

## SUMMARY OF DISCUSSIONS OF THE NORTH ATLANTIC TECHNOLOGY AND INTEROPERABILITY GROUP (NAT TIG)

### NINTH MEETING

*(WebEx, 16-19 March 2020)*

#### 1. Introduction

1.1 The Ninth Meeting of the ICAO NAT Technology and Interoperability Group (NAT TIG/9) was held via teleconference sessions (WebEx) from 16 to 19 March 2020.

1.2 The Meeting was chaired by Mr. Bjarni Stefansson from Iceland. Mr. Abbas Niknejad from the ICAO EUR/NAT Office was the Secretary, supported by Ms. Catherine Daly.

#### *Election of Chairperson*

1.3 In the opening, the Group noted that the review of rapporteurship should be conducted by a routine process of elections every four years. Therefore, the NAT TIG proceeded with the election of NAT TIG Rapporteur. In accordance with the procedures outlined in the NAT SPG Handbook on the review/elections of Chairpersons and Rapporteurs, the NAT TIG re-elected Mr. Bjarni Stefansson from Iceland as its Rapporteur. Mr. Stefansson was nominated by Iceland and seconded by Canada.

1.4 The NAT TIG congratulated and appreciated Bjarni for his continuous support to the NAT TIG and wished him all the best. Bjarni expressed his appreciation for the support he was receiving from the TIG members and participants.

#### *Adoption of agenda*

1.5 The Group noted that due to the evolving COVID-19 crisis, the meeting had to be conducted via teleconference. Therefore, the NAT TIG/9 (WebEx) would address urgent papers/topics and postpone the remaining papers to the next meeting. **Appendix A** provides a list of meeting participants and **Appendix B** tables the meeting documentation. The group agreed to process the received working and information papers as follows:

- a) Papers that would be presented and processed during the telecon.
- b) Papers that would be referred to the NAT TIG analysts for processing in separate telecons. Members from IATA would be invited to participate in those telecons which would be organized by the NAT TIG analyst's leader.
- c) Papers that the NAT TIG members and participants should note and read on their own.
- d) Papers that would be postponed to NAT TIG/10.

This grouping of papers is reflected in the list of meeting documentation in **Appendix B**.

1.6 The Group adopted the following meeting agenda and agreed on the proposed work schedule:

**Agenda Item 1: Opening and review of the latest developments**

- a) NAT TIG Chairperson election
- b) Review of the NAT IMG approved work programme and follow-up action list;
- c) Outcomes of NAT meetings of relevance to NAT TIG; and
- d) Other developments.

**Agenda Item 2: Data Link performance monitoring and analysis, including trials and operations. Reports by States, industry and DLMA**

- a) DLMA report;
- b) Report of the Network Outage Detection and Reporting (NODAR) PT;
- c) Manage the trial of a 300 seconds uplink latency monitor timer;
- d) NAT data link performance report; and
- e) Other issues

**Agenda Item 3: Voice communication systems**

- a) Voice com system traffic volume report;
- b) SATVOICE issues; and
- c) Other issues.

**Agenda Item 4: Planning and implementation programmes and supporting documentation**

- a) Review of the project teams progress reports;
- b) Monitor and support implementation of the regional Air Traffic Services (ATS) Interfacility Data Communications (AIDC) plan;
- c) NAT DLM;
- d) PBCS; and
- e) Other issues

**Agenda Item 5: Any other business**

- a) Future work programme;
- b) Next meetings; and
- c) Report to NAT IMG/56.

## **2. Review of the latest developments**

### *NAT TIG follow-up action list*

2.1 The Group reviewed and updated its follow up action list as provided at **Appendix C**. Tasks that were addressed through the current meeting material had been documented in this summary. The NAT TIG agreed to postpone some actions that were scheduled for TIG/9 to be reported at TIG/10, due to the COVID-19 situation which pushed some topics to the next meeting.

2.2 Concerning task 8-2 (*Provide further update with regard to: NAT Uplink Latency Timer (ULT) PT recommendations and NAT SPG Conclusion 55/9 that tasked the NAT IMG to monitor aircraft equipage to determine the number of aircraft that do not have a RCP240-compliant Message Latency Monitor function and continue to investigate if there were other mitigation measures available*), it was considered that the action is completed and should be closed, as the latency monitor function equipage data was prepared and would be submitted to the NAT IMG, SOG and SPG. However, the Group did not have additional ideas on other possible mitigation measures.

