Satellite Voice (SATVOICE) Capability

Includes Flight Plan (FPL) and Aeronautical Information Publication (AIP) Matters (ISPACG/29 IP/3)

Presented to: ISPACG/29
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Highlights from Previous Meetings (1/2)

- **Refer to the following action items:**
  - AI 27-1 SATCOM Voice Capability in Flight Plan
  - AI 27-2 SATCOM Voice Capabilities in AIP
- **Sep/Nov 2012 – APANPIRG and NAT SPG adopted Satellite Voice (SATVOICE) Guidance Material (SVGM) developed by the IRSVTF**
- **Jun 2013 – APANPIRG revised AMS strategy**
  - Expanded scope to include SATVOICE
  - Advance COM technology within PBCS framework
  - Involve all stakeholders and take account of benefits and costs

Highlights from Previous Meetings (2/2)

- **2013 – 2028 Global Air Navigation Plan (Doc 9570)**
  - SATVOICE preparation in Block 1 (2018 – 2023) and Block 2 (2023 – 2028) timeframes
  - Foresees SATVOICE will replace HF voice communication – Block 3 (beyond 2028) timeframe
- **ICAO OPLINKP and FAA-sponsored PARC CWG are contributing to the planning and implementation of global SATVOICE services**
  - ATS communications
  - AOC communications

OPLINKP Work Program (Near Term)

- **Work program items completed by the panel**
  - HLSC – 2010 High Level Safety Conference (AF447 and MH370)
  - ICAO Annex-PANS provisions for DLIC, CPDLC and ADS-C
  - ICAO Annex-PANS provisions for PBCS
  - ICAO Annex-PANS provisions for SATVOICE
  - ICAO Manuals – Doc [GOLD], Doc [SVOM] and Doc 9869 (PBCS Manual)

Subject of this briefing

- **Schedule**
  - ✓ **October 2014 – Completed deliverables agreed at OPLINKP/2**
  - ❑ 1st half 2015 – ICAO publishes Manuals
  - ❑ November 2016 – ICAO approves Annexes-PANS amendments

OPLINKP SATVOICE Annex Provisions

Near Term

Document	Title of Document	Description of Provision
Annex 4	Aeronautical Charts	Requires SATVOICE number on charts
Annex 10	Aeronautical Telecommunications – Volume II — Communication Procedures including those with PANS status	Indicates that OVER and OUT are not normally used in SATVOICE communication
Annex 10	Aeronautical Telecommunications – Volume III — Communication Systems	G-t-A requires secure calling, priority calling and SATVOICE number as aircraft address in octal code A-t-G requires SATVOICE number (short code and/or direct dial) and specification of priority level Includes priority level definitions
Annex 15	Aeronautical Information Services	Requires SATVOICE numbers in AIP

OPLINKP SATVOICE PANS Provisions

Near Term

Document	Title of Document	Description of Provision
Doc 4444 (PANS-ATM)	Procedures for Air Navigation Services — Air Traffic Management	Revises terms in Appendix 2 and Appendix 3 (FPL) from “RTF SATCOM” and “RTF” to “SATVOICE.”
Doc 8400 (PANS-ABC)	Procedures for Air Navigation Services — ICAO Abbreviations and Codes	Revises term “SATCOM” to apply generally to both voice and data satellite communication or only data satellite communication. Added term “SATVOICE” to allow use in phraseology

OPLINKP SATVOICE "Other" Provisions

Near Term

- **Affects multiple Annexes and PANS**
  - Definition for "SATVOICE number"
  - "Frequency" is used generally to include VHF, HF, UHF and SATVOICE number"
  - Added references to Doc [SVOM] and Doc 9869 (PBCS Manual)

SATVOICE Benefits

- **ICAO Annex-PANS SATVOICE provisions promote harmonization of services, procedures, systems, equipment and capabilities supporting ATS & AOC**
- **SATVOICE capability**
  - Complements CPDLC and ADS-C
  - Supports MMEL and MEL
  - Complements HF voice in poor HF propagation conditions
  - Provides DCPC for intervention (e.g. complements ADS-B where no VHF and/or aircraft not CPDLC/ADS-C capable)
  - Is required for extended diversion time operations (EDTO)—also referred to as ETOPS—beyond 180 minutes

