



Aviation Spectrum Resources Inc.  
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Aeronautical Frequency Committee

14 March 2016

**MINUTES OF THE AFC WINTER MEETING 2016  
1-2 March 2016, Albuquerque, New Mexico**

**1. OPENING REMARKS AND INTRODUCTIONS**

Jeff Monroe (ASA), as AFC Vice Chairman acting on behalf of Mr. Vytas Cerniauskas, convened the Aeronautical Frequency Committee (AFC) meeting on 1 March 2016 at the DoubleTree by Hilton Hotel, Albuquerque, NM.

All members introduced themselves to the group.

**AFC Attendees:**

Ken Adams (DAL)	Vic Nagowski (ASRI Consultant)
James Dickens (Bristow)	Chris Naugle (FDX)
Terry Gambill (PHI)	Tim Payne (DAL)
Michael Hinojosa (ASRI)	Mike Richards (AAL)
Terry Horn (SITA)	Brian Romine (USA/AAL)
Kris Hutchison (ASRI)	Andrew Roy (ASRI) – Executive Secretary
Zbig Jasiukajc (SITA)	Tim Totten (UPS)
Steve Ledger (Rockwell Collins/ARINC)	Tom Wainscott (FDX)
Jeff Monroe (ASA) – Vice Chairman	Neal Young (SWA)
John Monto (Rockwell Collins/ARINC)	

**Guests:**

Ramsey Abid (Rockwell Collins/ARINC)	Joe James (Harris)
Yung Chung (Rockwell Collins/ARINC)	John Seybold (Harris)

**Apologies:**

Vytas Cerniauskas - Chairman (ASA Alternate)	Pete Incaini (UAL)
Chris Collings (Harris)	Chris Kelly (UAL)
Joe Cramer (Boeing)	Tim Pawlowitz (FAA)
Tom Davis (DAL)	Barry Pilkinton (FDX)
Bob Dick (FFT Alternate/ACG Systems)	Dave Robinson (ERA)
Rich Farr (AAL)	Joe Williamson (JBU)

Michael Francis (NATA)	David York (HAI)
Mark Hagan (UPS)	

The current AFC membership, associate members and observers' status was reviewed by Andrew Roy (ASRI - Executive Secretary). The Executive Secretary asked that AFC meeting attendees do not distribute the AFC meeting information outside the AFC membership. Twelve voting members, out of an AFC membership total of 17 votes, were in attendance. Therefore, a quorum was achieved.

The Executive Secretary presented four letters<sup>1</sup> requesting changes to the AFC Membership:

- A letter was received from Chevron asking that Tim Guidry become a new member of the AFC.
- A letter was received from Federal Express advising that Tom Wainscott was retiring and that Chris Naugle was taking his place.
- NATA requested that Amy Koranda be replaced by Megan Eisenstein.
- The IATA organization provided a letter requesting a renewed application and that Noppadol Pringvanich be the new AFC member.

A formal motion was made by Terry Gambill (PHI) and seconded by Tim Totten (UPS) to accept all the proposed membership requests. A vote was taken and there was unanimous agreement by the AFC membership to recommend all the membership changes to the ASRI Board of Directors for approval.

Jeff Monroe (ASA) presented a token of appreciation to past chairman Terry Gambill (PHI) for his leadership of the AFC last year.

## **2. APPROVAL OF THE AGENDA**

The agenda was reviewed and approved as presented.

## **3. APPROVAL OF THE FALL 2015 MEETING MINUTES**

Andrew Roy (ASRI) – The AFC Executive Secretary introduced the minutes from the Fall 2015 AFC meeting and the group conducted a page-by-page review. Future distribution of the AFC meeting minutes will be done as an attachment after a short discussion by the members.

A formal motion to approve the minutes was provided by Neal Young (SWA) and seconded by Kris Hutchison (ASRI). A vote was taken and there was unanimous agreement by the AFC membership to approve the previous minutes as presented

## **4. STANDING REPORT OF RELATED ACTIVITIES**

### **A) International Telecommunications Union-Radiocommunications (ITU-R) Activities**

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<sup>1</sup> The first three were presented at the start of the meeting, and the fourth was presented on the second day. The AFC agreed that the previous vote result was repeated for the fourth letter.

(i) WRC-15 Report Study Group 5 (WP 5A and WP 5B)

Andrew Roy (ASRI) briefed on the WRC-15 meeting results. The meeting was held at the ITU Headquarters in Geneva, Switzerland from 7-27 November 2015. There were 3114 participants representing 193 nations. Andrew Roy (ASRI) was on the ASRI delegation and Kris Hutchison (ASRI) was on the US delegation supported the WRC-15 meeting. Agenda items at the conference relevant to the AFC membership were prioritized into high and important items.

