



National Interagency Fire Center

3838 S. Development Avenue
Boise, Idaho 83705

Area Command Team 4 Briefing Paper

Date: August 30, 2005

Action Item 1

Name: Fire Season 2005 Field Training

Issue/Topic: Provide training to fire line personnel prior to the end of the 2005 fire season

Indicators of Need for Action: Radio communications on incidents, initial attack and in aviation operations are currently being adversely impacted by narrowband / wideband conflicts. These conflicts are not always recognized by users and technicians.

Key Points:

- Wideband / narrowband conflicts impact communication and therefore safety
- Problems are often misdiagnosed
- Maintenance is often uneven and ineffective
- Training is predominately absent and not tracked

Proposed Action Description: Starting immediately, post the DVD / video, the safety advisory, safety alerts and radio aptitude test on the internet. Require firefighters and other radio users to review the information and take the test. Successful completion of the test (80%) will generate a certificate needed to “check-out” a radio on incident.

Provide the same package of information on a DVD to Incident Management Teams to be shared with firefighters in incidents. Issue a hard copy certificate or completion card to those receiving the training “off-line”.

Provide field training prior to the end of this fire season by sending two (2) person teams to on-going incidents. Working with the Geographic Area Coordination Centers (GACCs) and regional/state/area aviation managers, determine the priority for aviation bases to be visited by avionics technicians and radio technicians for assessment and training.

Improve the training during the fall and winter of 2005, and make it widely available and required as part of the annual refresher training.

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Action Item 2

Name: Interagency Communications Working Group

Issue/Topic: Establish National Fireline Communications Oversight and Working Group

Oversight, leadership and policy development by an interagency national level group is essential to prevent continued long-term safety issues related to radio communications. Assignments could be accepted by current fire leadership groups such as WFLC, NWCG or NFAEB, or assigned to another group or team by one of these national groups. However, it is key that the parent organization have the authority to direct agencies and work groups.

The current situation is somewhat dysfunctional with no clear path to the future. Agencies act independently of each other. Additionally, units within a particular agency often act independently in procurement, programming and training exacerbating the conflicts causing major breakdowns in training, procurement and operations.

Indicators of Need for Action:

Training - The current policy of revising courses on a schedule does not allow the incorporation of new and emerging technology. Additionally, training policy does not provide for recurring or continuing education of incident assigned personnel. This is not unique to communications training.

The use of at least, six (6) different kinds of handheld radios makes detailed, standardized training for use, programming and maintenance nearly impossible. Users are faced with a number of different radios over the course of a single season.

Procurement - The current situation of locally procuring a number of radios has put the wildland fire community in an untenable position. Radios and equipment are purchased locally from a variety of sources with equipment servicing a local function as well. Department and agency leadership must develop oversight of this function to enhance standardization. This must be done while maintaining practical consideration of the overall cost investment in relation to what the true needs are on the fire ground and for aviation. The package must meet agency procurement regulations.

Staffing - It appears there is inadequate staffing to meet the radio communications needs of the wildland fire community. Many Communications Unit Leaders (COML) do not have the tools, training or experience to troubleshoot, repair or program the incident radios. Some COML work in radio or telecommunications as their normal job and normally have the equipment and tools necessary to perform at a high level. However, these same individuals may be dispatched away from their home unit and not have the tools and equipment necessary to complete the assigned work.

Key Points:

- Comprehensive National interagency strategy for fire line communications is lacking.
- Inconsistent Procurement methods exacerbate radio communication issues.
- Training does not currently meet needs.

- Local interpretation of national policy dilutes effectiveness of standardization goals.

Proposed Action Description: Empower a national group to provide oversight and leadership for wildland fire communications. This group will craft interagency policy and ensure effective electronic communications on fires and emergency situations.

Revise national policy to require radio operation and use elements as part of annual refresher training. Certification of this training should be required prior to the issuance of Incident Qualifications Card. Provide all firefighters with this training on the internet.

Task the technology development centers to evaluate or determine the fireline communication solutions for the future. These solutions will consider the impacts on all wildland firefighters.

