

December 1, 2005

The Honorable Todd R. Platts
Chairman
Subcommittee on Government Management,
Finance, and Accountability
Committee on Government Reform
House of Representatives

Subject: *Potential Spectrum Interference Associated with Military Land Mobile Radios*

Dear Mr. Chairman:

To address homeland defense needs and comply with government direction that agencies use the electromagnetic spectrum more efficiently, the Department of Defense (DOD) is deploying new Land Mobile Radios to military installations across the country. The new Land Mobile Radios operate in the same frequency range—380 Megahertz (MHz) to 399.9 MHz—as many unlicensed low-powered garage door openers, which have operated in this range for years. While DOD has been the authorized user of this spectrum range for several decades, their use of Land Mobile Radios between 380 MHz and 399.9 MHz is relatively new. With DOD's deployment of the new radios and increased use of the 380 MHz-399.9 MHz range of spectrum, some users of garage door openers have experienced varying levels of inoperability that has been attributed to interference caused by the new radios.¹ Nevertheless, because garage door openers operate as unlicensed devices, they must accept any interference from authorized spectrum users. This requirement stems from Part 15 of the Federal Communications Commission (FCC) regulations.² Garage door

¹ The garage door openers in question are programmed to operate at 390 MHz. However, because the technology employs a wide receiver bandwidth, the openers are also susceptible to interference from signals in other parts of the 380 MHz-399.9 MHz range, with a maximum interference potential from 387 MHz to 393 MHz.

² 47 CFR §15 (2004).

openers and other unlicensed devices are often referred to as “Part 15 devices.”³

In response to your April 27, 2005, request, we reviewed the potential spectrum interference caused by DOD’s recent deployment of Land Mobile Radios. Specifically, you asked us to (1) determine the extent of the problem of spectrum interference associated with the recent testing and use of mobile radios at military facilities in the United States, (2) review the efforts made by DOD during the development of its Land Mobile Radio system to identify and avoid spectrum interference, and (3) identify efforts to address the problem. We briefed your staff on August 30, 2005, on the results of our review. This report summarizes that information and makes a recommendation to the Department of Defense.

Background

The electromagnetic radio frequency spectrum is the medium that enables wireless communications of all kinds, such as mobile phones, radios, and satellite-based services as well as low-powered consumer devices such as advanced tire pressure gauges, remote entry devices for vehicles, and garage door openers. As new spectrum-dependent products are developed and deployed, the demand for spectrum, a limited resource, has escalated among both government and private sector users. The demand for spectrum has resulted in direction from the National Telecommunications and Information Administration (NTIA)⁴ that the U.S. Government foster spectrum conserving methods for government radio communications systems, including, for land mobile radios, methods for “narrowbanding” those systems. In response, DOD issued a policy that all DOD land mobile radio systems be modified or, for new systems, procured in conformance with the NTIA “narrowbanding” direction by 2008.⁵

In response to NTIA’s direction to make more efficient use of spectrum, DOD recently began rolling out new Land Mobile Radios that comply with narrowband requirements in various military installations across the United States. The Land Mobile Radio system is a two-way radio system

³The Federal Communications Commission (FCC) is an independent regulatory body that manages commercial and nonfederal spectrum use.

⁴The Department of Commerce’s National Telecommunications and Information Administration manages federal spectrum use.

⁵Narrowbanding involves the modification or implementation of devices that require less spectrum for their operation.

that provides communications capabilities for law enforcement, force protection, fire, transportation management, medical duties, and first responders on military installations. The new Land Mobile Radios are also expected to strengthen homeland defense with such capabilities as improved interoperability with other installations. DOD expects the Land Mobile Radio system to operate at about 36 locations in 9 states and the District of Columbia by the end of fiscal year 2005, and 137 installations in 28 states and the District of Columbia by fiscal year 2010.

