢ Each kit battery has a battery tender unit for keeping the battery fully charged while not in use. **It should be hooked up at the time of kit storage and left on continuously.**

  - ➢ Batteries should be put on a load tester and if the battery checks out then it should be placed back on the battery tender. If the battery does not check out on the load tester it must be replaced.

  - ➢ Batteries must be kept in dry storage and protected from freezing

- **CW Keyer**

  - ➢ The CW keyer unit has a 9V battery that must be replaced periodically

- **Computers**

  - ➢ The laptops must be plugged in so that the batteries are kept charged

  - ➢ Windows updates should be applied

  - ➢ Anti-Virus software need to be updated

  - ➢ Documentation and software updates applied from supplied media

- **Radios**

  - ➢ All radios must be turned on and memories checked

  - ➢ All power and data cables checked for damage or missing

  - ➢ Check all radio panel lights are in working order

- **Black Utility Bag (containing headphones etc.)**

  - ➢ Check the contents against the inventory list included in the bag and confirm all items present. Report missing items.

- **Document Pouch (containing equipment manuals)**

  ➢ Check the contents against the inventory list included in the pouch and confirm all items present. Report missing items.

- **Pelican Case #2 and HF Antenna Bag**

  ➢ Check the contents against the inventory list in this manual and confirm all items present. Report missing items.

ANNUAL MAINTENANCE

- **Antennas**

    - Assemble HF antenna and test with the MFJ analyzer

    - coax cables checked for damage

    - mounting poles, ropes and hardware checked

    - VHF/UHF antenna tripods checked

    - Confirm all VHF/UHF antenna radials are in the storage tube

    - Assemble VHF/UHF antennas (2) and test with analyzer

- **Pelican cases**

    - Check that seals are on each case

    - Remove seal and check contents against the check list provided

    - Check each case for physical damage and complete damage report

- **Computers**

    - Remove any non approved software

    - Backup and delete all user documents. Reload with standard supplied documents.

    - Disk Cleanup needs to be run

    - Disk Defragmenter

    - Install Windows updates

    - Renew and update Anti-Virus software

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Troubleshooting

➢ Radios will not power up when power supply is plugged in

- ✓ Check power supply ON/OFF switch is in the ON position

- ✓ Confirm the Anderson power pole connector is firmly inserted into the Power Gate and the Power Gate is connected to the distribution panel (Rigrunner) and that the green light on the panel is ON

- ✓ If just one radio will not power up check the in line fuse for that radio and that the Anderson power pole connection is firmly in its socket.

➢ Computer will not boot

- ✓ Check computer is plugged into either the 12 Volt power supply or 120 volt mains and that the battery is fully charged

➢ HF Antenna SWR is too high (i.e. over 2.0) when checked with the Dino Meter under power, and after activating the internal auto-tuner.

- ✓ Ensure you are on one of the following bands when using the Off-Center-Fed(OCF) Dipole, 75/80, 40, 20, 17, 12, 10, & 6 meters

- ✓ Ensure that the tuner has engaged and that Ant. 1 is selected

- ✓ Make sure the coax cable is properly connected to the antenna

- ✓ Make sure the HF antenna is not located too close to a metal building or structure

- ✓ The HF legs are at the correct angle of 120⁰ at the center pole

➢ VHF/UHF antenna SWR is too high when checked with the MFJ analyzer

- ✓ Make sure the ground plane radials are securely in place

- ✓ Make sure the coax cable is firmly connected

- ✓ Antennas should be located in the clear and the tripods raised as high as practicable and a vertical separation space of no less than 2 feet exists between the two antennas

➢ Airmail is not able to contact the modem

- ✓ Check all the connections and ensure everything is plugged in properly

- ✓ Shutdown Airmail and cycle the power on the modem

- ✓ Reboot the computer and cycle the power on the modem before starting Airmail

➢ Airmail is not able to control the HF

✓ Check all the connections and ensure everything is plugged in properly

✓ Turn off the HF radio and modem then power up the radio before the modem

✓ Shutdown Airmail and cycle the power on the modem and radio. Ensure that the radio is powered on before the modem

✓ Reboot the computer and cycle the power on the modem and radio before starting Airmail. Ensure that the radio is powered on before the modem