Develop national policy that would lead to the procurement of a single brand and type radio for handheld, mobile and incident repeater applications.

Procure a single type or brand of radio within each of the areas, handheld, mobile, base and repeater. Military procurement follows this principle. Multiple types and brands lead to confusion, increased costs and lack of compatibility can compromise safety. Explore the possibility of procuring radios and maintenance on a national scale.

National policy revised to allow radios to be programmed on incidents or on details.

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Action Item 3

Name: Annual Electronic Equipment Inspections and Testing Protocol

Issue/Topic: Electronic Equipment Maintenance/Inspections, Software Upgrades, and Radio Testing Protocol

Indicators of Need for Action: Electronics equipment such as radios and repeaters are not getting annual maintenance/inspections and are not receiving manufacturer's software upgrades. Radio users need a testing protocol to determine if radios are operating correctly. In discussions with the National Interagency Incident Communications Division (NIICD) and Information Resources Management electronics personnel indicated that many of the communications issues that the wildland fire community has experienced this summer are due to the lack of annual equipment maintenance/inspections and/or lack of software upgrades at the firefighter's home units.

Key Points:

- Field unit managers, Information Service Organization (ISO), and field electronic technicians should work cooperatively to ensure that maintenance/inspection and upgrades are completed annually or as needed.
- Radio users should follow an established protocol to determine if radios are operating correctly.

Proposed Action Description: Unit managers ensure support and completion of requests for annual maintenance/inspection and upgrades of all electronic equipment including two-way radios and repeaters. Complete this item before fire season, when software upgrades are available, or when communication problems are encountered.

Field electronic technicians ensure that software upgrades are installed on all electronic equipment within their area of responsibility.

NIICD includes electronic equipment software upgrade information on their website (<http://www.fs.fed.us/fire/niicd/documents.html>).

NIICD webpage (<http://www.fs.fed.us/fire/niicd/documents.html>) expanded to include maintenance and inspection information on all wildland fire radios. Currently, only three kinds of radios' information are on the site.

NIICD develop a "Help Desk" that could assist field electronic technicians in maintenance/inspection questions.

Contracting Officers require that all contractors' radios receive annual maintenance and inspection and all current software upgrades.

A radio testing protocol developed by NIICD and should be posted on the NIICD webpage (<http://www.fs.fed.us/fire/niicd/documents.html>). This protocol will help radio users determine if radios are working correctly: Following is an **example** testing protocol:

- Ensure that radio is maintained annually and is in the correct mode (narrowband/wideband)
- Tests should be conducted at a uniform distance between radios. Distances less than 15 feet will likely yield false results. Short distances may mask problems; therefore tests should be conducted with the radios miles apart when possible.
- Simplex and repeater channels should be tested.
- Ensure the transmission is loud and clear. Test should be more than a routine "ten" count. Use the following text for the test.
- "Radio check. Testing 1,2,3,4,5,6,7,8,9,10. How do you copy?"
- Responder should reply (if it applies), "Loud and clear. Testing 1,2,3,4,5,6,7,8,9,10. How do you copy?"
- Results should be weighed against the indicators of incompatibility listed below. If transmissions are not loud and clear, it may indicate a radio problem that should be investigated by electronics technician

CAUTION this is only a aid for users to determine an indication of basic problems, it is not intended to replace the need of regular maintenance.

User should be educated to recognize the indicators of narrowband/wideband incompatibility:

- Transmissions loud and distorted (wideband to narrowband conflict).
- Transmissions soft and quiet (narrowband to wideband conflict).
- Transmissions choppy and repeater cuts-out (wideband to narrowband repeater conflict).

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Date: August 30, 2005

Action Item 4

Name: List of Narrowband Compatible Radios

Issue/Topic: Identification of Narrowband Compatible Radios

Indicators of Need for Action: Some radio users are confused concerning what radio brands or models are narrowband compatible.

