NPSTC
National Public Safety Telecommunications Council

The Collective Voice of Public Safety Communications

MEMBER ORGANIZATIONS

American Association of State Highway and Transportation Officials

American Radio Relay League

American Red Cross

Association of Public Safety Communications Officials - International

Forestry Conservation Communications Association

International Association of Chiefs of Police

International Association of Emergency Managers

International Association of Fire Chiefs

International Association of Fish and Wildlife Agencies

International Municipal Signal Association

National Association of State Emergency Medical Services Directors

National Association of State Foresters

National Association of State Telecommunications Directors

LIAISON ORGANIZATIONS

Federal Communications Commission

Federal Partnership for Interoperable Communications

Telecommunications Industry Association

US Department of Agriculture

US Department of Justice

NIJ CommTech Program

US Department of Homeland Security

FEMA

SAFECOM Program

US Department of Interior

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Fourth Quarter Report, 2004

This Quarterly Report documents the activities of the National Public Safety Telecommunications Council (NPSTC), its Governing Board, the three Committees including their respective Working Groups, and the National Support Office for the fourth quarter, 2004.

Governing Board

The Governing Board's Quarterly Meeting was held in New York City on November 18 and 19, 2004, and well attended, with 68 attendees on Committee Day and 66 at the official Governing Board meeting. Complete meeting minutes can be found on the NPSTC website at www.NPSTC.org.

The Governing Board approved the addition of two new Working Groups to the Technology Committee—a Paging Working Group and an Equipment Surveyors Working Group. Many public safety agencies continue to use paging services, traditionally tone and voice technology. Two trends in deploying public safety radio systems impact the current use of tone and voice paging systems. First, many agencies have migrated to the 800 MHz band and use trunked radio technology that does not support traditional tone and voice paging. Second, as systems below 512 MHz transition to narrow emissions to meet Federal Communications Commission (FCC) refarming rules, agencies are electing to implement using digital modulations. Another factor affecting paging technologies is the growth of cellular phone use. While a few years ago, commercial paging systems were a large growth area, commercial systems have lost large numbers of paging customers as a direct result of the huge growth in cell phone use. Because of the smaller market for paging, some paging companies have withdrawn from the market and others have merged. Due to this industry consolidation, many 900 MHz paging channels are apparently unused today. While more technical and licensing research is needed to better quantify and document the use of 900 MHz paging channels, the trend creates an opportunity for the public safety community to request that the FCC allocate some 900 MHz paging pairs of frequencies for public safety use.

There was a second recommendation for a Working Group on Surveying Equipment. Most equipment is designed for private surveyors, which use business itinerant channels to send Global Positioning System (GPS) information to crews, but the government cannot use those channels. The Technology Committee will develop a mission and goals for the Working Group.

The NPSTC Governing Board approved its revised Charter, which is also posted on the website; the NPSTC Handbook, which will be considered a living document with any revisions to be reviewed and adopted as needed by the Board; and a NPSTC Style Guide to govern the editorial style of NPSTC's published documents.

With much activity happening at the national level at this time, at least one additional Governing Board meeting will be added in the next calendar year. The next Governing Board meeting will be held in Orlando, Florida on January 24, 25, and 26, 2005, in coordination with the Department of Homeland Security (DHS) SAFECOM program meetings, to be held on January 26 and 27. This will allow several NPSTC members who are part of the SAFECOM Executive Committee and Advisory Group to attend both meetings.

Meetings

NPSTC members represented public safety at various meetings this quarter, including Telecommunications Industry Association (TIA) TR-8 meetings and Radio Advisory Board of Canada (RABC) Canadian Public Safety Meetings. NPSTC members attended the TR-8 meetings in St. Louis, Missouri, in October. There were several TR-8.8 submissions that were examined from both Motorola and M-A/COM. The M-A/COM submission identified a need to clarify power measurements for 4.9 GHz equipment and to harmonize these measurement techniques with the FCC's Part 15 rules to better allow for the use of Orthogonal Frequency Division Multiplexing (OFDM) equipment at 4.9 GHz. The meeting included discussions on how best to proceed with the methodologies to define bandwidth needs and technical parameters.