2.3 Regarding task 8-13 (*With regard to the issue of prepending Flight ID to all uplinks displayed to flight crew: a) Investigate the feasibility b) Bring the issue to the attention of the OPDLWG at the global level*), it was noted that item b) was completed. The Group invited FAA to provide an IP on the relevant outcome of the OPDLWG discussions to NAT TIG/10.

2.4 In the same vein, the Group recalled that NAT IMG/55, through its follow-up action list (action item 55-1), tasked NAT TIG to further investigate the feasibility of prepending A/C identification to CPDLC messages in coordination with MUAC and Shannon. Accordingly, the Group invited Ireland to provide feedback on this action item to NAT TIG/10.

2.5 The Group discussed two actions related to the ongoing TIG discussions about message delivery over the FANS data link network. Regarding action 7-28 (*Investigate on the issue and provide inputs on the work programme item n (examine possible fine tuning of CSP/SSP timers, number of transmission retries and retry intervals taking into account aircraft timers and any other currently existing ground timers) for further elaboration*) the action was extended until TIG/10. Regarding related action 8-11 (*Provide information on the implementation of an uplink delivery timeout function in the ground network for the USA Datacomm program*), the Group recalled the previous CNSG discussions on uplink delivery timeout functionality, and how feedback from the CSPs at that time led to the conclusion that it would be infeasible. It was affirmed that the US domestic datacomm program had recently requested ARINC and SITA to implement this functionality and then noted that supplement 10 to the ARINC 620 specification (DATALINK GROUND SYSTEM AND INTERFACE SPECIFICATION), scheduled to be published in October 2020, contains an update related to this activity. However, the point was made that the data link implementation defined for the US domestic airspace relies only a subnetwork of VHF data link directly provided by the CSPs, and that it would be less complex to implement such functionality there than in the oceanic environment, which relies on a combination of VHF, HF and satellite subnetworks. This action was therefore extended until TIG/10, with SITA and ARINC being added to provide information on the changes being made and how they may be used to improve operations in the NAT.

*NAT Implementation Management Group (NAT IMG/55), NAT Safety Oversight Group (NAT SOG/21) and NAT Procedures and Operations Group (NAT POG/9)*

2.6 The Group noted the relevant outcomes of the NAT IMG/55 (4 to 8 November 2019), NAT SOG/21 (10 to 13 December 2019) and NAT POG/9 (3 to 7 March 2020) meetings.

*ICAO updates*

2.7 The Group noted the latest updates concerning ICAO meetings and documentation, including amendments to ICAO provisions.

### **3. Data link performance monitoring and analysis**

*NAT Data link Performance Update*

3.1 The NAT TIG was provided with an update of the data link performance in the NAT Region for the two recent 6-month reporting periods (H1/2019 and H2/2019).

- a) NAT aggregate performance:
  - i. The 95% criteria were met for RSP 180 and RCP240 for the aggregate NAT and for the individual NAT FIRs;
  - ii. The 99.9% criteria were met for RSP 180 at the currently accepted level of 99.0% for the aggregate NAT and for the individual NAT FIRs;
  - iii. The 99.9% criteria were met for RCP 240 at the currently accepted level of 99.0% for the aggregate NAT and for the individual NAT FIRs.