Summary

Since DOD began its rollout of the new Land Mobile Radios in 2004, a number of complaints have been reported at several locations near military installations—notably, Eglin Air Force Base, Florida; Defense Distribution Depot Susquehanna (DDSP) near New Cumberland, Pennsylvania; and Ft. Detrick, Maryland. As of August 2005, manufacturers had received over 1,300 customer complaints of affected garage door openers that they attributed to interference from Land Mobile Radios. One major manufacturer also estimated that its distributors had received between 7,000 and 10,000 complaints. However, the extent of interference experienced by users of garage door openers from DOD's Land Mobile Radios is difficult to quantify because interference problems may not be reported or may be reported to several different organizations, including garage door opener manufacturers and retailers, government agencies, or congressional representatives. According to DOD and garage door opener manufacturers, the nature of the interference that has occurred varies by location. In some locations where the radios were rolled out, no occurrences of interference have been reported. Where interference has been reported, the problems range from intermittent inoperability to situations where the garage door may not open at all with the remote control device. DOD has reported a decrease of interference complaints. They attribute this decrease, in part, to consumer awareness of the problem and the completion of the Land Mobile Radio testing phase, at each site.⁶

Because DOD is the authorized user of the 380 MHz-399.9 MHz spectrum, it was under no obligation, according to the FCC, to identify or mitigate potential interference with Part 15 devices that may also be operating in that spectrum. Even if DOD had attempted to identify Part 15 devices,

⁶According to DOD officials, the potential for interference is higher during the testing phase when the radio system is transmitting a test tone continuously on a single frequency.

there is no documentation available as to where such devices operate. Users of Part 15 devices are not tracked by federal agencies in the way that licensed users are tracked. DOD chose to operate the new Land Mobile Radio system in the 380 MHz-399.9 MHz spectrum range because other bands of spectrum could not accommodate system requirements. DOD received NTIA certification in 2003 to operate the new radios in that spectrum. According to DOD officials, they cannot readily move off of this range of spectrum as it would necessitate costly technical changes and would negatively impact Land Mobile Radio capabilities.

In early 2005, following reports of interference, NTIA's Office of Spectrum Management and the FCC's Office of Engineering and Technology established a working group with representatives from DOD and the major manufacturers of garage door openers to develop short- and long-term solutions to the spectrum interference problem. The group has met several times, and as a result, DOD and the manufacturers report that progress has been made in terms of coordination and information sharing. For example, DOD has provided the Land Mobile Radio rollout locations to manufacturers and the ranges of spectrum to be affected through fiscal year 2010. DOD has also conducted analyses showing the likely extent of potential interference from Land Mobile Radios in several populated areas where the radios will be deployed and has given the findings to major manufacturers. For their part, manufacturers are offering retrofit kits to change the frequencies of existing garage door openers that would cost consumers \$50 to \$80, excluding installation. Furthermore, for new devices, one manufacturer is moving off of the 390 MHz spectrum range, and another plans to go to a multi-frequency approach using 390 MHz and other spectrum in order to minimize potential interference problems in the future.

Despite these efforts, for consumers with garage doors that do not operate, it can be difficult and costly to sort out the problem and to know how to fix it. Information available does not always provide a clear course of action to consumers trying to remedy interference problems. Because of potential confusion, consumers receiving intermittent interference may unnecessarily purchase a new opener, not knowing that the interference may be temporary. While DOD has provided guidance to local installations regarding public relations with the communities potentially affected by the Land Mobile Radio rollout, it is largely reactive in nature. Specifically, the guidance primarily provides information on how to respond to media inquiries and leaves the decision of any community outreach efforts to the discretion of local installation officials. The benefits of proactive community outreach were demonstrated in one installation we visited

where, among other things, installation officials briefed retail associates, and local officials and continued to keep the local media informed of the situation. These proactive efforts have helped to resolve complaints, according to installation officials.

DOD officials recently acknowledged the need to improve community outreach efforts and told us that they are planning to take steps to more proactively inform local communities of potential interference problems. For example, DOD and the major garage door manufacturers plan to synchronize outreach efforts to ensure communities receive at least 1 month notification of the Land Mobile Radio rollout. DOD is also creating press release templates for local installations to use that will include, among other things, information about the radio system, potential interference that could occur, and points of contact. In addition, DOD officials plan to inform local congressional district offices as appropriate of the potential for spectrum interference associated with the rollout of Land Mobile Radio systems. These outreach efforts, if carried out, should help better inform local communities that may encounter interference problems.

Recommendation for Executive Action

We recommend that the Secretary of Defense document and affirm DOD's current plans for improving community outreach.

Agency Comments and Our Evaluation

DOD provided written comments on a draft of this report. Their comments are discussed below and are reprinted in appendix I. Both DOD and NTIA provided technical comments which were incorporated where appropriate. The FCC had no comments on a draft of this report.

