Communications Planning for Pre-planned EMS Events

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Why do we need to preplan EMS Communications

- We need to EXPECT the UNEXPECTED
- The best plan is only as good as its WEAKEST link
- Don’t take for granted it will never happen here..

AFTER ACTION COMMON THREADS

A PREPLANNED EMS EVENT IS NOTHING MORE THAN <u>A KNOWN MASS CASUALTY INCIDENT</u> …. WHERE Mmurphy HASN'T ARRIVED….. *<u>YET</u>*

What are the expectations of communications users in preplanned EMS events?

One might want to ask:

- Who wants to communicate?
- What do they want to communicate?
- When do they want to communicate?
- Where do they want to communicate?
- Why do they want to communicate?

Who might you need to communicate with in your event?

- 911 Comm Center
  - Dispatch
- EMA
  - Local EOC
  - Virginia EOC
  - MACC
- Fire
  - Primary Agency
  - Mutual Aid
  - Forestry
- EMS
  - Primary Agency
  - Mutual Aid
  - Private Services
- Law
  - Sheriff
  - Police
  - VSP
- DOT/Transportation
  - Local
  - VDOT
- Hospitals
  - Local
  - RHCC
- State agencies
  - ABC
  - Fire Programs
  - VDEM
  - Health Department
  - DGIF
  - Parks
- NGO
  - Red Cross
  - Salvation Army
- Sponsors
  - Vendors
  - Hosts
  - Corporate Sponsors
- Federal Partners
  - DHS
  - FBI
  - Secret Service
  - ATF
- Military/DOD
  - National Guard
  - Coast Guard
  - Army
  - Navy
  - Air Force
  - Marines
- Public
  - Public Information
  - Public Relations

What *EXACTLY* are our EMS Communications needs?

Then, you NEED to determine…..

- Who needs to communicate (and how) ?
- What do they need to communicate (and how)?
- When do they need to communicate (and how)?
- Where do they need to communicate (and how)?
- Why do they need to communicate?

How do we communicate?

- Radio
  - Analog/Digital
  - Conventional/Trunked
  - Simplex
- Phone
  - Landline
  - Cell
- D
  -
  - W

ice

PTT Talkgroups

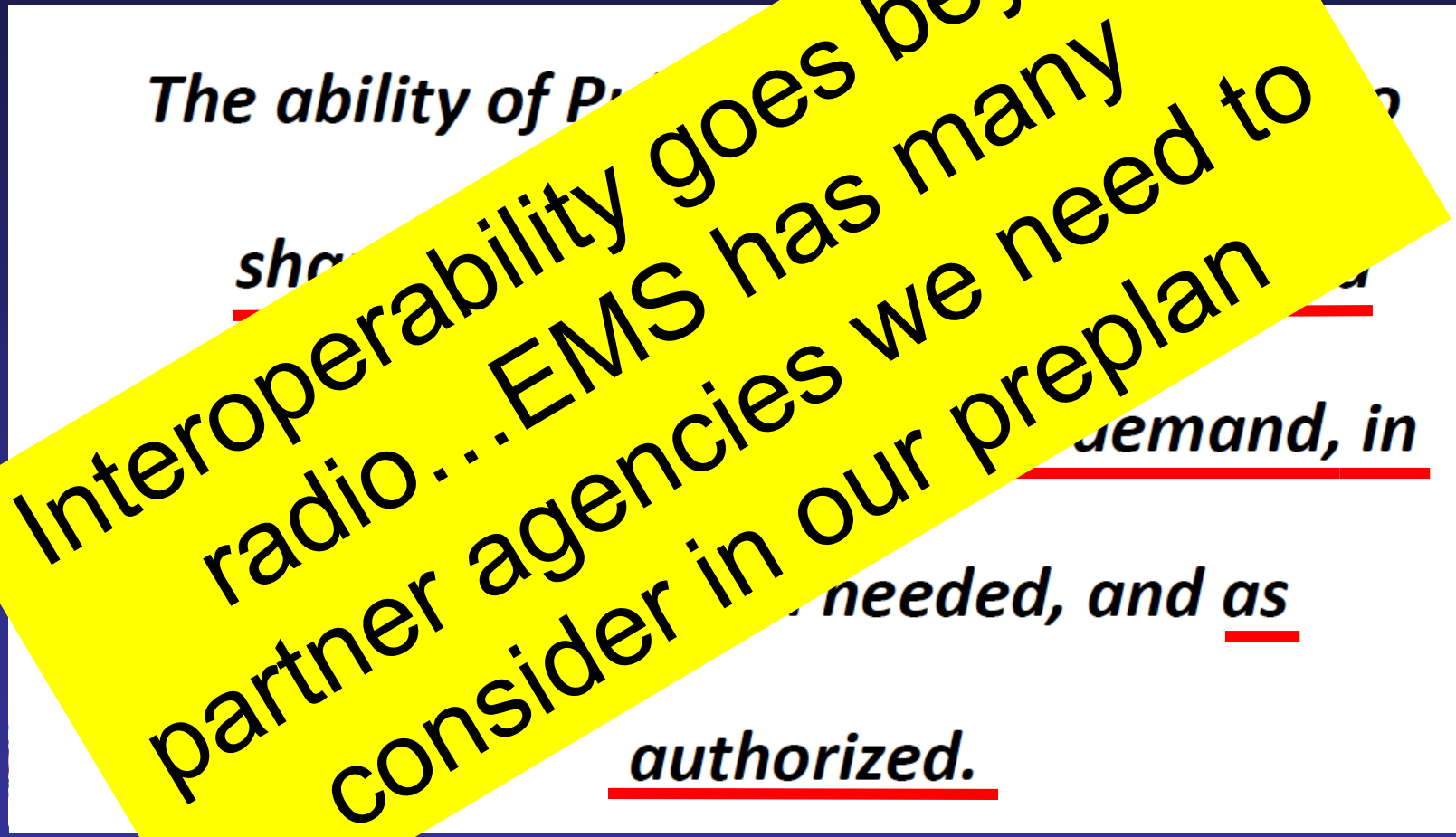
Satellite Internet

VOIP

ROIP

You should consider every way to communicate in your plan

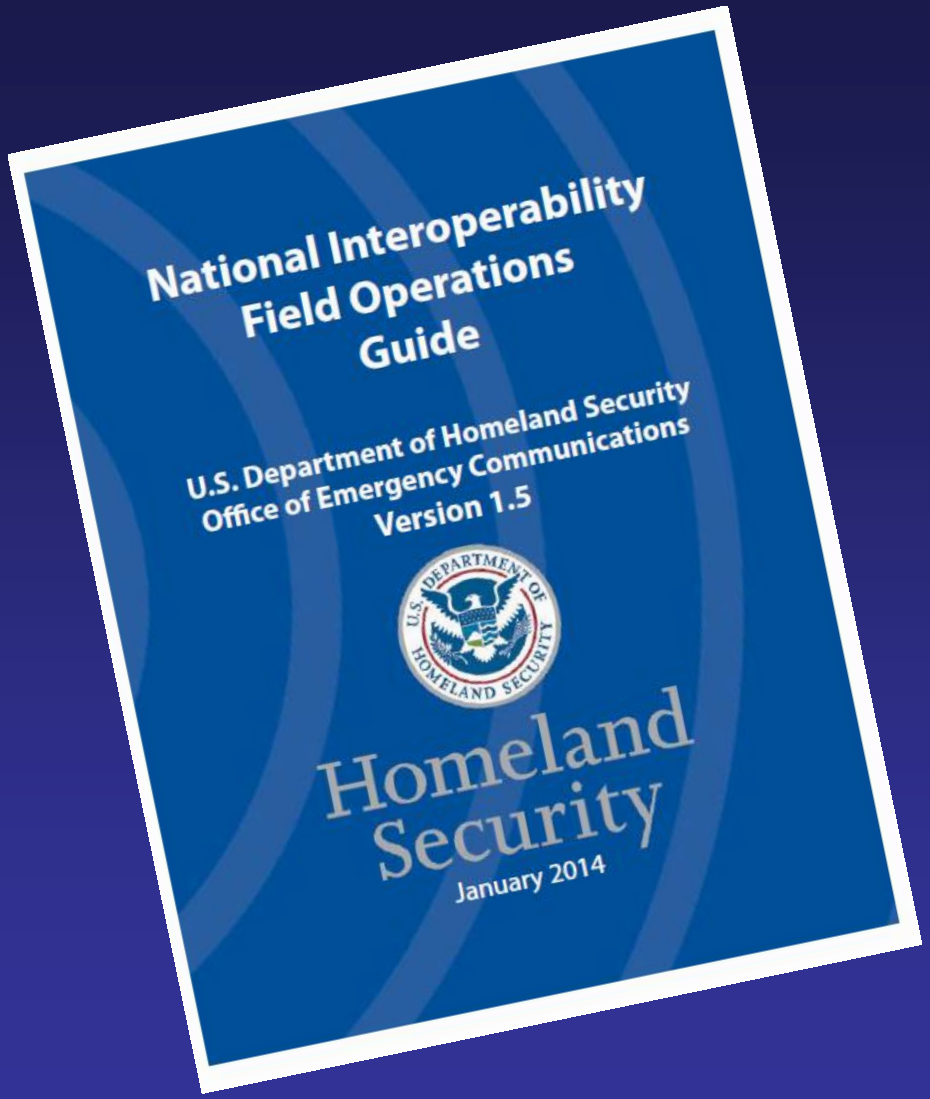
Interoperabili



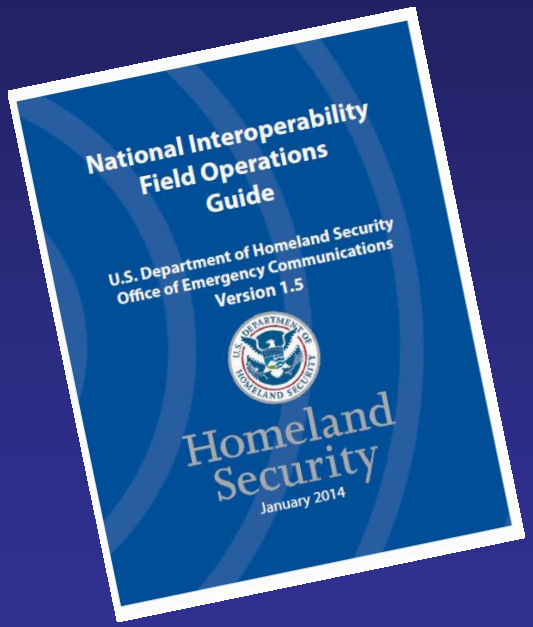
Interoperability goes beyond radio…EMS has many partner agencies we need to consider in our preplan

Is everyone talking in the same way?

