The Global Voice of Pilots

IFALPA

POSITION PAPER

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The Use of Satellite Voice Communications (SATVOICE) for Air Traffic Control Operations

The discussion of expanding Satellite Voice Communications (SATVOICE) into the realm of Direct Controller - Pilot Communications (DCPC) and as a sole source of Long Range Communications Systems (LRCS) is evolving. Many shortcomings have been identified and specifications for new system development needs to resolve these shortcomings before SATVOICE can be approved as a substitute means of communication.

The limitations of current systems must be accounted for and the risks mitigated. The areas include Human Machine Interface (HMI), DCPC, ATC Vectoring, Call priorities, Satellite limitations, avionics limitations, flight plans, and Short Code implementation.

1. **Satellite Voice Communications (SATVOICE) should not be supported as a primary means of communication between the pilot and controller until its Actual Communications Performance meets the equivalence with current DCPC VHF Voice Communications.**
   - SATVOICE does not meet the performance requirement of current voice communications, a value yet to be defined, but faster than the defined RCP240.
   - We are far from the technology needed and CSP/SSP (Communication Service Providers/Satellite Service Providers) still have issues. SATVOICE should be part of the Long-Range Communications Systems (LRCS) along with HF radio as it currently is.
   - Operators may use it to help Minimum Equipment List (MEL) dispatch in remote areas i.e. one HF radio operating if SATVOICE operational, 2HF w/ no SATVOICE, allowing relief of equipage requirements in remote areas to safely operate the aircraft.

2. **IFALPA supports the system human machine interface (HMI) development to ensure transparency to the flight crews and controllers of means of communications.**
   - IFALPA should be part of that process of working with the ANSPs, controllers, regulators, operators, and manufacturers to develop and safe and useful future SATVOICE interface.
   - This research requires much future development of the SATVOICE communications HMI to be able to replace or augment current DCPC.

3. **SATVOICE shall not be used for VECTORING in procedural airspace until it meets the equivalence performance of DCPC VHF voice.**
   - Vectoring can only be safely accomplished if DCPC-VHF-Party line type comm is used. This may be counter to the current use of CPDLC application of vectors and lateral instructions. The difference is the layer of surveillance performance in the airspace.

- A major issue with the reduced separation standards is the "Uncleared Weather Deviation Contingency". Under these circumstances (19NM Lateral, and next year 15NM) there is a possibility that deviating aircraft will be crossing another track at +/-300' vertically of other traffic. It is the approved contingency procedure, but there are risks when you consider:
  - Altimetry error,
  - PBCS filed a/c without PBCS approval,
  - RVSM filed a/c without RVSM certification,
  - Wake turbulence, and convective turbulence.

  The only way to mitigate this is for ATC to have the ability to vector traffic to keep them from conflict. Presently, unless the reliability and performance requirement are met, IFALPA is opposed to the use of SATVOICE to vector traffic.

4. **Air to Ground SATVOICE calls priority. SATVOICE calls from Air to Ground should not be overridden by ATC calls. Background:**
   - The SATVOICE system includes call priority where ATC is normally the high priority and therefore prioritized from other communication when the SATVOICE line is busy.
   - In emergency/urgency cases such as System failure or Medical Diversion, company communication and coordination should not be overridden by ATC calls.
   - The balance between ATC communication and company communication is important therefore it is necessary that the Priority is clarified and evaluated from a system perspective.