FCC Actions

WT 02-55, 800 MHz Interference

Since the FCC's issuance of the 800 MHz rebanding plan on August 6, 2004, Nextel and Verizon have engineered a truce. The Government Accounting Office (GAO) also issued an opinion on the legality of the 800 MHz interference issue, removing potential major stumbling blocks from resolution of the order. Numerous ex parte submissions have been filed by Nextel and others. The issues of interference abatement during transition, border issues with Canada and Mexico, and formal approval by Nextel remain to be addressed.

4.9 GHz Public Safety Spectrum

On November 9, 2004, the Commission adopted a MO&O that partially adopted the NPSTC petition on the mask by adopting a new 4.9 GHz emission mask—one for high-power operations (the DSRC-C mask) and one for low-power operations (the DSRC-A mask). The MO&O granted acceptance of the 20 dBm breakpoint, a decision grounded on the fact that even consumer equipment in this frequency range is relatively tolerant of interference and that the power level strikes a reasonable balance between interference avoidance and 4.9 GHz equipment affordability. The FCC also reaffirmed decisions in the Third Report & Order (R&O), not to adopt a technology standard and not to make regional planning mandatory in the 4.9 GHz band.

NPSTC filings were instrumental in achieving partial acceptance of its petition. NPSTC filed a PFR on July 30, 2004, asking for adoption of an industry standard emission mask, a clear path towards minimal technology standards to promote interference-free operations and interoperability, a mandate for adherence to regional plans, and the provision of intra and inter regional dispute resolution. On August 8, 2004, NPSTC filed a public safety scenario demonstrating operational deployment of 4.9 GHz at the scene of a severe incident, which dispelled interference claims under severely loaded conditions.

Other Regulatory Actions

Regarding ET 04-37, Broadband over Powerlines (BPL) R&O, NPSTC wanted exclusion for public safety bands, but it was not granted. Although the R&O establishes "excluded frequency bands" within which BPL must avoid operating entirely to protect aeronautical and aircraft receivers communications and establishes "exclusion zones" in locations close to sensitive operations, such as Coast Guard or radio astronomy stations, within which BPL must avoid operating on certain frequencies, public safety is not included in the excluded frequency bands. There are open issues that need to be resolved on BPL, including universal service, disabilities access, E911, pole attachments, competition protections, and how to handle the potential for cross-subsidization. The burden of resolving interference mitigation has been shifted from the operator to the licensee. The R&O also requests licensees to locate "sensitive receiver antennas" as far as practically possible from power lines. The FCC told the American Radio Relay League (ARRL) that if members experience interference "such noise can often be avoided by carefully locating their antennas." The ARRL is weighing options.

Regarding the U.S. and Canadian harmonization, in October 2004, Industry Canada released DGTP-002-04, Mobile Service Allocation Decision and Designation of Spectrum for Public Safety in the Frequency Band 746-806 MHz. This action allocates the mobile service in the frequency band 746-806 MHz on a co-primary basis with the broadcasting service and designates some spectrum for public safety (TV Channels 63/68).

Spectrum Management Committee Chair, Steve Devine, Vice-Chair, Stu Overby

The NPSTC Spectrum Management Committee currently oversees the activities of the following Working Groups. The International Telecommunications Union (ITU) Working Group has been moved under the Interoperability Committee, and the VHF Rebanding Working Group was recently added at the September 2004 NPSTC meeting.

- Regional Planning Committees (RPC)
- Broadband (BRB)
- TIA TR-8 (TIA)
- 700 MHz Outreach (700)
- VHF Rebanding (VHF)

Regional Planning Committees (RPC)

The RPC community is soliciting comment through the National Association of Regional Planning Committees (NARPC) on the issue of 57 wideband 50 KHz data channels the FCC has set in reserve for future use. The FCC allocated 48 50 KHz channels for state and local general use and 18 50 KHz wideband data channels were specifically designated for interoperability. The 700 MHz wideband data channels in reserve were intended for future technologies, but is possible that some RPCs would be better served if the reserve spectrum were consolidated and used for a 700 MHz broadband technology, such as IEEE 802.20. Other Working Groups, including 700 MHz Advocacy, Broadband, and 700 MHz Wideband Technologies are also involved in these discussions.