COORDINATING RESOURCES



Can I use this??



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 (other than maritime or aviation) 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(g) 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 to responding to an imminent threat to safety-of-life or property.

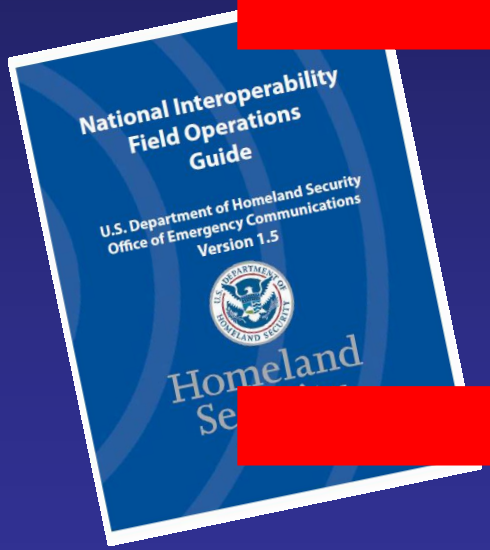
See also 90.407 dealing with communications during an emergency which disrupts normal communications facilities and §90.411 dealing with civil defense communications.

Programming of maritime channels must be performed only by a person holding a first or second class radiotelegraph operator's certificate, a radiotelegraph operator license, or a general radiotelephone operator's license (47 CFR 80.203(b)(3). See also 80.203(b)(4) and §80.169(a).

A general radiotelephone operator must directly supervise and be responsible for all transmitter adjustments or tests during installation, servicing or maintenance of an aeronautical radio station - see §87.73.

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

What about the FCC??



How can I use these frequencies if I don't have a license for them?

There are seven ways you can legally use these radio frequencies:

1. You or your employer may already have a Federal Communications Commission (FCC) license or a National Telecommunications and Information Administration (NTIA) authorization for some of the interoperability and mutual aid frequencies.
2. **For FCC licensees**, the non-Federal National Interoperability Channels VCALL10-VTAC14 and VTAC33-38, UCALL40-UTAC43D, the 800 MHz interoperability channels, and 8CALL90-8TAC94D are covered by a "blanket authorization" from the FCC - "Public safety licensees ... can operate mobile units on these interoperability channels without an individual license." See FCC 00-348, paragraph 90 (released October 10, 2000) for VHF and UHF; see FCC rules 90.421(a)(3) and 90.525(a) for 700 MHz; see FCC 87-112, paragraph 34 (released December 18, 1987), for 800 MHz. When above Line A or East of Line C the blanket authorization in paragraph 90 of FCC 00-348 applies only to mobile (including hand-held) stations operating with an effective radiated power (ERP) of 3 watts or less. At higher power levels, frequency coordination is required. Line A and C are defined in 47CFR90.7. You can check a location for Line A and Line C restrictions at http://wireless.fcc.gov/uls/index.htm?job=line_a_c
3. You may operate on frequencies authorized to another licensee when that licensee designates you as a unit of their system, in accordance with FCC rule 90.421.
4. In extraordinary circumstances, the FCC may issue a "Special Temporary Authority" (STA) for such use in a particular geographic area.

Non-Federal National Interoperability Channels - VHF

Non-Federal VHF National Interoperability Channels VHF Low Band				
Description	Channel Name	Mobile Receive Frequency	Mobile Transmit Frequency	CTCSS Tone ±
Law Enforcement	LLAW1	39.4600	45.8600	CSQ /156.7 (5A)
Law Enforcement	LLAW1D	39.4600	39.4600	CSQ /156.7 (5A)
Fire (Proposed)	LFIRE2	39.4800	45.8800	CSQ /156.7 (5A)
Fire (Proposed)	LFIRE2D	39.4800	39.4800	CSQ /156.7 (5A)
Law Enforcement	LLAW3	45.8600	39.4600	CSQ /156.7 (5A)
Law Enforcement	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 reprogramming 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.
All channels on this page are NARROWBAND only. Limited to 3 watts ERP above Line A or East of Line C.

Non-Federal National Interoperability Channels - UHF

Non-Federal UHF National Interoperability Repeater Channels			
Description	**Channel Name**	**Mobile RX (MHz)**	**Mobile TX (MHz)**
Calling	UCALL40	453.2125	458.2125
Calling	UCALL40D	453.2125	453.2125
Tactical	UTAC41	453.4625	458.4625
Tactical	UTAC41D	453.4625	453.4625
Tactical	UTAC42	453.7125	458.7125
Tactical	UTAC42D	453.7125	453.7125
Tactical	UTAC43	453.8625	458.8625
Tactical	UTAC43D	453.8625	453.8625

Default operation should be carrier squelch receive, CTCSS 156.7(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.

All channels on this page are NARROWBAND only. Limited to 3 watts ERP above Line A or East of Line C.

Non-Federal National Interoperability Channels – 800 MHz

Non-Federal 800 MHz National Mutual Aid Repeater Channels			
Description	**Ch. Name**	**Mobile RX (MHz)***	**Mobile TX (MHz)***
Calling	8CALL90	851.0125 (866.0125)	806.0125 (821.0125)
Calling – Direct	8CALL90D	851.0125 (866.0125)	851.0125 (866.0125)
Tactical	8TAC91	851.5125 (866.5125)	806.5125 (821.5125)
Tactical – Direct	8TAC91D	851.5125 (866.5125)	851.5125 (866.5125)
Tactical	8TAC92	852.0125 (867.0125)	807.0125 (822.0125)
Tactical – Direct	8TAC92D	852.0125 (867.0125)	852.0125 (867.0125)
Tactical	8TAC93	852.5125 (867.5125)	807.5125 (822.5125)
Tactical – Direct	8TAC93D	852.5125 (867.5125)	852.5125 (867.5125)
Tactical	8TAC94	853.0125 (868.0125)	808.0125 (823.0125)
Tactical – Direct	8TAC94D	853.0125 (868.0125)	853.0125 (868.0125)

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

*The frequency in parenthesis, which is 15 MHz higher, is the frequency used before rebanding - channel names were ICALL, ITAC1 - ITAC4. Wideband FM 20K0F3E before and after rebanding.

Non-Federal National Interoperability Channels – 700 MHz

700 MHz Nationwide Interoperability Channels

Primary Use	Channel Name	Mobile RX (MHz)	Mobile TX (MHz)
Law Enforcement	7LAW62		
Law Enforcement	7LAW62D		
General Public Safety	7TAC54		
General Public Safety	7TAC54D		
Mobile Data	7DATA69		
Mobile Data	7DATA69D		
Mobile Repeater	7MOB59		
Mobile Repeater	7MOB59D		
Other Public Service	7GTAC57		
Other Public Service	7GTAC57D		
EMS	7MED86		
EMS	7MED86D		

700 MHz Nationwide Interoperability Channels

Mode: P25 FDMA Common Air Interface
NAC: $293 ($659_{10}$)
Talk Group ID: $00001 ($1_{10}$)
Manufacturer's ID: $00 ($0_{10}$)

Message ID: $0000000000000000000 ($0_{10}$)
No encryption on calling channels:
- Algorithm ID: $80 ($128_{10}$)
- Key ID: $0000 ($0_{10}$)

Primary Use	Channel Name	Mobile RX (MHz)	Mobile TX (MHz)
General Public Safety	7TAC51	769.14375	799.14375
General Public Safety	7TAC51D	769.14375	769.14375
Calling Channel	7CALL50	769.24375	799.24375
Calling Channel	7CALL50D	769.24375	769.24375
EMS	7MED65	769.39375	799.39375
EMS	7MED65D	769.39375	769.39375
EMS	7MED66	769.49375	799.49375
EMS	7MED66D	769.49375	769.49375
General Public Safety	7TAC52	769.64375	799.64375
General Public Safety	7TAC52D	769.64375	769.64375

Other Common Channels

Commonwealth of Virginia

Commonwealth of Virginia

VHF Public Safety Mutual Aid and Common Channels			
WARNING: These frequencies are NOT covered by the blanket authorization for nationwide interoeprability channels. A valid FCC license for these frequencies is required. Availability subject to other licensed users in the same area.			
Frequency (MHz)	**Usage**	**Channel Name**	**Note**
155.1600	Search and Rescue Common (CTCSS 127.3 transmit & receive)	VSAR16 (a.k.a.SAR NFM & SAR160)	Not restricted to SAR by FCC; availability varies.
154.2650 mobile	Fire Mutual Aid	VFIRE22	Not available in Puerto Rico and the U.S. Virgin Islands.
154.2725 base/mob.	Fire Mutual Aid	VFIRE24	
154.2800 base/mob.	Fire Mutual Aid	VFIRE21	
154.2875 base/mob.		VFIRE25	
154.2950 mobile	Fire Mutual Aid	VFIRE23	
154.3025 base/mob.		VFIRE26	
155.3400 base/mob.	EMS Mutual Aid	VMED28	May be designated for EMS Mutual Aid.
155.3475 base/mob.		VMED29	May be designated for EMS Mutual Aid.
155.4750 base/mob.	Law Enforcement Mutual Aid	VLAW31	
155.4825 base/mob.	Law Enforcement Mutual Aid	VLAW32	
LICENSING REQUIRED - Rules for use of these channels are contained in 47 CFR 90.20 and NTIA Manual Section 4.3.11 & 7.3.6. See also "Non-Federal VHF National Interoperability Channels" and "Non-Federal VHF Inland Interoperability Channels" on page 25 - page 28 of this document.			