- b) By media type:
- i. The 95% criteria for RSP180 ASP and RCP240 ACTP, ACP and PORT were met for the aggregate as well as both satellite and VHF media populations;
  - ii. The 99.9% criteria for RSP180 ASP and RCP240 ACTP, ACP were met at the currently accepted level of 99.0%;
  - iii. Neither the 95% nor the 99.9% criteria for RSP180 ASP or RCP240 ACTP, ACP were met for HF during this period;
  - iv. In general, the ACP criteria continue not to be met for any subpopulations of mixed media RCP transactions.
- c) Remote Ground Station (RGS) / Ground Earth Station (GES):
- i. CPDLC dialogs with transition from Americas to EMEA, both through ARINC and SITA, are extremely bad in Shanwick, not as bad in Gander. This is consistent with the last report (first half of 2019) though some improvement in Gander perhaps.
  - ii. Great improvement in IOR virtual paths for EMEA, XXI and EUA2, though in some FIRs they are slightly below 99% in RSP180/RCP240 99% requirements.
  - iii. Iridium below 95% for both RSP180 and RCP240 in BIRD. The main factor behind them falling rapidly since first half of 2019 in BIRD is the fall of contribution of WOW air to the overall data link messages. In the first part of 2019 WOW had a big portion of the Iridium Datalink traffic in BIRD as well as having very good performance. Two remaining operators with a large proportion of the Iridium traffic in BIRD now are from DAL and CPA which seem to have had a spike in the ratio of delayed messages July through October. DAL also seems to have a much higher ratio of delays through SITA path than through ARINC path.
- d) MONITORING RESULTS BY AIRCRAFT TYPE:
- At an aircraft type view, the following aircraft types fall below the 95% criteria in multiple categories for multiple NAT FIRs: ASTR, C5, C5M, B757, HA4T. Further analysis is needed on the respective operator(s) and routes being flown by these aircraft.
- e) MONITORING RESULTS BY AIRFRAME:
- Note that the observed filing status for RCP240 and RSP180 is starting to be included in these results.
  - There were 6,415 airframes observed using data link in one or more of the NAT FIRs.
  - There were 3,131 of these airframes observed as filing P2/RSP180 in New York, Shanwick, or Reykjavik.
    - There were 19 that were observed as flying under two or three different ICAO operator codes and then subsequently assigned to multiple States of registry. Based on preliminary research, one of those aircraft appears to be owned by Airbus Financial Services with Air Belgium being a sub-lessor. During 2019, the aircraft went through a series of lease transactions from Air Belgium to British Airways and LOT Polish Airlines. This is an issue that should be brought to the Non-performance Reporting Harmonization Project Team (NPRH PT) and may require feedback from the NAT Safety Oversight Group (SOG).

- There were 228 that were observed as filing P2/RSP180 in one FIR and not in filing in another FIR. Only one of these aircraft were observed below the 95% requirement for RSP180 and RCP240. Further investigation is needed to determine the cause and whether there may be a need for additional guidance to the user community on flight planning related to PBCS.
- Airframes identified with at least 100 data points and an ASP below the RSP180 95% criteria and/or an ACP below the RCP240 95% criteria, in at least 1 of the FIRs: 485
  - Airframes also observed as filing P2/RSP180 in at least one of the FIRs during the 6-month analysis period: 230

3.2 IATA acknowledged the significant challenge facing the NAT TIG analyst in collecting and assimilating all of the necessary data for the NAT Data Link Performance Report. That said, IATA presented a Flimsy that detailed some of the differences in the NAT TIG/9 Data Link Performance Report and the data in the NAT PBCS Monitoring Report (July-December 2019) posted on the fans.cra website. Of significance and substantiated by Shanwick:

- a) Aggregate ADS-C Message Counts differs by 250,387 with Shanwick Message Counts differing by 258,763; 10%.
- b) Aggregate CPDLC Transaction Counts differs by 18,471 with Shanwick Transaction Counts differing by 21,735; 11%.
- c) The data from NAT TIG/9 WP21 Table 3 NAT PBCS Monitoring Report (July-December 2019) differ in that the ACP “currently accepted level of 99.0%” was not met.

3.3 IATA reiterated the importance of data integrity and the potential effect it may have on PBCS approvals.

3.4 It was agreed that Tables 1 and 2 in the NAT TIG/9 WP21 would be corrected and that a separate teleconference would be arranged between the NAT TIG analyst and IATA to further discuss the potential discrepancies.

3.5 It was also agreed that the analysts sub-group discuss how to handle the issues of multiple operator codes associated with the same airframe, and different results observed for filing of P2/RSP180 between NAT FIRs, in the monitoring results and provide feedback to NAT TIG/10.

#### *Equipage Update*

3.6 The Group was provided with the summary of the data link usage and filing statistics observed for the 12-month period from January to December 2019.

