

# National Incident Radio Support Cache User's Guide



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## National Incident Radio Support Cache (NIRSC) Users Guide:

The 2008 all-risk season supported fires, law enforcement, forest pest management, support to National Communication System (ESF2), as well as hurricane support to the Southeast U.S.

While it wasn't the largest season for incident communication resources orders, there were some challenges.

- \* 135 Starter Systems and 730 issues were deployed from the National Cache
- \* 43,000 radios were issued
- \* 10 Year Average (1995-2004) 139 Starter Systems, 684 issues
- \* 800 hours and 1300 missions of infrared detection and mapping flights
- \* Both infrared aircraft were equipped with Phoenix Infrared Systems

It is important that all personnel involved in incident communications keep themselves up-to-date on the changes in equipment and technology. Several courses are scheduled for this year. I recommend that any Communications Unit Leaders who have not been out for a few years, or Communications Unit Leaders and Communications Technicians who would like some first hand experience with the equipment, give Susan Blegg, Technical Training a call at 208-387-5857 and reserve a slot in one of our seminars.

I thank all of you for the work that you do in incident communications. Your role is vital and brings together all the functions under the Incident Command System. Thanks for your dedication and hard work.

If you have any questions for the National Incident Interagency Communications Division, please feel free to call me at 208-387-5485 or the Communications Duty Officer at (208) 387-5644 or the toll free number at 1-877-775-3451.

E-mail: [sjenkins01@fs.fed.us](mailto:sjenkins01@fs.fed.us).

Sincerely,

*/s/ Stephen M. Jenkins*

Stephen M. Jenkins  
Chief  
National Interagency Incident Communications Division

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This publication is revised annually by the National Interagency Incident Communications Division, National Interagency Fire Center at Boise, Idaho.

Additional copies of this publication may be ordered from:

National Interagency Fire Center  
ATTN: Great Basin Cache Supply Office  
3833 S. Development Ave.  
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Order NFES #0968

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# NIICD Hotsheet

For up-to-date information on multi-mode (P25) radios, training, infrared operations, incident operations, COMC, new equipment in the NIRSC and more, visit the National Interagency Incident Communications Division web site.

**<http://www.fs.fed.us/fire/niicd/Hotsheet/Hotsheet.html>**

# NIICD Documents

Visit NIICD's documents page for instructions, forms, and helpful information.

**<http://www.fs.fed.us/fire/niicd/documents.html>**

## INTRODUCTION

This booklet is designed to aid in the evaluation of incident communications needs for users of the National Incident Radio Support Cache (NIRSC).

To use this guide:

1. Read the descriptions of incident communications conditions. Find those most closely reflecting your needs.
2. Each description corresponds to one or more drawings showing general and special purpose equipment applications. Match the condition to the drawing and verify the equipment specified will meet your needs.
3. When ordering equipment from the NIRSC, use the NFES catalog numbers indicated on the drawings or in the descriptions section of this booklet. The NFES numbers must appear on your resource order. One request number per kit.
4. The National Interagency Incident Communications Division Communications Duty Officer (NIICD-CDO) is available 24 hours per day year-round. NIICD-CDO personnel provide ordering and planning assistance and are an information resource for field communications personnel. At a minimum, communications personnel should check in with the NIICD-CDO upon arrival at incident to provide assignment location and phone number. All provided information is logged and updated daily.

NOTE: Those communications personnel not familiar with NIRSC equipment or who are not experienced are required to contact the NIICD-CDO for assistance. See NIICD ASSISTANCE NUMBERS (p. 3) for phone listings.

## **NEW FOR 2009**

All NIFC VHF-FM and UHF-FM frequencies will continue to be in narrowband configuration.

All radio passwords will continue to be all zeros for programming.

All incidents will be assigned a tone by the NIICD-CDO.

Incidents will be advised to tone the following:

- All VHF Repeaters (RX only)
- All Tactical channels/frequencies (both RX and TX)

## **NIRSC ASSISTANCE NUMBERS**

The numbers listed below are for your general use for assistance from the staff at the National Interagency Incident Communications Division (NIICD) and the National Incident Radio Support Cache (NIRSC) at NIFC.

**CDO:** Phone :(208) 387-5644 for incident related business only. All other calls to the NIICD should be directed to individual division numbers.

Toll Free: 1-877-775-3451

Fax: (208) 387-5892

For specific assistance from the National Interagency Incident Communications Division, use the following numbers: area code (208)

### **DIVISION NUMBERS:**

Branch of Communications Maintenance:	387-5856
Branch of Communications Operations:	387-5947
	387- 5858
	387-5826
Branch of Engineering and Development:	387-5720
Branch of Infrared:	387-5647
Branch of Rework:	387-5645
Branch of Avionics:	387-5648
Branch of Technical Training:	387-5857

## **NATIONAL AIR FREQUENCY GUIDELINES**

These guidelines are intended to clarify the use of the national VHF-FM air frequencies and the VHF-AM (Victor) frequencies. Each is authorized for specific uses, even though they are listed as “national”.

### **AIR GUARD FREQUENCY**

There is one common VHF-FM air guard frequency: **168.6250** with a transmitter tone of **110.9**. It is found on the last channel of all NIRSC radios. This frequency is authorized for:

1. Emergency air-to-air initial communications.
2. Emergency ground-to-air communications.
3. Initial call, recall, and redirection when no other frequency is available.

### **NATIONAL FLIGHT FOLLOWING**

The common national flight following frequency is: **168.6500** with TX Tone: **110.9**. This frequency is authorized for:

1. Flight-following and/or re-direction of aircraft.

**This frequency is not authorized for ground-to-ground traffic, tactical communications, administrative, or logistical use.**

### **VHF-FM**

In the NIRSC radios, National VHF-FM air frequencies are located in GROUP 3. These frequencies have specific uses. Prior to use, you **MUST** contact the NIICD-CDO.

### **VHF-AM (Victor)**

The use of VHF-AM frequencies is restricted to Air Operations only, there are no exceptions. All VHF-AM frequency assignments will only be authorized and assigned by the NIICD-CDO or COMC if assigned. It is the responsibility of the Incident COML to verify need, place request, and ensure immediate release of frequency assignment upon completion of incident. All frequency assignments must go through the assigned COMC, and ordered by the NIICD-CDO office from the FAA on an incident specific basis. It is imperative to place requests early in order to have frequency assignments available for operational use in a timely manner.

**NOTE: All Aviation Frequencies Will Be Ordered Through the Dispatch Ordering System to the NIICD-CDO.**



## FOREST HEALTH PROTECTION PROJECTS

The NIRSC supports the Forest Health Protection Program with basic communications equipment. The NIRSC can be contacted with requirements or needs to customize an order to ensure it will be properly placed with the NIFC National Interagency Coordination Center (NICC).

All requests for equipment must be submitted through the local dispatch office and the Geographic Coordination Center, then to NIFC-NICC. Preliminary letters will be accepted by the NIRSC for informational purposes only, as will e-mail messages to [sjenkins01@fs.fed.us](mailto:sjenkins01@fs.fed.us). **Equipment will not be issued against the letter or e-mail.** A resource order, placed through the formal ordering process, is necessary.

The NIICD-CDO will assist FHP users with system design information, layout and ordering, in order to meet the specific requirements of each particular project. Users are requested to contact the NIRSC at least 1-2 months in advance of a project(s) to allow for sufficient design, implementation and ground shipping of equipment.

The following equipment is available from the NIRSC:

- 4381 VHF Radios (16/kit)
- 4312 Command Repeater/Link
- 4300 Ground Aircraft Base Kit
- 4330 Remote Kit

The above NFES items are the standard kits to support FHP projects. Other types of equipment are available if the project has unusual requirements. These other kits are described under the section EQUIPMENT DESCRIPTIONS in this catalog.

Radios are issued in kits of 16 each, but can be supplemented with individual radios if needed. It is preferred that radios be ordered in kit lots of 16. The radios will come with full, reusable clamshells which use AA batteries, plus one change of AA batteries for each radio. Please return the reusable clamshells with the kit. If you require additional batteries, above what is provided in the kit, place a resource order for NFES# 0030, AA batteries, or purchase the batteries locally.

The radios will be pre-programmed with NIRSC command/tactical frequencies. However, given sufficient time, the NIRSC will custom program frequencies in each channel. The repeater frequencies must remain as they are assigned.

The FHP equipment in the NIRSC must be shared with many FHP users. It is requested that required time frames for project use be kept to a minimum. When the project is

completed, please expedite shipment of the equipment back to the NIRSC. The requesting user will pay for shipping to and from the NIRSC. There is a charge for equipment repair and parts. Costs for use of the equipment include replacement of batteries and lost kit accessories or capitalized equipment.

## **GENERAL INFORMATION ABOUT RADIO BATTERIES**

When ordering batteries, round the order to the next full STD PK. (See Standard Pack -- STD PK--entry in the Radio Battery Matrix or see listing in the GENERAL SECTION of the NFES Catalog under Battery, Radio.)

Alkaline batteries are not considered hazardous waste, except in California. These batteries should be disposed of at the incident.

All of the radio batteries utilized in the NIRSC are of alkaline technology. Alkaline batteries should have a shelf life of two years with only about 10% degradation in power. The batteries, utilized in NIICD equipment, can probably be stored, in our application, for four years, however the life will be noticeably shorter.

Repeater batteries should last 5-7 days under heavy usage. Radio batteries should easily last a shift (usually 12 hours).

Battery life with the clamshell-type battery will depend entirely upon the AA cells installed, and the type of radio used. The new P25 radios drain batteries quicker than the analog radios.

Using a voltmeter to determine the state of an alkaline battery can yield very inconsistent results. A battery that no longer works on a repeater and has not had a load placed on it for a few days may read good on a voltmeter (a voltmeter does not apply the proper current load). To correctly test the batteries in a repeater with a voltmeter, put the repeater in transmit condition to apply a load to the batteries.

UHF/VHF Repeaters -- Replace batteries if the voltage is at 10.5 volts with the transmitter operating. Starting voltage is about 15 volts with the transmitter operating.

RADIOS -- The transmit LED is the best indicator of battery life. If the light holds bright for 3 seconds while transmitting, the battery should be in good shape. Don't rely on the battery gauge on the Racal radio since it is designed for use with the Lithium-Ion rechargeable battery.

## RADIO/REPEATER BATTERY MATRIX

CLAMSHELLS: NFES #5083 for ICOMS (12/box). Return KIT clamshells!  
 NFES #1034 for KINGS (12/box). Return KIT clamshells!  
 NFES #4165 for RACAL (each). Return KIT clamshells!  
 NFES #4537 for MOTOROLA XTS-2500. Return KIT clamshells!  
 NFES #4541 for DATRON GUARDIAN 25 (each) Return KIT clamshells!

Frequently used batteries are listed below by type and NFES #. Numbers reflect batteries required, per equipment unit.

NFES#	0030	1023	1233
VOLTAGES	1.5V	7.5V	6V (Hotshot)
STD. PK.	24/PG	4/BX	4/BX
<b>RADIOS</b>			
ICOM (clam)	10		
KING (clam) 9-cell (VHF/UHF)	9		
RACAL (clam)	10		
XTS-2500/5000, DATRON GUARDIAN 25 (clam)	12		
<b>KITS</b>			
GRND A/C 4370, 4300	80	4	
P.A. 4410			2
REMOTE 4330		2	2
REPEATERS & LINKS 4248, 4253, 4312, 4281		4	

**MOST BATTERY DISPOSAL SHOULD BE HANDLED AT THE  
INCIDENT TO SAVE SHIPPING COSTS.**

## COMMUNICATIONS COORDINATOR (COMC)

### Duties and Responsibilities

1. Manages the allocation of communications resources at the Geographic Area level. This includes communications equipment, communications personnel, and associated supplies. The COMC reports to the NIICD-CDO and directly supports the assigned geographic area. COMC's will not be assigned to specific incidents or to Area Command. Orders for this position should originate from the requesting geographic area. The order will then go to NICC who will then forward the order to the NIICD-CDO to be filled.

Situations may occur when communications coordination is required between multiple Geographic Areas. Under these circumstances a COMC may be assigned to a NICC resource order to provide overall coordination and support to COMC's assigned to the affected geographic areas.

2. Manages the frequency resources for all incidents under assigned jurisdiction. This includes all frequencies for ground tactical, command, logistics, and air operations.

**NOTE:** During complex situations, the COMC will request additional qualified personnel to be assigned as field COMC's. Any situation involving large air operations will require that the COMC request an Aviation Frequency Coordinator just for air operations.

3. Maintains an accurate inventory of all communications equipment assigned to complex(es) under their control. This includes equipment assigned to all incidents within the complex(es).

4. Keeps current on the availability of communications resources for future geographic area and national requirements. The COMC should be current on procedures needed to obtain such resources. Maintains daily contact with NIICD-CDO.

**NOTE:** This may entail pooling Communications Technicians (COMT) from existing incidents to better utilize this resource.

5. Provides problem solving recommendations and advice on communications issues to the respective Geographic Area Coordinators, the Area Coordinators, the Area Command Teams managing an incident complex, and/or to incident management teams within a complex or an

incident. National as well as geographic area priorities will be considered when making recommendations and/or providing advice.

6. Provides the incidents with assistance in obtaining specialized communications equipment.

## **NATIONAL INCIDENT RADIO SUPPORT CACHE**

The information outlined below must be considered when ordering and using NIRSC equipment. All NIRSC frequencies, both UHF and VHF, must be cleared for use BEFORE shipment is made. Frequencies are cleared by the NIICD-CDO.

### **STARTER SYSTEMS (NFES #4390):**

A Starter System consists of 11 boxes of assorted equipment, and is ordered as a system. A Starter System contains 1 VHF repeater/link and 1 UHF repeater. Generally the frequency assignments for these repeaters will be one of the standard VHF command assignments (C1 through C7) and one of the standard UHF assignments (L1 through L7).

When ordering a starter system, appropriate frequency assignments must be obtained by contacting the NIICD-CDO or the appropriate COMC when assigned. The resource order will indicate which frequency pair has been assigned as in the following example: C4/L4. When possible please provide a latitude and a longitude for each repeater set up in the field. Starter Systems may not always contain 11 kits and 8 sets of masts (due to equipment availability).

**NOTE:** In areas with extreme frequency congestion, the NIICD-CDO or COMC will advise incidents/COMCs of available frequencies.

### **LOGISTICS SYSTEM:**

A Logistics System is a part of every Starter System. It consists of one (1) UHF Logistics Repeater and one (1) kit of 16 UHF Logistics radios. If you do not need logistics equipment, you MUST order command equipment by individual kit catalog numbers.

### **ADDITIONAL REPEATER:**

When needed for an incident, the request will be evaluated and supported with another single frequency repeater. Order as a single resource item:

Command Repeater/Link - NFES #4312; Logistics Repeater - NFES 4248.

## **USER'S GUIDE (NFES #0968):**

The User's Guide is located in all Command Repeater/Link Kits (NFES #4312) and can also be ordered through the Great Basin Warehouse (GBK).

## **COMMUNICATIONS DUTY OFFICER:**

The NIICD-CDO, as much as possible, will maintain compatibility of new equipment orders with equipment already on an incident.

## **DEMOB:**

All cache equipment must be returned to the NIRSC after each incident, for re-work.

## **FIELD ASSISTANCE:**

The NIICD-CDO will coordinate field assistance for incidents. The NIICD-CDO can be contacted at (208) 387-5644 or toll free 1-877-775-3451.

## **(4305) MAST, ANTENNA**

The following kits come with at least one (1) set of three (3) masts.

- 4248 Log Repeater
- 4312 CMD Repeater/Link (2 sets)
- 4330 Remote
- 4300 Ground VHF-AM Base Station
- 4281 Crossband Link Kit (2 sets)
- 4370 Aircraft Link (2 sets)
- 4390 Starter System (7 sets)
- 4630 Satellite Iridium Remote Kit
- 4800 Portable IR Downlink Kit
- MAFFS Base Station (3 sets)

The NIRSC tries to keep a good supply of these masts on hand to support our kits. However, many are not returned from incidents and they must be replaced. Shipping them individually is not recommended. It is highly recommended that masts be returned at the same time as their associated kits.



Do not return masts that are bent, squashed, badly out of round or otherwise not readily reusable.

## EQUIPMENT DESCRIPTIONS

### **4244 Logistics Radio Kit**

This radio kit is designed to be used for incident support personnel, e.g., Plans, Logistics, and Finance. This kit contains 16 UHF radios. The radios operate independently or in conjunction with UHF Repeater Kit NFES# 4248.

Kits contain radios which have all NIRSC frequencies, including all simplex and repeater pair frequencies.

NIRSC frequencies must be cleared for use by the NIICD-CDO. Frequency charts are in the kit.

The following frequency scheme indicates the channel on which the repeater frequencies will be found:

REPEATER	RADIO CHANNEL
L1 Logistics Repeater	Group 1 Ch 2
L2 Logistics Repeater	Group 1 Ch 4
L3 Logistics Repeater	Group 1 Ch 6
L4 Logistics Repeater	Group 1 Ch 8
L5 Logistics Repeater	Group 1 Ch 10
L6 Logistics Repeater	Group 1 Ch 12
L7 Logistics Repeater	Group 1 Ch 14

### **King Radios**

The NIRSC has kits of 210 channel EPV radios. These radios have 15 groups of 14 channels. Groups are accessed by turning the radio on, then, when GRP appears on the display, press the number on the front pad for the group desired. If radio shows a channel number, press #, then press the number on the front pad for the group desired.

Refer to the kit frequency charts for additional information.

The EPV radios have a TA toggle switch on top. This is the talk-around switch. NIRSC recommends NOT USING this switch. When activated, the radio receives and transmits on the receive frequency.

**NOTE: All NIRSC UHF King Radio Kits use the 9-cell battery clamshells. Do not use more than 9 cells!**

### **Motorola XTS2500**

These radios have 15 groups of 16 channels. Groups are accessed by turning the radio on and pressing the zone button, then either scroll through using the right or left arrow, or typing the Group Number on the numerical keypad and hitting Home.

Refer to the kit frequency charts and diagrams for additional information.

### **4248 Logistics Repeater**

The Logistics Repeater must be used in conjunction with a Logistics Radio Kit, NFES #4244, or the Remote Kit, NFES # 4330 with an appropriate UHF radio installed in the remote. Additionally, the Logistics Repeater Kit, NFES #4248 is to be used to link two or more Command Repeater/Link, NFES #4312's together. It is a battery operated portable repeater kit. (See drawings # 7 & 8, pages 34 & 35).

Uses include:

- ICP to Expanded Dispatch Center
- Helibase to ICP
- Ground Support Unit
- Outlying service functions to the Incident Communications Center (ICC)
- Non-fire related incidents can utilize these kits in command/tactical situations.
- Staging area to ICP
- Helispots to ICP

Resource Orders should indicate which frequency is needed, (L1, L2, etc.).

NIRSC frequencies must be cleared for use by the NIICD CDO.

Logistics repeaters have the following frequency designators:

REPEATER	RADIO CHANNEL
L1 Logistics Repeater	Group 1 Ch 2
L2 Logistics Repeater	Group 1 Ch 4
L3 Logistics Repeater	Group 1 Ch 6
L4 Logistics Repeater	Group 1 Ch 8
L5 Logistics Repeater	Group 1 Ch 10
L6 Logistics Repeater	Group 1 Ch 12
L7 Logistics Repeater	Group 1 Ch 14

### **4281 Crossband Link Kit**

The Crossband Link is designed to provide support for special operations on an incident that requires UHF frequency to VHF frequency conversion. This unit is in a Daniels rack with both a UHF transmitter and receiver and a VHF transmitter and receiver and can be programmed with special frequencies. Please contact the NIICD-CDO for ordering, design, and frequency coordination. This unit is not a repeater.

### **4300 Ground VHF-AM Base Station Kit**

The Ground VHF-AM Base Station kit is a portable 760-channel VHF-AM base station. This kit cannot be linked. Kits are used primarily as a base station to contact aircraft on Forest Health Protection projects and on incidents. Base stations will transmit 7 watts, are capable of 10 pre-set channels, will scan, and operate using 115 VAC or 12 VDC through an automobile accessory plug-in. Four (4) handheld ICOM VHF-AM radios are included, as well as T-cards for radio check-out.

If this kit is to be used as an FAA portable control tower, the NFES 4300 order MUST be placed by the incident COML.

## 4312 Command Repeater w/Link

### Stand-alone Repeater Configuration:

The Command Repeater must be used in conjunction with a Command/Tactical Radio Kit, NFES #4381. The kit is a battery operated portable repeater designed for mountainous terrain and/or extended area coverage applicable to incident operational requirements. NIRSC Command repeater/Links will link to other VHF/UHF Repeaters using the UHF Link Modules included in the NFES 4312 kit. Repeaters should be ordered by NFES #. NIRSC frequencies must be cleared for use BEFORE shipment is made. Call the NIICD-CDO at (208) 387-5644 for clearance. The NIICD-CDO will assign a frequency if none is indicated on the resource order.

All Command Repeater/Links are single channel. If an additional repeat frequency is necessary, a separate Command Repeater/Link must be ordered. Orders will be filled based on priority need. Frequencies must be coordinated to reduce interference problems. All repeaters are capable of being tone-controlled (decode only). A tone-controlled repeater will operate as a normal repeater (carrier squelch) when not in the tone mode. Call the NIICD-CDO for more information on tone-control applications. The unit can be operated from the supplied alkaline batteries (@ 15 Volts) or from an external 12 Volt DC power source (i.e. heavy duty car battery, DC power supply, or solar panels). If a 12 Volt DC power supply is used, it should have a minimum 5 amp continuous duty capability.

NIRSC Channel Plan: Radios are configured to match up with repeaters as follows:

Radio	Radio
ALL	ALL
Cmd Repeater C1 Group 1 Ch 6	Cmd Repeater C5 Group 2 Ch 6
Cmd Repeater C2 Group 1 Ch 8	Cmd Repeater C6 Group 2 Ch 8
Cmd Repeater C3 Group 1 Ch 10	Cmd Repeater C7 Group 2 Ch 10
Cmd Repeater C4 Group 1 Ch 12	

**Note: If a special repeater is being sent to your incident the COML will need to program the radios with the frequencies.**

**Note: Verify that the UHF Modules are in the “OFF” position when used as a stand-alone command repeater.**

## **Repeater and Link Configuration:**

The UHF Link is used to link UHF-FM and VHF-FM together to extend area coverage for large incidents.

Uses include:

Linking two (2) or more VHF-FM Command Repeater/Links (NFES# 4312), using NIRSC frequencies.

Linking one (1) or more VHF-FM Command Repeater/Links in configuration with a UHF Repeater to establish communications with the incident operations area back to an ICP located in difficult terrain.

The Command Repeater/Link (NFES# 4312) contains two (2) UHF modules (1-RX and 1-TX), that are permanently installed into the Daniels repeater (NFES# 4312) backplane along with two (2) RF cables that connect the modules to the antenna relay. A UHF whip antenna and a UHF Yagi antenna with 20 foot RF cables are included in the Command Repeater/Link NFES# 4312 shipping container to expedite all installation options.

### **4330 Remote Kit**

The Remote kit can be used with VHF-FM (tactical) and UHF-FM (logistics) radios. Use of this kit, in conjunction with NIRSC radios, allows a remote base station to be installed up to a half mile away from the ICP, camp, helibase, etc.

The radio, chassis and battery are enclosed in a steel box which is removable from the shipping container. This allows for placement of the box at the base of the antenna while running only a wire pair to the desk set location. VHF and UHF King Radios are included in the chassis box, eliminating the need for multiple interface cables.

Several antenna options are available including omni-directional UHF and VHF antennas and a breakdown UHF Yagi directional gain antenna.

### **4370 Ground Aircraft Radio/Link Kit**

This Daniels kit is a portable, battery operated, all in one, VHF-AM aircraft base station and UHF-FM link. All aircraft kits operate as a base station or as a cross-band link. There are two sets of antennas (VHF-AM

and UHF-FM) for use in the link configuration. All kits include four (4) handheld ICOM VHF-AM radios.

Due to airline weight restrictions, this kit will be shipped in two (2) boxes on orders requiring air charter or air freight. Box one will contain the radio equipment and antennas. Box two will contain the remaining accessories and will be listed on a separate inventory sheet. Ground freight orders will continue to be shipped in a single container.

The Ground Aircraft Radio/Link uses a 12 Volt DC power source. The unit can be operated from the supplied alkaline batteries (@ 15 Volts) or from an external 12 Volt DC power source (i.e. heavy duty car battery, DC power supply, or solar panels). If a 12 Volt DC power supply is used, it should have a minimum 5 amp continuous duty capability. Additional ICOM radios can be ordered to supplement a full kit. Call the NIICD-CDO for ordering assistance. Supplies are limited, therefore orders will be filled on a priority basis.

### **4381 Command Radio Kit**

This VHF Radio kit is designed for use in command and tactical operations of an incident. Each kit contains sixteen (16) handheld radios. All radios are configured with all tactical, command and national air frequencies. The radios in each kit are the same manufacturer and model.

The issue document that you receive with these kits will reference a subkit, i.e. (4353) issued with the kit. This sub-kit is not a separate item and therefore not visible or trackable. It is used to capture costs of the accessories for the different radios that you receive. It is for NIRSC use only. Frequency charts are included in the kit, as well as T-cards for radio checkout. Boxes are labeled on the outside to indicate the type of radios contained within, according to the following convention:

4381-K \_\_ \_\_ \_\_ (K = King, R = Racal, D = Datron Guardian 25, KD=King DPHx)

NIRSC frequencies must be cleared for use BEFORE shipment is made. Call the NIICD-CDO for clearance.

The following table lists the repeater frequency designations with the corresponding radio channel assignments.

Radio	Radio
ALL	ALL
Cmd Repeater C1 Group 1 Ch 6	Cmd Repeater C5 Group 2 Ch 6
Cmd Repeater C2 Group 1 Ch 8	Cmd Repeater C6 Group 2 Ch 8
Cmd Repeater C3 Group 1 Ch 10	Cmd Repeater C7 Group 2 Ch 10
Cmd Repeater C4 Group 1 Ch 12	

### **Command/Tac Radios:**

Command/Tac radios are programmed by the NIRSC to be compatible with each system in which they are included. King EPH series radios are 210 channels, and are capable of operating in either wide or narrowband mode. The Racal and Datron are 256 channel radios. The King DPH has 400 channels. All radios are capable of operating in wide, or narrowband mode, as well as digital.

The King EPH radios have 15 groups of 14 channels. The King DPH Radios have 25 groups of 16 channels. The Racal and Datron Guardian 25 have 16 groups of 16 channels.

The NIRSC recommends that users limit the number of scanned channels to three (3) and to use the HIGH POWER TX mode sparingly. These options increase the load on the batteries which will rapidly reduce battery life.

**NOTE: 1.) All clamshells included in radio kits must be returned. 2.) The NIRSC King Radio Kits use 9-cell clamshells only!! Do not use more than 9 cells!**

### **4390 Starter System - ICS Command/Logistics Radio System**

The starter system is designed to be the initial system to support basic incident communications requirements. The system supplies equipment which will facilitate immediate communications for command, tactical, logistical and ground-to-air needs. The Starter System consists of:

- 1- Command Repeater/Link
- 3 - CMD/TAC Radio Kits (total of 48 radios)
- 1 - Ground Aircraft Radio/Link Kit (with 4 ICOM radios)  
(Shipped via air there will be two (2) boxes)

- 2 - Remote Kits
- 1 - Satellite Iridium Phone Kit (when available)
- 1 - Logistics Repeater
- 1 - Logistics Radio Kit (total of 16 radios)

A logistics capability is sent with all Starter Systems, i.e., logistics repeater, logistics radio kit. Use of NIRSC frequencies must be cleared by the NIICD-CDO prior to shipment. The NIICD-CDO will assign frequencies if not indicated on the resource order.

A NIRSC User's Guide, (NFES# 0968) is included in each Command Repeater Kit.

In the case of a multi-branch or multi-incident complex, if several ICS Starter Systems are ordered, or if communications personnel are not familiar with NIRSC equipment, the NIICD-CDO must be contacted for ordering, system planning and frequency coordination assistance.

NIICD-CDO contact numbers:  
CDO Phone: (208) 387-5644  
Toll Free: 1- 877-775-3451

#### **4410 Public Address Kit**

The Public Address kit is primarily used at the ICP or in staging areas which house large numbers of personnel. It allows for broadcasting information or paging from a central point. The kits can be powered by either AC or batteries.

#### **4499 Air Attack Kit**

The Air Attack kit is built to supplement communications in contracted fixed-wing aircraft for missions ranging from reconnaissance to complex air attack. This kit can fit between the pilot and copilot seats in some aircraft (i.e. Cessna) and slightly behind the front seats in other aircraft. This kit creates an interface between the aircraft's existing audio system/radios and the Air Attack kit radios. All kits have the capability to operate two Technisonic Industries radios. Each kit will have two TDFM-136 radios.

The NFES 4499 Air Attack has a Dual Audio Control (COM/FM1/FM2/AUX1/AUX2/SC) for the pilot and co-pilot/ATGS, connectors for two AUX-FM type portable radio adapters, and two



passenger headset adapters. Kit headset jacks are 600-ohm impedance using standard audio and mic type connectors. The pilot and copilot/ATGS utilize case mounted headsets. Both passengers can operate all radios through the copilot/ATGS's transmitter selector. The "SC" position is simulcast transmission on both COM (aircraft VHF-AM) and FM1. Each kit includes two passenger headset adapters, two PT-300 PTT adapters, two BNC barrel connectors (for AUX-FM antenna connections), and instructions. Two (2) externally mounted VHF antennas are also required for operation.

This kit will ONLY be installed in aircraft meeting the National Air Tactical/ Reconnaissance Standards and passing an avionics inspection by a qualified Forest Service/AMD avionics inspector.

The NFES 4499 Air Attack Aux-FM portable radio adapter connectors accept the same adapter connections used in all helicopters. Contact the NIICD-CDO for availability of King & Racal AUX-FM adapter cables.

#### **4630 Satellite Iridium Phone Kit**

There are 35 Satellite Iridium Phone Kits ready for issue. These kits will be sent out with the 4390 Starter Systems as long as they are available.

#### **4800 Portable IR Downlink Kit**

The Portable IR Downlink kit is designated for use **only** by Infrared Interpreters (IRIN). It is used to transfer data from the infrared aircraft flying fire mapping missions to the IRIN on the ground, where delivery time is critical. All Kits (18 ea.) are designed with the novice user in mind. Easy to follow setup instructions are included so that the user need only to set up the antenna, connect a CAT 5 cable to the computer, and turn it on. All data will be transferred by the technician in the aircraft to the "My Documents" directory on the included PC in the ground station.

## **MAFFS Base Station**

There are four (4) MAFFS Base Stations ready for issue. MAFFS stands for Modular Airborne Fire Fighting System and is used in conjunction with Military C-130 Airtanker use. MAFFS Base Stations will only be issued to tanker bases where MAFFS operations are being conducted. A spare base station is available for non-MAFFS use.

This portable kit is a combination 136 to 174 MHz VHF-FM and 760 channel VHF-AM base station. The kit cannot be linked or remoted. Kits are used primarily for MAFFS Tanker Bases and other sites needing both VHF-FM and VHF-AM communications. The VHF-FM radio is a Technisonic TDFM-136 airborne radio capable of transmitting 10 watts, 120 preset channels, simultaneous Air Guard (168.6250) reception, and scanning. The VHF-AM radio will transmit 7 watts, is capable of 10 preset channels, and will scan. The TAF-550 operates using 115 VAC or 24 VDC/12VDC through an automobile accessory plug-in (24 VDC and 12 VDC plug-ins are not included with any dedicated MAFFS Base Station). A headset for the TAF-550 is included for noisy environments in addition to a handheld mic.

MAFFS kits also include ten (10) King 210 channel VHF-FM handheld radios, 4 Hi/Low impedance headsets and adapters. The spare base station will not be issued with portable radios, headsets, or adapters.

# GENERAL COMMUNICATIONS CONDITIONS & SOLUTIONS

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Drawing #:

(1) Command/Tac Radio Kit and Command Repeater/Link Kits .....	26
(2) One-Hop Logistics Repeater with Logistics Radio Kit.....	27
(3) Command/Tac Radio Kit and Command Repeater/Link with Remote Kit.....	28
(4) Incident Operations Area to ICP/ICC Backbone.....	29
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## GENERAL COMMUNICATIONS CONDITIONS & SOLUTIONS

<b>CONDITIONS</b>	<b>EQUIPMENT SOLUTIONS</b>	<b>NFES#</b>	<b>DWG#</b>
All incident area is not line-of-sight	<b>CMD/TAC Radio Kit</b> <b>CMD Repeater/Link</b> <b>Remote Kit</b>  Use of a repeater generally allows more flexibility and gives wider coverage.	4381 4312 4330	1
Logistics points are not line-of-sight	<b>Logistics Radio Kit</b> <b>Logistics Repeater Kit</b> <b>Remote Kit</b>  To be used to tie logistics points together if not line-of-sight.	4244 4248 4330	2
ICP/ICC not in line-of-sight with incident CMD Repeater	<b>CMD/TAC Radio Kit</b> <b>CMD Repeater/Link</b> <b>Remote Kit</b>  Remote kit will allow ICP/ICC radio to be installed at a location up to one mile away, where line-of-sight exists, but be controlled from the ICP/ICC through a desk set.	4381 4312 4330	3
Need to backbone CMD Repeater to reach the ICP/ICC due to terrain problems	<b>CMD Repeater/Link</b> <b>Logistics Repeater</b> <b>Remote Kit</b>  Logistics UHF and CMD VHF are not normally linked. However, terrain problems may dictate linking a CMD Repeater, via a UHF Link to a Logistics Repeater, for the incident operations area to reach the ICP/ICC.	4312 4248 4330	4
Need to link two ends of an incident which has considerable linear distance or terrain problems	<b>Two CMD Repeater/Links</b> <b>Remote Kit</b>  UHF Links are hard-linked to CMD Repeaters, which are located to cover the far ends of the incident. Repeaters are linked via a designated UHF frequency.	4312 4330	5
Need to link more than two CMD Repeaters to cover large incidents or multiple small incidents	<b>Three or more CMD RPT/Links</b> <b>Remote Kit</b>  UHF Links are on simplex frequency which allows linking of all CMD RPTs. All UHF Links MUST be line-of-sight with each other. Each CMD Repeater is on a different frequency. Call NIICD CDO for assistance.	4312 4330	6

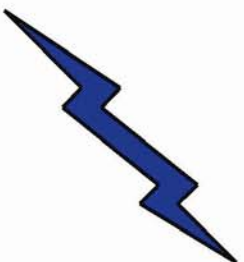
## GENERAL COMMUNICATIONS CONDITIONS & SOLUTIONS

CONDITIONS	EQUIPMENT SOLUTIONS	NFES#	DWG#
<p>Need to link two ends of an incident over long distance OR neither CMD Repeater can reach ICP/ICC</p>	<p><b>Two CMD Repeater/Links</b>  <b>Logistics Repeater</b>  <b>Remote Kit</b></p> <p>UHF Repeater links both linked CMD Repeaters to the ICP/ICC or UHF Repeater is needed to link both CMD Repeaters due to terrain and distance.</p>	<p>4312  4248  4330</p>	<p style="text-align: center;">7</p>
<p>Need to link more than two CMD RPTs. All UHF Links are not line-of-sight with each other. Used to link a large incident or multiple small incidents</p>	<p><b>Three or more CMD RPT/Links</b>  <b>Logistics Repeater Kit</b>  <b>Remote Kit</b></p> <p>UHF Repeater is hub which links all CMD RPTs. All UHF Links MUST be line-of-sight with the UHF RPT. ICP/ICC can be tied in through one of the CMD RPTs, or the UHF RPT. Each CMD RPT is on a different frequency. Call NIICD CDO for assistance.</p>	<p>4312  4248  4330</p>	<p style="text-align: center;">8</p>
<p>New, growing incident needs communications.</p>	<p><b>ICS Starter System</b></p> <p>Contains sufficient equipment to initially supply a new incident which has potential for increasing in size.</p> <p>System includes:  CMD Repeater/Link  CMD/TAC Radio Kits (3 ea.)  Ground A/C Radio/Link Kit  Remote Kit (2 ea.)  Satellite Iridium Phone Kit ( 1 ea. When available)  Logistics Repeater  Logistics Radio Kit (1 ea.)</p>	<p>4390</p>	

# COMMAND/TACTICAL RADIO KIT AND COMMAND REPEATER/LINK



COMMAND REPEATER/LINK



INCIDENT OPERATIONS AREA

REPEATER REQUIRED BECAUSE LINE-OF-SIGHT  
DOES NOT EXIST OVER ENTIRE INCIDENT AREA.

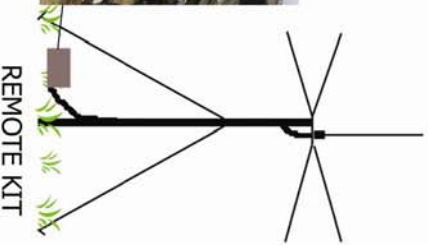
DRAWING 1

## EQUIPMENT NEEDED:

- 1 EA. 4381 CMD/TAC RADIO KIT
- 1 EA. 4312 COMMAND REPEATER/LINK
- 1 EA. 4330 REMOTE KIT



ICP/JCC OR  
OTHER INCIDENT  
OPERATIONS AREA



REMOTE KIT

# ONE-HOP LOGISTICS REPEATER WITH LOGISTICS RADIO KIT

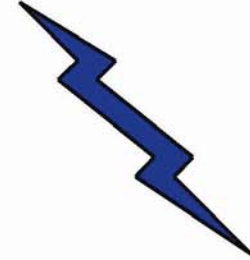
NOTE: SHOULD SPECIFY REPEATER FREQUENCIES WHEN ORDERING.



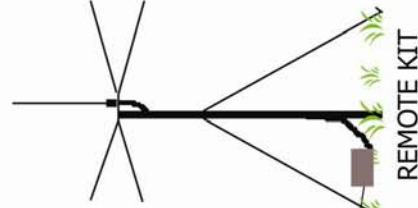
LOGISTICS REPEATER

## EQUIPMENT NEEDED:

- 1 EA. 4244 LOGISTICS RADIO KIT
- 1 EA. 4248 LOGISTICS REPEATER
- 2 EA. 4330 REMOTE KIT



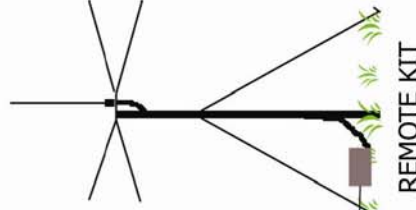
EXPANDED DISPATCH, SPIKE CAMPS, STAGING AREAS, ETC.



REMOTE KIT



ICP/ICC



REMOTE KIT

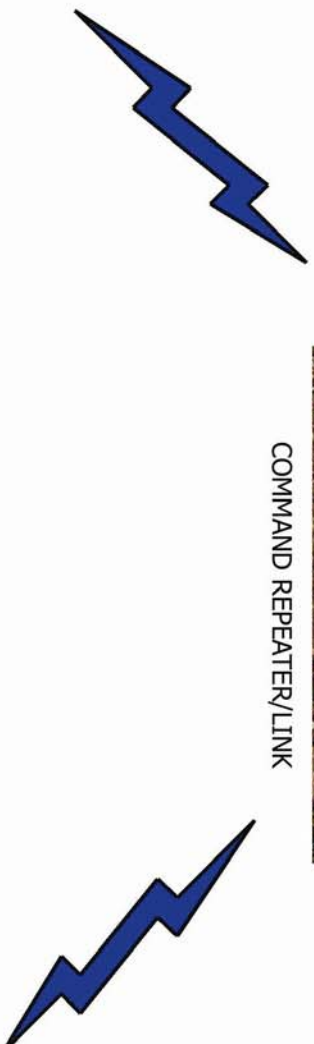
REPEATER REQUIRED BECAUSE LINE-OF-SIGHT DOES NOT EXIST BETWEEN LOCATIONS.

# COMMAND/TACTICAL RADIO KIT AND COMMAND REPEATER/LINK WITH REMOTE KIT



COMMAND REPEATER/LINK

- EQUIPMENT NEEDED:
- 1 EA. 4381 CMD/TAC RADIO KIT
  - 1 EA. 4312 COMMAND REPEATER/LINK
  - 1 EA. 4330 REMOTE KIT



INCIDENT OPERATIONS AREA

REMOTE UNIT REQUIRED WHEN NO LINE-OF-SIGHT  
EXISTS BETWEEN THE COMMAND REPEATER SITE  
AND THE ICP/ICC SITE.

DRAWING 3



REMOTE KIT  
(INSTALLED LINE-OF-SIGHT  
TO REPEATER)



ICP/ICC



**INCIDENT OPERATIONS AREA  
TO ICP/ICC BACKBONE**

**EQUIPMENT NEEDED:**

- 1 EA. 4248 LOGISTICS REPEATER
- 1 EA. 4312 COMMAND REPEATER/LINK
- 1 EA. 4330 REMOTE KIT



COMMAND REPEATER/LINK



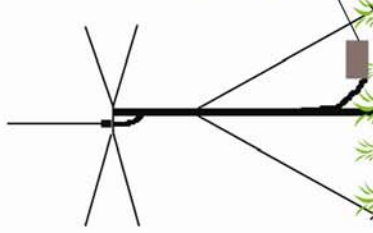
LOGISTICS REPEATER



INCIDENT OPERATIONS AREA

USE WHEN TERRAIN LIMITS LINE-OF-SIGHT ACCESS TO THE  
COMMAND REPEATER FROM THE ICP/ICC, AND INSTALLATION  
OF A REMOTE KIT TO GAIN LINE-OF-SIGHT IS NOT POSSIBLE.

NOTE: FREQUENCY COORDINATION WITH THE COMC OR CDO IS  
REQUIRED.



REMOTE KIT



ICP/ICC

# LARGE INCIDENT OPERATIONS AREA LINKING SYSTEM



COMMAND REPEATER/LINK



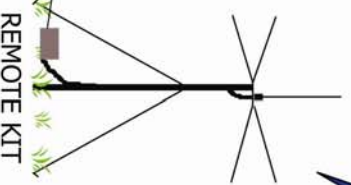
INCIDENT OPERATIONS AREA



COMMAND REPEATER/LINK



ICP/ICC



REMOTE KIT



INCIDENT OPERATIONS AREA

- EQUIPMENT NEEDED:
- 2 EA. 4312 COMMAND REPEATER/LINK
  - 1 EA. 4330 REMOTE KIT

A SYSTEM OF REPEATERS AND LINKS THAT EXTENDS COMMUNICATIONS COVERAGE FOR AN INCIDENT WHICH HAS A LARGE OPERATIONAL AREA. FREQUENCY COORDINATION WITH COMC OR CDO REQUIRED.

NOTE: THIS SYSTEM LINKS TWO (2) DIFFERENT COMMAND FREQUENCIES.



