



MPSCS NEWSLETTER

Inside this issue:

NCC Patch Incident	2
Refresher Training Course Offered	2
Rebanding Update	2
FCC Regulation about BDA's	3
Standards for robot technology	3
Contacts	4
Usage Statistics	4

UPCOMING EVENTS

Training

Contact: Chris Moore
(517) 336-6126

- January 11-14 (Livonia) (Lansing)
- February 8-11 (Negaunee)
- March 22-25 (Ludington)

QUICK STATS

- TOTAL RADIOS: **50,608**
- AMOUNT OF CHANGE IN PAST TWO MONTHS: **- 57**

FUN FACT

- The first portable phones were used in cars in the 1940s, and weighed about 29 lbs.

Hello, Oven?

How electromagnetic inductance has ignited ovens across the country

In mid-November, MPSCS received an email from the executive director of Tri-Hospital EMS in Port Huron, Ken Cummings. He alerted the MPSCS that when his dispatcher used a portable radio near the kitchen's oven, and the oven turned on!

The dispatcher ran some tests of his own, and determined that indeed, when the portable radio was keyed close to the Maytag MagicChef oven, the oven's broiler setting powered on.

To decipher whether it was the radio or the oven at fault, Cummings conducted tests of his own at his home without success, thus showcasing that the problem was tied to the oven.

While this is the only reported incident involving a two-way radio, similar occurrences have taken place across the country. This past August, *The New York Times* reported of a similar incident occurring in a Brooklyn apartment home involving a cell phone. When called, the man's Sony Ericsson PDA powered on the gas oven's broiler setting.

After numerous other trials, several identical Maytag MagicChef models powered on when in close proximity to cell phones. Captured on video, the same thing occurs between an oven and an iPhone (<http://www.youtube.com/watch?v=7ITGXOcgyeo>).

Related occurrences include a Motorola phone starting an electric shaver, cell phones and iPods affect-



Robin Stremlow
MPSCS

A dispatcher in Port Huron noticed recently that his portable radio had the capability to turn on his oven.

"As ... [electromagnetic] waves pass through an electronic device (such as an oven's digital control panel), they cause electrons to move and generate electricity; this is called electromagnetic inductance."

ing pacemakers, and wireless devices interfering with breath alcohol tests.

Electromagnetic waves (or radio frequencies) are transmitted by devices like portable radios and cell phones. As those waves pass through an electronic device (such as an oven's digital control panel), they cause electrons to move and generate electricity; this is called electromagnetic inductance.

To prevent this, electromagnetic shields, similar to faraday cages, are placed

around an item's control center.

Similar to a microwave oven's metal "mesh" door, these shields prevent waves from passing through. A microwave oven door shield is designed as a mesh to allow you to see inside while still providing protection from the waves. These mesh holes are designed smaller than the microwave's wavelength so that the waves cannot pass through.

Most shields are metal based and are wrapped around sensitive electronics. Electronics manufacturers run tests to ensure that radio waves will not interfere with their equipment; however not every scenario can be tested.

It is probable that the incident in Port Huron was merely an interference of the radio's transmissions and the oven's improperly shielded electronic control panel.

Jill M. Soletta, a Maytag spokesperson, released this statement shortly after the New York City story broke headlines: "In our experience, this situation is highly unusual. We have offered to replace the unit with a brand-new one, at no cost, and will be taking the old unit to fully test in our lab." She assured each Maytag customer that any other oven with this problem would be handled in the same way.

Maytag has since replaced Tri-Hospital EMS' oven, and those affected in New York City.

The NCC Fixes a Mysterious Patch

An MPSCS user called the Network Communication Center (NCC) around 7:30 a.m. on November 19 complaining of unauthorized usage on their Department's talk group. It was impossible to identify the transmitting agency, as there were no mentions of location or agency affiliation within the calls. The only information available was that the transmissions occurred over most of the night, approximately 10 PM through 6 AM the next morning. After running reports, the NCC verified that these transmissions did indeed take place; the talk group normally does not have overnight traffic.

The NCC then ran the Air Traffic Interface Access (ATIA) logs. The ATIA is a highly detailed database that lists every radio ID affiliation, call connection, tower resources and call disconnect. Since it contains a large amount of information, it is logged and stored for only a twenty-four hour period. For detailed call information, the NCC must save the log within the twenty-four hour period.

After analyzing the ATIA logs, it was apparent that whenever talk group A placed a call, a console located at Agency B would also be assigned to the call. The NCC notified Agency B of a potential problem. A telecommunicator at Agency B confirmed that when she came on duty at 0600 hours, she noticed a patch was in place between Agency B and Agency A's talk groups. She then disengaged the patch.