FIR	ALL FLIGHTS									
	Total Flights	% AFN Logon	% Using ADS-C	% Filing ADS-C	% Using CPDLC	% Filing CPDLC	% Filing RNP4	% Using ADS-B	% Filing ADS-B	% Filing RSP180/RCP240
Reykjavik (south of 82N)	12,609	68%	68%	69%	59%	69%	71%	97%	96%	46%
Santa Maria	13,440	79%	80%	82%	81%	82%	82%		89%	65%
Gander	34,190	91%	95%	96%	95%	96%	96%	98%	88%	81%
New York East	11,538	95%	95%	95%	95%	96%	94%		79%	78%
Shanwick	39,324	86%	86%	86%	85%	86%	87%		94%	73%
FIR	OTS FLIGHTS									
	% of Total Flights	% AFN Logon	% Using ADS-C	% Filing ADS-C	% Using CPDLC	% Filing CPDLC	% Filing RNP4	% Using ADS-B	% Filing ADS-B	% Filing RSP180/RCP240
Reykjavik (south of 82N)	7%	98%	98%	100%	41%	99%	99%	99%	99%	56%
Santa Maria	5%	95%	97%	99%	98%	99%	99%		99%	91%
Gander	43%	98%	99%	99%	99%	99%	98%	99%	92%	89%
New York East	11%	99%	98%	99%	99%	99%	98%		85%	91%
Shanwick	39%	99%	99%	100%	99%	100%	99%		99%	92%

3.7 It was agreed that the data link performance report and equipage statistics together with the further list of issues emanating from the problem reports analysis would be collated by the Secretariat and submitted to the NAT IMG.

#### *Latency Monitor Data Collection*

3.8 The Group recalled that NAT SPG/55 reviewed and discussed the NAT IMG/53 recommendation mandating RCP 240 in the NAT DLM airspace effective 23 January 2025. The NAT SPG determined that, based on the primary rationale of it being a means to address issues with the Uplink Message Latency Monitor functionality and taking into account that there were a number of other practical issues that were in the process of being addressed regarding application of RCP 240, an RCP 240 mandate was not appropriate at this time. Further consideration of the regional impact of an RCP 240 mandate would need to be undertaken. Understanding the risk of “old” CPDLC uplink messages being acted upon by pilots of certain fleet type(s), the NAT SPG directed the NAT IMG to monitor aircraft equipage to determine the number of aircraft that did not have a PBCS-compliant Message Latency Monitor function. Further, the NAT IMG should continue to investigate if there were other mitigation measures available.

3.9 In this respect, the Group reviewed latency monitor function equipage data, presented by Iceland, at **Appendix D**. The latency monitor function equipage data collection was initially initiated by the NAT Uplink Latency Monitor Project Team (ULT PT) and was now updated with fresh data provided by Airbus, Boeing and IBAC. The Group agreed that the ICAO secretariat should provide the information to the NAT IMG, SOG and SPG.

#### *Report of the Network Outage Detection and Reporting Project Team (NODAR PT)*

3.10 The Group was provided with update on the Network Outage Detection and Reporting Project Team (NODAR PT). The Group noted the draft advisory template and the baseline list of services that may affect air traffic services. Accordingly, NAT TIG members were encouraged to review the advisory template in **Appendix E** and provide further feedback to the NODAR PT.

3.11 The Group also noted two major questions that emerged from the discussions of the NODAR PT: a) whether one CSP advisory message would be acceptable for both ANSP and AOC customers, and b) if AOC systems cannot be easily and cost effectively modified to accept a new advisory format, will two unique formats of advisory be required? It was noted that the costs of making any necessary modifications to produce and deliver the advisory messages should be addressed.

3.12 The Group confirmed that while informal coordination with the broader ATSP community (in particular with the concerned APAC States) has been occurring since the beginning of the NODAR PT work, a more formal coordination through ICAO would be required to confirm that all ATSPs are in agreement with the changes and prepared for how the changes may impact their individual contracts with their contracted CSP(s). Therefore, the Group invited the NODAR PT to finalize the template and services list, in coordination with the CSPs, and propose actions needed for the formal coordination with other ICAO regions to NAT TIG/10.

3.13 Regarding the potential impacts on the AOC customers, it was noted that the member from IFALDA may be able to coordinate with the dispatch community and bring information to the group on how the CSP notifications are currently provided, whether they are considered useful in their current format, and whether any system modifications would be needed if the format were to change. IATA stated that any impacts that the changes proposed by the NODAR PT may have on the operators would need to be adequately factored into any decisions or implementation plans.

3.14 The CSPs also indicated that the template change might have an impact outside the aviation community since they are providing the advisory e-mail messages to a wide range of customers. The CSPs were invited to provide further information on the implications of the proposed change to the non-aviation customers and any flexibility there may currently be with using different formats.