# EXTENDED OR MULTIPLE INCIDENT OPERATIONS AREA LINKING SYSTEM



COMMAND REPEATER/LINK



INCIDENT OPERATIONS AREA



COMMAND REPEATER/LINK



INCIDENT OPERATIONS AREA



EQUIPMENT NEEDED:

- 2 EA. 4312 COMMAND REPEATER/LINKS
- 1 EA. 4330 REMOTE KIT



A SERIES OF REPEATERS AND LINKS THAT EXTENDS COMMUNICATIONS COVERAGE FOR MULTIPLE SMALL INCIDENTS OR FOR AN INCIDENT WHICH HAS AN EXTENDED OPERATIONAL AREA. COMMUNICATIONS WITH THE ICP/ICC IS THROUGH ONE OF THE COMMAND REPEATERS. A SIMPLEX UHF FREQUENCY LINKS THE SYSTEM. ADDITIONAL REPEATERS AND LINKS CAN BE ADDED AS LONG AS THEY ARE LINE-OF-SIGHT WITH ALL OTHER UHF LINKS. FREQUENCY COORDINATION WITH COMC OR CDO IS REQUIRED.

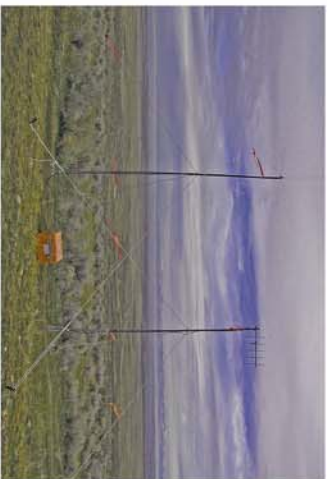
NOTE: EACH COMMAND REPEATER IS A DIFFERENT FREQUENCY.

DRAWING 6

# EXTENDED INCIDENT OPERATIONS AREA LINKING SYSTEM

## EQUIPMENT NEEDED:

- 2 EA. 4312 COMMAND REPEATER/LINK
- 1 EA. 4330 REMOTE KIT
- 1 EA. 4248 LOGISTICS REPEATER



COMMAND REPEATER/LINK



LOGISTICS REPEATER



COMMAND REPEATER/LINK



VHF



UHF

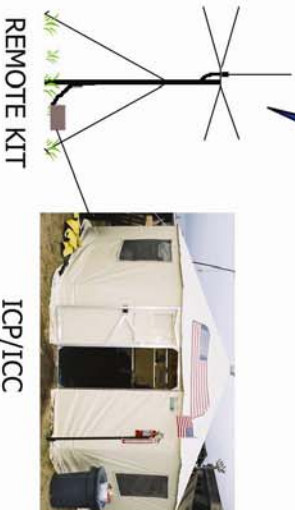


VHF

OR



UHF

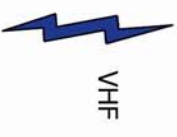


REMOTE KIT

ICP/ICC



UHF



VHF

A SERIES OF REPEATERS AND LINKS THAT EXTENDS COMMUNICATIONS COVERAGE FOR AN INCIDENT WHICH HAS AN EXTENDED OPERATIONAL AREA, OR WHERE NEITHER COMMAND REPEATER IS LINE-OF-SIGHT TO THE ICP/ICC, BUT CAN BE LINKED USING A LOGISTICS REPEATER AT AN INTERMEDIATE SITE. FREQUENCY COORDINATION WITH COMC OR CDO IS REQUIRED.

NOTE: THIS SYSTEM LINKS TWO (2) DIFFERENT COMMAND FREQUENCIES AND ONE (1) LOGISTICS FREQUENCY.



INCIDENT OPERATIONS AREA



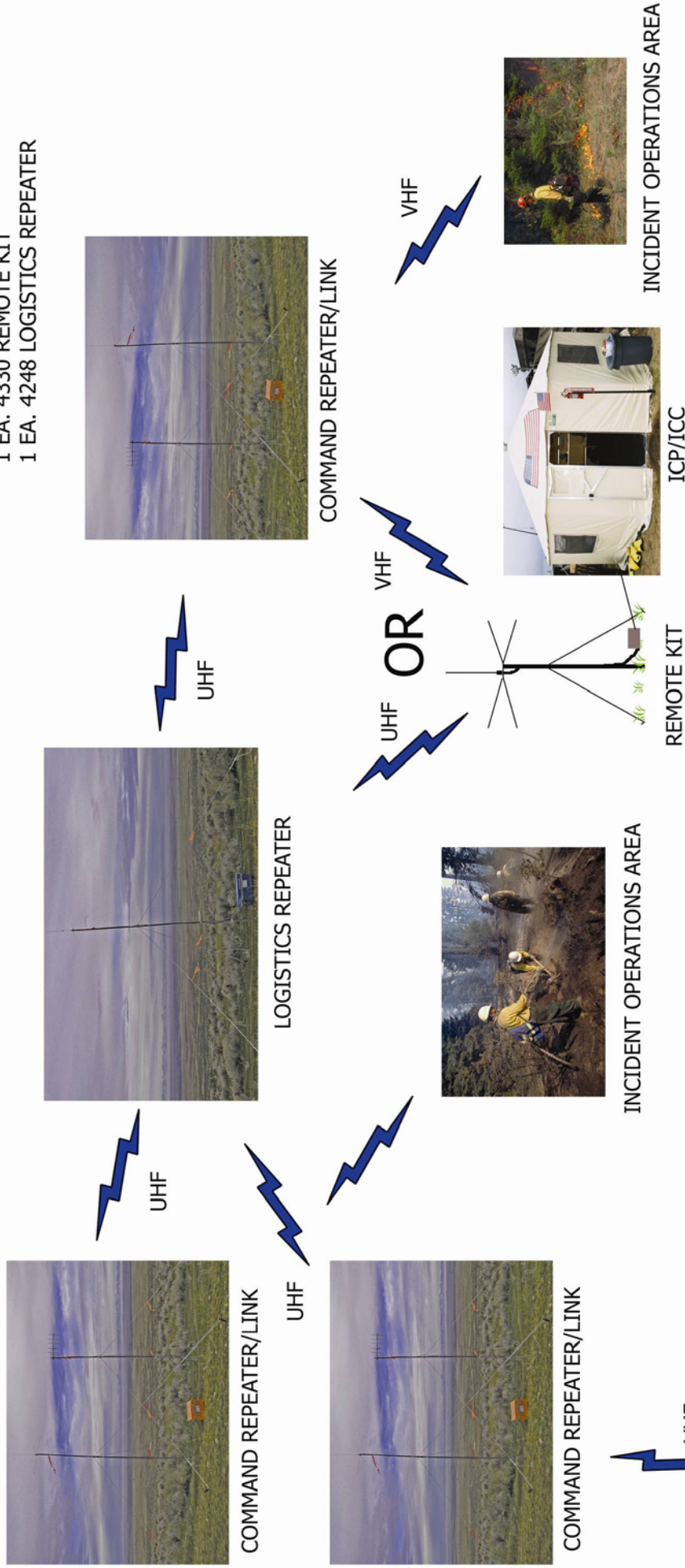
INCIDENT OPERATIONS AREA



# EXTENDED OR MULTIPLE INCIDENT OPERATIONS AREA LINKING SYSTEM

## EQUIPMENT NEEDED:

- 3 EA. 4312 COMMAND REPEATER/LINK
- 1 EA. 4330 REMOTE KIT
- 1 EA. 4248 LOGISTICS REPEATER



A SERIES OF REPEATERS AND LINKS THAT EXTENDS COMMUNICATIONS COVERAGE FOR MULTIPLE SMALL INCIDENTS OR FOR AN INCIDENT WHICH HAS AN EXTENDED OPERATIONAL AREA. COMMUNICATIONS WITH THE ICP/ICC MAY BE THROUGH ONE OF THE COMMAND REPEATERS OR THROUGH THE LOGISTICS REPEATER WHICH LINKS THE ENTIRE SYSTEM. ADDITIONAL REPEATERS AND LINKS CAN BE ADDED, AS LONG AS THEY ARE LINE-OF-SIGHT WITH THE LOGISTICS REPEATER. FREQUENCY COORDINATION WITH THE COMC OR CDO IS REQUIRED.

NOTE: EACH COMMAND REPEATER IS A DIFFERENT FREQUENCY.

# AVIATION COMMUNICATIONS CONDITIONS & SOLUTIONS

Aircraft Equipment Conditions.....35

Drawing #:

(9)	Ground VHF-AM Base Station Kit.....	37
(9)	Ground to Aircraft Radio/Link Kit (Used as Base Station).....	37
(10)	Ground to Aircraft Radio/Link Kit (Using Linking) .....	38
(11)	Ground to Aircraft Radio/Link Kit (Extended Range with 2 Kits) .....	39
(12)	Portable IR Data Downlink Kit .....	40

## AIRCRAFT EQUIPMENT CONDITIONS

CONDITIONS	EQUIPMENT SOLUTIONS	NFES#	DWG#
<p>Ground/Air for Forest Health Protection Projects Ground VHF-AM Base Station Kit</p>	<p><b>Ground VHF-AM Base Station Kit</b></p> <p>For Forest Health Protection projects and incidents needing VHF-AM base station capabilities. This kit includes four (4) programmable ICOM handheld radios. VHF-AM frequency used in kit must be cleared/authorized.</p>	4300	9
<p>Need helibase/airport ground to aircraft communications (VHF-AM).</p>	<p><b>Ground Aircraft Radio/Link Kit</b></p> <p><b>Base Station Use Only:</b> Will communicate directly with aircraft, without modification, on VHF-AM frequencies. Dedicated frequency should be ordered/cleared by Expanded Dispatch/RO/NIRSC. All kits include four (4) programmable ICOM radios. (Kit is used as a base station, without the link, in this instance.)</p>	4370	9
<p>Helibase/helispot personnel must communicate with incident aircraft in remote locations, as well as flight-follow to/from the operations area and the helibase or helispots. (UHF-FM to VHF-AM)</p>	<p><b>Ground Aircraft radio/Link Kit utilizing Link capability:</b></p> <p>Allows helispot personnel using VHF-AM ICOM or UHF-FM radios to communicate with aircraft on VHF-AM frequencies. Kit also enables non-contract or military aircraft to communicate with other incident aircraft and helispot personnel via VHF-Am frequencies and helibase personnel via UHF-FM through the link.</p> <p>Dedicated VHF-Am and UHF-FM frequencies must be ordered/cleared by Expanded Dispatch/RO/NIRSC. A VHF radio can be substituted on the link side. Call NIICD-CDO for assistance.</p> <p>Each kit includes four (4) handheld programmable ICOM radios.</p>	4390	10

## AIRCRAFT EQUIPMENT CONDITIONS

<b>CONDITIONS</b>	<b>EQUIPMENT SOLUTIONS</b>	<b>NFES#</b>	<b>DWG#</b>
<p>Extensive flight-following needs require expansion of Radio/Link Kit system utilizing two (2) kits.</p>	<p><b>Ground Aircraft Radio/Link Kit</b></p> <p>By using two (2) Ground Aircraft Radio/Link Kits linked on a single UHF-FM frequency, flight-following capabilities can be greatly expanded.</p> <p>This design uses one (1) UHF-FM and two (2) VHF-AM frequencies. Helibase must flight-follow using the UHF-FM side of the system.</p> <p>Dedicated VHF-AM and UHF-FM frequencies must be ordered through Expanded Dispatch.</p> <p>A VHF radio can be substituted on the link side. Call NIICD-CDO for assistance and clearance of frequencies for assignment.</p> <p>Each kit includes four (4) handheld programmable ICOM radios.</p>	<p>4370</p>	<p>11</p>



**GROUND VHF-AM BASE STATION KIT  
&  
GROUND TO AIRCRAFT RADIO/LINK KIT  
(Used as a Base Station)**

EXCLUSIVE INCIDENT FAA FREQUENCY SHOULD BE ORDERED THROUGH EXPANDED DISPATCH.

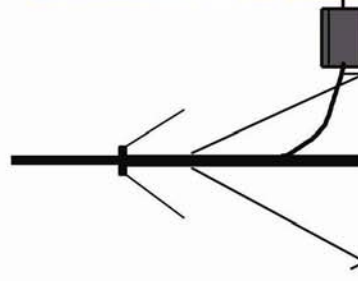


**EQUIPMENT NEEDED:**

1 EA. 4370 GROUND A/C RADIO/LINK KIT  
(INCLUDES 4 EA. ICOM HANDHELDS)

**OR**

1 EA. 4300 GROUND VHF-AM RADIO/BASE KIT  
(INCLUDES 4 EA. ICOM HANDHELDS)



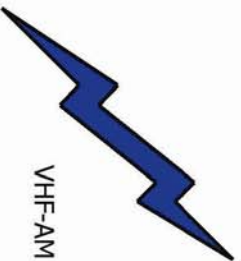
VHF-AM GROUND A/C RADIO



HELIBASE/AIRPORT

# GROUND TO AIRCRAFT RADIO/LINK KIT (Using Linking)

EXCLUSIVE INCIDENT FAA FREQUENCY SHOULD BE CLEARED/ORDERED THROUGH EXPANDED DISPATCH.



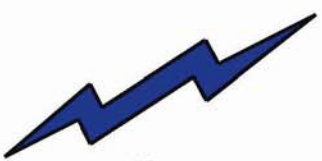
VHF-AM



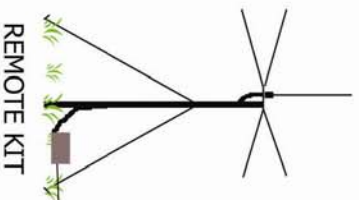
VHF-AM/UHF GRND A/C RADIO/LINK

## EQUIPMENT NEEDED:

- 1 EA. 4370 GROUND A/C RADIO/LINK KIT (INCLUDES 4 EA. ICOM HANDHELDS)
- 1 EA. 4330 REMOTE KIT



UHF-FM



REMOTE KIT



HELIBASE

THIS SYSTEM EXTENDS FLIGHT FOLLOWING COVERAGE. KIT CAN ALSO BE OPERATED WITH A VHF-FM RADIO IN THE LINK PORTION OF THE KIT. CALL NIICD CDO FOR FREQUENCY ASSISTANCE.

DRAWING 10

# GROUND TO AIRCRAFT RADIO/LINK KIT (Extended Range with 2 Kits)

EXCLUSIVE INCIDENT FAA FREQUENCY  
SHOULD BE CLEARED/ORDERED THROUGH  
EXPANDED DISPATCH.

EQUIPMENT NEEDED:

2 EA. 4370 GROUND A/C RADIO/LINK KIT  
(INCLUDES 4 EA. ICOM HANDHELDS)



VHF-AM/UHF GRND A/C RADIO/LINK



VHF-AM/UHF GRND A/C RADIO/LINK



VHF-AM



HELISPOT  
W/ICOM



HELIBASE  
W/ICOM

USING TWO (2) A/C KITS LINKED TOGETHER BY UHF-FM ALLOWS FOR  
GREATER AREA COVERAGE FOR FLIGHT FOLLOWING. USES ONLY ONE  
(1) UHF-FM AND TWO (2) VHF-AM FREQUENCIES. CALL NIICD CDO FOR  
FREQUENCY ASSISTANCE.

DRAWING 11

## PORTABLE IR DATA DOWNLINK KIT

ONLY A QUALIFIED IRIN MAY ORDER THIS EQUIPMENT.

### EQUIPMENT NEEDED:

1 EA. 4800 IR DOWNLINK KIT



THESE UNITS ARE USED TO TRANSFER DIGITAL INFRARED IMAGE DATA TO THE IRIN WHEN TIME IS CRITICAL, OR A NEARBY LANDING FIELD CAN NOT BE USED. IT ALLOWS FOR THE RAPID TRANSFER OF THE IMAGERY AS IT IS COLLECTED BETWEEN RUNS.



DRAWING 12

ICP/IRIN

# KIT INVENTORIES

4244	Logistics Radio Kit.....	42
4248	Logistics Repeater Kit.....	43
4281	Crossband Link Kit .....	45
4300	Ground VHF-AM Base Station Kit.....	46
4312	Command Repeater/Link .....	47
4330	Remote Kit.....	48
4370	Ground Aircraft Radio/Link Kit.....	49
4381	CMD/TAC Radio Kit.....	51
4390	ICS Starter System .....	53
4410	Public Address Kit.....	54
4499	Air Attack Kit.....	55
4630	Satellite Iridium Phone Kit.....	56
	MAFFS Kit .....	58



**NATIONAL INCIDENT RADIO SUPPORT CACHE  
4244 LOGISTICS RADIO KIT  
(KING & MOTOROLA XTS 2500 UHF RADIOS)**

<b>TOTAL WEIGHT</b>	<b>CU FT</b>	<b>DIMENSIONS</b>
BOX 75 LBS	3.5	20"X21"X15"

**(STANDARD-ALL KITS)**

<b>NFES#</b>	<b>DESCRIPTION</b>	<b>QTY ISSUED</b>
4309	Box, fiberglass, (radio & rptr)	1 ea
4306	Liner, foam, radio kit	1 ea
	T-cards, radio tracking	32 ea
	Kit inventory worksheets	3 ea
	Lead box seals	2 ea
	Radio tracking sheets	3 ea
	Frequency sheets	3 ea
	<b>KING</b>	
	Radio, King, (capitalized)	16 ea
	<b>SUBKIT-4246</b>	
0030	Batteries, AA	12 pg
5340	Antenna, uhf, King	19 ea
5331	Case, radio, King	16 ea
1034	Holder, battery, AA, King	16 ea
5330	Speaker/mic, King	4 ea
4355	Antenna, mobile mag.	4 ea
5350	Antenna adapter, mobile mag, King	4 ea
5353	Guard, keyboard/faceplate, King	16 ea
	<b>(MOTOROLA)</b>	
	Radio, Motorola, XTS2500(capitalized)	16 ea
	<b>SUBKIT-4536</b>	
0030	Batteries, AA	16 pg
4540	Antenna, uhf, XTS 2500	19 ea
4542	Holster, leather, XTS 2500	16 ea
4537	Holder, battery, AA, XTS 2500	16 ea
4543	Speaker/mic, XTS 2500	4 ea
4355	Antenna, mobile mag, uhf	4 ea
4544	Cloning cable, XTS 2500	1 ea

**NATIONAL INCIDENT RADIO SUPPORT CACHE  
4248 LOGISTICS REPEATER**

	<b>WEIGHT</b>	<b>CU FT</b>	<b>DIMENSIONS</b>
<b>TOTAL</b>	95 LBS	4.5	
<b>BOX</b>	80 LBS	3.5	20"X21"X15"
<b>MASTS</b>	15 LBS	1.0	60"X3"X3"

<b>NFES#</b>	<b>DESCRIPTION</b>	<b>QTY ISSUED</b>
4309	Box, fiberglass, (radio & rptr)	1 ea
1023	Batteries, 7.5 Volt	4 ea
4297	Duplexer, Uhf	1 ea
0825	Tent stakes	3 ea
4171	Screwdriver, 6" straight slot	1 ea
4303	Hammer, 4 lb	1 ea
4304	Antenna, Uhf, whip, w/po-uhf load	1 ea
4489	Base antenna, Uhf w/gnd planes	1 ea
4308	Guy assembly, antenna	1 ea
4326	Cable, coaxial w/2 ea 4327 (pl-259)	1 ea
4339	Adapter, barrel connector	1 ea
4333	Wire assembly, fused	1 ea
4659	Microphone, Daniels	1 ea
4690	Screwdriver, Daniels	1 ea
4180	Connector, 90°, UHF	1 ea
	Power cord, w/ female cinch connector	1 ea
	Battery straps, 15 volt	3 ea
	Fuses, 3 ag 5 amp	1 bx
	Battery jumpers, 4-red, 4-black	8 ea
	Garbage bag	1 ea
	Filament tape	1 ro
	Flagging tape	1 ro
	Allen wrench	1 ea
	Kit inventory worksheets	3 ea
	Switch setting diagram (laminated)	1 ea
	Battery & antenna set-up sheets	3 ea
	Lead box seal	2 ea
4305	Masts, antenna, 5 ft. sect.	3 ea
4650	Card, audio control	1 ea
4651	Subrack	1 ea
4652	System monitor	1 ea
4677	Cable, uhf duplexer to radio	2 ea
4682	Transmitter, uhf, digital	1 ea
4683	Receiver, uhf, digital	1 ea

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**NATIONAL INCIDENT RADIO SUPPORT CACHE  
4281 CROSSBAND LINK**

	<b>WEIGHT</b>	<b>CU FT</b>	<b>DIMENSIONS</b>
<b>TOTAL</b>	95 LBS	4.5	
<b>BOX</b>	80 LBS	3.5	20"X21"X15"
<b>MASTS</b>	15 LBS	1.0	60"X3"X3"

<b>NFES#</b>	<b>DESCRIPTION</b>	<b>QTY ISSUED</b>
4309	Box, fiberglass, (radio & rptr)	1 ea
1023	Batteries, 7.5 Volt	4 ea
0825	Tent stakes	6 ea
4171	Screwdriver, 6" straight slot	1 ea
4303	Hammer, 4 lb	1 ea
4464	Antenna, vhf whip, with PO-150 load	1 ea
4304	Antenna, uhf whip, with PO-Uhf load	1 ea
4489	Base antenna, vhf w/gnd planes	1 ea
4489	Base antenna, uhf w/gnd planes	1 ea
4308	Guy assembly, antenna	2 ea
4326	Cable, coaxial w/2 ea 4327 (pl-259)	2 ea
4339	Adapter, barrel connector	2 ea
4333	Wire assembly, fused	1 ea
4180	Connector, 90 degree, uhf	2 ea
4659	Microphone, Daniels	1 ea
4690	Screwdriver, Daniels	1 ea
5208	Antenna, yagi, w/u-bolt, clamp, nuts	1 ea
	Power cord w/female cinch connector	1 ea
	Battery straps, 15 volt	3 ea
	Fuses, 3 ag 5 amp	1 bx
	Battery jumpers, 4-red, 4-black	8 ea
	Battery jumpers, 6-foot, 1-red, 1-black	2 ea
	Garbage bag	1 ea
	Filament tape	1 ro
	Flagging tape	1 ro
	Allen wrench	1 ea
	Kit inventory worksheets	3 ea
	Frequency sheets	3 ea
	Battery & antenna set-up sheets	3 ea
4651	Sub-rack, Daniels( 19")	1 ea
4684	Transmitter, vhf, digital	1 ea
4685	Receiver, vhf, digital	1 ea
4682	Transmitter, uhf, digital	1 ea
4683	Receiver, uhf, digital	1 ea
4668	Cable, receiver, A-side	1 ea
4669	Cable, transmitter, A-side	1 ea
4678	Cable, receiver, B-side Tx	1 ea
4679	Cable, transmitter, B-side Rx	1 ea
4675	Card, control, audio	1 ea
4665	Monitor, system	1 ea
4305	Masts, antenna, 5 ft. section	3 ea

**NATIONAL INCIDENT RADIO SUPPORT CACHE  
4300 GROUND VHF-BASE STATION**

	<b>WEIGHT</b>	<b>CU FT</b>	<b>DIMENSIONS</b>
<b>TOTAL</b>	95 LBS	4.5	
<b>BOX</b>	80 LBS	3.5	20"X21"X15"
<b>MASTS</b>	15 LBS	1.0	60"X3"X3"

<b>NEFS#</b>	<b>DESCRIPTION</b>	<b>QTY ISSUED</b>
4309	Box, fiberglass, (radio & rptr)	1 ea
4307	Liner, a/c 5-pocket	1 ea
1023	Battery, 7.5 volt	4 ea
0825	Tent stakes	3 ea
4303	Hammer, 4 lb	1 ea
4171	Screwdriver, 6" straight slot	1 ea
4308	Guy assembly, antenna	1 ea
4326	Cable, coaxial, w/2 ea 4327 (pl-259)	1 ea
0332	Wrench, adjustable, 6"	1 ea
4343	Antenna, vhf- am, AV-1	1 ea
4339	Adapter, barrel connector	2 ea
	N. male to uhf female adapter (rfn-1035-1)	1 ea
	120 volt ac power cord (TBS-150)	1 ea
	Adapter, car battery, female to battery connector	1 ea
	Adapter, car battery, male to 2 hole (TBS-150)	1 ea
	Battery jumpers, 4-red, 4-black	8 ea
	Battery straps, 15-volt	3 ea
	Fuses, 2AG, 5 amp mini (1 box)	5 ea
	Fuses, 3AG, 5 amp (1 box)	5 ea
	Fuses MDL, 2.5 amp (1 box)	5 ea
	Kit inventory worksheets	3 ea
	Battery & antenna set-up sheets	3 ea
	Installation instruction sheets	3 ea
	Frequency sheets for Icoms	4 ea
	Lead box seal	2 ea
	Garbage bag	1 ea
	Filament tape	1 ro
	Flagging tape	1 ro
	Instruction manual (TBS-150)	1 ea
5066	Mic. (Telex) w/three pin male connector	1 ea
0030	Battery, AA	4 pg
5083	Holder, battery, AA, Icom	4 ea
5084	Case, radio, Icom	4 ea
5082	Antenna, Icom, handheld, helical	5 ea
	Operating booklet, Icom	1 ea
	T-cards, radio tracking	8 ea
4305	Masts, antenna, 5 ft section	3 ea

**NATIONAL INCIDENT RADIO SUPPORT CACHE  
4312 COMMAND REPEATER/LINK**

	<b>WEIGHT</b>	<b>CU FT</b>	<b>DIMENSIONS</b>
<b>TOTAL</b>	110 LBS	4.5	
<b>BOX</b>	95 LBS	3.5	20"X21"X15"
<b>MASTS</b>	15 LBS	1.0	60"X3"X3"

4309	Box, fiberglass, (radio & rptr)	1 ea
1023	Batteries, 7.5 Volt	4 ea
4342	Duplexer, vhf	1 ea
0825	Tent stakes	6 ea
4171	Screwdriver, 6" straight slot	1 ea
4303	Hammer, 4 lb	1 ea
4464	Antenna, vhf whip, with PO-150 load	1 ea
4304	Antenna, uhf whip, with PO-UHF load	1 ea
4489	Base antenna, w/grnd planes( 1-vhf 1-uhf)	2 ea
4308	Guy assembly, antenna	2 ea
4326	Cable, coaxial w/2 ea 4327 (pl-259)	2 ea
4339	Adapter, barrel connector	2 ea
4333	Wire assembly, fused	1 ea
4659	Microphone, Daniels	1 ea
4690	Screwdriver, Daniels	1 ea
4180	Connector, 90 degree, Uhf	2 ea
5208	Antenna, Yagi, w/ u-bolt, clamp, nuts	1 ea
	Power cord w/female cinch connector	1 ea
	Battery straps, 15 volt	3 ea
	Fuses, 3 ag 5 amp	1 bx
	Battery jumpers, 4-red, 4-black	8 ea
	Garbage bag	1 ea
	Filament tape	1 ro
	Flagging tape	1 ro
	Allen wrench	1 ea
	Kit inventory worksheets	3 ea
	Switch setting diagrams (laminated)	2 ea
	Battery & antenna set-up sheets	3 ea
	Frequency sheets for UHF link	3 ea
	User's guide	1 ea
	Lead box seal	2 ea
4305	Masts, antenna, 5 ft. section	6 ea
4650	Card, audio control	1 ea
4651	Subrack	1 ea
4652	System monitor	1 ea
4676	Cable, vhf duplexer to radio	2 ea
4678	Cable, uhf transmitter to monitor	1 ea
4679	Cable, uhf receiver to monitor	1 ea
4682	Transmitter, uhf, digital	1 ea
4683	Receiver, uhf, digital	1 ea
4684	Transmitter, vhf, digital	1 ea
4685	Receiver, vhf, digital	1 ea

**NATIONAL INCIDENT RADIO SUPPORT CACHE  
4330 REMOTE KIT**

	<b>WEIGHT</b>	<b>CU FT</b>	<b>DIMENSIONS</b>
<b>TOTAL</b>	105 LBS	4.5	
<b>BOX</b>	95 LBS	3.5	20"X21"X15"
<b>MASTS</b>	15 LBS	1.0	60"X3"X3"

<b>NFES#</b>	<b>DESCRIPTION</b>	<b>QTY ISSUED</b>
4309	Box, fiberglass (radio & rptr)	1 ea
4473	Desk set, CPI, Mod. DR-10	1 ea
1023	Battery, 7.5 volt	2 ea
1233	Battery, 6 volt hotshot	2 ea
4332	Wire, field telephone, ¼ mile reel	1 ro
0825	Tent stakes	3 ea
4171	Screwdriver, 6" straight slot	1 ea
4303	Hammer, 4 lb	1 ea
4464	Antenna, vhf whip w / po-150 load	1 ea
4304	Antenna, uhf whip w/ po-uhf load	1 ea
4489	Base antenna, w/ grnd planes - vhf	1 ea
4489	Base antenna, w/ grnd planes - uhf	1 ea
5208	Antenna, yagi, w/u-bolt, clamp, nuts	1 ea
4308	Guy assembly, antenna	1 ea
4326	Cable, coaxial w/ 2 ea 4327 ( PL-259 )	1 ea
4339	Adapter, barrel connector	1 ea
0325	Pliers, lineman	1 ea
4180	Connector, 90 degree, uhf	1 ea
4302	Wire assembly, fused, dc/1 amp 3-hole	1 ea
4274	Ac/dc transformer	1 ea
4409	Speaker, external, 8-ohm	1 ea
	External power cord w/2- prong plug/dc	1 ea
	Kit inventory worksheets	3 ea
	Battery & antenna set-up sheets w/instructions	3 ea
	Allen wrench	1 ea
	Lead box seal	2 ea
	Garbage bag	1 ea
	Fuses 1 amp ( for telephone only )	1 bx
	Wire nuts	6 ea
	Battery jumpers, 3 Red, 3 Black	6 ea
	Filament tape	1 ro
	Flagging tape	1 ro
4305	Masts, antenna, 5 ft section	3 ea
4471	Gray box for remote chassis	1 ea
5327	Battery eliminator, King	1 ea
5342	Panel, termination	1 ea
5326	Cable / connector assy, King	1 ea
5338	Box, aluminum - ( 5 ¾ x 3 ¾ x 2 )	1 ea
	Fuse, 5 amp ( for chassis only )	1 ea
	King Radio UHF	1 ea
	King Radio VHF	1 ea

**NATIONAL INCIDENT RADIO SUPPORT CACHE  
4370 GROUND AIRCRAFT RADIO/LINK KIT**

	<b>WEIGHT</b>	<b>CU FT</b>	<b>DIMENSION</b>
<b>TOTAL</b>	110 LBS	4.5	
<b>BOX</b>	95 LBS	3.5	20"X21"X15"
<b>MASTS</b>	15 LBS	1.0	60"X3"X3"

<b>NFES#</b>	<b>DESCRIPTION</b>	<b>QTY ISSUED</b>
4309	Box, fiberglass, (radio & rptr)	1 ea
4307	Liner, foam 5 pocket	1 ea
1023	Battery, 7.5 volt	4 ea
0825	Tent stakes	6 ea
4659	Microphone, Daniels	1 ea
4303	Hammer, 4 lb	1 ea
4343	Antenna, vhf/am, AV-1	1 ea
4489	Base antenna, uhf w/gnd planes	1 ea
4308	Guy assembly, antenna	2 ea
4326	Cable, coaxial w/2 ea 4327 (pl-259)	2 ea
4339	Adapter, barrel connector	2 ea
4180	Connector, 90 degree, uhf	2 ea
4304	Antenna, uhf whip, with Po-Uhf load	1 ea
4409	Speaker, external, 8-ohm	1 ea
4171	Screwdriver, 6" straight slot	1 ea
4690	Screwdriver, Daniels	1 ea
0332	Wrench, adjustable, 6"	1 ea
0030	Battery, AA	4 pg
5082	Antenna, Icom	5 ea
5083	Holder, battery, AA, Icom	4 ea
5084	Holster, radio, Icom	4 ea
4651	Sub-rack, with motherboard, SR39-1	1 ea
4682	Transmitter, uhf, digital	1 ea
4683	Receiver, uhf, digital	1 ea
4665	Monitor, system	1 ea
4666	Transmitter, syn. Vhf-Am	1 ea
4667	Receiver, syn. Vhf-Am	1 ea
4668	Cable, receiver, A-side	1 ea
4669	Cable, transmitter, A-side	1 ea
4678	Cable, co-ax, B-side transmit	1 ea
4679	Cable, co-ax, B-side receive	1 ea
4675	Card, control, audio(AC-3E)	1 ea

**NATIONAL INCIDENT RADIO SUPPORT CACHE  
4370 GROUND AIRCRAFT RADIO/LINK KIT**

<b>NFES#</b>	<b>DESCRIPTION</b>	<b>QTY ISSUED</b>
	Power cord with female cinch connector	1 ea
	Power cord (female cinch conn. to alligator clip)	1 ea
	Battery straps, 15 volt	3 ea
	Battery jumpers, 4-red, 4-black	8 ea
	Fuses, 3ag-5 AMP (5 each)	1 bx
	Filament tape	1 ro
	Flagging tape	1 ro
	Allen wrench	1 ea
	Lead box seal	2 ea
	Garbage bag	1 ea
	Operating booklet, Icom	1 ea
	Frequency sheet for Icoms	4 ea
	Frequency sheet, uhf	3 ea
	Battery & antenna set-up sheets	3 ea
	Kit inventory worksheet	3 ea
	T-card, radio tracking	8 ea
	Installation Instruction sheet	3 ea
4305	Masts, antenna, 5 ft. section	6 ea

**NATIONAL INCIDENT RADIO SUPPORT CACHE  
4370 GROUND AIRCRAFT RADIO/LINK KIT  
(Accessories Kit When Shipped via Air)**

<b>NFES#</b>	<b>DESCRIPTION</b>	<b>QTY ISSUED</b>
4308	Guy Assembly	2 ea.
4408	Speaker, external, 8-ohm	1 ea.
0825	Tent Stakes	6 ea.
0030	Battery, AA	4 pg
4303	Hammer, 4 lb.	1 ea.
0332	Wrench, Adjustable, 6 in.	1 ea.
4161	Screwdriver, 6" Straight Slot	1 ea.
4690	Screwdriver, Daniels	1 ea.
4659	Microphone, Daniels	1 ea.
	Filament Tape	
	Flagging Tape	
	Garbage bag	1 ro.
	Allen wrench	1 ro.

**NATIONAL INCIDENT RADIO SUPPORT CACHE  
4381 CMD/TAC RADIO KIT (KING, RACAL, DATRON )**

	<b>WEIGHT</b>	<b>CU FT</b>	<b>DIMENSION</b>
<b>TOTAL</b>	85 LBS	3.5	20''X21''X15''
<b>(STANDARD-ALL KITS)</b>			
<b>NFES#</b>	<b>DESCRIPTION</b>	<b>QTY ISSUED</b>	
4309	Box, fiberglass, (radio & rptr)	1 ea	
4306	Liner, foam, radio kit	1 ea	
	T-cards, radio tracking	32 ea	
	Kit inventory worksheets	3 ea	
	Lead box seals	2 ea	
	Radio tracking sheets	3 ea	
	Frequency sheets	3 ea	
	<b>KING</b>		
	Radio, King, EPH(capitalized)	16 ea	
	<b>SUBKIT-4353</b>		
0030	Batteries, AA	12 pg	
5321	Antenna, Vhf, King	19 ea	
5331	Case, radio, King	16 ea	
1034	Holder, battery, AA, King	16 ea	
5330	Speaker/mic, King	4 ea	
4355	Antenna, mobile mag.	4 ea	
5350	Antenna adapter, mobile mag, King	4 ea	
5353	Guard, keyboard/faceplate, King	16 ea	
	<b>RACAL/THALES</b>		
	Radio, Racal/Thales, PRC6894(capitalized)	16 ea	
	<b>SUBKIT-4162</b>		
0030	Batteries, AA	14 pg	
4163	Antenna, Vhf, Racal/Thales	19 ea	
4164	Holster, leather, Racal/Thales	16 ea	
4165	Holder, battery, AA, Racal/Thales	16 ea	
4166	Speaker/mic, Racal/Thales	16 ea	
4355	Antenna, mobile mag, (bnc-w/sma adapter)	4 ea	
4168	Cable, cloning, Racal/Thales	1 ea	

**NATIONAL INCIDENT RADIO SUPPORT CACHE  
4381 CMD/TAC RADIO KIT (KING, RACAL, DATRON )  
(CONTINUED)**

<b>NFES#</b>	<b>DESCRIPTION</b>	<b>QTY ISSUED</b>
	<b>KING DIGITAL</b>	
4603	Radio, King, (capitalized) DPHx	16 ea
	<b>SUBKIT-4600</b>	
0030	Batteries, AA	16 pg
4601	Antenna, Vhf, King, Digital	19 ea
5331	Case, Radio, King	16 ea
1034	Holder, battery, AA, King	16 ea
5330	Speaker/mic, King	4 ea
4355	Antenna, mobile mag.	4 ea
5350	Antenna adapter, mobile mag., King	4 ea
5353	Guard, keyboard/faceplate, King	16 ea
4602	Cable, cloning, King DPHx	1 ea

	<b>DATRON</b>	
4115	Radio, Datron G25RPV100, (capitalized)	16 ea
	<b>SUBKIT-4600</b>	
0030	Batteries, AA	16 pg
4111	Antenna, Vhf, Datron	19 ea
4112	Holster, leather, Datron	16 ea
4541	Holder, battery, AA, (Mot Xts & Datron)	16 ea
4113	Speaker/mic, Datron	4 ea
4114	Cable, cloning, Datron	1 ea
4355	Antenna, mobile mag., (bnc w/sma adapter)	4 ea
5353	Guard, keyboard/faceplate, King	16 ea
4602	Cable, cloning, King DPHx	1 ea



**NATIONAL INCIDENT RADIO SUPPORT CACHE  
4390 ICS STARTER SYSTEM (COMMAND/LOGISTICS)**

	<b>WEIGHT</b>	<b>CU FT</b>	<b>DIMENSIONS</b>
<b>TOTAL</b>	1035 LBS	42.0	
<b>BOX</b>	915 LBS	35.0	10 EA @ 20"X21"X15"
<b>MASTS</b>	120 LBS	8.0	8 EA @ 60"X3"X3"

<b>NFES#</b>	<b>DESCRIPTION</b>	<b>QTY ISSUED</b>
4244	Logistics Radio Kit	1 ea
4248	Logistics Repeater	1 ea
4305	Masts, Antenna 5 Ft Sections	24 ea
4312	Command Repeater/Link	1 ea
4330	Remote Kit	2 ea
4370	Ground Aircraft Radio/Link Kit	1 ea
4381	Cmd/Tac Radio Kit	3 ea
4630	Satellite Remote Kit	1 ea

**NATIONAL INCIDENT RADIO SUPPORT CACHE  
4390 ICS STARTER SYSTEM (COMMAND/LOGISTICS)  
(When Shipped Via Air Freight)**

	<b>WEIGHT</b>	<b>CU FT</b>	<b>DIMENSIONS</b>
<b>TOTAL</b>	1036 LBS	44.7	
<b>BOX</b>	915 LBS	37.7	10 EA @ 20"X21"X15" 1 EA @ 24"X16"X12"
<b>MASTS</b>	120 LBS	8.0	8 EA @ 60"X3"X3"

<b>NFES#</b>	<b>DESCRIPTION</b>	<b>QTY ISSUED</b>
4244	Logistics Radio Kit	1 ea
4248	Logistics Repeater	1 ea
4305	Masts, Antenna 5 Ft Sections	24 ea
4312	Command Repeater/Link	1 ea
4330	Remote Kit	2 ea
4370	Ground Aircraft Radio/Link Kit	2 ea
4381	Cmd/Tac Radio Kit	3 ea
4630	Satellite Remote Kit	1 ea

**NATIONAL INCIDENT RADIO SUPPORT CACHE  
4410 PUBLIC ADDRESS SYSTEM**

<b>TOTAL</b>	<b>WEIGHT</b>	<b>CU FT</b>	<b>DIMENSIONS</b>
<b>BOX</b>	60 LBS	3.5	20"X21"X15"

<b>NFES#</b>	<b>DESCRIPTION</b>	<b>QTY ISSUED</b>
4309	Box, Fiberglass	1 ea
1233	Batteries, 6 Volt Hot Shot	2 ea
4377	Wire, 1,000 Ft. Roll	1 ro
5037	Microphone, Pa	1 ea
4171	Screwdriver, 6" Straight Slot	1 ea
0325	Pliers, Lineman	1 ea
1172	100' Extension Cord	1 ea
4397	Amplifier, PA	1 ea
4063	Speaker, 8 Ohm, 15 Watt, Pa	3 ea
	Garbage Bag	1 ea
	Filament Tape	1 ea
	Flagging Tape	1 ea
	Fuses, 3Ag 1 Amp	1 bx
	Wire nut, Small	10 ea
	Battery Jumpers, 3 Black, 3 Red	6 ea
	Kit Inventory Worksheets	3 ea
	Lead Box Seal	2 ea
	Installation Instructions	3 ea

**NATIONAL INCIDENT RADIO SUPPORT CACHE  
4499 AIR ATTACK KIT**

<b>TOTAL</b>	<b>WEIGHT</b>	<b>CU FT</b>	<b>DIMENSIONS</b>
<b>BOX</b>	35 LBS	3.35	24.5"X14"X17"

<b>NFES#</b>	<b>DESCRIPTION</b>	<b>QTY ISSUED</b>
	Case, Pelican 1650	1 ea
4479	Chassis, Air Attack ( Model TAK 100 )	1 ea
4487	Cable, Power	1 ea
4488	Cable, Audio/Mic	1 ea
	Adapter, Headset	2 ea
4486	Adapter, PTT, PT-300	2 ea
	Connector, Barrel, Bnc	2 ea
	Operator's Guide TDFM-136	1 ea
4490	Strap, Tie Down	2 ea
	Information Sheet, Air Attack	1 ea
	Information Sheet for TDFM-136	1 ea
	TDFM-136 Basic Programming Instructions	1 ea
	TDFM-136 Command Reference Guide	1 ea

**NATIONAL INCIDENT RADIO SUPPORT CACHE  
4630 SATELLITE IRIDIUM PHONE KIT**

	<b>WEIGHT</b>	<b>CU FT</b>	<b>DIMENSIONS</b>
<b>TOTAL</b>	90 LBS	4.5	
<b>BOX</b>	75 LBS	3.5	20"X21"X15"
<b>MASTS</b>	15 LBS	1.0	60"X3"X3"

