

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
)	WT Docket 11-79
Wireless Telecommunications Bureau Seeks)	DA 11-838
Comment on Spectrum Needs for the)	
Implementation of the Positive Train Control)	(WT Docket 11-27)
Provisions of the Rail Safety Improvement)	(WT Docket 06-142)
Act of 2008)	(ET Docket 10-235)

To: The Commission

Comments of Hammett & Edison, Inc., Consulting Engineers

This filing is in response to the Commission’s May 5, 2011, Public Notice, DA 11-838, *Wireless Telecommunications Bureau Seeks Comment on Spectrum Needs for the Implementation of the Positive Train Control (PTC) Provisions of the Rail Safety Improvement Act of 2008*. The comment deadline is July 11, 2011, so this filing is timely.

I. No Expanded Use of AMTS Frequencies Can Be in the Public Interest Until Their Impact on DTV Operations on Channels 10 and 13 Has Been Assessed

1. This rulemaking is an outgrowth of WT Docket 11-27 and the Commission's February 11, 2011, Public Notice, DA 11-322, *Wireless Telecommunications Bureau Seeks Comment on National Railroad Passenger Corporation (AMTRAK) Request for Waiver of Certain Part 80 Automated Maritime Telecommunications System (AMTS) Rules To Implement Positive Train Control*. Hammett & Edison, Inc., Consulting Engineers (H&E) filed both comments and reply comments to that proceeding, pointing out that the requested waivers of the Part 80 AMTS rules are so extensive that they constitute a *de facto* request for rulemaking. According to Footnote 8 of DA 11-322, no fewer than twenty-five Part 80 rules would require waivers. For this reason alone, the requested rule waivers should be denied. If AMTRAK wishes to create a new Part 90 PTC radio service using 217–218 MHz AMTS and 219-220 MHz AMTS A and B block maritime service frequencies, there should be a Petition for Rulemaking to do so.* This successor proceeding now proposes to do just that.

2. As before, we realize that the reason for requesting additional spectrum for PTC is a 2015 federal mandate for U.S. railroad traffic to employ PTC, pursuant to the Rail Safety Improvement Act

* It is unclear from the January 3, 2011, AMTRAK *Request for Waiver* whether AMTRAK is limiting its waiver request to just the AMTS A and B blocks between 217–219 MHz, and excluding AMTS C and D blocks at 216–217 MHz, or including the C and D blocks. This is because, at page three of the AMTRAK request, it states that the waivers are desired for “AMTRAK’s use of any AMTS spectrum to which it may acquire (as a licensee or spectrum lessee) in the 35 counties of interest to it.”

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of 2008 (RSIA), because existing 220–222 MHz Part 90 Private Land Mobile Radio frequencies are not expected to offer sufficient spectrum for a new PTC system.[†] Nevertheless, it cannot be in the public interest to proceed until the impact of expanded PTC on AMTS frequencies to *digital* television reception is known.

II. Potential for Interference to TV Channels 10 and 13

3. The DTV transition period of course ended on June 12, 2009, and now a June 12, 2013, sunset date for analog operation by LPTV, TV translator, and Class A TV stations has been proposed. However, in part because of its reduced effective radiated power (ERP), digital television (DTV) operation on VHF TV channels has proven problematic. VHF low band DTV operation is adversely affected because of the levels of man-made RF noise and the too weak VHF low band DTV Threshold of 28 dBu (25.1 microvolts per meter). By comparison, the former Grade B field strength for VHF low band analog TV was 47 dBu (224 microvolts per meter). Granted, DTV is F(50,90) and analog TV is F(50,50), but there is no denying that DTV VHF low band signals are relatively poor; coding isolation and forward error correction techniques have their limits.

4. To address the VHF DTV reception problem, on November 30, 2010, the Commission commenced a rulemaking, ET Docket 10-235 (“VHF Improvements”). At paragraph 15 of the ET Docket 10-235 NPRM, the Commission stated:

We also are aware that broadcasters have encountered technical issues in using VHF channels to provide satisfactory [DTV] service to viewers.

