

RADIO COMMUNICATIONS DEGRADATION & INTEROPERABILITY OR “CAN YOU HEAR ME NOW?”

Presenter:

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Eastside Fire & Rescue – COML/COMT

COMMUNICATIONS FAILURES

- Not “IF” but “WHEN”
- Three primary levels
 - “Everything is functioning well, Bob”
 - “We are working some issues and accessing the impacts, Mr. Defcon”
 - **“We are in a complete failure, our best people are on it, SIR!”**
- There is a 4th level – but we won’t go there today
- Small issues can quickly cascade into a full blown crisis

Normal

Primary systems all functional

- We don't need any back-up systems
- The systems never really fail completely
- They told us the radio system is "bulletproof"
- Anyway, money and staff time are tight

Compromised

Primary radio, internet and phones are impacted

- Do we have any back-up systems?
- "I'm sure there's a manual in one of these cabinets"
- Have we exercised any of this with our staff?
- Do our users know how to operate it?
- Do others know how to reach us and can we communicate with them?

Degraded

All primary systems down

- Please, please tell me we have a plan, some kind of plan
- Well, who here knows anything?
- Anyone? Really?
- Hello? Can you hear me?????
- Bueller....BUELLER!!!!

COMMUNICATIONS DEGRADATION TRUNKED SYSTEMS

- Individual antenna site(s) down
 - Will take longer to get “go” tones or fringe coverage
- Loss of connectivity between systems
 - Requires users to go to “Site Trunking”
- System crash/baseline capability
 - Requires users to go to “Site Trunking”
 - Single Talkgroup operation by assignment – usually department-wide
- Total system failure
 - Direct radio to radio only on conventional/simplex channel



COMMUNICATIONS DEGRADATION SIMULCAST SYSTEMS

- Individual antenna site(s) down
 - No coverage except “talk-around”
 - Direct radio to radio – minimized range
- Loss of connectivity between systems
 - No wide area coverage outside of “zone”
 - Users are isolated and can only talk to others on the same tower
- Total system failure
 - Direct radio to radio only



COMMUNICATIONS DEGRADATION COMMON ISSUES

- Frequency saturation
- Lack of coordinated “Net Style” operations to maintain efficient communications
- Potential lack of training for utilizing the degraded system and backups
- Back-up equipment maintenance, charging, spare batteries, etc.
- Limited capability for Interoperable communications

CURRENT STATE KING COUNTY - EASTSIDE

- Should 800MHz system be completely unavailable...
 - Our 800 mobile & portable radios will only communicate on StateOps 1 - 5 over very limited range
 - NORCOM has a single VHF channel (154.190) for dispatch/TAC
 - Local sites at Squawk & Rattlesnake are on the microwave link
 - Only the Sammamish water tower, SnoPass & Skykomish are on leased TelCo lines
 - There is no “onsite” radio at NORCOM should some/all links fail

CURRENT STATE

KING COUNTY – ZONE 1

- No Zone 1 backup communications plan exists
 - Minimal VHF channel capacity will cause overload & interference
 - NORCOM uses 154.190 for dispatch - any other utilization by individual departments will render the channel unusable
 - Some departments have licenses for additional VHF frequencies
 - These are generally duplicated in the area as a legacy of VHF dispatch
 - Without coordination these frequencies will also become unusable
 - VHF/UHF Interoperability frequencies are available
 - These may be used when coordinated for specific incidents
 - Utilization requires VHF or UHF mobiles and portables
- There is no significant cache of VHF or UHF radios available