ALSO Licensed by Commonwealth of Virginia for Common/Shared use:

155.205
155.280
155.400

The best plans are limited by..

Effective communication

Standard Information- ICS 205

INCIDENT RADIO COMMUNICATIONS PLAN	Incident Name	Date/Time Prepared		Operational Period Date/Time	
	36th United States Marine Corps Marathon	Initial	8/12/2011 1051 hours	10/30/2011	0400-1800 hours
		Updated	10/25/2011 1552 hours		

4. Basic Radio Channel Utilization

Function	Radio Type/Cache	Group/Channel	Frequency/Tone	Assignment	Remarks
Command	Arlington / Regional Cache			Unified Command	Command traffic only
Tactical 1	Arlington / Regional Cache			Division 1 (Crystal City)	Radio traffic for Div 1 in Crystal City AS 8/9 and AS 10
Tactical 2	Arlington / Regional Cache			Division 2 (Rosslyn)	Radio traffic for Div 2 in Rosslyn area and AS David, Echo and Foxtrot (Rosslyn Metro)
Tactical 3	Arlington / Regional Cache			Division 6 (Iwo Jima)	Radio traffic for Div 6 on the hill (Iwo Jima) and AS Charlie
Transportation Group	Arlington / Regional Cache			Transportation Group	Hospital assignment will be made on this channel
Logistics	Arlington / Regional Cache			Logistics Operations	Logistics Section
RHCC	Arlington / Regional Cache			Medical Communications Coordinator	Hospital status
DC Divisions	DCFD / Regional Cache			Command	All units shall monitor this channel, all units will be dispatched on A-11
DC Divisions	DCFD / Regional Cache			Support	Hospital assignment will be made on this channel
DC Divisions	DCFD / Regional Cache			Tactical	Unit to unit transmissions

5. Prepared by (Communications Unit)

Be Careful !!

INCIDENT RADIO COMMUNICATIONS PLAN	Incident Name	Date/Time Prepared			Operational Period Date/Time	
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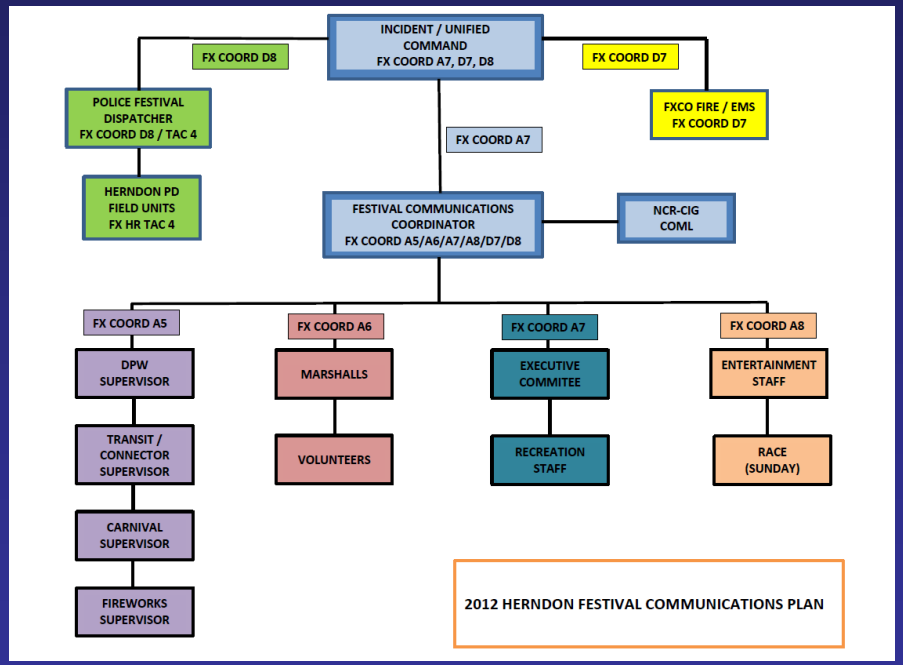
5. Prepared by (Communications Unit)

In a format everyone can understand

How many channels?
Who talks to who?



INCIDENT RADIO COMMUNICATIONS PLAN (ICS 205)

1. Incident Name:	2. Date/Time Prepared:	3. Operational Period:
32nd Herndon Festival 2012	Date: May 23, 2012 Time: 1800 hrs	THURSDAY DAY 1 Date From: 5/31/12 Date To: 5/31/12 Time From: 1600 Time To: 2230

4. Basic Radio Channel Use:

Zone Grp.	Ch #	Function	Channel Name/Trunked Radio System Talkgroup	Assignment	RX Freq N or W	RX Tone /NA C	TX Freq N or W	TX Tone/ NAC	Mode (A, D, or M)	Remarks
FX COORDINATION	O 15	COMMAND	COORD A7	INCIDENT / UNIFIED COMMAND	Fairfax County Trunked System				D	COORDINATION WITH FESTIVAL COMMUNICATIONS COORDINATOR
FX COORDINATION	O 15	TACTICAL/ OPERATIONS	COORD A7	EXECUTIVE COMMITTEE	Fairfax County Trunked System				D	COORDINATION WITH FESTIVAL COMMUNICATIONS COORDINATOR
FX COORDINATION	O 15	TACTICAL/ OPERATIONS	COORD A7	RECREATION STAFF	Fairfax County Trunked System				D	COORDINATION WITH FESTIVAL COMMUNICATIONS COORDINATOR
FX COORDINATION	M 13	TACTICAL/ OPERATIONS	COORD A5	DEPT OF PUBLIC WORKS SUPERVISOR	Fairfax County Trunked System				D	COORDINATION WITH FESTIVAL COMMUNICATIONS COORDINATOR
FX COORDINATION	M 13	TACTICAL/ OPERATIONS	COORD A5	TRANSIT / CONNECTOR SUPERVISOR	Fairfax County Trunked System				D	COORDINATION WITH FESTIVAL COMMUNICATIONS COORDINATOR
FX COORDINATION	M 13	TACTICAL/ OPERATIONS	COORD A5	CARNIVAL SUPERVISOR	Fairfax County Trunked System				D	COORDINATION WITH FESTIVAL COMMUNICATIONS COORDINATOR
FX COORDINATION	N 14	TACTICAL/ OPERATIONS	COORD A6	MARSHALS / VOLUNTEERS	Fairfax County Trunked System				D	COORDINATION WITH FESTIVAL COMMUNICATIONS COORDINATOR
FX COORDINATION	P 16	TACTICAL/ OPERATIONS	COORD A8	ENTERTAINMENT STAFF	Fairfax County Trunked System				D	COORDINATION WITH FESTIVAL COMMUNICATIONS COORDINATOR
FX COORDINATION	M 13	TACTICAL/ OPERATIONS	COORD A5	FIREWORKS SUPERVISOR	Fairfax County Trunked System				D	COORDINATION WITH FESTIVAL COMMUNICATIONS COORDINATOR

5. Special Instructions: COORDINATION CHANNELS *COORD A5-A8* PROVIDE SUPERVISORS WITH COMMUNICATIONS TO COORDINATE ACTIVITES

INCIDENT RADIO COMMUNICATIONS PLAN (ICS 205)

1. Incident Name:	2. Date/Time Prepared:	3. Operational Period:
32nd Herndon Festival 2012	Date: May 23, 2012 Time: 1800 hrs	PUBLIC SAFETY ALL OPERATIONAL PERIODS Date From: 5/31/12 Date To: 6/3/12 Time From: 1600 Time To: 1830

4. Basic Radio Channel Use:

Zone Grp.	Ch #	Function	Channel Name/Trunked Radio System Talkgroup	Assignment	RX Freq N or W	RX Tone /NA C	TX Freq N or W	TX Tone/ NAC	Mode (A, D, or M)	Remarks
FX COORDINATION	O 15	COMMAND	COORD A7	INCIDENT / UNIFIED COMMAND	Fairfax County Trunked System				D	COORDINATION WITH FESTIVAL COMMUNICATIONS COORDINATOR AND LAW, FIRE/EMS BRANCHES
FX COORDINATION	G 8	COMMAND	COORD D8	LAW BRANCH	Fairfax County Trunked System				D	LAW ENFORCEMENT COORDINATION WITH INCIDENT/UNIFIED COMMAND
FX COORDINATION	G 7	COMMAND	COORD D7	FIRE/EMS BRANCH	Fairfax County Trunked System				D	FIRE/EMS COORDINATION WITH INCIDENT/UNIFIED COMMAND
FX POLICE 3	K 11	TACTICAL/ OPERATIONS	HR TAC 4	HERNDON POLICE/ FESTIVAL FIELD UNITS	Fairfax County Trunked System				D	COORDINATION WITH LAW BRANCH/ POLICE FESTIVAL DISPATCHER