At paragraph 42 the NPRM stated:

We recognize that television broadcasters have had some difficulty in ensuring consistent reception of [DTV] signals.

At paragraph 43 the NPRM stated:

Complaints from individuals typically have indicated that a consumer who was previously able to receive a station’s analog VHF signal was not able to receive that station’s digital VHF signal.

At paragraph 46 the NPRM stated:

We are therefore seeking solutions to the VHF digital TV reception difficulties. In this regard, we are considering changes to our DTV operating rules to mitigate or overcome these challenges.

[†] As claimed in the January 3, 2011, AMTRAK *Request for Waiver*, at pages 7–8.

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5. The ET Docket 10-235 rulemaking is still a work in progress, yet in this instant WT Docket 11-79 the Commission is now proposing expanded adjacent-band operations that will further stress DTV stations operating on VHF high band TV channels.

III. Complication of AMTS Interference to TV Channels 10 and 13

6. The newly proposed use of AMTS frequencies is problematic because of the unknown impact of AMTS operations on VHF high band digital TV operations in general, and digital TV operation on TV Channels 10 and 13 in particular. Section 80.215(h)(2) of the FCC Rules requires AMTS stations less than 169 kilometers from a TV Channel 13 station, or less than 129 kilometers from a TV Channel 10 station, or using a transmitting antenna height of greater than 61 meters AGL, to submit “a plan to limit interference.” Further, while the AMTRAK waiver request claims, at page 7, that “favorable action on this request will not harm operations on television channels 10 and 13,” it offers no information to support this claim. The June 20, 2011, AMTRAK comments to this rulemaking continue that problem: There is no discussion of how expanded AMTS base stations, no longer near large bodies of water, might degrade reception of D10 and D13 signals. Indeed, Footnote 18 to those AMTRAK comments seems to presume that the requested rule waivers will be granted, but it would be inappropriate to do at this time, for the reasons given in the following paragraphs.

7. Section 80.215(h)(2)(ii) requires an analysis of residences within the protected contour(s) of Channel 10 and 13 TV stations. The interference calculating methodology is given in a 1982 FCC Office of Science & Technology (OST, now Office of Engineering & Technology, or OET) Technical Memorandum FCC/OST TM82-5, *Guidance for Evaluating the Potential for Interference to TV from Stations of Inland Waterways Communications Systems*. This technical memorandum was, of course, derived for the protection of *analog* TV Channel 10 and 13 operations, not *digital* TV Channel 10 and 13 operations, and therein lies the problem: Neither AMTRAK, nor the Commission, knows the interference impact of expanded AMTS operations by AMTRAK on the reception of digital TV Channel 10 or 13 signals, or VHF high band DTV signals in general.

8. Given that DTV tuners are not required to be double-conversion receivers, nor to have any minimum interference-rejection requirements,[‡] it is reasonable to expect that AMTS signals are still an adjacent-channel interference threat to digital operation on TV Channel 13, and still a half-intermediate frequency (IF) interference threat to digital operation on TV Channel 10. Compounding the problem is that while the former VHF high band Grade B protected contour was the F(50,50)

[‡] While the Advanced Television Systems Committee, Inc. (ATSC) has its Document A/74:2010, *Receiver Performance Guidelines*, it is a Recommended Practice rather than a full ATSC standard, and in any event its usage is not mandatory under Section 15.117 of the FCC Rules.

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56 dBu, the VHF high band DTV protected contour is the F(50,90) 36 dBu, which would be at least 17 dB weaker.[§]

9. Thus, before creating a new land mobile PTC radio service at 217–218 MHz and 219–220 MHz, the Commission needs to have OET undertake an updated study to determine the interference susceptibility of consumer-grade DTV tuners from potentially interfering AMTS signals. While digital TV signals have coding isolation that analog signals did not, it is unknown whether that coding isolation will offset the weaker DTV protected signal strength. As the technical regulatory agency for communications in the U.S., the Commission owes it to the viewing public, and to broadcasters, to find out.

