What's New in NIFOG Version 1.4

New content:

- VTAC Repeater Channels
- The DOJ 25 Cities Project
- FEMA Regions – States and Territories
- U.S. Coast Guard Rescue Coordination Centers
- Cellular Telephone Emergency Response
- Text Messaging
- Line-of-sight Formulas

Updated content:

- VHF Low-band interoperability repeaters and channel names
- All channel tables list frequencies in the same order as ICS-205 and ICS-217 forms
- An improved map showing where channel VTAC17 may be used, with county names
- 700 MHz Interoperability Channels – frequencies have been added to the table
- UHF MED channels – 12.5 and 6.25 channels added
- RJ-45 wiring – crossover wiring added
- VHF Marine Channel and Frequency tables
- Revised the answer to the question "Don't I need a license for these channels before programming them into radios?"
- Revised the "Ground to Air working channel" in the table "Federal/Non-Federal VHF SAR Operations Interoperability Plan"

… and other minor additions and updates. Also, there are 3 PDF versions that you can download:

- NIFOG 1.4 for personal printing
- NIFOG 1.4 for professional printing
- NIFOG 1.4 rotated for viewing

Don't I need a license for these channels before programming them into radios?

If you are licensed under Part 90 of the FCC rules, you may program frequencies that you are not licensed to use IF "the communications involved relate directly to the imminent safety-of-life or property" or "with U.S. Government stations ... in connection with mutual activities" (see FCC rules 90.427 and 90.417).

However, note that 90.403(q) requires that "[f]or transmissions concerning the imminent safety-of-life or property, the transmissions shall be suspended as soon as the emergency is terminated." Also, the safety of life provision of 90.417(a) makes it clear that the exception applies only when the communications involved "relate directly" to the "imminent" safety of life or property. Because one overriding policy concern of the FCC is the prevention of harmful interference, any exceptions to the general prohibition on using non-licensed frequencies are limited in nature to responding to an imminent threat to safety-of-life or property, and licensees are not allowed to exceed the bounds of those communications.

See also 90.407 dealing with communications during an emergency which disrupts normal communications facilities and §90.411 dealing with civil defense communications.

There are no restrictions on U.S. Government stations programming frequencies into U.S. Government radios.

INTEROPERABILITY CHANNELS

Non-Federal VHF National Interoperability Channels				
Description	Channel Name	Mobile Receive Frequency	Mobile Transmit Frequency	CTCSS Tone ±
		VHF Low Band		
Law Enforcement	LLAW1	39.4600	45.8600	CSQ /156.7 (5A)
	LLAW1D	39.4600	39.4600	CSQ /156.7 (5A)
Fire (Proposed)	LFIRE2	39.4800	45.8800	CSQ /156.7 (5A)
	LFIRE2D	39.4800	39.4800	CSQ /156.7 (5A)
Law Enforcement	LLAW3	45.8600	39.4600	CSQ /156.7 (5A)
	LLAW3D	45.8600	45.8600	CSQ /156.7 (5A)
Fire (Proposed)	LFIRE4	45.8800	39.4800	CSQ /156.7 (5A)
Fire	LFIRE4D	45.8800	45.8800	CSQ /156.7 (5A)

Frequency 39.4800 MHz is pending FCC assignment for exclusive fire intersystem use.

± Default operation should be carrier squelch receive. CTCSS transmit. If the user can enable/disable without reprogramming the radio, the indicated CTCSS tone also could be programmed for receive, and the user instructed how and when to enable/disable.

Non-Federal VHF National Interoperability Channels

VHF High Band

Description	Channel Name	Mobile Receive Freq.	Mobile Transmit Freq.	CTCSS Tone
Calling	VCALL10	155.7525	155.7525	CSQ / 156.7 (5A) ±
Tactical	VTAC11 *	151.1375	151.1375	CSQ / 156.7 (5A) ±
Tactical	VTAC12 *	154.4525	154.4525	CSQ / 156.7 (5A) ±
Tactical	VTAC13	158.7375	158.7375	CSQ / 156.7 (5A) ±
Tactical	VTAC14	159.4725	159.4725	CSQ / 156.7 (5A) ±
Tac Rpt	VTAC33 * •	159.4725	151.1375	CSQ / 136.5 (4Z)
Tac Rpt	VTAC34 * •	158.7375	154.4525	CSQ / 136.5 (4Z)
Tac Rpt	VTAC35 •	159.4725	158.7375	CSQ / 136.5 (4Z)
Tac Rpt	VTAC36 * •	151.1375	159.4725	CSQ / 136.5 (4Z)
Tac Rpt	VTAC37 * •	154.4525	158.7375	CSQ / 136.5 (4Z)
Tac Rpt	VTAC38 •	158.7375	159.4725	CSQ / 136.5 (4Z)

*VTAC11-12, VTAC33-34, and VTAC36-37 may not be used in Puerto Rico or the USVI.

±Default operation should be carrier squelch receive, CTCSS transmit. If the user can enable/disable without re-programming the radio, the indicated CTCSS tone also could be programmed for receive, and the user instructed how and when to enable/disable.