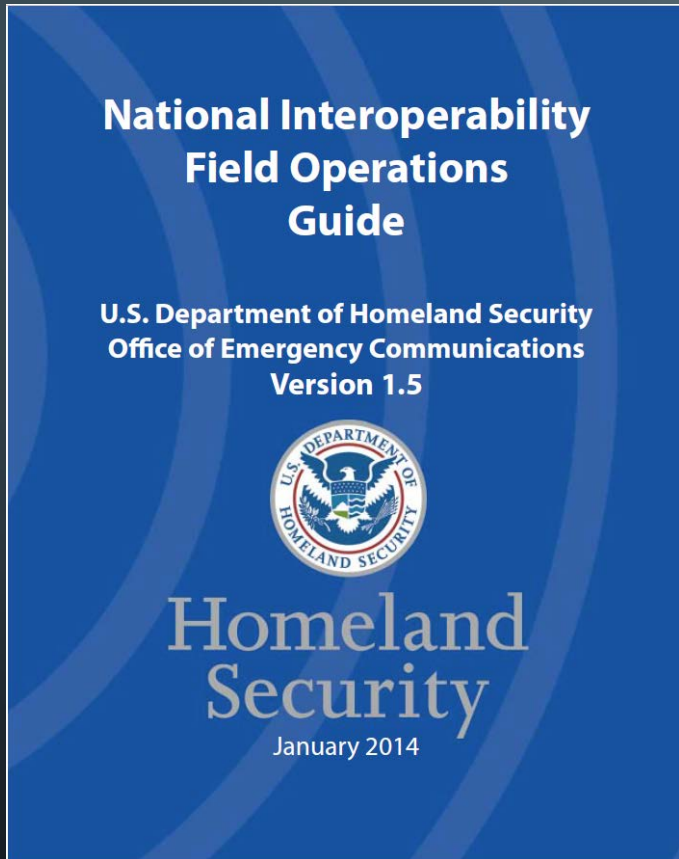
SECONDARY AND BACK-UP COMMUNICATIONS

- What's available for my agency?
 - Public Service – Part 90 Radio
 - VHF-Low, VHF and UHF frequencies
 - 700/800 Conventional frequencies
 - Many agencies have existing licenses maintained from 15+ years ago
 - Allows access to non Federal NIFOG frequencies
 - Amateur Radio – Part 97 Radio
 - Voice
 - Digital modes including email via RF – Winlink email system
 - APRS positioning and messaging
 - Satellite voice and data
 - Other

INTEROPERABILITY

- Part 90 radios give you access to a significant number of frequencies that are used nationally
 - There are several categories – Federal only, licensed required and open
 - These frequencies need to be coordinated within regional areas to minimize interference and spectrum overload
 - Some frequencies cannot be used above “Line A” and/or have other restrictions
 - The frequencies and information is available via the NIFOG online
- A coordinated utilization of these frequencies will give you access to personnel, resources and information within your region

WHAT IS NIFOG?



| 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.

VHF NIFOG INTEROPERABILITY

SAMPLE ICS-217

| Zone Name | Band | Channel # | Name | Repeater | Receive (MHz) | Rec PL | Transmit (MHz) | Trans | Usage |
|-----------|------|-----------|----------|----------|---------------|--------|----------------|-------|-------------------------|
| INTEROP | VHF | 1 | VCALL10 | | 155.7525 | | | | Any agency |
| INTEROP | VHF | 2 | VTAC11 | | 151.1375 | | | | Any agency |
| INTEROP | VHF | 3 | VTAC12 | | 154.4525 | | | | Any agency |
| INTEROP | VHF | 4 | VTAC13 | | 158.7375 | | | | Any agency |
| INTEROP | VHF | 5 | VTAC14 | | 159.4725 | | | | Any agency |
| INTEROP | VHF | 8 | VFIRE21 | | 154.2800 | | | | Fire |
| INTEROP | VHF | 9 | VFIRE22 | | 154.2650 | | | | Fire |
| INTEROP | VHF | 10 | VFIRE23 | | 154.2950 | | | | Fire |
| INTEROP | VHF | 11 | VFIRE24 | | 154.2725 | | | | Fire |
| INTEROP | VHF | 12 | VFIRE25 | | 154.2875 | | | | Fire |
| INTEROP | VHF | 13 | VFIRE26 | | 154.3025 | | | | Fire |
| INTEROP | VHF | 14 | VMED28 | | 155.3400 | | | | EMS |
| INTEROP | VHF | 15 | VMED29 | | 155.3475 | | | | EMS |
| INTEROP | VHF | 16 | LE A | | 167.0875 | | | 167.9 | Law Enforcememt calling |
| INTEROP | VHF | 17 | LE 1 | X | 167.0875 | | 162.0875 | 167.9 | Law Enforcememt calling |
| INTEROP | VHF | 18 | NC 1CALL | X | 169.5375 | | 164.7125 | 167.9 | Incident Calling |
| INTEROP | VHF | 19 | IR 1 | X | 170.0125 | | 165.2500 | 167.9 | Incident Tactical |
| INTEROP | VHF | 20 | IR 2 | X | 170.4125 | | 165.9625 | 167.9 | Incident Tactical |
| INTEROP | VHF | 21 | IR 3 | X | 170.6875 | | 166.5750 | 167.9 | Incident Tactical |
| INTEROP | VHF | 22 | IR 4 | X | 173.0375 | | 167.3250 | 167.9 | Incident Tactical |
| INTEROP | VHF | 23 | IR 5 | | 169.5375 | | | 167.9 | Incident Tactical |
| INTEROP | VHF | 24 | IR 6 | | 170.0125 | | | 167.9 | Incident Tactical |
| INTEROP | VHF | 25 | IR 7 | | 170.4125 | | | 167.9 | Incident Tactical |
| INTEROP | VHF | 26 | IR 8 | | 170.6875 | | | 167.9 | Incident Tactical |
| INTEROP | VHF | 27 | IR 9 | | 173.0375 | | | 167.9 | Incident Tactical |

