NEXCOM Roundtable Highlights

The NEXCOM Roundtable was held at MITRE CAASD in McLean, VA on September 18, 2000. Approximately 60 representatives from the aviation community attended this meeting to discuss the FAA’s NEXCOM Program Plan and issues associated with air-ground modernization.

The Need for A/G Communications Modernization

The FAA presented briefings outlining the urgent need to modernize the current analog-based A/G communications system. This modernization need was described from the operational, spectrum, and infrastructure viewpoints. The FAA also presented a summary of the NEXCOM Program Plan. No significant issues or concerns were raised with respect to the operational or infrastructure needs and requirements presented by the FAA, as there was general agreement on the needs and requirements. There was however, significant discussion on spectrum needs and the FAA’s NEXCOM program. The following comments related to spectrum and program plan were expressed.

Spectrum Depletion Issue: Can the life of the current 25 kHz DSB AM system be extended?

The FAA presented evidence of the Spectrum depletion and denials in some parts of the US. The FAA also believes that with the anticipated spectrum demand the current system will be exhausted by the end of the decade. However, at a 2-3% growth in ATC spectrum demand, both VDL-3 and 8.33kHz/VDL-2 can last approximately 30 years.

a. Expansion of VHF band

Some of the participants suggested that more of the spectrum from 136 to 137 MHz band could be used for ATC since it was their belief that all airline radios are capable of operating in the 118-137 MHz band. It was also suggested that this communications VHF band could be expanded into the VOR band down to 112 MHz. It was noted in the meeting that this had been explored by ICAO AMCP in the past, but has not resulted in any change in the allocation of this band. It was also noted that the new radio under procurement is specified to be capable of tuning down to 112 MHz.
b. More efficient utilization of VHF spectrum in current 25 kHz system
There was some discussion of utilizing the VHF spectrum more efficiently in the 118-136 MHz band for ATC. FAA stated that there were ongoing efforts to improve the utilization of frequency across the NAS. It was also noted that the spectrum capacity analysis presented takes into account the most efficient assignment of frequencies across the NAS (i.e. “repacking” has been done).

c. Impact of NAS improvements that might reduce the need for VHF frequencies
Some participants postulated that data link combined with other procedural changes (e.g. RNAV, Free Flight, RVSM) could significantly reduce the need for new frequencies. With respect to RVSM, CAASD noted that unless there were some yet to be defined change in air traffic operations, it was likely that the amount of spectrum needed would increase with the implementation of RVSM. Several participants indicated that Data Link could reduce the activity on a particular channel, but would not directly reduce the number of frequency assignments for voice communications. One of the airlines noted that there were practical limits to continued sector splitting. In some airspace, these limits may have been reached. This would reduce the future demand for new voice communications channels in this airspace. FAA and MITRE indicated that although the effect of these changes are unknown at this time, a 2% growth rate projection (half of the historical growth rate of approximately 4%) for new communications channels was assumed to account in part for this change. It was deemed that significant changes in operations and procedures would be needed to slow this growth rate to a level that would allow the current communications system to continue providing adequate voice channels.

Experience in Europe
Eurocontrol representatives discussed their experience with 8.33 kHz deployment in Europe. They stated that in general, the 8.33 experience has been successful in meeting the program spectrum relief objectives. Continued success will require both horizontal and vertical expansion and the cooperation of individual member states. It was noted that 8.33 kHz assignments have been made to approximately 80 radios in Europe. Although they have not experienced co-site interference problems to date, these problems could arise later, as more 8.33 kHz assignments are made.
Discussion on Alternatives

Representatives from the airlines, cargo carriers, regional carriers, business and general aviation had an opportunity to express their opinion on how to address the current and future spectrum needs, if the decision were theirs to make. A concern expressed about VDL 3 was the ability of the FAA to successfully deploy a system of this magnitude in the timeframe needed.

Two main viewpoints emerged from the carriers and general aviation:

- Extend the life of the existing system by “squeezing” additional capacity out of the current air-ground system, and defer the decision on VDL-3. CAASD noted that the additional capacity achieved by these means would be marginal.
- Implement 8.33/VDL-2 as the next-generation A/G communications system in the U.S.