• VTAC33-38 recommended for deployable tactical repeater use only (FCC Station Class FB2T).

• VTAC36-38 are preferred; VTAC33-35 should be used only when necessary due to interference.
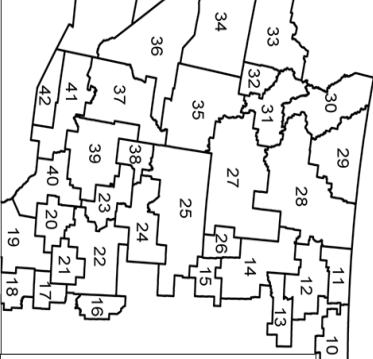
Non-Federal VHF National Interoperability Channels			
VHF Inland			
Description	**Channel Name**	**Mobile RX (MHz)**	**Mobile TX (MHz)**
Tactical – narrowband FM	VTAC17	161.8500	157.2500
Tactical – narrowband FM	VTAC17D	161.8500	161.8500

Default operation should be carrier squelch receive, CTCSS 156.7 Hz(5A) transmit. If the user can enable/disable CTCSS without reprogramming the radio, the indicated CTCSS tone also could be programmed for receive, and the user instructed how and when to enable/disable.

For VTAC17/VTAC17D only: Base stations: 50 watts max, antenna HAAT 400 feet max. Mobile stations: 20 watts max, antenna HAAT 15 feet max. These channels are for tactical use and may not be operated on board aircraft in flight. These channels use narrowband FM and are available only in certain inland areas at least 100 miles from a major waterway. These channels use the same frequencies as VHF Marine channel 25, which uses wideband FM. Use only where authorized. See map on next page. In these authorized areas, interoperability communications have priority over grandfathered public coast and public safety licensees.

Counties Where VTAC17/VTAC17D May Be Used

Numbers Indicate VHF Public Coast Station Areas - see 47CFR80.371(c)(ii)

OR: Harney, Malheur

CA: Alpine, Inyo, Lassen, Mono, Plumas, Sierra

KS: Cheyenne, Gove, Logan, Sheridan, Sherman, Thomas, Wallace

MN: Kittson, Lake of the, Woods, Marshall, Pennington, Polk, Red Lake, Roseau

All counties except
AZ: La Paz, Yuma;
ID: Benewah, Bonner, Boundary, Clearwater , Idaho, Kootenai, Latah , Lewis, Nez Perce, & Shoshone
ND: Barnes, Cass, Dickey, Foster, Griggs, LaMoure, Pierce, Ransom, Richland, Sargent, Sheridan, Stutsman, Wells

All of MT, WY, NV, UT, CO, & NM

NE: Arthur, Banner, Blaine, Box Butte, Chase, Cherry, Cheyenne, Dawes, Deuel, Dundy, Garden, Grant, Hooker, Keith, Kimball, Lincoln, Logan, McPherson, Morrill, Perkins, Scotts Bluff, Sheridan, Sioux, Thomas

SD: All counties except
Aurora, Beadle, Bon Homme, Brookings, Brule, Buffalo, Charles Mix, Clark, Clay, Codington, Davison, Deuel, Douglas, Grant, Gregory, Hamlin, Hand, Hanson, Hughes, Hutchinson, Hyde, Jerauld, Kingsbury, Lake, Lincoln, Lyman, McCook, Miner, Minnehaha, Moody, Roberts, Sanborn, Stanley, Sully, Tripp, Turner, Union, Yankton

OK: Beckham, Custer, Dewey, Ellis, Greer, Harmon, Harper, Jackson, Kiowa, Roger Mills, Washita, Woodward

700 MHz Interoperability Channels				
FCC Channel (Subscriber Load)		Transmit and Receive Frequencies	Primary Use	Channel Name
Receive Ch.	Transmit Ch.			
23-24	983-984	799.14375	General Public Safety	7TAC51
	23-24	769.14375		7TAC51D
39-40	999-1000	799.24375	Calling Channel	7CALL50
	39-40	769.24375		7CALL50D
63-64	1023-1024	799.39375	EMS	7MED65
	63-64	769.39375		7MED65D
79-80	1039-1040	799.49375	EMS	7MED66
	79-80	769.49375		7MED66D
103-104	1063-1064	799.64375	General Public Safety	7TAC52
	103-104	769.64375		7TAC52D
119-120	1079-1080	799.74375	General Public Safety	7TAC55
	119-120	769.74375		7TAC55D
143-144	1103-1104	799.89375	Fire	7FIRE63
	143-144	769.89375		7FIRE63D
159-160	1119-1120	799.99375	Fire	7FIRE64
	159-160	769.99375		7FIRE64D
183-184	1143-1144	800.14375	General Public Safety	7TAC53
	183-184	770.14375		7TAC53D
199-200	1159-1160	800.24375	General Public Safety	7TAC56
	199-200	770.24375		7TAC56D
223-224	1183-1184	800.39375	Law Enforcement	7LAW61
	223-224	770.39375		7LAW61D