Agenda Item 1.1 International Mobile Telecommunications (IMT) was for multiple new spectrum allocations in the 400 MHz – 6 GHz range. IMT did fairly poorly after its big push for more mobile broadband spectrum below 6 GHz, with very few new IMT allocations being agreed to<sup>2</sup>. No significant IMT allocations were made that will impact aviation services directly. Aviation support systems (GPS, SATCOM, etc.) were relatively unaffected, though a few countries did confirm more extensive use of the lower VSAT band<sup>3</sup> (3.4-3.6 GHz) for IMT (used for aviation backhaul in certain areas).

The Global Flight Tracking (GFT) Agenda Item focused on ADS-B over satellite by modifying the existing ADS-B allocation at 1090 MHz. ADS-B over satellite was approved under the GFT agenda item by the second week, including protections for existing navigation systems, and also recognizing IFF<sup>4</sup> systems in the same spectrum by certain administrations. The decision was not unanimous, with several countries wanting to wait until the next conference for more studies to be completed. A lot of press was generated by the decision, however several facts were inaccurate and misleading concerning the current safety of aviation.

Agenda Item 1.4 Amateur HF dealt with a new allocation in the 5 MHz range which is adjacent to the Aero HF allocation. Although the amateurs did succeed in agreeing a new amateur allocation on a secondary basis, it was only for 15 kHz of spectrum, and with lower power limits than hoped for. The new allocation of 5351.5-5366.5 kHz will not create any co-site interference issues for aviation, as it is sufficiently separated from the Aeronautical HF spectrum above 5450 kHz.

Agenda Item 1.5 Unmanned Aircraft Systems (UAS) over satellite agreed with the use of Fixed Satellite Service (FSS) for UAS command links. Use of the standard Fixed Satellite Service for the control of oceanic and remote UAS was approved, but with a very convoluted resolution that appears contradictory. The final text was a result of very chaotic negotiations that lasted the whole conference, including going beyond the official end of the negotiation periods. A major operating restriction was placed on satellite control of UAS, preventing use of the service until ICAO finishes its standardization work, and reports back at WRC-23.

Agenda Item 1.7 dealt with FSS feederlinks allocations in the same band as AeroMACS. The FSS interference limit on AeroMACS were increased to a level that will not affected planned AeroMACS deployments.

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<sup>2</sup> Most allocations were minor in scope, or added more countries to existing footnotes.

<sup>3</sup> This is often used for ATM message backhaul given its extremely high reliability in all weather conditions.

<sup>4</sup> ID Friend or Foe – Primarily a military system

Item 1.17 dealt with the wireless avionics intra-communications (WAIC). WAIC's AM(R)S allocation in 4.2-4.4 GHz was agreed within a single meeting, and approved by the end of the first week. The resolution proposed in the CPM report was unchanged, except for minor editorial work.

In summary, the aviation results at the WRC-15 were considered good to excellent. Kris Hutchison (ASRI) covered the future agenda items which include GFT studies, Global Aeronautical Distress and Safety System (GADSS), IMT over 6 GHz, C-band IMT, train communication systems, space planes, and wireless power transfer (WPT). Airline representatives were encouraged to support future ITU-R and ICAO meetings.

(ii) Study Group 5 (WP5A and 5B)

Kris Hutchison (ASRI) briefed on the work associated with WP 5A and WP 5B. The primary purpose of the previous meetings was preparations in support of the WRC-15. The next meeting scheduled for May 9-20, 2016 in Geneva, Switzerland will start to address items identified during WRC-15 that will be addressed at future WRC meetings. Issues to be investigated will include agenda items identified for the next WRC meeting.

**B) International Civil Aviation Organization (ICAO) Aeronautical Communications Panel (ACP) Activities Report**

(i) Frequency Spectrum Management Panel (FSMP).

Kris Hutchison (ASRI) provided a brief update on ICAO FSMP. ASRI is a panel member. The meeting has Mike Biggs of the FAA as Chairman and Andrew Roy (ASRI) was elected Vice Chairman. Their last meeting was held on February 16-17, 2016 in Montreal Canada.

Agenda items relevant to the meeting included:

- Results of ITU WRC-15
- Start drafting the initial ICAO position for WRC-19
- ICAO frequency spectrum strategy
- WAIC and radio altimeters
- UAS command control
- GADSS
- Aviation spectrum planning

The next meetings of FSMP is scheduled for September 6-16, 2016 in Montreal, Canada.

(ii) European Frequency Management Group (FMG).

A presentation was provided by Andrew Roy (ASRI) on the FMG.

