**2014 Second Meeting, ARRL Board of Directors**

**Report of the Chief Technology Officer**

1. **Introduction**

The execution of ARRL’s Centennial celebrations, both on the air and at conventions around the country, are not my bailiwick, but they are fun beyond anything I imagined at the beginning of the year. Heeding my colleague Sean Kutzko’s sage advice (“Don't let your housing situation keep you off the air!”), N4QX has been QRV, exclusively QRP and mostly from my car, to the extent family and professional obligations permit. I even have a Division winning and top ten overall contest finish to show for it—an hour, five QSOs, and ten points earned from the freezing cold of my mother-in-law’s driveway in Southington, Connecticut, was enough to win the New England Division and overall tenth place in the Single Operator Portable category of the ARRL January VHF Contest. I am not amassing huge QSO totals, but I don’t have to, nor does anyone else. Every QSO is eagerly sought and creates significant goodwill for our League, particularly those from the W1AW/x stations.

Technology is significantly enhancing the on-the-air experience of the Centennial QSO Party, just as it is enhancing Amateur Radio in general. The WSJT suite of weak signal digital modes enables stations like mine to complete QSOs that would be extremely difficult using conventional modes. One of these modes, FSK441, was utilized earlier this month in the first terrestrial 144 MHz transmission from North America successfully received in Europe. While attempts to complete a QSO were not successful, this is as close as anyone has come to earning one of the Brendan Trophies, and is an important illustration of how new communications modes advance the art, science, and enjoyment of Amateur Radio.

Against this exciting backdrop, the work of ARRL’s Fairfax office continues, addressing a number of challenges to and opportunities for Amateur Radio. This meeting overlaps the first two days of the final meeting of ITU-R Joint Task Group 4-5-6-7, which has conducted the technical studies and is drafting the CPM text for the mobile broadband agenda item (1.1) of the 2015 World Radiocommunication Conference (WRC-15). While there is tremendous political pressure to make further domestic and international allocations for commercial broadband services, there is a profound lack of consensus as to what bands to allocate, and resistance by incumbent services is spirited. I remain somewhat worried about impact to the 3400-3500 MHz segment of the 9 cm band, which is already identified for broadband purposes in a number of countries, but an earlier threat to the 420-430 MHz segment of the 70 cm band appears to have abated. At 5 GHz, evaluation of 5850-5925 MHz for low power RLANs has been deferred at least to another day—so far.

I should expand a bit on what I mean by “CPM text” before I get too far into arcane jargon. The responsible ITU-R group for each WRC-15 agenda item is tasked with drafting text to be considered at the second session of the WRC-15 Conference Preparatory Meeting (CPM), which will be held in Geneva March 23-April 2, 2015. The text is supposed to be a concise (ten pages or less—a rarely met objective) description of the agenda item, the studies conducted in conjunction with the item, methods to satisfy item, and changes to the text of the ITU *Radio Regulations* that would enact each of the methods. The deadline for groups to draft this text is July 31, 2014, and text for all items except the broadband items has now been drafted.

These drafts are further debated at CPM and included in a document called, appropriately, the CPM Report, which is an influential document as the numerous countries that don’t participate in ITU work until a WRC is imminent try to figure out what is going on. Once a WRC starts, the value of the CPM Report quickly goes to zero, but it is substantially greater than zero during the final preparatory stages. It is therefore critical to put forward the best possible argument for one’s case in the CPM text. This has been our main objective the first half of this year, and by the end of the month, we’ll be done.

Now that the drafting of CPM text is behind us, IARU volunteers and the Fairfax professional staff (Technical Relations Specialist Jonathan Siverling, WB3ERA, and myself) will turn attention to gaining regional support for outcomes favorable to Amateur Radio at WRC-15. This is a critical step toward a good outcome on our efforts toward a worldwide secondary allocation at 5 MHz, which still faces significant resistance, despite some positive developments discussed below.