FCC Channel (Subscriber Load)		Transmit and Receive Frequencies	Primary Use	Channel Name
Receive Ch.	Transmit Ch.			
239-240	1199-1200	800.49375	Law Enforcement	7LAW62
	239-240	770.49375		7LAW62D
263-264	1223-1224	800.64375	General Public Safety	7TAC54
	263-264	770.64375		7TAC54D
279-280	1239-1240	800.74375	Mobile Data	7DATA69
	279-280	770.74375		7DATA69D
303-304	1263-1264	800.89375	Mobile Repeater	7MOB59
	303-304	770.89375		7MOB59D
319-320	1279-1280	800.99375	Other Public Service	7GTAC57
	319-320	770.99375		7GTAC57D
641-642	1601-1602	803.00625	EMS	7MED86
	641-642	773.00625		7MED86D
657-658	1617-1618	803.10625	General Public Safety	7TAC71
	657-658	773.10625		7TAC71D
681-682	1641-1642	803.25625	Calling Channel	7CALL70
	681-682	773.25625		7CALL70D
697-698	1657-1658	803.35625	EMS	7MED87
	697-698	773.35625		7MED87D
721-722	1681-1682	803.50625	Fire	7FIRE83
	721-722	773.50625		7FIRE83D
737-738	1697-1698	803.60625	General Public Safety	7TAC72
	737-738	773.60625		7TAC72D

FCC Channel (Subscriber Load)		Transmit and Receive Frequencies	Primary Use	Channel Name
Receive Ch.	Transmit Ch.			
761-762	1721-1722	803.75625	General Public Safety	7TAC75
	761-762	773.75625		7TAC75D
777-778	1737-1738	803.85625	Fire	7FIRE84
	777-778	773.85625		7FIRE84D
801-802	1761-1762	804.00625	Law Enforcement	7LAW81
	801-802	774.00625		7LAW81D
817-818	1777-1778	804.10625	General Public Safety	7TAC73
	817-818	774.10625		7TAC73D
841-842	1801-1802	804.25625	General Public Safety	7TAC76
	841-842	774.25625		7TAC76D
857-858	1817-1818	804.35625	Law Enforcement	7LAW82
	857-858	774.35625		7LAW82D
881-882	1841-1842	804.50625	Mobile Repeater	7MOB79
	881-882	774.50625		7MOB79D
897-898	1857-1858	804.60625	General Public Safety	7TAC74
	897-898	774.60625		7TAC74D
921-922	1881-1882	804.75625	Mobile Data	7DATA89
	921-922	774.75625		7DATA89D
937-938	1897-1898	804.85625	Other Public Service	7GTAC77
	937-938	774.85625		7GTAC77D

12.5 kHz narrowband channels shown as odd-even channel pairs of 6.25 kHz channels.
Ref: http://www.apco911.org/frequency/documents/700_NB_channel_centers.pdf

Federal / Non-Federal SAR Command Interoperability Plan			
Channel Name*	**Mobile RX (MHz)**	**Mobile TX (MHz)**	**CTCSS**
IR 12**	410.8375	419.8375	167.9 Tx, CSQ Rx
VTAC14	159.4725	159.4725	156.7 Tx, CSQ Rx (156.7 Rx if user selectable)
UTAC43	453.8625	458.8625	156.7 Tx, CSQ Rx (156.7 Rx if user selectable)
8TAC94 (ITAC4 before rebanding)	853.0125 (868.0125 before rebanding)	808.0125 (823.0125 before rebanding)	156.7 Tx, CSQ Rx (156.7 Rx if user selectable)
VHF Marine Ch. 17***	156.8500 (this use requires FCC STA)	156.8500 (this use requires FCC STA)	none

* If a repeater is not available, substitute the corresponding talk-around channel: IR 18 for IR 12, UTAC43D for UTAC43, 8TAC94D for 8TAC94.

**See Conditions for Use of Federal Interoperability Channels on pages 22 - 24.

***VHF marine ch. 17 is wideband FM, emission 16K00F3E.

Federal / Non-Federal VHF SAR Operations Interoperability Plan	
Suggested SAR Function	**Frequency (MHz)**
Ground Operations	155.1600 narrowband FM (or wideband FM till 1/1/2013)
Maritime Operations *	157.050 or 157.150 (VHF Marine ch.21A or 23A) as specified by USCG Sector Commander
Air Operations – civilian	123.100 MHz AM (may not be used for tests or exercises)
Air Operations – USCG/Military	345.0 MHz AM for initial contact only, then move to 282.8 MHz AM or other working channel
Air rescue assets to air rescue assets (deconfliction)	As charted on standard air chart or MULTICOM 122.850 (south or west sector) & 122.900 MHz (north or east sector), or as specified by FAA. 122.850 may not be used for tests or exercises
Ground to Air SAR working channel	157.175 83A (21A, 23A, 81A alternates as specified by local USCG Sector Commander) **
Ground to Maritime SAR working channel	157.050 21A (23A, 81A, 83A alternates as specified by local USCG Sector Commander) **
Maritime/Air/Ground SAR working channel *	157.175 83A (21A, 23A, 81A alternates as specified by local USCG Sector Commander) **
EMS / Medical Support	155.3400 (wideband FM)
Hailing* & DISTRESS only - Maritime/Air/Ground	156.800 VHF Marine channel 16