The FMG is responsible for developing recommendations for the ICAO European Air Navigation Planning Group (EANPG) on issues related to aviation spectrum management and frequencies. The committee normally meets twice a year. ASRI and the datalink service providers are observers. ASRI did not attend the January 2016 meeting.

The European Laboratory for Structural Assessment (ELSA) has been studying the VDLM2 datalink issues being observed in Europe. ELSA concluded that the CSC frequency for VDLM2 is at its capacity limits and that an additional four frequencies will be a minimum requirement to support European datalink until 2025. ELSA is scheduled to release more results in the 2Q16.

The FMG has also concluded that additional VDLM2 spectrum is required and are reviewing a proposal to assign 5 frequencies in total for VDLM2, but more work is required. The FMG goal is to assign two VDL frequencies (one terminal and one enroute) to each of the service providers in Europe. ELSA is studying the impact on 5 frequencies and will report to the next FMG meeting. The ELSA report is available on the ASRI website.

The FMG has requested further study before they can endorse a plan for more VDL spectrum. The next FMG meeting is scheduled for June 2016 in Paris, France.

## C) **FAA REPORT**

### (i) **FAA DataComm Program**

Joe James, Harris, on behalf of the FAA DataComm office, provided an overview of the FAA Data Communications program which will provide data communications between the cockpit and controllers to replace some of the current voice communications.

Harris is leading the Data Communication Integrated Services (DCIS) team partners with the FAA to deliver data communication network services (DCNS), data communications integration and test, avionics equipage incentives, operations support, and engineering services.

Joe stated that at the end of February that there were 674 aircraft operational at nine airports providing departure clearances (DCL) supporting around 1500 flights per week. Airports scheduled for DCL initial operating capability during March 2016 are IND, LAX, LGA, LAS, and TEB. The installation plans to support this installation are scheduled throughout the remainder of 2016. The DCL deployment is scheduled through 2019 followed by enroute services. Work is continuing to solidify the enroute data communication service definition and the enroute operational demonstrations are on-going.

The FAA Performance-based Operations Aviation Rulemaking Committee Communications Working Group (PARC CWG), which develops recommendations for the FAA on matters of policy, rules, and guidance related to aeronautical communications for safety oversight of service provision, aircraft certification, and operational authorization is about to publish a report stating that ACARS (FANS) equipped aircraft should be allowed to participate in the FAA DataComm enroute program. This would allow approximately an additional 650 aircraft to participate in the program. The FAA has asked Harris to investigate the cost to monitor performance of such aircraft. These aircraft are primarily the airline international fleets. Concerns were expressed in the requirement for spectrum to support additional ACARS aircraft FANS applications due to the limited spectrum that is available.

### (ii) **ADS-B Implementation Progress and Future intentions (Terrestrial and SATCOM).**

The FAA did not attend the meeting so no report was provided.

(iii) FAA's AeroMACS Deployment Update.

The FAA did not attend the meeting so no report was provided.

## **5. REPORT ON OTHER REGULATORY AND TECHNICAL ORGANIZATIONAL UPDATES**

### **A) Ligado Networks and GPS**

Andrew Roy (ASRI) provided an update on Ligado Networks, formally known as LightSquared. Ligado was struggling after the FCC delays to its license modification, having tried to sue GPS companies for \$1.9bn, and also sued the US government for FCC actions. Ultimately, Garmin, Deere and Trimble have settled their case at the end of 2015 and the action against the FCC was withdrawn.

The FAA study in 2012 on the 1526-1536 MHz Ligado basestation band impact showed that the aviation GPS navigation services below 300 feet were not viable and there was strong concern for operations below 1800 feet. The Dept. of Transport (DOT) GPS adjacent band compatibility assessment was initiated after NTIA and FCC discussions following effects of the Ligado process. The plan is to derive adjacent-band power limits to create an Interference Tolerance Mask (ITM). The DOT timeline is to conduct GPS/GNSS receiver testing in March 2016 and have results in 3Q16. The DOT test plan is generally supported by manufacturers and the GPS industry.

Ligado is proposing its own test plan which focuses on Key Performance Indicators (KPIs) for devices (i.e. what the device states it is accurate too). They plan to increase interference until the KPI is affected and will then define the interference limit for each device. Roberson and Associates are working on LS' behalf and will not be part of DOT plan, and it is not supported by any GPS manufacturers.

Concerning the implications regarding the impact on NOAA spectrum, ASRI is reserving its position on the NOAA frequency band 1675-1680 MHz until the extent of weather information usage is better understood.