<b>NFES#</b>	<b>DESCRIPTION</b>	<b>QTY ISSUED</b>
4309	Box, fiberglass,( large )	1 ea
4609	Phone box, fiberglass ( small )	1 ea
0825	Tent stakes	3 ea
4303	Hammer,4 lb	1 ea
4308	Guy assembly, antenna	1 ea
1023	Battery, 7.5 volt	4 ea
	Adapter, female cig. lighter to battery connectors	1 ea
	Adapter, female cig. lighter to alligator clamps	1 ea
	Filament tape	1 ro
	Flagging tape	1 ro
	Garbage bag	1 ea
	Battery jumpers ( 3 red – 3 black )	6 ea
	Spare fuse, 3 amp/3agc (in batt.tray of dock.station)	1 ea
	Battery straps 15 volt	3 ea
	Battery & antenna set-up sheets	3 ea
	Calling instructions	1 ea
	Kit inventory worksheets	3 ea
	Iridium phone user guide	1 ea
	Lead box seals	2 ea
4612	Antenna, mobile mag	1 ea
4623	A/C charger to docking station	1 ea
4617	Docking station	1 ea
4618	D/C power adapter/ docking station to auto	1 ea
4619	Antenna, fixed mast	1 ea
4620	Cable, docking station to antenna(w/2 short cables)	1 ea
4621	Adapter, phone to dock	1 ea
4622	Handset, w / phone cord & RJ45 plug	1 ea
4305	Masts, antenna, 5 ft. section	3 ea

**NATIONAL INCIDENT RADIO SUPPORT CACHE  
MAFFS BASE STATION (TAF-550)**

	<b>WEIGHT</b>	<b>CU FT</b>	<b>DIMENSIONS</b>
<b>BOX 1</b>	35 LBS	3.35	24.5"X14"X17"
<b>BOX 2</b>	35 LBS	3.35	24.5"X14"X17"

<b>NFES#</b>	<b>DESCRIPTION</b>	<b>QTY ISSUED</b>
	<b>Box 1</b>	
4309	Box, Fiberglass	1 ea
0825	Tent Stakes	6 ea
4303	Hammer, 4 Lb.	1 ea
4308	Guy Assembly, Antenna	2 ea
4464	Antenna, Vhf Whip, W/Po-150 Load	1 ea
4489	Base Antenna, Vhf W/ Grnd Planes	1 ea
4343	Antenna, Vhf/AM, AV-1	1 ea
4326	Cable, Coaxial, w/2 ea 4327 (pl-259)	4 ea
4339	Adapter, Barrel Connector	3 ea
	Adapter, Bnc To Uhf	2 ea
	Headset, S-40	1 ea
	Information Sheet, TDFM-136 Radio	1 ea
	Information Packet, TIL-91DE Radio	1 ea
	Flagging tape	1 ro
	Filament tape	1 ro
	Allen wrench	1 ea
	Garbage bag	1 ea
	Fuse 5A-AGC(in rear of TAF-550)	1 ea
	Fuse 7.5A-MDL(in rear of TAF-550)	1 ea
	Fuse 3A-MDL(in rear of TAF-550)	1 ea
	Fuse 2A-MDL(in rear of TAF-550)	1 ea
	115V power cable(in rear of TAF-550)	1 ea
	Microphone, Handheld (In rear of TAF-550)	1 ea
	<b>Box 2</b>	
4309	Box, fiberglass	1 ea
4322	Radio, King, EPH	10 ea
1034	Battery Holder, AA King	10 ea
0030	Battery, AA	8 pg
5321	Antenna, Helical King	11 ea
5331	Case, Radio King	10 ea
5328	Adapter, Helmet	6 ea
5330	Spkr Mic, King	4 ea
	Headset, David Clark H10-66	4 ea
	Adapter, Sigtronics #900051	2 ea
1086	Harness, Chest Radio	4 ea
	Earpiece, Radio	6 ea
	Pads, Alcohol	12 ea
	T-Cards, Radio Tracking	25 ea

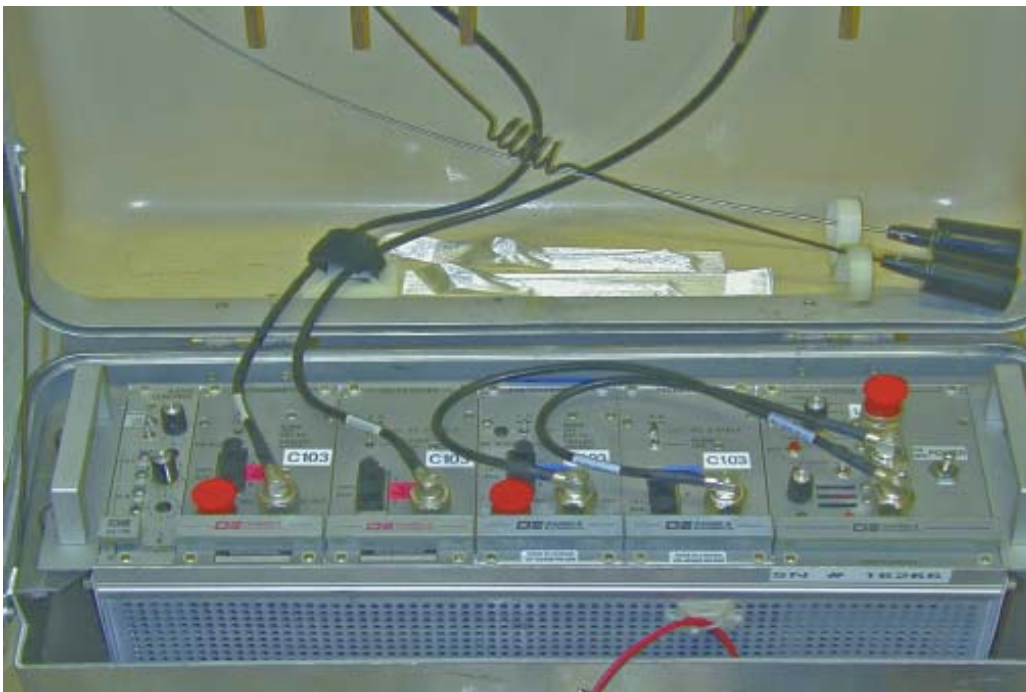
# KIT INSTALLATION INSTRUCTIONS

4248/ 4312	Setup Procedure NIRSC Stand-Alone Repeater .....	59
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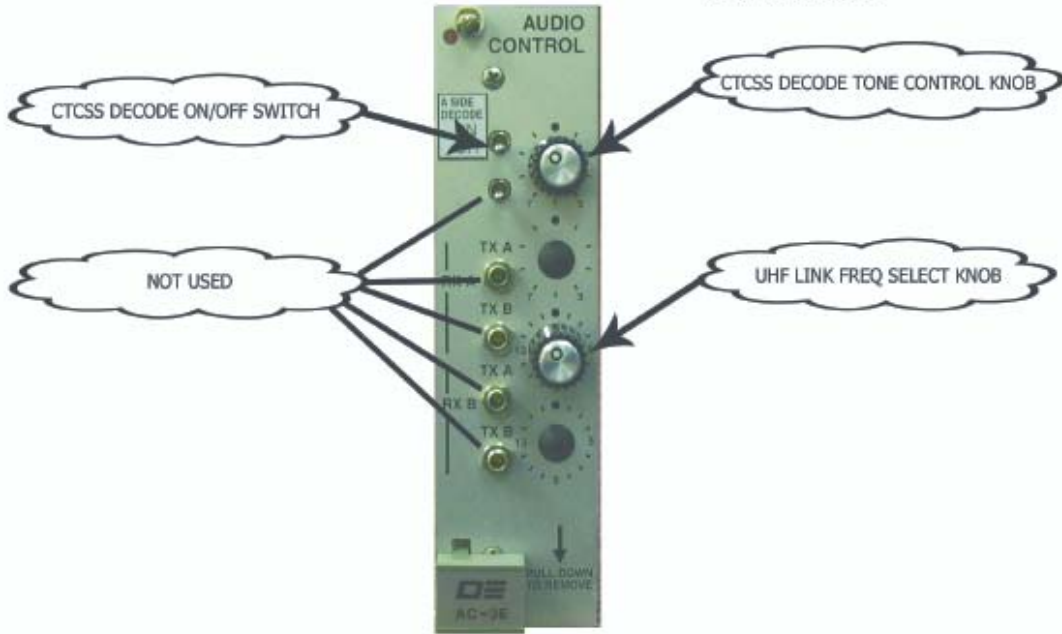
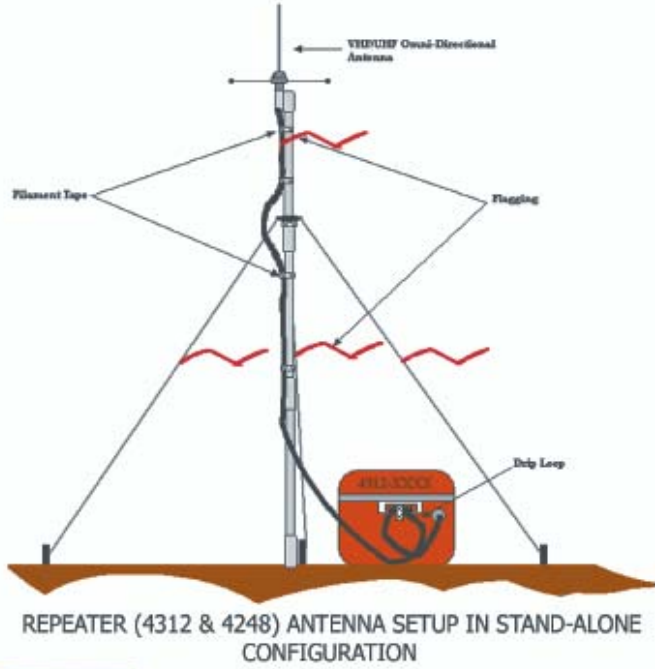
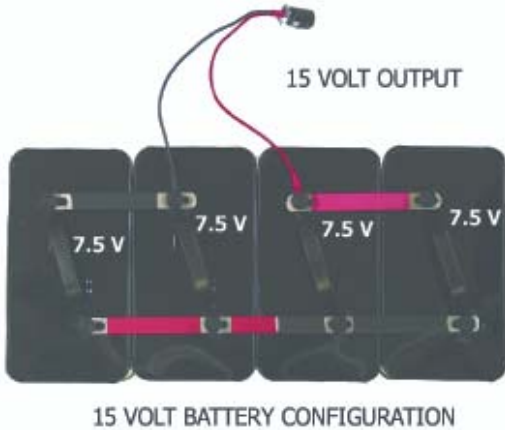
## SET-UP PROCEDURE NIRSC STAND ALONE REPEATERS NFES 4312 & 4248

1. Battery Supply. The battery is configured with a POLARIZED interconnect plug. If it becomes necessary to replace batteries, follow the battery hook-up illustration on page 62. Reversing polarity will result in an inoperative repeater. The repeater kit is shipped with the polarized plug disconnected and should be plugged in before the repeater is turned on.
2. Antenna Installation. Use the high gain antenna provided. Attach the ground planes.
3. Coaxial Cable. DO NOT leave the cable coiled. Run the coaxial cable through the hole provided in the side of the shipping container. Connect to the repeater antenna port located in the box lid below the duplexer. Close the lid tightly to prevent weather and rodent damage to the equipment. Put tape over the hole in the box where the coax comes through to prevent rain from entering the box.

Note: Verify that the UHF Modules are in the “OFF” position when used as a stand-alone command repeater.



# COMMAND/LOGISTICS REPEATER NFES 4312 & NFES 4248 STAND-ALONE INSTALLATION INSTRUCTIONS





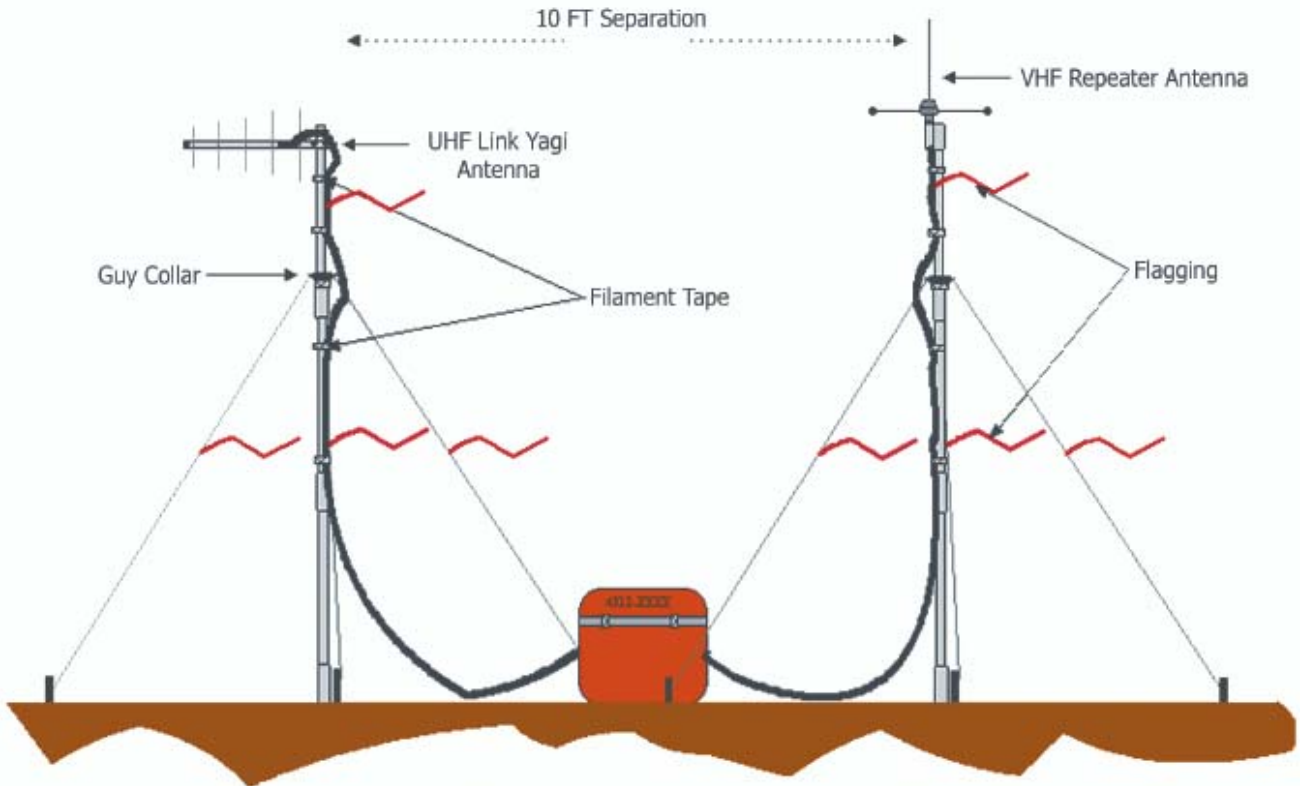
## SET-UP PROCEDURES NIRSC REPEATER/LINK CONFIGURATION INSTALLATION INSTRUCTIONS

VHF REPEATERS ARE SENT OUT WITH UHF LINK RADIOS (Modules) INSTALLED.  
NOTE: A CONFIGURATION DIAGRAM IS PROVIDED WITH EACH UNIT.

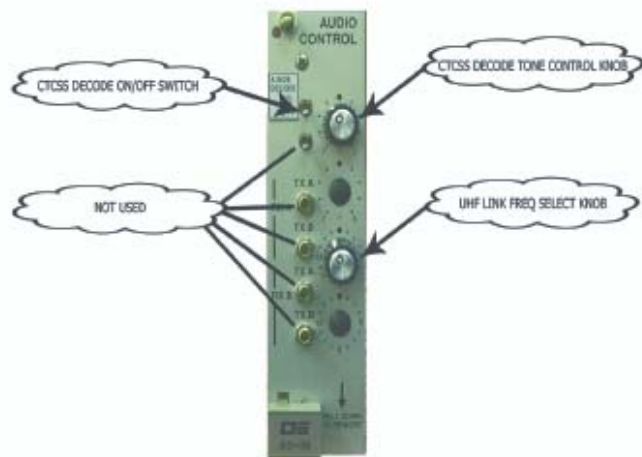
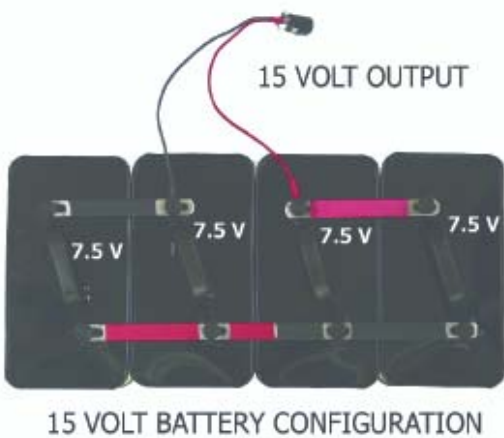
1. Verify that the repeater antenna is erected and the repeater coax is connected to the repeater port as detailed in the stand-alone repeater set-up procedure.
2. Erect the UHF Link Antenna (Yagi or Omni) according to the drawing. Attach the coaxial cable through the hole provided in the side of the fiberglass box to the Antenna Link port on the system monitor, using a 90 degree UHF connector (NFES# 4180) at the port.
3. The antenna coax should be fed out of the repeater box through the appropriate port. If done properly, the repeater and link coax cables will exit on opposite sides of the repeater box. The repeater box access ports are marked to facilitate proper installation. **DO NOT FEED BOTH THE REPEATER AND LINK COAX CABLES OUT OF THE SAME ACCESS HOLE!**
4. Ensure that the UHF TRANSMITTER AND RECEIVER Module switches are in the "NORM", position.
5. Unless special frequencies are required, the UHF TX and RX frequencies are set by selecting the proper channel number using the TX B and RX B channel Select Switch on the AUDIO CONTROL Module. The Channel Select Switch is the bottom switch on the AUDIO CONTROL Module. The switch changes BOTH the transmit and receive frequencies at the same time. SEE THE CHANNEL/FREQUENCY CHART PROVIDED. "Straight UP" is Channel 1.
6. After installation is complete, test the repeater and link modules using the appropriate portable radios before leaving the site. NOTE: BACK AWAY FROM THE REPEATER/LINK BOX A MINIMUM OF 25 FEET BEFORE TESTING.
7. If at any time there are questions, call the NIICD-CDO at telephone number (208) 387-5644.



**COMMAND REPEATER/LINK  
NFES 4312  
LINK CONFIGURATION INSTALLATION INSTRUCTIONS**



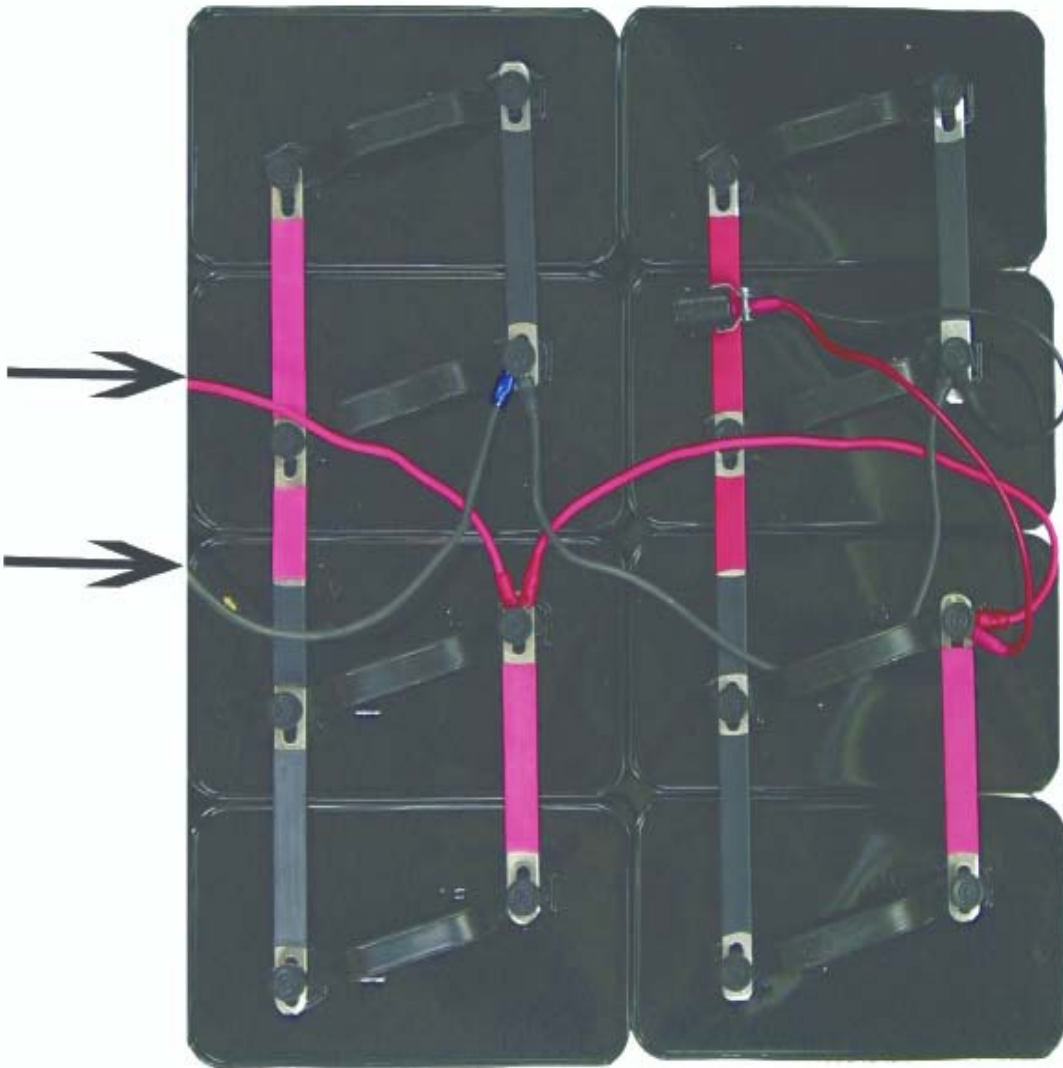
**REPEATER (4312) ANTENNA SETUP IN LINK CONFIGURATION**



**COMMAND REPEATER/LINK CONTROL CARD**

**+15 VOLT DUAL BATTERY SET CONFIGURATION  
NFES 1023**

**ADDITIONAL SETS OF 4 EA. NFES#1023 MAY BE INTRODUCED AT THIS LOCATION. ALTHOUGH, IT IS RECOMMENDED THAT AT THIS POINT A DEEP CYCLE RV/MARINE BATTERY AND CHARGER BE PURCHASED AND UTILIZED.**



**15 VOLT SERIES/PARALLEL CONFIGURATION  
USES TWO (2) SETS OF 7.5 VOLT BATTERIES  
NFES # 1023**

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## **GROUND VHF-AM BASE STATION KIT NFES 4300**

**ANTENNA SETUP:** Connect one end of antenna cable to the base station antenna. Erect base station antenna and mast using guy ropes and stakes. Connect the other end of antenna cable to TBS-150 Ground VHF-AM Base Station.

**VOLTAGE SELECTION:** The TBS-150 can operate on 115 VAC or external 13 VDC power. **NEVER CONNECT BOTH 115 VAC and 13 VDC at the same time.**

**For 115 VAC operation:** Connect AC power cord into TBS-150 and 115 VAC outlets. Turn TBS-150 AC On/Off switch to ON. Turn 91-DE Power On/Off switch to On.

**For external power/cigarette lighter operation:** Connect 3 pin/cigarette lighter DC power cable into TBS-150 and supplied batteries or cigarette lighter. Turn 91-DE Power On/Off switch to On. Note: The TBS-150 AC On/Off switch only operates when 115 VAC is used.

**MICROPHONE CONNECTION:** Connect handmic's 3 pin connector to 91-DE MIC connector. PTT operation is from the handmic. **DO NOT transmit without the antenna connected.**

**91-DE RADIO USE:** The 91-DE radio is a 760 channel VHF-AM transceiver capable of 10 preset channels plus scanning. Frequency selection is via the keypad. Set Volume knob to mid-range. Adjust squelch knob until squelch just quiets. See enclosed Operating Instructions book for more information.

**OTHER INFORMATION:** The TBS-150 has 4 fuses: the 91-DE's fuse is a standard 5 amp; the TBS-150's AC fuse is a 2.5 amp MDL; the TBS-150's DC fuse is a mini 5 amp; the DC power cord is an overrated 10 amp fuse and is basically unused with the TBS-150 relying on the mini 5 amp fuse for DC protection.

**This kit is designed for base station use only and will not be operated in an aircraft.**

# GROUND VHF-AM BASE STATION KIT NFES 4300





## **REMOTE KIT NFES 4330**

This Kit consists of one box plus the antenna masts.

1. Remove the remote desk set from the box along with 2 ea. 6 volt Hotshot batteries. If AC power is not available, connect the batteries to the remote desk set using the provided wire assembly (**Fused DC 5 Amp, 3-prong cable**). If AC power is available, use the provided AC-DC transformer to power the remote desk set. Connect the external speaker to the side audio jack for better audio quality.

**CAUTION: Observe correct polarity when using batteries. See drawing for correct battery strapping (CPI remote desk set uses + 12 volts).**

2. Remove the gray chassis box. Select a location common to the desired service areas that is within range of available communications wire supplied in the kit (**1/4 mile reels**).
3. Erect the appropriate antenna (UHF, VHF, UHF Yagi) and attach the coax cable from the antenna to the coax connector on the outside of the gray chassis box.
4. Connect the remote end of the communications wire pair to the remote chassis terminal lugs on the outside of the gray chassis box (**not polarity dependent**).
5. Open the grey box and determine if the correct radio is pre-mounted. If not, connect the King adapter cable to the correct King radio's side connector (UHF or VHF), and strap the radio into place on top of the black DC termination panel. Connect the male BNC side of the King adapter cable to the female BNC side mount, and connect the male MIL Spec to the corresponding female side mount.
6. Connect power to the remote chassis using the provided 7.5 volt batteries or an external battery source. **Note: a fused DC 5 Amp, 2 prong cable is provided for external power.**

**CAUTION: +10.5 to +15 volts is required for King radios.**

7. After power up select the correct group and channel that will be used for the incident. Ensure the radio volume knob is set to the **pre-designated mark** on top of the radio, and adjust the squelch.
8. String the communications wire back to the site of the remote desk set. Attach the wires directly to the binding posts on the back of the CPI remote desk set (**not polarity dependent**)
9. Test and verify operation of the remote.

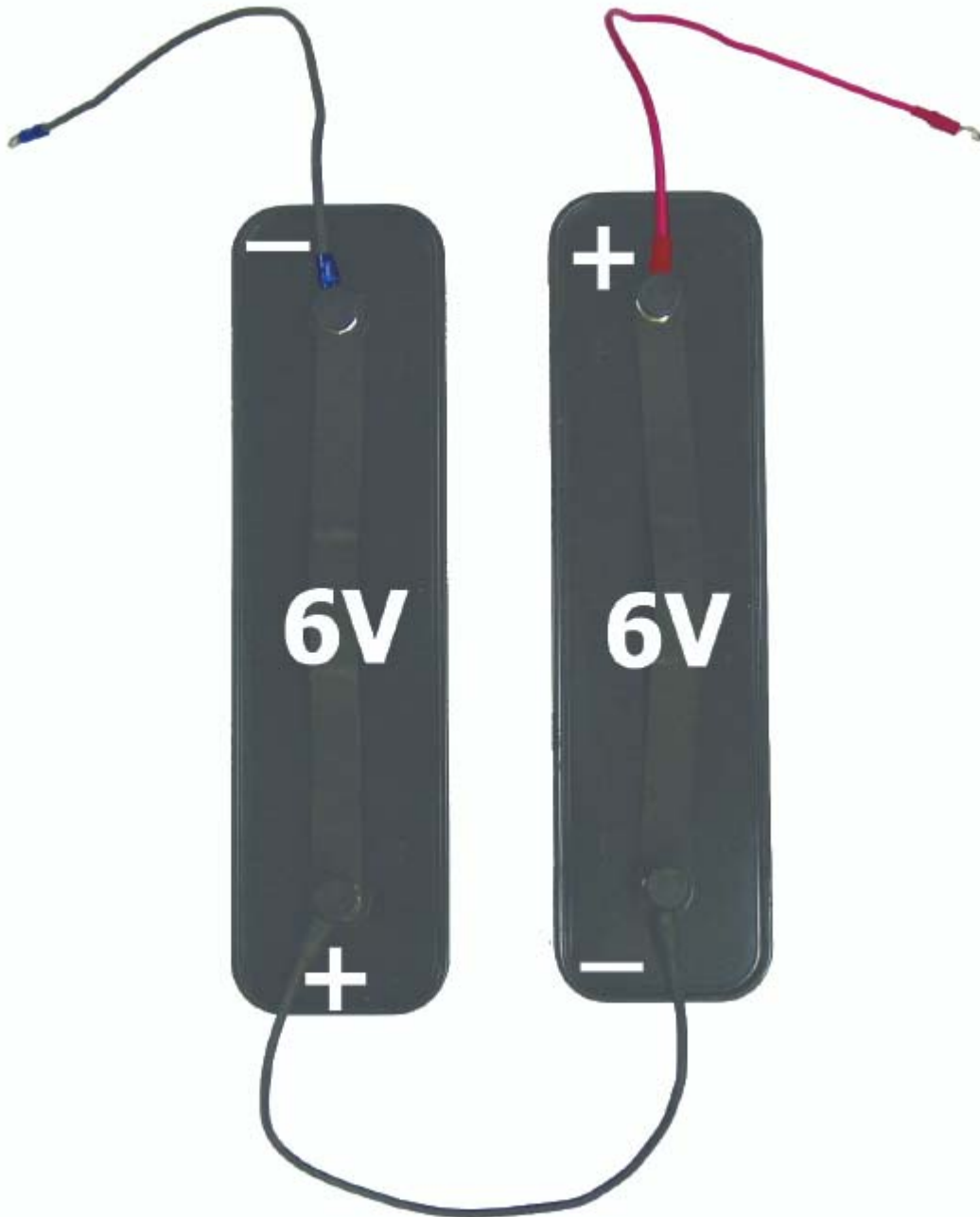
# REMOTE KIT NFES 4330





**REMOTE KIT**  
**NFES 4330**  
Desk set Battery Setup

+12 Volt Output between red and black leads



## GROUND AIRCRAFT RADIO/LINK KIT NFES 4370

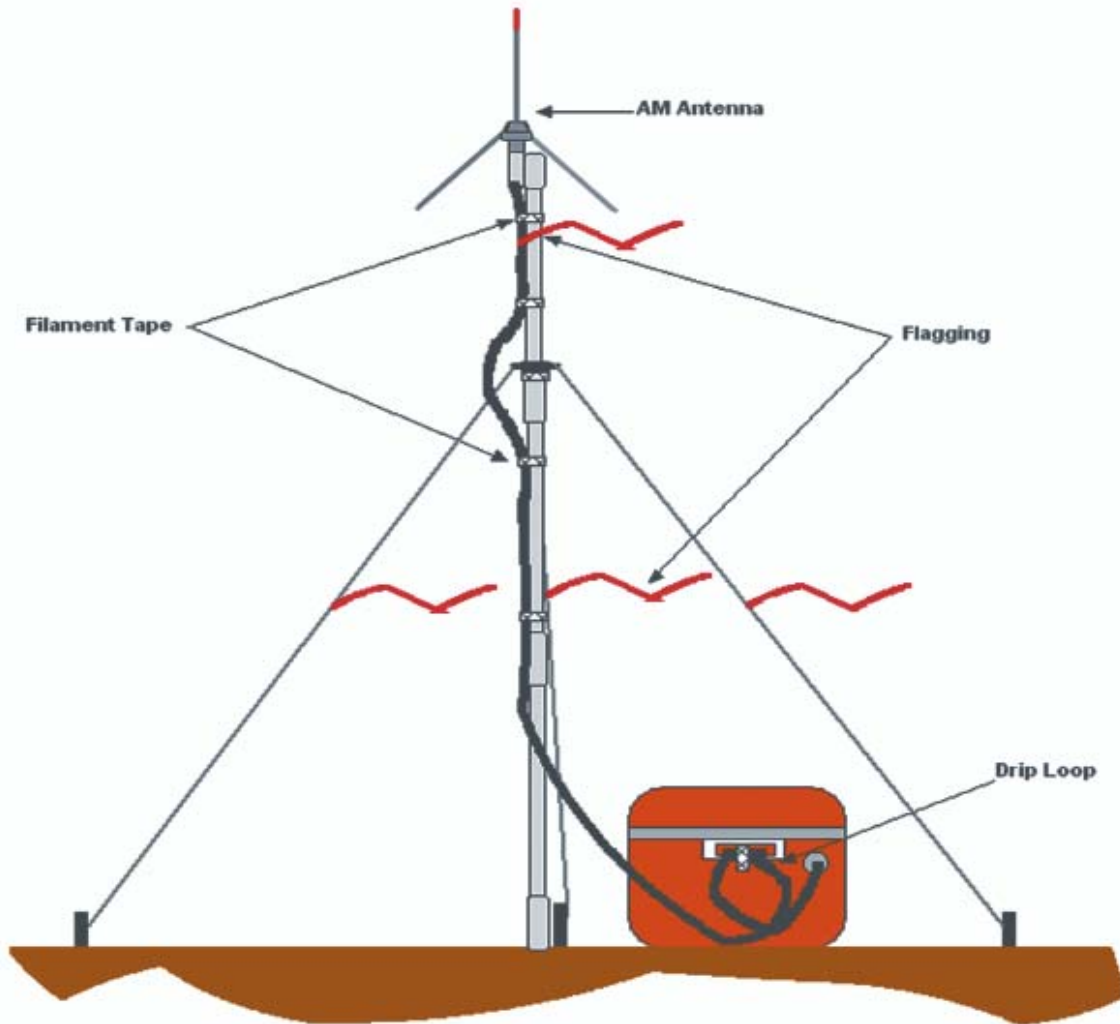
### BASE STATION ONLY INSTALLATION

1. Erect the AV-1 aircraft antenna according to the drawing. Attach the coaxial cable through the hole provided in the left side of the fiberglass kit box to the Antenna A, AM port on the system monitor, using a 90° UHF connector (NFES# 4180) at the port.
2. Connect the battery leads as shown in the drawing. There are several power supply options available (12-15 Volts) and the corresponding cables are included in the kit. To power up the unit, connect the cable from the power source to the cable coming from the unit's sub-rack (there is no on/off switch).
3. Place the two toggle switches on the audio control module in the down position. Place the VHF/AM transmitter module toggle switch and the VHF/AM receiver module toggle switch in the "NORM" position and make sure that both UHF/FM modules' toggle switches are in the "OFF" position.
4. Connect the microphone to the AM transmitter module. To use the low power internal speaker, switch the system monitor audio toggle switch to the "A" position, place the system monitor rotary function switch in position #2, and turn the rotary volume knob up to the desired level.  
To use the external high power speaker, connect the speaker leads to the system monitor "METER" jacks, observing the correct polarity, switch the system monitor audio toggle switch to the "A" position, place the system monitor rotary function switch in position #1, and turn the system monitor rotary volume knob up to the desired level.
5. Set the desired AM frequency by turning rotary Switch A on the audio control module to the assigned channel. This switch controls both the transmitter and the receiver modules. Channel 1 is straight up. Channels 1 through 6 are preprogrammed with AM simplex frequencies according to the AM frequency chart. **Channel 16** is user-programmable through the modules' front display faces.
6. To program an authorized frequency into **channel 16** of either the receiver or transmitter module: Turn rotary Switch A on the audio control module to **channel 16**. Then unlock the unit by hitting the "\*" button and, before the "LOCKED" display goes blank, hit the "**down arrow button**" button. The display should now show "UNLOCKED". Wait for the display to blank, and then hit the "**down arrow button**" button. When the display is showing the frequency, press and hold either the "**down arrow button**" or "**up arrow button**" until the desired frequency is

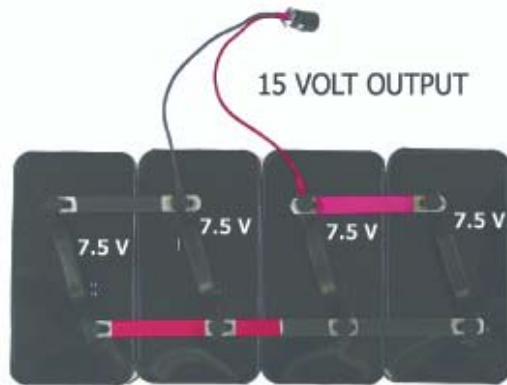
reached. The transmitter and receiver modules must be individually programmed. The unit is ready for base station operation.



# GROUND AIRCRAFT RADIO/LINK KIT BASE STATION CONFIGURATION



4370 AM OMNI ANTENNA SETUP



15 VOLT BATTERY CONFIGURATION

## GROUND AIRCRAFT RADIO/LINK KIT NFES 4370

### AC RADIO/LINK INSTALLATION

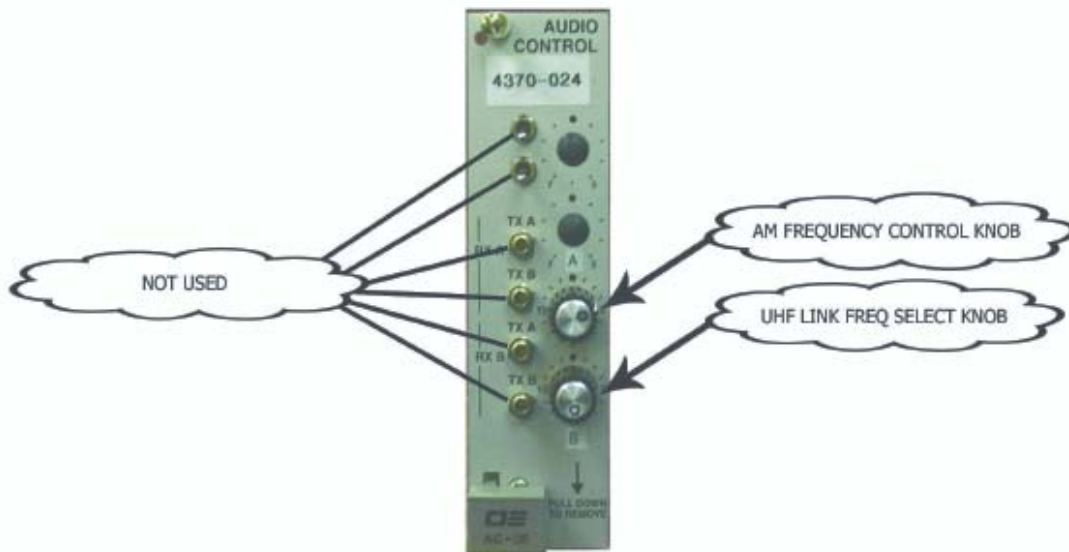
1. Before setting up either antenna, keep in mind that maximum antenna separation is mandatory. Be sure that the antennas' coax cables will reach the sides of the AC radio/link kit box and allow for a drip loop.
2. Erect the AV-1 aircraft antenna as shown in the drawing, keeping in mind separation and cable length. Attach the coaxial cable through the hole provided in the left side of the fiberglass kit box to the Antenna A, AM port on the system monitor, using a 90° UHF connector (NFES #4180) at the port.
3. Erect the UHF omni-directional antenna as shown in the drawing, keeping in mind separation and cable length. Attach the coaxial cable through the hole provided in the right side of the kit box to the Antenna B, FM port on the system monitor, using a 90° UHF connector (NFES #4180) at the port.
4. Connect the battery leads as shown in the drawing. There are several power supply options available (12-15 Volts) and the corresponding cables are included in the kit. To power up the unit, connect the cable from the power source to the cable coming from the unit's subrack (there is no on/off switch).
5. Place the two toggle switches on the audio control module in the down position. Place both VHF/AM modules' toggle switches and both UHF/FM modules' toggle switches in the "NORM" position. Place the system monitor audio toggle switch in the center (off) position.
6. Set the desired AM frequency by turning rotary Switch A on the audio control module to the assigned channel. This switch controls both the transmitter and the receiver modules. Channel 1 is straight up. Channels 1 through 6 are preprogrammed with AM simplex frequencies according to the AM frequency chart. **Channel 16** is user-programmable through the modules' front display faces.

To program an authorized frequency into **channel 16** of either the receiver or transmitter module: Turn rotary Switch A on the audio control module to **channel 16**. Then unlock the unit by hitting the "\*" button and, before the "LOCKED" display goes blank, hit the "**down arrow**" button. The display should now show "UNLOCKED". Wait for the display to blank, and then hit the "**down arrow**" button. When the display is showing the frequency, press and hold either the "**up arrow button**" or "**down arrow button**" until the desired frequency is reached. The transmitter and receiver modules must be individually programmed.

7. Set the desired FM frequency by turning rotary Switch B on the audio control module to the assigned channel according to the UHF/FM frequency chart. This switch controls both the transmitter and the receiver modules. The unit is now ready for link operation. Before leaving the site, perform a radio test through both antennas using both a VHF/AM and a UHF/FM handheld radio. Step at least 40-50 feet away from the unit while performing the test.