DOD concurred with our recommendation and indicated that it plans to follow through with the outreach effort. DOD noted that the responsibility for mitigating potential spectrum interference lies solely with the garage door device manufacturers. DOD expressed concern that the recommendation could entail a recurring reporting requirement throughout the roll-out of the radio system. Our intent with the recommendation, however, is not to require DOD to report on outreach efforts each time the radio system is fielded at a new location. Rather, the intent of the recommendation is to have DOD formalize its current plans for improving community outreach on future radio deployments. DOD is required, however, by 31 U.S.C. §720 to report to Congress on the action taken on the recommendation.

Scope and Methodology

To assess the extent of the interference problems associated with Land Mobile Radios, DOD's efforts to identify potential interference and ways to address it, we interviewed key officials from DOD, FCC, NTIA, and representatives of the garage door opener manufacturing industry. We also reviewed various DOD, FCC, and NTIA documents, reports, and guidance. To assess responses by local installations to reports of interference, we met with DOD officials from Ft. Detrick, Maryland and New Cumberland, Pennsylvania. We conducted our work between June and September 2005 in accordance with generally accepted government auditing standards.

We are sending copies of this letter to the Secretary of Defense and interested federal agency officials and Congressional committees. We will make copies available for other interested parties upon request. In addition, the letter will be available at no charge on the GAO Web site at <http://www.gao.gov>.

Please contact me at (202) 512-4841 if you or your staff has any questions concerning this letter. Other major contributors to this letter were John Oppenheim, Ridge Bowman, and Lisa Henson.

Sincerely yours,



Paul L. Francis, Director
Acquisition and Sourcing Management

Enclosure: Comments from the Department of Defense



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November 23, 2005

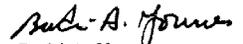
NETWORKS AND INFORMATION
INTEGRATION

Mr. Paul L. Francis
Director, Acquisition and Sourcing Management
U.S. Government Accountability Office
441 G Street, N.W.
Washington, DC 20548

Dear Mr. Francis:

This is the Department of Defense (DoD) response to the GAO draft report, "Potential Spectrum Interference Associated with Military Land Mobile Radios" dated October 20, 2005 (GAO Code 120465). DoD concurs with on this report with the understanding that there will be no reporting requirement on the recommendation. Enclosed are specific comments to the report.

Sincerely,


Badri A. Younes
Director, Spectrum Management

Enclosure



**GAO DRAFT REPORT - DATED OCTOBER 20, 2005
GAO CODE 120465/GAO-06-172R**

**POTENTIAL SPECTRUM INTERFERENCE ASSOCIATED
WITH MILITARY LAND MOBILE RADIOS**

**DEPARTMENT OF DEFENSE COMMENTS
TO THE RECOMMENDATION**

RECOMMENDATION:

The GAO recommended that the Secretary of Defense document and affirm its current plans for improving community outreach. (p. 5/GAO Draft Report)

DOD RESPONSE: Concur with recommendation with the following understanding.

As discussed with the GAO, the intent of the recommendation is not to impose a reporting burden on DOD or to require DOD to report on outreach efforts each time a radio system is fielded to a new location.

The Department is currently developing and executing a community outreach campaign. This campaign is a subset of the collective effort that the Department has undertaken to address this issue. In a traditional scenario, the responsibility for addressing an interference situation between a licensed and unlicensed user would fall completely on the unlicensed user. Although not obligated to do so, the Department has assisted the unlicensed device manufacturer, or service provider, in addressing this interference situation by sponsoring technical studies and sharing implementation information.

The Federal Communications Commission (FCC) and the National Telecommunications and Information Administration (NTIA) regulate the government and non-government radio spectrum and this situation falls within regulations in which FCC and NTIA govern. The primary responsibility should be placed on these institutions. Since a licensed user is causing interference to these unlicensed devices, the responsibility lies solely on the unlicensed device manufacturer to provide for mitigation.

The Department will continue to assist unlicensed service providers, in this case, garage door manufacturers, in addressing the issue to continue the Department's traditionally harmonious relationship with its surrounding communities. This includes the recommended outreach campaign, however, the Department takes issue with there being a formal reporting requirement placed on the licensed user, and not on the responsible parties, the unlicensed device manufacturer, as well as the relative regulators, the FCC and NTIA. The Department's roll out of land mobile radio (LMR) equipment in this bandwidth is currently planned to extend through the year 2010; imposing reporting requirements throughout this time period is unacceptable and unnecessarily burdensome.

The Department's position is that this recommendation be removed, since its removal will not impact the Department's plans to assist in the resolution of this matter. The Department can concur with the recommendation with the understanding that there will be no reporting requirement on its status.

As stated above, the Department will continue to support its resolution to the maximum extent possible.

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