3.15 The Group concluded that the NODAR PT made good progress and its work needs to continue. Therefore, the Group agreed with the proposal to extend the NODAR PT until NAT TIG/10 (September 2020), pending NAT IMG/56 approval. The Group noted that the remaining work included:

- a) finalize the agreed list of services with standard nomenclature for use in communications between CSPs and ANSPs;
- b) finalize email advisory template to be used by all CSPs when reporting to ANSPs and reach an agreement on implementation date by all CSPs;
- c) update the document provided by Iceland, which is used to assist the system operators and shift supervisors in analyzing the operational effect of advisories received from the CSPs, based on the agreements in a) and b), for use as a template for all NAT ANSPs; and
- d) identify ICAO global and/or NAT documentation that may require or benefit from amendments concerning the NODAR PT outcomes and products (high level task 5).

3.16 Once the NODAR work above is finalized, the Group will progress to the implementation phase, with due consideration for the challenges discussed above.

3.17 Concerning NODAR PT action items 4-5 (*Coordinate what additional information can be provided by SSPs to CSPs in terms of impact times for satellite systems and warning information for periods of weather, etc, and present to the PT*) and 4-6 (*Provide further details on plans to provide web-based tool in terms of implementation timeline, available information*), the Group noted that this information should be provided by CSPs and SSPs on regular basis. Therefore, the Group agreed to the proposal to consider these NODAR PT action items “closed” and modify the NAT TIG work programme to address this issue. Accordingly, the Group proposed an amendment to the TIG work programme item e), as reflected in paragraph 6.1

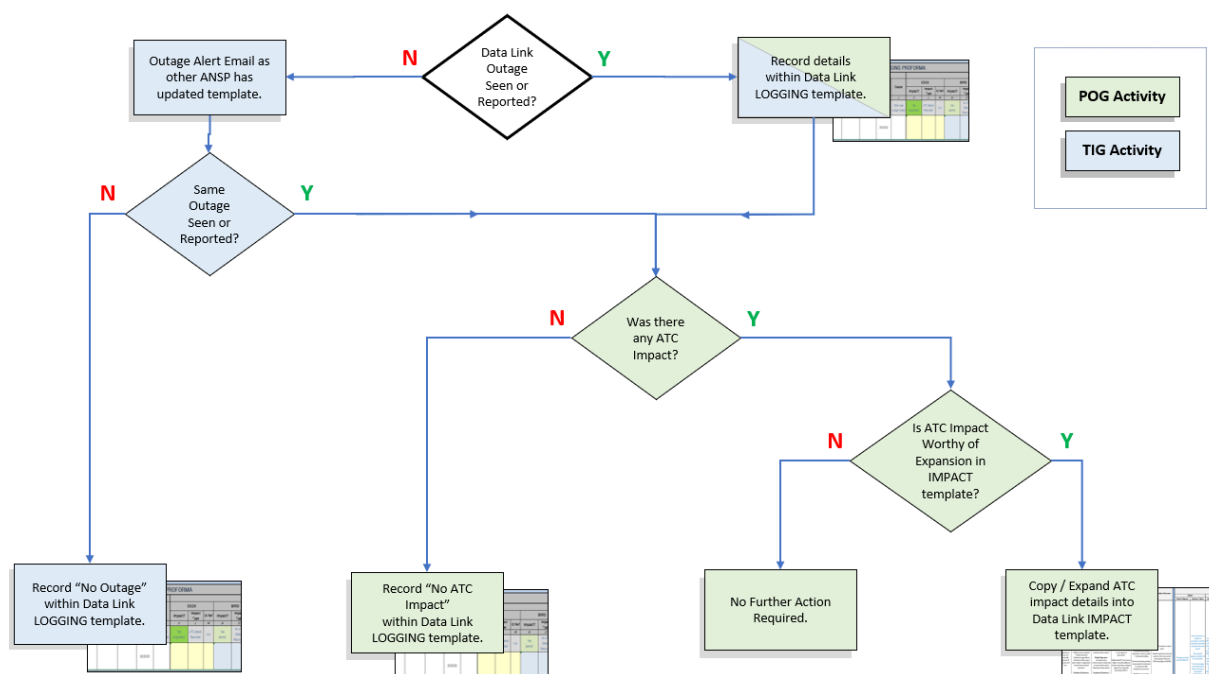
### Data Link Outage

3.18 The Group recalled that IMG/55 was appraised of the work initiated by the NAT TIG in cooperation with the NAT POG, to establish a common reporting template in a location that all the air navigation service providers (ANSPs) could access and update on a continuous basis during each reporting period.