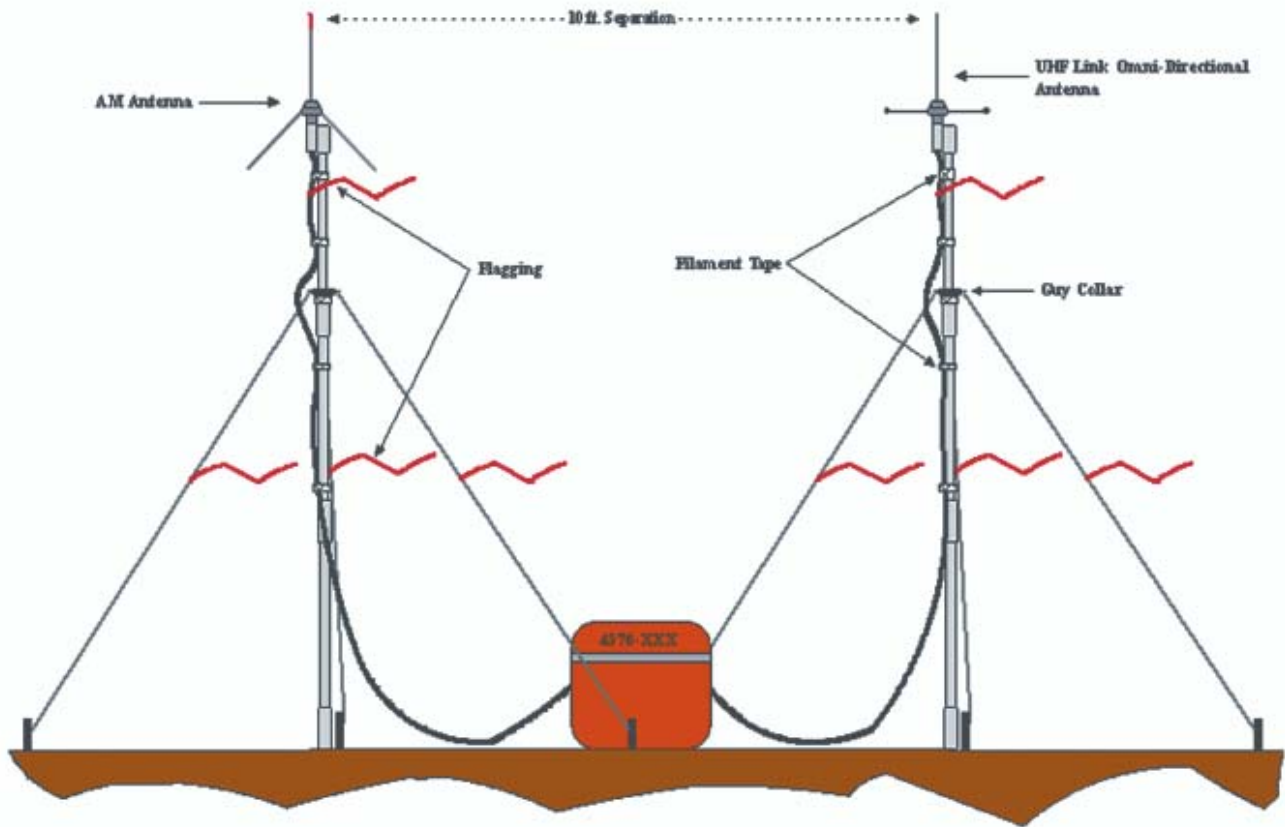
## AUDIO CONTROL CARD FOR GROUND A/C RADIO/LINK



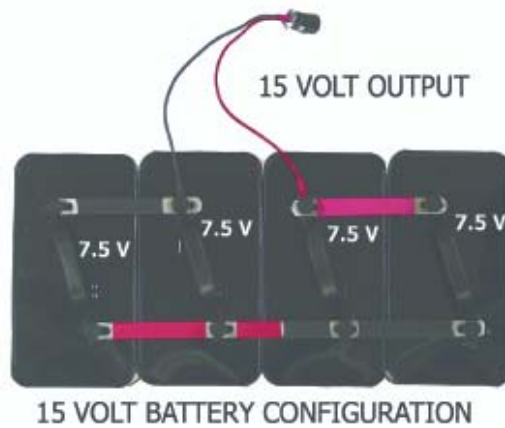
AN AUDIO CONTROL CARD FOR THE 4370 AIRCRAFT LINK



## GROUND A/C RADIO/LINK INSTALLATION



AIRCRAFT LINK (4370) ANTENNA SETUP IN LINK CONFIGURATION





## PUBLIC ADDRESS KIT NFES 4410

The kit consists of one 20 Watt amplifier, two (2) to three (3) speakers designed for outdoor use, and tools and accessories necessary for installation.

1. Connect the amplifier to a power source.
  - A. For 115VAC operation use the power cord provided. An extension cord is provided for added convenience.
  - B. For 12 -15VDC operation, a similar cord is provided but with polarized clips rather than an AC plug. CAUTION: Observe polarity when operating the amplifier on 12 - 15VDC!
2. Connect the microphone to "MIC 1" or "MIC 2" on the front panel.
3. Connect the communication wire to the 70V and COM terminals on the rear panel.
4. String the communications wire to the remote speakers and connect the speakers as shown in the diagram. Use the wire nuts provided for these connections.
5. Before turning the amplifier ON turn all volume controls to minimum. Place the ON-OFF switch to the ON position and rotate the master volume control about halfway. Adjust the correct MIC control until a satisfactory output is obtained. Any further adjustments should be made using the master control.

PUBLIC ADDRESS KIT  
NFES # 4410

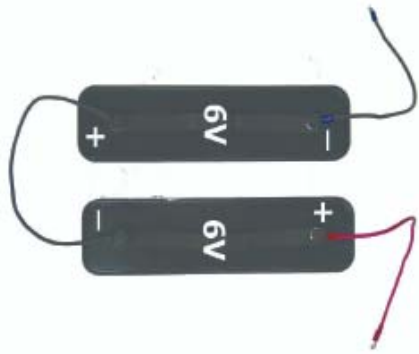


INDICATOR LED

**CAUTION: MAKE SURE THAT RED LEAD IS CONNECTED TO POSITIVE (+) BATTERY TERMINAL!**

12V DC POWER

AC POWER



2 EACH 6 VOLT BATTERIES CONNECTED  
IN SERIES FOR 12 VOLTS.



UP TO 1/2 MILE OF COMMUNICATION WIRE CAN BE USED

# Air Attack Kit Information

December 11, 2007

The NFES 4499 Air Attack kit is a compact slip-in kit providing multiple VHF-FM radios for missions ranging from simple reconnaissance to complex Air Attack. The kit has two VHF-FM radios, two AUX-FM connections, and supports up to four operators. The kit operates on either 14 VDC or 28 VDC. A storage compartment in the kit holds no equipment.

**1. Kit Security:** The NFES 4499 Air Attack kit must be secured for safe flight using the kit's two silver "D" handles and the supplied adjustable straps. Secure the kit to any ridged structure in the cockpit (using common sense and keeping safety in mind).

**2. Voltage Selection:** The NFES 4499 Air Attack kit has automatic voltage selection for 14 VDC or 28 VDC. Automatic voltage selection is dependent upon the aircraft's power connector supplying the correct voltage to the Air Attack kit.

**3. Aircraft Power & Audio Connections:** Aircraft must have an MS3112E12-3S (female) power connector in the aircraft (ground on pin B, and 14 volts on pin C or 28 volts on pin A). Only 14 or 28 VDC need be wired in the aircraft, **never wire both**. Attach power jumper cable from kit to MS3112E12-3S power connector in aircraft. Attach audio/mic jumper cable from kit to pilot's audio and mike jacks. Aircraft mic jack must have PTT capability.

**4. Antenna Connections:** Aircraft must have a minimum of two broadband VHF-FM aviation antennas installed (Comant type CI-177 or equal) using RG-58 A/U or better coax cable terminated with male BNC connectors. Connect the first two aircraft VHF-FM antenna cables to the kit's RADIO 1 ANT and RADIO 2 ANT connectors. A third or fourth aircraft VHF-FM antenna(s) are for the AUX-1 and AUX-2 connections.

**5. TFDM-136 Radio Use:** Operation and programming instructions are provided with the kit. Visit NIICD's website for up to date radio instructions at: <http://www.fs.fed.us/fire/niicd/documents.html>

FM 1 main/guard (upper radio) and FM 2 main (lower radio) may be reprogrammed to suit user needs. FM 2 guard preset is locked out and must never be re-programmed. FM 2 guard is dedicated to Air Guard operation (168.6250), the emergency frequency.

**6. AUX-FM Connections:** Two AUX-FM connectors are located at the rear of the kit. These connectors allow handheld radios to be operated through the kit's audio selector panels as AUX1 and AUX2. The user must supply a handheld radio and matching AUX-FM adapter cable. Use the supplied female BNC barrel connectors to mate the AUX-FM radio adapter to aircraft antenna cable for AUX-FM operation. Any type handheld radio using any frequency band may be used (dependent upon the installed aircraft antenna's frequency band capability).

**7. Audio Selector Panel:** The TAC-250 is a dual audio selector panel for the pilot (left) and ATGS (right). Two observer positions operate off the ATGS's audio selector panel. Attach observer headset adapter cord assemblies at the rear of the kit. Observer positions have the same radio receive, transmit, and VOX capability as selected by the ATGS's audio selector panel.

Transmitter Radio Selections:

1. COM is for the aircrafts' audio system via the kits' audio/mic jumper cable.
2. FM1 is for the upper VHF-FM radio (beside the TAC-250).
3. FM2 is for the lower VHF-FM radio.
4. AUX1 is for the AUX-FM 1 connector.
5. AUX2 is for the AUX-FM 2 connector.
6. SC is for simulcast transmissions using COM and FM1 radios. SC transmits on both radios simultaneously.

The pilot's audio selector panel has transmit priority over the ATGS's audio selector panel when they both have the same radio selected on their respective transmitter selector switches.

Keep in mind there are three transmitter selector switches: (1) TAC-250 transmitter selector knob; (2) TDFM-136 radio MAIN & GUARD switch; and the (3) aircrafts' audio selector panel switch.

Receiver Audio Selections:

1. COM is for the aircrafts' audio system via the kits' audio/mic jumper cable.
2. FM1 is for the upper VHF-FM radio (beside the TAC-250).
3. FM2 is for the lower VHF-FM radio.
4. AUX1 is for the AUX-FM 1 connector.
5. AUX-FM 2 has no receiver selector (transmitter selector must be set on AUX2 to hear AUX2 audio).
6. SC "simulcast" uses COM and FM1 receive toggle switches.

Audio Level: A receiver is automatically selected when its companion transmitter is selected on the audio selector panel. Receive (RX) volume level is the inner knob with VOX volume level being the outer knob.

VOX (Voice Activated Intercom): For no intercom, rotate the VOX knob fully CCW. Rotating VOX knob CW adjusts VOX activation level accordingly. VOX volume level is the outer knob with RX volume level being the inner knob.

NORMAL/EM/ISOL Switch: (1) NORMAL provides normal operation of VOX and amplified radio audio to all headset positions. (2) EM is emergency. The EM position operates in the same manner as the NORMAL position. (3) ISOL isolates the pilot's audio from the ATGS and both observers. The pilot will not be able to hear the ATGS or observers; however, the ATGS and observers will be able to hear the pilot and have normal intercom among themselves.

**8. Other Information:** Radio programming "D" connectors are located in the front of the kit. Both pilot and ATGS MIC jacks' have PTT capability using supplied PT-300 adapters. 28 VDC power input uses the 7.5 amp circuit breaker and normally draws 3 amps while transmitting. 14 VDC power input uses the 15 amp circuit breaker and normally draws 8 amps while transmitting.

# AIR ATTACK KIT NFES 4499



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## **SATELLITE IRIDIUM PHONE KIT NFES 4630**

Satellite Iridium Phone Setup Directions  
11/15/2004

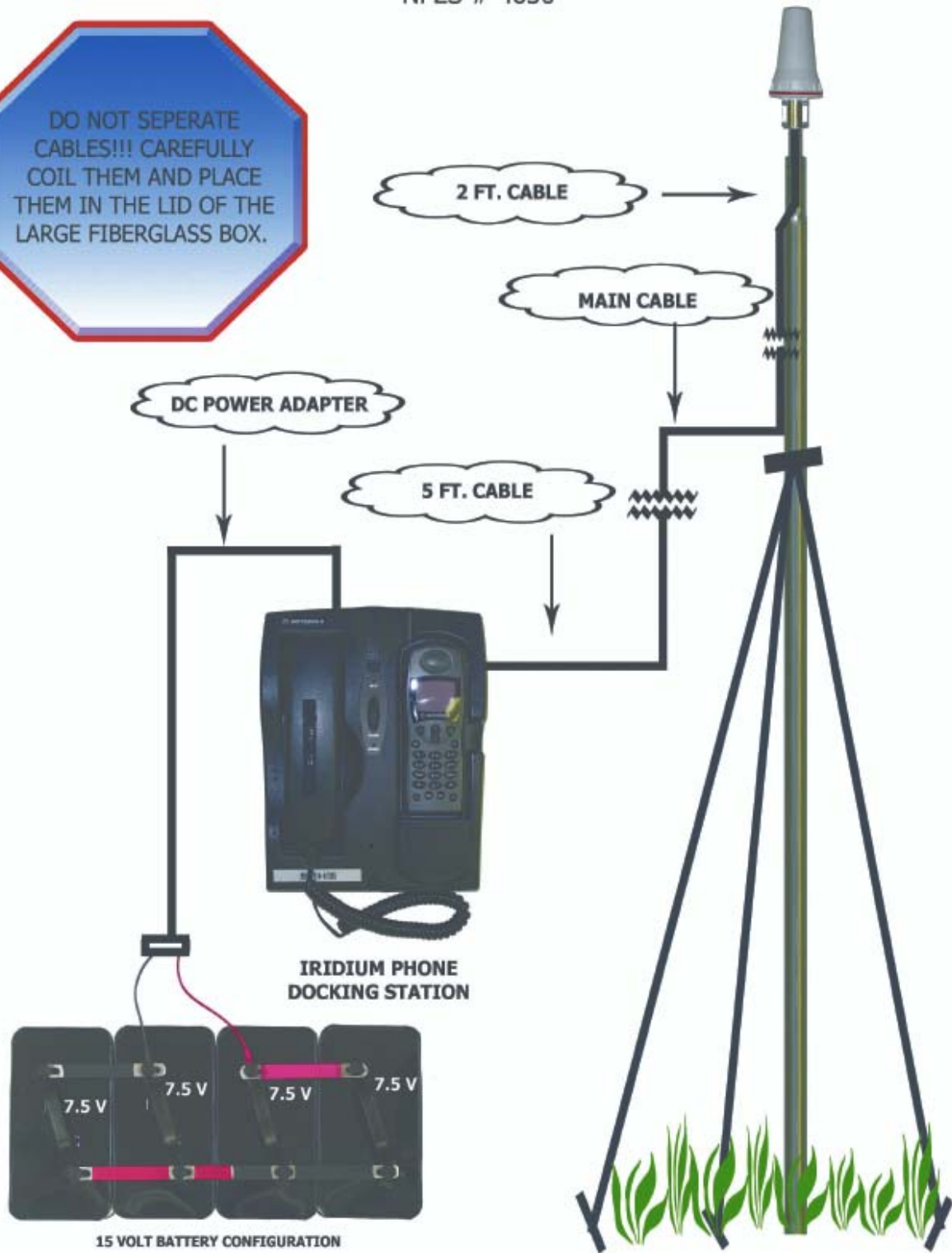
1. Remove outdoor antenna from box and attach to 1st mast section. Make certain that the antenna has a unobstructed view of the sky.
2. Attach 2ft. cable to antenna and the main cable to the 2ft. section.
3. Slide guy rope collar over 2<sup>nd</sup> mast section and attach to 1<sup>st</sup> mast section.
4. Attach 3<sup>rd</sup> mast section to 2<sup>nd</sup> mast section, pound in guy anchors and raise mast.
5. Attach N type barrel to main cable then attach 5ft. cable to barrel. Attach the other end of the 5ft. cable to the right side of the docking station.
6. Attach DC power adapter to top of docking station. If AC power is available use AC power adapter.
7. Configure batteries as shown in diagram and attach power cord. *(If you are using vehicle power plug the Iridiums' DC power adapter into the vehicles' power receptacle. Attach magnetic antenna directly to the right side of the docking station and place the antenna on the roof of the vehicle.)*
8. Turn phone on using the red button on the lower left side of keyboard.
9. Enter pin 1111 when prompted. Refer to World Comm. Document located in brown envelope. The mini SIM card has already been installed.
10. To place a call press and hold the '0+' key until the '+' appears and then dial as you would a long distance call. To call the phone when it is located in the U.S. the caller must dial 011' and then the 12 digit phone number. If the phone is located outside the U.S. the correct 3 digit international access code must precede the 12 digit phone number.

**Do not attempt to remove phone from docking station!**

**Do not separate antenna cables!**

SATELLITE IRIDIUM PHONE KIT  
NFES # 4630

DO NOT SEPERATE  
CABLES!!! CAREFULLY  
COIL THEM AND PLACE  
THEM IN THE LID OF THE  
LARGE FIBERGLASS BOX.





## **PORTABLE IR DOWNLINK KIT INFORMATION**

### **NFES 4800**

The portable IR downlink kit is designed for use only by Infrared Interpreters (IRIN)!! It is used to transfer data from the Infrared Aircrafts flying fire mapping missions to the IRIN on the ground, in situations where delivery time is critical. All kits (20 ea) are designed with the novice user in mind. Easy to follow setup instructions are included so all the user need do is set up the antenna, connect a CAT5 network patch cable to the computer, and turn it on. All data will be transferred by the technician in the aircraft to the “My Documents” directory on the included PC in the ground station.

This unit is designed to operate on 115VAC 60 Hz systems so the user will need to find a suitable power source. The data links utilize the 902-928 MHz public spectrum which has a 1 Watt power limitation, but since this is for **EMERGENCY USE ONLY** the National Interagency Incident Communications Division (NIICD) has been granted a license to use up to 5 Watts of power. Since this can cause severe interference in the public spectrum, this unit is to be utilized only when necessary and then turned off once transfer of data is complete. **\*\*NOTE:** Do not shut this unit down until communications has been established to the aircraft and you have been notified that all data has been transferred.

The PC included in the kit is for use by the IRIN for the manipulation and viewing of the Infrared Imagery. Most applications needed by the IRIN are included, but in the event more applications are needed, administrative rights to install software/drivers have been installed. The procurement and installation of approved software is the IRIN’s responsibility. A CD-R/W drive has been included in the PC so user created data can be removed. Procurement of suitable media is the responsibility of the IRIN. When the units are returned to NIFC, the hard drives will be restored to their original condition. Any data on the units will be completely and irretrievably erased. Data storage and archival operations are to be performed by the IRIN.

Kits can be delivered by the Infrared Aircraft but **ONLY** after an appropriate resource order for an NFES # 4800 has been placed and approved by the incident. Once the Infrared Aircraft is no longer needed over the incident, the units must be **PROMPTLY** returned to NIFC for refurbishment. The PC included in the kit is to be used **ONLY** as an IRIN GIS processing system.

**MAFFS KIT  
THIS KIT HAS NO NFES NUMBER  
IT IS ORDERED BY NAME ONLY**



**PHOTOS COURTESY OF THE FOLLOWING:**

**NIICD INFRARED OPERATIONS BRANCH**

**NIICD AVIONICS BRANCH**

**NIICD FIELD OPERATIONS BRANCH**

**USDA PHOTO ARCHIVES**



# APPENDIX A

## DANIELS SWITCH SETTINGS\*

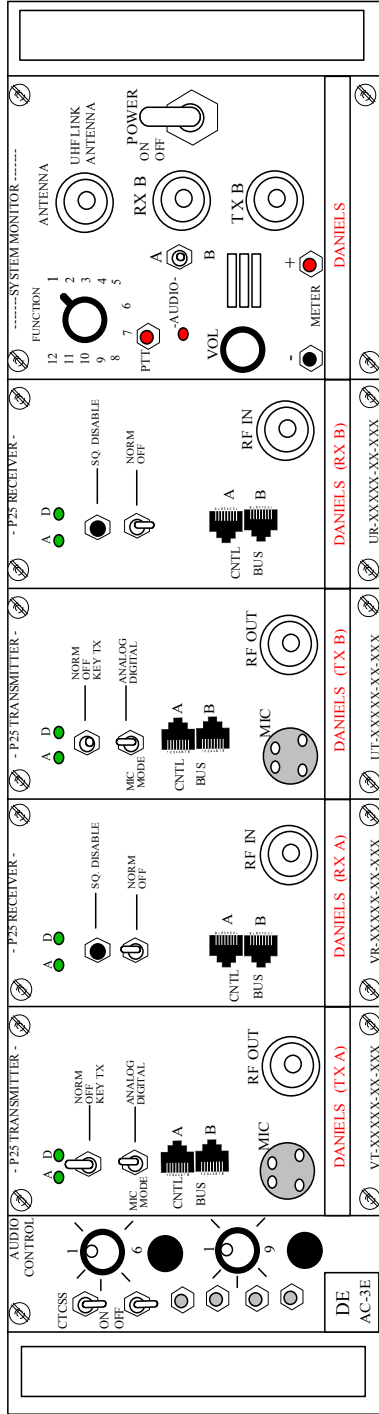
\*These diagrams are also available for download online at:

**<http://www.fs.fed.us/fire/niicd/documents.html>**





# NORMAL SWITCH SETTINGS FOR DANIELS COMMAND REPEATER AND UHF LINK (REPEATER CONFIGURATION)



### REPEATER CONFIGURATION:

- Connect power cable to batteries using provided fused cable.
- Turn Power Switch to the "ON" position on the System Monitor.
- Keep both toggle switches in the "OFF" position on the AC-3E Module, if no tones are being used.
- Keep switches on TX A and RX A in "NORM" position.
- Keep switches on TX B and RX B in "OFF" position.
- Keep Audio Select Switch on System Monitor Module to center position.
- Connect VHF Antenna Coax to Duplexer.

NOTE: FOR CTCSS DECODE OPERATION, TURN CTCSS TOGGLE SWITCH (TOP TOGGLE SWITCH) TO "ON" POSITION AND SELECT DECODE FREQUENCY WITH THE 10 POSITION ROTARY SWITCH (TOP ROTARY SWITCH); SEE CTCSS FREQUENCY CHART.

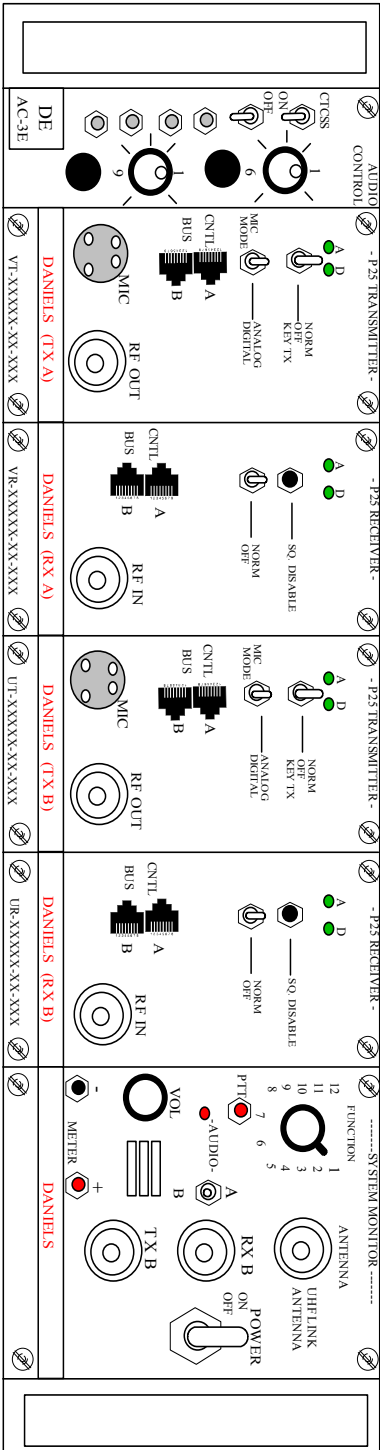
### CTCSS TONES:

1. 110.9
2. 123.0
3. 131.8
4. 136.5
5. 146.2
6. 156.7
7. 167.9
8. 103.5
9. 100.0
10. 107.2

National Interagency Fire Center U.S. Department of Agriculture, U.S. Forest Service/U.S. Department of Interior, Bureau of Land Management	
NIFC Switch Settings for Daniels Command Repeater and UHF Link (Page 1 Repeater Configuration)	
Designed by:	NIFC
Drawn by:	NIFC/J. Lopez
Date:	December, 2007



# NORMAL SWITCH SETTINGS FOR DANIELS COMMAND REPEATER AND UHF LINK (REPEATER/LINK CONFIGURATION)



### REPEATER/LINK CONFIGURATION:

- Connect power cable to batteries using provided fused cable.
- Turn Power Switch to the "ON" position on the System Monitor.
- Keep both toggle switches in the "OFF" position on the AC-3E Module.
- Keep switches on TX A, RX A, TX B, and RX B in the "NORM" position.
- Keep Audio Select Switch on System Monitor Module to center position.
- Select correct UHF Link frequency with 16 position rotary switch on the AC-3E Module. (Bottom Rotary Switch)
- Connect UHF Antenna cable to UHF Antenna connector on System Monitor Module.

NOTE: FOR CTSS DECODE OPERATION, TURN CTSS TOGGLE SWITCH (TOP TOGGLE SWITCH) TO "ON" POSITION AND SELECT DECODE FREQUENCY WITH THE 16 POSITION ROTARY SWITCH (TOP ROTARY SWITCH); SEE CTSS FREQUENCY CHART.

### CTSS TO NBS:

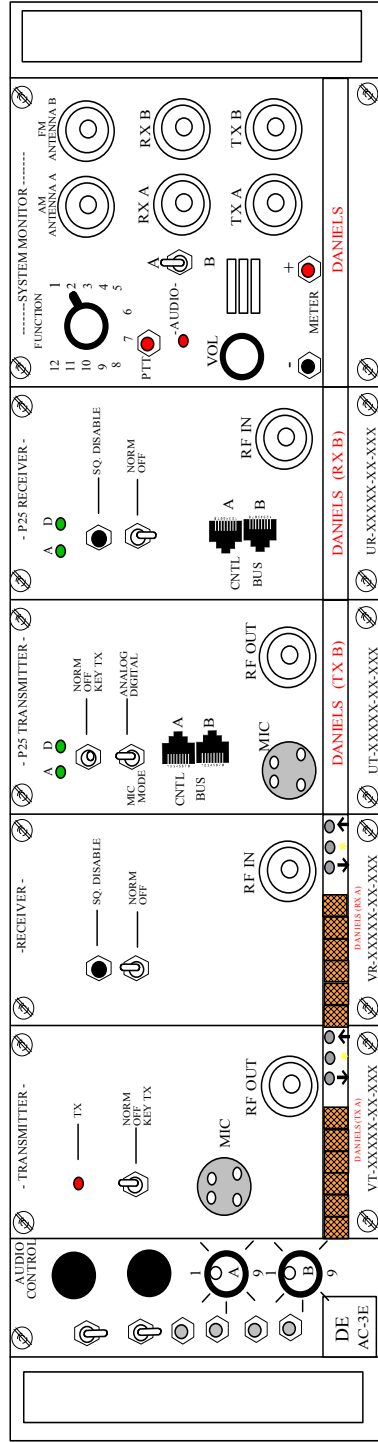
1. 110.9
2. 123.0
3. 131.8
4. 136.5
5. 146.2
6. 156.7
7. 167.9
8. 103.5
9. 100.0
10. 107.2

<b>National Interagency Fire Center</b> U.S. Department of Agriculture, U.S. Forest Service/U.S. Department of Interior, Bureau of Land Management	
NIFC Switch Settings for Daniels Command Repeater and UHF Link (Page 2 Repeater/Link Configuration)	
Designed by:	NICD
Drawn by:	NICD/J. Lopez
Date:	December, 2007





# NORMAL SWITCH SETTINGS FOR DANIELS AIRCRAFT LINK (AIRCRAFT BASE CONFIGURATION)



### AIRCRAFT BASE CONFIGURATION:

- Keep both CTCSS switches in the "OFF" position on the AC-3E Module.
  - Keep switches on TX A and RX A in "NORM" position/ Keeping switches on TX B and RX B in "OFF" position.
  - Keep the Audio Select Switch on System Monitor Module in the A position to activate the internal speaker, and place the rotary switch on the System Monitor in position # 2.
  - Select correct AM frequency for TX A and RX A using the 16 position rotary switch on the AC-3E Module. (Top Rotary Switch)
  - For Special AM frequencies, select channel 16 on rotary switch to program the AM TX and RX modules. (Top Rotary Switch)
  - Connect Microphone to "MIC" jack on AM TX A.
- Note:** EXTERNAL Speaker may be used by connecting the speaker leads to the System Monitor "METER" jacks, observe correct polarity.  
Place rotary switch on the System Monitor to position # 1 for EXTERNAL Speaker ONLY.

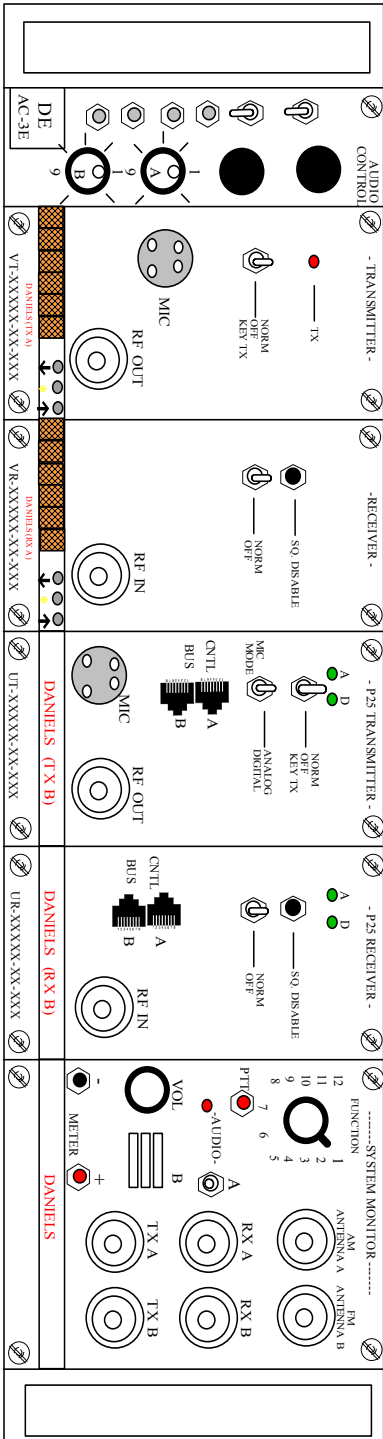
### Note: Programming Authorized AM frequency into Channel 16:

- Turn rotary Switch A (top rotary switch) on the Audio Control Module to Channel 16.
- Unlock the unit by pressing the "\*" button and, before the "Locked" display goes blank, press the "v" button. The display should now show "Unlocked".
- Wait for the display to blank, then press either the "A" or "v" button to display the current programmed frequency.
- While the display is showing the frequency, press and hold either the "A" or "v" until the desired frequency is reached.
- The AM transmitter and receiver modules must be individually programmed.
- The unit is now ready for base station operation.

<b>National Interagency Fire Center</b> <b>U.S. Department of Agriculture,</b> <b>Bureau of Land Management</b>	
NIFC Switch Settings for Daniels Aircraft Link (Page 1 Aircraft Base Configuration)	
Designed by:	NICD
Drawn by:	NICD/J. Lopez
Date:	December, 2007



# NORMAL SWITCH SETTINGS FOR DANIELS AIRCRAFT LINK (AIRCRAFT LINK CONFIGURATION)



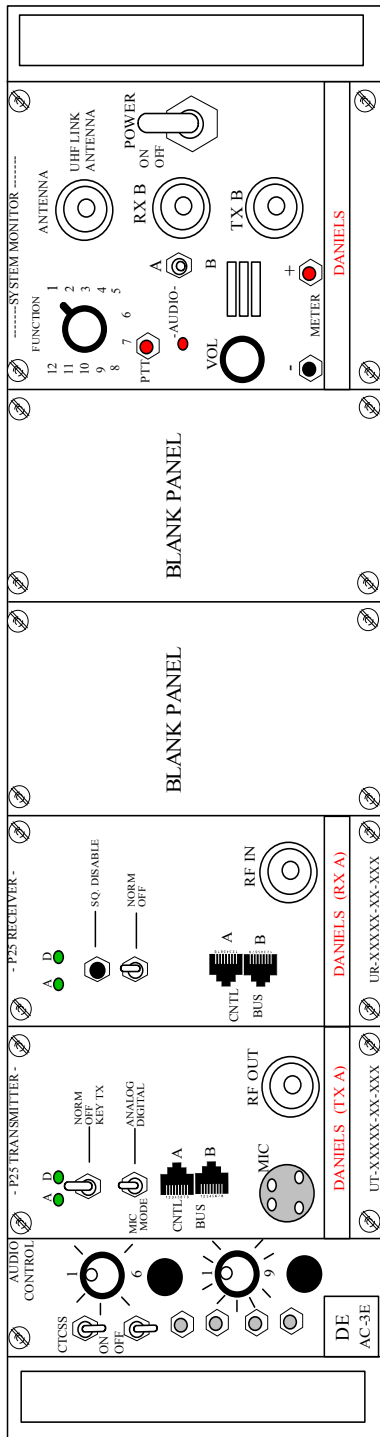
**AIRCRAFT LINK CONFIGURATION:**

- Keep both CTCSS switches in the "OFF" position on the AC-3 Module.
  - Keep switches on TX A, RX A, TX B, and RX B in the "NORM" position.
  - Keep Audio Select Switch on System Monitor Module to center position.
  - Select correct AM UHF Link frequency for TX A and RX A using the 16 position rotary switch A on the AC-3E Module. (Top Rotary Switch)
  - Select correct FM UHF Link frequency for TX B and RX B using the 16 position rotary switch B on the AC-3E Module. (Bottom Rotary Switch)
- Note:** For Special AM Frequencies, select channel 16 on rotary switch A to program the AM TX and RX modules. (Top Rotary Switch)
- Note:** Programming Authorized AM frequency into Channel 16:
- Turn rotary Switch A (top rotary switch) on the Audio Control Module to Channel 16.
  - Unlock the unit by pressing the "\*" button and, before the "Locked" display goes blank, press the "↓" button. The display should now show "Unlocked".
  - Wait for the display to blank, then press either the "↑" or "↓" button to display the current programmed frequency.
  - While the display is showing the frequency, press and hold either the "↑" or "↓" until the desired frequency is reached.
- The AM transmitter and AM receiver modules must be individually programmed.**

<b>National Interagency Fire Center</b> U.S. Department of Agriculture, Bureau of Land Management	
NIFC Switch Settings for Daniels Aircraft Link (Page 2 Aircraft Link Configuration)	
Designed by:	NICD
Drawn by:	NICD/J Lopez
Date:	December, 2007



# NORMAL SWITCH SETTINGS FOR DANIELS LOGISTICS REPEATER (REPEATER CONFIGURATION)



### **REPEATER CONFIGURATION:**

- Connect power cable to batteries using provided fused cable.
  - Turn Power Switch to the "ON" position on the System Monitor.
  - Keep both toggle switches in the "OFF" position on the AC-3E Module, if no tones are being used.
  - Keep switches on TX A and RX A in "NORM" position.
  - Keep Audio Select Switch on System Monitor Module to center position.
  - Connect UHF Repeater Antenna to Duplexer.
- Note:** UHF Link Antenna is not used in repeater configuration.

**NOTE:** FOR CTCSS DECODE OPERATION, TURN CTCSS TOGGLE SWITCH (TOP TOGGLE SWITCH) TO "ON" POSITION AND SELECT DECODE FREQUENCY WITH THE 10 POSITION ROTARY SWITCH (TOP ROTARY SWITCH); SEE CTCSS FREQUENCY CHART.

### CTCSS TONES:

1. 110.9
2. 123.0
3. 131.8
4. 136.5
5. 146.2
6. 156.7
7. 167.9
8. 103.5
9. 100.0
10. 107.2

National Interagency Fire Center U.S. Department of Agriculture, U.S. Forest Service/U.S. Department of Interior, Bureau of Land Management	
NIFC Switch Settings for Daniels Logistics Repeater	
Designed by:	NICCD
Drawn by:	NICCD/J. Lopez
Date:	December, 2007



# APPENDIX B

## RADIO PROGRAMMING GUIDES\*

\*These diagrams are also available for download online at:

**<http://www.fs.fed.us/fire/niicd/documents.html>**





# NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION KING EPH/EPV PORTABLE RADIO PROGRAMMING GUIDE

## PROGRAMMING CHANNELS ON KING EPH/EPV RADIOS

1. Select a group and channel you wish to program  
**Note:** *To change groups, press the "#" key followed by a 2-digit group number and press the "ENT" key.*
  
2. **Access Program Mode**
  - o Insert a programming plug into the side connector of the radio.
  - o Press and hold the red Master Switch on the programming plug.
  - o Press and hold the "FCN" key for approximately three seconds until the LCD displays "-- -- ID". (See Figure 1)
  - o Enter a valid password if requested. **NIFC Default password is "000000"**
  - o Press the "ENT" key to proceed into the programming mode.
  - o If the correct password was entered, the LCD displays either "PASS" or "PRG CH00". (See Figure 2)
  - o If the display indicates "PASS", press the "ENT" key to proceed to "PRG CH00" parameters.**Note:** *If the EPH radio does not indicate "PASS" while entering Program Mode, it can not be used as a Master Clone radio if Narrow-Band frequencies are used.*
  
3. Once in Program Mode, select a 2-digit channel number (01-14) to program using the keypad.  
**Note:** *At this point, pressing the "FNC" key will scroll through that particular channel settings.*
  
4. Once the wanted channel is displayed, the **Bandwidth Setting** can be set.  
 Press the "#" key to toggle between Wide-Band and Narrow-Band. (See Figure 3)  
**Note:** *The "N" indicates that the channel is set for Narrow-Band operation, No indication for Wide-Band operation.  
 NIFC Default is set to "N" for Narrow-Band.*
  
5. Once the Bandwidth is set, press the "FCN" key to scroll to the next programming parameter.  
 The LCD will display "PRG RX 162.5500" for programming the **RX Frequency**. (See Figure 4)  
 Press the "CLR" key to clear the current frequency and enter a valid VHF RX frequency and press the "ENT" key.
  
6. The LCD will display "PRG RX CG 000.0" for programming the **RX Code Guard**. (See Figure 5)  
 Press the "CLR" key to clear the tone and enter a valid tone using the keypad and press the "ENT" key.  
**Note:** *NIFC Default is set to "000.0", for NO RX Tone.  
 To Enable RX Code Guard, turn the Squelch Code Guard knob counterclockwise into the detent position.*
  
7. LCD will display "PRG TX 168.05000" for programming the **TX Frequency**. (See Figure 6)  
 Press the "CLR" to clear the current frequency and enter a valid VHF TX frequency and press the "ENT" key.
  
8. LCD will display "PRG TX CG 110.9" for programming **TX Code Guard**. (See Figure 7)  
 Press the "CLR" key to clear the current tone and enter a valid tone using the keypad and press the "ENT" key.  
**Note:** *Not all repeaters require a code guard from the radio, incident dependent.*
  
9. LCD will display the channel name/label, press the "ENT" key to keep name/label and finish programming the channel or press the "CLR" key to change the name/label for that channel. (See figure 8)
  
10. **Changing Channel Label**
  - o Press the "CLR" key to clear the label.
  - o Press the "PRI" key to scroll through available Alphanumeric Characters.
  - o Press the "FCN" key to enter a character and shift to the left for the next character.
  - o Repeat the process until desired name/label is entered and press the "ENT" key.**Note:** *LCD is an 8 character display.  
 Not all NIFC EPH or EPV radios are Alphanumeric programmable.  
 NIFC Default is set to display Numeric display only in "CH 00" parameters.*
  
11. Once the label is entered, the program will bring the first channel parameter up. Channel programming is complete. At this point the user may select another channel to program or exit the program mode by cycling power to the radio.

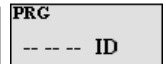


Figure 1

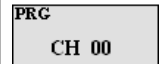


Figure 2



Figure 3

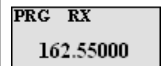


Figure 4

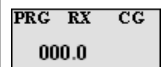


Figure 5

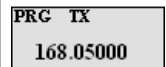


Figure 6

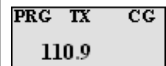


Figure 7

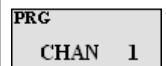


Figure 8



# NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION KING EPH/EPV PORTABLE RADIO SETTINGS/OPTIONS

## EPH/EPV SETTINGS/OPTIONS

### ADD/REMOVE CHANNELS FROM SCAN LIST

- To **ADD channel to Scan List**, select a channel to scan with the channel select knob and press the "ENT" key. LCD will display "SCN" in the upper section, indicating that the current displayed channel is in the scan list. (See *Figure 1*)
- To **REMOVE channel from Scan List**, select the channel to remove with the channel select knob and press the "CLR" key. "SCN" will be removed from the upper section of the LCD.

**Note:** Scan must be disabled in order to add or remove channels from the scan list, by toggling the "SCAN" and "PRI" toggle switches in the down position. (Toward the front of the radio)

### ADD PRIORITY SCAN CHANNEL

- To select a channel as a **Priority Scan Channel**, select a channel and press the "PRI" key. (See *Figure 2*) LCD will display "PR" in the upper section, indicating that the current displayed channel is now the Priority 1 Channel.

**Note:** Scan must be disabled in order to add or remove Priority 1 channel, by toggling the "SCAN" and "PRI" toggle switches in the down position. (Toward the front of the radio)  
In order to set the Priority Channel with the keypad, Priority Mode must be either set to B, C, or D. NIFC Default is Priority Mode A, Priority Channel follows the position of the channel select switch, so the user can not change the Priority Channel via the keypad.

### ENABLE/DISABLE SCAN/PRIORITY SCAN

- Enable Scan**, by toggling the Scan Toggle Switch to the up position. (Toward the back of the radio) LCD will indicate scan is enabled by flashing "--" in the right side of the display if alphanumeric mode is disabled. (See *Figure 3*)

or

LCD will indicate scan is enabled by flashing "SCN" in the upper part of the display if alphanumeric mode is enabled.

- Disable Scan**, by toggling the Scan Toggle Switch to the down position. (Toward the front of the radio)
- Enable Priority Scan**, by toggling the PRI Toggle Switch to the up position. (Toward the back of the radio) LCD will indicate Priority Scan is enabled by flashing "--" in the right side of the display and with a "PR" icon in the top portion of the display if alphanumeric mode is disabled. (See *Figure 4*)

or

LCD will indicate Priority Scan is enabled by flashing "SCN" in the upper part of the display if alphanumeric mode is enabled.

**Note:** When scan is enabled, the radio will scan the current selected channel along with the current channels entered in the scan list.

- Disable Priority Scan**, by toggling the PRI Toggle Switch to the down position. (Toward the front of the radio)  
**Note:** Depending on what type of Priority Scan Mode is enabled, the LCD will display and operate differently for each priority mode. Check the priority mode in the "CH 00" Group Settings. NIFC Default is set to Priority Mode A.

### CHANGING GROUPS

- Press the "#" key followed with the 2-digit number of the desired group and press "ENT" or wait 3 seconds (See *Figure 5*) **Note:** All EPH/EPV NIFC model radios have a 15 group capacity.  
On EPV Model Radios, the user must wait 3 seconds after entering the new group number for the radio to change groups.  
Groups 1-4 contain the Standard NIFC Frequencies.

### TX USER SELECTABLE TONES

- To **Enable Selectable Tone**, press one of number keys (1-9) to select a preprogrammed TX User Selectable Tone. Display will indicate a TX User Selectable Tone is enabled by displaying the "CG" icon in the top portion of the LCD. If Alphanumeric Mode is Disabled, display will also indicate the selected TX User Tone. (See *Figure 6*)
- To **Disable Selectable Tone**, press the "0" key on the keypad.  
**Note:** NIFC preprograms 9 agency standard selectable tones in groups 1-4.

### HI/LOW POWER SETTINGS (EPH ONLY)

- Select Low Power** by toggling the LO/Hi Toggle Switch to the up position. (Toward the back of the radio)
- Select High Power** by toggling the LO/Hi Toggle Switch to the down position. (Toward the front of the radio)  
**Note:** NIFC Low Power setting is set to 2.0 Watts, High Power setting is set to 5.0 Watts. (Current draw dependent)

### TALK AROUND (TA) EPV ONLY

- Enable TA** by toggling the TA Toggle Switch to the up position. (Toward the back of the radio)
- Disable TA** by toggling the TA Toggle Switch to the down position. (Toward the front of the radio)  
**Note:** TA allows the user to TX and RX on the RX Simplex Frequency if channel is programmed with Duplex Frequencies. Leave TA toggle switch disabled at all times.