VHF NIFOG INTEROPERABILITY SAMPLE RADIO PROGRAMMING

| CH | Recv.Frequency | FIRECOM | Zone | CH | Recv.Frequency | DMR |
|-----------|----------------|-----------------------|----------------------|----|----------------|----------------|
| 1 | 154.1900 | V1EFR 190 | 3 | 1 | 151.4150 | DMR Common |
| 2 | 154.0850 | Y2 | 3 | 2 | 153.8300 | REDNET |
| 3 | 155.2800 | Y3 | 3 | 3 | 159.2925 | DMR NB |
| 4 | 153.8300 | REDNET | 3 | 4 | 159.2550 | DMR Bellair |
| 5 | 156.1350 | OSSCR/WSP | 3 | 5 | 169.9000 | FSNB |
| 6 | 155.1900 | MARS | 3 | 6 | 169.9000 | FS Granite |
| 7 | 155.0850 | ISSPW1 | 3 | 7 | 151.3100 | Blue1 |
| 8 | 155.7450 | ISSPW2 | 3 | 8 | 151.3400 | Blue2 |
| 9 | 155.8650 | N Bend P/W | 3 | 9 | 171.5750 | Blue3 |
| 10 | 153.6050 | PSE Line | 3 | 10 | 154.0850 | Red1 |
| 11 | 154.4000 | Bellevue Dsp | 3 | 11 | 170.1250 | Green1 |
| 12 | 154.2050 | KITT Dsp | 3 | 12 | 159.4200 | St. Kitsap |
| 13 | 155.3400 | HEAR | 3 | 13 | 159.4200 | ST Isqua |
| 14 | 155.3700 | LEPN | 3 | 14 | 159.2700 | DMR Air |
| 15 | 155.4750 | NLEEC | 3 | 15 | 167.3000 | FS Air/Ground |
| 16 | 155.2350 | KCECC | 3 | 16 | 156.1350 | OSSCR |
| 17 | 153.7550 | OES | 3 | 17 | 154.1900 | VH1 - EFR Disp |
| 18 | 154.1900 | EFR 190 No PL | 3 | 18 | 154.0850 | W2 |
| | | | 3 | 19 | 155.2800 | W3 |
| | | | 3 | 20 | 155.1900 | MARS |
| | | | 3 | 21 | 156.1350 | OSSCR/WSP |
| CH | | Recv.Frequency | SARCOM | | | |
| 1 | 154.9650 | SARF2 | | | | |
| 2 | 153.7750 | SARF3 | | | | |
| 3 | 155.1600 | WSAR | | | | |
| 4 | 155.3250 | ESAR | | | | |
| 5 | 155.1750 | KC 4X4 | | | | |
| 6 | 155.2050 | KC Dogs | | | | |
| 7 | 145.1100 | KC7SAR-N | | | | |
| 8 | 145.1100 | KC7SAR-S | | | | |
| CH | | Recv.Frequency | FIRECOM | | | |
| 1 | 154.1900 | V1EFR 190 | 3 | 1 | 151.4150 | Common |
| 2 | 154.0850 | Y2 | 3 | 2 | 153.8300 | Rednet |
| 3 | 155.2800 | Y3 | 3 | 3 | 159.2925 | DMR NB |
| 4 | 153.8300 | REDNET | 3 | 4 | 159.2550 | DMR Bellair |
| 5 | 156.1350 | OSSCR/WSP | 3 | 5 | 169.9000 | FSNB |
| 6 | 155.1900 | MARS | 3 | 6 | 169.9000 | FS Granite |
| 7 | 155.0850 | ISSPW1 | 3 | 7 | 151.3100 | Blue1 |
| 8 | 155.7450 | ISSPW2 | 3 | 8 | 151.3400 | Blue2 |
| 9 | 155.8650 | N Bend P/W | 3 | 9 | 171.5750 | Blue3 |
| 10 | 153.6050 | PSE Line | 3 | 10 | 154.0850 | Red1 |
| 11 | 154.4000 | Bellevue 400 | 3 | 11 | 170.1250 | Green1 |
| 12 | 154.2050 | KITT Dsp | 3 | 12 | 159.4200 | St. Kitsap |
| 13 | 155.3400 | HEAR | 3 | 13 | 159.4200 | ST Isqua |
| 14 | 155.3700 | LEPN | 3 | 14 | 159.2700 | DMR Air |
| 15 | 155.4750 | NLEEC | 3 | 15 | 167.3000 | FS Air/Ground |
| 16 | 155.2350 | KCECC | 3 | 16 | 156.1350 | OSSCR |
| 17 | 153.7550 | OES | 3 | 17 | 154.1900 | VH1 - EFR Disp |
| 18 | 154.1900 | EFR 190 No PL | 3 | 18 | 154.0850 | W2 |
| | | | 3 | 19 | 155.2800 | W3 |
| | | | 3 | 20 | 155.1900 | MARS |
| | | | 3 | 21 | 156.1350 | OSSCR/WSP |
| CH | | Recv.Frequency | SARCOM | | | |
| 1 | 154.9650 | SARF2 | | | | |
| 2 | 153.7750 | SARF3 | | | | |
| 3 | 155.1600 | WSAR | | | | |
| 4 | 155.3250 | ESAR | | | | |
| 5 | 155.1750 | KC 4X4 | | | | |
| 6 | 155.2050 | KC Dogs | | | | |
| 7 | 145.1100 | KC7SAR-N | | | | |
| 8 | 145.1100 | KC7SAR-S | | | | |
| | | | IC F5061 | | 5/10/2011 | |
| Button | | P0 | Priority A - EFR 190 | | | |
| Button | | P1 | Zone Menu | | | |
| Button | | P2 | High/Low/Low2 | | | |
| Button | | P3 | User Mode | | | |
| Button | | P4 | Monitor | | | |