Key Points:

- In discussions with the National Interagency Incident Communications Division (NIICD) it was evident that some wildland firefighters are arriving on incidents with radios that are not narrowband compatible.
- Some contractors are arriving with wideband radios that were recently purchased on the Internet.
- Other wildland firefighters believe their older wideband radios are more reliable than the newer narrowband radios and are reluctant to adapt. The use of these older model wideband radios on federal fires creates wideband/narrowband conflicts that significantly diminishes, or sometimes prevents, effective radio communications.

Proposed Action Description: NIICD posts a list of narrowband compatible fire radios on their webpage <http://www.fs.fed.us/fire/niicd/documents.html>. Incident Management Team Communications Unit Leaders (COML) and field electronic technicians should repeatedly check this list. Electronic equipment that is not narrowband compatible should not be used on federal fires.

Federal agencies replace all radios and repeaters that are not narrowband compatible.

Cooperators and local emergency responders may not have radio equipment that is narrowband compatible for several years. In order to maintain communications with wideband radio cooperators and local emergency responders, federal narrowband radios can be programmed in the wideband mode. Prior to fire season, communication protocols should be outlined in Memorandums of Understanding or Cooperative Agreements.

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Action Item 5

Name: Radio Problem Reporting System

Issue/Topic: Develop protocols and implement a system for end user support, reporting radio problems and technical assistance. There currently no consistent interagency method of reporting and sharing communication issues between management, communications specialists, and users. A system or protocol is needed for reporting radio equipment failures, requesting general and specific technical information, delivering feedback of applicability of equipment under field conditions. A centralized location for training is also lacking.

Indicators of Need for Action: By reviewing documents and conducting interviews with field users and cooperators, a clear frustration exists in that little or no opportunity exists to share emerging narrowband radio problems except through the SAFENET/SAFECOM system. The exception was the Forest Service where problems could be reported to the Information Service Organization (ISO). At all levels, fire managers were frustrated by the inability to direct questions to the appropriate level for answers or solutions.

Key Points:

- The SAFECOM and SAFENET web-based hazard reporting systems are independent of each other and maintained and managed by NIFC specialists. Neither system is designed to specifically report radio problems and then provide a reference source or provide training.
- The Lessons Learned web-based wildland fire information system maintained by NTARC. It is a reference based learning system, not a training or reporting site.
- The NIFC Communications Unit maintains a communication web site that shares information but primarily only for NIFC fire equipment. The NIFC Communication Unit's current web site is used to distribute information on upgraded national cache equipment and attempts to concurrently train and educate users in the latest communication developments. Unfortunately this constitutes a very small portion of fire and aviation communication users and the information has not been universally distributed throughout the fire community.

Proposed Action Description: Establish and maintain a web based system that allows two-way communications between field units and a central radio authority. Models would be the SAFECOM/SAFENET systems and the Lessons Learned Center websites and would be characterized by:

- Serving as the definitive repository of radio communication knowledge.
- The site would allow reporting of general radio equipment issues and specific problems with a piece of equipment both in field unit and incident operations.
- Solutions or training would be referenced either on the site or linked to another site.
- Where necessary the individual problem or series of problems may be referred to a specific agency for resolution.

The recommended action is to temporarily use an existing site and in the long term alter an existing site or develop a new site. Actions to redesign an existing site or build a new site will require commitment by the wildland firefighting agencies to support development, staffing, and corporate hierarchy to ensure this is an effective response to issues and problems identified.

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Action Item 6

Name: Annual Communications Refresher

Issue/Topic: Wildland firefighters and aviators are improperly programming radios. These mistakes are made more severe by the wideband/narrowband issues. Improper programming is causing communication concerns on several incidents.

Indicators of Need for Action: After reviewing numerous SAFECOMs and SAFENETs it is apparent that many wildland firefighters and aviators are unfamiliar with the various brands of radios that are used on incidents.

Key Point:

- Wildland firefighters and aviators are not receiving adequate training on radio programming and use.

Proposed Action Description: Include radio communication training as a part of the required annual firefighter refresher package for all agencies and states.

Develop web-based training similar to USDA AgLearn Security Training for radio communications. Ensure the program issues a certificate upon completion.