3.19 The United Kingdom provided an update, through online demonstration, on the web-based template. In addition to the recording of operational effects of planned and un-planned outages (POG activity), the Group supported that the template would also facilitate the recording of all technical outages by ANSPs to support TIG responsibilities for recording and reporting all outages as set out in the PBCS Manual (ICAO Doc 9869.)

3.20 UK NATS host the template within a Microsoft ‘TEAMS’ portal in Excel form, and has sent links to the site to all ANSPs. The purpose of the template is to provide a common area where ANSPs can update outage and impact information on a continuous basis, with a proposal that the POG and TIG review the updates using the online template without having to submit Working or Information Papers. The portal will automatically send out an email to members whenever the contents of the template have been updated by an ANSP, so that other ANSPs can check if the newly entered outage had been seen and impacted their respective operations. Each ANSP will be expected to confirm their details as appropriate or record ‘no outage’ / ‘no impact’ so that the NAT POG and NAT TIG can be assured that the information being reviewed is up to date and consistent. It was noted that the template will support each reporting period which would be aligned with the PBCS reporting period; January to June and July to December. This process would simplify the process and reduce workload for ANSP representatives who are required to provide updates to POG and TIG. The data link outage impact tables and the data link outage logging tables will then provide the most up to date information available. This process does not prevent any ANSP presenting a separate Working Paper or Information Paper should they consider one necessary.

3.21 The Group noted the following workflow diagram:



3.22 The Group agreed to the data link reporting templates, agreed to the proposed hosting of the datalink outage and operational impact template on the Microsoft ‘TEAMS’ portal and thanked the United Kingdom for their support. The United Kingdom offered to fill the template with observed/reported outages for the period 1<sup>st</sup> January 2020 to the current date and the NAT ATSPs would subsequently start entering data in accordance with the approved process.



### *Data Link Performance Improvement Options*

3.23 The Group recalled that the NAT OPS Bulletin 2019-003 Rev 1 (Data Link Performance Improvement Options) was issued on 30 January 2020. The NAT OPS Bulletin proposes the following solutions for the Problem/Issue “*VHF to SATCOM Transitions*”:

Solution a): Disable VHF datalink just prior to entering oceanic airspace

*Implement flight crew procedures to disable VHF datalink (usually by placing the VHF radio used for VHF datalink into voice mode) just prior to entering oceanic airspace or prior to leaving contiguous VHF coverage in order to proactively force SATCOM use. Conversely, enable VHF datalink when exiting oceanic airspace or entering contiguous VHF coverage.*

Solution b): Implement more precise VHF region definitions

*In avionics that offer the capability to prefer specified subnetworks in defined geographic regions (including 777 DCMF and 787 CMF), implement more precise VHF region definitions that exclude areas of the world with only intermittent VHF subnetwork coverage in order to force SATCOM use in those areas. Such areas, in which the DLMA has observed consistent performance problems, include the North Pacific near the Aleutian Islands and the Kamchatka Peninsula, the South Pacific near New Caledonia and Vanuatu, and the North Atlantic near Bermuda and the Azores.*

3.24 IATA informed the Group that, although the proposed mitigations seem appropriate, there remain significant safety issues if there is a loss of SATCOM while in oceanic airspace where VHF is available or will be available during an oceanic diversion. Accordingly, the Group agreed to the proposal made by IATA to add the following notes for the proposed solutions:

Solution a) *Caution: In the event of an oceanic diversion, when SATCOM and HF data link (if installed) are lost or otherwise unavailable, flight crews will need to re-enable VHF data link to provide ACARS AOC communication with company.*

Solution b) *Caution: In the event of an oceanic diversion, when SATCOM and HF data link (if installed) are lost or otherwise unavailable flight crews will not have ACARS AOC communication with company.*

3.25 Based on the above, the following draft NAT SPG Decision was proposed:

#### **Draft NAT SPG Decision 56/\_– VHF to SATCOM Transitions**

That the ICAO Regional Director, Europe and North Atlantic, take appropriate actions to publish an updated version of NAT OPS Bulletin 2019\_003 Rev2, Data Link Improvement Options, including the additional material provided in **Appendix F**.