The FCC's Media Bureau released an order on Docket 03-15 that introduced a new responsibility for the RPCs to approve state licensees for low power TV, translator licensees, and new licenses being issued. Within TV channels 60-69, the new licensee has to obtain written concurrence from the RPC or the state licensee. There will need to be an awareness campaign to educate the RPCs that secondary licensees will be approaching them for letters of concurrence. The order relates only to new digital low power stations, not analog.

Broadband (BRB)

BRB, working with the Software Defined Radio Working Group, will coordinate an official reaction to the FCC actions on the continuation of the FCC's 04-136/02-380 Docket on Unlicensed Sharing in the TV Bands. They will also coordinate with the Software Defined Radio Forum (SDRF) Spectrum Sharing/Cognitive Working Group; the NPSTC 700 MHz Advocacy Working Group and the Radio Advisory Board of Canada (RABC) Joint Broadcast/Public Safety Working Group, on TV Interference and Sharing, as well as the IEEE 802.18 TV Sharing Study Group (soon to be the IEEE 802.22 Working Group). The National Support Office has provided a draft filing to stimulate discussion. The initial comments in the FCC proceeding have been postponed 90 days and were due November 30, 2004.

TIA TR-8 (TIA)

The Working Group continues to liaise with BRB and to follow the activities of most of the other TR-8 committees. The current plan for TR-8.8 is to develop use cases that will be used to develop bandwidth requirements to support user applications and scenarios. As that is accomplished, the protocol will naturally develop. The modeling will be performed by ITS Boulder, SRC, Motorola, and others using OpNet software. SRC will develop the physical (PHY) layer models, similar to those employed in the NPSTC 4.9 GHz scenario, and interface them with OpNet while ITS will model the upper layer interactions. There will also continue to be discussions between the Spectrum Management and Interoperability Committees to try to resolve the need for requesting mandated standards for interoperability PHY protocols at 4.9 GHz.

700 MHz Outreach (700)

The DTV transition has developed a lot of momentum this year. Senator McCain added language to the Intelligence Homeland Security Bill in the Senate that would address TV clearing and address additional spectrum

beyond the 24 MHz. The latest actual date certain may not survive, but another congressional effort encourages the FCC to do something by a date certain. The Working Group will continue its work and hope to get some final decisions next year. As noted under BRB, the 700 Working Group will collaborate with other Working Groups on TV sharing and interference analyses within the 700 MHz band.

Border Issues (BIS)

BIS continues to work with the RABC within the Joint Broadcast and Public Safety Working Group. This group is working with Industry Canada (IC) to develop the TV Band sharing and interference protection rules for Public Safety and Broadcast Services. IC has released Notice No. DGTP-002-04, Mobile Service Allocation Decision and Designation of Spectrum for Public Safety in the Frequency Band 746-806 MHz (SP-746 MHz). This document solicits comments on issues such as the band plan and technical standards for the Canadian allocation. Filings are due January 15, 2004. BIS is working with the 700 MHz Advocacy Working Group to draft NPSTC comments to the IC 700 MHz Consultation. These are to be provided to the Governing Board review by January 7, 2005, for approval before submission to Industry Canada by the January 14, 2005 due date. The comments will address the following key points:

- Express NPSTC support for IC action designating 700 MHz spectrum in channels 63 & 68 (764-770/794-800 MHz) for public safety.
- Encourage IC to take actions needed to ensure this spectrum is cleared and actually available for use as soon as possible.
- Recommend that technical rules compatible with those adopted in the U.S.
- Provide a recommended border plan that maximizes availability of spectrum for both Canadian and U.S. public safety entities in the border area.
- Recommend IC also continue to consider additional public safety allocations and TV clearing in TV channels 64 and 69 (770-776/800-806 MHz).

New York State also has a border sharing proposal at 700 MHz that provides for equitable international spectrum sharing while accounting for TV interference effects.

VHF

VHF and the National Support Office are examining issues relating to an ICOM PFR requesting Additional Public Safety Spectrum at VHF (150 and 153-154 MHz). These additional channels—18 paired channels from CFR 47 Part 22.561, and 4 unpaired channels from CFR 47 part 22.531—may facilitate some of the band management and repacking operations that are necessary to free additional spectrum, assist in narrowbanding transitions, organize the VHF for trunking support, and lesson the effects of interference within the band.