Include hands-on radio and avionics training at the following meetings:

- Regional Helicopter Managers Workshops

- Air Attack National Workshop
- Leadplane Pilots Meeting
- Helicopter Operations Specialist Meeting
- SEAT Meeting
- Inspector Pilot Meeting
- Air Tanker Association Meeting
- Dispatchers Workshops
- Other meetings/training with vendor pilots
- Engine, Hotshot, and Division Chief Meetings
- Involve and invite local cooperators in meetings

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Action Item 7

Name: Radio Technical Support

Issue/Topic: Current National Wildfire Coordinating Group (NWCG) training curriculum is not adapting to meet today's rapidly changing electronics technology. Communication Unit Leaders (COML) need to enhance their knowledge of the latest electronics technology. COMLs are not provided the equipment, hardware, and instructions to program all the radios that are currently being used.

Indicators of Need for Action: COML's are challenged by programming and maintaining the variety of radio types and brands and repeaters that are being used in wildland fire. Six different brands of handheld radios are in service and numerous brands of radio consoles, repeaters, and mobiles are also being used. It has become a daunting task to obtain knowledge and skill base for these radio systems without additional training. COMLs, once on an incident, are not provided equipment to program the all of brands of radios.

Key Points:

- COML are not receiving additional communication training after initially becoming qualified. Current NWCG training does not include training on the radios that are now being used in wildland fire.
- COMLs are not provided with the required programming equipment, hardware, or instructions on the radios that are being used. S-358 will be revised in 2006 and S-258 will be revised in 2007.

Proposed Action Description: NWCG develops a biannual communications refresher for all COML. S-358 and S-258 revisions should include hands-on training on all the radios that are currently being used in wildland fire.

To keep pace with technology, the courses are revised on a shorter cycle, five years instead of 10 years. NWCG develops a 400 level training for COML. This training would include in-depth training on the various repeaters, radios, etc. The NIICD should provide all required programming equipment, hardware, and instructions in the Incident Management Team Communications Kit (estimated cost of \$4000 per kit).

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Action Item 8

Name: Distribution of Safety Alerts

Issue/Topic: Distribution of Technical, User Alerts and Safety Information

Indicators of Need for Action: A number of technical tips, user alerts, and safety bulletins may come out for specific radio brands and directed at the general user community, but there is currently no established system to get all the information out to the large firefighting user community comprised of federal, state, tribal, and local government agencies and cooperators.

Key Points:

- The National Interagency Incident Communication Division (NIICD) does a good job informing users of NIICD radio systems of technical tips, user alerts, and safety information, but these radios reflect a small percentage of the radios being used in the wildland fire community.
- Many local fire departments and some agencies may not have any methodology to keep informed of changes in technology and updated information regarding their radio systems.

Proposed Action Description: NIICD includes technical tips, user alerts, and safety bulletins on the website (<http://www.fs.fed.us/fire/niicd/documents.html>)

NMAC develop an email notification process for safety alerts that require immediate mitigation

Technical tips, user alerts, and safety alerts posted on the Lessons Learned website and links should be posted to other appropriate sites such as the NIICD site and a wildland firefighter web forum such as They Said site (www.wildlandfire.com).

NWCG, NMAC, and others determine the most effective way to establish this information distribution and notification system and assign implementation.

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Action Item 9

Name: Workload Analysis

Issue/Topic: A review is needed of current workload capacity of maintenance, training and management of radio system to determine level of support required is available.

Indicators of Need for Action: Some of the Fire and Aviation Safety Team (FAST) findings addressed the level of maintenance occurring on the existing radio systems. FAST indicated that many users did not have their radios maintained on a regular basis. Some of the SAFENETs indicated that there were lengthy delays on getting radios back that were sent in for repairs.

