



M E M O R A N D U M

SUBJECT: Rail Safety: Evaluation of Radio
Emergency Alarms (OIG 18-03)

DATE: September 14, 2017

FROM: OIG – Geoffrey A. Cherrington

TO: GMGR – Paul J. Wiedefeld

During a radio training class, OIG became aware of a serious safety issue. Specifically, emergency alarm buttons (the orange button) on portable 2-way radios had been pushed by rail users over 6,400 times in a 20-month period. Rail Operations Control Center¹ (ROCC) employees did not respond to any of these alarms generated by these radios. This could result in non-response to real emergencies, thereby adversely impacting the safety of employees, contractors, and rail passengers. Moreover, communication was hampered within ROCC as well as between ROCC and radio users when these alarms were activated.

Management agreed with this report at the exit conference and in subsequent written comments. However, management stated the emergency radio buttons were not part of the current emergency protocols and will disable this feature to decrease disruption in ROCC.

OIG concurs with this course of action and will close all recommendations when the emergency alarm buttons have been disabled, which is scheduled to be completed by November 1, 2017.

Attachment

cc: COO - J. Leader
COUN - P. Lee
SAFE - P. Lavin
INCP - E. Christensen

¹ROCC includes the Maintenance Operations Center (MOC) which includes the Maintenance Operation Control Center.

Background

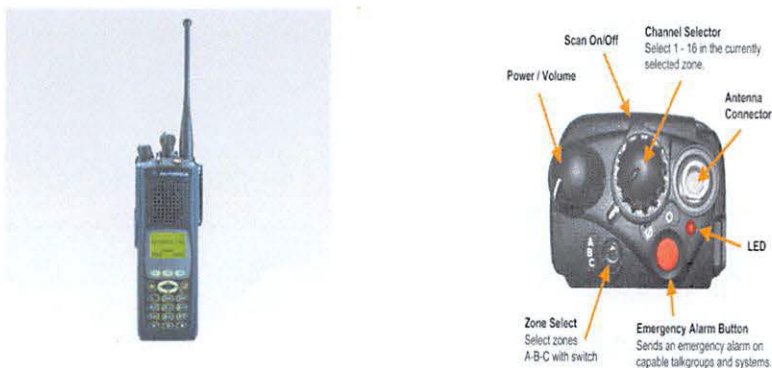
Using portable radios is the standard for communication at Washington Metropolitan Area Transit Authority (WMATA), as radio communication supports safe and efficient rail operation. WMATA's communication system permits digital two way radio communication between ROCC, train operators, station managers, rail supervisors, terminal supervisors, interlocking operators, and work crews. WMATA has [REDACTED] radios to support the rail operation.

The Federal Transit Administration (FTA) issued WMATA a Safety Management Inspection Report, dated June 17, 2015 which reported the Advanced Information Management system generates a high volume of various alarms that must be managed by the rail traffic controller. The report recommended WMATA review protocols for alarms in the ROCC to identify critical versus non-critical notifications and to reduce rail traffic controllers' responsibilities for non-critical notifications. WMATA has taken some action to manage alarms based on criticality. WMATA identified "Super Major" and "Visual Display" as critical alarms to be handled by the rail traffic controllers, reducing the number of alarm notifications rail traffic controllers have to respond to. All other alarms were considered minor "events" to be handled by other components of the ROCC. WMATA reduced the total number of all alarms from over 654,000 a week as of April 5, 2015 to 41,669 alarms on average per week for the year ending August 6, 2017.

What is Required

WMATA rail workers are equipped with portable radios that have an orange button to be used in the event of an emergency (see Figures 1 and 2). WMATA's Metrorail Safety Rules and Procedures Handbook (MSRPH), dated July 20, 2016, states "Employees shall not knowingly transmit, nor cause to be transmitted, any unnecessary, irrelevant, unidentified, false, or false emergency communications." WMATA's Roadway Worker Protection Manual prescribes that employees that do not abide by the safety rules in the MSRPH and compromise the safety of the public or employees, will result in the employee's termination from service.