Figure 1



Figure 2



Figure 3

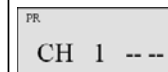


Figure 4



Figure 5

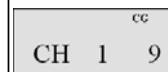


Figure 6





## NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION KING EPH/EPV PORTABLE RADIO CLONING GUIDE

### CLONING RADIO SETTINGS (See Figure 5)

1. Turn both radios ON.
2. Attach the Master end of the cloning cable to the side connector of the Master radio.
3. Put the Master radio in programming mode by holding down the Master Switch and pressing the "FCN" key simultaneously on the radio until the LCD displays (-- -- ID). (See Figure 1)
4. Enter a valid password, if requested, and press the "ENT" key. (NIFC Default Password is set to "000000") The LCD will display either "PASS" or "CH 00" depending on the radio, if the correct password was entered. (See Figure 2)

**Note:** If the EPH radio displays "PASS" press the "ENT" key to proceed to "CH 00" parameters. If the radio does not display "PASS" it can not be used as a Master clone if Narrow-Band frequencies are used, only Flex-Mode Models can clone Narrow-band Frequency List.

5. Attach the other end of the cloning cable to the side connector of the radio to be cloned.
6. Press the "\*" key on the Master radio. The LCD will flash "PROG", indicating that the radio is ready to download. (See Figure 3)
7. Press the "FCN" key to download to clone/slave radio. If the clone was successful, the Master radio will resume flashing "PROG" on the display. If the clone was not successful, the Master radio will flash "FAIL" followed by continuous beeps. (See Figure 4)  
**Note:** To stop "FAIL" mode, press the "CLR" key, turn off the radios, and start the cloning process again. When the Master radio downloads to a clone, the Scan List and Priority Channel designations are also downloaded to the clone radio.

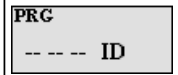


Figure 1

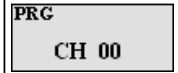


Figure 2



Figure 3



Figure 4

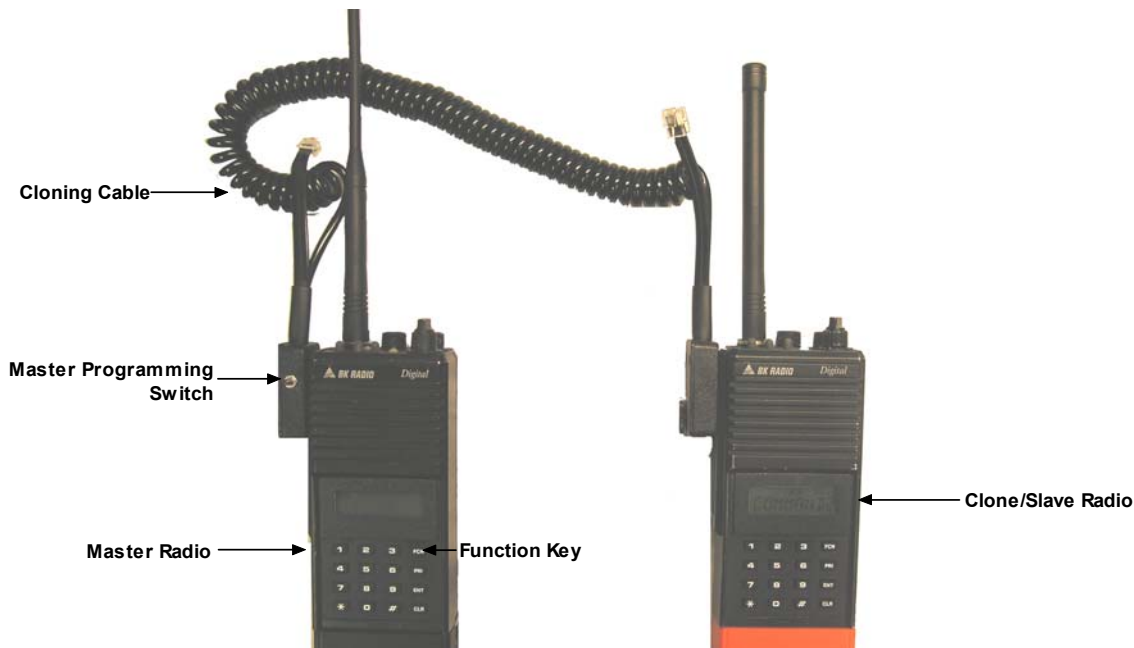


Figure 5



## NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION KING EPH/EPV PORTABLE RADIO "CH 00" SETTINGS

**Note:** "Channel 00" settings contain general performance variables for all channels in each group. There is a "Channel 00" setting for each group, so each group must be programmed separately.

1. Select a group you wish to program.
2. Access the Program Mode to enter the "CH 00" Settings. (See Figure 1)  
(See Access Program Mode on page 1)
3. Once "CH 00" is displayed, press the "FNC" key to scroll to the first "CH 00" parameter.
4. The display will indicate "PRG ID 0000000" for the **Group Automatic Numeric Identification** parameter (ANI). (See Figure 2) This is used as either a radio management number of transmitted as a DTMF tone. Press the "ENT" or "FNC" key to advance to the next field. (NIFC Default is set to "0000000")
5. The display will indicate "PRG TX 160 SEC" for the **Transmit Tim-Out Timer (TOT) duration**. (See Figure 3)  
To change the TOT, press the "PRI" key to increase the TOT duration and press the "ENT" to store value and advance to the next field. (NIFC Default is set to "120 SEC")  
**Note:** A TOT value of 0.0 Seconds, disables the TOT.
6. The display will indicate "PRG SCN 2.0 SEC" for the **Scan Delay Time**. (See Figure 4)  
To change the Scan Delay Time, press the "PRI" key to increase the duration and press the "ENT" key to store and advance to the next field. (NIFC Default is set to "2.0 SEC")
7. The display will indicate "PRG 1--12345" for the **group 1 functions**. (See Figure 5)  
The group functions can be enabled or disabled by pressing the number key corresponding to that function.

### CH 00 Group 1 Functions      NIFC Default is "1-12345"      (See Figure 5)

- 1-12345.....**Battery Saver** (Disables the Battery Saver Function reduce current drain and battery life.)
- 1-12345.....**Priority Mode A** (Priority Channel follows the position of the current selected channel.)
- 1-12345.....**Priority Mode B** (Priority Channel is fixed, but the user will transmit on the current selected channel.)
- 1-12345.....**Priority Mode C** (Priority Channel is fixed, but the user will transmit on the Priority Channel when the Priority Toggle Switch is enabled, and the display will indicate the Priority Channel.)
- 1-12345.....**Priority Mode D** (Same as Priority C, but display will indicate the current selected channel.)
- 1-12345.....**Priority Key Lockout** (Enables the lock out of the "PRI" key, so user can not change the Priority 1 Channel.)
- 1-12345.....**Scan List Lockout** (Enables Scan List Lockout, so user can not change the channels in the scan list.)

### CH 00 Group 2 Functions      NIFC Default is "2-12345"      (See Figure 6)

- 2-12345.....**User Code Guard** (Enables keypad to independently select a Channel Code Guard value from programmed channels.)
- 2-12345.....**Busy Channel Indicator** (Yellow LED illuminates when signal is received on selected channel.)
- 2-12345.....**Busy Channel Lockout** (Yellow LED illuminates and PTT is disabled when a signal is received on selected channel.)
- 2-12345.....**Busy Channel Lockout/Over-ride** (Same as Busy Channel Lockout, but PTT can be activating the Squelch Code Guard.)
- 2-12345.....**ANI** (Enables the ANI ID number to be transmitted with each press of the PTT as a DTMF tone.)
- 2-12345.....**Manual DTMF Encoder** (Enables keypad for manual DTMF operation.)
- 2-12345.....**Manual DTMF/ANI Encoder** (Enables the ANI ID number to be transmitted only after the "ENT" key is pressed during TX.)

### CH 00 Group 3 Functions      NIFC Default is "3-12345"      (See Figure 7)

- 3-12345.....**LCD Back light ON Main Channel Activity** (LCD back light will illuminate each time there is activity on the selected channel.)
- 3-12345.....**LCD Back light ON Scan Channel Activity** (LCD back light will illuminate each time there is activity on a scanned channel.)
- 3-12345.....**LCD Back light ON Other Display Activity**
- 3-12345.....**LCD Back light ON Key Press** (LCD back light will illuminate each time a key is pressed.)
- 3-12345.....**Alphanumeric Mode** (LCD will display Alphanumeric Characters.)

**Note:** Not all NIFC EPH/EPV radios are Alphanumeric capable.

10. After "CH 00" Group 3 Functions, the display will indicate "PRG LITE OFF" for the **LCD Back light Duration Setting**.  
To change the back light duration, press the "PRI" key to select an available setting and press the "ENT" key to store and advance to the next field. (See Figure 8)  
(NIFC Default is "OFF")
11. The display will indicate the current **group label**. (See Figure 9)  
Press the "ENT" key to advance back to the "CH 00" starting point.  
At this point, pressing the "FNC" key repeatedly will scroll down each value of the "CH 00" settings for that channel.  
If no changes are needed, exit the program mode by cycling power to the radio or continue with programming other CH.

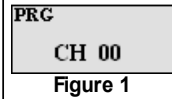


Figure 1

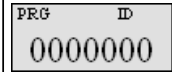


Figure 2

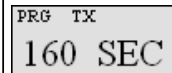


Figure 3

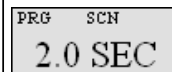


Figure 4

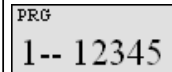


Figure 5

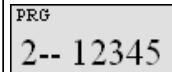


Figure 6

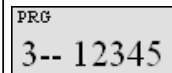


Figure 7



Figure 8

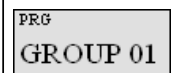


Figure 9



# NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION KING EPH PORTABLE RADIO BASIC OPERATION & RADIO CONTROLS

## EPH BASIC OPERATION AND RADIO CONTROLS

1. Turn power **ON** by turning the ON/OFF Volume Knob clockwise.  
A beep indicates the radio is operational. The LCD will indicate the current channel.
2. Select a group number by pressing the "#" key and entering a 2-digit number followed by the "ENT" key.
3. Select a channel by turning the Channel Select Knob to one of the 14 available positions.
4. Adjust the volume by turning the Squelch Knob clockwise to open the squelch and set the volume to desired level.
5. Adjust the Squelch by turning the Squelch Knob counterclockwise until the squelch closes.

**Note:** *This is the Threshold Squelch Setting.*

*Turn the squelch Knob fully counterclockwise into the detent position to place the RX in Code Guard. RX must have a tone programmed in order for RX Code Guard to function properly. Putting the RX in Code Guard, will enable the RX not to open squelch unless the it receives the correct tone.*

**The radio is now ready to RECEIVE on that current channel.**

6. To transmit, press and hold the Push-To-Talk (PTT) button on the side of the radio.  
**Note:** *The Transmit Indicator Light should glow red while transmitting. If not, the battery may be low or the channel is RX only or busy.*
7. Pause 1 second and talk in a normal voice into the microphone.  
**Note:** *Try to shield the microphone from wind and other loud background noises for clearer transmissions.*
8. Release the PTT to stop transmitting and receive incoming transmissions.

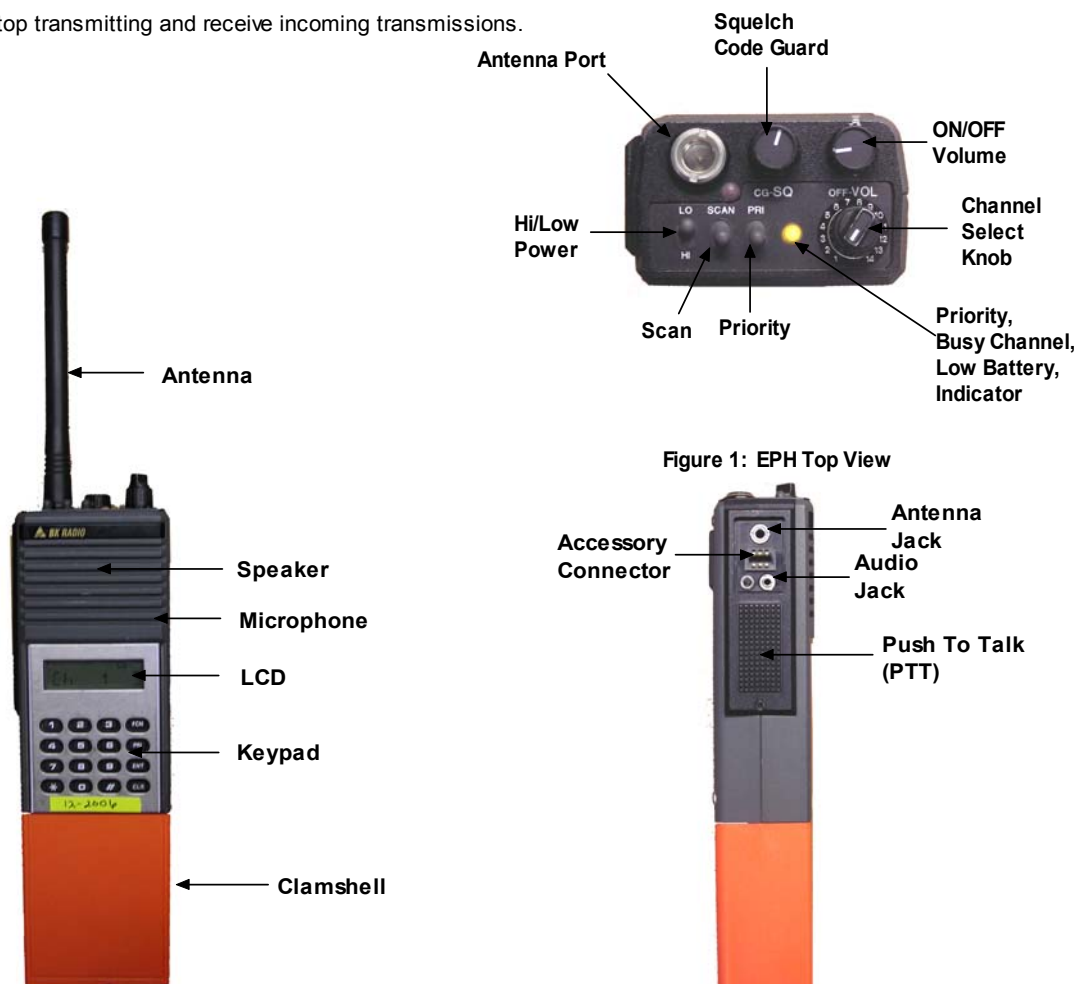


Figure 2: EPH Front View

Figure 3: EPH Side View



# NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION KING EPV PORTABLE RADIO BASIC OPERATION & RADIO CONTROLS

## EPV BASIC OPERATION AND RADIO CONTROLS

1. Turn power **ON** by turning the ON/OFF Volume Knob clockwise.  
A beep indicates the radio is operational. The LCD will indicate the current channel.
2. Select a group number by pressing the **"#"** key and entering a 2-digit number followed by the **"ENT"** key.
3. Select a channel by turning the Channel Select Knob to one of the 14 available positions.
4. Adjust the volume by turning the Squelch Knob clockwise to open the squelch and set the volume to desired level.
5. Adjust the Squelch by turning the Squelch Knob counterclockwise until the squelch closes.

**Note:** *This is the Threshold Squelch Setting.*

*Turn the squelch Knob fully counterclockwise into the detent position to place the RX in Code Guard. RX must have a tone programmed in order for RX Code Guard to function properly. Putting the RX in Code Guard, will enable the RX not to open squelch unless the it receives the correct tone.*

**The radio is now ready to RECEIVE on that current channel.**

6. To transmit, press and hold the Push-To-Talk (PTT) button on the side of the radio.

**Note:** *The Transmit Indicator Light should glow red while transmitting. If not, the battery may be low or the channel is RX only or busy.*

7. Pause 1 second and talk in a normal voice into the microphone.

**Note:** *Try to shield the microphone from wind and other loud background noises for clearer transmissions.*

8. Release the PTT to stop transmitting and receive incoming transmissions.

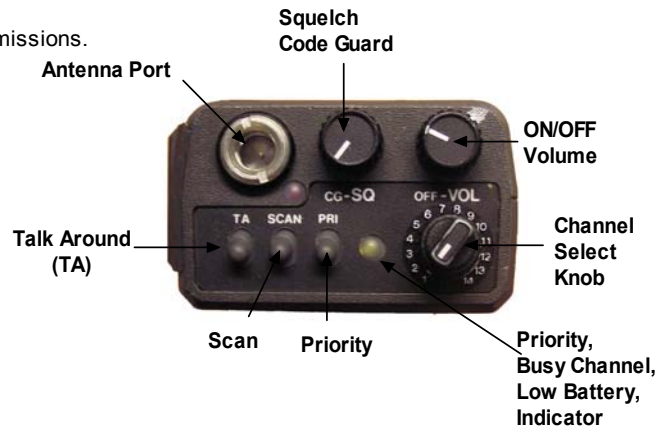


Figure 1: EPV Top View



Figure 2: EPV Front View

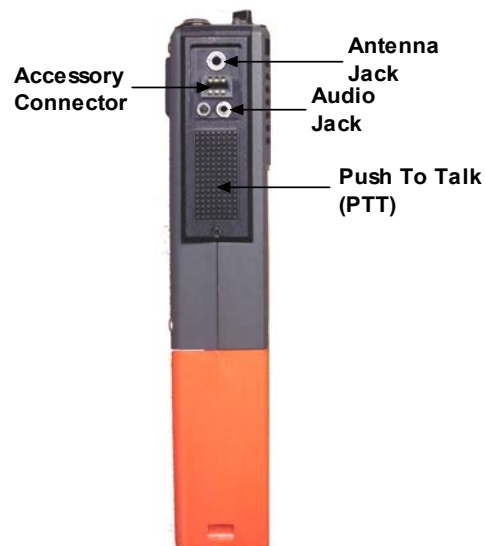


Figure 3: EPV Side View



# NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION KING DPH PORTABLE RADIO ANALOG PROGRAMMING GUIDE

## PROGRAMMING ANALOG CHANNELS ON KING DPH RADIOS

1. Select a group and channel you wish to program
2. **Access Program Mode**
  - o Insert a programming plug into the side connector of the radio.
  - o Press and hold the red Master Switch on the programming plug.
  - o Press and hold the "FCN" key for approximately three seconds until the LCD displays "-- -- ID". (See Figure 1)
  - o Enter a valid password if requested. **NIFC Default password is set to "000000"**
  - o Press the "ENT" key to proceed into the programming mode.
  - o If the correct password was entered, the LCD displays "PRG CH00". (See Figure 2)
3. Once in Program Mode, select a 2-digit channel number (01-16) to program using the keypad.
 

**Note: Once a channel is entered, pressing the "FNC" key will scroll through that particular channel settings.**
4. Once the wanted channel is entered and displayed, the **Bandwidth Setting** can be set. Press the "#" key to toggle between Wide-Band and Narrow-Band. (See Figure 3)
 

**Note: The "N" indicates that the channel is set for Narrow-Band operation. NIFC Default is set to "N" for Narrow-Band.**
5. Once the Bandwidth is set, press the "FCN" key to scroll to the next programming parameter. The LCD will display "PRG RX 162.5500" for programming the **RX Frequency**. (See Figure 4) Press the "CLR" key to clear the current frequency and enter a valid VHF RX frequency and press the "ENT" key.
6. The LCD will display "PRG RX MODE-A" for programming the **RX Mode**. (See Figure 5) Press the "PRI" key to toggle between "A", "D", or "M" select "A" press the "ENT" key.
 

**Note: A=Analog Channel, D=Digital Channel, and M=Mixed Mode Channel. NIFC Default is set to "A" for Analog Channels Only**
7. The LCD will display "PRG RX CG 000.0" for programming the **RX Code Guard**. (See Figure 6) Press the "CLR" key to clear the tone and enter a valid tone using the keypad and press the "ENT" key.
 

**Note: NIFC Default is set to "000.0", for NO RX Tone. To Enable RX Code Guard, turn the Squelch Code Guard knob counterclockwise into the detent position.**
8. LCD will display "PRG RX IDCG NAC0659" for programming the **RX Network Access Code**. This is a Digital Channel Function, press the "ENT" key to skip to the next programming parameter.
9. The LCD will display "PRG RX ID SQL-NRM" for programming the **Squelch Setting**. (See Figure 7) Press the "PRI" key to toggle between "NRM", or "SEL". Select "NRM" and press the "ENT" key.
 

**Note: "SEL" is used only in Digital or Mixed Mode to use Talk Groups or Individual Call Functions.**
10. LCD will display "PRG TX 168.05000" for programming the **TX Frequency**. (See Figure 8) Press the "CLR" key to clear the current frequency and enter a valid VHF TX frequency and press the "ENT" key.
11. LCD will Display "PRG TX MODE-A" for programming the **TX Mode**. (See Figure 9) Press the "PRI" key to toggle between "A", "D", or "M" select "A" and press the "ENT" key.
 

**Note: A=Analog Channel, D=Digital Channel, and M=Mixed Mode Channel NIFC Default is set to "A" for Analog Channels Only**
12. LCD will display "PRG TX CG 110.9" for programming **TX Code Guard**. (See Figure 10) Press the "CLR" key to clear the current tone and enter a valid tone using the keypad and press the "ENT" key.
13. LCD will display "PRG TX IDCG NAC0659" for programming the **TX Network Access Code**. This is a Digital Channel Function, press the "ENT" key to skip to the next programming parameter.
14. LCD will display the "PRG ID TG00001" for programming the **TX Talk Group ID**. This is a Digital Channel Function, press the "ENT" key to skip to the next programming parameter.
15. LCD will display the channel name/label, press the "ENT" key to keep name/label and finish programming the channel or press the "CLR" key to change the name/label for that channel. (See figure 11)
16. **Changing Channel Label**
  - o Press the "CLR" key to clear the label.
  - o Press the "PRI" key to scroll through available Alphanumeric Characters.
  - o Press the "FCN" key to enter a character and shift to the left for the next character.
  - o Repeat the process until desired name/label is entered and press the "ENT" key.

**Note: LCD is an 8 Character display NIFC Default is set to display the Numeric Characters only in the "CH 00" parameters.**
17. Once the label is entered, the program will bring the first channel parameter up, channel programming is complete. At this point the user may select another channel to program by starting on step 3 or exit the program mode by cycling power to the radio.

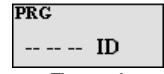


Figure 1

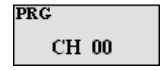


Figure 2



Figure 3

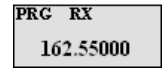


Figure 4

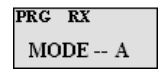


Figure 5

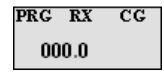


Figure 6

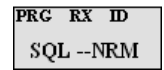


Figure 7

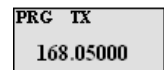


Figure 8

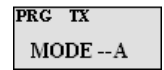


Figure 9

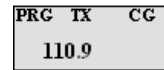


Figure 10



Figure 11





# NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION KING DPH PORTABLE RADIO SETTINGS/OPTIONS

## DPH SETTINGS/OPTIONS

### ADD/REMOVE CHANNELS FROM SCAN LIST

1. To **ADD channel to Scan List**, select a channel to scan with the channel select knob and press the "ENT" key. LCD will display "SCN" in the upper section, indicating that the current displayed channel is in the scan list. (See **Figure 1**)
2. To **REMOVE channel from Scan List**, select the channel to remove with the channel select knob and press the "CLR" key. "SCN" will be removed from the upper section of the LCD.

**Note:** Scan must be disabled in order to add or remove channels from the scan list, by toggling the "SCAN" and "PRI" toggle switches in the down position. (Toward the front of the radio)

### ADD PRIORITY SCAN CHANNEL

1. To **select a channel as a Priority Scan Channel**, select a channel and press the "PRI" key. (See **Figure 2**) LCD will display "PR" in the upper section, indicating that the current displayed channel is now the Priority 1 Channel.

**Note:** Scan must be disabled in order to add or remove the Priority 1 Channel, by toggling the "SCAN" and "PRI" toggle switches in the down position. (Toward the front of the radio)  
Priority 2 Channel can only be changed in the "CH 00" parameters. (See "CH 00" Settings on page 4)

In order to set the Priority Channel with the keypad, Priority Mode must be either set to B, C, or D. NIFC Default is Priority Mode A, Priority Channel follows the position of the channel select switch, so the user can not change the Priority Channel via the keypad.

**Note:** Enabling PRI Scan will only scan the Priority Channel(s). In order to scan the scan list channels and the Priority Channel(s), both the Scan and PRI Toggle switches must be enabled.

### ENABLE/DISABLE SCAN/PRIORITY SCAN

1. **Enable Scan**, by toggling the Scan Toggle Switch to the up position. (Toward the back of the radio)  
LCD will indicate scan is enabled by flashing "--" in the right side of the display if alphanumeric mode is disabled. (See **Figure 3**)

or

LCD will indicate scan is enabled by flashing "SCN" in the upper part of the display if alphanumeric mode is enabled.

2. **Disable Scan**, by toggling the Scan Toggle Switch to the down position. (Toward the front of the radio)
3. **Enable Priority Scan**, by toggling the PRI Toggle Switch to the up position. (Toward the back of the radio)  
LCD will indicate Priority Scan is enabled by flashing "--" in the right side of the display and with a "PR" icon in the top portion of the display if alphanumeric mode is disabled. (See **Figure 4**)

or

LCD will indicate Priority Scan is enabled by flashing "SCN" in the upper part of the display if alphanumeric mode is enabled.

4. **Disable Priority Scan**, by toggling the PRI Toggle Switch to the down position. (Toward the front of the radio)  
**Note:** Depending on what type of Priority Scan Mode is enabled, the LCD will display and operate differently for each priority mode. Check the priority mode in the "CH 00" Group Settings. NIFC Default is set to Priority Mode A.

### CHANGING GROUPS

1. Press the "#" key followed with the 2-digit number of the desired group and press "ENT" or wait 3 seconds. (See **Figure 5**)

**Note:** All DPH NIFC model radios have a 25 group capacity. Groups 1-4 contain the Standard NIFC Frequencies.

### TX USER SELECTABLE TONES

1. To **Enable Selectable Tone**, press one of number keys (1-9) to select a preprogrammed TX User Selectable Tone. Display will indicate a TX User Selectable Tone is enabled by displaying the "CG" icon in the top portion of the LCD. If Alphanumeric Mode is Disabled, display will also indicate the selected TX User Tone. (See **Figure 6**)
2. To **Disable Selectable Tone**, press the "0" key on the keypad.

**Note:** NIFC preprograms 16 agency standard selectable tones in groups 1-4.

### HI/LOW POWER SETTINGS

1. **Select Low Power** by toggling the LO/Hi Toggle Switch to the up position. (Toward the back of the radio)
2. **Select High Power** by toggling the LO/Hi Toggle Switch to the down position. (Toward the front of the radio)  
**Note:** NIFC Low Power setting is set to 2.0 Watts, High Power setting is set to 5.0 Watts. (Current draw dependent)

### ENABLE/DISABLE KEYPAD

1. To **Disable keypad**, press and hold the "FNC" key until the LCD displays "LOCKED". (See **Figure 7**)
2. To **Enable keypad**, press and hold the "FNC" key until the LCD displays "UNLOCKED". (See **Figure 8**)



Figure 1



Figure 2



Figure 3



Figure 4



Figure 5

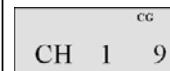


Figure 6



Figure 7



Figure 8



## NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION KING DPH PORTABLE RADIO CLONING GUIDE

### CLONING RADIO SETTINGS (See Figure 5)

1. Turn both radios ON.
2. Attach the Master end of the cloning cable to the side connector of the Master radio.
3. Put the Master radio in programming mode by holding down the Master Switch and pressing the "FCN" key on the radio until the LCD displays (-- -- ID). (See Figure 1)
4. Enter a valid password, if requested, and press the "ENT" key. (NIFC Default Password is set to "000000")  
The LCD will display "CH 00" if the correct password was entered. (See Figure 2)
5. Attach the other end of the cloning cable to the side connector of the radio to be cloned.
6. Press the "\*" key on the Master radio.  
The LCD will flash "PROG", indicating that the radio is ready to download. (See Figure 3)
7. Press the "FCN" key to download to clone/slave radio.

If the clone was successful, the Master radio will resume flashing "PROG" on the display.

If the clone was not successful, the Master radio will flash "FAIL" followed by continuous beeps. (See Figure 4)

**Note:** To stop "FAIL" mode, press the "CLR" key, turn off the radios, and start the cloning process again. When the Master radio downloads to a clone, the Scan List and Priority Channel designations are also downloaded to the clone radio.

Group Password are also downloaded between DPH and GPH Model radios, NIICD recommends not modifying the Group Password when programming radios.

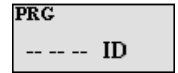


Figure 1

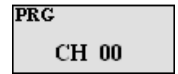


Figure 2



Figure 3



Figure 4

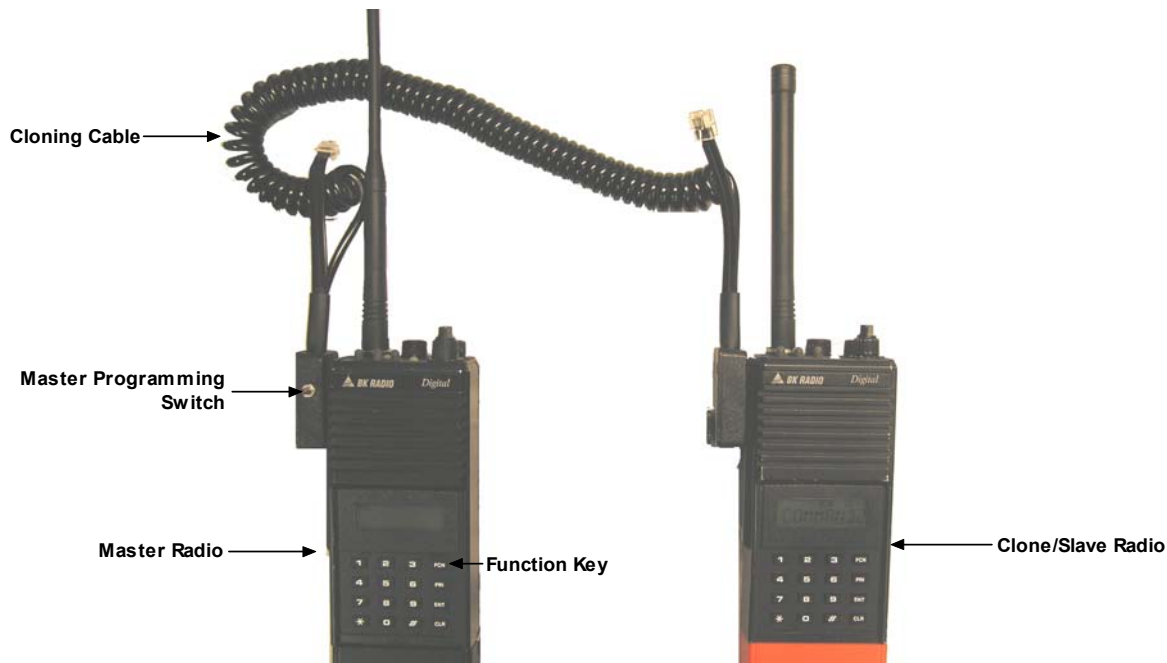


Figure 5



## NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION KING DPH PORTABLE RADIO "CH 00" SETTINGS

**Note:** "Channel 00" settings contain general performance variables for all channels in each group. There is a "Channel 00" setting for each group, so each group must be programmed separately.

1. Select a group you wish to program.
2. Access the Program Mode to enter the "CH 00" Settings. (See Figure 1)(See Access Program Mode on page 1)
3. Once "CH 00" is displayed, press the "FNC" key to scroll to the fist "CH 00" parameter.
4. The display will indicate "PRG P000000" for the **Group Password**. (See Figure 2)  
Press the "ENT" if no change is required and advance to the next programming parameter  
**Note: To change the group password, press the "CLR" key then enter a 6-digit password and press the "ENT" key to store and advance to the next programming parameter.**  
**NIFC does not recommend changing the group password, Default password is set to "P000000"**
5. The display will indicate "PRG ID 0000000" for the **Group Automatic Numeric Identification** parameter (ANI). (See Figure 3) This is used as either a radio management number or transmitted as a DTMF tone. Press the "ENT" or "FNC" key to advance to the next field. (NIFC Default is set to "0000000")
5. The display will indicate "PRG TX 160 SEC" for the **Transmit Tim-Out Timer (TOT)** duration. (See Figure 4)  
To change the TOT, press the "PRI" key to increase the TOT duration and press the "ENT" to store value and advance to the next field. (NIFC Default is set to "120 SEC") A TOT value of 0.0 Seconds, disables the TOT.
6. The display will indicate "PRG SCN 2.0 SEC" for the **Scan Delay Time**. (See Figure 5)  
To change the Scan Delay Time, press the "PRI" key to increase the duration and press the "ENT" key to store and advance to the next field. (NIFC Default is set to "2.0 SEC")
7. The display will indicate "PRG PR1 OFF" for programming a **Priority 1 Channel**. (See Figure 6)  
To change the Priority 1 Channel, press the "PRI" key to select a channel or turn OFF the function and press the "ENT" key to store and advance to the next field. **NIFC Default is set to "OFF"**  
**Note: Priority 1 Channel can be programmed as a fixed channel, selected by the channel select knob, or OFF. If the PRI 1 is set as fixed, it can be changed through the front keypad by pressing the "PRI" key.**
8. The display will indicate "PRG PR2 OFF" for programming the **Priority 2 Channel**. (See Figure 7)  
To change the Priority 2 Channel, press the "PRI" key to select a channel or turn OFF the function and press the "ENT" key to store and advance to the next field. **NIFC Default is set to "OFF"**  
**Note: Priority 2 Channel can only be changed via the "CH 00" parameters.**
7. The display will indicate "PRG 1--12345" for the **Group 1 Functions**. (See Figure 8)  
The group functions can be enabled or disabled by pressing the number key corresponding to that function.  
**CH 00 Group 1 Functions NIFC Default is "1-12345" (See Figure 8)**  
1-12345.....**Battery Saver** (Disables the Battery Saver Function for current drain on battery life.)  
1-12345.....**Group Scan** (Enables the current group to be scanned while in Group Scan Mode.)  
1-12345.....**TX on PRI 1** Enables transmission on PRI 1 when PRI Scan is Enabled.)  
1-12345.....**Priority Key Lockout** (Enables the Lock out of the "PRI" key, so user can not change the Priority 1 Channel.)  
1-12345.....**Scan List Lockout** (Enables the Scan List Lock out, so user can not add/remove channels from the scan list.)  
**CH 00 Group 2 Functions NIFC Default is "2-12345" (See Figure 9)**  
2-12345.....**User Code Guard** (Enables keypad to independently select a Channel Code Guard value from programmed channels.)  
2-12345.....**Busy Channel Indicator** (Yellow LED illuminates when signal is received on selected channel.)  
2-12345.....**Busy Channel Lockout** (Yellow LED illuminates and PTT is disabled when a signal is received on selected channel.)  
2-12345.....**Busy Channel Lockout/Over-ride** (Same as Busy Channel Lockout, but PTT can be activating the Squelch Code Guard.)  
2-12345.....**ANI** (Enables the ANI ID number to be transmitted with each press of the PTT as a DTMF tone.)  
2-12345.....**Manual DTMF Encoder** (Enables keypad for manual DTMF operation.)  
2-12345.....**Manual DTMF/ANI Encoder** (Enables the ANI ID number to be transmitted only after the "ENT" key is pressed during TX.)  
**CH 00 Group 3 Functions NIFC Default is "3-12345" (See Figure 10)**  
3-12345.....**Reserved**  
3-12345.....**Reserved**  
3-12345.....**LCD Back light ON Display Change** (LCD back light will illuminate each time the display receives an input.)  
3-12345.....**LCD Back light ON Key Press** (LCD back light will illuminate each time a key is pressed.)  
3-12345.....**Alphanumeric Mode** (LCD will display Alphanumeric Characters.)
10. After "CH 00" Group 3 Functions, the display will indicate "PRG LITE OFF" for the **LCD Back light Duration Setting**. To change the back light duration, press the "PRI" key to select an available setting and press the "ENT" key to store and advance to the next field. (NIFC Default is "OFF") (See Figure 11)
11. The display will indicate the current **group label**. (See Figure 12)  
Press the "ENT" key to advance back to the "CH 00" starting point.  
At this point, pressing the "FNC" key repeatedly will scroll down each value of the "CH 00" settings for that channel.  
If no changes are needed, exit the program mode by cycling power to the radio or continue with channel programming.

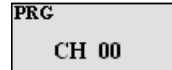


Figure 1

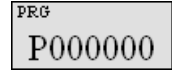


Figure 2

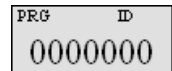


Figure 3

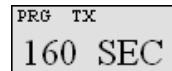


Figure 4

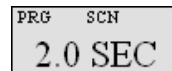


Figure 5



Figure 6

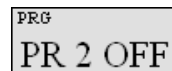


Figure 7

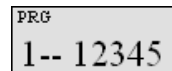


Figure 8

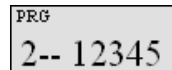


Figure 9

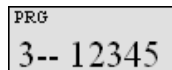


Figure 10



Figure 11



Figure 12





# NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION KING DPH PORTABLE RADIO BASIC OPERATION & RADIO CONTROLS

## DPH BASIC OPERATION AND RADIO CONTROLS

1. Turn power **ON** by turning the ON/OFF Volume Knob clockwise.  
A beep indicates the radio is operational. The LCD will indicate the current channel.
2. Select a group number by pressing the "#" key and entering a 2-digit number followed by the "ENT" key.
3. Select a channel by turning the Channel Select Knob to one of the 14 available positions.
4. Adjust the volume by turning the Squelch Knob clockwise to open the squelch and set the volume to desired level.
5. Adjust the Squelch by turning the Squelch Knob counterclockwise until the squelch closes.

**Note:** *This is the Threshold Squelch Setting.*

*Turn the squelch Knob fully counterclockwise into the detent position to place the RX in Code Guard. RX must have a tone programmed in order for RX Code Guard to function properly. Putting the RX in Code Guard, will enable the RX not to open squelch unless it receives the correct tone.*

**The radio is now ready to RECEIVE on that current channel.**

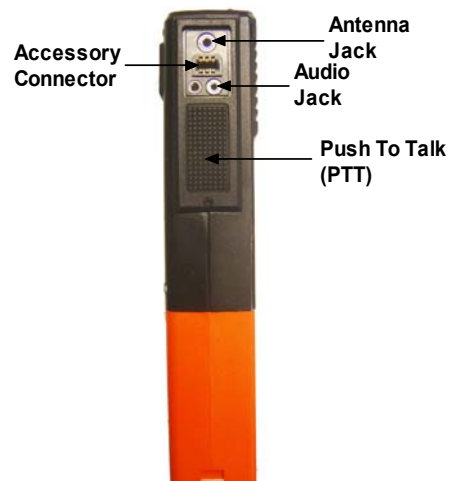
6. To transmit, press and hold the Push-To-Talk (PTT) button on the side of the radio.  
**Note:** *The Transmit Indicator Light should glow red while transmitting. If not, the battery may be low or the channel is RX only or busy.*
7. Pause 1 second and talk in a normal voice into the microphone.  
**Note:** *Try to shield the microphone from wind and other loud background noises for clearer transmissions.*
8. Release the PTT to stop transmitting and receive incoming transmissions.



**Figure 1: DPH Top View**



**Figure 2: DPH Front View**



**Figure 3: DPH Side View**



# NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION MOTOROLA XTS 2500 PORTABLE RADIO PROGRAMMING GUIDE

## PROGRAMMING ANALOG CHANNELS ON MOTOROLA XTS 2500

1. Turn radio ON and select a Zone/Group you wish to program.
2. Press the 4-Way Navigation key to the right once or until the "FPP" softkey is visible on the display. (See Figure 1)  
Press the "FPP" softkey to proceed into programming mode.  
Radio will indicate or ask for programming password, press the "OK" softkey to enter program mode. (See Figure 2)  
Radio will display active zone, select the desired zone by pressing the 4-Way Navigation key left or right. (See Figure 3)  
Once the desired zone is reached, press the "VIEW" softkey to change the channel programming information. (See Figure 4)
3. Select the desired channel to program, by pressing the 4-Way Navigation key left or right.  
Once the desired channel is reached, press the "VIEW" softkey to change that particular channel programming information.
4. The display will indicate "TX:4xx.xxxxxx", press the "EDIT" softkey to change the TX frequency. (See Figure 5)  
Enter the desired TX frequency and press the "OK" softkey, then press the 4-Way Navigation key to the right to enter the RX frequency.
5. The display will indicate "RX:4xx.xxxxxx", press the "EDIT" softkey to change the RX frequency. (See Figure 6)  
Enter the desired RX frequency and press the "OK" softkey, then press the 4-Way Navigation key to the right to enter the TX tone.
6. The display will indicate "TX PL: 0 CSQ", press the "EDIT" softkey to change the TX tone. (See Figure 7)  
Enter a valid TX tone via the keypad and press the "OK" softkey, or  
Press the 4-Way Navigation key up or down and select the desired tone and press the "OK" softkey.  
Press the 4-Way Navigation key to the right to enter the RX tone.  
**NOTE: If an invalid tone is entered, radio will default to the closest valid tone.**  
**NOTE: "0 CSQ" is default for NO TONE.**
7. The display will indicate "RX PL: 0 CSQ", press the "EDIT" softkey to change the RX tone. (See Figure 8)  
Enter a valid RX tone via the keypad and press the "OK" softkey, or  
Press the 4-Way Navigation Key up or down and select the desired tone and press the "OK" softkey.  
Press the 4-way Navigation key to the right to enter the TX DPL.  
**NOTE: If an invalid tone is entered, radio will default to the closest valid tone.**  
**NOTE: "0 CSQ" is default for NO TONE.**
9. The display will indicate "TX DPL: 0 CSQ", do not change, press the 4-Way Navigation Key to the right to enter the RX DPL.
10. The display will indicate "RX DPL: 0 CSQ", do not change, press the 4-Way Navigation Key to the right to enter the TX NAC.
11. The display will indicate "TX NAC: \$293", no not change, press the 4-Way Navigation Key to the right to enter the RX NAC.
12. The display will indicate "RX NAC: \$293", do not change, press the 4-Way Navigation key to the right to enter the RX Type.  
**NOTE: Do not change TX/RX DPL, or TX/RX NAC for analog channels, these parameters are used for digital channels only.**  
**NOTE: TX/RX DPL and TX/RX NAC will display analog equivalent information.**
13. The display will indicate "RX Type: ANALOG", press the "EDIT" softkey to change the RX type. (See Figure 9)  
Toggle between "ANALOG", "MIXED", or "DIGITAL" by pressing the 4-Way Navigation Switch up or down.  
For Analog channels, select "ANALOG" and press the "OK" softkey, then press the 4-Way Key to the right to enter TX Type.
14. The display will indicate "TX Type: ANALOG". (See Figure 10)  
**Note: If the "RX Type" is set to ANALOG or DIGITAL, the TX MODE can not be changed, it will default to the RX setting.**  
Press the 4-way Navigation Key to the right to enter the Bandwidth.
15. The display will indicate "Bandwidth: 12.5 Khz", press the "EDIT" softkey to change the channel bandwidth. (See Figure 11)  
Toggle between either "12.5 Khz" for Narrowband or "25.0 Khz" for Wideband by pressing the 4-Way Navigation Switch up or down and press the "OK" key. Press the 4-Way Navigation Key to the right to enter the Channel Name.  
**NOTE: UHF models are capable of selecting "20.0 Khz" for bandwidth, DO NOT SELECT THIS OPTION.**
16. The display will indicate "Chan Name: CHAN 1", press the "EDIT" softkey to change the Channel Name.  
Enter the desired channel name using the alpha numeric keypad and press the "OK" softkey when done.  
Press the 4-Way Navigation Key to the right, to enter the Zone Name.  
**NOTE: For Space Character, press the 4-Way Navigation Switch to the Right.**
17. The display will indicate "Zone Name: Z1", press the "EDIT" softkey to change the Zone Name.  
Enter the desired Zone Name using the alpha numeric keypad and press the "OK" softkey when done.  
**NOTE: NIICD does not recommend changing the Zone Name.**
18. Once the Zone Name is edited, pressing the 4-way Navigation Switch to the right will bring up the TX Frequency option.
19. Once all the programming parameters have been entered for that channel press the "DONE" softkey and select another channel to program or press the "HOME" Button to exit programming mode.