Further investigations could not decipher why the patch was originally enabled. The only possible indicator was a tabletop exercise conducted the previous day by Agency B. There was not supposed to be any actual communication between the two agencies, but somehow a patch was set up.

There are three lessons one can learn from this scenario.

- Be aware of patches set up and disengage when the patch is no longer required.
- Notify the NCC of any strange radio traffic on your talk groups.
- Notify the NCC in a timely manner. It is very possible that the patch could have been identified and the proper agency notified much sooner than the 12 hours which ensued.

The NCC (517 333 5050) or (888 554 4622) is available twenty four hours a day, seven days a week to help agencies with radio problems, locally or system wide.

Refresher Training Course Offered in 2010

For the first time, a refresher training course is being offered for MPSCS agencies that have already attended the required 8-hour Operator Training Course, but could benefit from a review.

The Operator Refresher Training is a 2-hour block of instruction which uses a 'hands-on' approach to review concepts. The class reviews the operation of both the portable and mobile radio, provides an overview of interoperability, and revisits the concept of zones, talk groups, scanning, radio tones/bonks, battery maintenance, radio repair procedures, the 800 MHz system, and other agencies in your area.

Up to 20 students can participate in

this course for a flat rate of \$150. Scheduling of these courses is on a case-by-case basis. For more information, contact Chris Moore at 517-336-6126.

Please note: This course does not take the place of the 8-hour Operator Training Course nor does it prepare students to conduct radio training for their own agencies.

"The Operator Refresher Training is a 2-hour block of instruction which uses a 'hands-on' approach to review concepts ..."

Rebanding Update

Project Team reaches the "end of the beginning"

The rebanding project team wrapped up the year by completing most of the reports and plans needed to write a Frequency Rebanding Agreement proposal. The initial proposal, to install the Back-to-Back (B2B) Mutual Aid Repeater System, will be submitted to Sprint Nextel in January.

The following plans have been completed and accepted by the MPSCS:

- The B2B Repeater System plan and its installation by Motorola. Supporting reports include an analysis of the antenna towers' capacity to accept additional antennas, the capacity and requirements for more Fixed Network Equipment (FNE) at the tower sites, an analysis of existing and potential intermodulation interference after completion of the B2B installation, and a quality inspection protocol for equipment installations.
- The Subscriber Reconfiguration Plan. It sets forth the requirements, resources, processes, and quality assurance methodology for rebanding the 50,000+ mobile and portable radios on the MPSCS network.

These two items, along with the numerous supporting plans and reports

created as a foundation for them, represent major accomplishments and milestones for the project. While we draw closer to the implementation phase by preparing proposals for Sprint Nextel, we've reached the end of the beginning.

This beginning is vital to the future success of the project. The famous advocate of quality, Edward Deming, is quoted as saying that, "A well defined problem is half solved." He meant that half the battle in creating a successful outcome is the time spent identifying all issues that could impinge on a problem, and preparing plans to address them.

MPSCS and its partners, RCC Consultants, Motorola, Legal Counsel Elizabeth Sachs, and Project Managers, LLC have worked closely to prepare those plans and bring the project to the end of the beginning.

This year, MPSCS will enter into a contract with Sprint Nextel for the implementation phase. The first planned action will be the installation of the B2B Mutual Aid Repeater System. The mobilization activities for the Rebanding of the subscriber radios will also begin, although the Rebanding itself cannot begin until the B2B system is operational. Subscriber rebanding is now expected to begin during 2011.

*Updates will appear in each future issue of this Newsletter. However, detailed project information, upcoming events, and up-to-date progress reports can be found at the Rebanding Project's website:
<http://www.rccpm.com/M1800MHz/default.aspx>*

FCC Regulations Regarding BDA's

Important information about the installation process of Bi-Directional Amplifiers

As stated in the January 2009 newsletter, bi-directional amplifiers are, "a type of wireless signal booster that utilizes an external reception antenna, a signal amplifier, and an internal rebroadcast antenna to improve the ability of portable radios to transmit clear signals from inside of buildings." However, that article did not provide adequate instruction for how an MPSCS subscriber must obtain permission to install such a device.

The FCC permits a primary license holder to allow other agencies to install and use BDA's as long as they have the primary license holder's expressed permission. See FCC rule 47 CFR 90.219.

The State of Michigan is the holder of most of the FCC licenses for frequencies used with the MPSCS. A few MPSCS user agencies, such as the City of Detroit, hold their own licenses for frequencies used with the MPSCS. Even so, MPSCS staff oversees the entire system's operation so they set the policy regarding the use of BDA's.