### **B) AEEC Data Link Users Forum**

Vic Nagowski (ASRI Consultant) provided a presentation on the last meeting of the AEEC Data Link Users Forum (DLUF).

The DLUF holds two meetings each year with one in the US and one in Europe and are normally hosted by a participant organization. The last DLUF meeting was held on February 2-3, 2016 in Miami, Florida hosted by Rockwell Collins IMS. The primary subject of discussion were the status of the FAA Data Communications program and feedback from the airlines on DCL and aircraft equipage. A Media Independent Aircraft Messaging (MIAM) workshop was held on the afternoon of February 1, 2016.

Other items of interest included:

- An update on the NAV Canada CPDLC and ADS-B tracking program
- Operational performance (FANS vs. ATN)
- Base frequency change in the US/Canada for SITA

- VDL multi-frequency capability
- An update on industry data link standards

The next DLUF meeting is scheduled for September 13-14, 2016 in Dublin, Ireland hosted by Airtel ATN. An airline only roundtable meeting is scheduled for the morning of September 15, 2016 to review the previous meeting results and identify items for discussion at the next DLUF meeting. A workshop is scheduled for the afternoon of September 12, 2016 to further investigate the implementation of the MIAM functionality.

### **C) FCC Technical Advisory Council (TAC)**

Andrew Roy (ASRI) provided a presentation on the FCC Technical Advisory Council (TAC).

The FCC TAC deals with many different topics:

- Unlicensed spectrum usage
- Mobile phone locking
- Cyber security
- IoT
- Interference investigation
- Next generation technologies
- Receiver standards

Andrew provided an update on the receiver standards. The harm claim threshold (HCT) concept was defined in a whitepaper published in 2013 in which the AFC filed against it due to the practical issues of trying to implement such a concept onto aviation systems. The TAC has now developed the concept further and issued a new whitepaper in December 2015. The whitepaper highlights improvements in spectrum efficiency by incorporating all aspects of the radio system (transmitter, receiver, and signal encoding) in to the spectrum allocation process. The whitepaper is also proposing nine principles for new allocations for adoption by the FCC in an attempt to use spectrum to its full potential and recognizes that not all principles are applicable to every situation. A link to the whitepaper was provided in the presentation.

ASRI plans to continue to monitor this activity. Future TAC meetings are scheduled for March 9, June 9, September 20, and December 7, 2016. Proceedings are available online and a link to the website is [www.fcc.gov/live](http://www.fcc.gov/live) .

## **6. GUEST PRESENTATION**

There was no guest presentation.

## **7. SYSTEMS STATUS**

### **A) ASRI Frequency Utilization (ASRI)**

Michael Hinojosa (ASRI) provided a presentation on the ASRI Frequency Utilization.

Mike said that ASRI has 6,192 current assignments across the US, and users are experiencing congestion in high traffic areas. ASRI has 128 channels in the lower band in which 32 channels are US primaries, 32 channels are Canadian primaries, and 64 channels are shared between the US and Canada. The 20 channels in the upper 136 MHz band are being cleared for VDLM2 operations, except for a few voice users to minimize congestion in the lower AES band.

Coverage maps were provided that illustrated the 6,192 channel assignments supporting voice and data combined, 1,986 channel assignments supporting only voice stations, and 1,240 channel assignments supporting only the ACARS services. The ASRI spectrum monitoring system is being planned to be used to confirm channel usage.

In summary, the Northeast US is nearly out of available frequencies to assign and any unused frequencies should be returned to the frequency pool for reassignment as needed.

ASRI has made an attempt approx. 5 years ago to obtain permission from the US State Department to obtain frequency assignments in Cuba. ASRI plans to once again contact the US State Department to determine the status of the previous request.

#### **B) Data Link Systems (RC/SITA)**

Zbig Jasiukajc (SITA) provided a presentation on the SITA data link networks.

Zbig provided a chart that illustrated the SITA ground stations installations comparing June 2014, October 2015 and February 2016 for the USA, rest of the Americas, Asia, Europe/Middle East/Africa, and operated by ANSPs for the ACARS (POA) and VDL ground systems.

The SITA OnAir POA frequency migration for the enroute frequency (136.650 MHz to 129.350 MHz) in the USA was completed on September 14, 2015. There were 30 ground stations impacted and the transition took about 30 minutes with minimal service impact.

The SITA OnAir POA terminal frequency migration (136.575 MHz to 131.650 MHz) was completed on October 14, 2015. The transition took about 30 minutes with minimal service impact.

The SITA OnAir POA base frequency migration (136.850 MHz to 131.750 MHz) will involve over 300 ground stations. The migration is scheduled for June 2017. Airbus has provided their world coverage map database with the new frequency assignments to SITA.