5. Special Instructions: COORDINATION CHANNELS *FX COORD A5-A8* PROVIDE INDIVIDUAL EVENT SUPERVISORS WITH COMMUNICATIONS TO COORDINATE ACTIVITES WITH FESTIVAL COMMUNICATIONS COORDINATOR. FESTIVAL COMMUNICATIONS COORDINATOR RELAYS REQUESTS TO INCIDENT/UNIFIED COMMAND

Emergency Traffic -something significant has happened and UC/staff needs to know immediately

Priority Traffic -indicating attention is needed now and all other communications must go to standby

At any time a staff member or volunteer under threat, injured or in serious trouble-radio a **Mayday ("MAYDAY, MAYDAY, MAYDAY")** call for immediate assistance

6. Prepared by (Communications Unit Leader): Name: G. Hunter- NCR-CIG COML Signature: _____

ICS 205 | IAP Page ____ | Date/Time: May 23, 2012 1800hrs

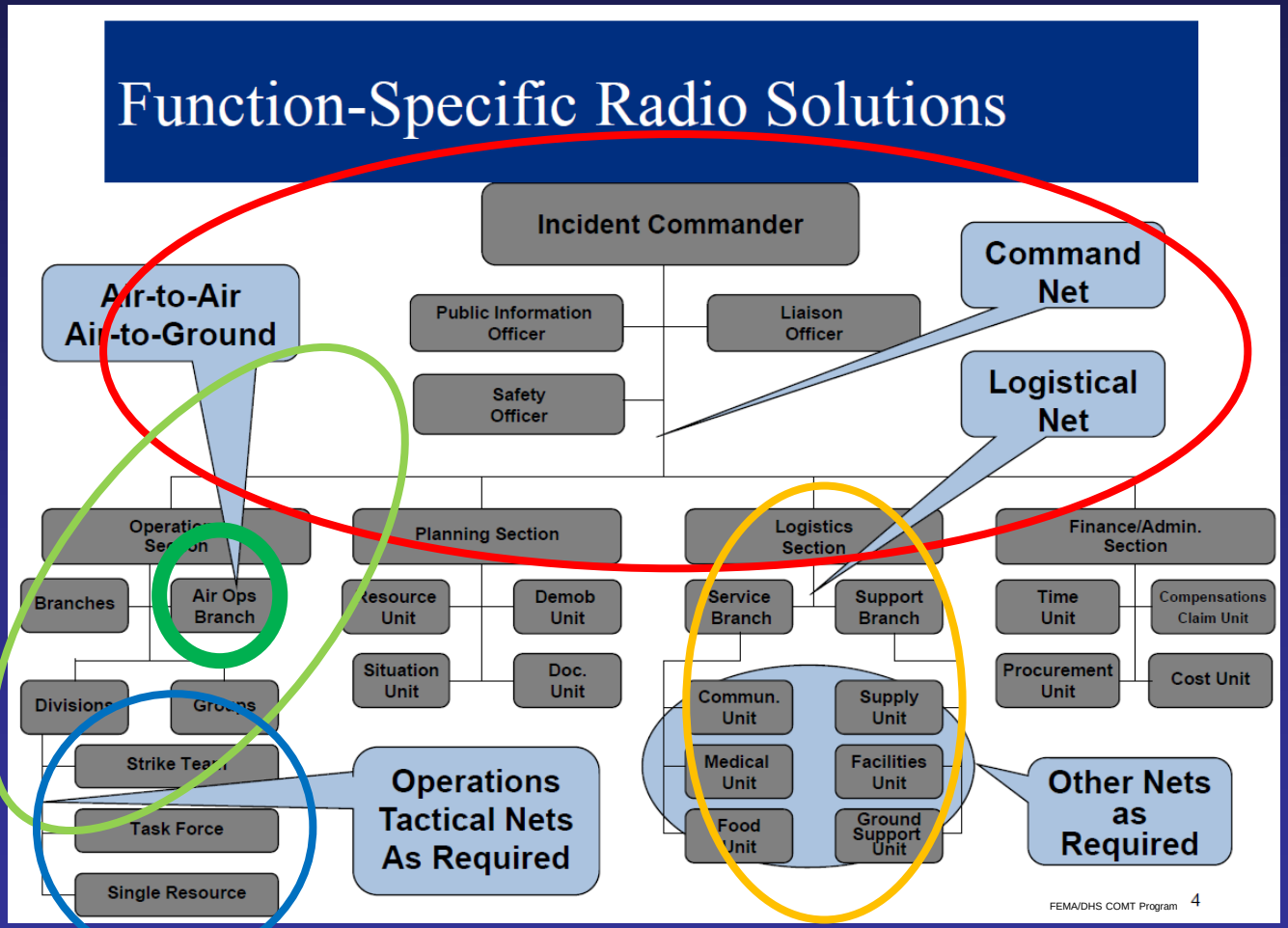
Divide and Conquer

Command Net

Operations-Tactical Net

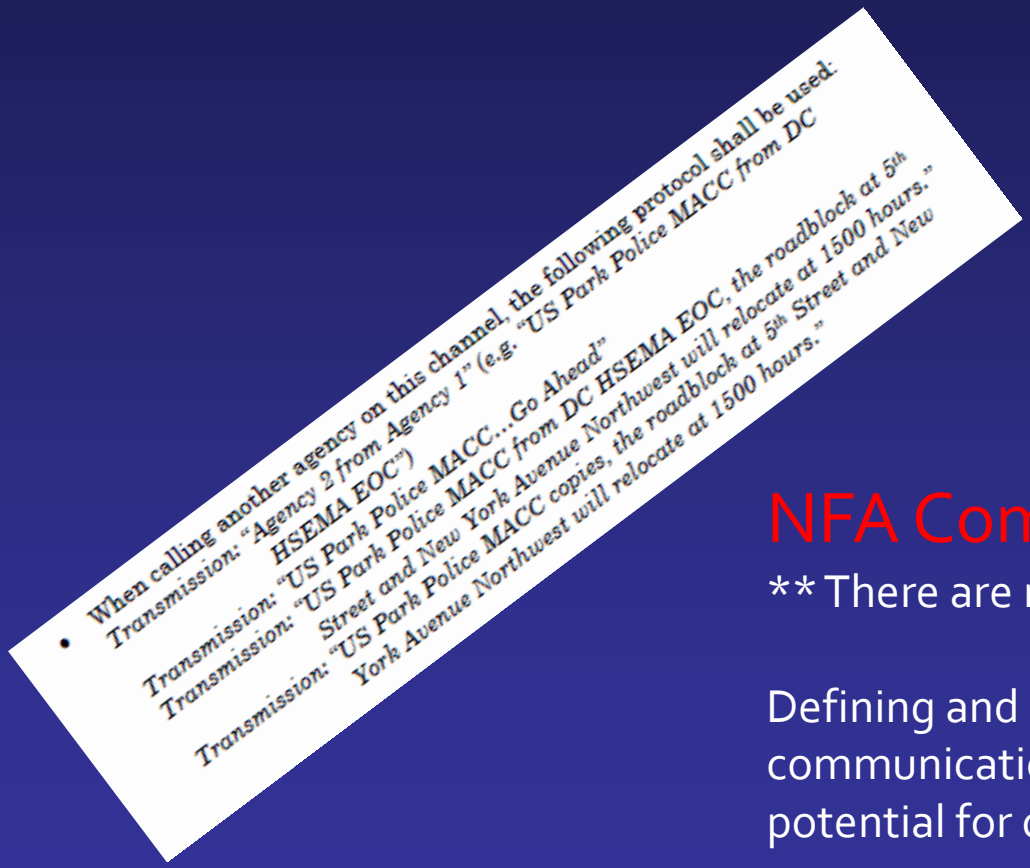
Logistics Net

Air to Air
Air to Ground



What is the message format?

The challenge of reducing confusion in communications



- When calling another agency on this channel, the following protocol shall be used:
  Transmission: "Agency 2 from Agency 1" (e.g. "US Park Police MACC from DC HSEMA EOC")
  Transmission: "US Park Police MACC…Go Ahead"
  Transmission: "US Park Police MACC from DC HSEMA EOC, the roadblock at 5th Street and New York Avenue Northwest will relocate at 1500 hours."
  Transmission: "US Park Police MACC copies, the roadblock at 5th Street and New York Avenue Northwest will relocate at 1500 hours."

The 4 C's

The 4 "C's" of Communications:

- Connect
- Convey
- Clarify
- Confirm

NFA Communications Model

** There are multiple ways to communicate.

Defining and using one model within your communications plan reduces another potential for confusion

The 4 C's of effective communications

- Connect

  Treatment Unit A: "EMS 12 From Treatment Unit A"

  EMS 12 Team Leader: "EMS 12"

- Convey

  Treatment Unit A: "Need one Paramedic crew to Treatment Unit A"

- Clarify

  EMS 12 Team Leader: "EMS12 copy, Need one Paramedic crew to Treatment Unit A"

- Confirm

  Treatment Unit A: "Affirmative EMS 12"

EMERGENCY !!