Per MPSCS policy 4.1.11

"All subscriber agencies ... must obtain expressed permission from the State of Michigan (MPSCS staff) prior to installation [of a BDA]."

Bi-Directional Amplifier (BDA) Installation and Use, all subscriber agencies who wish to improve their MPSCS radio coverage by means of a BDA must obtain expressed permission from the State of Michigan (MPSCS staff) prior to installation and operation of such devices. Permission is usually granted upon completed review of the proposed installation plans.

MPSCS engineers follow specific criteria when regulating BDA use with the MPSCS. Since BDA equipment creates the potential for dangerous interference to crucial radio communications, MPSCS engineers or technicians may conduct site surveys, installation inspections, and performance testing to ensure that harmful interference does

not occur.

All pertinent data on the BDA installation is recorded on a form and filed at both the MPSCS engineering offices and the Network Communications Center (NCC) for future reference.

Cellular carriers such as AT&T, Verizon, Sprint, etc. hold licenses for the segments of spectrum used with their respective cellular systems. If you intend to install a wide band BDA that will also amplify cellular calls, you must also obtain expressed permission from the appropriate carrier(s).

Failure to obtain proper permission to install a BDA or failure to operate it properly may result in substantial FCC fines, equipment seizure, and possibly even criminal sanctions.

Due to the current 800 MHz Rebanding project, the MPSCS' knowledge and approval of all BDA's, existing and planned, is crucial. Please contact the MPSCS if you have previously installed a BDA and had not received prior approval from the State of Michigan to do so.

Robot Standards for the Public Safety World

How NIST is creating a path for robotics

Today's need for innovative, safe, and cost-effective methods of first responder technology has kick-started the robot market.

The National Institute of Standards and Technology (NIST) is working to develop performance standards for urban search and rescue (USAR) robots. The first robot of this sort was used in New York City during the 9/11 rescue missions. Robots have been a key component to bomb squads, hazardous material clean-ups, and building collapses ever since.

The Department of Homeland Security's Office of Standards is sponsoring NIST's development of standards. NIST wants to ensure that potential public safety customers are informed of various robotic capabilities and are able to purchase ones that best fit their needs.

To do this, NIST has created a series of field scenarios that mimic real-



A bomb detection robot is one of the many types of robots useful to public safety.

world environments that potential users would experience, such as stairs, inclines, and extreme dark and light situations. They put each robot through the tests to measure how well they perform in each situation. They also test for mobility, manipulation, sensors, and more. Those results are then evaluated against the identified needs of the public safety and first responder world.

By creating a set of standards, robotic manufacturers are more aware of the needs and desires of its customer base, and also of the triumphs and pitfalls of existing robots. NIST houses on-site performance tests that permit robotic manufacturers to monitor the interactions of users with their robots directly.

The sixth Response Robot Evaluation Exercise will be held at Texas A&M University in College Station, Texas this March.

For more information about the NIST project, visit: www.isd.met.nist.gov/US&R_Robot_Standards.

Michigan's Public Safety Communications System

Providing statewide radio communication for public safety and state government agencies.



The MPSCS Newsletter strives to provide users with information to better utilize the system through understanding and instruction, to find funding sources for communication programs, and to inform users of news and events in both the communication technology world, and Michigan's public safety sector.



4000 Collins Rd.
 P.O. Box 30631
 Lansing, MI 48910
 Phone: 517-336-6240
 Fax: 517-336-6222

Comments or suggestions are appreciated!

Contact Robin StremLOW, Publications Specialist
 517-336-6345
 StremLOWR@michigan.gov

www.michigan.gov/mpscs

Usage Statistics

2009	Total Calls	PTTs	PTT Change From 2008
Nov	4,345,854	7,778,199	+ 633,285
Dec	4,578,150	8,209,601	+ 741,892

Want additional information?

Email: mpscs@michigan.gov

For topics of interest related to articles in this volume contact:

NCC Patch Incident

NCC Technician

Rich Rybicki

RybickiR@michigan.gov

Refresher Course

MSP Communications

Chris Moore

517-336-6126

Rebanding Update

800 MHz Rebanding Project Manager

BakerR4@michigan.gov

FCC Regulations

MPSCS Radio Engineer

Al Nowakowski

NowakowskiA@michigan.gov

Keep Your Eyes Open for UPCOMING ISSUES of the *MPSCS Newsletter*.

- TDMA Technology
- Event Talkgroups
- Emergency Alerts
- Wind Energy
- Agency Profiles
- MPSCS Staff Bio
- System/User ID Updates
- Rebanding Updates
- ...and more!