| Zone | CH | Recv.Frequency | HAM |
|------|----|----------------|-----------------|
| 1 | 1 | 442.3000 | CH - 1 |
| 1 | 2 | 440.2500 | CH - 3 |
| 1 | 3 | 442.7250 | CH - 4 |
| 1 | 4 | 445.0500 | CH - 6 |
| 1 | 5 | 445.9000 | CH - 7 |
| 1 | 6 | 443.3250 | CH - 10 |
| 1 | 7 | 441.1000 | CH - 11 |
| 1 | 8 | 442.1500 | CH - 12 |
| 1 | 9 | 443.4500 | CH - 13 |
| 1 | 10 | 444.9250 | CH - 18 |
| 1 | 11 | 444.5250 | CH - 19 |
| 1 | 12 | 441.5500 | CH - 25 |
| 1 | 13 | 442.0250 | CH - 26 |
| 1 | 14 | 443.7000 | CH - 27 |
| 1 | 15 | 440.6750 | CH - 28 |
| 1 | 16 | 444.6000 | CH - 29 |
| 1 | 17 | 441.0750 | CH - 30 |
| 1 | 18 | 441.7750 | CH - 31 |
| 1 | 19 | 443.6500 | CH - 32 |
| 1 | 20 | 444.7000 | CH - 34 |
| 1 | 21 | 441.8000 | CH - 35 |
| 1 | 22 | 441.7500 | CH - 36 |
| | | | FRS/GMRS |
| 2 | 1 | 462.5625 | FRSG 1 |
| 2 | 2 | 462.5875 | FRSG 2 |
| 2 | 3 | 462.6125 | FRSG 3 |
| 2 | 4 | 462.6375 | FRSG 4 |
| 2 | 5 | 462.6625 | FRSG 5 |
| 2 | 6 | 462.6875 | FRSG 6 |
| 2 | 7 | 462.7125 | FRSG 7 |
| 2 | 8 | 467.5625 | FRS 8 |
| 2 | 9 | 467.5875 | FRS 9 |
| 2 | 10 | 467.6125 | FRS 10 |
| 2 | 11 | 467.6375 | FRS 11 |
| 2 | 12 | 467.6625 | FRS 12 |
| 2 | 13 | 467.6875 | FRS 13 |
| 2 | 14 | 467.7125 | FRS 14 |
| 2 | 15 | 462.5500 | FRSG 15 |
| 2 | 16 | 462.5750 | FRSG 16 |
| 2 | 17 | 462.6000 | FRSG 17 |
| 2 | 18 | 462.6250 | FRSG 18 |
| 2 | 19 | 462.6500 | FRSG 19 |
| 2 | 20 | 462.6750 | FRSG 20 |
| 2 | 21 | 462.7000 | FRSG 21 |
| 2 | 22 | 462.7250 | FRSG 22 |

| Zone | CH | Recv.Frequency | INTEROP |
|----------------------|----|----------------|------------|
| 3 | 1 | 453.2125 | UCALL40 |
| 3 | 2 | 453.2125 | UCALL40D |
| 3 | 3 | 453.4625 | UTAC41 |
| 3 | 4 | 453.4625 | UTAC41D |
| 3 | 5 | 453.7125 | UTAC42 |
| 3 | 6 | 453.7125 | UTAC42D |
| 3 | 7 | 453.8625 | UTAC43 |
| 3 | 8 | 453.8625 | UTAC43D |
| 3 | 9 | 410.2375 | NC2 CALL R |
| 3 | 10 | 414.0375 | LE B |
| 3 | 11 | 409.9875 | LE 10 R |
| 3 | 12 | 410.4375 | IR 10 R |
| 3 | 13 | 410.6375 | IR 11 R |
| 3 | 14 | 410.8375 | IR 12 R |
| 3 | 15 | 413.1875 | IR 13 |
| 3 | 16 | 413.2125 | IR 14 |
| 3 | 17 | 410.2375 | IR 15 |
| 3 | 18 | 410.4375 | IR 16 |
| 3 | 19 | 410.6375 | IR 17 |
| 3 | 20 | 410.8375 | IR 18 |
| 3 | 21 | 462.9500 | MED 9 R |
| 3 | 22 | 462.9625 | MED 9.2 |
| 3 | 23 | 462.9750 | MED 10 R |
| 3 | 24 | 462.9875 | MED 10.2 R |
| 3 | 25 | 463.0000 | MED 11 R |
| 3 | 26 | 463.0125 | MED 1.2 R |
| 3 | 27 | 463.0250 | MED 2 R |
| 3 | 28 | 463.0375 | MED 2.2 R |
| 3 | 29 | 463.0500 | MED 3 R |
| 3 | 30 | 463.0625 | MED 3.2 R |
| 3 | 31 | 463.0750 | MED 4 R |
| 3 | 32 | 463.0875 | MED 4.2 R |
| 3 | 33 | 463.1000 | MED 5 R |
| 3 | 34 | 463.1125 | MED 5.2 R |
| 3 | 35 | 463.1250 | MED 6 R |
| 3 | 36 | 463.1375 | MED 6.2 R |
| 3 | 37 | 463.1500 | MED 7 R |
| 3 | 38 | 463.1625 | MED 7.2 R |
| 3 | 39 | 463.1750 | MED 8 R |
| 3 | 40 | 463.1875 | MED 8.2 R |
| UHF TEMPLATE 4-13-12 | | | |