The National Support Office will provide significant assistance to the Working Group in generating a response to any FCC-issued docket and performing analyses to reach conclusions about the impact and opportunities afforded by the clearing of additional VHF spectrum. The National Support Office will perform analyses on how these channels may be leveraged to re-band portions of the VHF spectrum in certain areas of the country. If this spectrum were to be made available to public safety, significant planning would be necessary to maximize its impact in "cleaning" up the VHF band. This could provide a rare and precious opportunity to reorganize the VHF band.

Technology Committee, Chair, Glen Nash, Vice-Chair, Sean O'Hara

The NPSTC Technology Committee currently oversees the activities of the following Working Groups:

- NCC Recommendations (NCC)
- Narrowbanding Below 512 MHz (NRB)
- ARS and Broadband Over Powerline Technology (BPL)
- Security (SCR)

NCC Recommendations (NCC)

To date, the FCC has still not released its Final Report with NCC recommendations although FCC representatives indicate that this is an active item at the Commission. There has been a great deal of activity to provide clarification and updates to the FCC in an ex parte filing that NPSTC filed on September 30, 2004.

Narrowbanding Below 512 MHz (NRB)

As discussed above under the VHF Rebanding Working Group, ICOM filed a PFR requesting Additional Public Safety Spectrum at VHF (150 and 153-154 MHz). These additional channels may facilitate some of the band management and repacking operations that are necessary to free additional spectrum, assist in narrowbanding transitions, organize the VHF for trunking support, and lessen the effects of interference within the band.

Several years ago the FCC issued R&O that has since become a problem, requiring that by January 1, 2004, in order to obtain certification for a radio, manufacturers would have to include a 6.25 KHz channel for that radio. When the R&O was issued, it was assumed the task would be achievable, but technology has not developed at the pace that was assumed at the time of issuance. TIA is currently working on a new set of standards that will satisfy the 6.25 KHz requirement, but the standards will not be completed for 18 months. The manufacturers, through TIA, have asked for a stay of the R&O; a NPSTC letter in support of the stay is on the website.

Amateur Radio Services (ARS) and Broadband Over Powerline Technology (BPL)

The primary issue of this group continues to be the broadband over powerline interference issue. On October 14, 2004, the FCC released an R&O on BPL that does the following:

- Sets forth rules imposing new technical requirements on BPL devices, such as the capability to avoid using any specific frequency and to remotely adjust or shut down any unit.
- Establishes "excluded frequency bands" within which BPL must avoid operating entirely to protect aeronautical and aircraft receivers communications; and establishes "exclusion zones" in locations close to sensitive operations, such as coast guard or radio astronomy stations, within which BPL must avoid operating on certain frequencies.
- Establishes consultation requirements with public safety agencies, federal government sensitive stations, and aeronautical stations.
- Establishes a publicly available Access BPL notification database to facilitate an organized approach to identification and resolution of harmful interference.
- Changes the equipment authorization for Access BPL systems from verification to certification.
- Improves measurement procedures for all equipment that use RF energy to communicate over power lines.

Security (SCR)

The SCR Working Group continues a high-level assessment of the DSRC security report on the 5.9 GHz portion of the band and to monitor the activities and goals of GLOBAL, a Department of Justice effort to standardize information sharing among agencies. Long-term goals include how and where to appropriately address identification, authorization, authentication, privacy, integrity, attack detection and prevention, and monitoring.

700 Wideband Technology Working Group (WTC)

During this quarter, the WTC Working Group requested information from Motorola for all SAM [Scalable Adaptive Modulation] bandwidth configurations including SAM ENBW [Effective Noise Bandwidth] factors, SAM Power Spectrum, IF [Intermediate Frequency] Filter Shape and Model, SAM Data Rate Sensitivity, SAM Adjacent Channel Rejection, and SAM Co Channel Rejection. NPSTC has received some of this information and will review it with Motorola.

New Working Groups

With the Governing Board's approval, the Technology Committee added two new Working Groups—the Paging Technologies Working Group (PGT) and the Surveying Equipment Working Group.

