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FORUM

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THE STRUGGLE FOR UHF SPECTRUM

October 6, 1988

Seminar Notes

**MASSACHUSETTS INSTITUTE OF TECHNOLOGY
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THE STRUGGLE FOR UHF SPECTRUM

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**John B. Richards, Esq.
Keller & Heckman**

**Gregory DePriest
Association of Maximum Telecasters**

**Dr. Michael Marcus, Moderator
FCC and CTPID, MIT**

**Gail Kosloff
Student Rapporteur
MIT**

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This session provided the audience with an update of events regarding the longstanding battle between television and land mobile players for UHF spectrum. Both Gregory DePriest of the Association of Maximum Service Telecasters (MST) and John B. Richards, who represents the Land Mobile Communications Council, acknowledged that "broadcasters like to say the land mobile people do not use spectrum efficiently." The land mobile interests, according to Richards, often point to the growth of cable television in arguing that consumers have plenty of access to programming and therefore do not see the need to approve more spectrum for broadcasters. Both speakers would agree that the best strategy for both interest groups would be to strike a mutual agreement whereby both parties would be able to obtain some addition spectrum.

Dr. Mike Marcus of the FCC* provided the audience with some background on the contentious nature of UHF spectrum over the years. He explained some of the technical ideosyncracies of using UHF spectrum for TV, e.g., every sixth channel is used instead of every channel. He introduced the speakers as two ex-FCC employees who have ended up on opposite sides of this spectrum debate.

The first speaker, Gregory DePriest of MST, acknowledged the reality that television interests and land mobile interests are both seeking more spectrum. He started out by providing the audience with a comprehensive overview of the U.S. Television system:

- o Today, there are 1400 local full-powered TV stations (about evenly divided between UHF and VHF stations) in the U.S. in 250 markets.

- o According to DePriest 80% of U.S. homes are passed by cable T.V. today, while a growing 50% of U.S. households actually subscribe. Today, the typical cable system in the U.S. provides consumers with 36 channels. Recently the "must carry" rule that had obligated cable companies to carry local stations was nulified.

- o DePriest noted approximately 60% of U.S. homes have VCRs (video cassette recorders) and 2-3% of homes receive DBS (direct broadcast satellite) today.

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With this as background, DePriest went on to summarize the FCC decisions on UHF spectrum allocation. He emphasized that in 1985 the FCC proposed that land mobile receive between 2 to 6 local TV channels for their use and the FCC would review the record after a year. Before the FCC made any final decision on this matter, NAB (National Association of Broadcasters) and MST demonstrated an HDTV system (NHK's MUSE system) in Washington in January of 1987. In light of what was developing in the HDTV area, the Commission put the entire land mobile/UHF spectrum decision on hold.

DePriest also discussed the origins of HDTV and the 20 year development efforts of NHK in this area. DePriest discussed three strategies that might be employed to bring HDTV service to U.S. consumers. He characterized these as:

- o one-step: This approach would involve augmentation or simulcasting of signals. The major benefits, according to DePriest, would be quality and the fact that the necessary spectrum appears to be available for augmentation. The issues raised by adopting this strategy include cost (need to build new stations), complexity, spectrum and possible interference.

- o two-step: DePriest believes this strategy would eventually allow delivery of something superior to HDTV to the consumer since the consumer would first be delivered an improved picture within broadcasters existing channels and the next phase would "jump past HDTV" in quality using extra spectrum. According to DePriest, some of the issues raised by adopting this strategy include the quality and complexity of such a system.

- o ?-step: At this point DePriest highlighted some possibilities that others have raised. One possible strategy DePriest attributes to Bill Schreiber of MIT involves legislating manufacturers to make open architecture receivers as has been the trend in the computer industry. Another proposal would be that consumers be given the choice to either buy set-top converters to receive HDTV at slightly lesser quality than those consumers who would purchase new HDTV receivers. Lastly, DePriest acknowledges that there are some like Richard Iredale on the west coast who emphasize that there is still more mileage to be gotten out of NTSC using modified transmission techniques, over a ten year period, we could migrate to HDTV and not lose NTSC.

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DePriest raised some important questions about how much quality consumers want or need. He commented that trying to improve on NTSC might only result in "taking along a lot of excess baggage" as the industry works toward HDTV.

Although DePriest would agree with the second speaker that today's TV in the U.S. may be dinosauric in comparison with cable, he still views TV as the almost universal media with almost 98% of the population covered. In addition, DePriest argues that consumers cannot get very much local television programming from their cable systems.