Key Points:

- In speaking with personnel from the National Interagency Incident Communications Division (NIICD), recommendations surfaced to send radio technicians to the field to help program radios or to have all radios returned on an annual basis for a “tune-up”, and to ensure the radios had the proper programming and software.
- Some of the comments had to do with the move within the U.S. Forest Service to have the Information Services Office (ISO) coordinate and make repairs for all radio equipment. Several personnel did not believe the ISO was able to carry out their mission requirements.
- The issues related to maintenance, training and management of radio systems are interagency problem since the owners of the radio systems must determine what their own capacity is to handle maintenance issues. The solutions agencies have found and implemented range from having fully staffed radio shops with diagnostic equipment and technicians, to those who use contractors to keep their radios maintained.

- Some contractors and cooperators have no radio maintenance program.

Proposed Action Description: Each agency determines how radios will be tuned-up and maintained. The agency is responsible for their own maintenance and their requirements depend on how many radios and repeaters the agency owns. Most agencies have a person responsible for communications management and this individual could work with their local radio shop and technicians to write a plan to have radios brought in from the field for annual maintenance.

This interagency issue that is addressed by an executive committee formed to deal with communication issues. Agencies determine level of support needed based on the expected workload. Agencies develop alternative plans if their level of support falls short of the needs. This could include interagency sharing of radio technicians or the use of contractors and private industry repair shops. Any additional costs must be planned for and borne by the agencies.

Agencies write their own protocols regarding having radios repaired and maintained and distributing the protocols to their users. Field personnel have an understanding of how to report problems, whom to call, and what to do when their radios need to be repaired.

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Action Item 10

Name: Radio Management Hierarchy

Issue/Topic: Identify and display radio management responsibility hierarchy for planning, purchase, management, training, and interagency coordination. The agencies lack a clearly defined radio management hierarchy to identify responsibilities for management oversight, interagency coordination, and planning for fire and aviation operations needs.

Indicators of Need for Action: By reviewing documents, and conducting interviews with field users and cooperators, frustrations emerged that no one person or group seemed to be visibly coordinating the transition to narrowband in any of the agencies and little or no information was shared on narrowband conversion problems except through the SAFENET/SAFECOM system. At all levels of the Forest Service, managers were frustrated at not being able to direct questions to the appropriate level for answers.

All organizational levels reported frustration in contacting the appropriate level of communication support in attempts to address communication needs. The complaints varied by agency with the highest dissatisfaction directed by Forest Service personnel to the Information Service Organization (ISO) and the lowest dissatisfaction in the Bureau of Land Management due to clear standard operating procedures.

With the increased emphasis in the last decade on computers and telecommunication, many agencies radio communications receive less attention and budget resulting in staff and infrastructure losses beyond the level needed to maintain the system. Where staff and budget permitted, retention narrowed to mainly maintenance technicians and a few engineers or other communication professionals. Technicians were given responsibility for multiple field units,

often with unfamiliar systems. Regardless of the process for reductions in staff and budget, the responsibility remained directly under the control of the local manager.

Control and contact has been lost with the advent of the large centralized service organizational concept. The introduction of narrowbanding is focusing attention on an enduring problem of aging equipment, poor maintenance, and lack of coordination with adjoining systems. It is not uncommon to have incompatible repeaters and base station dispatch consoles that have been “patched” together due to different contactors and specifications that do not fully work in the agency computer environment. This is a radio over IP environment issue.

A NWCG interagency working team addressed the need to meet the narrow banding mandate for the members of the interagency community in 1998. As the transition occurred, no central authority was involved in monitoring and advising management or users of accomplishments, issues, or aids to ease the transition. The National Interagency Incident Communications Division (NIICD) has consistently maintained and upgraded the National Radio Kits to meet the new standards and has attempted to concurrently train and educate users. Unfortunately, these kits only constitute a very small portion of fire and aviation communication use since the vast majority are unit level suppression and operations uses. The narrowband information from NIICD is helpful but unevenly distributed throughout the interagency fire community.

The three components of the typical radio systems are base, repeaters and mobiles and are all affected by the narrowband transition. Many of the repeaters and bases have older technology and have been updated repeatedly to meet narrowbanding requirements. In general the mobiles and handheld radios are newer technology and are rapidly being replaced by narrowband equipment. Maintenance is performed either by agencies or contractors. Standards, levels, and frequency for maintenance are often exclusively budget driven. There are no national standards for the fire and aviation emergency aspect of the radio communication system to be maintained outside of the NIICD cache system.