The initial use of 131.725 MHz as a terminal frequency at several airports has been implemented by SITA. Reports of interference from voice users at these locations on an adjacent channel have been received. An assessment of potential interference will need to be conducted. SITA will request a comprehensive list of all licensed users from ASRI on the adjacent channels (131.675, 131.700, 131.750 and 131.775 MHz) at all airports where SITA operates. The potential interference needs to be further evaluated and mitigating actions will need to be considered. Fall back criteria may be needed



Steve Ledger (Rockwell Collins/ARINC) provided a presentation on the RC/ARINC data link networks. Steve provided information on Performance and Statistics, Service Expansion, VDLM2 AOA and ATN Services, Satellite and HFDL, MultiLink, and MIAM Support.

The GLOBALink worldwide statistics include supporting approximately 19,000 aircraft, delivering more than 80M messages every month at over 1050 airports. The typical round-trip response time is 10-12 seconds for VDL MODE 0/A message and 2 seconds for VDLM2 message. The ground message processor availability was 100% in 2015. Rockwell Collins IMS is currently operating 11 frequencies in the Americas. The average uplink success in November 2015 was 98.8% for VDL MODE 0/A and 97.7% for VDL AOA.

Coverage maps were provided for North America, Europe, Middle East, Africa, and Asia. The VDLM2 service expansion and multi-frequency initiatives were covered for the Americas, Europe, Middle East, Africa, and Asia. Rockwell Collins IMS is currently pursuing other ANSPs in Europe in support of the European CPDLC program. The VDLM2 expansion in Asia is driven by customer demands. In January 2016, KAC (Korea) completed deployment and activated a turn-key VDLM2 network. The network includes eight VDLM2 stations in Korea offering ARINC 623 applications before moving toward ATN CPDLC.

Rockwell Collins IMS offers long range air/ground communications with High Frequency Data Link (HFDL), Inmarsat, and Iridium which are complementary long-range data and/or voice service offerings for global aircraft communications. Rockwell Collins IMS continues to offer Classic Aero services over I-3 and I-4 satellite networks. Aero-H and Aero-I services end-of-life scheduled to coincide with the I-3 decommissioning in 2018. The Inmarsat SBB services are being offered over I-4 satellites. Rockwell Collins IMS is a direct value added reseller of all Iridium service offerings. The Iridium NEXT deployment completion is expected in 2017.

The European Commission (EC) mandate focuses on operators having flight tracking capability in place by December 2018. ICAO has recommended fifteen-minute reporting with a one-minute trigger by abnormal events. Rockwell Collins IMS has a MultiLink solution that meets these requirements.

### C) **SELCAL**

A presentation was provided by Vic Nagowski (ASRI Consultant) on the Selective Calling (SELCAL) code pool expansion program. Vic provided some back ground information on the current limitation of the SELCAL system and how the industry developed a SELCAL code pool expansion solution.

The ICAO Communications Panel Meeting is scheduled for October 10-14, 2016 in Montreal, Canada. ASRI plans to submit a working paper on the status of the successful avionics backward compatibility testing to date consisting of theoretical analysis, bench testing and flight testing. The ICAO approval process will commence after that meeting and updates to the appropriate standards can be expected in the 2017/8 timeframe.

The AEEC SELCAL working group completed its work in July 2015. They reviewed and completed the draft SELCAL standard (ARINC 714A). The AEEC Executive Committee unanimously approved the 714A document at the AEEC Mid-term meeting held September 23-24, 2015.

The RTCA SC-232 held six meetings in total to develop the SELCAL Minimum Operational Performance Standard (MOPS). The final meeting of SC-232 was held in January 2016 in Washington, DC. The primary objective of the meeting was to disposition comments received on the draft MOPS document and review the status of avionics testing for backward compatibility.

The bench testing conducted on avionics associated with both Airbus and Boeing fleet aircraft avionics indicated that all legacy avionics are fully backwards compatible with the proposed SELCAL code pool expansion. Airbus completed a flight test campaign in December 2015 to verify backward compatibility with A320/A350 aircraft. Free Flight Systems conducted bench testing with the assistance of AvtechTyee and their avionics were backward compatible. Honeywell and Rockwell Collins did not conduct avionics testing but did advise the SC-232 committee to proceed with the SELCAL code pool expansion.

A theoretical analysis on intermodulation products when the new 16 tones are incorporated into the existing SELCAL system was completed. The committee concluded to provide guidance to ASRI in the MOPS concerning early assignment of SELCAL codes in order to reduce the probability of false triggering. Guidance was also provided to the FAA and the airlines on the impact on their respective ground systems that currently support SELCAL codes. The MOPS document will be presented to the RTCA Program Management Committee for final approval on March 17, 2016.