Figure 1



Figure 2



Figure 3



Figure 4



Figure 5



Figure 6



Figure 7



Figure 8



Figure 9



Figure 10

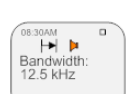


Figure 11



## NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION MOTOROLA XTS 2500 PORTABLE RADIO SETTINGS/OPTIONS

### CHANGING ZONES/GROUPS

1. To change zones/groups, press the "ZONE" softkey from the default screen/display. (See Figure 1)
2. Select the desired zone/group by scrolling right/left with the 4-Way Navigation Switch. (See Figure 2)  
(or direct enter a 2 digit zone/group number via the key)
3. Once a desired zone/group is selected, press the "HOME" button to make that zone/group active.



Figure 1



Figure 2

### ENABLE/DISABLE SCAN/PRIORITY SCAN

1. To Enable Scan, turn the 3-Position Rotary Switch to the "B" or "C" position.  
LCD will indicate the radio is in scan mode, by displaying an (Z) icon on the upper part of the LCD. (See Figure 3)
2. To Disable Scan, turn the 3-Position Rotary Switch to the "A" position.  
**NOTE: If no channels are in the Scan List, the radio will beep and indicate empty scan list on the LCD when scan is enabled.**



Figure 3

### ADD/REMOVE CHANNELS FROM SCAN/PRIORITY LIST

1. To add a channel to the Scan List, press the "PROG" softkey from the default screen/display. (See Figure 4)
2. Press the "SCAN" softkey to enter into the scan list. (See Figure 5)
3. Select the desired channel to scan with the top 16 Channel Select Knob.
4. Press the "SEL" softkey once to enter that selected channel in the scan list. (See Figure 6)  
LCD will indicate the channel is in the scan list, by displaying an (Z) icon on the upper part of the LCD.
5. Press the "SEL" softkey once more to enter that selected channel as the scan priority 1 channel.  
LCD will indicate the radio is PRI 1 by displaying an (Z.) icon on the upper part of the LCD.
6. Press the "SEL" softkey once more to enter that selected channel as the scan priority 2 channel.  
LCD will indicate the radio is PRI 2 by displaying an (Z.) icon on the upper part of the LCD. (Note Flashing DOT on end)
7. Press the "SEL" softkey once more to remove the channel from the scan list completely.  
Or press the "DEL" softkey to remove the channel from the scan list.
8. Press the "HOME" button to return to the main screen.



Figure 4



Figure 5



Figure 6



# NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION MOTOROLA XTS 2500 PORTABLE RADIO CLONING INSTRUCTIONS

## XTS 2500 CLONING PROCEDURE

1. Turn both radios on.
2. Connect the cloning cable to both the Master and Slave radios. (See Figure 7)
3. On the MASTER RADIO, press the "CLON" softkey from the default screen to bring up the cloning menu. (See Figure 1)  
Note: The Master radio will momentarily display "TARGET RADIO CONNECTED" if a slave radio is connected correctly.  
The Slave radio will display "CLONE MODE" on the LCD.
4. Select a desired zone/group by pressing the 4-Way Navigation Key to the left or right. (See Figure 2)
5. Once a zone is selected, press the "SEL" softkey to enable that zone to be sent over to the slave radio.  
The display will indicate the zone is enabled by an "C" icon on the right side of the LCD. (See Figure 3)
6. Press the "DONE" softkey to select a target zone/group. (See Figure 4)
7. The display will indicate "Target: Zx.", select a desired group/zone that the Master radio will write/clone over the Slave radio.  
Press the "SEL" softkey when desired target group/zone is selected.  
The display will indicate the target zone is enabled by an "C" icon on the right side of the LCD. (See Figure 4)
8. Press the "OK" softkey to begin cloning.  
Display on Master will indicate "Wait: Cloning.....".  
Display on Master will indicate "CLONE SUCCESSFUL" once clone is complete. (See Figure 6)
9. Press the "EXIT" softkey to exit clone mode and return to default screen.



Figure 1



Figure 2



Figure 3



Figure 4



Figure 5



Figure 6





# NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION MOTOROLA XTS 2500 PORTABLE RADIO BASIC OPERATION & RADIO CONTROLS

## XTS 2500 BASIC OPERATION AND RADIO CONTROLS

1. Turn power **ON** by turning the ON/OFF Volume Knob clockwise.  
The LCD will indicate the current group and channel label.
2. Select a zone number by pressing the appropriate Menu Select soft key labeled "ZONE", then select a zone by pressing the 4-Way Navigation switch to the right or left; or direct enter a 2 digit group/zone number via the keypad and press the "Home" key when finished.
3. Select a channel by turning the Channel Select Knob to one of the 16 available positions.
4. Adjust the volume by pressing/hold the "Monitor" key until it beeps and set the volume to desired level, press the "Monitor" key once more to close Squelch.  
**The radio is now ready to RECEIVE on that current group and channel.**
6. To transmit, press and hold the Push-To-Talk (PTT) button on the side of the radio.  
**Note: The Transmit Indicator Light should glow red while transmitting.**  
**If not, the battery may be low or the channel is RX only or busy.**
7. Pause 1 second and talk in a normal voice into the microphone.  
**Note: Try to shield the microphone from wind and other loud background noises for clearer transmissions.**
8. Release the PTT to stop transmitting and receive incoming transmissions.



Figure 3: Top View XTS 2500



Figure 1: Front View XTS 2500

Figure 2: Side View XTS 2500





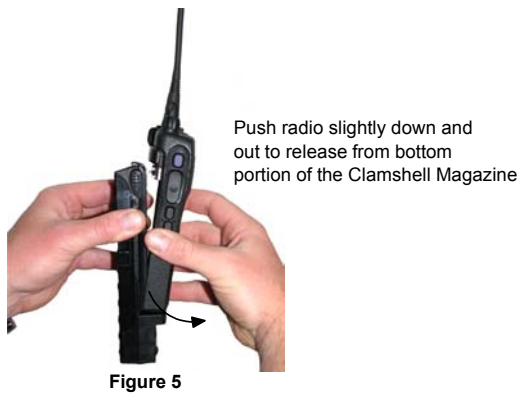
## NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION REMOVING CLAMSHELL FROM MOTOROLA XTS 2500 PORTABLE RADIO



Slide Clamshell Cover down until removed from radio



**Note:** Once the Clamshell Cover is removed, batteries can be easily replaced, without removing the Clamshell Magazine.





# NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION THALES 25 PORTABLE RADIO (RACAL) ANALOG CHANNEL PROGRAMMING

## RACAL ANALOG CHANNEL PROGRAMMING GUIDE

1. Select a channel for programming by rotating the Channel Select Knob to one of the sixteen rotary positions.
2. Press the "ENTER" key to bring up the Main Menu screen. *(See Figure 1)*
3. Scroll up/down using the "O" and " " (up/down arrow keys) to select "PROGRM" and press the "ENTER" key.
4. Enter a 6-Digit Password if requested and press the "ENTER" key.  
**Note:** NIFC password is "000000".
5. Scroll up/down and select "CHANEL" and press the "ENTER" key to program Channel Parameters. *(See Figure 2)*
6. Scroll down and select "TAG" and press the "ENTER" key. *(See Figure 3)*  
Change the channel name/label using the keypad and press the "ENTER" key when complete.  
**Note:** "ID" cannot be changed, it is automatically updated when programming a channel.
7. Scroll down and select "MODE" and press the "ENTER" key to program the Channel Mode. *(See Figure 4)*  
Select either "ANALOG" or "DIGITAL" and press the "ENTER" key.  
**Note:** NIFC Default is "ANALOG" for all channels.
8. Scroll down and select "B/W" and press the "ENTER" key to program the Channel Bandwidth. *(See Figure 4)* Select either "25Khz" or "12.5Khz" and press the "ENTER" key.  
**Note:** 25Khz= Wide-Band, 12.5khz= Narrow-Band.  
**Note:** NIFC Default is "12.5 Khz" for Narrow-Band operation.
9. Scroll down and select "ENCRPT" and press the "ENTER" key to program Encryption. *(See Figure 5)*  
Select either "ENABLD" or "DISABD" and press the "ENTER" key.  
**Note:** If Encryption is enabled, a key must be loaded first into the radio with the PC Programmer.  
**Note:** NIFC Default is "DISABD"
10. Scroll down and select "RX" and press "ENTER" key to program the RX Frequency. *(See Figure 6)*  
Enter a valid RX frequency from 136-174 Mhz using the keypad and press the "ENTER" key.
11. Scroll down and select "RX SQMD" and press the "ENTER" key to program the RX Squelch Mode. *(See Figure 7)* Select either "NOISE", "DCS", "CTCSS", or "NONE" and press the "ENTER" key.  
**Note:** If "Noise" is selected, the program will proceed with the Squelch Adjust parameter (SQ=), select a squelch setting and press "ENTER" when done; this setting opens the squelch with any corresponding analog signal. If "CTCSS" is selected, the program will proceed with a SUB Audible Tone menu, select a tone from the menu by scrolling through and then press "ENTER"; this setting will open the squelch with any corresponding analog signal that contains the correct "CTCSS" tone. If "DCS" is selected, the program will proceed with the Digital Coded Squelch tone menu, select a tone from the menu by scrolling through and then press "ENTER"; this setting will open the squelch with any corresponding analog signal that contains the correct "DCS" tone. If "None" is selected, squelch will be open at all times (Constant Open Squelch).  
**Note:** NIFC Default is "Noise" with a "SQ" setting of 8.
12. Scroll down and select "TX" and press the "ENTER" key to program the TX Frequency. *(See Figure 8)*  
Enter a valid TX frequency from 136-174 Mhz using the keypad and press the "ENTER" key.
13. Scroll down and select "TX SQMD" and press the "ENTER" key to program the TX Squelch Mode. *(See Figure 9)* Select either "DCS", "CTCSS", or "NONE" and press the "ENTER" key.  
**Note:** If "CTCSS" is selected, the program will proceed with a Sub Audible Tone menu, select a tone from the menu by scrolling through and press "ENTER"; this setting will include a "CTCSS" tone on the analog transmit signal. If "DCS" is selected, the program will proceed with a Digital Coded Squelch menu, select a tone from the menu by scrolling through and then press "ENTER"; this setting will include a "DCS" tone on the analog transmit signal. If "None" is selected, no tones are sent out on the analog transmit signal.  
**Note:** NIFC Default is "None".
14. Scroll down and select "LO PWR" and press "ENTER" to program the Low Power Setting. *(See Figure 10)*  
Select either "0.1", "0.5", "1.0", "2.0", or "5.0" Watts for low power setting and press the "ENTER" key.  
**Note:** NIFC Default for Low Power is 1.0 Watts.
15. Scroll down and select "HI PWR" and press the "ENTER" key to program the High Power Setting. *(See Figure 10)* Select either "0.1", "0.5", "1.0", "2.0", or "5.0" Watts for high power setting and press the "ENTER" key.  
**Note:** NIFC Default for Hi Power is 2.0 Watts.
16. If screen reads "SAVE CHANNEL", select "YES" to save. If not, channel information was stored and you can select another channel using the channel select knob and continue programming other channels or press "ESC" a few times to return to the main display.

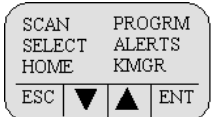


Figure 1



Figure 2

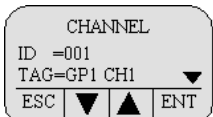


Figure 3

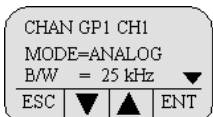


Figure 4

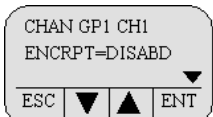


Figure 5

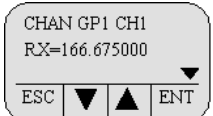


Figure 6

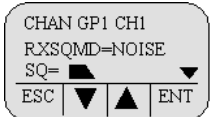


Figure 7

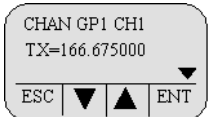


Figure 8

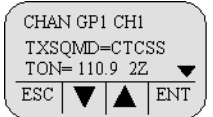


Figure 9

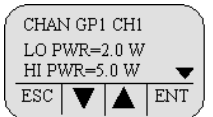


Figure 10



# NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION THALES 25 PORTABLE RADIO (RACAL) SETTINGS/OPTIONS GUIDE

## ADD/REMOVE CHANNEL FROM SCAN LIST

1. Select a channel to be added to the Scan List by using the Channel Select knob.
2. **To Add Channel**, briefly press and release the "◊" key, when released a box "□" will enclose the "C" in the display, indicating that the channel is in the scan list. (See Figure 1)
3. **To Remove**, briefly press and release the "O" key. The box "□" will be removed from the "C" in the display.

**Note:** If the "◊" key is pressed too long, it will enable Zone Scan, which will scan other scan channels in different zones/groups. The LCD will display a box around the "Z". If this happens, disable the function by pressing and holding the "O" key for about 3 seconds.

## SCAN/PRIORITY SCAN MODE

1. **To Enable SCAN**, the 3-position toggle switch must be in the "B" position. The display will indicate that the radio is scanning. (See figure 2)
2. **To Enable PRI SCAN**, the 3-Position toggle switch must be in the "A" position. The display will indicate that Priority Scan is enabled. (See Figure 3)
3. **To Disable SCAN/PRI SCAN**, the 3-position toggle switch must be in the "C" position.

**Note:** In order for Priority Scan to function properly, the user must add a priority scan channel. (See Add Priority Scan Channel)

## ADD PRIORITY SCAN CHANNEL

1. Press the "ENTER" key to bring up the Main Menu Screen.
2. Scroll down to "PROGRAM" and press the "ENTER" key.
3. Scroll down to "SCAN" and press the "ENTER" key.
4. Scroll down to "P1" and press the "ENTER" key.
5. Select the P1 Channel by using the Channel select knob and press the "ENTER" key when done.
6. To add a second priority channel P2, scroll down to "P2" and press the "ENTER" key. Select the P2 Channel by using the Channel Select Knob and press the "ENTER" key when done.
7. Press the "ESC" key a few times to reach the main screen.

**Note:** In order for P2 channel to function properly, the user must enable the P2 function under the scan options. Press the "ENTER" key to bring up the Main Menu Screen. Select "SCAN" and press the "ENTER" key. Scroll down to "PRIM ODE" and press the "ENTER" key. Select "PR1+2" to enable P2 scan function. Once P2 scan function is enabled, when the radio is set to Priority Scan, the display will indicate that both Priority Channels are being scanned. (See Figure 4)

**NIFC Default is P1 and P2 Disabled.**

## CHANGING ZONES

1. Press the "ENTER" key to bring up the Main Menu Screen.
2. Scroll down to "SELECT" and press the "ENTER" key.
3. Scroll down to "ZONE" and press the "ENTER" key. (See Figure 5)
4. Scroll to the desired zone/group and press the "ENTER" key to select the zone. Press the "ESC" key a few times to reach the main screen.

**Note:** NIFC has a total of 16 available zones under the NIFC Bank. Additional 3 zones are available under the Incident Bank. NIFC Default is set to Bank "NIFC"

## CHANGING BANKS

1. Press the "ENTER" key to bring up the Main Menu Screen.
2. Scroll down to "SELECT" and press the "ENTER" key.
3. Scroll down to "BANK" and press the "ENTER" key. (See Figure 5)
4. Scroll to the desired bank and press the "ENTER" key to select a bank. Press the "ESC" key a few times to reach the main screen.

**Note:** NIFC Default in "NIFC Bank". The "INCIDENT Bank" contains 3 additional zones available for programming or cloning.

## DISABLE/ENABLE KEYPAD (See Figures 6 & 7)

1. Press and hold the "□" key while pressing and holding the "ENTER" key. Display will show "Keys Disabled", "Side Enabled". (Only the keypad is disabled, while all the side buttons are still enabled)
2. Repeat the process, display shows "Keys Disabled", "Side Disabled". (Both the keypad and the side buttons are disabled)
3. To Enable Keypad and Side buttons, repeat the process one more time and display will show "Keys Enabled", "Side Enabled".

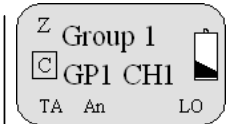


Figure 1

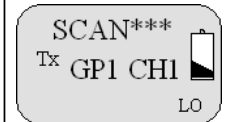


Figure 2

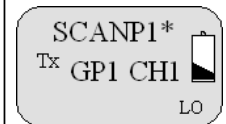


Figure 3

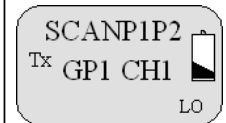


Figure 4

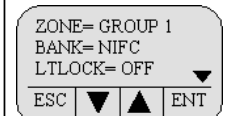


Figure 5

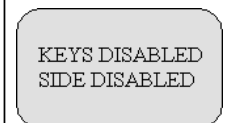


Figure 6

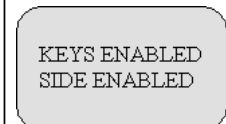


Figure 7





# NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION THALES 25 PORTABLE RADIO (RACAL) CLONING INSTRUCTIONS

## CLONING PROCEDURES

1. Turn both radios on.
2. Connect Source end of cloning cable to Master Radio. *(See Figure 8)*
3. Connect Target end of cloning cable to Slave/Target Radio.  
Master radio automatically detects the target radio, and brings up the Cloning Main Menu. *(See Figure 1)*  
**Note: If a non-Fire Feature target radio is connected, the only cloning option is to clone all channels, zones, and banks.**

4. Scroll down using the "O" key through the Cloning Main Menu.
5. Use the "◇" (√) key to select or de-select cloning features.

### Selectable Cloning Features: *(See Figure 1 & 2)*

- GLOBAL DATA:** Clones all buttons, toggle switch settings, and scan configurations.  
**ALL ZONE:** Clones all Bank and Zone information in radio, including the "Event Bank"  
**EVENT CLONE:** Clones either one of the event zones (17,18, or 19) or can select all event zones to clone.  
**FULL EVBANK:** Clones all zones, channels in the event zones (17,18, 19).  
**TX SQL LIST:** Clones Analog/Digital Transmit Squelch tone pick list.  
**TALKGP LIST:** Clones talk group list (**DIGITAL Only**).

6. Select desired cloning process; "GLOBAL DATA", "ALL ZONE", "EVENT CLONE", "FULL EVBANK", "TX SQL LIST", or "TALKGP LIST" and press the "ENTER" key.

### Cloning Procedure For Each Cloning Feature

- GLOBAL DATA:** Press the "PTT" button to send data to clone radio. *(See Figure 3)*  
**ALL ZONES:** Press the "PTT" button to send data to clone radio. *(See Figure 3)*  
**EVENT CLONE:** Press the "ENTER" key. *(See Figure 3)*  
 Select "SELECT ZONES" and press the "ENTER" key. *(See Figure 4)*  
 Select which Event Zone will be cloned in the "Target" radio and press "ENTER". *(See Figure 5)*  
 Select which Zone will be cloned from the "Source" radio to the "Target" radio by scrolling through the available zones and press the "ENTER" key. *(See Figure 6)*  
 Press "ESC" once to return to the "Start Cloning" menu.  
 Select "START CLONING" and press the "ENTER" key.  
 Press the "PTT" to download to the "Target" radio.

**Note: When performing an "EVENT CLONE", the user can only select zones for that current bank. If Zones 17, 18, or 19 need to be cloned over to the "Target" radio, the user must first select the "Event Bank" on the Master radio before connecting the cloning cable in order to select these zones.**

- FULL EVBANK:** Press the "PTT" button to send data to clone radio. *(See Figure 3)*  
**TX SQL LIST:** Press the "PTT" button to send data to clone radio. *(See Figure 3)*  
**TALKGP LIST:** Press the "PTT" button to send data to clone radio. *(See Figure 3)*

7. Once the clone is complete, the "Target" radio will indicate which zone or zones were cloned over. *(See Figure 7)*
8. Disconnect "Target" radio and connect any other "Target" radios that need to be cloned.



Figure 1

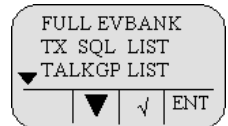


Figure 2

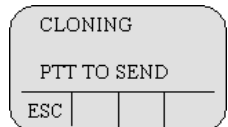


Figure 3

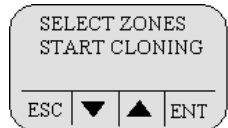


Figure 4

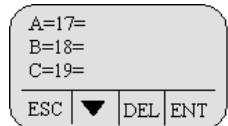


Figure 5

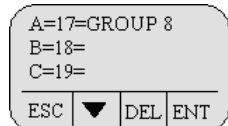


Figure 6

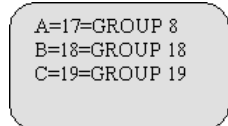


Figure 7



Figure 8



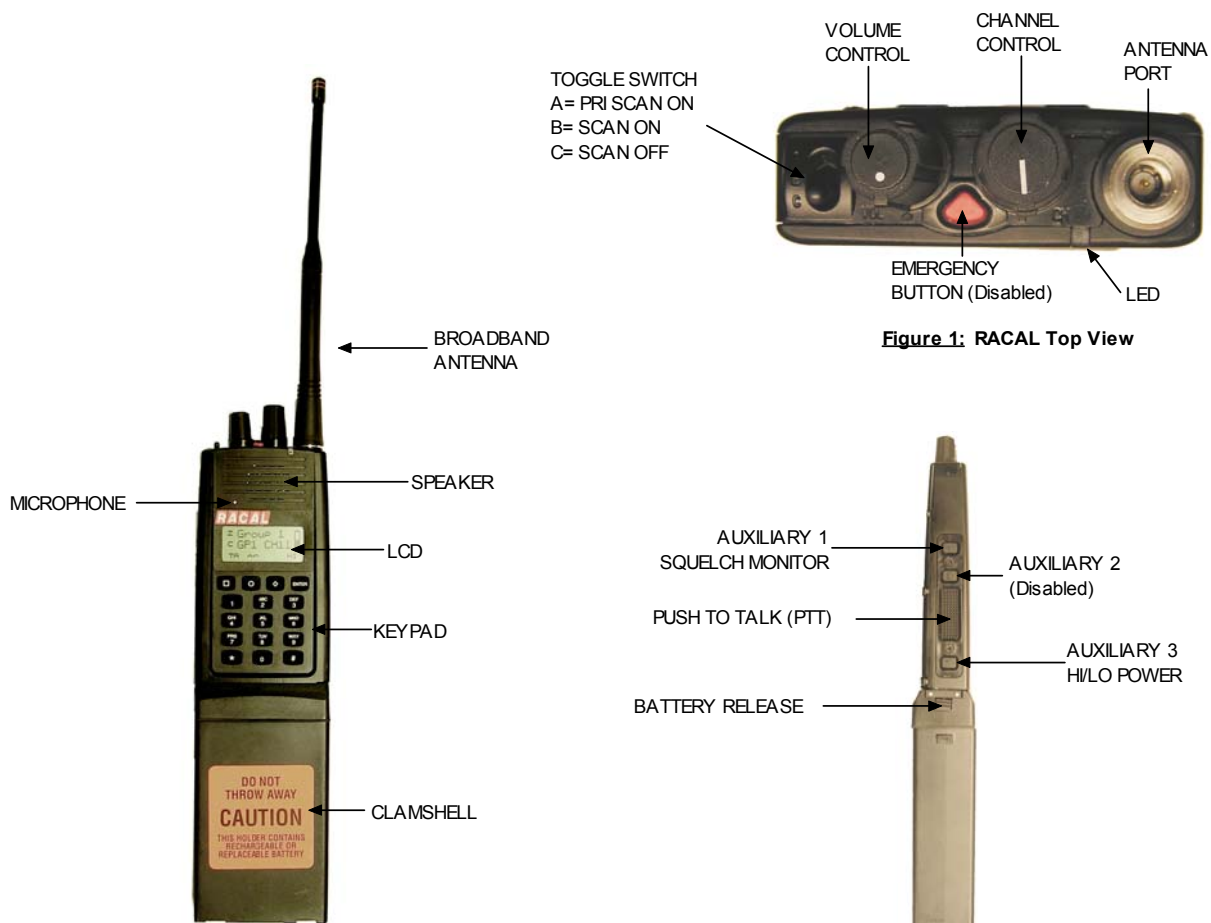
## NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION RACAL BASIC OPERATION AND RADIO CONTROLS

### RACAL BASIC OPERATION AND RADIO CONTROLS

1. Turn power ON by turning the ON/OFF Volume knob clockwise.  
A beep indicates the radio is operational. The LCD will indicate the current group and channel.
2. Select a channel by turning the Channel Select Knob to one of the 16 available positions.
3. Adjust the volume by pressing the Squelch Monitor Button to open the squelch and set the volume to desired level.  
Press the Squelch Monitor Button once more to close the squelch.

**The radio is ready to receive on that current channel.**

5. To Transmit, press and hold the Push-To-Talk (PTT).  
**Note: The Transmit Indicator should light RED. If not, the battery may be low or the channel is busy.**
6. Pause 1 Second and talk in a normal voice into the microphone.  
**Note: Try to shield the microphone from wind and other loud background noises for clearer transmissions.**
7. Release the PTT to stop transmitting and receive incoming transmissions.



**Figure 2: RACAL Front View**

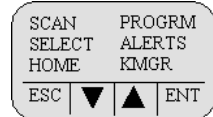
**Figure 3: RACAL Side View**



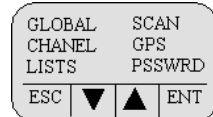
# NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION DATRON PORTABLE RADIO ANALOG CHANNEL PROGRAMMING

## DATRON ANALOG CHANNEL PROGRAMMING GUIDE

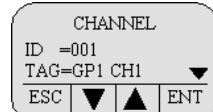
1. Select a channel for programming by rotating the Channel Select Knob to one of the sixteen rotary positions.
2. Press the Large Green Multi-Function key to bring up the Main Menu screen. **(See Figure 1)**
3. Scroll up/down using the Blue Multi-Functions keys (**up/down keys**) to select "PROGRM" and press the "ENT" key.
4. Enter a 6-Digit Password if requested and press the "ENT" key.  
**Note:** NIFC password is "000000".
5. Scroll up/down and select "CHANEL" and press the "ENT" key. **(See Figure 2)**
6. Scroll down and select "TAG" and press the "ENT" key. **(see Figure 3)**  
Change the channel name/label using the keypad and press the "ENT" key when complete.  
**Note:** "ID" cannot be changed, it is automatically updated when programming a channel.
7. Scroll down and select "MODE" and press the "ENT" key. **(See Figure 4)**  
Select either "ANALOG" or "DIGITAL" and press the "ENT" key.  
**Note:** NIFC Default is "ANALOG" for all channels.
8. Scroll down and select "B/W" and press the "ENT" key. **(See Figure 4)**  
Select either "25Khz" or "12.5Khz" and press the "ENT" key.  
**Note:** 25Khz= Wide-Band, 12.5khz= Narrow-Band. If "DIGITAL" is selected for "MODE", the "B/W" option is not available. Other options are available once "DIGITAL" is selected.  
**Note:** NIFC Default is "12.5 KHz" for Narrow-Band operation.
9. Scroll down and select "ENCRPT" and press the "ENT" key. **(See Figure 5)**  
Select either "ENABLD" or "DISABD" and press the "ENT" key.  
**Note:** If Encryption is enabled, a key must be loaded first into the radio with the PC Programmer.  
**Note:** NIFC Default is "DISABD"
10. Scroll down and select "RX" and press "ENT". **(See Figure 6)**  
Enter a valid RX frequency from 136-174 Mhz using the keypad and press the "ENT" key.
11. Scroll down and select "RX SQMD" and press the "ENT" key. **(See Figure 7)**  
Select either "NOISE", "DCS", "CTCSS", or "NONE" and press the "ENT" key.  
**Note:** If "Noise" is selected, the program will proceed with the Squelch Adjust parameter (SQ=), select a squelch setting and press "ENT" when done; this setting opens the squelch with any corresponding analog signal. If "CTCSS" is selected, the program will proceed with a SUB Audible Tone menu, select a tone from the menu by scrolling through and then press "ENT"; this setting will open the squelch with any corresponding analog signal that contains the correct "CTCSS" tone. If "DCS" is selected, the program will proceed with the Digital Coded Squelch tone menu, select a tone from the menu by scrolling through and then press "ENT"; this setting will open the squelch with any corresponding analog signal that contains the correct "DCS" tone. If "None" is selected, squelch will be open at all times (Constant Open Squelch).  
**Note:** NIFC Default is "Noise" with a "SQ" setting of 8.
12. Scroll down and select "TX" and press the "ENT" key. **(See Figure 8)**  
Enter a valid TX frequency from 136-174 Mhz using the keypad and press the "ENT" key.
13. Scroll down and select "TX SQMD" and press the "ENT" key. **(See Figure 9)**  
Select either "DCS", "CTCSS", or "NONE" and press the "ENT" key.  
**Note:** If "CTCSS" is selected, the program will proceed with a Sub Audible Tone menu, select a tone from the menu by scrolling through and press "ENT"; this setting will include a "CTCSS" tone on the analog transmit signal. If "DCS" is selected, the program will proceed with a Digital Coded Squelch menu, select a tone from the menu by scrolling through and then press "ENT"; this setting will include a "DCS" tone on the analog transmit signal. If "None" is selected, no tones are sent out on the analog transmit signal.  
**Note:** NIFC Default is "None".
14. Scroll down and select "LO PWR" and press "ENT". **(See Figure 10)**  
Select either "0.1", "0.5", "1.0", "2.0", or "5.0" Watts for low power setting and press the "ENT" key.  
**Note:** NIFC Default for Low Power is 1.0 Watts.
15. Scroll down and select "HI PWR" and press the "ENT" key. **(See Figure 10)**  
Select either "0.1", "0.5", "1.0", "2.0", or "5.0" Watts for high power setting and press the "ENT" key.  
**Note:** NIFC Default for Hi Power is 2.0 Watts.
16. If screen reads "SAVE CHANNEL", select "YES" to save. If not, channel information was stored and you can select another channel using the channel select knob and continue programming other channels or press "ESC" a few times to return to the main display.



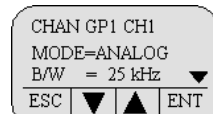
**Fig. 1:** Main Program Menu



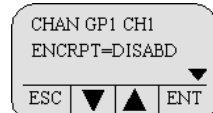
**Fig. 2:** Program Menu



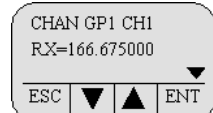
**Fig. 3:** Channel Program 1



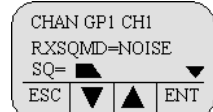
**Fig. 4:** Channel Program 2



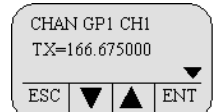
**Fig. 5:** Channel Program 3



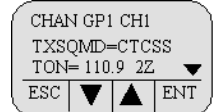
**Fig. 6:** Channel Program 4



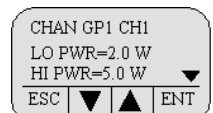
**Fig. 7:** Channel Program 5



**Fig. 8:** Channel Program 6



**Fig. 9:** Channel Program 7



**Fig. 10:** Channel Program 8



## NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION DATRON PORTABLE RADIO SETTINGS/OPTIONS GUIDE

### ADD/REMOVE CHANNEL FROM SCAN LIST

1. Set the radio that the channel to be added in the Scan List by using the Channel Select knob.
2. **To Add Channel** , briefly press and release the 3rd Multi-Function key from the left, when released a box "C" will appear in the display, indicating that the channel is in the scan list. (See Figure 1)
3. **To Remove**, briefly press and release the 2nd Multi-Function key from the left. The box "C" will be removed from the display.

**Note:** If the 3rd Multi-Function key is pressed to long, it will enable Zone Scan, which will scan other scan channels in different zones/groups.

### SCAN/PRIORITY SCAN MODE

1. **To Enable SCAN**, the 3-position toggle switch must be in the "B" position. The display will indicate that the radio is scanning. (See figure 2)
2. **To Enable PRI SCAN**, the top 3-Position toggle switch must be in the "A" position. The display will indicate that the radio that Priority Scan is enabled. (See Figure 3)
3. **To Disable SCAN/PRI SCAN**, the 3-position toggle switch must be in the "C" position.

**Note:** In order for Priority Scan to function properly, the user must add a priority scan channel. (See Add Priority Scan Channel)

### ADD PRIORITY SCAN CHANNEL

1. Press the Large Green Multi-Function key to bring up the Main Menu screen.
2. Scroll down to "PROGRM" and press the "ENT" key.
3. Scroll down to "SCAN" and press the "ENT" key.
4. Scroll down to "P1" and press the "ENT" key.
5. Select the P1 Channel by using the Channel select knob and press the "ENT" key when done.
6. To add a second priority channel P2, scroll down to "P2" and press the "ENT" key. Select the P2 Channel by using the Channel Select Knob and the press the "ENT" key when done.
7. Press the "ESC" key a few times to reach the main screen.

**Note:** In order for P2 channel to function properly, the user must enable the P2 function under the scan options. Press the "ENT" key to bring up the Main Menu Screen. Select "SCAN" and press the "ENT" key. Scroll down to "PRIMODE" and press the "ENT" key. Select "PR1+2" to enable P2 scan function.

Once P2 scan function is enabled, when the radio is set to Priority Scan, the display will indicate that both Priority Channels are being scanned. (See Figure 4)

NIFC Default is P1 Enabled.

### CHANGING ZONES

1. Press the Large Green Multi-Function key to bring up the Main Menu screen.
2. Scroll down to "SELECT" and press the "ENT" key.
3. Scroll down to "ZONE" and press the "ENT" key. (See Figure 5)
4. Scroll to the desired zone/group and press the "ENT" key to select the zone. Press the "ESC" key a few times to reach the main screen.

**Note:** NIFC has a total of 16 available zones under the NIFC Bank. Additional 3 zones are available under the Incident Bank. NIFC Default is "NIFC BANK"

### CHANGING BANKS

1. Press the Green Multi-Function key to bring up the Main Menu screen.
2. Scroll down to "SELECT" and press the "ENT" key.
3. Scroll down to "BANK" and press the "ENT" key. (See Figure 5)
4. Scroll to the desired bank and press the "ENT" key to select a bank. Press the "ESC" key a few times to reach the main screen.

**Note:** NIFC Default in "NIFC Bank".

The "INCIDENT Bank" contains 3 additional zones available for programming or cloning.

### DISABLE/ENABLE KEYPAD

1. Press and hold the 1st Blue Multi-Function key while pressing and holding the Green Multi-Function key. Display will show "Keys Disabled", "Side Enabled". (Only the keypad is disabled, while all the side button are still enabled)
2. Repeat the process, display shows "Keys Disabled", "Side Disabled". (Both the keypad and the side buttons are disabled)
3. To Enable Keypad and Side buttons, repeat the process on more time and display will show "Keys Enabled", "Side Enabled". (See Figures 6 & 7)

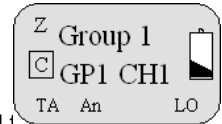


Fig. 1: Scan Channel

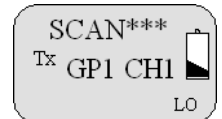


Fig. 2: Scan Mode Display

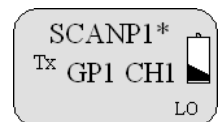


Fig. 3: Pri Scan Mode Display

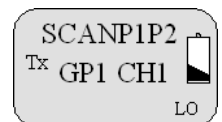


Fig. 4: Pri 2 Scan Mode Display

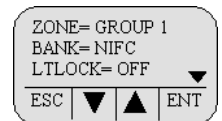


Fig. 5: Select Mode Menu

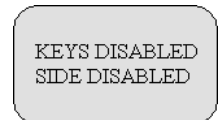


Fig. 6: Keys Disabled Screen

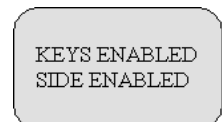


Fig. 7: Keys Enabled Screen



# NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION DATRON PORTABLE RADIO CLONING INSTRUCTIONS

## CLONING PROCEDURES

1. Turn both radios on.
2. Connect Source end of cloning cable to Master Radio. (See Figure 8)
3. Connect Target end of cloning cable to Slave/Target Radio.

Master radio automatically detects the target radio, and brings up the Cloning Main Menu. (See Figure 1)

**Note:** *If a non-Fire Feature target radio is connected, the only cloning option is to clone all channels, zones, and banks.*

4. Scroll down using the "O" key through the Cloning Main Menu.
5. Use the "√" (✓) key to select or de-select cloning features.

- Selectable Cloning Features:** (See Figure 1 & 2)
- GLOBAL DATA:** Clones all buttons, toggle switch settings, and scan configurations.
  - ALL ZONE:** Clones all Bank and Zone information in radio, including the "Event Bank"
  - EVENT CLONE:** Clones either one of the event zones (17,18, or 19) or can select all event zones to clone.
  - FULL EVBANK:** Clones all zones, channels in the event zones (17,18, 19).
  - TX SQL LIST:** Clones Analog/Digital Transmit Squelch tone pick list.
  - TALKGP LIST:** Clones talk group list (**DIGITAL Only**).

6. Select desired cloning process; "GLOBAL DATA", "ALL ZONE", "EVENT CLONE", "FULL EVBANK", "TX SQL LIST", or "TALKGP LIST" and press the "ENTER" key.

**Cloning Procedure For Each Cloning Feature**

- GLOBAL DATA:** Press the "PTT" button to send data to clone radio. (See Figure 3)
- ALL ZONES:** Press the "PTT" button to send data to clone radio. (See Figure 3)
- EVENT CLONE:** Press the "ENTER" key. (See Figure 3)
  - Select "SELECT ZONES" and press the "ENTER" key. (See Figure 4)
  - Select which Inevent Zone will be cloned in the "Target" radio and press "ENTER". (See Figure 5)
  - Select which Zone will be cloned from the "Source" radio to the "Target" radio by scrolling through the available zones and press the "ENTER" key. (See Figure 6)
  - Press "ESC" once to return to the "Start Cloning" menu.
  - Select "START CLONING" and press the "ENTER" key.
  - Press the "PTT" to download to the "Target" radio.

**Note:** *When performing an "EVENT CLONE", the user can only select zones for that current bank. If Zones 17, 18, or 19 need to be cloned over to the "Target" radio, the user must first select the "Event Bank" on the Master radio before connecting the cloning cable in order to select these zones.*

- FULL EVBANK:** Press the "PTT" button to send data to clone radio. (See Figure 3)
- TX SQL LIST:** Press the "PTT" button to send data to clone radio. (See Figure 3)
- TALKGP LIST:** Press the "PTT" button to send data to clone radio. (See Figure 3)

7. Once the clone is complete, the "Target" radio will indicate which zone or zones were cloned over. (See Figure 7)
8. Disconnect "Target" radio and connect any other "Target" radios that need to be cloned.



Fig. 8: Cloning Cable Connections



Fig. 1: Cloning Main Menu

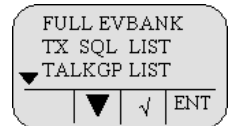


Fig. 2: Cloning Main Menu 2

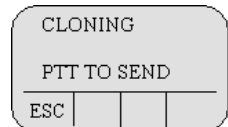


Fig. 3: Push PTT to Send Menu

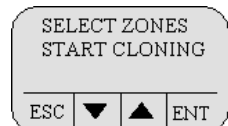


Fig. 4: Select Zones Menu

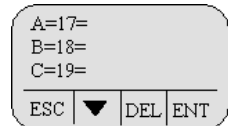


Fig. 5: Target Zones Screen

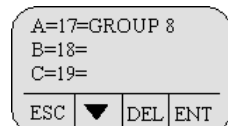


Fig. 6: Source Zones Screen

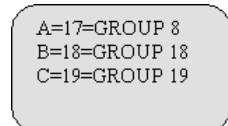


Fig. 7: Target Radio Screen





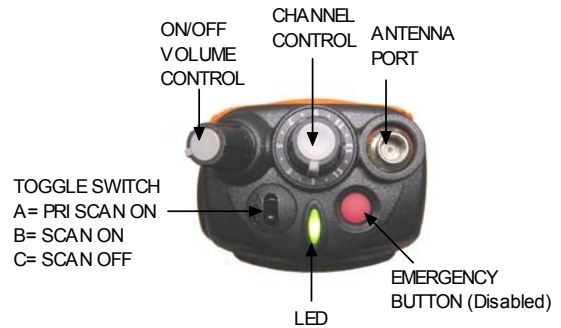
## NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION DATRON BASIC OPERATION AND RADIO CONTROLS

### DATRON BASIC OPERATION AND RADIO CONTROLS

1. Turn power ON by turning the ON/OFF Volume knob clockwise.  
A beep indicates the radio is operational. The LCD will indicate the current group and channel.
2. Select a channel by turning the Channel Select Knob to one of the 16 available positions.
3. Adjust the volume by pressing the Squelch Monitor Button to open the squelch and set the volume to desired level.  
Press the Squelch Monitor Button once more to close the squelch.

