Statement of
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before the

House Committee on Government Reform
Subcommittee on National Security, Emerging Threats and International Relations

hearing on

"U.S. Preparation for the World Radio Conferences: Too Little, Too Late?"

Introduction

Good morning, Mr. Chairman and members of the Subcommittee. I would like to thank you and the members of this Subcommittee for holding a hearing on a topic that is of great importance to the U.S. Department of Transportation (DOT). The Department welcomes this opportunity to present its views on the World Radiocommunication Conference (WRC or Conference), and to provide input on the internal U.S. preparatory process and external consultations. Radio spectrum decisions made at the WRC have a significant long-term impact upon the safety, efficiency, and effectiveness of our Nation's transportation systems, and play a vital role in helping us to plan for and meet our critical infrastructure needs.

DOT is first and foremost a public safety agency, with oversight responsibility for all modes of transportation and for the traveling public that relies on them. Many of our transportation systems and services are also global in nature, and they operate according to international standards and protocols supported by United Nations-affiliated bodies. For DOT, these include the International Telecommunication Union (ITU), the International Civil Aviation Organization (ICAO), and the International Maritime Organization (IMO).

While the Department's most basic mission is to enhance safety, we also have a responsibility to do all we can to make our transportation systems as efficient as possible, and we increasingly employ spectrum in those efforts. DOT's Intelligent Transportation System (ITS) program encompasses a number of wireless technologies that help to reduce accidents, ease congestion, and aid first responders. For example, the Department uses spectrum to support public transportation agencies' role in responding to emergencies by providing interoperable communications links to first responders. With our partners in Canada, we also operate a state-of-the-art vessel traffic system on the St. Lawrence Seaway that uses Automatic Identification System (AIS) technology to provide highly accurate, real-time information for navigation, communication, and security purposes. The Coast Guard is in the process of expanding that system for use at ports and in navigable waters nationwide.

As you can see, our Department has substantial radio spectrum equities that we must provide for and protect in both the domestic and international arenas, with successful management of the airwaves in the U.S. translating into more productive outcomes at the WRC. The domestic and

international aspects of spectrum management are of course inextricably linked, and make DOT a major stakeholder in any and all radio frequency proceedings where a transportation system or service can be affected.

Spectrum management and allocation, of course, have become increasingly complicated due to the scarcity of this resource and a strong desire to leverage the economic benefits of this limited asset. As a result, the WRC has evolved into a forum where competing nations work to secure access to as much spectral "real-estate" as possible. While this process can produce substantial efficiencies in the way spectrum is managed on a global basis, our Department must work to ensure that the spectrum resources we use to carry out our statutory responsibilities are not adversely affected. To this end, we have strongly supported our U.S. delegation in its pursuit of American interests at previous World Radio Conferences, sharing in the successes that have been achieved. The Department also intends to play a productive role in the preparatory work that has already begun for the 2007 Conference.

DOT Spectrum Requirements

The Department of Transportation is a strong supporter of using spectrum to create innovative and cost effective technology solutions to address complex problems. Similarly, given surging demand for transportation services and constrained resources, we are always searching for new ways to bring technology to bear in order to more safely and efficiently meet our Nation's transportation needs. This means that we must maximize the value of all current assets, including the Federal spectrum that DOT modal administrations use to ensure the safe, secure and efficient operation of our transportation systems.

Radio spectrum under DOT's purview essentially serves as an enabler for a wide variety of land, sea, air and space transport applications. As we work to modernize and improve the transport system, we rely heavily on uninterrupted access to radio waves that support a broad range of communications, navigation and surveillance (CNS) systems. In fact, our Department is the second largest user and service provider of all radio services in the United States. We have attached a list of these numerous systems and services for your information.

Aviation, which contributes over $700 billion annually to our country's economy and provides jobs for thousands of Americans is by its very nature a global service, and successful outcomes at the WRC play a big role in helping the Department to promote both the safety and economic well being of this industry. We have a strong track record of accomplishment in helping to make the U.S. aviation system the safest in the world, which is why we work so hard to ensure that our aeronautical and air traffic control systems do not become degraded, constrained or curtailed due to radio frequency interference (RFI).

For example, Secretary Mineta recently launched an interagency initiative with a goal of tripling capacity in our air transportation system over the next two decades. In order to accomplish that ambitious goal we will need continued and clear access to spectrum resources. Only then will we be able to help ensure that the U.S. remains an international leader in providing cutting-edge air transport services that benefit all Americans.

DOT Participation in Past World Radiocommunication Conferences

The successful development and implementation of many of our core transportation services can ultimately be tied to the Department's participation in past Conferences, supported of course by our highly skilled WRC ambassadors. One of those core technologies is the Global Positioning System (GPS), which is managed by our Department of Defense but also has important civilian applications. These applications are already providing tremendous benefits in areas like air navigation, highway safety, E911, or even just in getting driving directions.