1. **ITU-R**
2. **WRC-15**

As a reminder, there are six items with potential impact (positive and negative) to Amateur Radio spectrum on the WRC-15 agenda. These items, in numerical order, are:

1.1 to consider additional spectrum allocations to the mobile service on a primary basis and identification of additional frequency bands for International Mobile Telecommunications (IMT) and related regulatory provisions, to facilitate the development of terrestrial mobile broadband applications;

1.4 to consider possible new allocation [sic] to the amateur service on a secondary basis within the band 5 250-5 450 kHz;

1.6.1 to consider possible additional primary allocations to the fixed-satellite service (Earth-to-space and space-to-Earth) of 250 MHz in the range between 10 GHz and 17 GHz in Region 1 . . . and review the regulatory provisions on the current allocations to the fixed-satellite service within each range, taking into account the results of ITU R studies;

1.10 to consider spectrum requirements and possible additional spectrum allocations for the mobile-satellite service in the Earth-to-space and space-to-Earth directions, including the satellite component for broadband applications, including International Mobile Telecommunications (IMT), within the frequency range from 22 GHz to 26 GHz;

1.12 to consider an extension of the current worldwide allocation to the Earth exploration-satellite (active) service in the frequency band 9 300-9 900 MHz by up to 600 MHz within the frequency bands 8 700-9 300 MHz and/or 9 900-10 500 MHz; and

1.18 to consider a primary allocation to the radiolocation service for automotive applications in the 77.5-78.0 GHz frequency band.

Additionally, there are several topics to be addressed in the report of the Director of the ITU Radiocommunication Bureau to WRC-15 that may have impact on non-spectrum issues within Amateur Radio. The most prominent of these topics from our perspective are issues relating to small communications satellites.

1. **Working Parties 5A, 5B, and 5C**

 Working Parties 5A, 5B, and 5C of Study Group 5 (Terrestrial Services) met in Geneva May 19-30, 2013. As usual, I attended these meetings as part of the United States Delegation and acted as United States spokesperson on Amateur Radio issues. Working Party 5A is responsible for the amateur and amateur-satellite services, the land mobile service above 30 MHz, and some limited applications in the fixed service. The meetings of Working Group 5A-1, dealing with the amateur and amateur-satellite services, were chaired by Dale Hughes, VK1DSH. IARU was represented by Vice President Ole Garpestad, LA2RR. Other radio amateurs participating included Bryan Rawlings, VE3QN, Colin Thomas, G3PSM, Ulrich Mueller, DK4VW, Ken Yamamoto, JA1CJP, and Hans Blondeel Timmerman, PB2T.

The Amateur Working Group had three major tasks for the meeting:

1. Complete draft CPM text for agenda item 1.4, and
2. Incorporate agenda item 1.4 compatibility study contributions (from the Russian Federation, China, the United States and Canada) into a cohesive report describing the technical work done on the agenda item, and elevate the report to preliminary draft status (meaning approval is anticipated within an additional one or two meetings).

These tasks were accomplished quickly and efficiently. While the Russian Federation vigorously opposes an allocation, and has done so in a manner that has made past meetings difficult, agenda item 1.4 was but one of several items for which Russia’s spokesperson was responsible, most of which are quite contentious. As a result, the Russian delegate was eager to negotiate agreed text quickly, and Bryan Rawlings and I were able to do so by the end of the first week.

The CPM text presently contains a number of methods, some generous, and some not:

1. A secondary allocation to the amateur service between 5 275-5 450 kHz (proposed by Norway at the behest of Ole Garpestad);
2. A secondary allocation to the amateur service between 5 350-5 450 kHz (proposed by the Netherlands at the behest of Hans Blondeel Timmerman);
3. A generic method suggesting some sort of allocation to the amateur service of an unspecified amount of spectrum between 5 275-5 450 kHz (proposed by Canada);
4. Generic methods suggesting an allocation to the amateur service of an unspecified amount of spectrum that may be non-continuous, channelized, or limited in transmitter power (proposed by China); and
5. No change (proposed by Russia).

We owe gratitude to Ole and Hans for persuading their administrations to propose generous, well defined, affirmative methods. Without success on their part, we would have been left with Canada’s vague proposal as our best outcome, and vague proposals are inherently problematic.