IV. No PTC Proponents Addressed the DTV Channel 10 and 13 Interference Problem

10. Not a single PTC proponent addressed the AMTS-into-TV Channel 10 and AMTS-into-TV Channel 13 interference problem: American Public Transportation Association (APTA), Association of American Railroads, California High Speed Rail Authority, Central California Transportation Company, CSX Transportation, Inc., Dallas Area Rapid Transit Authority, Joint Council on Transit Wireless Communications, Massachusetts Bay Transportation Authority, National Railroad Passenger Association (AMTRAK), Northeast Illinois Regional Commuter Railroad, PTC220, New York Metropolitan Transportation Authority, Peninsula Corridor Joint Powers Board, Southern California Regional Rail Authority (SCRRA), or Twin Cities Western Railroad. Even the technical consultant retained by Skybridge, Communications Architecture with its 76-page report, mentions not at all the TV Channel 10 and 13 interference problem. While several parties note the still pending (fortunately) waiver request for twenty-five Part 80 rules, some of which were written to ensure that AMTS stations did not cause interference to analog TV Channel 10 or TV Channel 13 signals, not a single party addressed *why* those rules were created or whether waiving them would cause interference to *digital* TV operations on those channels. Given the H&E comments and reply comments to WT 11-27, this skirting of the key issue should be unacceptable. We can only hope that the Commission will recognize this adjacent-band issue. While the purpose of PTC is to avoid train wrecks, the Commission has an obligation to also avoid spectrum “train wrecks.” Both are required for the public interest, convenience, and necessity to be met.

V. Related WT Docket 06-142 SVRS Rulemaking

11. We note that there is a pending related rulemaking, WT Docket 06-142, regarding 173.075 MHz Stolen Vehicle Recovery System (SVRS) stations. This rulemaking is in response to a waiver

[§] This is less than the full 20 dB field strength differential to account for the smaller time variability required for DTV reception.

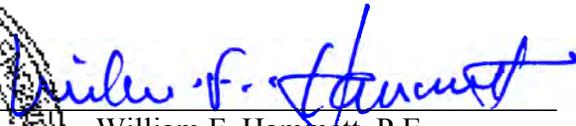
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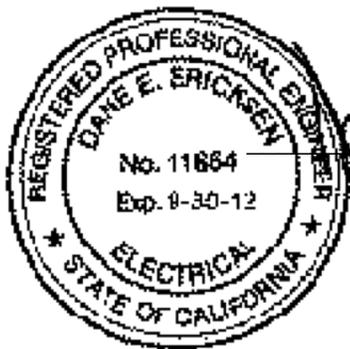
request by Lojack Corporation (Lojack), to (1) expand the use of SVRS from just Police Departments to all Public Safety Pool eligible entities; (2) allow system activation via portable or mobile devices; and (3) increase the allowable duty cycle to 1,000 mSec every eight seconds. SVRS operations are an adjacent-channel interference to TV Channel 7 operations, and like the AMTS rules, the SVRS protection rules have not been updated to consider the impact to digital TV Channel 7 operations. An updated OET study should therefore also be used to determine the interference susceptibility of consumer-grade DTV tuners both to SVRS-into-TV Channel 7 reception and to AMTS-into-TV Channels 10 and 13 reception.

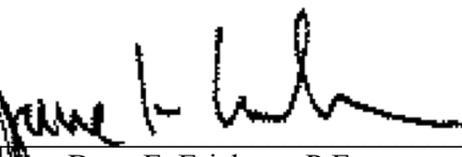
VI. Summary

12. Opening AMTS frequencies for greatly expanded use by AMTRAK and other railroad users is inappropriate until the Commission completes an updated study of the interference susceptibility of consumer-grade DTV tuners to AMTS signals. That study should also investigate the interference impact of expanded 173.025 MHz SVRS operations on digital TV Channel 7 signals.




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