* Use VHF Marine ch.16 to make contact (30 seconds max.), then move to appropriate working channel as directed by local USCG Sector Commander. Non-maritime use of any VHF Marine channel requires FCC Special Temporary Authority or appropriate license. VHF marine channels use wideband FM, emission 16K0F3E

** VHF Marine channels: 16=156.800 21A=157.050 22A=157.100 23A=157.150 81A=157.075 82A=157.125 83A=157.1750 Direction from USCG, FCC, or FAA overrides information in this table. This table does not convey authority to operate.

UHF MED (Medical, EMS) Channels			
Base & Mobile TX	Mobile TX	Channel Name	Bandwidth
462.950	467.950	MED–9 *	W,N,U
462.95625	467.95625	MED–91 *	U
462.9625	467.9625	MED–92 *	N,U
462.96875	467.96875	MED–93 *	U
462.975	467.975	MED–10 *	W,N,U
462.98125	467.98125	MED–101 *	U
462.9875	467.9875	MED–102 *	N,U
462.99375	467.99375	MED–103 *	U
* Used primarily for dispatch; may be used for mutual aid. 47CFR90.20(d)(65).			
463.000	468.000	MED–1	W,N,U
463.00625	468.00625	MED–11	U
463.0125	468.0125	MED–12	N,U
463.01875	468.01875	MED–13	U
463.025	468.025	MED–2	W,N,U
463.03125	468.03125	MED–21	U
Direct mode: receive & transmit on "Base & Mobile TX" freq.; Repeater mode: transmit on "Mobile TX" freq., receive on "Base & Mobile TX" freq. CTCSS as required by local plan. Bandwidth: W=wide, N=narrow, U=ultra-narrow (6.25 kHz). Add "D" to channel name when operating in "Direct" mode.			

UHF MED (Medical, EMS) Channels			
Base & Mobile TX	Mobile TX	Channel Name	Bandwidth
463.0375	468.0375	MED–22	N,U
463.04375	468.04375	MED–23	U
463.050	468.050	MED–3	W,N,U
463.05625	468.05625	MED–31	U
463.0625	468.0625	MED–32	N,U
463.06875	468.06875	MED–33	U
463.075	468.075	MED–4	W,N,U
463.08125	468.08125	MED–41	U
463.0875	468.0875	MED–42	N,U
463.09375	468.09375	MED–43	U
463.100	468.100	MED–5	W,N,U
463.10625	468.10625	MED–51	U
463.1125	468.1125	MED–52	N,U
463.11875	468.11875	MED–53	U
463.125	468.125	MED–6	W,N,U

Direct mode: receive & transmit on "Base & Mobile TX" freq.; Repeater mode: transmit on "Mobile TX" freq., receive on "Base & Mobile TX" freq. CTCSS as required by local plan. Bandwidth: W=wide, N=narrow, U=ultra-narrow (6.25 kHz). Add "D" to channel name when operating in "Direct" mode.

UHF MED (Medical, EMS) Channels			
Base & Mobile TX	Mobile TX	Channel Name	Bandwidth
463.13125	468.13125	MED–61	U
463.1375	468.1375	MED–62	N,U
463.14375	468.14375	MED–63	U
463.150	468.150	MED–7	W,N,U
463.15625	468.15625	MED–71	U
463.1625	468.1625	MED–72	N,U
463.16875	468.16875	MED–73	U
463.175	468.175	MED–8	W,N,U
463.18125	468.18125	MED–81	U
463.1875	468.1875	MED–82	N,U
463.19375	468.19375	MED–83	U

Direct mode: receive & transmit on "Base & Mobile TX" freq.; Repeater mode: transmit on "Mobile TX" freq., receive on "Base & Mobile TX" freq. CTCSS as required by local plan. Bandwidth: W=wide, N=narrow, U=ultra-narrow (6.25 kHz). Add "D" to channel name when operating in "Direct" mode.

The 25 Cities Project Federal Interoperability Channels

The 25 Cities Project Federal Interoperability Channels were developed through the Department of Justice "25 Cities" project to support local, state, federal, and tribal voice communications interoperability. Each metropolitan area has agreed upon policies and procedures regarding use of these channels. Most 25 Cities VHF channels are accessible by non-VHF users via permanent or ad hoc patching capabilities. All agencies interested in using these frequencies, who are not currently participating in the 25 Cities effort, should contact the local FBI Radio Manager prior to programming any equipment. For frequencies and programming details or other questions regarding the project, contact Rob Zanger, U.S. Department of Justice, Wireless Management Office at 202.598.2000 or robert.m.zanger@usdoj.gov.