Other views were to continue the current NEXCOM plan to implement VDL-3, or to implement 8.33/VDL-2 immediately with a future transition to the digital VDL-3. The current view of the FAA is that the latter concept is impractical.

At least one airline representative thought it difficult to make a business case for VDL-3 to their CEOs at this time.

FAA representatives stated that VDL-3 is the only alternative that meets all FAA Air/Ground communications requirements.

ARINC questioned why VDL-2 provides only “limited data capabilities”, considering modeling results developed under a cooperative R&D agreement signed by the FAA, ARINC, and MITRE.

The NATCA representative considered an 8.33/VDL-2 solution to be shortsighted, and would ultimately cost the aviation industry more to provide the services that were needed.

The airlines recognized that implementation of 8.33 kHz voice could solve the immediate spectrum concerns, but may also be short-sighted from the broader FAA/aviation user community perspective.
Discussion on Schedule
One airline stated that it could implement avionics for 8.33/VDL-2 earlier than for VDL-3, and there was a sense that the FAA could implement 8.33/VDL-2 earlier than VDL-3. The FAA indicated that the acquisition, deployment, and transition of the analog 8.33 kHz system was unlikely to be significantly shorter than the proposed schedule for the digital VDL-3 system due to similar rulemaking, certification and equipage timelines.

Because of additional capabilities offered by a digital VDL-3 system, some representatives indicated that certification would, in fact, take longer than the analog 8.33 kHz system.

There was some concern with respect to the FAA schedule that some of the proposed certification activities to be carried out in parallel would have to be performed in series. This change could add up to 3 years to the schedule. There was discussion on whether the time line for 8.33 vs. VDL-3 would be driven by the certification activities and how different these would be. A schedule for each path was requested.

Discussion on Cost
FAA stated that the cost of the analog 8.33 kHz ground system would be higher due to additional sites, radios, telecommunication circuits, and data link services. It was stated that in the long run these costs might exceed what FAA can realistically afford.

Some industry representatives also expressed the concern that the VDL-3 program has the risk of having additional and undefined certification costs that are greater than the analog 8.33/VDL-2 due to its complexity and additional features.

Business Cases
Aggregate Business Plans for both VDL-3 and 8.33/VDL-2 should be put together that take into account both FAA and airspace user perspectives. These plans will help bring the aviation community together on a common plan. An independent advocate for each alternative is needed in the development of these plans.
Action Items

- Develop an 8.33 kHz deployment schedule, including acquisition, rulemaking, certification, and implementation (FAA and CAASD and appropriate industry participants for the next meeting)

- Review the rulemaking and certification aspects of the VDL-3 program schedule, including parallel rulemaking and development activities, with AVR (FAA by next meeting)

- Start development of aggregate business cases for 8.33/VDL-2 and VDL-3 considering both FAA and airspace user perspectives (FAA and CAASD and appropriate industry participants for the next meeting)

- Provide VDL-3 Testing Reports on the NEXCOM Roundtable website: www.CAASD.org/nexcom (CAASD by September 25th)

- Provide NEXCOM Avionics Cost Study on NEXCOM Roundtable website: www.CAASD.org/nexcom (CAASD by September 25th)

- Review the 1997 FAA, ARINC and CAASD cooperative research and development agreement results with respect to VDL-2 ATS Data Link capability (FAA, ARINC and CAASD for the next meeting)

Next Steps

- Hold NEXCOM Industry Roundtable follow-up meeting in December 2000/January 2001 (MITRE/CAASD to arrange)

- Convene FAA internal group to determine the appropriate regulatory path as soon as possible (FAA)

- Approve RTCA special committee requested by FAA as soon as possible (FAA/RTCA)

- Establish AEEC work program for VDL-3 avionics standards in November (FAA/AEEC)

- Convene C/AFT to conduct NEXCOM cost/benefit analysis as soon as possible -- perform both system procurement and regulatory cost/benefit analyses concurrently (Russ Chew (AA) to explore and coordinate)