VHF NIFOG INTEROPERABILITY

SAMPLE PRELIMINARY KING COUNTY ICS-217

| King County Zone 1 ICS-217 | | | | | | | | | | | | | | Revision# | V1.0 - 12-20-15 | |
|-------------------------------|-----------|------|---------|---------------|------|---------------|-------|----------------|---------|------|--------------------------------------|----------------------------------|--|-----------|-----------------|------|
| Zone | Zone Name | Band | Channel | Name | Reps | Receive (MHz) | Rec P | Transmit (MHz) | Trans P | MODE | Usage | Notes | Special Conditions | Call | Call | Call |
| 6 | INTEROP | UHF | 1 | UCALL40 | X | 452.2125 | | 452.2125 | 156.7 | A | Incident Calling | | 3 Watter Max. Above Line "A" | | | |
| 6 | INTEROP | UHF | 2 | UCALL40D | | 452.2125 | | 452.2125 | 156.7 | A | Direct - Incident Calling | | 3 Watter Max. Above Line "A" | | | |
| 6 | INTEROP | UHF | 3 | UTAC41 | X | 452.4625 | | 452.4625 | 156.7 | A | Tactical | | 3 Watter Max. Above Line "A" | | | |
| 6 | INTEROP | UHF | 4 | UTAC41D | | 452.4625 | | 452.4625 | 156.7 | A | Tactical - Direct | | 3 Watter Max. Above Line "A" | | | |
| 6 | INTEROP | UHF | 5 | UTAC42 | X | 452.7125 | | 452.7125 | 156.7 | A | Tactical | | 3 Watter Max. Above Line "A" | | | |
| 6 | INTEROP | UHF | 6 | UTAC42D | | 452.7125 | | 452.7125 | 156.7 | A | Tactical - Direct | | 3 Watter Max. Above Line "A" | | | |
| 6 | INTEROP | UHF | 7 | UTAC43 | X | 452.8625 | | 452.8625 | 156.7 | A | Tactical | | 3 Watter Max. Above Line "A" | | | |
| 6 | INTEROP | UHF | 8 | UTAC43D | | 452.8625 | | 452.8625 | 156.7 | A | Tactical - Direct | | 3 Watter Max. Above Line "A" | | | |
| 6 | INTEROP | UHF | 9 | LEB | | 414.0375 | | 414.0375 | 167.9 | A | Colling | Federal - Authorization Required | | | | |
| 6 | INTEROP | UHF | 10 | LE10 | X | 409.9375 | | 419.9375 | 167.9 | A | Tactical | Federal - Authorization Required | | | | |
| 7 | INTEROP | UHF | 11 | LE16 | | 409.9375 | | 409.9375 | 167.9 | A | Direct For LE 10 | Federal - Authorization Required | | | | |
| 6 | INTEROP | UHF | 12 | NC2 CALL | X | 410.2375 | | 419.2375 | 167.9 | A | Incident Calling | Federal - Authorization Required | | | | |
| 6 | INTEROP | UHF | 13 | IR 10 | X | 410.4275 | | 419.4275 | 167.9 | A | Ad Hoc Assignment | Federal - Authorization Required | | | | |
| 6 | INTEROP | UHF | 14 | IR 11 | X | 410.6275 | | 419.6275 | 167.9 | A | Ad Hoc Assignment | Federal - Authorization Required | | | | |
| 6 | INTEROP | UHF | 15 | IR 12 | X | 410.8275 | | 419.8275 | 167.9 | A | SAR Incident Command | Federal - Authorization Required | | | | |
| 6 | INTEROP | UHF | 16 | IR 13 | | 412.1875 | | 412.1875 | 167.9 | A | Ad Hoc Assignment | Federal - Authorization Required | | | | |
| 6 | INTEROP | UHF | 17 | IR 14 | | 412.2125 | | 412.2125 | 167.9 | A | Interagency Convey | Federal - Authorization Required | | | | |
| 6 | INTEROP | UHF | 18 | IR 15 | | 410.2375 | | 410.2375 | 167.9 | A | Direct - Incident Calling (NC 2) | Federal - Authorization Required | | | | |
| 6 | INTEROP | UHF | 19 | IR 16 | | 410.4275 | | 410.4275 | 167.9 | A | Ad Hoc Assignment | Federal - Authorization Required | | | | |