Information as of November 17, 2010.

CITY	CHANNEL NAME
ATLANTA	ATL FIO (VHF P25 Voted System)
BALTIMORE	BA FIOLE3 (VHF P25 Voted System)
BOSTON	BPD FIO (VHF Voted System - Analog)
CHICAGO	CG-COM-N, CG-COM-C, CG-COM-S (VHF P25 Multicast Voted System)
CHICAGO	CG-TAC-N, CG-TAC-C, CG-COM-S (VHF P25 Multicast Voted System)
DALLAS	DFW EAST (VHF P25 Voted System)
DALLAS	DFW WEST (VHF P25 Voted System)
(continued)	

The 25 Cities Project Federal Interoperability Channels	
CITY	**CHANNEL NAME**
DENVER	DEN IO-N, DEN IO-E, DEN IO-C, DEN IO-S, DEN IO-W (VHF P25 Multicast Voted System)
EL PASO	EP FIO-W, EP FIO-E (VHF P25 Multi-cast Voted System)
HAMPTON ROADS – NORFOLK	HRN FIO (VHF P25 Voted System)
HARTFORD, CT	CFedcom-N, CFedcom-S (VHF P25 Multi-cast Voted System)
HONOLULU	HNL FIO (VHF P25 Stand Alone 125 watt repeater)
	HNL FIO2 (VHF P25 Stand Alone 125 watt repeater)
	LE 4 (VHF P25 Transportable 125 watt repeater)
	HNL FIRE (VHF Voted System – Analog)
HOUSTON	HOU CMD (VHF P25 Voted System)
	HOU PAT (VHF P25 Voted System)
JACKSONVILLE	JAX FIO (VHF P25 Voted System)
(continued)	

The 25 Cities Project Federal Interoperability Channels	
CITY	**CHANNEL NAME**
LOS ANGELES	LA FIO1 (VHF P25 Voted System)
	LA FIO2 (VHF P25 Voted System)
	LA FIO3 (VHF P25 Voted System)
MIAMI	MIA FIO (VHF P25 Voted System)
MINNEAPOLIS/ST PAUL	FEDCOM-MP, FEDCOM-SP (VHF P25 Multicast Voted System)
NEW ORLEANS	NOLA FIO (VHF P25 Voted System)
NEW YORK	NYC FIO (NYC), NYC FIO-N (Orange-Putnam), NYC FIO-E (Suffolk), NYC FIO-S (Central NJ) (VHF P25 Multicast Voted system)
	NYC FIO2 (VHF P25 Voted System)
ORLANDO	ORL FIO (VHF P25 Voted System
PHILADELPHIA	PH FIO (VHF P25 Voted System)
(continued)	

The 25 Cities Project Federal Interoperability Channels	
CITY	**CHANNEL NAME**
ST LOUIS	STL CALL (VHF P25 Voted System)
	8CALL90(800 MHz Simulcast Voted Repeater System)
	STL TAC (VHF P25 Voted System)
	8TAC91 (800 MHz Simulcast Voted Repeater System)
	All of the above repeaters can be networked together.
(continued)	

The 25 Cities Project Federal Interoperability Channels	
CITY	**CHANNEL NAME**
SAN FRANCISCO	SF MA U-A (UHF Stand Alone 125 watt repeater - Analog)
	SF MA V-A (VHF Stand Alone 125 watt repeater - Analog)
	CLEMARS 7 (LLAW1) (Low Band repeater)
	SF MA T-A (UHF-T Band Stand Alone 125 watt repeater - Analog)
	8TAC94 (800 MHz Stand Alone 125 watt repeater- Analog)
	SF FED-V (VHF P25 Stand Alone 125 watt repeater)
	SF FED-U (UHF P25 Stand Alone 125 watt repeater)
	All of the above repeaters can be networked together.
	SF FED-ED, SF FED-ES, SF FED-ET, SF FED-EW (VHF P25 Multicast Voted System)
TAMPA	TAM FIO (VHF P25 Voted System)
WASHINGTON DC	DC I0-1 (VHF P25 Voted System)
	DC I02LE2 (VHF P25 Voted System)

FEMA Regions - States and Territories

Region I: CT, MA, ME, NH, RI, VT - 1-617-956-7506 or 1-877-336-2734

Region II: NJ, NY, Puerto Rico and the US Virgin Islands
    NJ and NY: 1-212-680-3600
    PR and USVI: 1-787-296-3500

Region III: DC, DE, MD, PA, VA, WV - 1-215-931-5500

Region IV: AL, FL, GA, KY, MS, NC, SC,TN - 1-770-220-5200

Region V: IL, IN, MI, MN, OH, WI - 1-312-408-5500

Region VI: AR, LA, NM, OK, TX - 1-940-898-5399

Region VII: IA, KS, MO, NE - 1-816-283-7061

Region VIII: CO, MT, ND, SD, UT, WY - 1-303-235-4800

Region IX: AZ, CA, Guam (GU), HI, NV, CNMI, RMI, FSM, American Samoa (AS)
    1-510-627-7100