- Do all users have a common emergency protocol?
  - Make sure you clarify use and how to clear
    - Signal 1
    - Signal 13
    - Mayday
    - Priority Traffic
    - Emergency

Be sure to give clear direction to ensure mission success

Now what do we do… We have a plan

Plan A- Use our regular system

Plan B- Use our tactical channels

Plan C- Use “EMS statewide”

Plan D- ???

What could be wrong with our current plan??

PLAN A- Current System

- Designed for a specific purpose

  (System coverage standards originated after 9/11 and were developed in 2004-2007)

  – Public Safety (>95% coverage)

  – Public Service (>90% coverage)

  – Business Grade (>50% coverage)

- Designed Based on a number of users (subscribers)
- Adding users to system that may not have capacity
- May have design issues – no coverage in areas

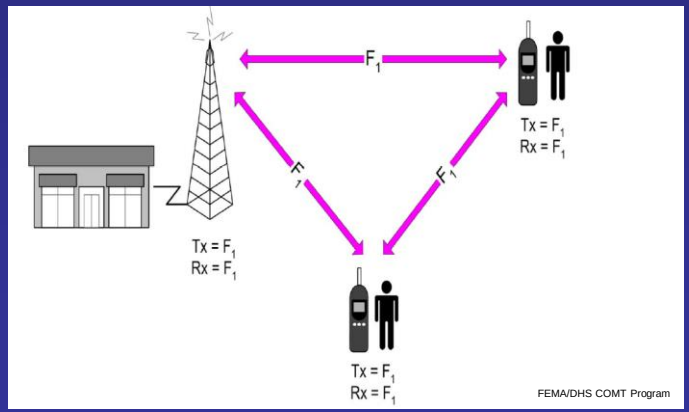
PLAN B- Tactical Channels

- Often Simplex (Coverage based on subscriber) *may be repeated or trunked*
- Users need to have programming (jurisdiction licensed)

- Designed Based on a number of users (subscribers)
- Adding users to system that may not have capacity
- May have design issues – no coverage in areas

Virginia EMS Statewide 155.205

- Simplex Radio Channel (Not Repeated)
- Limited in power/range
  - Up to 5 Watt Portable
  - Up to 50 Watt Mobile (avg)
- Use is not universal or governed
  - Helicopter Use
  - Staging
  - Tactical Operations
  - Hospital Use



Designing a system for a special event

1. Evaluate needs independently
    1. Radio (RF 39-800 MHz)
    2. Phone (Cellular RF- 700-2300 MHz)
    3. Data (2.4 GHz WiFi)
2. Determine the best function of each system
3. Determine weak areas / interference

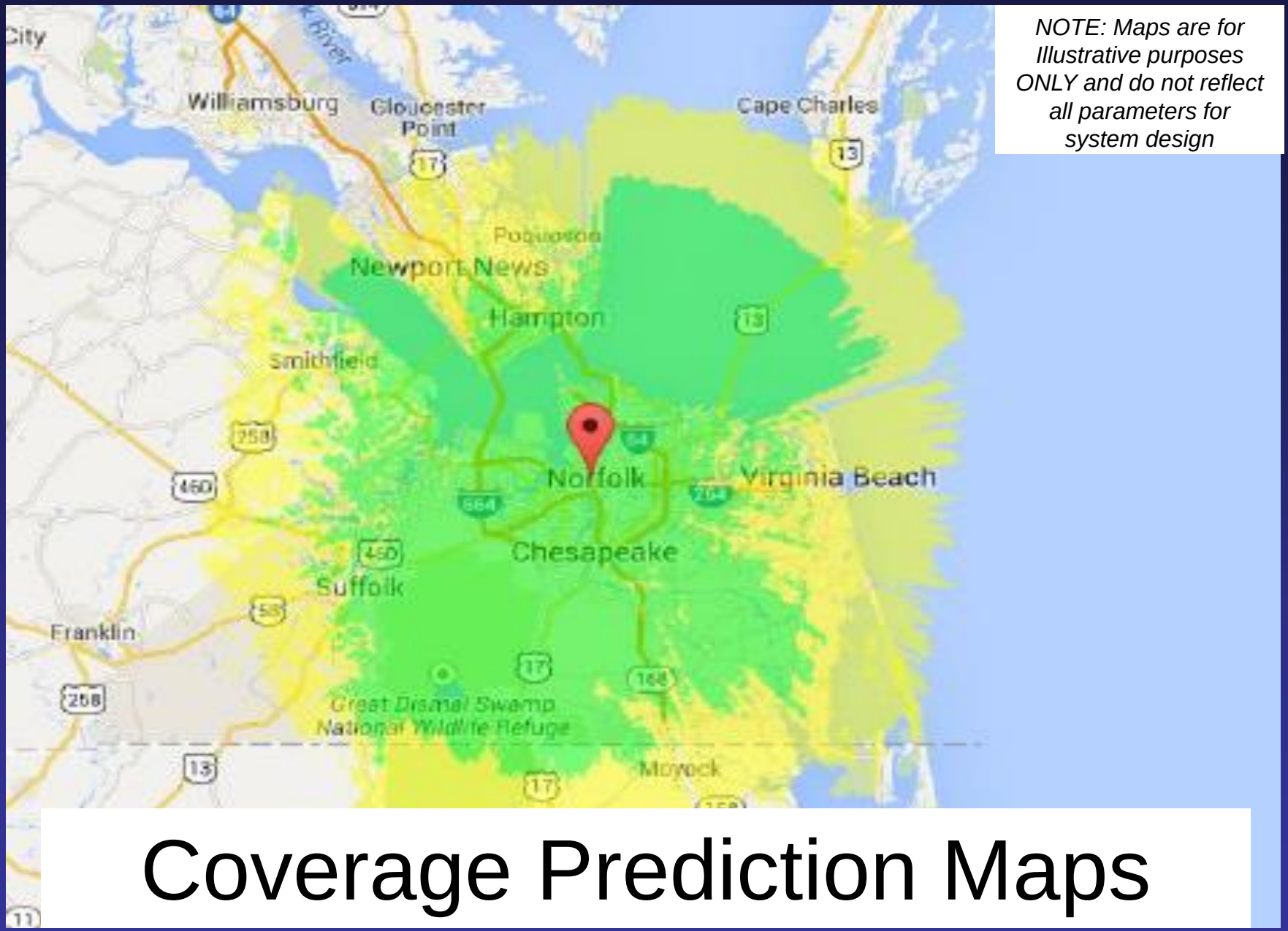
Designing a system for a special event

4. Determine ways to expand capacity
   - Gateway Devices
   - Independent Subsystems
   - Simplex Systems
5. Channel Loading
   - Number of users/ subscribers per channel
   - Volume of traffic / use

Design/Testing system

The best systems in theory may not be the best application for our needs

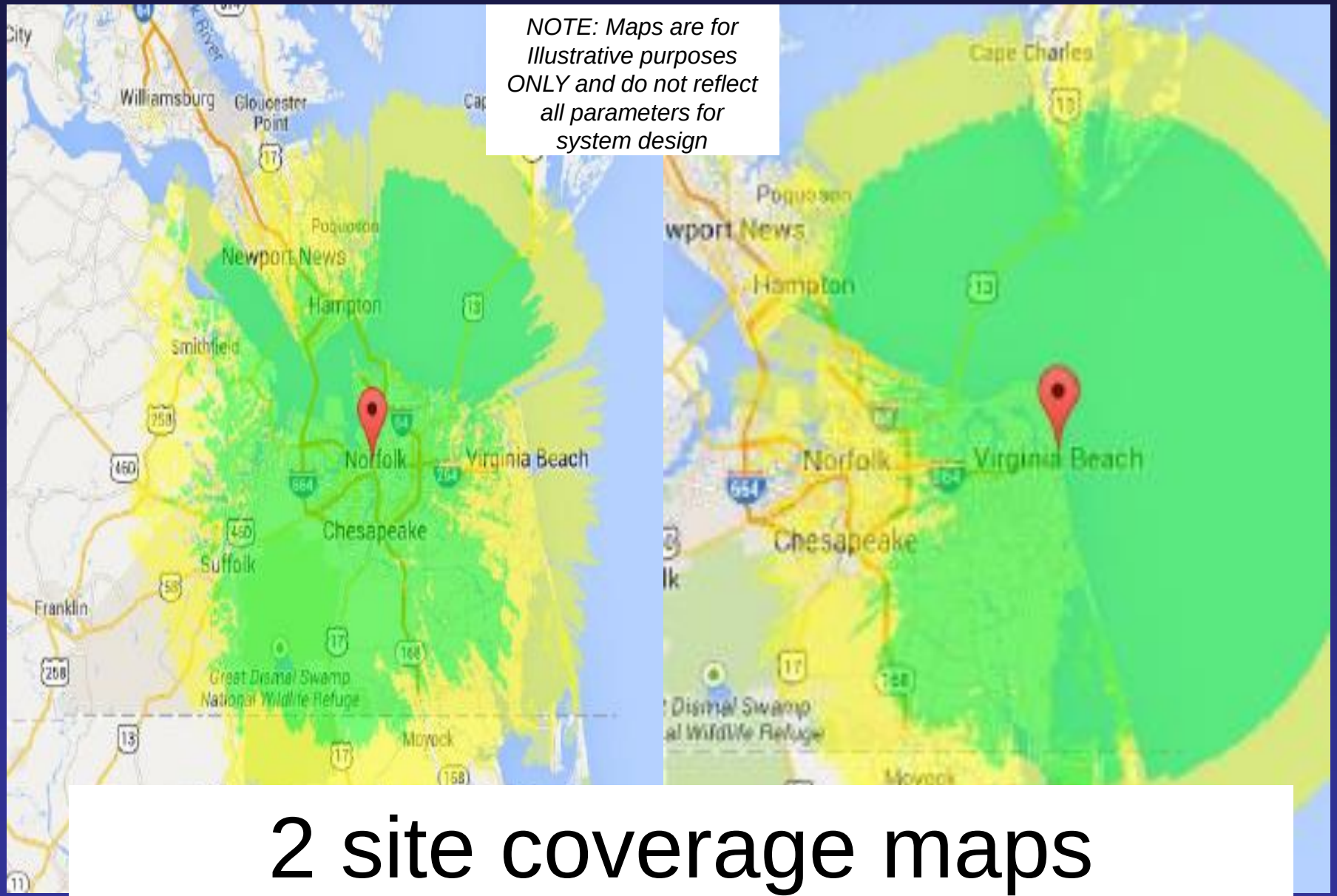
- Coverage Predictions
  - Use of computer generated modeling to identify weak areas
- Coverage Verification Testing
  - Actual “road testing” of areas of coverage
    - Applies to radio (RF), data, and cellular needs