#### D) **AeroMACS**

A presentation was provided by Vic Nagowski (ASRI Consultant) on the ICAO WG-S and the AEEC AeroMACS Working Group. Vic provide some back ground information on the AeroMACS system and provided an update on the various committees developing avionics standards.

The RTCA Special Committee 223 has completed a Profile document and Minimum Operational Standards (MOPS) and is expected to reconvene to address system security.

The ICAO WG-S is an ICAO sponsored initiative to develop standards for the AeroMACS system. The WG-S objectives include the development of the System, Recommended Practices (SARPs) standard, the Technical Manual (TM), and coordination with other committees as necessary. The SARPs has been completed and the TM is expected to be complete by end of 2016.

The AEEC formed an AeroMACS Working Group (WG) which is tasked with defining an airborne radio suitable for installation in all types of aircraft. A draft ARINC Project Paper 766 (AeroMACS Transceiver and Aircraft Installation Standards) has been prepared. The goal of the WG is to develop a mature draft of ARINC 766 by the end of 2016. The next meeting is scheduled for May 24-26, 2016 in a location to be defined in Europe. A list of key issues the WG are addressing will be provided.

#### E) **Radio Station Inspection Programs (ASRI).**

Michael Hinojosa (ASRI) gave a short briefing on the status of the 2016 ASRI radio station inspection program. Thus far there were 57 inspections completed in 2016, with inspections currently progressing in California. There were 1023 inspections completed in 2015, and the goal for 2016 is 1000 inspections.

Some problems identified during the inspections include:

- Radios found on frequencies that were not included on the station license
- Radios licensed that are not being used and need to be decommissioned.
- Transmitters not marked with the licensed frequency
- Customers using frequencies that they are not licensed for
- Unlicensed radios have been found that were abandoned by the customers.

**F) Station RFI Issues (ASRI).**

Michael Hinojosa (ASRI) gave a presentation on all RFI incidents since the Fall 2015 AFC meeting. ASRI acknowledged the outstanding help received from the FAA ATC Spectrum Engineering Services office, the FCC, the airlines involved, Rockwell Collins/ARINC, and ACG Systems in the resolution of the RFI problems.

Problems were identified and resolved (October 2015 to March 2016) at the following airports: ERA, COS, KTN, AVL, DFW, JAX, and Midland, TX. Interference issues are still open at SDY, JFK, MBS, DAL, and OMA. There were 26 reported RFI issues received in 2015 with 22 issues resolved and 4 issues still open.

**G) Spectrum Monitoring Results (ASRI).**

Michael Hinojosa (ASRI) provided a presentation on the Spectrum Monitoring Capability.

The LS Telecom Observer is a portable unit that monitors the frequency bands to capture and store the data for instant decision making or later analysis. The parameters such as range of frequencies to monitor, time to monitor, start and end times, can be programmed by the operator. ASRI plans to use the monitor at larger US airports to collect statistics on the VHF band usage and issues.

The monitor capabilities include the ability to:

- Continuously monitoring the entire AES spectrum
- Filter specific frequencies or bandwidth
- Triangulate transmission sources
- Remotely access monitored data
- Demodulate, listen and record transmissions

Initial training and familiarization with a direction finding tool was conducted at BWI and IAD airports. The monitor is being used to identify the use of unlicensed frequencies and monitor the proper use of licensed frequencies.

**8. EXISTING BUSINESS**

**A) VDLM2 Implementation Plan for Data Comm. (ASRI/RC/SITA/HARRIS)**

Andrew Roy (ASRI) provided a presentation on the VDLM2 Deployment Plan.

ASRI has worked with both CSPs, Harris and the FAA to develop a proposal for adoption by the AFC to assign new VDLM2 channels while minimizing the impact on existing users.

ASRI is planning for a 4 phase process from initiation on July 1, 2014:

1. Reorganize lower band AES voice users - Completed
2. Migrate affected voice users from the upper AES band - Completed
3. Migrate upper band ACARS networks
  - a. Secondary RC and SITA ACARS networks – Completed
  - b. SITA ACARS base frequency – June 2017
4. Assign VDLM2 frequencies in the upper AES band – As required

The currently proposed VDL channel plan was a refinement of the AFC VDLM2 planning completed in 2010. The revised plan allowed for dedicated ground and enroute frequencies for each CSP. The plan provides the best available spectral/physical separation given the VDLM2 emission profile and the available physical and spectral separation possible. Charts illustrating the proposed VDLM2 channel plan and the current timelines were provided.