Region X: AK, ID, OR, WA - 1-425-487-4600

FEMA Headquarters, Washington DC: 1-202-646-2500

FEMA Disaster Assistance: 1-800-621-FEMA (3362)

U.S. Coast Guard Rescue Coordination Centers

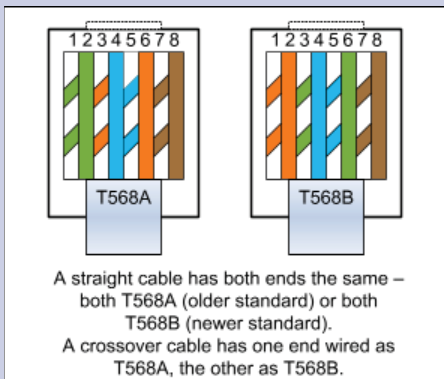**24 hour Regional Contacts for Emergencies**
Last Modified 4/29/2009

RCC	Location	Phone Number
Atlantic Area SAR Coordinator	*Portsmouth, VA*	*(757)398-6700*
RCC Boston	Boston, MA	(617)223-8555
RCC Norfolk	Portsmouth, VA	(757)398-6231
RCC Miami	Miami, FL	(305)415-6800
RSC San Juan	San Juan, PR	(787)289-2042
RCC New Orleans	New Orleans, LA	(504)589-6225
RCC Cleveland	Cleveland, OH	(216)902-6117
Pacific SAR Coordinator	*Alameda, CA*	*(510)437-3700*
RCC Alameda	Alameda, CA	(510)437-3700
RCC Seattle	Seattle, WA	(206)220-7001
RCC Honolulu	Honolulu, HI	(808) 535-3333
Sector Guam	Apra Harbor, GU	(671)355-4824
RCC Juneau	Juneau, Alaska	(907)463-2000

RJ-45 Wiring					
		T568A (less common)		**T568B (more common)**	
Pin	**Pair**	*Color*	*Name*	**Color**	**Name**
1	**2**	*white/ green*	*RecvData+*	**white/orange**	**TxData +**
2	**2**	*green*	*RecvData-*	**orange**	**TxData -**
3	**3**	*white/orange*	*TxData +*	**white/green**	**RecvData+**
4	**1**	*blue*		**blue**	
5	**1**	*white/blue*		**white/blue**	
6	**3**	*orange*	*TxData -*	**green**	**RecvData-**
7	**4**	*white/brown*		**white/brown**	
8	**4**	*brown*		**brown**	
Note that the odd pin numbers are always the white-with-stripe color.					

A straight cable has both ends the same –
both T568A (older standard) or both
T568B (newer standard).
A crossover cable has one end wired as
T568A, the other as T568B.

Telephone Keypad Letters

1:(QZ)	2:ABC	3:DEF
4:GHI	5:JKL	6:MNO
7:P(Q)RS	8:TUV	9:WXY(Z)
*	0	#

DSN Area Codes
(Defense Switched Network)

312 - CONUS	313 – Caribbean
314 - Europe	315 - Pacific
317 - Alaska	318 - Southwest Asia
319 - Canada	

Cellular Telephone Emergency Response

Some cellular telephone companies have transportable cell sites (Cellular On Wheels – COWs, Cellular on Light Trucks – COLTs, etc.) that can be deployed during disasters, emergencies, and special events. Local jurisdictions are encouraged to coordinate with their established service provider representatives for local events; however, the U.S. Department of Homeland Security – National Communications System National Coordinating Center will assist jurisdictions with referrals to corporate level contacts for wireless/wireline service provider representatives if needed.

The NCS-NCC 24x7 Watch can be reached at 1-703-235-5080 or e-mail NCS@dhs.gov

Text Messaging	
Selected US & Canadian Cellular Text Messaging Carriers	
Alltel	number@alltelmessage.com or message.alltel.com
AT&T	number@mobile.att.net
Bell Canada	number@txt.bellmobility.ca
Centennial Wireless	number@cwemail.com
Cellular South	number@csouth1.com
Cincinnati Bell	number@gocbw.com
Metro PCS	number@mymetropcs.com or number@metropcs.sms.us
Nextel	number@messaging.nextel.com
Omnipoint	number@omnipointpcs.com
Qwest	number@qwestmp.com
Sprint	number@messaging.sprintpcs.com
Suncom	number@tms.suncom.com
T-Mobile	number@tmomail.net
TracFone	number@mmst5.tracfone.com
Continued	

Text Messaging (continued)	
Telus	number@msg.telus.com
U.S. Cellular	number@email.uscc.net
Verizon	number@vtext.com
Virgin Mobile	number@messaging.sprintpcs.com
Alaska	
Alaska Communications Systems (ACS)	number@msg.acsalaska.com
General Communications Inc. (GCI)	number@mobile.gci.net
Puerto Rico	
Centennial Wireless	number@cwemail.com
Claro	number@vtexto.com
TracFone	number@mmst5.tracfone.com
U.S. Virgin Islands	
Centennial Wireless	number@cwemail.com
TracFone	number@mmst5.tracfone.com
See http://en.wikipedia.org/wiki/List_of_SMS_gateways for more.	

