National Interagency Fire Cache Frequency List

Rpt Out/ Simplex	Rpt In	
168.050		**Forest Service Tactical 1**
168.200		**Forest Service Tactical 2**
168.600		**Forest Service Tactical 3**
166.725		**Interior Tactical 1**
166.775		**Interior Tactical 2**
168.250		**Interior Tactical 3**
168.700	170.975	Command 1
168.100	170.450	Command 2
168.075	170.425	Command 3
166.6125	168.400	Command 4
167.100	169.750	Command 5
168.475	173.8125	Command 6
168.025		**Forest Svc Law Enforcement**
163.100		Gov't Wide
168.350		Gov't Wide
168.550		ICS Call-Up
168.625		**Air Guard**
168.650		Standard Flight Following
166.675		Air Tactics 1 (Air to Air)
169.150		Air Tactics 2 (Air to Air)
169.200		Air Tactics 3 (Air to Air)
170.000		Air Tactics 4 (Air to Ground)
167.950		Air Tactics 5 (Air to Air)

169.350		FAA

UHF

414.650	410.775	Logistics 1
415.400	411.400	Logistics 2
415.500	411.500	Logistics 3
417.300	411.750	Logistics 4
417.350	411.925	Logistics 5
417.500	412.150	Logistics 6
417.800	412.200	Logistics 7

Aircraft

122.850	Air to Air, Air to Ground
122.975	Air to Air
123.025	Air to Air, Air to Ground
123.050	Air to Ground
123.075	Air to Air, Air to Ground
122.925	Air to Air, Air to Ground

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See the California (Forest Service Region 5) Section
below for Region 5 only, additional frequencies.

Discussion / Explanation

This list includes the entire STANDARD National Incident Radio Support
Cache frequencies. In most incidents (wildland fire or otherwise),

many of the local Land Management agency's frequencies will play a role in the communications plan.

During extremely large incidents, additional frequencies may be specifically assigned to that incident for that time, but will vanish afterwards. Many times these will result in names such as command 8, etc.

The cache primarily contains frequency agile radios, which allow the Communications Unit to add or change frequencies as needed.

In many instances there will be frequencies used that are not approved by the Communications Unit, or even known to the Incident Command. These are mostly used as "squad" or "crew" frequencies.   These are usually frequencies used by the unit at home. i.e.: A Hotshot crew from the Coconino National Forest, may be using the Coconino National Forest simplex frequency amongst themselves, even though they are on a fire in Utah. This can get interesting, as many frequencies are re-used by completely different agencies in other areas. e.g.: BLM units from Idaho use frequencies that are used by the FBI most everywhere else in the nation!

Basic VHF Channel Chart (Scheme) - King Radios

CH	Group 1	Group 2	Group 3
	USFS	NATIONAL	INTERIOR
1	TAC 1	Air to Air	TAC 1
2	TAC 2	Air to Air	TAC 2
3	TAC 3	Air to Air	TAC 3
4	C-1 Monitor	Air to Ground	C-4 Monitor
5	C-1 Repeater	Air to Air	C-4 Repeater
6	C-2 Monitor	Blank	C-5 Monitor
7	C-2 Repeater	Blank	C-5 Repeater
8	C-3 Monitor	Blank	C-6 Monitor
9	C-3 Repeater	Blank	C-6 Repeater

10	FS Law Enforcement	Blank	FAA
11	Govt Wide	ICS Call-Up	Govt Wide
12	Govt Wide	Blank	Govt Wide
13	Blank	Blank	Blank
14	Air Guard	Air Guard	Air Guard

King portable radios are the primary radios used in the cache. Some older GE, & Motorola radios are still used and are configured similarly, or are set up with only one group.

At first blush the order of the frequencies may not make sense. But there is a reason behind the setup. (King radios do not scan between banks).

The groupings are set up so that most incidents, or divisions of incidents, use the same group. i.e.: When a Command Channel 1 repeater is sent to the incident, all of the tactical channels will be from Group 1, and likewise if a Command 5 repeater is sent, all the channels will be out of group 3.

On very large, or complex incidents, they may use both groups, and divide the incident in half, with one side or function operating on Group 1, and the other half or another function on Group 3. In these incidents you may see two Command Repeaters linked together (one out of each group).