**The radio is ready to receive on that current channel.**

5. To Transmit, press and hold the Push-To-Talk (PTT).  
**Note: The Transmit Indicator should light RED. If not, the battery may be low or the channel is busy.**
6. Pause 1 Second and talk in a normal voice into the microphone.  
**Note: Try to shield the microphone from wind and other loud background noises for clearer transmissions.**
7. Release the PTT to stop transmitting and receive incoming transmissions.



**Figure 1: DATRON Top View**



**Figure 2: DATRON Front View**



**Figure 3: DATRON Side View**



# NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION ICOM IC-A3 PORTABLE AM RADIO PROGRAMMING & OPTIONS GUIDE

## ICOM PROGRAMMING & OPTIONS GUIDE

### MANUAL FREQUENCY ENTRY USING THE KEYPAD

1. Rotate the Volume Knob clockwise to turn the power ON.
2. Push the "CLR" key to select frequency mode.
3. Enter a valid AM frequency and press the "ENT" key.  
Display will indicate the current selected frequency. (See Figure 1)

**Note:** Push the "ENT" key to enter consecutive zero digits.  
Push the up/down arrow keys to scroll through frequencies quickly.  
Decimal is automatically entered.

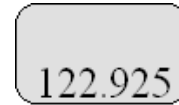


Figure 1

### MEMORY CHANNEL SELECTION

1. Push the "MR" key to select memory mode.
2. Select the desired memory location by pressing the appropriate 2-digit number with the keypad # keys and press "ENT".  
Display will indicate the corresponding frequency of the memory location. (See Figure 2)

**Note:** NIFC as Default contains 6 preprogrammed frequencies in memory locations 1-6.  
Memory locations can also be selected via the tuning dial once in memory mode.

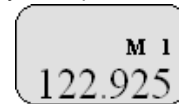


Figure 2

### PROGRAMMING A MEMORY CHANNEL

1. Set the desired frequency using the keypad, the radio must be in frequency mode to enter new frequency.
2. Press the "F" key, followed by the "MR" key.  
The LCD will flash the "M" in the upper display.
3. Select a memory channel (01-50) to be programmed using the keypad or by rotating the tuning dial.
4. Press the "ENT" key to enter that frequency into the memory location.

or

5. Press the "MR" key to change the alpha/numeric label then press the "ENT" key to store the frequency and label into the memory location.

**Note:** The user must know which keys correspond to the alpha characters, the keypad does not indicate which key corresponds to each alpha character.  
When entering alpha characters, use the up/down arrow keys to move cursor.  
Keys correspond just like a cell phone with exception to letters Q and Z, these are under the #1 key.  
No special characters are available.

### LOCK FUNCTION

1. To Enable Key Lock, press the "F" key, then press the "7" key (Key Lock) to turn ON the function.  
Display indicates that the key Lock functions is enabled by displaying the " " icon in the upper part of the LCD.
2. To Disable Key Lock, repeat the process.

**Note:** The lock function prevents accidental frequency changes & accidental function activation.

### AUTOMATIC NOISE LIMITER (ANL)

1. To Enable ANL, press the ANL side button. (Top side button)  
Display indicates that the ANL function is enabled by displaying "ANL" icon in the upper part of the LCD.
2. To Disable ANL, press the ANL side button.

**Note:** The ANL function reduces pulse noise such as ignition noise and other outside interference.

### LIGHT SWITCH

1. To Enable the LCD Back Light, press the Light side button. (Bottom side button)
2. To Disable the LCD Back Light, Press the Light side button.

**Note:** The Light button turn on the LCD back light and the keypad lighting.  
The light will stay on until it is disabled.



## NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION ICOM IC-A3 AM PORTABLE RADIO BASIC OPERATION & CONTROLS

### ICOM IC-A3 BASIC OPERATION AND CONTROLS

1. Turn power ON by turning the ON/OFF Volume knob clockwise.
2. Select a valid AM frequency from one of the memory locations or direct enter a valid AM frequency via the keypad.
3. Adjust the volume by turning the Squelch knob clockwise to open the squelch and set the volume to desired level.
4. Adjust the squelch by turning the Squelch knob counterclockwise until the squelch closes. This is the Threshold Squelch Setting.  
**Note: If the Squelch control is set too high, squelch may not open for weak signals.**
5. Push the "ANL" side button to reduce pulse noise caused by engine ignitions or other outside interference.

The radio is ready to receive on that current frequency.

6. To Transmit, press and hold the Push-To-Talk (PTT).  
**Note: The display will indicate the radio is transmitting by displaying a "TX" icon on the top portion of the LCD.**
7. Pause 1 second and talk in a normal voice into the microphone.  
**Note: Try to shield the microphone from wind and other loud background noises for clearer transmissions.**
8. Release the PTT to stop transmitting and receive incoming transmissions.

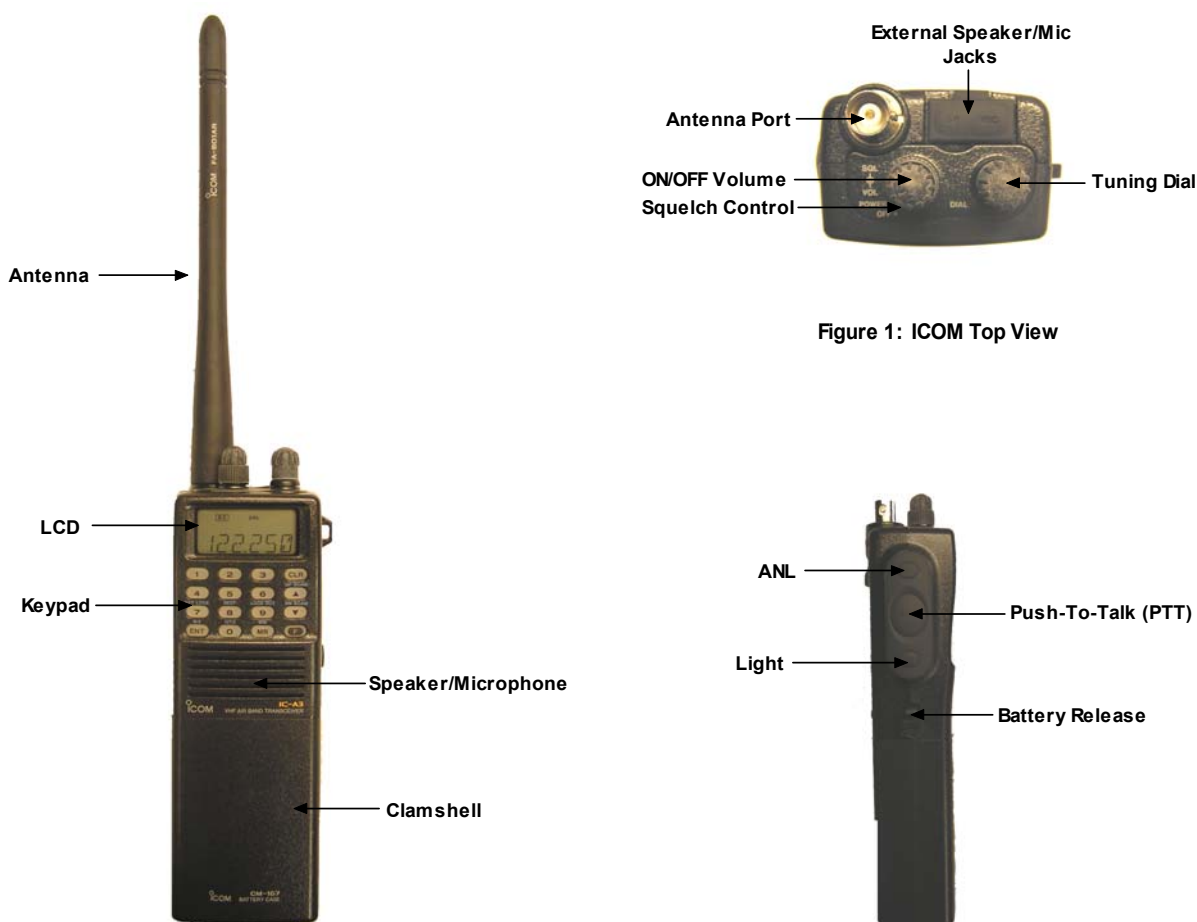


Figure 2: ICOM Front View

Figure 3: ICOM Side View



# APPENDIX C

## RADIO PROGRAMMING POCKET GUIDES\*

\*These diagrams are also available for download online at:

**<http://www.fs.fed.us/fire/niicd/documents.html>**





NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION  
EPH/EPV KING RADIO QUICK PROGRAM GUIDE

1. Select a group and channel needed to program.

Select a group by pressing the # key followed by a 2-digit group number and press the "ENT" key.

2. Program Access

- o Insert programming plug into radio side connector.
- o Press and hold the master switch on plug.
- o While pressing the master switch, press and hold the "FCN" key for about 3 secs.
- o LCD should display "----ID".
- o Enter the SIX-DIGIT password and press the "ENT" key to enter program mode.  
(Note: NIFC radio password is "000000")
- o If the correct password was entered, the LCD will display either "PASS" or "REG CH 00".
- o If the display indicates "PASS", press the "ENT" key to proceed to "CH 00" Parameters.

Note: If the EPH radio does not indicate "PASS" while entering Program Mode, it can not be used as a Master Clone Radio if Narrow-Band Mode is used.

3. Programming a Channel

- Once in the Program Mode, press a 2-digit channel number to program with the keypad.
- "REG CH 01"..... Channel 01. Settings is currently selected.
  - "REG CH 01N"..... Press # to toggle between Narrow/Wide band (EPH Only) and press the "FCN" key.
  - "REG RX 170.47500"..... Press "CLR" and enter new RX Frequency and press the "ENT" key.
  - "REG RX CG 000.0"..... Press "CLR" and enter new RX Code Guard and press "ENT" key.
  - "REG TX 170.47500"..... Press "CLR" and enter new TX Frequency and press the "ENT" key.
  - "REG TX CG 103.5"..... Press "CLR" and enter new TX Code Guard and press the "ENT" key.
  - "REG CHAN 1"..... Channel Label, press "ENT" to bring up the first programming field (\*REG CH 01N).

Note: See "EPH/EPV Help File" to program a new channel label.

4. Channel Programming is complete. At this point the user may select another channel to program or exit the program mode by cycling power to the radio.

EPH/EPV Version 3.0/October, 2007

EPH/EPV SETTINGS & OPTIONS

EPH/EPV CH 00 Program Guide

- ADD Channel to Scan List**  
Select CH with CH knob and press the "ENT" key.  
"SCN" will appear in upper display.
- DELETE Channel from Scan List**  
Select CH with CH knob and press the "CLR" key.  
"SCN" will be removed from the upper display.  
Note: Scan must be disabled to add/delete CH's from scan list.
- ADD PRI Scan Channel**  
Select CH, Press "PRI" key, PRI will appear in display.  
Priority Mode B, C or D must be enabled to change PRI Channel via the keypad.  
Note: See EPH/EPV Help Files for more information.
- Changing Groups**  
See Step 1 on font page.
- HI/LOW Power Selection**  
Select LO Power by toggling the LO/HI Switch to the up position. (Toward the back of the radio)  
Select HI Power by toggling the LO/HI Switch to the down position. (Toward the front of the radio)
- TX User Selectable Tones**  
To Enable Tone, press number on keypad so select.  
To Disable Tone, press the number "0" on keypad.

Bold= Flashing



NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION  
EPH/EPV KING RADIO QUICK PROGRAM GUIDE

1. Select a group and channel needed to program.

Select a group by pressing the # key followed by a 2-digit group number and press the "ENT" key.

2. Program Access

- o Insert programming plug into radio side connector.
- o Press and hold the master switch on plug.
- o While pressing the master switch, press and hold the "FCN" key for about 3 secs.
- o LCD should display "----ID".
- o Enter the SIX-DIGIT password and press the "ENT" key to enter program mode.  
(Note: NIFC radio password is "000000")
- o If the correct password was entered, the LCD will display either "PASS" or "REG CH 00".
- o If the display indicates "PASS", press the "ENT" key to proceed to "CH 00" Parameters.

Note: If the EPH radio does not indicate "PASS" while entering Program Mode, it can not be used as a Master Clone Radio if Narrow-Band Mode is used.

3. Programming a Channel

- Once in the Program Mode, press a 2-digit channel number to program with the keypad.
- "REG CH 01"..... Channel 01. Settings is currently selected.
  - "REG CH 01N"..... Press # to toggle between Narrow/Wide band (EPH Only) and press the "FCN" key.
  - "REG RX 170.47500"..... Press "CLR" and enter new RX Frequency and press the "ENT" key.
  - "REG RX CG 000.0"..... Press "CLR" and enter new RX Code Guard and press "ENT" key.
  - "REG TX 170.47500"..... Press "CLR" and enter new TX Frequency and press the "ENT" key.
  - "REG TX CG 103.5"..... Press "CLR" and enter new TX Code Guard and press the "ENT" key.
  - "REG CHAN 1"..... Channel Label, press "ENT" to bring up the first programming field (\*REG CH 01N).

Note: See "EPH/EPV Help File" to program a new channel label.

4. Channel Programming is complete. At this point the user may select another channel to program or exit the program mode by cycling power to the radio.

EPH/EPV Version 3.0/October, 2007

EPH/EPV SETTINGS & OPTIONS

EPH/EPV CH 00 Program Guide

- ADD Channel to Scan List**  
Select CH with CH knob and press the "ENT" key.  
"SCN" will appear in upper display.
- DELETE Channel from Scan List**  
Select CH with CH knob and press the "CLR" key.  
"SCN" will be removed from the upper display.  
Note: Scan must be disabled to add/delete CH's from scan list.
- ADD PRI Scan Channel**  
Select CH, Press "PRI" key, PRI will appear in display.  
Priority Mode B, C or D must be enabled to change PRI Channel via the keypad.  
Note: See EPH/EPV Help Files for more information.
- Changing Groups**  
See Step 1 on font page.
- HI/LOW Power Selection**  
Select LO Power by toggling the LO/HI Switch to the up position. (Toward the back of the radio)  
Select HI Power by toggling the LO/HI Switch to the down position. (Toward the front of the radio)
- TX User Selectable Tones**  
To Enable Tone, press number on keypad so select.  
To Disable Tone, press the number "0" on keypad.

Bold= Flashing





NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION  
DPH KING RADIO QUICK PROGRAM GUIDE

1. Select a group and channel needed to program.

Select a group by pressing the "#" key followed by a 2-digit group number and press the "ENT" key.

2. Program Access

- o Insert programming plug into radio side connector.
- o Press and hold the master switch on plug.
- o While pressing the master switch, press and hold the "FCN" key for about 3 secs.
- o LCD should display "----ID". (Note: NIFC radio password is "000000")
- o Enter the SIX-DIGIT password and press the "ENT" key to enter program mode.
- o If the correct password was entered, the LCD will display "RG CH 00".

3. Programming a Channel (ANALOG ONLY)

Once in the Program Mode, press a 2-digit channel number to program with the keypad.

"RG CH 01".....Channel 01 Settings is currently selected.

"RG CH 01N".....Press # to toggle between Narrow/Wide Band and press the "FCN" key.

"RG RX 170.47500".....Press "CLR" and enter new RX Frequency and press the "ENT" key.

"RG RX MODE-A".....Change RX Mode with "PRI" key to "A" for Analog and press the "ENT" key.

"RG RX CG 000.0".....Press "CLR" and enter new RX Code Guard and press "ENT" key.

"RG RX DCG" NAC0659".....Press "CLR" and enter new TX Frequency and press the "ENT" key.

"RG TX 170.47500".....Change "Squelch" with "PRI" key to "NRM" and press the "ENT" key.

"RG TX MODE-A".....Change TX Mode with "PRI" key to "A" for Analog and press the "ENT" key.

"RG TX CG 103.5".....Press "CLR" and enter new TX Code Guard and press the "ENT" key.

"RG TX DCG" NAC0659".....TX NAC, DIGITAL ONLY, press the "ENT" key to skip to next field.

"RG ID TG000001".....Talk Group ID, DIGITAL ONLY, press the "ENT" key to skip to next field.

"RG CHAN 1".....Channel Label, press "ENT" to bring up the first programming field (RG CH 01N).

4. Channel Programming is complete. At this point the user may select another channel to program or exit the program mode by cycling power to the radio.

DPH Version 3.0/October, 2007

DPH SETTINGS & OPTIONS

DPH CH 00 Program Guide

<b>ADD Channel to Scan List</b> Select CH with CH knob and press the "ENT" key. "SCN" will appear in upper display.	"P000000".....Group Password Assignment "0000000".....Group ANI/DTMF ID "120 SEC".....Transmit Time-Out Timer "2.0SEC".....Scan Delay Time	<b>DELETE Channel from Scan List</b> Select CH with CH knob and press the "CLR" key. "SCN" will be removed from the upper display. Note: Scan must be disabled to add/delete CH's from scan list.	"PRI OFF".....Priority 1 Channel Assignment "PR2 OFF".....Priority 2 Channel Assignment Group 1: (NIFC Default is 1-12345) Battery Saver Disabled.....1-12345 Group Scan.....1-12345 TX ON PRI 1.....1-12345 Priority Key Lockout.....1-12345 Scan List Lockout.....1-12345 Group 2: (NIFC Default is 2-12345) User Code Guard Enabled.....2-12345 Busy Channel Indicator Enabled.....2-12345 Busy Channel Lockout Enabled.....2-12345 Busy Channel Lockout/Override.....2-12345 ANI Enabled.....2-12345 Manual DTMF Encoder.....2-12345 Manual DTMF/ANI Encoder.....2-12345 Group 3: (NIFC Default is 3-12345) Reserved.....3-12345 LCD Backlight ON Display Change.....3-12345 LCD Backlight ON Key Press.....3-12345 Alphanumeric Mode Enabled.....3-12345 "LITE OFF".....Back Light Duration "GROUP XX".....Group Label
<b>ADD PRI Scan Channel</b> Select CH, Press "PRI" key, PRI will appear in display.			
<b>Priority Mode B, C or D must be enabled to change PRI Channel via the keypad.</b> Note: See DPH Help Files for more information.			
<b>Changing Groups</b> See Step 1 on front page.			
<b>HI/LOW Power Selection</b> Select LO Power by toggling the LO/Hi Switch to the up position. (Toward the back of the radio)			
Select HI Power by toggling the LO/Hi Switch to the down position. (Toward the front of the radio)			
<b>TX User Selectable Tones</b> To Enable Tone, press number on keypad so select.			
To Disable Tone, press the number "0" on keypad.			
<b>Disable/Enable Keypad</b> To Disable, press and hold "FCN" key. To Enable, press and hold "FCN" key.			

Bold=Flashing



NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION  
DPH KING RADIO QUICK PROGRAM GUIDE

1. Select a group and channel needed to program.

Select a group by pressing the "#" key followed by a 2-digit group number and press the "ENT" key.

2. Program Access

- o Insert programming plug into radio side connector.
- o Press and hold the master switch on plug.
- o While pressing the master switch, press and hold the "FCN" key for about 3 secs.
- o LCD should display "----ID". (Note: NIFC radio password is "000000")
- o Enter the SIX-DIGIT password and press the "ENT" key to enter program mode.
- o If the correct password was entered, the LCD will display "RG CH 00".

3. Programming a Channel (ANALOG ONLY)

Once in the Program Mode, press a 2-digit channel number to program with the keypad.

"RG CH 01".....Channel 01 Settings is currently selected.

"RG CH 01N".....Press # to toggle between Narrow/Wide Band and press the "FCN" key.

"RG RX 170.47500".....Press "CLR" and enter new RX Frequency and press the "ENT" key.

"RG RX MODE-A".....Change RX Mode with "PRI" key to "A" for Analog and press the "ENT" key.

"RG RX CG 000.0".....Press "CLR" and enter new RX Code Guard and press "ENT" key.

"RG RX DCG" NAC0659".....Press "CLR" and enter new TX Frequency and press the "ENT" key.

"RG TX 170.47500".....Change "Squelch" with "PRI" key to "NRM" and press the "ENT" key.

"RG TX MODE-A".....Change TX Mode with "PRI" key to "A" for Analog and press the "ENT" key.

"RG TX CG 103.5".....Press "CLR" and enter new TX Code Guard and press the "ENT" key.

"RG TX DCG" NAC0659".....TX NAC, DIGITAL ONLY, press the "ENT" key to skip to next field.

"RG ID TG000001".....Talk Group ID, DIGITAL ONLY, press the "ENT" key to skip to next field.

"RG CHAN 1".....Channel Label, press "ENT" to bring up the first programming field (RG CH 01N).

4. Channel Programming is complete. At this point the user may select another channel to program or exit the program mode by cycling power to the radio.

DPH Version 3.0/October, 2007

DPH SETTINGS & OPTIONS

DPH CH 00 Program Guide

<b>ADD Channel to Scan List</b> Select CH with CH knob and press the "ENT" key. "SCN" will appear in upper display.	"P000000".....Group Password Assignment "0000000".....Group ANI/DTMF ID "120 SEC".....Transmit Time-Out Timer "2.0SEC".....Scan Delay Time	<b>DELETE Channel from Scan List</b> Select CH with CH knob and press the "CLR" key. "SCN" will be removed from the upper display. Note: Scan must be disabled to add/delete CH's from scan list.	"PRI OFF".....Priority 1 Channel Assignment "PR2 OFF".....Priority 2 Channel Assignment Group 1: (NIFC Default is 1-12345) Battery Saver Disabled.....1-12345 Group Scan.....1-12345 TX ON PRI 1.....1-12345 Priority Key Lockout.....1-12345 Scan List Lockout.....1-12345 Group 2: (NIFC Default is 2-12345) User Code Guard Enabled.....2-12345 Busy Channel Indicator Enabled.....2-12345 Busy Channel Lockout Enabled.....2-12345 Busy Channel Lockout/Override.....2-12345 ANI Enabled.....2-12345 Manual DTMF Encoder.....2-12345 Manual DTMF/ANI Encoder.....2-12345 Group 3: (NIFC Default is 3-12345) Reserved.....3-12345 LCD Backlight ON Display Change.....3-12345 LCD Backlight ON Key Press.....3-12345 Alphanumeric Mode Enabled.....3-12345 "LITE OFF".....Back Light Duration "GROUP XX".....Group Label
<b>ADD PRI Scan Channel</b> Select CH, Press "PRI" key, PRI will appear in display.			
<b>Priority Mode B, C or D must be enabled to change PRI Channel via the keypad.</b> Note: See DPH Help Files for more information.			
<b>Changing Groups</b> See Step 1 on front page.			
<b>HI/LOW Power Selection</b> Select LO Power by toggling the LO/Hi Switch to the up position. (Toward the back of the radio)			
Select HI Power by toggling the LO/Hi Switch to the down position. (Toward the front of the radio)			
<b>TX User Selectable Tones</b> To Enable Tone, press number on keypad so select.			
To Disable Tone, press the number "0" on keypad.			
<b>Disable/Enable Keypad</b> To Disable, press and hold "FCN" key. To Enable, press and hold "FCN" key.			

Bold=Flashing





NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION  
MOTOROLA XTS 2500 PORTABLE RADIO QUICK PROGRAMMING GUIDE

**1. Program Access**

Press the 4-Way Navigation Key to the right until "FPP" softkey is displayed. Press the "FPP" softkey to proceed into programming mode. Radio will prompt for "Password", press the "OK" softkey to enter program mode. Radio will display active zone, select the desired zone by pressing the 4-Way Nav. key left or right. Once Desired zone is reached, press the "VIEW" softkey to select that zone channel information.

**2. Programming a Channel (ANALOG Only)**

Once the zone is selected, select the desired channel, by pressing the 4-Way Nav. key left or right. Press the "View" softkey to change that particular channel information. Press the "Edit" softkey to change the "TX" frequency, press the "OK" key when done. Press the 4-Way key to the right to enter the RX frequency. Press the "Edit" softkey to change the "RX" frequency, press the "OK" key when done. Press the 4-Way key to the right several times until "RX Type" is displayed. Press the "Edit" softkey to change the RX type, press the 4-way key up/down to toggle between "ANALOG", "MIXED" or "DIGITAL", select "ANALOG" and press the "OK" key when done. Press the 4-way key to the right several times until "Bandwidth" is displayed. Press the "Edit" softkey to change the Bandwidth, press the 4-Way key up/down to toggle between "12.5KHz", "20.0KHz", or "25.0KHz", select "12.5KHz" for narrowband and press the "OK" key. Once all the programming parameters have been entered for that channel, press the "Done" softkey and select another channel to program or press the "HOME" key to exit programming mode.

*Note: Do not change TX/RX DPL, or TX/RX NAC for analog channels, these parameters are used for digital channel only.*

July, 2008, Version 1.0

**MOTOROLA XTS 2500 SETTINGS AND OPTIONS**

**CHANGING ZONES/GROUPS**

- To change zones/groups, press the "ZONE" softkey from the default screen/display.
- Select the desired zone/group by scrolling right/left with the 4-Way Navigation Switch. (or direct enter a 2 digit zone/group number via the key)
- Once a desired zone/group is selected, press the "HOME" button to make that zone/group active.

**ENABLE/DISABLE SCAN/PRIORITY SCAN**

- To Enable Scan, turn the 3-Position Rotary Switch to the "B" or "C" position. LCD will indicate the radio is in scan mode, by displaying an ( ) icon on the upper LCD.
- To Disable Scan, turn the 3-Position Rotary Switch to the "A" position.

**NOTE: If no channels are in the Scan List, the radio will beep and indicate empty scan list on the LCD when scan is enabled.**

**ADD/REMOVE CHANNELS FROM SCAN/PRIORITY LIST**

- To add a channel to the Scan List, press the "PROG" softkey from the default screen/display.
- Press the "SCAN" softkey to enter into the scan list programming mode.
- Select the desired channel to scan with the top 16 Channel Select Knob.
- Press the "SEL" softkey once to enter that selected channel in the scan list. LCD will indicate the channel is in the scan list, by displaying an ( ) icon on the upper LCD.
- Press the "SEL" softkey once more to enter that selected channel as the scan priority 1 channel. LCD will indicate the radio is PRI 1 by displaying an ( ) icon on the upper part of the LCD.
- Press the "SEL" softkey once more to enter that selected channel as the scan priority 2 channel. LCD will indicate the radio is PRI 2 by displaying an ( ) icon on the upper part of the LCD.
- Press the "SEL" softkey once more to remove the channel from the scan list completely. Or press the "DEL" softkey to remove the channel from the scan list.
- Press the "HOME" button to return to the main screen.

(See Motorola XTS 2500 Help Files for more Detail)



NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION  
MOTOROLA XTS 2500 PORTABLE RADIO QUICK PROGRAMMING GUIDE

**1. Program Access**

Press the 4-Way Navigation Key to the right until "FPP" softkey is displayed. Press the "FPP" softkey to proceed into programming mode. Radio will prompt for "Password", press the "OK" softkey to enter program mode. Radio will display active zone, select the desired zone by pressing the 4-Way Nav. key left or right. Once Desired zone is reached, press the "VIEW" softkey to select that zone channel information.

**2. Programming a Channel (ANALOG Only)**

Once the zone is selected, select the desired channel, by pressing the 4-Way Nav. key left or right. Press the "View" softkey to change that particular channel information. Press the "Edit" softkey to change the "TX" frequency, press the "OK" key when done. Press the 4-Way key to the right to enter the RX frequency. Press the "Edit" softkey to change the "RX" frequency, press the "OK" key when done. Press the 4-Way key to the right several times until "RX Type" is displayed. Press the "Edit" softkey to change the RX type, press the 4-way key up/down to toggle between "ANALOG", "MIXED" or "DIGITAL", select "ANALOG" and press the "OK" key when done. Press the 4-way key to the right several times until "Bandwidth" is displayed. Press the "Edit" softkey to change the Bandwidth, press the 4-Way key up/down to toggle between "12.5KHz", "20.0KHz", or "25.0KHz", select "12.5KHz" for narrowband and press the "OK" key. Once all the programming parameters have been entered for that channel, press the "Done" softkey and select another channel to program or press the "HOME" key to exit programming mode.

*Note: Do not change TX/RX DPL, or TX/RX NAC for analog channels, these parameters are used for digital channel only.*

July, 2008, Version 1.0

**MOTOROLA XTS 2500 SETTINGS AND OPTIONS**

**CHANGING ZONES/GROUPS**

- To change zones/groups, press the "ZONE" softkey from the default screen/display.
- Select the desired zone/group by scrolling right/left with the 4-Way Navigation Switch. (or direct enter a 2 digit zone/group number via the key)
- Once a desired zone/group is selected, press the "HOME" button to make that zone/group active.

**ENABLE/DISABLE SCAN/PRIORITY SCAN**

- To Enable Scan, turn the 3-Position Rotary Switch to the "B" or "C" position. LCD will indicate the radio is in scan mode, by displaying an ( ) icon on the upper LCD.
- To Disable Scan, turn the 3-Position Rotary Switch to the "A" position.

**NOTE: If no channels are in the Scan List, the radio will beep and indicate empty scan list on the LCD when scan is enabled.**

**ADD/REMOVE CHANNELS FROM SCAN/PRIORITY LIST**

- To add a channel to the Scan List, press the "PROG" softkey from the default screen/display.
- Press the "SCAN" softkey to enter into the scan list programming mode.
- Select the desired channel to scan with the top 16 Channel Select Knob.
- Press the "SEL" softkey once to enter that selected channel in the scan list. LCD will indicate the channel is in the scan list, by displaying an ( ) icon on the upper LCD.
- Press the "SEL" softkey once more to enter that selected channel as the scan priority 1 channel. LCD will indicate the radio is PRI 1 by displaying an ( ) icon on the upper part of the LCD.
- Press the "SEL" softkey once more to enter that selected channel as the scan priority 2 channel. LCD will indicate the radio is PRI 2 by displaying an ( ) icon on the upper part of the LCD.
- Press the "SEL" softkey once more to remove the channel from the scan list completely. Or press the "DEL" softkey to remove the channel from the scan list.
- Press the "HOME" button to return to the main screen.

(See Motorola XTS 2500 Help Files for more Detail)







1. Select a group and channel needed to program.
2. Program Access  
Press the "ENTER" key to bring up the Main Menu Screen. Scroll up/down using the "O" or "Q" to select "PROGRAM" and press the "ENTER" key.  
Enter a 6-Digit Password is requested and press "ENTER". (NIFC Password is "000000")
3. Programming a Channel (ANALOG Only)
  - o Scroll down to "CHANNEL" and press "ENTER" to start programming the channel parameters.
  - o Scroll down to "TAG" and press "ENTER". Change the channel name using keypad and press "ENTER".
  - o Scroll down to "MODE" and press "ENTER". Select "ANALOG" and press "ENTER".
  - o Scroll down to "B/W" and press "ENTER". Select either "25Khz" or "12.5Khz" and press "ENTER".  
*Note: 25Khz= Wideband, 12.5Khz= Narrowband*
  - o Scroll down to "ENCRYPT" and press "ENTER". Select "DISABD" and press "ENTER".
  - o Scroll down to "RX" and press "ENTER". Enter the RX frequency using keypad and press "ENTER".
  - o Scroll down to "RX SQMD" and press "ENTER". Select either NOISE, DCS, CTCSS, or NONE.  
*Note: "NOISE" uses Squelch level to open RX. "DCS" use DCS code to open RX. "CTCSS" uses CTCSS to open RX, and "None" opens RX squelch at all times.*
  - o Scroll down to "TX" and press "ENTER". Enter the TX frequency using keypad and press "ENTER".
  - o Scroll down to "TX SQMD" and press "ENTER". Select either DCS, CTCSS, or NONE.  
*Note: "DCS" sends DCS code on TX carrier, "CTCSS" send CTCSS tone on TX carrier, and "None" sends no tones.*
  - o Scroll down to "LO PWR" and press "ENTER". Select either "0.1", "0.5", "1.0", "2.0" or "5.0" and press the "ENTER" key.
  - o Scroll down to "HI PWR" and press "ENTER". Select either "0.1", "0.5", "1.0", "2.0" or "5.0" and press the "ENTER" key.

If screen reads "SAVE CHANNEL", select "YES". If not, Channel information was stored and you can select another Channel and continue programming or press "ESC" a few times to reach main screen.

May, 2007

**RACAL SETTINGS AND OPTIONS**

**ADDERMOVING A CH FROM SCAN LIST**

1. Select a Channel to Add to Scan List with the channel select knob.
2. To Add, press and release the "Q" key, when released a box "□" will enclose the "C" in the display.
3. To Remove, press and release the "O" key. The box "□" will be removed from the "C" in the display.

**ADD PRIORITY SCAN CHANNEL**

1. Press the "ENTER" key, and select "PROGRAM".
2. Scroll down to "SCAN" and press "ENTER".
3. Scroll down to "PT" and Press "ENTER". Select channel by using CH Select Knob and press "ENTER".
4. Press "ESC" key a few times to return to main screen.  
*Note: To Enable Scan, top toggle switch must be in position B.  
To Enable Priority Scan, toggle switch must be in position A.  
To Disable Scan/Pri Scan, toggle switch must be in position C.*

**CHANGE ZONES**

1. Press the "ENTER" button.
2. Scroll down to "SELECT" and press "ENTER"
3. Scroll down to "ZONE" and press "ENTER". Scroll to the desired zone and press "ENTER", then press "ESC" a few times to reach the main screen.

**DISABLE/ENABLE KEYPAD**

1. Press and hold the "□" key while pressing and holding the "ENTER" key.  
Display will show "Keys Disabled", "Side Enabled".
2. Repeat the process, display shows "Keys Disabled, Side Disabled"
3. To Enable all, repeat the process on more time.

**HI/LOW POWER SELECTION**

1. Press the programmed power selection side button to toggle between HI and LOW Power.  
*Note: Third button from the top is programmed as the HI/LOW Power Switch. (NIFC Default)*

(See RACAL Help Files for more Detail)



1. Select a group and channel needed to program.
2. Program Access  
Press the "ENTER" key to bring up the Main Menu Screen. Scroll up/down using the "O" or "Q" to select "PROGRAM" and press the "ENTER" key.  
Enter a 6-Digit Password is requested and press "ENTER". (NIFC Password is "000000")
3. Programming a Channel (ANALOG Only)
  - o Scroll down to "CHANNEL" and press "ENTER" to start programming the channel parameters.
  - o Scroll down to "TAG" and press "ENTER". Change the channel name using keypad and press "ENTER".
  - o Scroll down to "MODE" and press "ENTER". Select "ANALOG" and press "ENTER".
  - o Scroll down to "B/W" and press "ENTER". Select either "25Khz" or "12.5Khz" and press "ENTER".  
*Note: 25Khz= Wideband, 12.5Khz= Narrowband*
  - o Scroll down to "ENCRYPT" and press "ENTER". Select "DISABD" and press "ENTER".
  - o Scroll down to "RX" and press "ENTER". Enter the RX frequency using keypad and press "ENTER".
  - o Scroll down to "RX SQMD" and press "ENTER". Select either NOISE, DCS, CTCSS, or NONE.  
*Note: "NOISE" uses Squelch level to open RX. "DCS" use DCS code to open RX. "CTCSS" uses CTCSS to open RX, and "None" opens RX squelch at all times.*
  - o Scroll down to "TX" and press "ENTER". Enter the TX frequency using keypad and press "ENTER".
  - o Scroll down to "TX SQMD" and press "ENTER". Select either DCS, CTCSS, or NONE.  
*Note: "DCS" sends DCS code on TX carrier, "CTCSS" send CTCSS tone on TX carrier, and "None" sends no tones.*
  - o Scroll down to "LO PWR" and press "ENTER". Select either "0.1", "0.5", "1.0", "2.0" or "5.0" and press the "ENTER" key.
  - o Scroll down to "HI PWR" and press "ENTER". Select either "0.1", "0.5", "1.0", "2.0" or "5.0" and press the "ENTER" key.

If screen reads "SAVE CHANNEL", select "YES". If not, Channel information was stored and you can select another Channel and continue programming or press "ESC" a few times to reach main screen.

May, 2007

**RACAL SETTINGS AND OPTIONS**

**ADDERMOVING A CH FROM SCAN LIST**

1. Select a Channel to Add to Scan List with the channel select knob.
2. To Add, press and release the "Q" key, when released a box "□" will enclose the "C" in the display.
3. To Remove, press and release the "O" key. The box "□" will be removed from the "C" in the display.

**ADD PRIORITY SCAN CHANNEL**

1. Press the "ENTER" key, and select "PROGRAM".
2. Scroll down to "SCAN" and press "ENTER".
3. Scroll down to "PT" and Press "ENTER". Select channel by using CH Select Knob and press "ENTER".
4. Press "ESC" key a few times to return to main screen.  
*Note: To Enable Scan, top toggle switch must be in position B.  
To Enable Priority Scan, toggle switch must be in position A.  
To Disable Scan/Pri Scan, toggle switch must be in position C.*

**CHANGE ZONES**

1. Press the "ENTER" button.
2. Scroll down to "SELECT" and press "ENTER"
3. Scroll down to "ZONE" and press "ENTER". Scroll to the desired zone and press "ENTER", then press "ESC" a few times to reach the main screen.

**DISABLE/ENABLE KEYPAD**

1. Press and hold the "□" key while pressing and holding the "ENTER" key.  
Display will show "Keys Disabled", "Side Enabled".
2. Repeat the process, display shows "Keys Disabled, Side Disabled"
3. To Enable all, repeat the process on more time.

**HI/LOW POWER SELECTION**

1. Press the programmed power selection side button to toggle between HI and LOW Power.  
*Note: Third button from the top is programmed as the HI/LOW Power Switch. (NIFC Default)*

(See RACAL Help Files for more Detail)





NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION  
DATRON PORTABLE RADIO QUICK PROGRAMMING GUIDE

1. Select a group and channel needed to program.
2. Program Access  
Press the Large Green Multi-function key to bring up the Main Menu Screen. Scroll up/down using the Blue Multi-function keys to select "PROGRAM" and press "ENT" key. Enter a 6-Digit Password if requested and press "ENT". (NIFC Password is "000000")
3. Programming a Channel (ANALOG Only)
  - o Scroll down to "CHANNEL" and press "ENT" to start programming the channel parameters.
  - o Scroll down to "TAG" and press "ENT". Change the channel name using keypad and press "ENT".
  - o Scroll down to "MODE" and press "ENT". Select "ANALOG" and press "ENT".
  - o Scroll down to "BW" and press "ENTER". Select either "25KHz" or "12.5KHz" and press "ENT".  
*Note: 25KHz= Wideband, 12.5KHz= Narrowband*
  - o Scroll down to "ENCRYPT" and press "ENT". Select "DISABD" and press "ENT".
  - o Scroll down to "RX" and press "ENTER". Enter the RX frequency using keypad and press "ENT".
  - o Scroll down to "RX SQMD" and press "ENT". Select either NOISE, DCS, CTCSS, or NONE.  
*Note: "NOISE" uses Squelch level to open RX, "DCS" use DCS code to open RX, "CTCSS" uses CTCSS to open RX, and "None" opens RX squelch at all times.*
  - o Scroll down to "TX" and press "ENT". Enter the TX frequency using keypad and press "ENT".
  - o Scroll down to "TX SQMD" and press "ENT". Select either DCS, CTCSS, or NONE.  
*Note: "DCS" sends DCS code on TX carrier, "CTCSS" send CTCSS tone on TX carrier, and "None" sends no tones.*
  - o Scroll down to "LO PWR" and press "ENT". Select either "0.1", "0.5", "1.0", "2.0" or "5.0" and press the "ENTER" key.
  - o Scroll down to "HI PWR" and press "ENT". Select either "0.1", "0.5", "1.0", "2.0" or "5.0" and press the "ENT" key.

If screen reads "SAVE CHANNEL", select "YES". If not, Channel information was stored and you can select another Channel and continue programming or press "ESC" a few times to reach main screen.

July, 2007 Version 2.0

RACAL SETTINGS AND OPTIONS

ADD/REMOVING A CH FROM SCAN LIST

1. Select a Channel to Add to Scan List with the channel select knob.
2. To Add, briefly press & release the 3rd Multi-function key from the left, when released a box "□" will enclose the "C" in the display.
3. To Remove, briefly press & release the 2nd Multi-function key from the left. The box "□" will be removed from the "C" in the display.

ADD PRIORITY SCAN CHANNEL

1. Press the Large Green Multi-function key for bring up the Main Menu, and select "PROGRAM".
2. Scroll down to "SCAN" and press "ENT".
3. Scroll down to "P1" and Press "ENTER". Select channel by using CH Select Knob and press "ENT".
4. Press "ESC" key a few times to return to main screen.

*Note: To Enable Scan, top toggle switch must be in position B.  
To Enable Priority Scan, toggle switch must be in position A.  
To Disable Scan/Pri Scan, toggle switch must be in position C.*

CHANGE ZONES

1. Press the large Green Multi-function key to bring up the Main Menu Screen.
2. Scroll down to "SELECT" and press "ENT"
3. Scroll down to "ZONE" and press "ENT". Scroll to the desired zone and press "ENT", then press "ESC" a few times to reach the main screen.

DISABLE/ENABLE KEYPAD

1. Press and hold the 1st Blue Multi function key while pressing and holding Large Green key. Display will show "Keys Disabled", "Side Enabled".
2. Repeat the process, display shows "Keys Disabled, Side Disabled"
3. To Enable all, repeat the process on more time.

HI/LOW POWER SELECTION

1. Press the programmed power selection side button to toggle between HI and LOW Power.  
*Note: Third side button from the top is programmed as the HI/LOW Power Switch.  
(See Datron Help Files for more Detail)*



NATIONAL INTERAGENCY INCIDENT COMMUNICATIONS DIVISION  
DATRON PORTABLE RADIO QUICK PROGRAMMING GUIDE

1. Select a group and channel needed to program.
2. Program Access  
Press the Large Green Multi-function key to bring up the Main Menu Screen. Scroll up/down using the Blue Multi-function keys to select "PROGRAM" and press "ENT" key. Enter a 6-Digit Password if requested and press "ENT". (NIFC Password is "000000")
3. Programming a Channel (ANALOG Only)
  - o Scroll down to "CHANNEL" and press "ENT" to start programming the channel parameters.
  - o Scroll down to "TAG" and press "ENT". Change the channel name using keypad and press "ENT".
  - o Scroll down to "MODE" and press "ENT". Select "ANALOG" and press "ENT".
  - o Scroll down to "BW" and press "ENTER". Select either "25KHz" or "12.5KHz" and press "ENT".  
*Note: 25KHz= Wideband, 12.5KHz= Narrowband*
  - o Scroll down to "ENCRYPT" and press "ENT". Select "DISABD" and press "ENT".
  - o Scroll down to "RX" and press "ENTER". Enter the RX frequency using keypad and press "ENT".
  - o Scroll down to "RX SQMD" and press "ENT". Select either NOISE, DCS, CTCSS, or NONE.  
*Note: "NOISE" uses Squelch level to open RX, "DCS" use DCS code to open RX, "CTCSS" uses CTCSS to open RX, and "None" opens RX squelch at all times.*
  - o Scroll down to "TX" and press "ENT". Enter the TX frequency using keypad and press "ENT".
  - o Scroll down to "TX SQMD" and press "ENT". Select either DCS, CTCSS, or NONE.  
*Note: "DCS" sends DCS code on TX carrier, "CTCSS" send CTCSS tone on TX carrier, and "None" sends no tones.*
  - o Scroll down to "LO PWR" and press "ENT". Select either "0.1", "0.5", "1.0", "2.0" or "5.0" and press the "ENTER" key.
  - o Scroll down to "HI PWR" and press "ENT". Select either "0.1", "0.5", "1.0", "2.0" or "5.0" and press the "ENT" key.