We have worked closely with our agency counterparts in past Conferences to protect and preserve the spectrum used for GPS and its applications. As you probably know, at the 1997 WRC there was a proposal tabled for the Mobile Satellite Service (MSS) to share the restricted radio spectrum where GPS operates. This threatened to introduce an immediate source of interference to a space-based positioning and timing system that America provides free to the world, and which has become a cornerstone for global air, land, and sea navigation.

The U.S. was ultimately successful in persuading our global partners not to co-locate MSS in the GPS band, but only after a robust series of international technical studies and a global outreach program leading up to the 2000 WRC. This serves as a good example of how U.S. agencies must work closely together to counter spectrum initiatives raised at the WRC that may threaten U.S. national security or public safety.

Our Department was similarly pleased with the outcome of the 2003 Conference. First, the U.S. effort to provide global radio spectrum for GPS modernization was finalized, which included approval for a new civil signal known as GPS L5. The new L5 signal, which will provide another fully capable, high-integrity safety signal for critical transportation services such as aircraft landings in inclement weather, will start being embedded in GPS satellites launched as of 2006. The successes we have enjoyed at past Conferences with GPS and other items are clear evidence of the importance of this event in helping us deliver new services and technologies to the American public.

Looking Ahead: The 2007 WRC

The Department will continue to play an active role as the U.S. Government works to determine which items should be addressed at the 2007 Conference. One key item will be the review of all future radio spectrum needs for air-to-ground safety communications to determine if additional global allocations are required. We will work to identify ways in which aviation can use radio spectrum more efficiently so that current and future needs, including new technologies, can be met through our existing band allocations. We will also be examining the potential for increased sharing of radar bands to ensure that both civilian air traffic control and military needs can be accommodated using the same or similar radio frequencies.

The 2007 Conference will also likely consider the need for increased radio spectrum to support aeronautical telemetry. This is especially important to our aircraft manufacturers and the military, so that they can safely and efficiently test new aircraft. It is also becoming important to the safety of the Nation's airspace, as this telemetry is largely used to control unmanned aerial vehicles (UAVs) that will increasingly fly in the airspace used primarily by commercial aircraft today.

Finally, we hope to use the 2007 Conference as an opportunity to explore ways to stimulate the development of standardized Intelligent Transportation Systems (ITS) around the world. Last December, the FCC completed licensing rules on the 5.9 Gigahertz band here in the United States for use by Dedicated Short Range Communications (DSRC) technologies, the spectrum enabler for ITS. ITS applications will provide numerous safety benefits on our Nation's roadways through collision avoidance and other technologies, but standardizing equipment and protocols for ITS around the world will go a long way in promoting public safety and giving U.S. manufacturers and opportunity to succeed not only here, but in other countries as well.

Conclusion

DOT looks forward to participating in the development of the U.S. position for these, and other issues, for the 2007 Conference. I would like to thank the Chairman for calling this hearing and giving me an opportunity to testify here today, and look forward to addressing any questions that you may have on the statements we have submitted.

Attachment: List of CNS Systems Used for Transportation

Frequency Range System / Short Description

Aviation

90-110 kHz LORAN-C[1] — en route navigation aid

190-435 & 510-535 kHz Non-directional Beacon -- en route navigation aid

2100-28,000 kHz High Frequency Communications — en route (mostly oceanic and remote) communications

75 MHz Navigation Aid (NAVAID) Marker Beacon —used for approach and landing, part of Instrument Landing Systems (ILS)

108-118 MHz NAVAID (Very High Frequency (VHF) Omni-directional range (VOR), ILS Localizer, Special Category I (SCAT-I) — ILS approach and landing aid; SCAT-1 GPS assisted landings; Local Area Augmentation System (LAAS) future precision approach and landing aid (GPS augmentation)

118-137 MHz VHF Air/Ground Communications Pilot/controller communication; en route and terminal

162-174 MHz Fixed, Mobile Communications — Comm. for maintenance and administrative, controlling runway lights, etc.

225-328.6 & 335.4-400 MHz Ultra-High Frequency (UHF) Air/Ground Communications — Military pilot/controller

328.6 & 335.4-400 MHz NAVAID (ILS Glideslope)—Approach and landing aid

406-406.1 MHz Satellite Emergency Position Indicating Radiobeacon[1] — Emergency beacon for search and rescue

406.1-420 MHz Fixed, Mobile Communications — Communications for maintenance and administrative, controlling runway lights, etc.