The other MAJOR reason why one group or another may be used, is location. The Interior frequencies are not cleared nationwide like the USFS frequencies are, and even though they are mostly clear in the Western U.S., they are still used in several metro areas by other agencies. See the comment below about the Interior Command Channels and IRS

Tactical Frequencies

168.050, 168.200, 168.600 are the three Forest Service tactical frequencies. These have been cleared nationwide for incident use.   You will see only these used east of the Mississippi River.

166.725, 166.775, 168.250 are the Interior Tactical frequencies. These are not cleared nationwide, and the duty communications officer at the National Interagency Fire Center must approve use of these for any given incident.

Command Frequencies

The Command Frequencies are the least likely to change once they are used on an incident. The Command Repeaters are fixed frequency (crystalled & duplexer tuning is not done in the

field). So unless they replace the entire repeater, it will be set for the duration of the incident.

Once again the Forest Service Command Frequencies are cleared nationwide, where as the Interior is not. As a matter of fact, you may notice that Command 5 & 6 use frequencies also used by the Internal Revenue Service.

The other confusing item is the terminology used of C-1 "Monitor", this is really operating simplex on the repeater output frequency, more commonly called "talk around".

Most of the command repeaters are now equipped to allow CTCSS tone (PL) operation, to allow closer spacing of the same command channels on different incidents. They use the first four standard USFS tones. [110.9 Hz, 123.0 Hz, 136.5 Hz, 141.3 Hz]

Forest Service Law Enforcement Frequency
168.025 was previously the input to what is now the Air Guard Frequency. During the 80's all of the 168.625 repeaters were phased out, and all are now remote base stations operated on either wireline, or microwave control.

When this occurred, the 168.025 was dedicated as the common frequency for Forest Service Law Enforcement Personnel. It is also available in the NIRSC radios, and is available as a ground tactical frequency, if needed. Many of the Forests that have large law enforcement programs, (West Coast), also have dedicated Law Enforcement nets with repeaters operating on other frequencies.

Itinerant Frequencies
163.100 and 168.350 are both federal nationwide common frequencies that any federal agency can use. They have also been used in repeater configurations. The land management agencies have started using them more heavily in the past 5 years, and they have replaced local tactical (work) channels in many cases (Several forests previously used the NIRSC tactical channels locally). These two frequencies are available as ground tactical frequencies, and in many cases you will also hear communications between crews as they travel on this frequency.

Keep in mind that any other federal agency may also pop up on these. Many agencies with little communications equipment, rely on these for their operations. (USGS gage tech., etc.).

ICS Call Up
168.550 Mhz is the ICS Calling Frequency. SmokeJumpers are also using it as the primary frequency for air-to-ground operations between the spotter and the jumpers on the ground.   If there is "silk in the air" the jump operation will be operating on this frequency.   Note that other

<u>special</u> air operations (aerial ignition, explosives) may also utilize this frequency.

Air Guard

Taken from the GB Mob Guide: Air Guard is defined as emergency communications for aviation. The national, interagency Air Guard frequency is **168.625**. The Air Guard channel provides a continuous communications link to any aircraft and dispatch unit with Air Guard capabilities.

1. Requirements.

All units dispatching aircraft, including dispatch centers and air tanker bases, shall have the capability of transmitting and receiving the interagency Air Guard frequency 168.625. Ground or ground-mobile transmitters on this frequency should be equipped with a CTCSS Encoder on 110.9 Hz. (Southern California suffers from interference from Mexico on this frequency and the CTCSS is used to reduce the impact of that interference.)

All aircraft assigned to an incident must have a radio configuration that includes the interagency Air Guard frequency of 168.625.   Also all NIFC NIRSC Cache radios will always have the Air Guard Frequency as the last channel in every mode. (Usually ch. 14, but may be in ch. 12 in older 12 channel per mode radios [GE's & Motorola's]).

Continuous monitoring of the Air Guard frequency is required by both aircraft and dispatch. To meet this requirement, all Federal "carded" aircraft used in incidents have dual receiver FM Radios, so that one receiver is always tuned to the "Guard" frequency.

2. Limitations. Use of this frequency is limited to:
Emergency air-ground communications Emergency air-air communications Initial call, recall, and re-direction of aircraft when no other contact frequency is available

Air Guard is <u>not</u> to be used for tactical communications, local dispatching, administrative, flight-following or logistical use, *<u>unless it is the only way to communicate in order to identify another frequency for communications</u>*.

Aircraft operations are considered high risk, and have a very high priority when communications assets are assigned.