| 6 | INTEROP | UHF | 20 | IR 17 | | 410.6275 | | 410.6275 | 167.9 | A | Direct For IR 11 (Ad Hoc) | Federal - Authorization Required | | | | |
| 6 | INTEROP | UHF | 21 | IR 18 | | 410.8275 | | 410.8275 | 167.9 | A | Direct For IR 12 (SAR Incident Comm) | Federal - Authorization Required | | | | |
| 6 | INTEROP | UHF | 22 | MED 9 | X | 462.9500 | | 467.9500 | | A | Primarily Dupatch | License Authorization Required | Direct mode: receive & transmit on "Mobile RW" freq.; add "D" to channel name. | | | |
| 6 | INTEROP | UHF | 23 | MED 92 | X | 462.9625 | | 467.9625 | | A | Primarily Dupatch | License Authorization Required | Direct mode: receive & transmit on "Mobile RW" freq.; add "D" to channel name. | | | |
| 6 | INTEROP | UHF | 24 | MED 10 | X | 462.9750 | | 467.9750 | | A | Primarily Dupatch | License Authorization Required | Direct mode: receive & transmit on "Mobile RW" freq.; add "D" to channel name. | | | |
| 6 | INTEROP | UHF | 25 | MED 102 | X | 462.9875 | | 467.9875 | | A | Primarily Dupatch | License Authorization Required | Direct mode: receive & transmit on "Mobile RW" freq.; add "D" to channel name. | | | |
| 6 | INTEROP | UHF | 26 | MED 1 | X | 463.0000 | | 468.0000 | | A | Tactical Or Ar Assigned | License Authorization Required | Direct mode: receive & transmit on "Mobile RW" freq.; add "D" to channel name. | | | |
| 6 | INTEROP | UHF | 27 | MED 12 | X | 463.0125 | | 468.0125 | | A | Tactical Or Ar Assigned | License Authorization Required | Direct mode: receive & transmit on "Mobile RW" freq.; add "D" to channel name. | | | |
| 6 | INTEROP | UHF | 28 | MED 2 | X | 463.0250 | | 468.0250 | | A | Tactical Or Ar Assigned | License Authorization Required | Direct mode: receive & transmit on "Mobile RW" freq.; add "D" to channel name. | | | |
| 6 | INTEROP | UHF | 29 | MED 22 | X | 463.0375 | | 468.0375 | | A | Tactical Or Ar Assigned | License Authorization Required | Direct mode: receive & transmit on "Mobile RW" freq.; add "D" to channel name. | | | |
| 6 | INTEROP | UHF | 30 | MED 2 | X | 463.0500 | | 468.0500 | | A | Tactical Or Ar Assigned | License Authorization Required | Direct mode: receive & transmit on "Mobile RW" freq.; add "D" to channel name. | | | |
| 6 | INTEROP | UHF | 31 | MED 32 | X | 463.0625 | | 468.0625 | | A | Tactical Or Ar Assigned | License Authorization Required | Direct mode: receive & transmit on "Mobile RW" freq.; add "D" to channel name. | | | |
| 6 | INTEROP | UHF | 32 | MED 4 | X | 463.0750 | | 468.0750 | | A | Tactical Or Ar Assigned | License Authorization Required | Direct mode: receive & transmit on "Mobile RW" freq.; add "D" to channel name. | | | |
| 6 | INTEROP | UHF | 33 | MED 42 | X | 463.0875 | | 468.0875 | | A | Tactical Or Ar Assigned | License Authorization Required | Direct mode: receive & transmit on "Mobile RW" freq.; add "D" to channel name. | | | |
| 6 | INTEROP | UHF | 34 | MED 5 | X | 463.1000 | | 468.1000 | | A | Tactical Or Ar Assigned | License Authorization Required | Direct mode: receive & transmit on "Mobile RW" freq.; add "D" to channel name. | | | |
| 6 | INTEROP | UHF | 35 | MED 52 | X | 463.1125 | | 468.1125 | | A | Tactical Or Ar Assigned | License Authorization Required | Direct mode: receive & transmit on "Mobile RW" freq.; add "D" to channel name. | | | |