If screen reads "SAVE CHANNEL", select "YES". If not, Channel information was stored and you can select another Channel and continue programming or press "ESC" a few times to reach main screen.

July, 2007 Version 2.0

RACAL SETTINGS AND OPTIONS

ADD/REMOVING A CH FROM SCAN LIST

1. Select a Channel to Add to Scan List with the channel select knob.
2. To Add, briefly press & release the 3rd Multi-function key from the left, when released a box "□" will enclose the "C" in the display.
3. To Remove, briefly press & release the 2nd Multi-function key from the left. The box "□" will be removed from the "C" in the display.

ADD PRIORITY SCAN CHANNEL

1. Press the Large Green Multi-function key for bring up the Main Menu, and select "PROGRAM".
2. Scroll down to "SCAN" and press "ENT".
3. Scroll down to "P1" and Press "ENTER". Select channel by using CH Select Knob and press "ENT".
4. Press "ESC" key a few times to return to main screen.

*Note: To Enable Scan, top toggle switch must be in position B.  
To Enable Priority Scan, toggle switch must be in position A.  
To Disable Scan/Pri Scan, toggle switch must be in position C.*

CHANGE ZONES

1. Press the large Green Multi-function key to bring up the Main Menu Screen.
2. Scroll down to "SELECT" and press "ENT"
3. Scroll down to "ZONE" and press "ENT". Scroll to the desired zone and press "ENT", then press "ESC" a few times to reach the main screen.

DISABLE/ENABLE KEYPAD

1. Press and hold the 1st Blue Multi function key while pressing and holding Large Green key. Display will show "Keys Disabled", "Side Enabled".
2. Repeat the process, display shows "Keys Disabled, Side Disabled"
3. To Enable all, repeat the process on more time.

HI/LOW POWER SELECTION

1. Press the programmed power selection side button to toggle between HI and LOW Power.  
*Note: Third side button from the top is programmed as the HI/LOW Power Switch.  
(See Datron Help Files for more Detail)*





**MANUAL FREQUENCY ENTRY**

1. Select Frequency Mode by pressing "CLR".
2. Enter desired frequency using digit keys on keypad, using the tuning dial, or using the "UP/DOWN" arrow keys.

**Basic Operation**

- RECEIVING**
1. Rotate "SQL" maximum clockwise, turn Power ON and adjust audio level.
  2. Rotate "SQL" counterclockwise until noise is muted.
  3. Set the desired frequency  
*Note: If "SQL" control is set too "tight", squelch may not open for weak signals.*
  4. Push the "ANL" side button to reduce pulse noise caused by engine ignitions or other outside interference.
  5. The radio is ready to **RECEIVE** on that current Frequency.

**TRANSMITTING**

1. Set the desired frequency.
2. Press and hold the "PTT" to transmit.
3. Speak into mic at a normal voice level.
4. Release "PTT" to return to receive incoming transmissions.  
*Note: Try to shield the microphone from wind and other loud background noises for clearer transmissions.*

(See ICOM Help Files for more detail information)

January, 2007

**IC-A3 SETTINGS & OPTIONS**

**MEMORY CHANNEL SELECTION**

1. Press the "MR" key to select memory mode.
2. Select desired memory channel using two digits (01-50) on the keypad or by rotating the channel knob.  
*Note: NIFC has preprogrammed 6 AM Frequencies in memory locations 1-6*

**PROGRAMMING A MEMORY CHANNEL**

1. Set the desired frequency.
2. Press the "F" key then the "MR" key.
3. Select the memory channel (01-50) to be programmed using two digits on the keypad or rotating the channel knob.
4. Press "ENT" to enter the frequency in memory  
*or*
5. Press "MR" to change the alpha/numeric label then pressing "ENT" to store the frequency and label into memory.  
*Note: Must know which keys correspond to alpha characters. When entering alpha characters, use up/down arrow keys to move cursor.*

**LOCK FUNCTION (DISABLE/ENABLE KEYPAD)**

1. Press the "F" key then press the "7" key [KEY LOCK] to turn the function ON or OFF.  
*Note: A key icon appears in the display when Key Lock is on.*

**CLEARING MEMORY CONTENTS**

1. Select a memory channel to be cleared
2. Press "F" then press and hold "CLR" for 1 second. "-----" displays momentarily when memory is cleared.  
*Note: Programming over a memory channel also clears the programmed contents. Memory channel 1 cannot be cleared.*



**MANUAL FREQUENCY ENTRY**

1. Select Frequency Mode by pressing "CLR".
2. Enter desired frequency using digit keys on keypad, using the tuning dial, or using the "UP/DOWN" arrow keys.

**Basic Operation**

- RECEIVING**
1. Rotate "SQL" maximum clockwise, turn Power ON and adjust audio level.
  2. Rotate "SQL" counterclockwise until noise is muted.
  3. Set the desired frequency  
*Note: If "SQL" control is set too "tight", squelch may not open for weak signals.*
  4. Push the "ANL" side button to reduce pulse noise caused by engine ignitions or other outside interference.
  5. The radio is ready to **RECEIVE** on that current Frequency.

**TRANSMITTING**

1. Set the desired frequency.
2. Press and hold the "PTT" to transmit.
3. Speak into mic at a normal voice level.
4. Release "PTT" to return to receive incoming transmissions.  
*Note: Try to shield the microphone from wind and other loud background noises for clearer transmissions.*

(See ICOM Help Files for more detail information)

January, 2007

**IC-A3 SETTINGS & OPTIONS**

**MEMORY CHANNEL SELECTION**

1. Press the "MR" key to select memory mode.
2. Select desired memory channel using two digits (01-50) on the keypad or by rotating the channel knob.  
*Note: NIFC has preprogrammed 6 AM Frequencies in memory locations 1-6*

**PROGRAMMING A MEMORY CHANNEL**

1. Set the desired frequency.
2. Press the "F" key then the "MR" key.
3. Select the memory channel (01-50) to be programmed using two digits on the keypad or rotating the channel knob.
4. Press "ENT" to enter the frequency in memory  
*or*
5. Press "MR" to change the alpha/numeric label then pressing "ENT" to store the frequency and label into memory.  
*Note: Must know which keys correspond to alpha characters. When entering alpha characters, use up/down arrow keys to move cursor.*

**LOCK FUNCTION (DISABLE/ENABLE KEYPAD)**

1. Press the "F" key then press the "7" key [KEY LOCK] to turn the function ON or OFF.  
*Note: A key icon appears in the display when Key Lock is on.*

**CLEARING MEMORY CONTENTS**

1. Select a memory channel to be cleared
2. Press "F" then press and hold "CLR" for 1 second. "-----" displays momentarily when memory is cleared.  
*Note: Programming over a memory channel also clears the programmed contents. Memory channel 1 cannot be cleared.*



# APPENDIX D

## NIICD SYSTEM DIAGRAMS\*

\*These diagrams are also available for download online at:

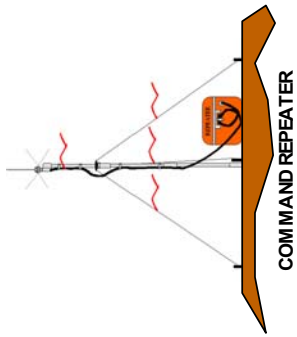
**<http://www.fs.fed.us/fire/niicd/documents.html>**





**COMMAND REPEATER WITH  
CMD/TAC RADIO KIT**

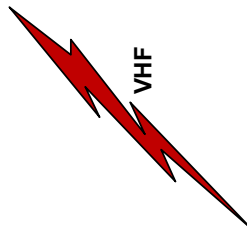
- 1 EA 4312 COMMAND REPEATER KIT
- 1 EA 4381 CMD/TAC RADIO KIT



**COMMAND REPEATER**

RX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 TX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 KIT #: \_\_\_\_\_

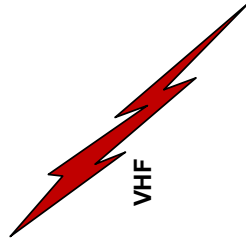
LOCATION: \_\_\_\_\_  
 LAT.: \_\_\_\_\_  
 LONG.: \_\_\_\_\_



RX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 TX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 GROUP #: \_\_\_\_\_  
 CHANNEL #: \_\_\_\_\_



**INCIDENT OPERATIONS AREA**



RX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 TX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 GROUP #: \_\_\_\_\_  
 CHANNEL #: \_\_\_\_\_



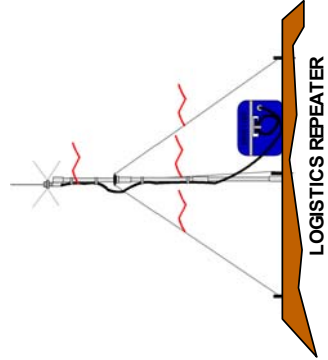
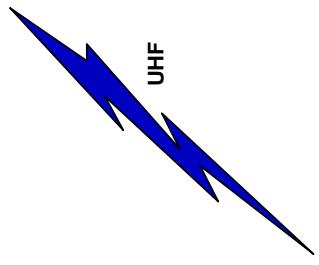
**INCIDENT OPERATIONS AREA**

**DRAWING 1**

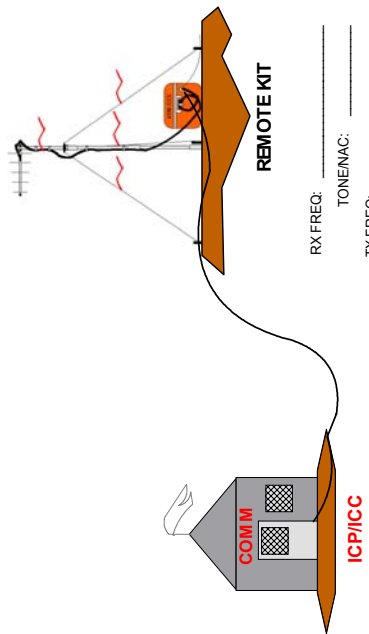
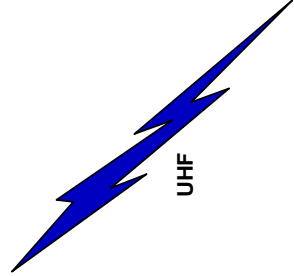


1 EA 4248 LOGISTICS REPEATER KIT  
 1 EA 4244 LOGISTICS RADIO KIT

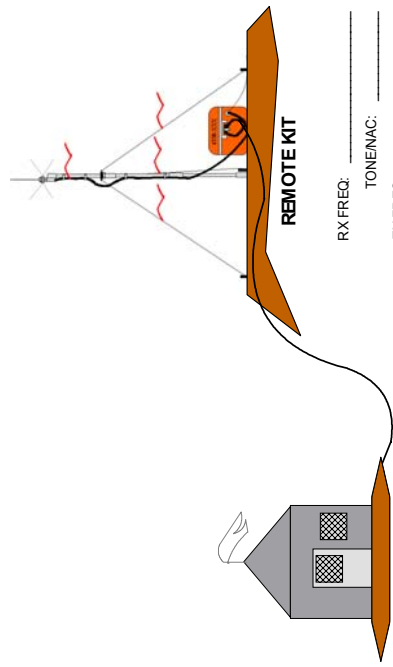
**LOGISTICS REPEATER WITH  
 LOGISTICS RADIO KIT**



RX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 TX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 KIT #: \_\_\_\_\_  
 LOCATION: \_\_\_\_\_  
 LAT.: \_\_\_\_\_  
 LONG: \_\_\_\_\_



RX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 TX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 KIT #: \_\_\_\_\_  
 LOCATION: \_\_\_\_\_  
 GROUP #: \_\_\_\_\_  
 CHANNEL #: \_\_\_\_\_

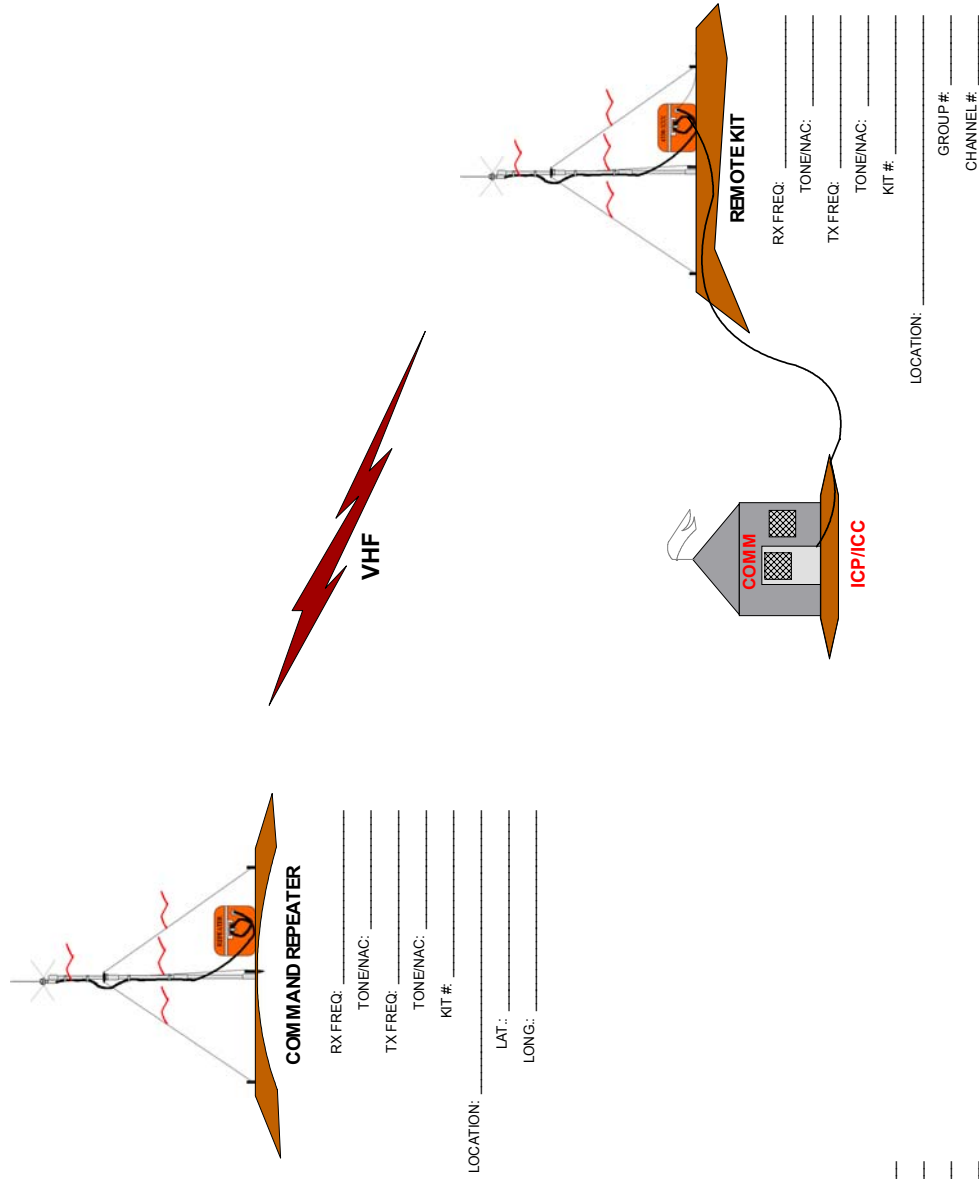


RX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 TX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 KIT #: \_\_\_\_\_  
 LOCATION: \_\_\_\_\_  
 GROUP #: \_\_\_\_\_  
 CHANNEL #: \_\_\_\_\_



1 EA 4312 COMMAND REPEATER KIT  
 1 EA 4330 REMOTE KIT

**COMMAND/TACTICAL RADIO KIT  
 AND COMMAND REPEATER WITH  
 REMOTE KIT**



**INCIDENT OPERATIONS AREA**

RX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 TX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 GROUP #: \_\_\_\_\_  
 CHANNEL #: \_\_\_\_\_

**DRAWING 3**

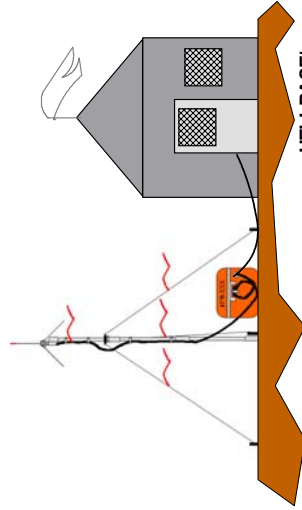
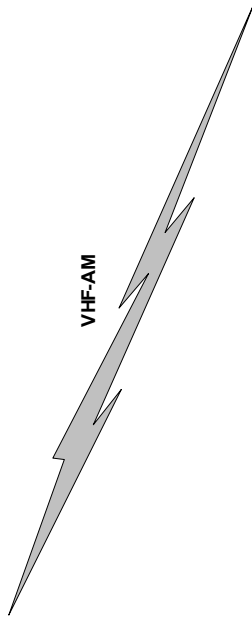


**AIRCRAFT LINK SYSTEM (BASE CONFIGURATION)  
GROUND TO AIRCRAFT COMMUNICATIONS**

**1 EA 4370 GROUND A/C RADIO/LINK KIT  
(INCLUDES 4 EA ICOM HAND HELD RADIOS)**



RX FREQ: \_\_\_\_\_  
TX FREQ: \_\_\_\_\_



**AIRCRAFT LINK IN BASE  
CONFIGURATION**

**HELI-BASE/  
AIRPORT**

RX FREQ: \_\_\_\_\_  
TX FREQ: \_\_\_\_\_  
KIT #: \_\_\_\_\_  
AM CHANNEL #: \_\_\_\_\_

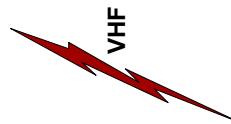
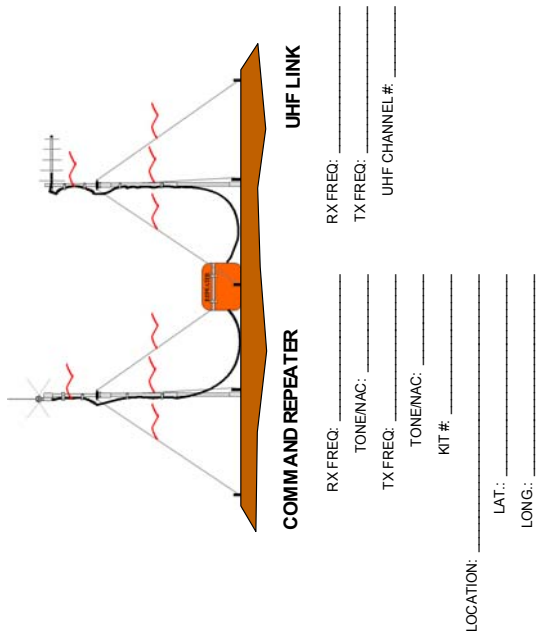
LOCATION: \_\_\_\_\_  
LAT.: \_\_\_\_\_  
LONG.: \_\_\_\_\_





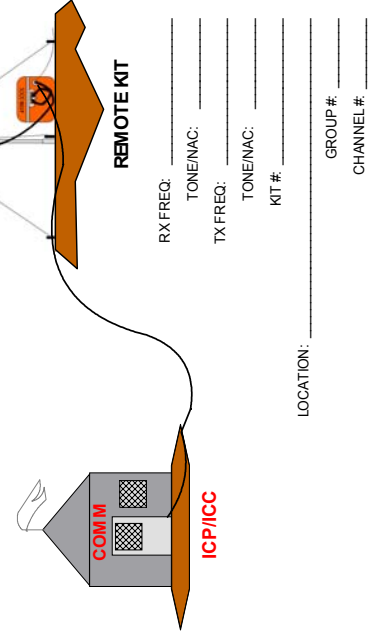
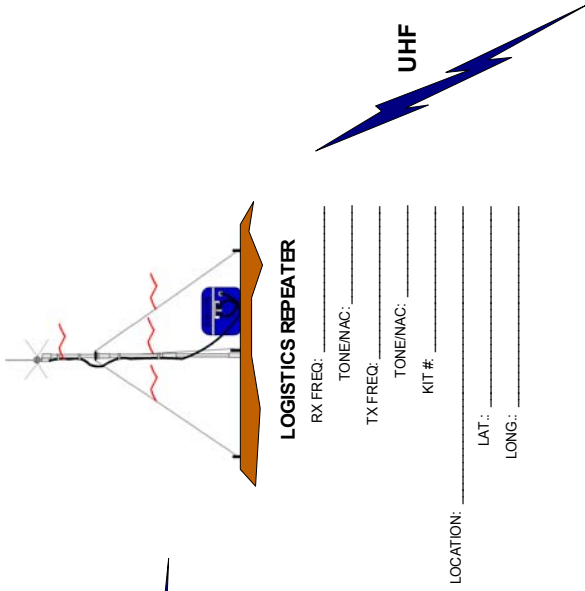
**COMMAND REPEATER LINKED WITH UHF LINK KIT TO LOGISTICS REPEATER**

- 1 EA 4312 COMMAND REPEATER/LINK KIT
- 1 EA 4248 LOGISTICS REPEATER KIT
- 1 EA 4330 REMOTE KIT



**INCIDENT OPERATIONS AREA**

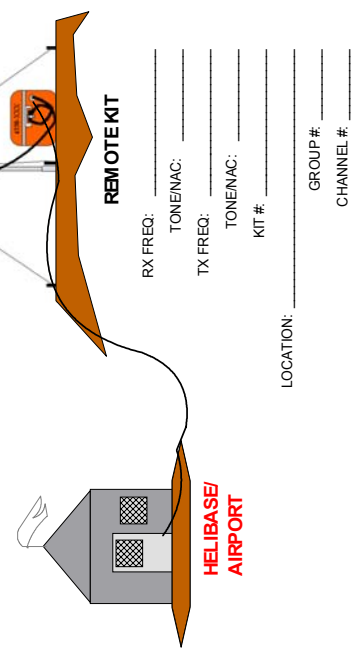
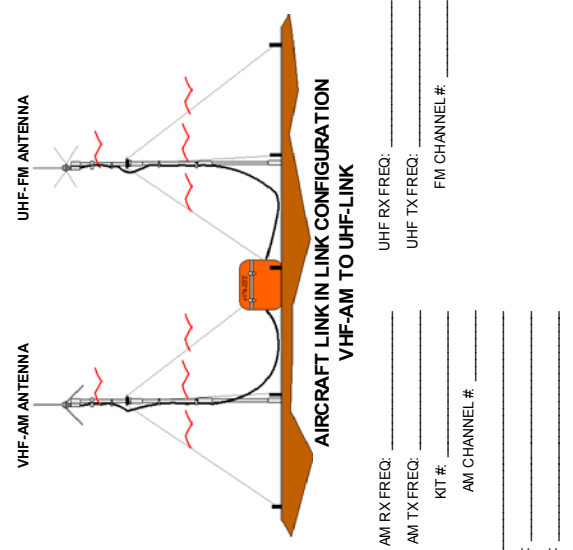
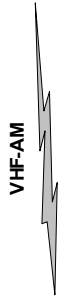
RX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 TX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 GROUP #: \_\_\_\_\_  
 CHANNEL #: \_\_\_\_\_





# AIRCRAFT LINK SYSTEM (LINK CONFIGURATION)

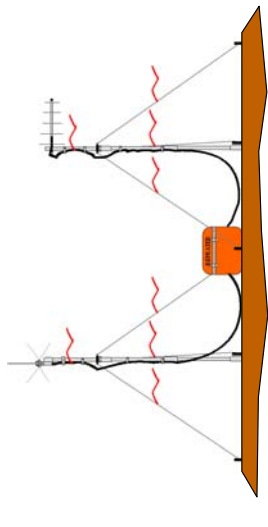
- 1 EA. 4370 GROUND A/C RADIO/LINK KIT (INCLUDES 4 EA. ICOM HAND HELD RADIOS)
- 1 EA. 4330 REMOTE KIT W/YAGI ANTENNA





**2- COMMAND REPEATERS LINKED WITH UHF LINK**

- 2 EA 4312 COMMAND REPEATER/LINK KIT
- 1 EA 4381 CMD/TAC RADIO KIT

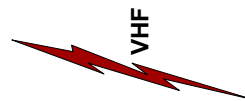


**COMMAND REPEATER**

RX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 TX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 KIT #: \_\_\_\_\_  
 LOCATION: \_\_\_\_\_  
 LAT.: \_\_\_\_\_  
 LONG.: \_\_\_\_\_

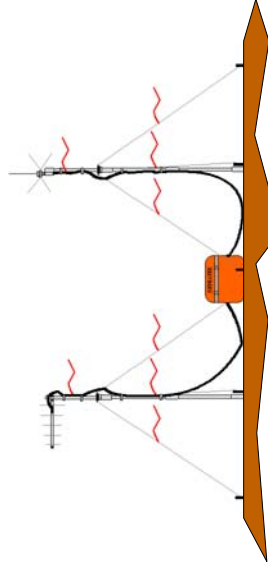
**UHF LINK**

RX FREQ: \_\_\_\_\_  
 TX FREQ: \_\_\_\_\_  
 UHF CHANNEL #: \_\_\_\_\_



**INCIDENT OPERATIONS AREA**

RX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 TX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 GROUP #: \_\_\_\_\_  
 CHANNEL #: \_\_\_\_\_



**UHF LINK**

RX FREQ: \_\_\_\_\_  
 TX FREQ: \_\_\_\_\_  
 UHF CHANNEL #: \_\_\_\_\_

**COMMAND REPEATER**

RX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 TX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 KIT #: \_\_\_\_\_  
 LOCATION: \_\_\_\_\_  
 LAT.: \_\_\_\_\_  
 LONG.: \_\_\_\_\_



RX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 TX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 GROUP #: \_\_\_\_\_  
 CHANNEL #: \_\_\_\_\_

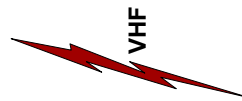
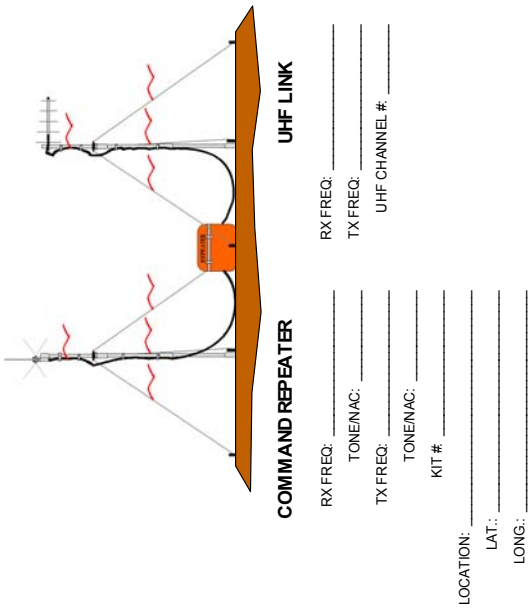


**INCIDENT OPERATIONS AREA**

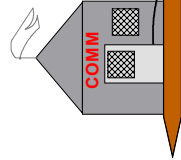
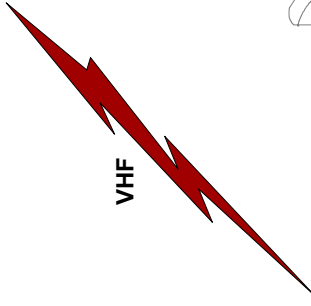
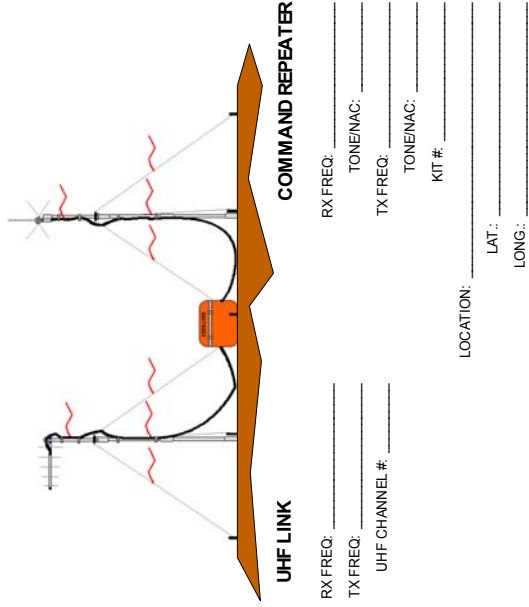


**2- COMMAND REPEATERS LINKED WITH UHF LINKS AND REMOTE TO ICP**

- 2 EA 4312 COMMAND REPEATER/LINK
- 1 EA 4381 CMD/TAC RADIO KIT
- 1 EA 4330 REMOTE KIT



RX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 TX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 GROUP #: \_\_\_\_\_  
 CHANNEL #: \_\_\_\_\_



RX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 TX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 GROUP #: \_\_\_\_\_  
 CHANNEL #: \_\_\_\_\_

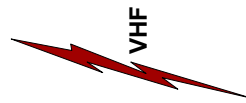
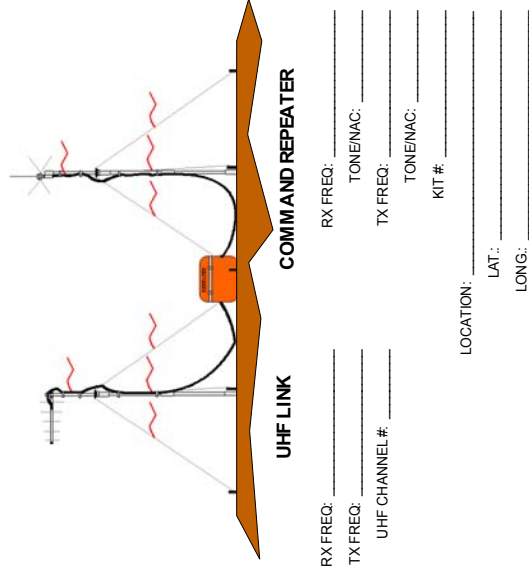
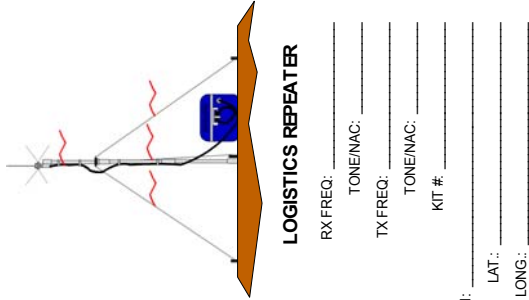
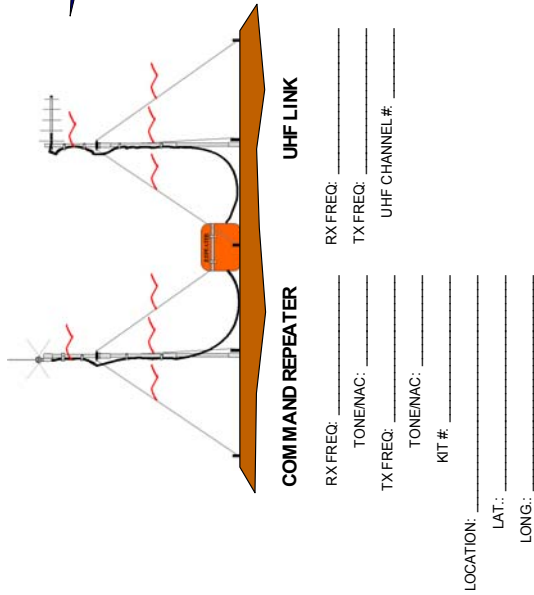




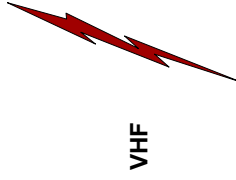


**2- COMMAND REPEATERS LINKED WITH UHF LINKS TO UHF REPEATER**

- 2 EA 4312 COMMAND REPEATER/LINK KIT
- 1 EA 4248 LOGISTICS REPEATER KIT
- 1 EA 4381 CMD/ITAC RADIO KIT



RX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 TX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 GROUP #: \_\_\_\_\_  
 CHANNEL #: \_\_\_\_\_



RX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 TX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 GROUP #: \_\_\_\_\_  
 CHANNEL #: \_\_\_\_\_





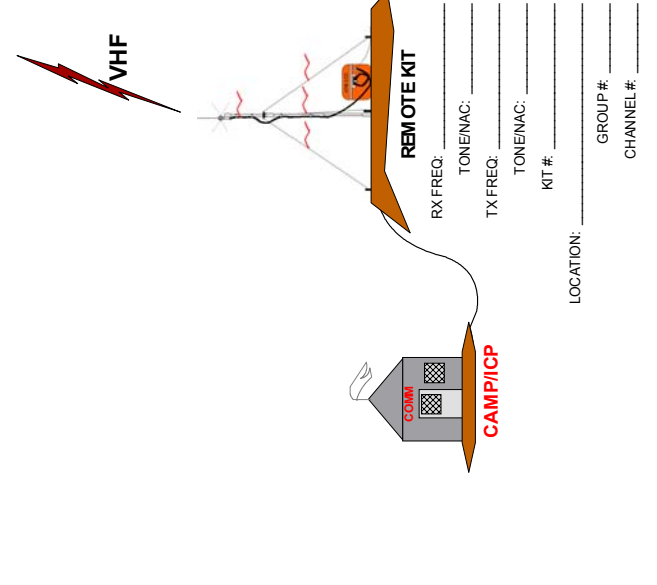
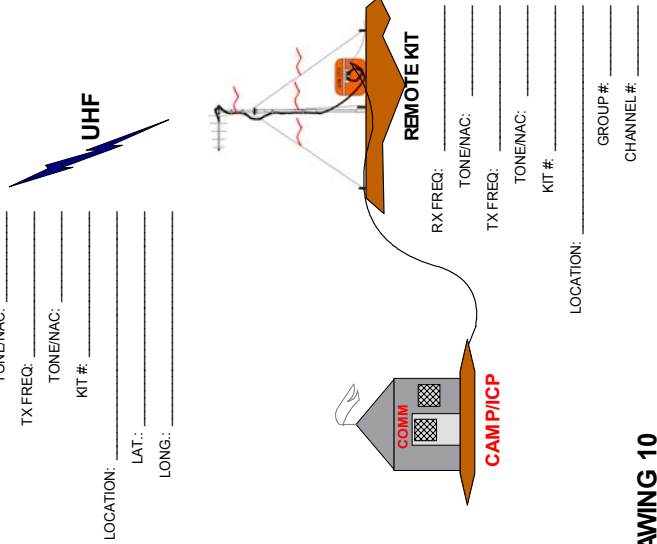
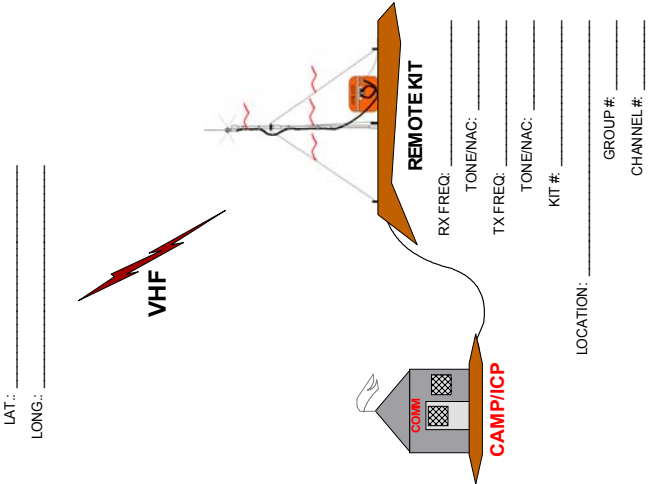
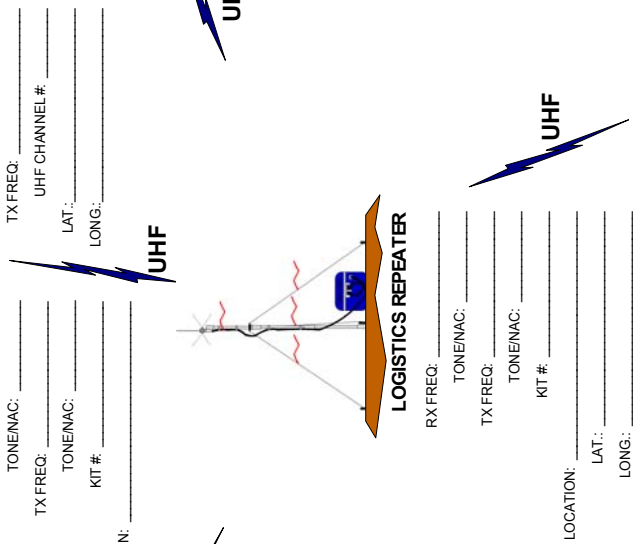
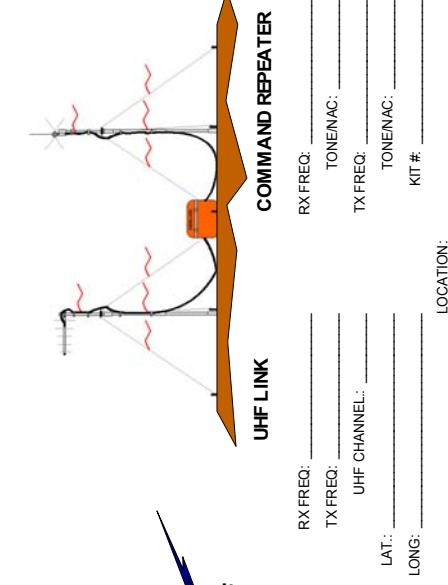
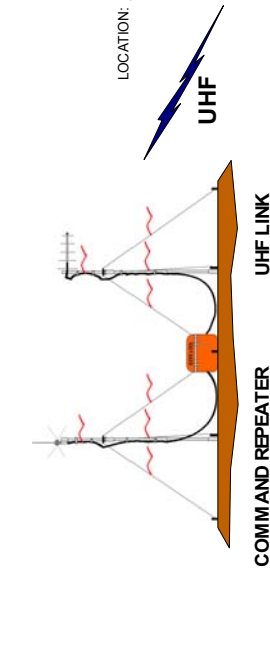
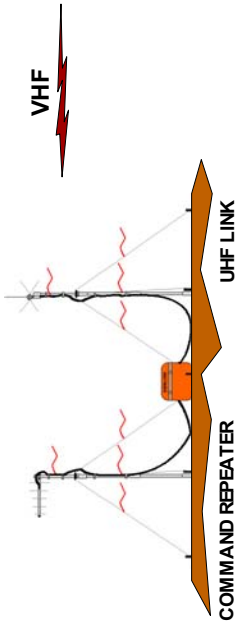
### 3- COMMAND REPEATERS LINKED WITH UHF LINKS TO UHF REPEATER

3 EA 4312 COMMAND REPEATER/LINK KIT  
1 EA 4248 LOGISTICS REPEATER KIT  
3 EA 4330 REMOTE KIT



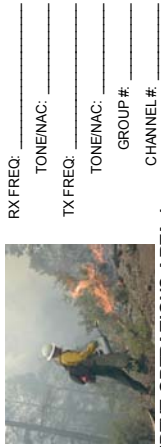
INCIDENT OPERATIONS AREA

RX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 TX FREQ: \_\_\_\_\_  
 TONE/NAC: \_\_\_\_\_  
 GROUP #: \_\_\_\_\_  
 CHANNEL #: \_\_\_\_\_

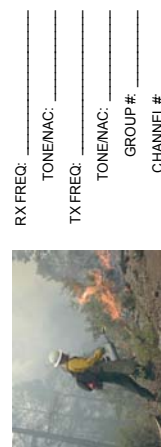
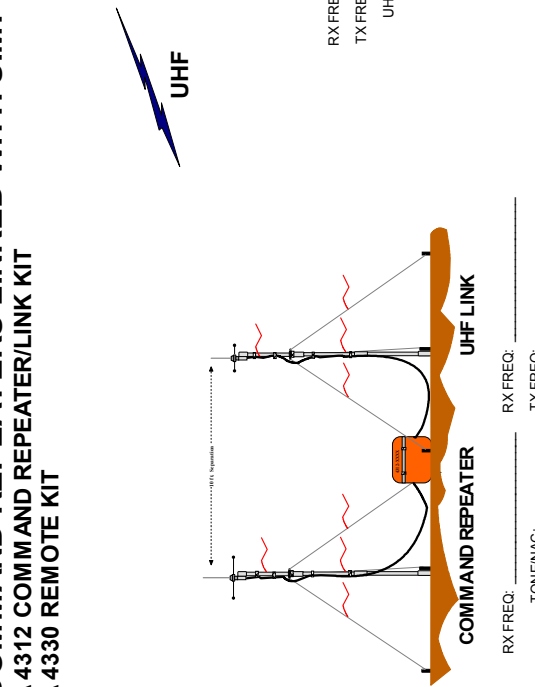
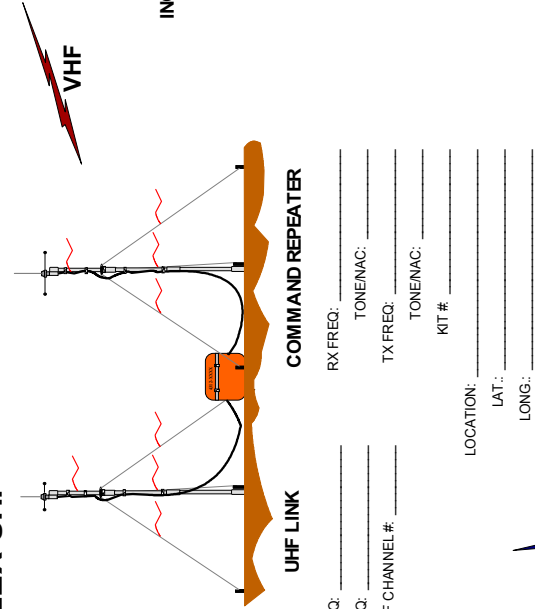




**3- COMMAND REPEATERS LINKED WITH SIMPLEX UHF**  
**3 EA 4312 COMMAND REPEATER/LINK KIT**  
**1 EA 4330 REMOTE KIT**



**INCIDENT OPERATIONS AREA 1**



**INCIDENT OPERATIONS AREA 2**