Key Points:

- ◆ The Department of the Interior and Agriculture have different management systems for oversight, planning, purchase, and training for communication equipment for general users.
- ◆ In both departments computers and telecommunications are emphasis while radio communications takes a very small allocation of budget and personnel resources.
- ◆ In all federal agencies yearly radio communications assessments are a significant investment in the budget in direct and indirect allocations.
- ◆ There is no central interagency fire and aviation group specifically for the management, coordination and planning of future communication needs.
- ◆ Radio communication is and will continue to be the primary method of sharing immediate dispatch, safety, and incident tactical information in the wildland fire environment.
- ◆ In many areas the present radio system infrastructure is either not matched, upgradeable, nor properly maintained to meet the narrow banding issues.

Proposed Action Description: The recommend action is to assign an interagency group to assemble the individual agencies corporate charts displaying current radio communication hierarchy responsible and processes uses to upgrade, repair, and procure communications. This allows the group to provide the best suggestions to ensure that national recommendations from the

NMAC/NWCG are presented to the agencies and departments to match current and future needs of the fire and aviation organizations. Nationally, agency fire management organizations need to clearly identify standards and priorities for radio communications including hardware, software, repeater systems, mobile, aircraft and handhelds. This could be accomplished by an interagency working team to establish universal standards consistent with the future vision and direction of fire and aviation programs' incident radio needs.

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Date: August 30, 2005

Action Item 11

Name: Coordination with Fire Departments

Issue/Topic: Continue and Improve Coordination with Fire Departments

Indicators of Need for Action: In the U.S., local fire departments respond to approximately 1.9 million fires per year with a substantial portion of this protection provided by up to 28,000 rural fire departments. The ability of all fire responders to communicate with each other is a critical component of interagency fire management. Radio compatibility is central to this communication challenge. A multitude of emergency communications systems are currently in use which can lead to frequency interference and lack of interoperability.

The National Fire Protection Association (NFPA) produced a national Needs Assessment of the U.S. Fire Service in December of 2002. NFPA received completed surveys from 12,240 fire departments that provided information on their ability to communicate with federal, state and local partners. Three-fifths to four-fifths say they can communicate at incident scenes with their federal, state, and local partners while only two-fifths say they can communicate with all their partners.

The National Association of State Foresters (NASF) published a needs assessment and report to Congress on June 30, 2003 entitled *The Changing Role and Needs of Local, Rural, and Volunteer Fire Departments in the Wildland –Urban Interface*. This assessment recommended actions for implementing a 10 year comprehensive strategy for wildland fire training, efficient interagency response, initial attack/emergency communications ability, and coordinated federal and state assistance. Radio communications for fire departments continues to be one of the top three priorities for federal assistance. The 2002 needs assessment indicated that up to 50% of emergency responders lacked radios and less than 50% of departments can communicate with most of their interagency partners on an incident. Texas Forest Service maintains the national database that was created from the survey. Contact number is 979 458 6509.

Key Points:

- Rural, volunteer, and local fire departments are the nation's first line of defense against fire starts in the Wildland-Urban Interface and surrounding landscapes.
- Many of the local, rural, volunteer fire departments will require additional time to complete transition to narrowband.
- Many fire departments operate on different radio bands such as UHF (400-512 MHZ) or 800 MHZ which complicate communications.

- The fire department land mobile radio systems are used in conventional, analog, and digital modes as well as in trunking mode-in which many users share a common pool of radio channels.
- The multitude of communications systems has led to two primary conflicts: frequency interference and lack of interoperability.
- State forestry agencies often function as the interface between local and federal agencies for radio communications and tactical operations.
- Both of these surveys were conducted prior to the January 2005 transition date of the federal agencies. Federal and state agencies need to recognize the scope of the issue of maintaining communications with local fire departments.