Line-of-Sight Formulas

Visual Line-of-Sight

Approximate distance in miles = $1.33 \times \sqrt{\text{(height in feet)}}$

Radio Line-of-Sight

$D = \sqrt{(2Hr)} + \sqrt{(2Ht)}$

Where:
D = approximate distance to radio horizon in miles
Hr = height of receive antenna in feet
Ht = height of transmit antenna in feet

Range	Tx Ant. Height	Rx Ant. Height	Tx Ant. Height	Range
8	10	5.5	150	21
10	20	5.5	200	23
11	30	5.5	300	28
12	40	5.5	400	32
13	50	5.5	500	35
16	75	5.5	750	42
17	100	5.5	1000	48

VHF Marine Channel Listing

This chart summarizes a portion of the FCC rules -- 47 CFR 80.371(c) and 80.373(f)

Type of Message	Appropriate Channels *
DISTRESS SAFETY AND CALLING - Use this channel to get the attention of another station (calling) or in emergencies (distress and safety).	16
INTERSHIP SAFETY - Use this channel for ship-to-ship safety messages and for search and rescue messages to ships and aircraft of the Coast Guard.	6
COAST GUARD LIAISON - Use this channel to talk to the Coast Guard (but first make contact on Channel 16).	22A
COAST GUARD - These channels are Coast Guard working channels, not available to commercial or non-commercial vessels for normal use.	21A, 23A, 81A, 83A
U.S. Government - Environmental protection operations.	81A
U.S. Government - This channel is a working channel for U.S. Government vessels and U.S. Government coast stations only.	82A
NONCOMMERCIAL - Working channels for voluntary boats. Messages must be about the needs of the ship. Typical uses include fishing reports, rendezvous, scheduling repairs and berthing information. Use Channels 67 and 72 only for ship-to-ship messages.	9[6], 67[9], 68, 69, 71[8], 72, 78A, 79A[4], 80[4]

Type of Message	Appropriate Channels *
COMMERCIAL - Working channels for working ships only. Messages must be about business or the needs of the ship. Use channels 8, 67, 72 and 88A only for ship-to-ship messages.	1^5, 7A, 8, 9, 10, 11, 18A, 19A, 63^5, 67^7, 79A, 80A, $88A^1$
PUBLIC CORRESPONDENCE (MARINE OPERATOR) - Use these channels to call the marine operator at a public coast station. By contacting a public coast station, you can make and receive calls from telephones on shore. Except for distress calls, public coast stations usually charge for this service.	24, 25, 26, 27, 28, 84, 85, 86
PORT OPERATIONS - These channels are used in directing the movement of ships in or near ports, locks or waterways. Messages must be about the operational handling movement and safety of ships. In certain major ports, Channels 11, 12 and 14 are not available for general port operations messages. Use channel 20 only for ship-to-coast messages. Channel 77 is limited to intership communications to and from pilots	1^5, 5^3, 12, 14, 20, 63^5, 65, 66, 73, 74, 75^{10}, 76^{10}, 77
NAVIGATIONAL - (Also known as the bridge-to-bridge channel.) This channel is available to all ships. Messages must be about ship navigation, for example, passing or meeting other ships. You must keep your messages short. Your power output must not be more than one watt. This is also the main working channel at most locks and drawbridges.	13, 67

Type of Message	Appropriate Channels *
MARITIME CONTROL - This channel may be used to talk to ships and coast stations operated by state or local governments. Messages must pertain to regulation and control, boating activities, or assistance to ships.	17
DIGITAL SELECTIVE CALLING - Use this channel for distress and safety calling and for general purpose calling using only digital selective calling techniques.	70
WEATHER - On these channels you may receive weather broadcasts of the National Oceanic and Atmospheric Administration. These channels are only for receiving. You cannot transmit on them.	WX-1 through WX-7
Footnotes	
1. Not available in the Great Lakes, St. Lawrence Seaway, or the Puget Sound and the Strait of Juan de Fuca and its approaches.	
2. Only for use In the Great Lakes, St Lawrence Seaway, and Puget Sound and the Strait of Juan de Fuca and its approaches.	
3. Available only in the Houston and New Orleans areas.	
4. Available only in the Great Lakes.	
5. Available only in the New Orleans area.	
6. Available for intership, ship, and coast general purpose calling by noncommercial ships.	
7. Available only In the Puget Sound and the Strait of Juan de Fuca.	

Type of Message	Appropriate Channels *
8. Available for port operations communications only within the U.S. Coast Guard designated VTS radio protection area of Seattle (Puget Sound). Normal output must not exceed 1 watt.	
9. Available for navigational communications only in the Mississippi River/ Southwest Pass/Gulf outlet area.	
10. Available for navigation-related port operations or ship movement only. Output power limited to 1 watt.	
* "A" indicates simplex use of the ship station transmit frequency of an international duplex channel. Used in U.S. waters only.	