Flight Following

VHF-FM 168.650 has been assigned as the National Interagency Flight Following frequency. This frequency should be used for flight following and air-to-ground administrative radio traffic.

Air-Dispatch Communications. Communications between dispatch and aircraft will be on the

local unit frequency assigned at the time of dispatch or as changed and relayed at the time of arrival. The national flight following frequency may be used when local unit VHF-FM channel is congested.

Air Tactical Frequencies

There are five (5) national VHF-FM <u>air-to-air and air-to-ground</u> frequencies which are designated as Air Tactical frequencies for <u>large incidents</u>.

The five (5) frequencies are:
* 166.675 * 167.950 (added in 1996) * 169.150 * 169.200 * 170.000

1. Restrictions. These frequencies are restricted to use West of the Mississippi River (95W). 170.000 cannot be used in the Columbia River Basin in WA. In CA, 166.675, 169.150 and 169.200 will be used as air-to-air only, and 170.000 is used as Air-to-Ground.

AM - Aircraft Frequencies

CHART 1 - NATIONAL VHF-AM FREQUENCIES				
Frequency	Air-to-Air	Air-to-Ground	Fixed Wing	Rotor Wing
122.925	YES	YES	YES	YES
122.975	YES	NO	NO	YES

122.850	YES	YES	NO	YES
123.025	YES	YES	NO	YES
123.050	NO	YES	NO	YES
123.075	YES	YES	NO	YES

Note that 122.925 is the only authorized national air-air frequency for fixed-wing use. It is a government "all call" frequency, meaning that any governmental agency may use it. Its use as a standard air-air frequency is therefore **not recommended.** It is best used as a backup for immediate temporary use until another discrete frequency can be obtained.

Many areas have pre-assigned AM frequencies for initial attack operations.   Additional "Discrete" frequencies can be requested and assigned just for an incident. After the incident is complete that frequency may or may not be used again. (NIFC coordinates it with FAA, and they change regularly, not for any security reason, but rather as the FAA changes, and adds frequencies around the nation).

Airtanker Bases - National VHF-AM Frequency. The national air-ground frequency for all Airtanker Bases is **135.975**. Note that 135.975 may be a change from the historic use of 122.925 at airtanker bases.   Also note that although not official, 163.100 is commonly used as the ramp frequency for most air tanker bases.

Logistics (UHF) Frequencies

Lots of confusion occurs when you see logistics frequencies lists. The list above is accurate. However, it is important to note the "RX Simplex" frequencies (Repeater Inputs).

The reason for the confusion, is that many times the UHF frequencies are used to link remote equipment. Much of the time this is done simplex, and by having the repeater input available on the portables, this doubles the number of simplex frequencies available for that.

Most of the "kits" for both the aircraft bases, and VHF repeaters are set up to allow a UHF radio to be plugged in, and allow it to be linked to another site.

This may be used in a large (geographical) size incident to link two VHF Command repeaters to cover the large area. This will mean that traffic on one VHF input (i.e.: Command 6), will show

up on another VHF Output (i.e.: Command 2), and may lead to confusion about repeater pairing. When in reality the two repeaters are linked together via a UHF frequency. The Logistics (UHF) Repeater may also be used to extend the distance between the command repeaters. There have been incidents where three command repeaters were used to cover a very large area.

The other very common use of linking is to remote an AM aircraft frequency. The AM Radio will be linked to a UHF radio, and then fed back down the UHF frequency to the Helibase, or to Air Operations. The UHF Logistics repeater may be used to remote it quite a distance from the control point.

Of course the UHF equipment is also used for it's stated purpose - Logistics. Usually the UHF portables will be used as a "camp net" for coordination of the personnel involved in the Camp operations, and logistics needs. If there is a large area involved in the incident, and the UHF repeater is not needed for other functions you may see it set up for coordination of transportation units, or other logistics needs.

In the past, the lack of cell phones, Satellite phones, and just plain wired telephones near the command post, required the use of extensive logistics systems to create a path to the outside world. There is a telephone kit available for the logistics kits, that remotes 1 telephone line via the logistics repeaters to the camp. This is being used less and less, as other communications are becoming more plentiful. The improved coverage of most local forest, blm, nps, bia, and other systems also allows use of those systems for ordering resources.

FAA Frequency

169.350 Mhz is an FAA frequency. It does appear in the NIRSC frequency scheme, but can only be used after approval of the NIRSC Communications duty officer.