Proposed Action Description: Federal and state programs that provide grant funding for local and rural fire departments to purchase equipment prioritize the acquisition of radio communications technology that will facilitate interoperability between local departments and their state and federal counterparts. Granting agencies also provide policy direction that radios purchased through federal funding must be narrow-band compatible

Local, state, and federal firefighting agencies in each state develop cooperative agreements or plans for interagency frequency use to mitigate interoperable problems and promote efficient frequency utilization and management. The agencies provide training in frequency management and the use of cross-banding/interoperable equipment.

While local fire departments transition to narrowband, state and federal agencies recognize the need and continue to use capabilities for mix mode/cross banding equipment to ensure adequate communications with local fire departments are maintained.

Improving interoperability and public safety communications for the long term requires improved coordination and partnerships, spectrum management, funding, standards and technology and security.

Area Command Team 4 Briefing Paper

Date: August 30, 2005

Action Item 12

Name: State Forestry Survey

Issue/Topic: Conduct Survey of State Forestry Agencies Produced by Area Command Team

Indicators of Need for Action: Area Command contacted numerous states to validate wideband/narrowband and other interoperability conflicts and to solicit suggestions on how to mitigate the problems. Most states indicated they were experiencing radio communication problems with federal agencies but were able to mitigate most of these conflicts through various work arounds. Most states were 50%-100% narrow band capable.

Concerns expressed by states included:

- Programming errors.
- Narrowband repeaters are being used exclusively while non-narrow band portables and mobiles are on the incident.

- Only narrow band frequencies are being selected by COMLs and used extensively for unified or interagency incidents which involves portables/mobiles that are wideband.
- Fire activity was limited this year so systems have not really been tested.
- Many states do not plan to transition to digital.
- Do not surplus wideband radios for local and state entities.
- Many local fire departments are operating on wideband, UHF, or 800 MHZ and will continue to do so.
- Many state governments are planning or currently implementing statewide 800 MHZ trunking systems for fire departments and local government

Mitigation measures employed by state forestry agencies this summer for wideband/narrow conflicts and other interoperability issues include:

- Developed and published radio operator guides.
- Narrowband radio loaner program for cooperators and personnel assigned to federal incidents.
- Emphasis on local training.
- Continued testing of equipment capabilities.
- Statewide Interoperable Communication Working Groups established and functioning in some states.
- Programming the national interoperable frequencies and tones into radios.

Connecting disparate frequency bands through gateways that allow for radios of various bands to communicate with each other

Key Points:

- Many states will require additional time to complete transition to narrowband.
- State forestry agencies often function as interface between federal and local resources for communication and tactical operations.
- State forestry agencies make their own decisions regarding narrowband and the level of transition from complete implementation to no transition.
- Local fire departments operate radio communications on a wide range of frequencies and bands.
- State forestry agencies are responsible for protection of more than 800 million acres of forest and range lands and are key cooperators to federal agencies.
- Federal agencies need to recognize the scope of the issue of maintaining communications with state forestry agencies.

Proposed Action Description: Conduct a survey of state forestry agencies to determine status of transition to narrowband and other interoperability issues. See attached sample survey format.

Capture success stories on mitigating interoperability.

Federal agencies should recognize the need to utilize capabilities for mix mode/cross banding equipment to ensure adequate communications with states are maintained.

Improving interoperability between federal and state agencies for the long term requires improved coordination and partnerships, spectrum management, funding, standards and technology and security.

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Date: August 30, 2005

Action Item 13

Name: Fireline Communications of the Future

Issue/Topic: Develop overall strategy or vision for future fire communications which includes research and development.

Indicators of Need for Action: Area Command Team 4 could not locate an overall strategy or vision for future fire communication. It was apparent there was little in the way of overall research of new and emerging technology.

The two way radio communication industry is focused on an urban environment where there are relatively large numbers of users. This community is able to operate on a small number of frequencies by the use of expensive computing equipment which enables trunking. A high volume of users is needed to defray the cost of these systems. These systems are also characterized by fixed sites and long term occupation that enables upgrades and improvements over time

The wildland fire community, by contrast, is generally comprised of smaller user groups, widely scattered geographically. There is long term occupation, but also intermittent occupation in the case of incidents and other emergencies. Another complicating factor is the mix of equipment and personnel from all over the country.