Shipboard repeaters: 457.525 457.550 457.575 457.600 MHz
Inputs are +10.225 MHz (foreign vessels may use +10.0 MHz offset –
not permitted in U.S. waters).

Maritime freqs. assignable to aircraft:
        (HF) 2.738 2.830 3.023 4.125 5.680 MHz
        (VHF) channels 6 8 9 16 18A 22A 67 68 72 & 88A
        See 47CFR80.379 for restrictions

VHF Marine Channels & Frequencies

Source: http://www.navcen.uscg.gov/?pageName=mtVhf

Channel Number *	Ship Transmit MHz	Ship Receive MHz	Use
01A	156.050	156.050	Port Operations and Commercial, VTS. Available only in New Orleans/Lower Mississippi area
05A	156.250	156.250	Port Operations or VTS in the Houston, New Orleans and Seattle areas
6	156.300	156.300	Intership Safety
07A	156.350	156.350	Commercial
8	156.400	156.400	Commercial (Intership only)
9	156.450	156.450	Boater Calling. Commercial and Non-Commercial
10	156.500	156.500	Commercial
11	156.550	156.550	Commercial. VTS in selected areas
12	156.600	156.600	Port Operations. VTS in selected areas
* "A" indicates simplex use of the ship station transmit frequency of an international duplex channel. Used in U.S. waters only.			

Channel Number *	Ship Transmit MHz	Ship Receive MHz	Use
13	156.650	156.650	Intership Navigation Safety (Bridge-to-bridge). Ships >20m length maintain a listening watch on this channel in US waters.
14	156.700	156.700	Port Operations. VTS in selected areas.
15	--	156.750	Environmental (Receive only). Used by Class C EPIRBs.
16	156.800	156.800	International Distress, Safety and Calling. Ships required to carry radio, USCG, and most coast stations maintain a listening watch on this channel.
17	156.850	156.850	State Control
18A	156.900	156.900	Commercial
19A	156.950	156.950	Commercial
20	157.000	161.600	Port Operations (duplex)
20A	157.000	157.000	Port Operations
21A	157.050	157.050	U.S. Coast Guard only

* "A" indicates simplex use of the ship station transmit frequency of an international duplex channel. Used in U.S. waters only.

Channel Number *	Ship Transmit MHz	Ship Receive MHz	Use
22A	157.100	157.100	Coast Guard Liaison and Maritime Safety Information Broadcasts. Broadcasts announced on channel 16.
23A	157.150	157.150	U.S. Coast Guard only
24	157.200	161.800	Public Correspondence (Marine Operator)
25	157.250	161.850	Public Correspondence (Marine Operator)
26	157.300	161.900	Public Correspondence (Marine Operator)
27	157.350	161.950	Public Correspondence (Marine Operator)
28	157.400	162.000	Public Correspondence (Marine Operator)
63A	156.175	156.175	Port Operations and Commercial, VTS. Available only in New Orleans/Lower Mississippi area.
65A	156.275	156.275	Port Operations
66A	156.325	156.325	Port Operations
67	156.375	156.375	Commercial. Used for bridge-to-bridge communications in lower Mississippi River. Intership only.

* "A" indicates simplex use of the ship station transmit frequency of an international duplex channel. Used in U.S. waters only.

Channel Number *	Ship Transmit MHz	Ship Receive MHz	Use
68	156.425	156.425	Non-Commercial
69	156.475	156.475	Non-Commercial
70	156.525	156.525	Digital Selective Calling (voice communications not allowed)
71	156.575	156.575	Non-Commercial
72	156.625	156.625	Non-Commercial (intership only)
73	156.675	156.675	Port Operations
74	156.725	156.725	Port Operations
77	156.875	156.875	Port Operations (intership only)
78A	156.925	156.925	Non-Commercial
79A	156.975	156.975	Commercial. Non-Commercial in Great Lakes only
80A	157.025	157.025	Commercial. Non-Commercial in Great Lakes only
81A	157.075	157.075	U.S. Government only - Environmental protection operations.
82A	157.125	157.125	U.S. Government only

* "A" indicates simplex use of the ship station transmit frequency of an international duplex channel. Used in U.S. waters only.

Channel Number *	Ship Transmit MHz	Ship Receive MHz	Use
83A	157.175	157.175	U.S. Coast Guard only
84	157.225	161.825	Public Correspondence (Marine Operator)
85	157.275	161.875	Public Correspondence (Marine Operator)
86	157.325	161.925	Public Correspondence (Marine Operator)
87A	157.375	157.375	Public Correspondence (Marine Operator)
88A	157.425	157.425	Commercial, intership only.
AIS 1	161.975	161.975	Automatic Identification System (AIS)
AIS 2	162.025	162.025	Automatic Identification System (AIS)

* "A" indicates simplex use of the ship station transmit frequency of an international duplex channel. Used in U.S. waters only.