Forest Service Region 5 (California)

Forest Service Region 5 (R5), has dedicated several frequencies for fire/ incident purposes. These are only used in California, and do not normally appear in the NIFC NIRSC frequency list. However, R5 maintains a large radio cache of their own, where these are used. There have been several articles published that listed the R5 frequencies as National Cache frequencies, which they are not. (see the note below about additional channel assignments).

The R5 caches have all the standard NIRSC frequencies (listed at the top), and also include the following:

VHF Radios have these additional frequencies:
173.9125   Tactical 4

173.9625	Tactical 5
173.9875	Tactical 6

Logistics (UHF) Radios have these additional frequencies:

418.050	A-13 Common User Simplex [1]
418.575	A-14 Common User Simplex [1]
418.075	B-13 Common User Simplex [1]
408.400	B-14 Common User Simplex [1]

Incident Specific Frequencies

During extreme fire seasons, or for other special longer term incidents, the NIFC NIRSC has been known to acquire additional frequencies for that specific incident. This occurs regularly for AM Aircraft frequencies, but it also can be done to acquire additional Command and Tactical frequencies if needed. This may also be done if on area of the country has a large number of incidents, and the standard frequencies become congested, and cannot support all of the needs. In the few cases where this happens, you might sometimes see a frequency list that had a command 7, etc, on it, and these will probably not be re-used elsewhere. In order to setup incident specific frequencies, the NIRSC Communications Staff, will actually go through the coordination process to get the frequencies assigned for that area.

There may also be cases where you will see a local special channel added to the NIRSC frequency list. This will happen in locations where they already have the frequencies authorized, and usually already have repeaters in place (Yellowstone is one example), and will use those during an incident in their area.

One other place that frequencies will appear from, is the region cache. Each forest service region usually has a pair of frequencies assigned, and you may see these in use at an incident. Some regions use them as portable or tactical frequencies, others have region wide radio nets on them for logistics ordering, or other support functions. It varies widely across the nation.

Kits

The National Incident Radio Support Cache (NIRSC) packages everything as a "kit". I.e.: a command repeater kit, includes the repeater, antenna, batteries, mast, everything that will be needed to install and operate the repeater.

Unless an incident starts as a large one (and some do), the first radio order will usually be for a *Starter System*. This kit will include: 3 Command/Tactical Radio Kits, 1 Command Repeater, 1 Ground Aircraft Radio/Link Kit, 3 Remote Kits, 1 Logistics Repeater, and 1 Logistics Radio Kit.

Command/Tactical Radio Kits. Contains: 16 VHF Portable Radios (48 for 3 kits), Extra Antennas, Mobile Antennas, 6 speaker microphones, and other supplies.

Command Repeater. Contains all the equipment to set up and operate one command channel.

Ground Aircraft Radio/Link Kit. Contains: Mast, and Base Antenna for VHF-AM (108-138 Mhz), Batteries, UHF antenna and cable for using a logistics radio for linking, and 5 ICOM aircraft portable Radios. One is used in the base equipment, and the other 4 are used by air personnel at the helibase, etc., and as a backup.

Remote Kits. Are used to remotely control a radio over wire. These include the adapters to plug in any VHF or UHF portable radio from the cache, and locate it up to a mile a way. Each kit contains a 1/2-mile spool of wire (2 conductor, stainless steel), to connect the radio to the remote control. This allow the separation of the radios to help prevent interference, and allows it to be placed at a better location than the camp or base may be located. The kit also contains the antenna mast, and antennas needed.

Logistics Repeater. Is a UHF repeater with all the associated parts, to install, and operate it.

Logistics Radio Kit. Contains 16 UHF portable radios, and assorted accessories.

Other Radio Resources

The NIRSC contains lots of other equipment. They have L Band Satellite phones (IMARSAT), Key Telephone Systems, Microwave systems, Military Low Band Radios (for when military aircraft are involved), Public Address systems, and several other specialized kits.

There is also one other kit of interest, this is a low-band (Narrow) portable radio that can be used for linking of AM Aircraft frequencies for flight following of **non** incident aircraft (press, VIP's, etc). It is used very little, but may show up at a large incident (or one that draws a lot of attention). There are 8 low band frequencies available. 36.65, 36.75, 36.95, 38.35, 38.55, 38.75, 38.85, and 41.35.

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