SATVOICE Phase-In and/or Transition

- **SATVOICE could eliminate potential need to implement additional HF selective calling system (SELCAL) codes**
- **Aircraft manufacturers will need to decide when to offer HF voice equipment as optional rather than basic on newer aircraft models**
- **State MMEL/MEL policies will need to depend on reliable infrastructure**
- **ANSPs may need to update infrastructure and/or related contracts, and revise AIPs accordingly**

ICAO Annex-PANS SATVOICE Provisions

- **Ensure a globally standardized and cost-effective approach**
  - Allows ANSPs to contract and implement reliable SATVOICE services (Block 1 and Block 2)
  - Prepare for decisions on role of SATVOICE (Block 3)
- **Support the use of different commercial satellite companies and network service providers within a common architecture**
  - Allows operators to choose from a variety of aircraft systems available that are interoperable with SATVOICE services.

SATVOICE Operations Manual (SVOM)

- **Based on “inter-regional” SVGM adopted by APANPIRG and NAT SPG, developed by IRSVTF**
- **Changes mostly of editorial nature and to align with ICAO Annex-PANS provisions**
  - Moved RCP/RSP specs & monitoring material to PBCS Manual
  - Introduced the term “ground user” and combined controller and radio operator procedures
- **Expect publication of Doc [SVOM] by mid 2015**
  - To supersede inter-regional SVGM

Next Steps for ICAO SATVOICE Material

- **SATVOICE Annex-PANS provisions and Doc [SVOM] are currently under review and coordination by the Secretariat**
- **April 2015 – ANC is expected to approve action to distribute State letter for review and comment between April and August**
- **Doc [SVOM] will be provided to the ANC and with the State letter as supporting material**
- **I can provide you latest draft material on request**

PARC CWG SATVOICE Project

- **PARC CWG is evaluating SATVOICE based on ICAO material to facilitate global harmonization of U.S. initiatives**
- **Goal is to justify recommendations to FAA that would allow one HF communication system to be permanently replaced with a SATVOICE system**
  - PARC CWG is NOT considering SATVOICE as a means to completely remove the carriage of HF voice communication equipment

SATVOICE Tiger Team

- **PARC CWG SATVOICE Tiger Team**
- **Stakeholders**
  - 6 Airline operators
  - 2 SSPs
  - 2 CSPs
  - Boeing
  - 2 LRU OEMs
  - FAA

SATVOICE Tiger Team Status

- **In January, 103 aircraft were identified for participation in the evaluation**
  - 92 Iridium aircraft – 83 UPS and 9 HAL
  - 11 Inmarsat aircraft – 11 HAL
- **In September 2014, began actual data collection to measure against the RCP 400 specification**
  - HAL aircraft in the Oakland Oceanic flight information region (FIR) with Rockwell Collins (RC, formerly ARINC)
  - Some issues are being worked; however the evaluation is expected to continue in Oakland Oceanic FIR and expand into New York Center's airspace.

Flight Plan (FPL) Data

- **RC is also parsing FAA FPL data for the hexadecimal (hex) code for the aircraft address filed in Item 18 following CODE/**
  - This code is translated into an octal code, which populates the RC Comm Center voice switch, and is used to call an aircraft
  - RC has created monthly reports that track FPL volume and proportion of FPLs that include CODE/[aircraft address in hex code] in Item 18
  - RC is communicating with individual airlines on their current status

HAL FPL 2012 Compliance Report

SATCOM FPL 2012 COMPLIANCE REPORT					
HAWAIIAN AIRLINES, INC.					
DECEMBER 2014					
Agency	Provider	FPL Filed	% of total FPL by provider	**FPL in compliance**	
				FPL with octal	%
HAL	M1 Inmarsat	160	32%	160	100%
HAL	M3 Iridium	291	58%	291	100%
Subtotal		451	89%	451	**100%**
HAL	No Provider Listed	53	11%	9	
TOTAL		504	100%		