3.26 The Group noted that Portugal expressed objection to the proposal, because they believed that the NAT OPS Bulletin solutions/actions are to be implemented by operators in order to improve ATC data link communications performance and because Portugal is transposing its provisions into national regulatory documentation. Portugal further commented that the proposed solutions/actions should be included in flight manuals and not in the NAT OPS Bulletin that would eventually become part of Portugal's national regulations. Taking into account that this was the only objection voiced against the proposal, the Group decided to submit the proposal to IMG.

#### *Issues reported on ADS-B*

3.27 The Group was informed that Airbus received some reports in 2019 from NAT ANSPs regarding suspected misbehaviours of the avionics involved in the broadcast of ADS-B data (abnormal values or rates of transmission, etc.). The need to follow-up on such reports was acknowledged. However, it was agreed that the NAT is lacking an appropriate forum and mechanism to address these issues. It was noted that the DLMA has provided an effective and successful mechanism for handling problems with FANS data link systems, but that the ADS-B systems require different expertise.

3.28 The Group discussed an option to include this task in the TIG work programme, as the TIG would be the appropriate NAT group to address problems with technology and interoperability of systems used to support NAT operations. However, it was agreed that the TIG does not currently have the necessary expertise relevant for ADS-B systems. Accordingly, the Group agreed that, as a first step, the TIG members investigate whether there are activities or groups at the global or regional level that are presently addressing problems with ADS-B technology, including interoperability issues for terrestrial and/or space-based ADS-B and provide feed-back to NAT TIG/10.

*Update by Inmarsat*

3.29 The Group was provided with an update by Inmarsat, including a summary of the developments on Classic Aero (network improvements), information related to SwiftBroadband Safety and update on the Iris Programme as well as cybersecurity measures taken by Inmarsat. The Group questioned whether there would be impacts related to the interfaces with the New Pan-European Network Service (NewPENS) and SITAOAIR replied that no problem was expected. It was noted that the two I-6 satellites are being constructed and scheduled to launch in 2020.

#### **4. Voice Communication Performance Monitoring and Analysis**

*Voice Communication Performance Report*

4.1 The Group was presented with the NAT voice communications consolidated report for 2019 that included a consolidated analysis of the voice message volume of the NAT Aeronautical Radio Stations (per NAT SPG Conclusion 29/13).

4.2 It was noted that the total NAT voice communications traffic of messages using high frequency (HF), general purpose (GP) VHF and satellite voice communications (SATVOICE) media for the aeronautical radio communications stations during 2019 was 2.714.178 with 75.5% by HF, 24.2% by VHF and 0.3 % on SATVOICE. The percentage of traffic for each station was as follows: Canada (31%), Ireland and Iceland (44%), Portugal (11%), the United States (12%) and Norway (2%).

4.3 The report showed a decrease of 4.6% compared to 2018 in the volume of air-ground messages. The five year variation on the message volume in the NAT showed an overall decrease of 14.5%.

4.4 The Group noted the consolidated NAT report and agreed that it would be submitted to NAT IMG for information and approval.

*Report of the SATVOICE Project Team (SATVOICE PT)*

4.5 The Group recalled that the NAT SATVOICE Project Team was established by NAT IMG/54, based on the proposal by the NAT TIG/7 (NAT IMG Decision 54/4) to determine the potential reasons for the current utilization of SATVOICE and investigate a way forward for its future use.

4.6 The Group was informed that the SATVOICE PT made some progress since NAT IMG/54 and agreed that this work is important to progress the use of SATVOICE in the NAT and in the evaluation of future communication requirements. Therefore, the Group supported the proposal to extend the SATVOICE PT until April 2021, pending NAT IMG/56 approval.