Interoperability Committee, Chair, John Powell; Vice-Chairs, David Buchanan and Ralph Haller

The NPSTC Interoperability Committee currently oversees the activities of the following Working Groups:

- Statewide Interoperability Executive Committee (SIEC)
- Project MESA (MESA)
- ARS Software Defined Radio (SDR)
- System Interconnect (ICT)
- International Telecommunications Union (ITU)

Statewide Interoperability Executive Committee (SIEC)

The administrator of the Computer Assisted Pre-coordination and Resource Database System (CAPRAD) continues to seek funding to generate a State Channel pool that can be loaded into CAPRAD and used as an optional SIEC template and to explore the possibility and timing of SIEC training sessions. The Working Group will seek support from SAFECOM and the FCC that would allow NPSTC to develop a framework to assemble the SIEC Chairs and develop a model SIEC plan. A proposal to the Governing Board on this plan is on the NPSTC website (Document #: IO-0008). It has also been suggested that NPSTC should move forward with SIEC planning in all bands, not just 700 MHz. This would require developing a restatement of the Working Group's mission and goals.

Project MESA (MESA)

Together, this committee and MESA continue to work together to align the MESA Statement of Requirements (SoR) and the SAFECOM SoR, primarily by eliminating colloquial United States expressions and language that are not relevant to the international public safety community.

Software Defined Radio (SDR)

The SDR Working Group asked for volunteers to attend SDR Forum meetings. SDRF hosts four concurrent working group meetings that all require attendance and monitoring. NPSTC provides funding for four attendees, but finding the volunteers to do the work is difficult. Volunteers for this role were identified at the November 2004 meeting.

SDR works closely with the Spectrum Efficiency and Cognitive Radio Working Group of the SDRF, which focuses on the approaches and effectiveness of cognitive and spectrum-sharing technologies. The Working Groups will identify these cognitive and spectrum-sharing approaches, and assess their effectiveness against an array of incumbent user profiles (e.g., TV operations, CMRS operations, etc). The assessment will be performed using both simulation and testbed validation techniques. The results of the assessment will be filed by the SDRF later this year in conjunction with all open Spectrum Sharing and Cognitive Radio Dockets.

An effort focused on spectrum utilization data collection examines relative changes in spectrum utilization in public safety and non-public safety frequency bands during normal/baseline activity and during major events. The Spectrum Efficiency and Cognitive Radio Working Group of the SDRF will review the data collected during the spectrum monitoring before, during, and after the Republican National Conventions in New York City. There are future data collection efforts being planned for the Super Bowl in 2005.

Joint Tactical Radio System (JTRS) continues to be interested in communicating with the public safety community and want to garner agreement and support of the work on the P25 waveform. Public safety requirements sit squarely between military and commercial services, with military and commercial services taking significantly diverse approaches to the introduction of SDR.

NPSTC member Fred Frantz has written a Public Safety Request for Information (RFI), *Request for Information on the Topic of How Software Defined Radio Technology Can Meet the Communications and Interoperability Requirements of Public Safety*, to address these matters with industry. The RFI has been published, with replies due December 15, 2004.

There is significant interest in the RFI and it is expected that answers will be received from manufacturers and regulatory bodies around the world. The SDR Forum Public Safety Special Interest Group (PSIG) will compile the results of the responses to the RFI, identify consensus positions and key areas for further consideration, and publish a report on the findings in mid-2005.

International Telecommunications Union (ITU)

At the September 2004 NPSTC meeting, the Governing Board voted to move the ITU Working Group from the Spectrum Committee to the Interoperability Committee because of its strong relationship with SDR. The Working Group Chair provided a presentation on ITU, a draft mission statement for the Working Group, and initiated a discussion on NPSTC's potential level of involvement with ITU that will be resolved by the Governing Board.

System Interconnect (ICT)

The ICT Working Group is currently reviewing drafts of the white paper addressing appropriate methods for licensing transmitters connected with gateway interconnect devices and will present on the issues at the next meeting.

National Support Office Administrative Support

During this quarter, the National Support Office revised the NPSTC Charter and Handbook; created a NPSTC Style Guide; developed templates that include a Word, Power Point, Press Release, and Fax Cover Sheet; developed a press release policy; and published Volume 4, Issue 2, of NPSTC's newsletter, *spectrum*. The National Support Office assisted with the creation and distribution of a press release thanking the FCC for finalizing technical rules for the 4.9 GHz band that will promote access to broadband technologies for the nation's public safety community. Points of Contacts for all of the public safety media were obtained in cooperation with the Association of Public Safety Communications Officials – International (APCO).