The report containing compatibility studies will be an unwieldy document, as the contributed studies widely diverge (largely depending on the result desired by the author), and efforts to generate a unified discussion have failed. The report will be structured as a series of annexes with supporting and critical text describing each annex. The work will be completed no later than WRC-15, and the contributing countries expressed a desire to finish by November 2014.

Working Party 5B approved CPM text for WRC-15 agenda item 1.18, considering vehicular radars at 77.5-78 GHz. The IARU position on this agenda item is that a co-primary allocation of the radiolocation service, limited to on-board, low power applications, is compatible with Amateur Radio, based on previous regional studies and experience. However, at least two countries (France and Sweden) would prefer to make a sweeping allocation to all kinds of radiolocation, despite the absence of studies supporting anything other than on-vehicle radar. Working Party 5A approved characteristics for several radars not previously considered in the studies upon which both we and automotive interests have relied. While France and Sweden have not yet persuaded other countries to their position, the issue merits further vigilance.

1. **Joint Task Group 4-5-6-7**

The Joint Task Group (JTG) is designed to ensure all interested stakeholders are present for consideration of studies relating to agenda item 1.1. As a result, the meetings are exceptionally large. I attended the penultimate meeting of the JTG from February 20-28 in Geneva as a representative of IARU. I presented a paper describing Amateur Radio allocations in the bands under consideration and presented the IARU position that radio amateurs’ meaningful access to these bands should be maintained. The document was appropriately incorporated into the body of the JTG’s work without objection.

In my January report to the board, I reported that of the numerous bands under consideration for broadband, two may impact Amateur Radio as we enjoy it in the United States: the 410-430 MHz band, and the 3400-3500 MHz band. I am pleased to report that Brazil has abandoned its efforts to reallocate 410-430 MHz after failing to gain any support whatsoever.

 The 3400-3500 MHz band is not allocated to the amateur service worldwide, and, in fact, is identified for International Mobile Telecommunications (ITU-speak for smartphone-style mobile broadband) by footnote in a number of countries. Aside from radio amateurs, the main user of this band is the commercial satellite industry, which is leading the effort to protect this segment as part of a broader defense of the 3400-4200 MHz band.

As I have stated before, defending secondary allocations is difficult because there is an unwarranted tendency to completely discount them. Since we have no primary allocation in the international table anywhere in the world between 440 MHz and 24 GHz (225 MHz and 24 GHz in the Americas), our secondary allocations in this range are important, and we will continue to vigorously defend them at this month’s final JTG meeting and beyond.

1. **Study Group 1 and its Working Parties**

Study Group 1 is responsible for a variety of regulatory issues, including spectrum monitoring and power line telecommunication impact on radio services. Jon Siverling covers this important beat for us, and attended two meetings in the first half of the year. Ian Greenshields, G4FSU, attends on behalf of IARU.

Work on a variety of power line and other wireline communication issues continues to be aggressively conducted at Study Group 1, necessitating a continued vigilance and coordinated response. Fortunately, administrations, including the United States, have accepted the undeniable fact that unfettered power line telecommunications adversely affect radio communications, and have been more aggressive against the efforts of diehard power line cheerleaders (mostly European—the American BPL cheerleading died even before BPL did).

1. **Inter-American Telecommunications Commission (CITEL)**

CITEL is the regional telecommunications organization for the Americas, part of the Organization of American States (OAS), with a secretariat in Washington. Jon Siverling participates in CITEL activities as a member of the US Delegation. IARU Region 2 is a recognized observer, usually represented by a member of the Executive Committee.

The technical work of CITEL is divided into two Permanent Consultative Committees (PCCs). PCC.I (Telecommunications/Information and Communication Technologies) met in Lima, Peru, from April 29-May 2. Emergency communications is among the topics considered by PCC.I, and Jon Siverling chairs the Rapporteur Group on the Use of Telecommunications in the Prevention and Mitigation of Catastrophes and Disasters. Jon’s leadership and contributions are universally well received.