NOTE: Maps are for Illustrative purposes ONLY and do not reflect all parameters for system design

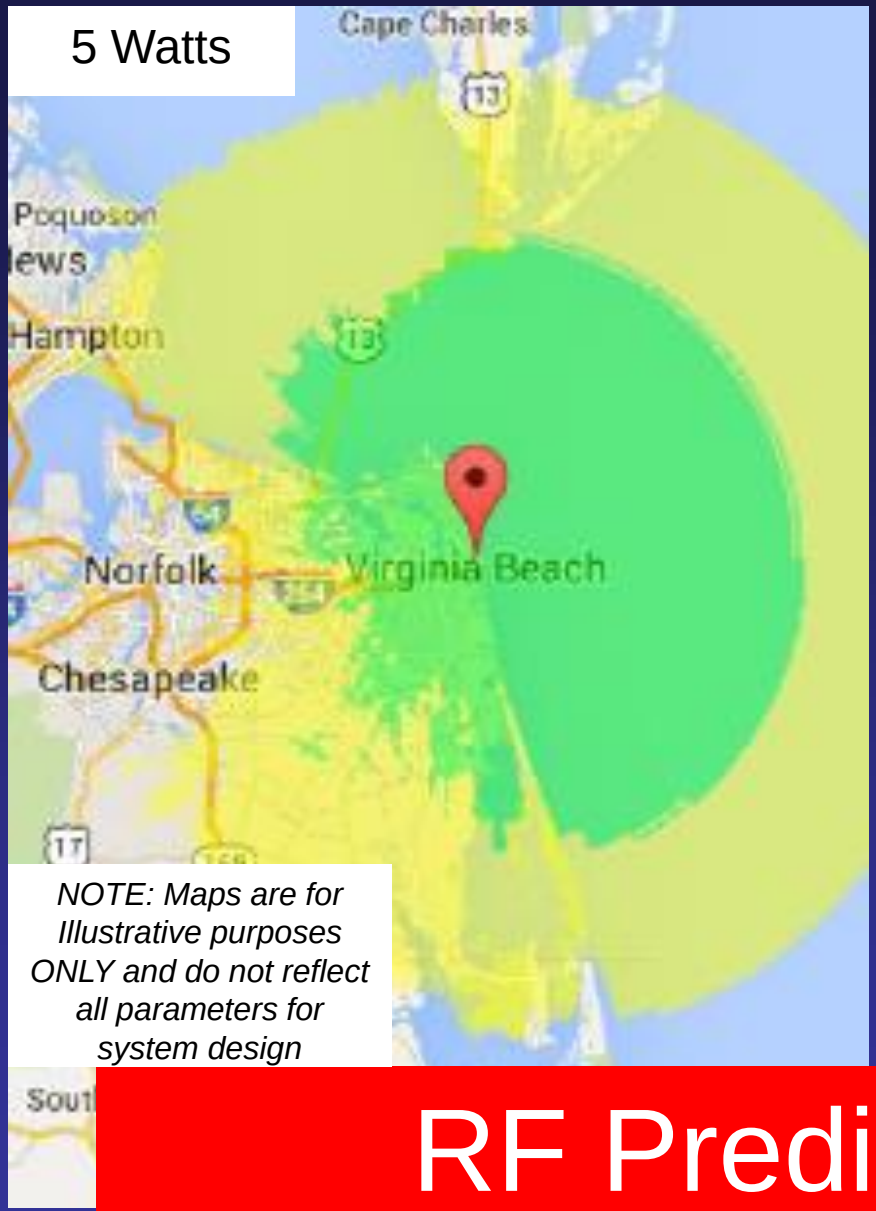
Coverage Prediction Maps

NOTE: Maps are for Illustrative purposes ONLY and do not reflect all parameters for system design



2 site coverage maps

5 Watts



35 Watts

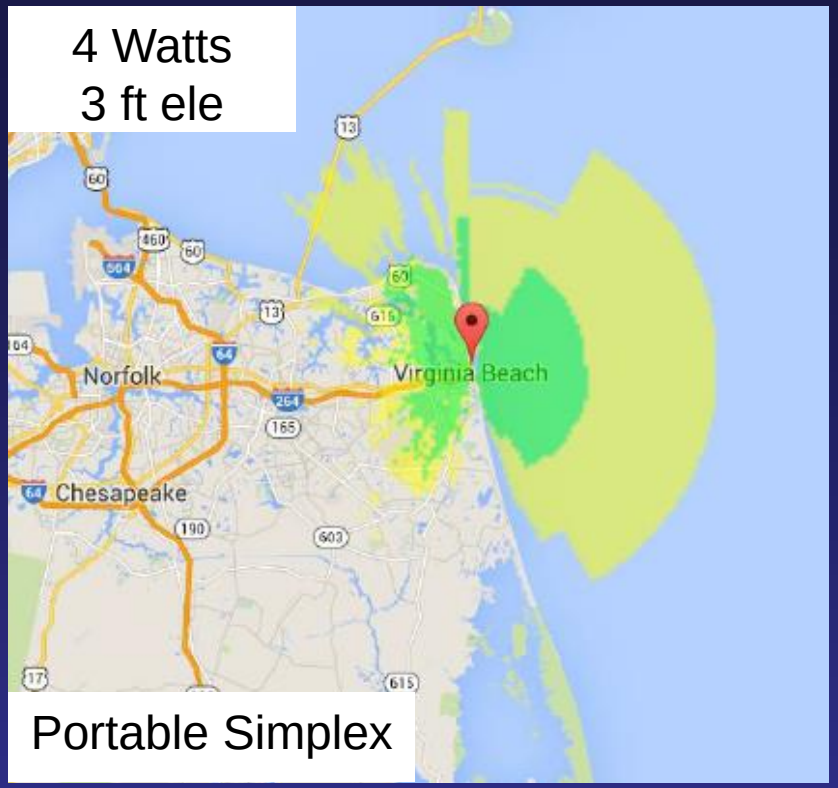
NOTE: Maps are for Illustrative purposes ONLY and do not reflect all parameters for system design

RF Predictive Maps

35 Watts,
100 ft ele

Repeater Talkout

4 Watts
3 ft ele



Portable Simplex

NOTE: Maps are for Illustrative purposes ONLY and do not reflect all parameters for system design

RF Power Comparison Maps

Data needs??

- Internet Driven Society
  - Where do we get our data service
  - Does it have capacity
- Wireless / Wi-Fi
  - Often available in buildings
  - Exterior/Wide area coverage options
  - Hot Spots
- Satellite Options
  - Voice
  - Data

Open Source Internet Advertising Photos-

Why do we need to consider data access?

- Patient care reporting
  - VPHIB access
- Pre-hospital Patient Tracking Applications
- Command Post Tracking Applications
  - Event monitoring / cameras
- E-mail
- Social Media

Open Source Internet Advertising Photos-

Cellular capacity

What can your cell service do for you?

Public safety has invested a large amount of reliable communications in cellular coverage.

But we have to view EVERY individual with a cell phone as an active user competing for service

Open Source Internet Advertising Photos-

COWS

Cell on Wheels

- Temporary deployments
- Many carriers have availability
- Expand
  - Capacity
  - Coverage
  - Backup

- Not a replacement for incident tactical/command wireless

FEMA/DHS COM-T Training Program

Making a plan

- List our wants and needs
- Identify users and capability
- Lay it out in a chart
- Current system design/capacity
- Organize it in a ICS 205
- Test the plan
- Revise as necessary based on testing

Do we have an option??