| 6 | INTEROP | UHF | 36 | MED 6 | X | 463.1250 | | 468.1250 | | A | Tactical Or Ar Assigned | License Authorization Required | Direct mode: receive & transmit on "Mobile RW" freq.; add "D" to channel name. | | | |
| 6 | INTEROP | UHF | 37 | MED 62 | X | 463.1375 | | 468.1375 | | A | Tactical Or Ar Assigned | License Authorization Required | Direct mode: receive & transmit on "Mobile RW" freq.; add "D" to channel name. | | | |
| 6 | INTEROP | UHF | 38 | MED 7 | X | 463.1500 | | 468.1500 | | A | Tactical Or Ar Assigned | License Authorization Required | Direct mode: receive & transmit on "Mobile RW" freq.; add "D" to channel name. | | | |
| 6 | INTEROP | UHF | 39 | MED 72 | X | 463.1625 | | 468.1625 | | A | Tactical Or Ar Assigned | License Authorization Required | Direct mode: receive & transmit on "Mobile RW" freq.; add "D" to channel name. | | | |
| 6 | INTEROP | UHF | 40 | MED 8 | X | 463.1750 | | 468.1750 | | A | Tactical Or Ar Assigned | License Authorization Required | Direct mode: receive & transmit on "Mobile RW" freq.; add "D" to channel name. | | | |
| 6 | INTEROP | UHF | 41 | MED 82 | X | 463.1875 | | 468.1875 | | A | Tactical Or Ar Assigned | License Authorization Required | Direct mode: receive & transmit on "Mobile RW" freq.; add "D" to channel name. | | | |
| 7 | INTEROP | 800 | 1 | 8CALL90 | X | 851.0125 | | 806.0125 | 156.7 | A | Incident Calling | Farmaly I-Call | | | | |
| 7 | INTEROP | 800 | 2 | 8CALL90D | | 851.0125 | | 806.0125 | 156.7 | A | Direct - Incident Calling | Farmaly I-TAC# | | | | |
| 7 | INTEROP | 800 | 3 | 8TAC91 | X | 851.5125 | | 806.5125 | 156.7 | A | Tactical Or Ar Assigned | Farmaly I-TAC# | | | | |
| 7 | INTEROP | 800 | 4 | 8TAC91D | | 851.5125 | | 806.5125 | 156.7 | A | Direct - Tactical Or Ar Assigned | Farmaly I-TAC# | | | | |
| 7 | INTEROP | 800 | 5 | 8TAC92 | X | 852.0125 | | 807.0125 | 156.7 | A | Tactical Or Ar Assigned | Farmaly I-TAC# | | | | |
| 7 | INTEROP | 800 | 6 | 8TAC92D | | 852.0125 | | 807.0125 | 156.7 | A | Direct - Tactical Or Ar Assigned | Farmaly I-TAC# | | | | |
| 7 | INTEROP | 800 | 7 | 8TAC93 | X | 852.5125 | | 807.5125 | 156.7 | A | Tactical Or Ar Assigned | Farmaly I-TAC# | | | | |
| 7 | INTEROP | 800 | 8 | 8TAC93D | | 852.5125 | | 807.5125 | 156.7 | A | Direct - Tactical Or Ar Assigned | Farmaly I-TAC# | | | | |
| 7 | INTEROP | 800 | 9 | 8TAC94 | X | 853.0125 | | 808.0125 | 156.7 | A | Tactical Or Ar Assigned | Farmaly I-TAC# | | | | |
| 7 | INTEROP | 800 | 10 | 8TAC94D | | 853.0125 | | 808.0125 | 156.7 | A | Direct - Tactical Or Ar Assigned | Farmaly I-TAC# | | | | |
| 7 | INTEROP | 800 | 11 | WA STATEOPS 1 | | 852.5275 | | 852.5275 | | A | Direct - Tactical - FIRE | | | | | |
| 7 | INTEROP | 800 | 12 | WA STATEOPS 2 | | 852.5625 | | 852.5625 | | A | Direct - Tactical - PD | | | | | |
| 7 | INTEROP | 800 | 13 | WA STATEOPS 3 | | 852.5875 | | 852.5875 | | A | Direct - Tactical - Camman | | | | | |
| 7 | INTEROP | 800 | 14 | WA STATEOPS 4 | | 852.6125 | | 852.6125 | | A | Direct - Tactical - FIRE | | | | | |
| 7 | INTEROP | 800 | 15 | WA STATEOPS 5 | | 852.6375 | | 852.6375 | | A | Direct - Tactical - PD | | | | | |