Key Points:

- Future fireline communication technology is not defined.
- Text type communicators have not been evaluated.
- Technology is rapidly changing.
- Industry is geared towards high volume users.

Proposed Action Description: It is unclear what kind of support and product development will be available for the wildland fire community. It is clear that the wildland firefighters as customers will likely to continue to shrink in importance to the radio industry.

The team recommends an ad-hoc group with representatives from the Information Services Organization (ISO) operations, professionals in aviation, communications and procurement, and field operations representatives to review current and emerging technology to recommend a fireline communication strategy for the future.

This review should include cell phones, satellite phones, satellite radio, radio communications over IP, trunking systems and frequency ranges. Contacts include;

- Satellite Radio -- Texas Forest Service, David Abernathy
- Radio over IP -- National Forest in North Carolina, Leah Wofford

Other items for review should include:

- Trunking systems that include cellular phones.
- Personal communicators such as PDA's and Blackberry type devices

Area Command Team 4 Briefing Paper

Date: August 30, 2005

Action Item 14

Name: Standard Contract Language

Issue/Topic: Develop standard radio specifications for contractors

Indicators of Need for Action: Several contractors are using radios that are not narrowband compatible. The problem is more likely to occur with vendors hired using Emergency Equipment Rental Agreements (EERAs). Contract requirements are currently too broad by specifying that the vendor provide a radio but not including contract language is not specific as to capability.

Key Points:

- National contracts currently have the proper specifications for radio communications.
- Regional contracts and EERA vendors may arrive on incidents with radios that are wideband cannot be properly programmed. This is creating situations where the incident must provide radios to engine and crew contractors.
- Providing radios to contract firefighting resources on incidents reduces the number of radios available for other incident resources and may indicate that the contractor is out of compliance with contract requirements.

Proposed Action Description: Use the standard contract language from the National Contract that addresses radio communications in all regional contracts and in EERAs to properly specify radio requirements. Distribute this contract language through the incident business management community. The proper clause should be changed in the Interagency Incident Business Management Handbook as an attachment to the EERA (OF-294).

Ensure that contractors are aware of the new requirements prior to the beginning of the 2006 fire season. Have the National Wildfire Coordinating Group Incident Business Practices Working Team coordinate with the states and federal agencies to implement use of standardized radio specifications in contract language.

Area Command Team 4 Briefing Paper

Date: August 30, 2005

Action Item 15

Name: Incident Radio Coverage

Issue/Topic: Develop Standards for Adequate Radio Coverage on Incidents

Indicators of Need for Action: Many IMTs are attempting to obtain 100% radio coverage for entire incidents including travel routes. There has been a significant increase in communication equipment orders from the National Interagency Incident Communications Division (NIICD) to supply the increased need for larger communication systems. A variety of factors are combining

to create the need for increase communication systems including fire size, spatial separation of incident facilities, topography, transportation corridors, initial attack responsibilities and an increased requirement for reliable coverage. When there is a lack of radio communication, firefighters need to maintain situational awareness, conduct a risk assessment, and mitigate the situation by seeking alternative methods. While disengagement is an alternative, it should be only one of many options considered. These standard protocols are used in other aspects of incident response, but are rarely implemented during periods of inadequate radio communications.

Key Points:

- It may not be operationally or technically feasible to establish radio communications on 100% of the incident and travel corridors.
- Mitigation measures can be employed when fighting fire in areas with less than 100% radio communications coverage. Those include:
 - Maintaining situational awareness and convey instructions
 - Exploring alternative methods of maintaining LCES
 - Evaluating risk, exposure and consequences
 - Changing location or channels
 - Modifying tactics
 - Using runners and or messengers
 - Assign human or verbal repeaters

Proposed Action Description: Develop an ad hoc group comprised of members from the National Wildfire Coordinating Group (NWCG) Incident Operations, Safety and Health, and Radio Narrowband Working Teams to review and develop standards for adequate radio coverage.