Steve Ledger (Rockwell Collins IMS) provided a presentation that proposed changes to the currently agreed ACARS migration plans.

RC proposed that SITA's ACARS base frequency should remain on 136.850 MHz, and the VDLM2 channel plan be revised to incorporate this. The result would still be five VDLM2 channels for on-site usage, but also keep the 136.850 MHz ACARS frequency, while removing all voice users from the upper NG band (both industry and federal users). RC cited several reasons for the change position:

- a. Allowing SITA to remain on 136.850 MHz allows end users to maintain their DSP frequency tables, without any investment for avionics modifications.
- b. RC notes that any end users affected by SITA's move to 131.725 MHz will be required to invest in either acquiring and deploying new software, or scheduling each aircraft for a maintenance activity to reconfigure their data link avionics in order to maintain data communications and their current DSP preferences. RC estimates that the total cost of this effort could easily exceed \$6-8 million for the airline community.
  - a. Co-site voice users with these VDLM2 assignments would likely, due to 3<sup>rd</sup> order intermodulation products, cause interference on all planned VDLM2 channels and also be interfered with by VDLM2 transmissions. In order for voice and data communications to be successful, RC recommends that all voice users should clear the upper NG band.
  - b. In RC's view, allowing SITA to remain on 136.850 MHz maintains the competitive balance that exists between the two DSPs today without giving either one a long term global market advantage that comes with globally harmonized ACARS base frequencies. Simplified avionics support for SITA ACARS networks will be more attractive to airlines than the more complex RC ACARS network frequency tables.

Given these reasons, RC believes the alternative frequency arrangement should replace the original implementation plan, for both technical and operational reasons. They stated that the proposed change does not adversely affect the number of VDLM2 channels that can be supported in the 136-137 MHz band, while also minimizing disruption for ACARS users.

There was much discussion by the AFC membership concerning the RC IMS proposal since the current AFC VDL deployment plan has been already progressing through the defined phases. Given this was the first time the AFC had seen the proposal, and several concerns had been raised over the plan, a list of questions derived that would assist the AFC members in analyzing the RC IMS proposal. It is anticipated that a discussion on the RC IMS proposal would be worked prior to the next AFC meeting, which is scheduled for June 2016 where a final decision on the proposal may be considered.

The questions were as follows:

- CSPs
  - What are the impacts to the CSPs and their airline customers based on feedback received (benefit/cost analysis)?
  - Compare side-by-side the current and new plan.
  - Are there any other alternatives to the above?
- SITA
  - Overall impact on SITA/airlines that have already initiated movement of ACARS base frequency?
- ARINC/RC
  - What are the competitive concerns raised by ARINC/RC about SITA moving to 131.725 MHz?
- ASRI/FAA
  - ASRI to provide details on the 136.500 voice users?
  - Impact on ASRI and FAA to move all voice users out of 136 MHz band?
- Harris/ARINC/RC and SITA
  - Technical review of third order analysis with RC.
  - Technical review of co-site considerations raised by RC.

It was agreed that the organizations responsible for each of the questions should provide answers by 4 April to Andrew Roy (ASRI) via email. Andrew will consolidate the answers received and distribute the results back to the AFC members. A teleconference could be scheduled for late April to review the results and consider recommendations prior to the next AFC meeting if so requested. The airlines were encouraged to contact their respective CSP to determine the impact on their avionics as a result of the proposed VDL frequency plan modification versus the original VDL frequency plan.

Andrew Roy (ASRI) provided an update on the VDLM2 Subgroup meeting (including RC/SITA/Harris/ASRI) held without the FAA participating. The FAA Spectrum Office brought in a two prong proposal at the last AFC meeting to revise the current VDLM2 deployment plan. The plan would allow for 11 VDLM2 frequencies which would result in the FAA and ASRI voice users being moved to the lower portion (136.000 – 136.450 MHz) of the VHF band. ASRI assessed the potential for the intermodulation aspects and identified some concerns that will need to be addressed, specifically 20 different intermods over 5 channels. The other half of the FAA proposal dealt a proposed licensing approach that ASRI would be expected to follow to apply for a license in the lower portion of the band. The end result would be a longer time frame to obtain a license, more coordination work, and limited temporary license assignments. ASRI is currently reviewing the proposed licensing approach and ASRI will need to conduct further discussions with the FAA Spectrum office on both suggested changes.

## **B) AFC Documentation review for 2014/2015 (ASRI)**

Andrew Roy (ASRI) gave a briefing on the status of the AFC Manual Review. Andrew stressed how important the manual is since it defines the policies that provide the guidance on how the AFC and ASRI operate.