PCC.II (Radiocommunications including Broadcasting) handles matters affecting spectrum allocation, including regional preparations for WRC-15. PCC.II met in Cartagena, Colombia, March 17-21. Jon Siverling was in attendance as a United States delegate. At this meeting, Canada contributed a proposal for WRC-15 agenda item 1.4 that was supportive, albeit nonspecific. The United States still has no view on agenda item 1.4, as federal government interests have not been willing to support any affirmative outcome beyond the five existing channels in the United States, and we cannot support an affirmative outcome that doesn’t provide a traditional band. For this reason, we are attempting through IARU Region 2, represented by IARU Region 2 Secretary Jose Arturo Molina, YS1MS, to get other countries to support a more specific, more favorable proposal, in order to pressure, and if necessary, bypass the United States on this issue.

1. **World Telecommunication Development Conference**

Jon Siverling attended as a United States delegate to the World Telecommunication Development Conference in Dubai from March 30 to April 10, 2014. IARU Secretary Rod Stafford, W6ROD, attended as an IARU observer. The Conference is the ultimate authority in the ITU’s Development Sector and sets the agenda for the next few years, just as each WRC sets the agenda for the next. ITU-D conducts a great deal of work on emergency and disaster relief communications, and Amateur Radio is valued by those who do that work. Amateur Radio remains among the topics to be studied over the next study period leading to the next WTDC. This outcome was not a foregone conclusion (no outcome of an ITU conference ever is), and Rod and Jon’s work reminding WTDC delegates of Amateur Radio’s past contributions and evolving capabilities was key in securing that outcome.

1. **United States ITU Association**

USITUA seeks to develop positions on ITU activities reflecting the consensus of its private sector members and to advocate these positions to government officials responsible for forming United States ITU policy. ARRL is one more than forty USITUA members, and I serve as a director of the association. Two other members of USITUA (without board seats) are represented by radio amateurs: Juniper Networks (by Tom Walsh, K1TW) and Raytheon (by former ARRL Arizona Section Manager Tom Fagan, K7DF).

Much of USITUA’s efforts over the past few years have been focused away from radio issues. This continues to be the case as the ITU Plenipotentiary Conference approaches later this year. Jon Siverling continues to capably lead a USITUA ad hoc group on CITEL issues, on which his expertise is without peer. Some USITUA members, including ARRL, have expressed concern that radio issues are getting short shrift, particularly as WRC-15 is just over a year away. We have been promised a shift in focus after the Plenipotentiary Conference.

1. **General Technology Issues and Domestic FCC Advocacy**

I advised General Counsel Imlay and the Executive Committee on a number of issues, including our opposition to Mimosa Networks’ Petition for Rulemaking to permit broadband networks in the 10-10.5 GHz band. Among other strong arguments, we noted that the ongoing consideration of earth exploration satellite systems in this band under WRC-15 agenda item 1.12 rendered action on Mimosa’s petition unwise. (Earth exploration satellite systems present no risk to our continued meaningful access to 10 GHz; the worst case interference potential is measured in seconds over a double-digit number of days.)

We caught Mimosa off guard with this argument, and they are playing catch up—poorly. I serve as a member of the WRC-15 Advisory Committee, which adopted a consensus proposal on agenda item 1.12 in January. Mimosa has hired a member of the committee to seek a change to this proposal after adoption. This member’s first effort contains at its core an untrue statement regarding current United States rules, and universally panned when first presented. I will continue to resist Mimosa’s efforts on substantive and procedural grounds.

1. **Conclusion**

As always, questions and input from members of the Board are welcome.

I would be remiss if I failed to acknowledge the significant contributions of Chief Development Officer Hobart to the financial health of our League. Her work promoting the Spectrum Defense Fund has enabled the present and former staff of the Fairfax office to maintain an extensive and vital presence on the international stage. We are a stronger organization representing a stronger service in large part because of her efforts. I wish Mary the best in retirement, and thank her for leaving the infrastructure for ARRL’s continuing development efforts.

73,



Brennan T. Price, N4QX

Chief Technology Officer

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