ALL FPL 2012 Compliance Report

SATCOM FPL 2012 COMPLIANCE REPORT					
ALL OPERATORS					
DECEMBER 2014					
Agency	Provider	FPL Filed	% of total FPL by provider	**FPL in compliance**	
				FPL with octal	%
ALL	M1 Inmarsat	19,816	27%	8,876	45%
ALL	M2 MTSAT	2,549	3%	1,586	62%
ALL	M3 Iridium	2,933	4%	1,293	44%
Subtotal		25,298	34%	11,755	**46%**
ALL	No Provider Listed	49,272	66%	3,161	
TOTAL		74,570	100%		

SATVOICE – FAA MMEL HF Policy

- **6 June 2014 – FAA Policy Letter PL-106, Rev 5 issued**

Federal Aviation Administration

MMEL Policy Letter (PL)106, Revision 5 GC

Date: **June 6, 2014**

Subject: **High Frequency (HF) Communications**

MMEL CODE: 23 (COMMUNICATIONS)

PURPOSE:

To provide standardized Master Minimum Equipment (MMEL) requirements for HF communication systems.

DISCUSSION:

Revision 5 introduces International Civil Aviation Organization (ICAO) Satellite Voice (SATVOICE) Guidance Material (SVGM) as a basis for Long Range Communications System (LRCS) relief; clarifies that data link alone is not suitable for non-routine and emergency communications; removes the note from bottom of provisions requiring SATVOICE to be used only as a backup to HF communications; added a proviso that the ICAO Flight Plan is to be updated (as required) to annotate the operating communications equipment onboard the aircraft to include the specific SATVOICE filing information in item 10 and 18; added a policy statement preventing MEL relief for aircraft SATVOICE systems accessible via direct dial commercial numbers as these systems do not include the necessary security switch function.

FAA Policy PL-106 – Change Summary

- **Iridium direct dial ground-to-air calls are not secured and, therefore, not acceptable for MMEL**
- **Requires FPL to identify the SATVOICE equipment and capability as follows:**
  - Item 10 – M1 (Inmarsat), M2 (MTSAT) or M3 (Iridium); and
  - Item 18 – CODE/[aircraft address in hex code]
- **CPDLC is not suitable for emergency and non-routine communications and, therefore, not acceptable for MMEL**

PARC CWG and FAA Next Steps

- **SATVOICE Tiger Team continues evaluations**
- **PARC CWG has taken an action to begin collecting information from AIPs to develop a world map of SATVOICE services**
  - such as any restrictions (non-routine and emergency use only, use only when HF is unavailable)
- **FAA Flight Standards is considering issuing an Information Notice to operators to raise awareness:**
  - SATVOICE FPL requirements
  - Upgrades necessary to Iridium installations

Challenges for SATVOICE (1/3)

- **MMEL policy – depends on reliable infrastructure**
  - Sufficient number of lines, dialing capability, receiving calls, safety service
- **Infrastructure may need to be upgraded for MMEL**
  - Cost/benefit
  - Policy on use – AIP, contracts, etc.
  - Changes to ATS systems and procedures
  - Publish SATVOICE numbers on aeronautical charts

Challenges for SATVOICE (2/3)

- **Ground-to-air calls to aircraft logged onto MTSAT are possible only using dedicated lines, such as Fukuoka ATC, or by obtaining a SATVOICE service account with SITA**
- **No access via RC SATVOICE service account**
  - FAA/Oakland Center would need to change or obtain a separate SITA SATVOICE service account to be capable of contacting aircraft logged on to MTSAT.
  - RC San Francisco Comm Center is currently not capable of contacting aircraft logged onto MTSAT using SATVOICE.
- **Refer also to ISPACG/28 WP/3 (New Zealand)**

Challenges for SATVOICE (3/3)

- **ICAO should develop policies and guidance on the assignment and management of short codes for ARTCCs, aeronautical stations and possibly AOC**
  - Short codes should be independent of technology.
  - Avionics suppliers are also looking for a single source that can be used to support speed dial capabilities on the flight deck
  - Attachment A of IP/3 provides list of short codes, same as ISPACG/28 IP/7 Attachment A, but Inmarsat expects to update this list in next few months
- **Operators wanting to use Iridium SATVOICE capability as LRCS may need to upgrade their fleets (Refer also to ISPACG/28 WP/3 (New Zealand)**