Andrew provided the following AFC Manual review timeline:

- March 2016 AFC meeting
  - Update on changes
  - Propose new concepts for discussion
  - ASRI to review for June meeting
- June 2016 AFC meeting
  - Review and tentatively approve all sections, except section 2
- October 2016 AFC meeting
  - Review and approve outstanding sections
  - ASRI Board of Directors ratify changes

The sections already reviewed included organization and administration, aeronautical industry operation VHF policy, VHF installation standards, HF policy, member associations, industry organizations, federal and international agencies, frequency allocations/ coordination/ assignments, AFC recommendations and resolutions, glossary, and the annex (past chairman, ASRI BoD, and members). Andrew reviewed key details of the sections of the manual that he has updated and the draft manual is available on the ASRI website ([www.asri.aero](http://www.asri.aero)).

The VHF policy still to be reviewed include:

- More detail on FCC regulations and licensing
- Operating height classification review
- Added ASRI and FCC station inspection policies
- VHF channel application justification formula
- Deletion of congested versus uncongested requirements
- Added Ground Station Activity Reporting System (GSARS)
- Modified VDLM2 channel justification process and plan

### **(i) GSARS**

The Ground Station Activity Reporting System (GSARS) document will be part of the ASRI documentation review.

### **(ii) De-icing frequency policies – All Airlines**

Michael Hinojosa (ASRI) provided information on the de-icing frequency policies.

In the 2009/10 season there were a total of 133 de-icing assignments at 30 different airports. Only 2 airports have more than 3 assignments, MSP had 7 and ORD had 4:

- FBOs received 3 assignments,
- De-icing companies received 8 assignments,

- City or airport authority received 1 assignment,
- Airlines received 121 assignments.

In the 2015/16 season there were a total of 220 de-icing assignments at 121 different airports, with 20 airports have more than 3.

- FBOs received 8 assignments
- De-icing companies received 32 assignments
- City or airport authority received 21 assignments
- Airlines received 159 assignments.

ASRI needs to understand the customer's requirements and policies/airlines to provide de-icing policies. Frequency 129.525 MHz is no longer available and frequency 129.175 MHz may be available in most areas as a replacement. There are no guarantees that the same de-icing frequencies will be available from season to season.

## **9. MEETING SUMMARY (SECRETARY)**

### **A) Action Items from the Meeting**

Andrew Roy (ASRI) reviewed the open action items from the meeting:

- Respond to questions raised as a results of the Rockwell Collins IMS revised VDL frequency plan proposal – All AFC membership
- SITA requested a comprehensive list of all licensed users on the adjacent channels (131.675, 131.700, 131.750 and 131.775 MHz) at all airports were SITA operates - ASRI
- Review the draft AFC Manual and provide feedback on the suggested modifications prior to the next AFC meeting – All AFC membership

### **B) AFC Topics for the Attention of the ASRI Board of Directors**

The following items will be briefed to the ASRI Board of Directors meeting following this AFC meeting:

- AFC Memberships Changes
- WRC-15 Results
- WRC-19 Preparations
- LightSquared/Ligado
- SELCAL
- AeroMACS
- ASRI Frequency Utilization
- DataComm Deployment
- AFC Manual Review
- Next AFC Meeting Locations

## **10. LOCATION OF NEXT MEETINGS. (SECRETARY)**

The Spring 2016 AFC meeting is scheduled for 7-8 June 2016 in Portland, OR

The Fall 2016 AFC meeting is provisionally scheduled for 25-26 October 2016 in Austin, TX.

**11. ANY OTHER BUSINESS.**

**A) Company updates and closing remarks. (AFC Roundtable)**

(i) Brian Romine (USA/AAL) suggested establishing a SWG to support the review of the AFC Manual. The motion was seconded by Tim Totten (UPS). Brian agreed to chair the SWG with support by Terry Gambill, Tim Totten, and Andrew Roy.

(ii) Terry Gambill (PHI) thanked ASRI for allowing Michael Hinojosa (ASRI) to attend the HSAC meeting to obtain a better understanding of helicopter operations.

(iii) Andrew Roy (ASRI) offered assistance to any new AFC members should further information on Ligado be required for senior management, offered a special thanks to Jeff Monroe (ASA) for chairing this AFC meeting in the absence of the chairman, and reminded everyone to please respond to the AFC meeting attendance request.

(iv) Tim Totten (UPS) asked if anyone has an experience in obtaining a license in Europe in support of a radio navigation test set.

**12. ADJOURNMENT (CHAIRMAN)**

The meeting was adjourned by the Chairman at 12:40 PM, March 2, 2016.

Andrew Roy  
Executive Secretary

Attachments posted to ASRI Website