Figure 1 and 2 – Motorola Model XTS – 5000



WMATA training materials outline what happens when the emergency radio alarm button is pushed as follows:

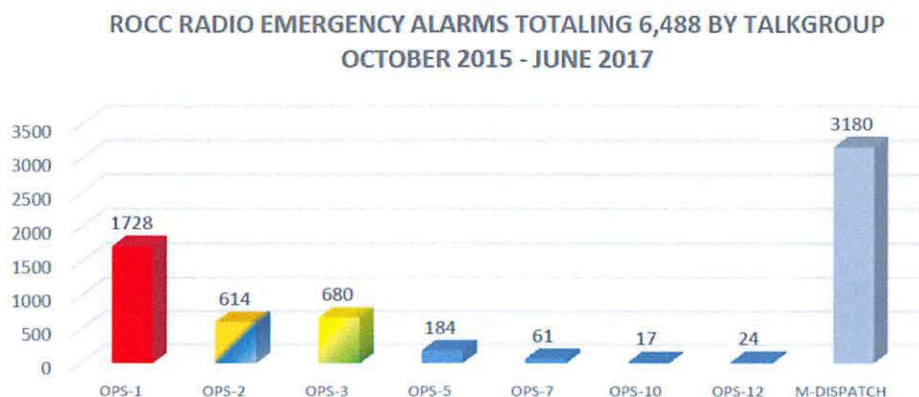
- A siren type of tone is sounded at every console in the ROCC/MOC.
- Every radio tuned to that “talkgroup”² is notified that an emergency is in progress.
- The ROCC/MOC superintendent will be notified an incident or accident has occurred.
- The unit that sent the alarm will be contacted by dispatch to gather information so that assistance can be routed to that location.

What We Found

Two conditions exist.

- **Excessive Use of Radio Emergency Button:** The orange emergency alarm button had been pushed over 6,400 times by rail radio users over a 20-month period (October 2015 to June 2017). The majority of the alarms generated by pushing the emergency alarm button are not “real” emergencies and can be considered false positives. Notwithstanding, the false positives, some of them may be real emergencies.
- **ROCC Not Responding to Alarms:** ROCC is not responding to any of the over 6,400 alarms (see the Graph 1 below listing eight rail talkgroups and the corresponding number of emergency alarms). These alarms are being purged by the ROCC. Consequently, the response process is halted as the superintendent is not notified, the radio operator is not contacted, and assistance is not routed.

Graph 1 - ROCC Radio Emergency Alarms



OPS numbers 1 to 12 represents the various rail lines. M-Dispatch represents maintenance components.³

²Rail talkgroups include ROCC, revenue and non-revenue operators, station managers, rail supervisors, terminal supervisors, interlocking operators, maintenance personnel, and emergency response/safety personnel.

³Components include Communications, Power, Plant, and Automated Train Control

Why this Occurred

The following internal control weaknesses contributed to the condition cited.

- *Difficult to Contact the ROCC* – WMATA officials indicated users are often frustrated when they cannot contact the ROCC on the radio, so they press the emergency button to connect to the ROCC quicker. Calls are sometimes not answered immediately because ROCC employees are often on other calls.
- *No Policies or Procedures* – There is no bulletin or reference in the MSRPH on the proper use of portable radios in emergencies. Also, there is no standard operating procedure on how to specifically manage these radio alarms.
- *Repercussions* – We were told there is no way to tell who specifically is pushing the radio alarm buttons or their location, except if the ROCC responds and subsequently receives a response from the user. Thus, no discipline can be provided to radio users for pushing the emergency button when there is no emergency.
- *Inadequate Radio Training* – WMATA Operations Radio Communication training does not sufficiently stress emergency protocols regarding radios and employees are not aware of the significant impact of pressing the emergency alarm button.
- *Process Not Followed* – The ROCC does not act on radio alarms because there are so many of them and nobody responds to the dispatcher from the field.
- *Radio Button Easily Pushed* – There is no foolproof mechanism on the radio to prevent accidental pushing of the orange emergency button.

Why this is Important

Inappropriate use of the emergency alarm button coupled with inaction of the ROCC, could result in non-response to a real emergency situation, thereby adversely impacting the safety of employees, contractors, and rail passengers. Moreover, communication is being hampered within the ROCC as well as between the ROCC and radio users when these alarms are activated. Specifically:

- A loud alarm rings at all 12 desks in ROCC, disrupting communications on the floor until the alarms are acknowledged and purged in the system. The ROCC computer screen picture shows an emergency alarm with radio call numbers ZC\$42391 (see Figure 3).