The updated website, www.NPSTC.org, went live on November 15, 2004. The main updates included a navigation bar for easier access to all parts of the site from any page, a drop down menu for quick access to member organizations, biographies of the Governing Board Members, Executive Committee, Committee Chairs, and National Support Office Staff, and a member's only section for sharing documents. In conjunction with the member's section of the website, all NPSTC documents since May 1, 2004 were renamed according to the NPSTC Document Numbering System (see the handbook for more details) and placed on the member's only section of the website into their appropriate categories. The document index for each section was also updated.

National Support Office Technical Support

Within the current funding framework, National Support Office Technical Support continues to focus on the following tasks:

- Performing analyses to reach conclusions about the impact and opportunities afforded by the clearing of additional VHF spectrum under ICOM's Petition for Rulemaking.
- Initiating the new 700 Wideband Technologies Working Group by performing analyses and creating a presentation on an implementations guideline for Committee-wide review.
- Initiating analyses on cognitive radio techniques to stimulate additional forward progress in the Software Defined Radio Working Group and to support public safety's position on Interference Protection in the Comments on FCC Docket 04-186/02-380, the Sharing of TV Spectrum with Unlicensed Devices.

The most urgent events of this quarter were related to the FCC Report and Order (R&O) on the 800 MHz Rebanding, activity regarding NPSTC's Petition for Reconsideration (PFR) on the 4.9 GHz Band Memorandum Opinion and Order (MO&O), and the development of a coordinated Statewide Interoperability Executive Committee (SIEC) organization. There is a strong need to coordinate the SIECs. The Spectrum Committee and SIEC Working Group would like support from SAFECOM and the FCC for NPSTC to develop a framework to assemble the SIEC Chairs and develop a plan to be used as a model by all the SIECs.

There is also a significant amount of Committee Chair coordination necessary to respond to the 800 MHz rebanding docket, including the discussion of interference protection (before, during, and after rebanding), rebanding timelines, handling states with multiple Regional Planning Commissions (RPC) regions simultaneously, and border issues.

Yahoo listserv groups, established for the Technology, Spectrum Management, and Interoperability Committees, continue to grow. As shown below, Committee website membership has steadily grown since the new NPSTC structure has been introduced, more than doubling in size over the past 6 months.

Committee Website Membership Levels

Month	Spectrum Management	Technology	Interoperability
Jun – 04	28	27	29
Jul – 04	29	27	32
Aug – 04	34	34	37
Sep – 04	38	39	42
Oct – 04	39	39	42
Nov – 04	44	41	44
Dec - 04	44	42	47

Concluding Remarks

In the next quarter, in addition to ongoing administrative and technical support, the National Support Office will assist with the development of an outreach plan that will include a speakers bureau, conference listing, publication listing, and outreach publications, including a new postcard and brochure. Once filled, the NPSTC National Support Office Director position will be responsible for developing a more robust outreach program. The National Support Office will continue to provide an increased role in the facilitation and execution of Committee activities, which will include building momentum and the focus of some Working Groups until they become self sustaining.

Formed on May 1, 1997, NPSTC is a federation of associations representing public safety telecommunications. NPSTC was originally formed to encourage and facilitate implementation of the findings and recommendations of the Public Safety Wireless Advisory Committee (PSWAC), established in 1994 by the Federal Communications Commission (FCC) and National Telecommunications and Information Administration (NTIA) to evaluate the wireless communications needs of local, tribal, State, and Federal public safety agencies through the year 2010, identify problems, and recommend possible solutions.

NPSTC has since taken on additional responsibilities including implementing the recommendations of the National Coordination Committee (NCC) and the support and development of the Computer Assisted Pre-coordination and Resource Database System (CAPRAD) for 700 MHz spectrum to assist the Regional Planning Committees (RPCs). NPSTC develops and makes recommendations to appropriate governmental bodies regarding public safety communications issues and policies that promote greater interoperability and cooperation between Federal, State and local agencies. Issues include: 4.9 GHz rebanding, Software Defined Radio (SDR), US/Canadian/DTV Transition, Project MESA, Spectrum Resources, Amateur Radio (ARRL), 800 MHz, State Interoperability Executive Committees (SIECs) Broadband, and the International Telecommunications Union.