VHF NIFOG INTEROPERABILITY

SAMPLE KING COUNTY CR 2016 – ICS-205

| INCIDENT RADIO COMMUNICATIONS PLAN | | | | | Incident Name | Date/Time Prepared | | Operational Period Date/Time | | | |
|------------------------------------|------|------------------------|-----------------------|--------------------------|------------------------------------|----------------------|--------------------|------------------------------|--------------------|-------------------------|--|
| | | | | | Cascadia Rising 2016 Exercise V3.1 | 4/6/2016 22:46:00 | | | | | |
| L i n | Ch # | Zone | Function | Channel Name/ TG Name | Assignment | RX Freq N or W | RX Tone/ NAC | TX Freq N or W | Tx Tone/ NAC | Mode A, D or M | Remarks |
| 37 | 1 | Eastside Fire & Rescue | 800 NORCOM Dispatch | TAC-9 | DISPATCH | KC 800 Trunk TG | | KC 800 Trunk TG | | A | Exercise 800 NORCOM Dispatch |
| 38 | 2 | | 800 Tactical | STATEOPS 1 | Tactical | 800 Conv | | 800 Conv | | A | Battallions #1, 4 & 5 |
| 39 | 3 | | 800 Tactical | STATEOPS 4 | Tactical | 800 Conv | | 800 Conv | | A | Battallion #2 & 3 |
| 40 | 4 | | 800 Tactical | STATEOPS 3 | FIRE/PD - I/O | 800 Conv | | 800 Conv | | A | FIRE & PD Local I/O |
| 41 | 5 | | Exercise VHF Dispatch | V/2 | DISPATCH | 154.0850 | 107.2 | 154.0850 | 107.2 | A | Excericse VHF NORCOM Dispatch |
| 42 | 6 | | VHF Command | VFIRE 21 | COMMAND | 154.2800 | 156.7 | 154.2800 | 156.7 | A | Agency DOC |
| 43 | 7 | | VHF Tactical | VFIRE 22 | Batt. #1 I/O | 154.2650 | 156.7 | 154.2650 | 156.7 | A | Batt. #1 Tactical & Local Partner I/O |
| 44 | 8 | | VHF Tactical | VFIRE 23 | Batt. #2 I/O | 154.2950 | 156.7 | 154.2950 | 156.7 | A | Batt. #2 Tactical & Local Partner I/O |
| 45 | 9 | | VHF Tactical | VFIRE 26 | Batt. #3 I/O | 154.3025 | 156.7 | 154.3025 | 156.7 | A | Batt. #3 Tactical & Local Partner I/O |
| 46 | 10 | | VHF Tactical | VFIRE 24 | Batt. #4 I/O | 154.2725 | 156.7 | 154.2725 | 156.7 | A | Batt. #4 Tactical & Local Partner I/O |
| 47 | 11 | | VHF Tactical | VFIRE 25 | Batt. #5 I/O | 154.2875 | 156.7 | 154.2875 | 156.7 | A | Batt. #5 Tactical & Local Partner I/O |
| 48 | 12 | | 800-VHF Patch | V/3 | TAC 9 Output On VHF | 155.2800 | 107.2 | 155.2800 | 107.2 | A | TAC 9 Dispatch Output on VHF (patch) |
| 49 | 13 | | HAM Command Wide 1 | Channel 2 | SSV Net | 147.1000 W | 123.0 | 147.7000 W | 123.0 | A | Primary SSV Net |
| 50 | 14 | | HAM Command Wide B/U | Channel 1 | SSV Net | 440.2500 W | 123.0 | 445.2500 W | 123.0 | A | Backup Repeater (shared w/ Sammamish) |
| 51 | 15 | | HAM Tactical | Channel 6 | HAM OPS UHF | 445.9000 W | 123.0 | 445.9000 W | 123.0 | A | Direct UHF |
| 52 | 16 | | HAM Tactical | Channel 7 | HAM Logistics UHF | 430.7250 W | 123.0 | 430.7250 W | 123.0 | A | Direct UHF |
| 53 | 17 | | HAM Tactical | Channel 5 | HAM Alternate VHF | 147.1000 W | 123.0 | 147.1000 W | 123.0 | A | Direct VHF |
| 54 | 18 | | Winlink 1 - Wide | W7EFR-10 | Regional OPS | 144.9500 W | | 144.9500 W | | D | w7efr@winlink.org |
| 55 | 19 | | Winlink 2 | W7EFR-12 | Agency OPS | 145.6300 W | | 145.6300 W | | D | w7efr@winlink.org |
| 56 | 20 | | Camp Murray HF | | | 3.9850 LSB | | 3.9850 LSB | | A | Primary HF - Camp Murray |
| 57 | 21 | | Camp Murray HF | | | 7.2450 LSB | | 7.2450 LSB | | A | Secondary HF - Camp Murray |
| 58 | 22 | | Satellite Phone | | DOC or COM80 | | | | | | Phone number: 881622466538 |
| 59 | 23 | | Satellite Phone | | BC or Designate | | | | | | Phone number: 881622466539 |



CASCADIA
R I S I N G

June 7-10, 2016

2016 CASCADIA RISING EXERCISE OBJECTIVES

- Overall communications objectives
 - Operational Communications
 - Demonstrate the ability of Emergency Operations Centers (EOCs) to establish and sustain voice and data communications with other EOCs and with the general public to include basic restoration of communications infrastructure within the impacted area to support response operations and coordinated public messaging
 - Amateur Radio is significantly involved and highlighted by FEMA and the PNW Section of the ARRL

2016 CASCADIA RISING EXERCISE OBJECTIVES

- Specific communications objectives

- 1st Operational Period mimics a complete loss of Primary communications

- Communications outage – all traditional communications systems that EOCs routinely rely upon – i.e., the internet to include e-mail, and landline and cell-phone service is ‘taken out’ during exercise play

OR

- Communications degradation – One or more forms of traditional communications systems are taken out, but leaving others functioning – i.e., taking out the internet/email, but letting players continue to use cell phones

2016 CASCADIA RISING EXERCISE

EASTSIDE FIRE & RESCUE OBJECTIVES (PRELIMINARY)

- Assessment

- Personnel, station and apparatus
- Capabilities
- Ongoing safety
- Available resources including food, water, hygiene, comfort, etc.

- Communications

- Identify availability – 800Mhz radio, telephone/fax, internet
- Communications degradation
 - Utilize VHF/HAM as per ICS-205
 - BC and/or DOC contact
 - NORCOM or COM80 – VHF dispatch on .190
 - Battalion level operations
 - Station level operations

2016 CASCADIA RISING EXERCISE COMMUNICATION LEADERS WORKGROUP

- Workgroup objectives
 - Bring various Communications Leads together to collect their planned ICS-205s for the event
 - Review spectrum usage
 - Gain a better view of radio operations as a whole and each team/agency/city's' objectives
 - Attempt to coordinate frequency utilization to reduce interference and spectrum overload
- Expected results
 - Master ICS-205 with sorting capability and lookup
 - Information on how each player may be reached during phases of the exercise
- Ongoing process
 - Maintain and grow the Workgroup within King and adjacent counties
 - Create and maintain an area-wide ICS-217 and provide coordination and information
- 3rd working meeting tonight @ Com Academy



QUESTIONS?



THANK YOU!