Figure 3 – ROCC Computer Screen



- Upon pushing the emergency alarm button, the communication channel is blocked and no other communications can take place until the alarms are shut off.

In addition, the radio training material incorrectly gives users assurances there is a viable emergency response process once the radio emergency button is pushed, which is not the case.

Recommendations

We recommend the GM/CEO:

1. Evaluate the business case over rail emergency response processes, including the use of radio emergency alarms.
2. If the business case for using the radio emergency alarms is unfavorable, discontinue using the alarm function.
3. If the business case for using the radio emergency alarms is favorable, proceed as follows:
 - a) Implement controls, processes, and training geared toward radio users on the proper use of the emergency alarm buttons.
 - b) Adequately resource the ROCC/MOC to ensure a timely response to emergency radio alarms.
 - c) Implement procedures for the ROCC/MOC to ensure identification and action when an alarm is received via a radio emergency alarm button.

Management's Comments

WMATA management agreed that radio emergency alarms pose a disruption in the ROCC (see Appendix). WMATA's Rail management decided to disable the emergency alarm feature for all radios used within the talk groups. WMATA's Rail management also plans to issue a staff bulletin for all Rail employees which will inform all radio users that the emergency call feature has been disabled on or about November 1, 2017. WMATA's Rail management also responded that this bulletin will reinforce the communication tools and techniques used within the Rail organization to call for emergency assistance.

OIG concurs with this course of action and will close all recommendations when the emergency alarm buttons have been disabled, which is scheduled to be completed by November 1, 2017.

Objective, Scope and Methodology

Our objective was to review rail emergency alarms generated by WMATA's portable radios and subsequent ROCC responses to these alarms.

The scope included recorded uses of the radio emergency alarm button over a 20-month period from October 2015 to June 2017.

To address the objective, we:

1. Reviewed WMATA's policy, procedures and applicable training material on radios.
2. Reviewed FTA reports and the associated WMATA Corrective Action Plan.
3. Interviewed WMATA staff members from the departments of Rail Services, Information Technology, System Maintenance, and Operation Management Services.
4. Examined key accountability controls over the rail emergency radio alarms and ROCC responses.
5. Obtained data on rail emergency alarms via portable radios over a 20-month period.
6. Conducted site visits of the ROCC and obtained data on radio alarms.

This evaluation was conducted in accordance with the Council of Inspectors General on Integrity and Efficiency "*Quality Standards for Inspection and Evaluations*." Those standards required that we plan and perform the evaluation to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our objective.

Appendix



M E M O R A N D U M

SUBJECT: Response to Draft OIG Rail Safety: Evaluation of Radio Emergency Alarms (OIG 18-XX) DATE: September 1, 2017

FROM: COO – Joe Leader

FOR: *[Handwritten: OFF, MAY]*
[Handwritten: R. [Signature] L. For P.W.]

THRU: GM – Paul J. Wiedefeld

TO: OIG – Geoffrey Cherrington

This is in response to the draft OIG memorandum on the results of investigation OIG 18-XX, evaluating the radio emergency alarms. WMATA RAIL management has confirmed that the emergency radio buttons are not part of current emergency protocols. Management concurs that the radio emergency alarms pose a disruption to the Operations Control Center and will move forward with removing this feature from the radios.

WMATA Rail management evaluated the OIG report through a meeting with Safety, Rail Operations Control Center leadership, and all General Superintendents. At this meeting it was reconfirmed that current emergency protocols do not include the use of the emergency radio button. While the emergency alarm capability exists in the current radio system it was determined that the addition of a new emergency protocol for which false positives would be difficult to control was not efficient.

WMATA RAIL management intends to disable the emergency alarm feature for all radios used within the RAIL talk groups because this emergency call feature on the radio system is not prescribed by operating policy as a means to call for emergency assistance. WMATA RAIL management is authoring a staff bulletin for all RAIL employees which will inform all radio users that the emergency call feature on the radio will be disabled on or about November 1, 2017. We expect to issue this bulletin no later than October 6, 2017. This bulletin will reinforce the communication tools and techniques used within the RAIL organization to call for emergency assistance which are referenced to standard operating procedures. A copy of the staff bulletin will be forwarded to the OIG when issued.

Washington
Metropolitan Area
Transit Authority