DePriest reviewed some technological developments that he sees on the horizon that might provide the broadcaster with some options. For example, NHK is working toward providing HDTV via satellite by the early 1990s. Also, in the next decade DePriest expects that fiber will penetrate into U.S. homes and thereby provide high quality videos to the home. DePriest reiterated that broadcasters today still rely on spectrum which is not an infinitely available resource.

The second speaker, John B. Richards, is currently an attorney to the Land Mobile Communications Council. Attorney Richards emphasized that this debate between the two interest groups has been a tough one. In his opinion, "land mobile has been at a disadvantage in these debates." He believes part of the reasoning for this is that most U.S. consumers can easily relate to television technology since we were raised on it. In contrast, he believes the concept of land mobile radio is often a difficult one to convey to non-users of the technology.

Richards emphasized that the nature of his talk today would be focused on "private" land mobile radio. He explained that the cellular mobile radio some of us might be familiar with today is a type of public land mobile system. Private land mobile users are characteristically found in the public safety sector, e.g., police and fire departments, government and ambulances, as well as businesses with requirements for "communications on the move," e.g., oil companies, pizza parlors, etc. He believes that users of private mobile radio definitely achieve "productivity benefits" from using such communications systems.

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Richards compared the private land mobile radio system to the broadcast industry. He argued that broadcast, which is a point-to point system, could use cable and/or fiber optics to deliver programming to consumers homes; these options do not require the use of scarce spectrum. He voiced agreement with the cable statistics Mr. DePriest issued at the beginning of the talk. He believes cable is a real alternative to broadcast delivered television today.

To emphasize what he sees as the disadvantaged position of private land mobile radio, Richards noted that the private land mobile people have been pressured by the regulators to continuously improve their technology's efficiency: at one time mobile interests had used 120 KHz of spectrum and this has been improved to where they use 12.5 KHz or a total channel of 25 KHz today. The land mobile people developed the concept of trunking in response to this call for improved efficiency. In contrast, Richards pointed out that broadcasters in the U.S. today have not improved on same 6 MHz standard they started with back in the 1940s and 1950s. He believes it is therefore ironic that the broadcasters like to use the argument that "the land mobile people do not use spectrum efficiently."

It was very apparent from Richards remarks that he believes that the broadcasters are wasting spectrum that could be put to better use by the land mobile users. He used the Boston area UHF channel assignments to illustrate how spectrum, in his opinion, is being used inefficiently by the broadcasters. He noted that out of the 67/68 channels available in the Boston area, only 25% of the spectrum is actually being used by broadcasters because of the "UHF taboos" which stipulate that only one in every six channels in the UHF band are to be used.

Richards provided a few examples of how the regulatory system has continued to leave the private land mobile interests with an uncertain future. Docket 18261 allowed for land mobile entities, according to Richards, to share some spectrum with broadcasters in the top 13 cities in the U.S. in bands 14-20. There has not been one case of documented interference.

Richards noted that the Commission had agreed that in theory that up to 36 MHz could be used for private land mobile,

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especially in cities with high land mobile traffic, e.g., Los Angeles. He explained that this proposed spectrum sharing should not worry consumers since these large cities are characterized by a large number of video outlets and high cable penetration.

In responding to the emergence of HDTV, Richards voiced agreement with MIT researchers that HDTV thus far displayed does not have high enough quality. He agrees with those at MIT that say that "HDTV won't yet knock the socks off consumers." Richards does support future HDTV study, but wants development to emphasize 6MHz advanced TV systems, instead of a 12 MHz HDTV system. He believes that more attention should be focused on the growth that is occurring in the cable and DBS markets, while less support should be given to the current "dinosauric" U.S. broadcasting system. He also believes that too much attention is being focused on TV picture and sound quality, while TV programming should be the real issue.

Richards believes that the private land mobile interests have temporarily lost this "UHF sharing" issue at the FCC. He voiced optimism that land mobile interests will ultimately get some spectrum in the UHF band. Ironically, as Richards pointed out, the radio people could end up bidding for spectrum (a.k.a. "Spectrum Auction" approach), while the TV people continue to get their spectrum for "free."

*The opinions expressed at this Forum are his personal opinions and not necessarily the opinions of Dr. Marcus' employer, the FCC.

**According to DePriest there are actually 19 constraints that apply to UHF spectrum use (regarding interference issues).