Grab & Go Kits - Box #1

Number					
1	1640	Pelican Case	no serial #	no serial #	no serial #
1	TS-480SAT	Kenwood HF transceiver	90400026	90400025	90500024
1	MC-58DM	External mic for Kenwood	no serial #	no serial #	no serial #
1	PG4Z	cable kit for Kenwood	no serial #	no serial #	no serial #
1	DM-330MV	Alinco power supply	11449	11450	11461
1	IC-2820H	Icom VHF/UHF transceiver	502886	502887	502889
1	IC-2820H	Icom VHF/UHF tranceiver	502831	502888	502890
1	IC-91AD	Icom handheld VHF/UHF transceiver	503052	503294	503053
1	BC-139	Icom charger for handheld radio	202688	202366	202367
1	PTCIIpro	SCS Modem	OP22070100000	OP46070100000	OP47070100000
			E84D3B8A8	AE309DCDC	FF52A78EE
1	Lenovo	Laptop computer	L3A3907	L3A3906	L3A5635
1	4012	West Mountain Rigrunner	no serial #	no serial #	no serial #
1	PG40	West Mountain Powergate	no serial #	no serial #	no serial #
1		SGS Noise cancelling speaker	no serial #	no serial #	no serial #
1	Custom	Dino Meter & pickup	no serial #	no serial #	no serial #
1	Custom	Dummy Loads	no serial #	no serial #	no serial #
2	Traveller Single Side	Heil headset with boom mic in cloth case	no serial #	no serial #	no serial #
1	HSTA-IM	Icom adaptor cable for Heil headset	no serial #	no serial #	no serial #
1	HSTA-KM	Kenwood adaptor cable for Heil headset	no serial #	no serial #	no serial #
2	Sony	Headsets	no serial #	no serial #	no serial #
1	HM-75A	Icom speaker mic for IC 91A	no serial #	no serial #	no serial #
1	XT-4	Unified Microsystems CW Memory Keyer	no serial #	no serial #	no serial #
1		Lenovo AC/DC Combo Adaptor	11S41R0139ZVJ2VZ 066732	11S41R0139ZVJ2VZ 076246	11S41R0139ZVJ2VZ 066662
		Manuals for above in document folder			

Grab & Go Kits - Box #2

1	1780	Pelican Case	n
2	NMO 2/70	Larsen dual band antenna	n
2	NMO 2/70 base	Base mounting kit for Larsens	n
2		Cameron tripods in case	n
1	90 amp hr	AGM sealed battery	n
	CM1A	Schauer Chargemaster (trickle charger)	n
1	7 band OCF Dipole	Buckmaster	n

More to come

Grab & Go Kits - HF Antenna Bag

12 pcs	48 ft.	Collapsible fibreglass pole kit
1		Tripod for above
3 pcs	LMR 400 ultraflex	Coax
		Rope, stakes, anchor rings

More to come

Appendix A

UM unified Microsystems

XT-4 CW Memory Keyer

User's Manual

Revision 1.06

Specifications
Battery: 9 volt alkaline
CW speed: Approximately 5-45 WPM
Memories: 4, approximately 110 Morse characters each
Output keying: Positive Keying only, RCA phono jack output
Paddle input: 1/8' (3.5mm) stereo jack input

ON/OFF/Speed Control
The speed control knob is a combined ON/OFF switch and speed control. Turn the knob fully counter-clockwise to turn the unit off when not in use. This will preserve battery life.
Turning the knob clockwise will increase the CW sending speed. The speed ranges from about 5 WPM to 45 WPM. The XT-4 has a special power save mode to conserve battery power if you forget to turn the power off. After about 30 minutes of inactivity. The XT-4 goes into power save. The LED will briefly flash every 6 seconds to remind you to turn it off. Pressing any button or the paddle will bring the XT-4 back to normal operation.

REC and MESSAGE 1-4 Buttons
Pressing Message Buttons 1-4 will play back the corresponding pre-recorded message. The message will be played until it is complete. Pressing either the DIT or DAH key paddles will cancel the rest of the recorded message.

To record a message:
1) Press the REC button. The LED will blink rapidly.
2) Press the MESSAGE Button (1, 2. 3, or 4) that you wish to record.
   The LED will come on without blinking.
3) Start sending the message you wish to record with the paddle. The XT-4 will not begin recording until the first dit or dah is sent.
4) Press the REC Button to stop recording. The LED will go out. Press the REC board as soon as possible after you finish sending the message. This will minimize recording dead time at the end of your message.

Message Recording Notes:

1)   The message will be presented even if you turn off the power.

2)   If you accidentally press the REC button and don't want to record a message, tap the DIT or DAH paddles before pressing a MESSAGE BUTTON. This will cancel the record, and the LED will go out.

3)   Each message buffer will hold approximately 100-110 Morse characters. You can combine messages 1-2 or 3-4 together. Simply start re-cording message 1 or 3 and it will continue into the next message buffer if it is too long to fit in the first buffer.

Paddle Reverse

You should wire up your paddle so that the dit and dah keys operate the way you are used to. You can temporarily reverse the paddle keys for other operators with the following procedure.

1)   Turn off the power.

2)   Press and hold down the message 1 key.

3)   Turn the power back on.

4)   The paddle keys will be reversed as long as power is applied.

Beacon Mode

You can put message 1 in auto-repeat or beacon mode by:

1)   Turn off the power.

2)   Press and hold down the message 2 key.

3)   Turn the power back on and then release the message 2 key.
      Once the message 1 key is pressed, message 1 will continuously repeat until a paddle key is touched. At that point it will operate as a normal keyer. Messages 2-4 operate normally. Pressing the message 1 key will return it to Beacon Mode.

Tune

You can place the XT-4 in a key down state for tuning with the following procedure:

1)   Press and hold the REC button.

2)   Press the 2 button. The keyer will now be in the tune mode.

3)   Touch either paddle key to exit tune mode.