Most jurisdictions lack capability to build standalone communications systems for special events

- Consider adjacent/overlay interop systems

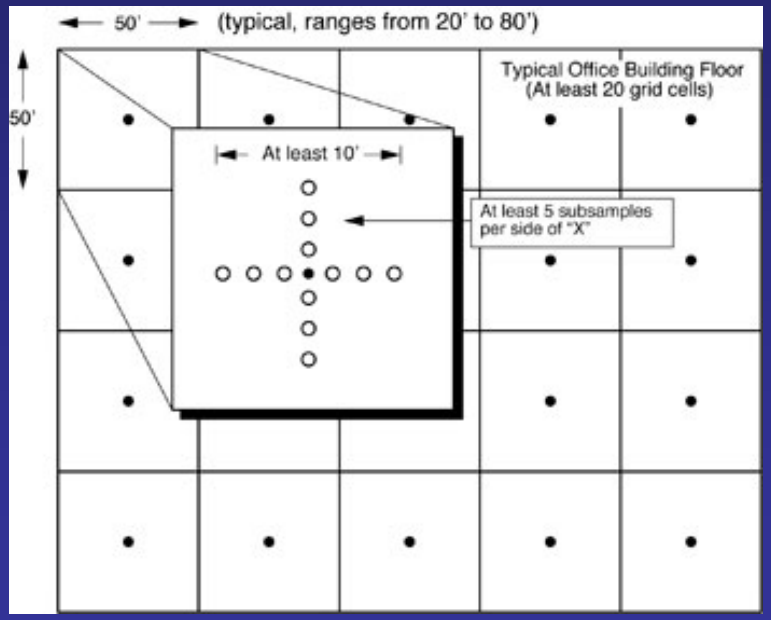
- Consider private vendor communications
  - Fee for service, temporary systems and radios
- Consider strategic statewide reserves
  - Virginia Communications Caches

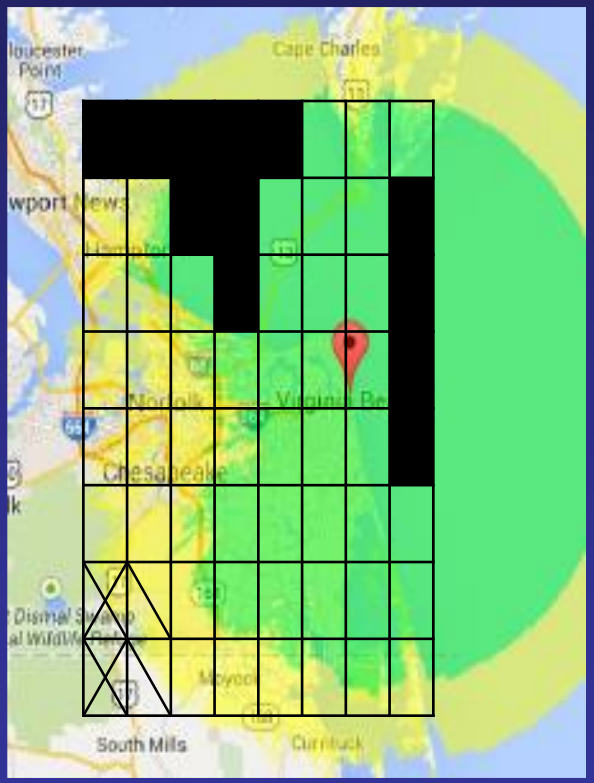
Backup plan

- Most pre-planned EMS events lack backup plans for communications
  - Cost factor
  - Equipment access
- Backup plan can be as simple as scalable communications or shared channel use
  - Think about other ways to communicate
  - Consider mutual aid and state resources

Testing a plan

- Every communication plan needs to be tested
  - *REAL WORLD* testing





Your turn

Incident Radio Communications Plan (ICS 205)		
1. Incident Name: **35th Annual EMS Symposium**	2. Date/Time Prepared: Date: November 6, 2014 Time: current time	3. Operational Period: Date From: 11/7 Date To: 11/7 Time From: 0800 Time To: 1700

4. Basic Radio Channel Use:

Zone Grp.	Ch #	Function	Channel Name/Trunked Radio System Talkgroup	Assignment	RX Freq N or W	RX Tone/NAC	TX Freq N or W	TX Tone/NAC	Mode (A, D, or M)	Remarks

5. Special Instructions:

6. Prepared by (Communications Unit Leader): Name: _____ Signature: _____

ICS 205	IAP Page _____	Date/Time: _____

Your turn

- 35th EMS symposium
  - 1 command net for incident command
  - 1 tactical net for EMS ops inside hotel
  - 1 EMS transport net for ambulance
- Available Channels
  - VTAC 11, VTAC 37, EMS Statewide 155.205

Your turn

Incident Radio Communications Plan (ICS 205)

1. Incident Name:	2. Date/Time Prepared:	3. Operational Period:
35th Annual EMS Symposium	Date: November 6, 2014	Date From: 11/7 Date To: 11/7
	Time: current time	Time From: 0800 Time To: 1700

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Zone Grp.	Ch #	Function	Channel Name/Trunked Radio System Talkgroup	Assignment	RX Freq N or W	RX Tone/NAC	TX Freq N or W	TX Tone/NAC	Mode (A, D, or M)	Remarks
A	1	COMMAND	VTAC 37	COMMAND	154.4525	CSQ	158.7375	136.5	A	COMMAND
A	1	TACTICAL	VTAC 11	EMS BRANCH	151.1375	CSQ	151.1375	156.7	A	EMS OPERATIONS
A	1	AIR TO GROUND	EMS STATEWIDE	TRANSPORTATION GROUP	155.205	CSQ	155.205	CSQ	A	HELICOPTER LZ
A	1	TACTICAL	EMS STATEWIDE	TRANSPORTATION GROUP	155.205	CSQ	155.205	CSQ	A	AMBULANCE STAGING

5. Special Instructions:

Emergency declared on Tactical channel must be relayed to command on VTAC37
Units should use home jurisdiction designator then unit number when talking- Ex. Culpeper Medic 12
Air to ground traffic- if necessary- will have priority during take off and landing

IF INCIDENT ESCALATES GO TO MCI COMMUNICATIONS PLAN

6. Prepared by (Communications Unit Leader): Name: _____ Signature: _____

ICS 205	IAP Page	Date/Time:

Questions??

Now for a small overview of your available statewide strategic cache communications resources…

VIRGINIA
COMMUNICATIONS CACHE

Greg Hunter
Deputy Program Manager
Fairfax County Team

Cache Resources

- Portable Radios.
- Portable Repeaters.
- Infrastructure Repeaters.
- Deployable Towers and Antenna Masts.
- System/Radio Interconnection (Gateways).
- Satellite Voice & Internet Communications.
- Local Wi-Fi Network.
- Point–to–Point Networking.

Portable Radios

- VHF High Band (50-100)
- UHF (50-100)
- 700/800 MHz (100-300)

- Analog/Digital Conventional
- P25 Conventional and Trunked
- Motorola & Harris Analog/Digital Trunking.

Over 2,000 Portable radios immediately available for deployment.

Repeaters

- **Portable**
  - VHF High Band (2)
  - UHF (2)
  - 700/800 MHz (2)
- **Infrastructure**
  - VHF High Band (1)
  - UHF (1)
  - 700/800 MHz (1)

Analog and P25 Conventional.

Deployable Towers & Masts

Radio Gateways

- VHF Low/High, UHF, 700/800:
  - Conventional
  - Proprietary Trunked
  - Digital
  - P25

- Aeronautical
- Maritime
- Amateur Radio
- Cellular
- Sat Link
- ROIP, VOIP

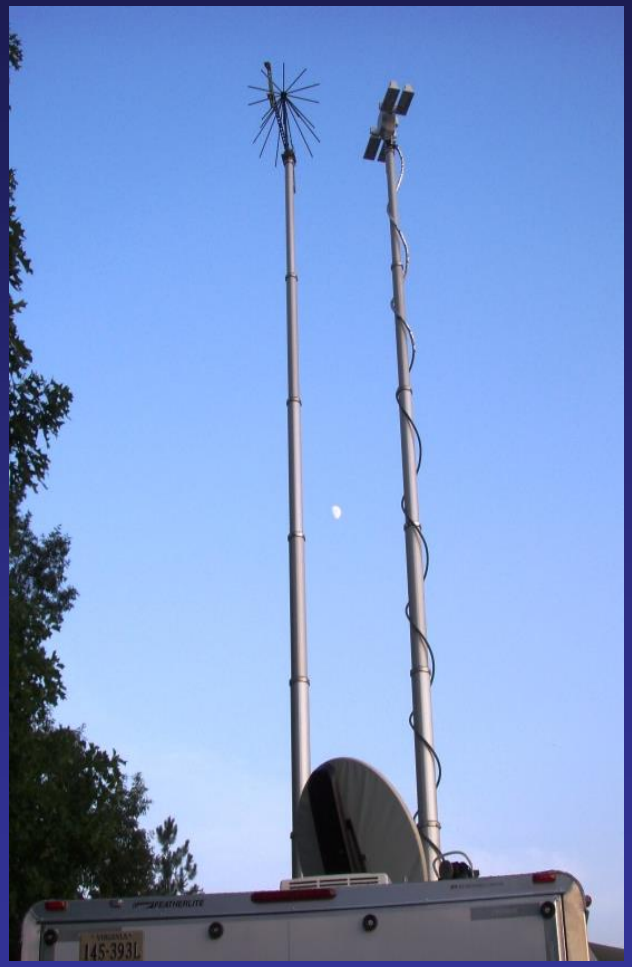
System 16 Port (1)