5. **Flight Deck Human Machine Interfacing (HMI) and Human Factor Concerns must be addressed and incorporated in all SATVOICE aircraft systems, these concerns include, but are not limited to:**
   - **Ringtones** – in some airframes, the SATVOICE ringtone (aural alert) is the same ringtone as other functions on the flight deck and only rings one time, it is not a constant alarm that grabs flight crew attention. This can include company calls, ACARS message, Flight Attendant calls, SELCAL, and ATC CPDLC uplink for example. (When common aural alerts are used, a visual annunciation tells the crew which function the aural alert is associated with, however, a visual annunciation might be hard to find due to the types of equipage. Some systems may indicate on the overhead, on a switch button in small font. The indication is not necessarily on front panel with large font).
   - **Aircrew Proficiency in usage** – SATVOICE use has been limited with most operators to communication with company, so flight crew education and familiarity are required to ensure best practices and standards are developed and followed.
   - **SATVOICE controls and indications** – the process to make and or receive a call can be cumbersome in some airframes.
     - The control panel may not show "SATVOICE" as part of the original flight deck design and OEM manuals may not address SATVOICE.
   - **Emergency communications** - Ideally Aircraft Communication Systems should be able to be operated the same manner as current VHF Communications. The system should be able to be configured in such a manner that when the pilot depresses the Transmit key the microphone is live, and a transmission is immediately active. Refer to **4 SATVOICE Emergency**.

- **Switching between Satellite Communication providers** - On airframes which support various Satellite Communication providers, flight crews are required to manually switch from one system to the other to ensure SATVOICE continues to be available when transiting different SSP network coverage areas. This is significant for operations in the polar regions where one SSP has coverage and the other does not. An automated method may be a better method and provide a more robust overall SATVOICE system to assist with ATCO planning.
- **Unambiguous short code identification** on the flight deck. Flight crews are not always able to identify the distinction between positions at a particular ACC. As seen below:

The outcome of this ambiguity and inconsistency are the following (but not limited to):

- Flight crews may be reluctant to use SATVOICE since additional steps maybe required to verify which short code to use.
- The time required to make SATVOICE calls may be increased.
- Flight crews may inadvertently contact the wrong address or not be able to find the appropriate contact easily.

The ICAO SATVOICE Sub-Group is working on a methodology for programming short codes that will clearly identify the expected ground user (ATC facility) of outgoing calls.

6. Satellite Service Provider (SSP) System Requirements/Limitations:

- **Onboard SATCOM receivers must have global coverage**. At the moment, not all SATCOM receivers have full polar coverage.
- **Limited numbers of incoming and outgoing SATVOICE calls need to be addressed. SATVOICE availability needs to conform to a standard, whereby it is available for greater than 99% of the time.**
- **Flight plans should include all the information required for SATVOICE operations**.
  - The appropriate SATVOICE equipage should be included in the flight plan along with an airframe's ICAO code (CODE/ followed by the aircraft address, expressed in the hexadecimal format)
  - Interoperability issues between ANSPs should be addressed particularly when transferring flight plan information (e.g. stripping out CODE/ in field 18).
  - Operator education on correct filing of flight plans is needed.
- **IFALPA supports amending Short Codes as avionics phone books are not necessarily programmed with published short codes for Air-to-Ground calls**.
  - Ambiguity on Short Codes can cause the call to circumvent the ground routing infrastructure instead of routing the call to the ATCO responsible for the aircraft.
  - Furthermore, by not using short codes the avionics phone books would require reprogramming if the PSTN (Public Switched Telephone Network) number (long code)

associated with the short code were to change. Efforts should be made to ensure the short code remains the same to avoid the need for avionics to be reprogrammed.

- **Aircraft should not have a restriction to single SSP SATVOICE system**.
  Currently airframes may have systems that are specific to one SSP or both. Depending on the flight routes, coverage may be limited to a single provider.
- **System and network availability**.
  SATVOICE should be as available and accessible as HF until such time that it has been proven otherwise. This item needs careful consideration because there are factors (i.e. Space Weather) that could affect SATVOICE as they affect HF.

7. CONCLUSION

As the expansion of SATVOICE into the realm of DCPC and as a sole source of LRCS evolves, many shortcomings have been identified before this can be approved as a substitute of established communication procedure. Specifications into the future development of the SATVOICE must incorporate these into new system development. The limitations of current systems must be accounted for and the risks mitigated. The areas Include HMI, DCPC, ATC Vectoring, Call priorities, Satellite limitations, avionics limitations, flight plans, and Short Code implementation.