932-935 & 941-944 MHz Fixed Communications — Data links (radar information) between control towers and remote equipment

960-1215 MHz NAVAID (TACAN, Distance Measuring Equipment (DME), etc) — TACAN en-route guidance for military aircraft; DME en-route navigation, UAT

1030 & 1090 MHz Radar Beacon, Traffic Alert and Collision Avoidance Systems (TCAS), Mode S — Identification of aircraft in flight, collision avoidance

1176.45 MHz GPS L5 Downlink[1] - Future En-route and non-precision landing aid

1227.6 MHz GPS L2 Downlink[1]

1215-1400 MHz Air Route Surveillance Radar — En-route surveillance

1544-1545 MHz Emergency Mobile Satellite Comm. (Downlink) — en route/Oceanic communications

1545-1559 MHz Aeronautical Mobile Satellite (R) (Downlink) — Safety communication

1559-1610 MHz Satellite Navigation[1]

1575.42 MHz GPS L1 Downlink[1] - en-route and non-precision landing aid

1645.5-1646.5 MHz Emergency Mobile Satellite Communications (Uplink) -

1646.5-1660.5 MHz Aeronautical Mobile Satellite (R) (Uplink) — Safety communication

1710-1850 MHz Fixed Communications (LDRCL) — radar data, air/ground communication

2700-3000 MHz Airport Surveillance Radar, Weather Radar — Airport Surveillance Radar (ASR) terminal radar; NEXRAD weather radar

3700-4200 & 5925-6425 MHz ANICS (Commercial Satellite Link) — Remote communication in Alaska (leased service)

4200-4400 MHz Airborne Radar Altimeter — Altitude measuring equipment

5000-5250 MHz NAVAID Microwave Landing System (MLS) to 5150 MHz — Precision approach and landing aid; Runway Incursion System (future system)

5350-5470 MHz Airborne Radar and Associated Airborne Beacons — airborne weather radar

5600-5640 MHz Terminal Doppler Weather Radar (TDWR) - wind shear, microbursts, storms, etc.

7125-8500 MHz Radio Communications Link - Data links (radar information) between control towers and remote equipment

8750-8850 MHz Airborne Doppler Radar

9000-9200 MHz Military Precision Approach Radar — Transportable landing aid; ASDE-X

9300-9500 MHz Airborne Radars and Associated Airborne Beacons

11.7-12.2 & 14.0-14.5 GHz FAA Satellite (Commercial Satellite Links) — Leased service for communication between major FAA facilities

13.25-13.4 GHz Airborne Doppler Radar

15.7-16.2 GHz Television (Video) Microwave Link — Radar data to remote control towers

15.7-16.2 GHz Airport Surface Detection Equipment (ASDE III) — Surveillance of airport surface area

21.2-23.6 GHz Microwave Link (Multi-Use) — Various communication links

35 and 94 GHz Synthetic Vision (Experimental)

Maritime

90-110 kHz LORAN-C[1] - — Vessel navigation

283.5-315 kHz DGPS corrections link; DGPS - used for harbor/harbor entrance and navigation on inland waterways, rail transportation; and navigation integrity

315-325 kHz DGPS; DGPS - used for harbor/harbor entrance and navigation on inland waterways, rail transportation, and navigation integrity

415-535 KHz MF Radiotelegraphy and data

518 kHz NAVTEX broadcast maritime safety information

1605-3800 KHz MF Radiotelephony including distress and safety communications

4-27.5 MHz HF data/radiotelephony - Maritime distress and safety, including Global Maritime Distress & Safety System (GMDSS)

121.5-243 MHz EPIRB/ELT distress alerts and emergency locating

156-165 MHz VHF Radiotelephony - VHF Maritime Communications, including distress, safety, and vessel traffic control

161.975-162.025 MHz Universal shipborne automatic identification systems (AIS)

162-174 MHz Fixed, Mobile Communications — Communications for command and control and public safety

225-328.6 & 335.4-400 MHz UHF Air/Ground Communications — USCG aircraft

406-406.1 MHz Satellite Emergency Position Indicating Radiobeacon1

406.1-420 MHz Fixed, Mobile Communications — Comm. for public safety and maintenance

1176.45 MHz GPS L5 Downlink[1]

1227.6 MHz GPS L2 Downlink[1]

1535-1544 MHz GMDSS maritime satellite communications (Downlink)

1544-1545 MHz Satellite emergency position-indicating radiobeacon (EPIRB) (Downlink) — Distress alerts

1559-1610 MHz Satellite Navigation[1]

1575.42 MHz GPS L1 Downlink[1] — Primary maritime navigation

1602-1615 MHz GLONASS Downlink — Maritime navigation

1626.5-1645.5 MHz GMDSS maritime satellite communications (Uplink)

2900-3100 MHz Shipboard and vessel traffic services radar — maritime navigation and collision avoidance (primarily foul weather)

9300-9500 MHz Shipborne Radars — maritime navigation and collision avoidance

Surficial Transportation

5.8 GHz Dedicated Short Range Communications System

[1] It is the case that with these radionavigation systems, there are multi-modal user communities far beyond transportation. In addition to navigation, Loran-C is used to some extent by the telecommunications community for timing. GPS has numerous additional user communities and applications.