Satellite Communications

Satellite Internet

VOIP

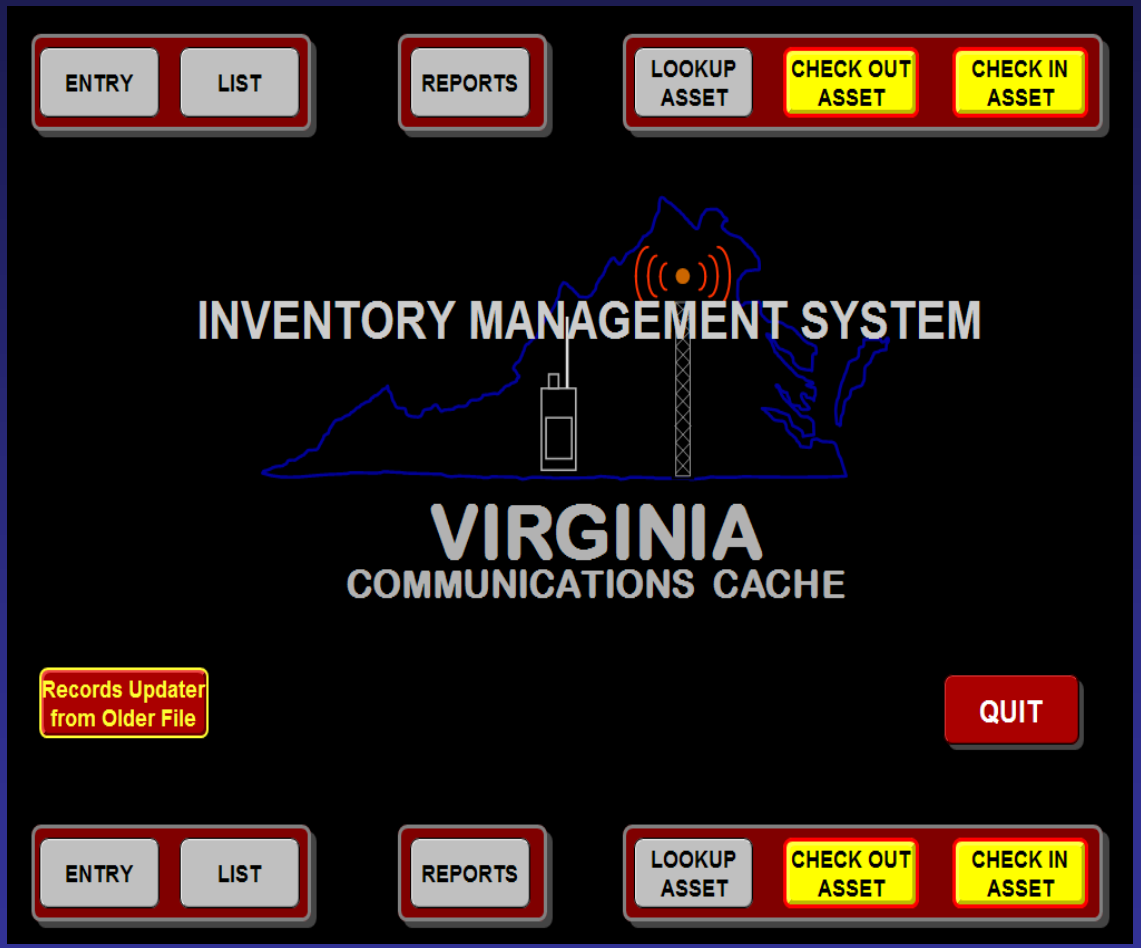
ROIP

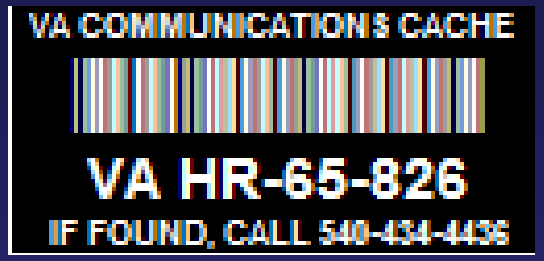


Satellite Voice

PTT Talkgroups

Automated Asset Tracking





Self-Contained, Self-Supporting

How to Request a Cache

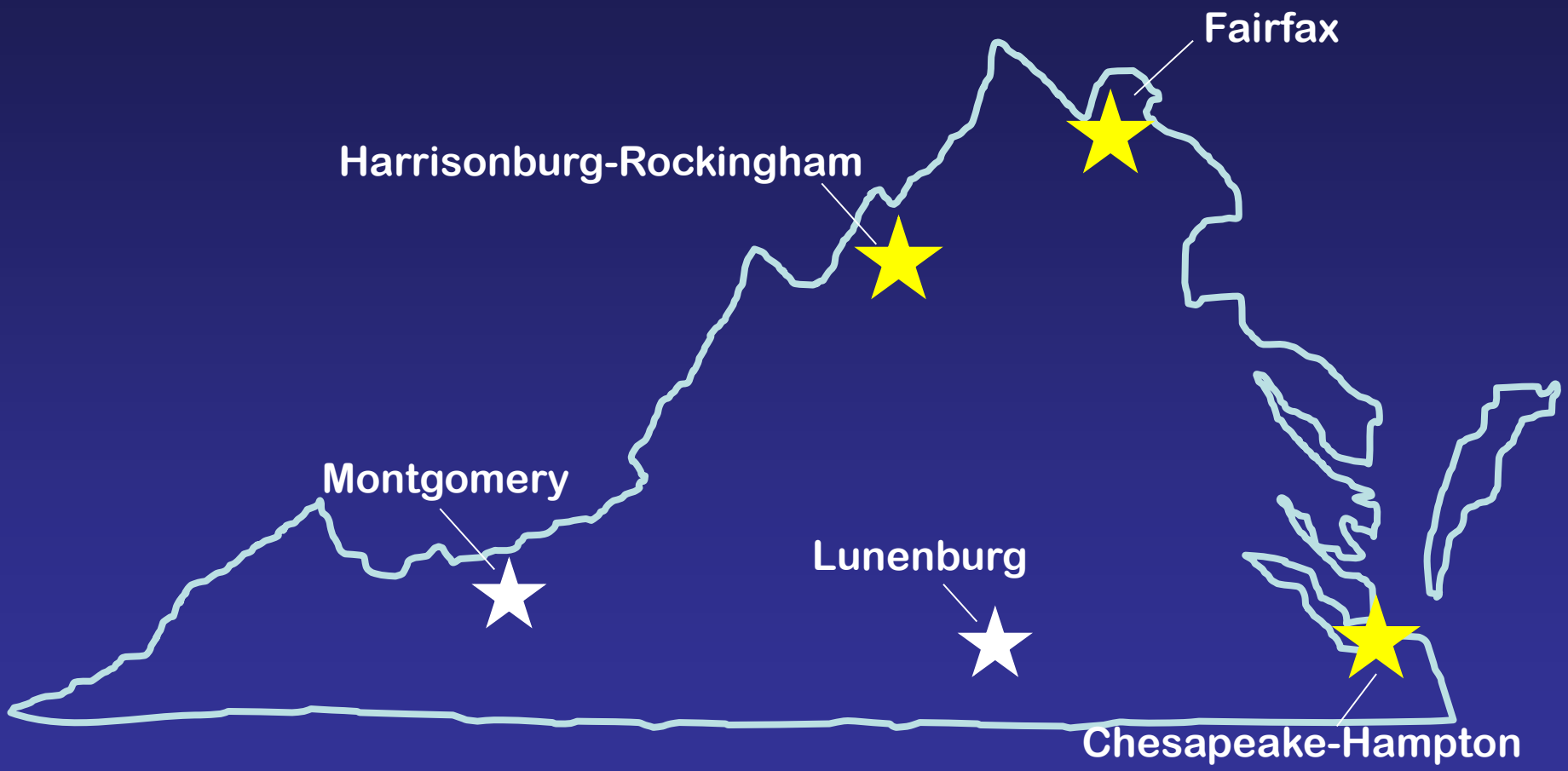
Emergency Incidents:

- Contact the Virginia EOC. Initial point of contact.
- Determine most efficient team/resource.
- Coordinate Planning and Response.

Planned Events:

- Contact Virginia EOC.
- Can make direct contact to local cache if known.
- Assist and source out best resource determination.
- Forward to local contact.
- Contact should be made 30-120 days prior.

A Communications Cache Close to You



The Virginia Communications Cache Teams

Locally Owned/Managed, State Coordinated

Chris Dennis
Chesapeake-Hampton
Team Manager

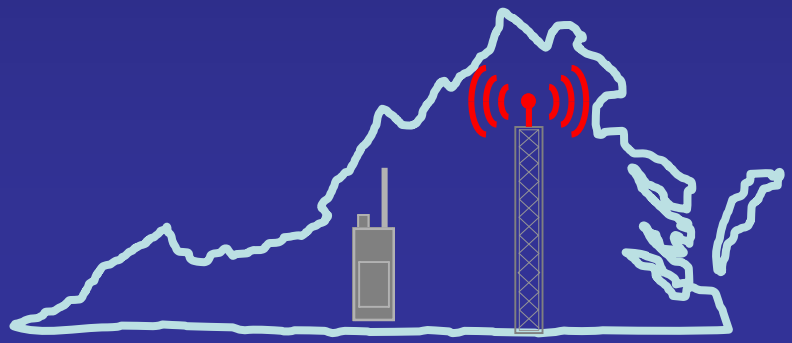
Neal Turner
Montgomery Team Manager

Wes Rogers
Fairfax Team Manager

Rodney Newton
Lunenburg Team Manager

Jim Junkins
Harrisonburg-Rockingham
Team Manager

Mike Keefe-Thomas
VA EOC Liaison



VIRGINIA
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