#### **5. Planning and Implementation Programmes and Supporting Documentation**

*Project Teams Progress Report*

5.1 The Group noted the status of various NAT Project Teams.

## 6. Any Other Business

### *Work programme*

6.1 The Group reviewed its work programme approved by IMG/55 and proposed the following amendment to the work programme:

- a) monitor and support implementation of conformance monitoring;
- b) monitor and support implementation of the regional AIDC plan;
- c) monitor and support the implementation of the technical aspect of the GOLD (Doc 10037), PBCS Manual (Doc 9869) and Satellite Voice Operations Manual (SVOM), Doc 10038;
- d) optimise the use of the NAT voice communications resources, plan for and support future implementations from the technology and interoperability perspective;
- e) monitor the health and performance of the data link communication and surveillance system, provide data link performance and problem reports in support of the DLMA activities and CSPs and SSPs to provide reports of failures and developments in the **in the operational and advisory systems** that affect NAT operations;
- f) provide voice communications traffic volume reports;
- g) supervise and report on the activities of the project teams for which it was assigned a supervisory role;
- h) investigate the impact of the differences in FANS 1/A aircraft implementations;
- i) investigate the impact of the differences in ground system implementations;
- j) carry out in-depth examinations of those areas where the performance criteria were not being fully met to try and determine the cause;
- k) examine the Airbus routing policy used for media advisory transmission where HF is tried before SATCOM;
- l) examine possible fine tuning of CSP/SSP timers, number of transmission retries and retry intervals taking into account aircraft timers and any other currently existing ground timers; and
- m) investigate why MAS responses are being received well beyond the time that could be considered normal.

### *Next meetings*

6.2 The Group agreed that the next meeting will be held from 21 to 25 September 2020, hosted by Portugal in Santa Maria. NAT TIG/11 was planned to be held in the week of 1 to 5 March 2021 in Paris, France.

**APPENDIX A**  
**List of participants**  
*(paragraph 1.5 refers)*

**CANADA**

Shelley BAILEY  
Robert FLEMING  
Raffaelina THOMAS

**DENMARK**

Bent FOG

**ICELAND**

Helgi SIGURDARSON  
Bjarni STEFANSSON

**IRELAND**

Patrick TARRANT

**NORWAY**

Kenneth BERG

**PORTUGAL**

Jose Joaquim DOS SANTOS CABRAL

**UNITED KINGDOM**

Iain BROWN  
Daniel JEREMY  
Tim MURPHY  
Michael PRICE  
Ian SIMPSON

**UNITED STATES**

Theresa BREWER-DOUGHERTY  
Meghan CURRIER  
Hilda DiMEO  
Travis FIEBELKORN  
Kevin C. KELLEY  
Shawn KNIGHT  
Raj KRISHNAPILLAY  
Vincent MCMENAMY  
John WARBURTON  
Jim WEBB

**AIRBUS**

Lucas BILLON  
Jean-François BOUSQUIE  
Clement SELLES

**ARINC**

Brian JACOBS  
Ronald MCGOWAN

**BOEING - NAT DLMA**

Suzanne HAWKINS  
Michael MATYAS

**COLLINS AEROSPACE**

Anthony ABATE

**IATA**

Rich STARK

**IBAC**

Candace GUNNING  
Tyler JUERGENS  
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Abbas NIKNEJAD  
Sven HALLE  
Oguzhan HASDENIZ  
Catherine DALY

**APPENDIX B**  
**List of Documentation**  
*(paragraph 1.5 refers)*

<b>WP</b>	<b>Agenda item</b>	<b>Title</b>	<b>Presented by</b>	<b>Portal</b>
WP01		Draft Agenda	Secretariat	15/01/2020
WP02	1 b)	Status of the NAT TIG Follow-up action list	Secretariat	27/01/2020
WP03	1 b)	Summary of Discussions of the North Atlantic Implementation Management Group 55 <sup>th</sup> Meeting (NAT IMG/55, Washington D.C., United States, 4 to 8 November 2019)	Secretariat TIG to note	27/01/2020
WP04	1 c)	Summary of Discussions of the North Atlantic Safety Oversight Group 21 <sup>st</sup> Meeting (NAT SOG/21, Madrid, Spain, 10 to 13 December 2019)	Secretariat TIG to note	27/01/2020
WP05	2 e)	Mitigations regarding the re-display of old CPDLC Messages	Secretariat <i>(postpone to TIG/10)</i>	06/02/2020
WP05 App A	2 e)	Responses from UK, USA and IFALPA to SL EUR/NAT 20-0008.TEC (NAE/CUP) of 6 January 2020.	Secretariat <i>(postpone to TIG/10)</i>	06/02/2020
WP06	3 b)	NAT SATVOICE Project Team Report	SATVOICE PT Lead	20/02/2020
WP06 AppA	3 b)	NAT SATVOICE Project Definition	SATVOICE PT Lead	20/02/2020
WP07	2 e)	Differences in FANS 1/A aircraft implementations	Iceland <i>(postpone to TIG/10)</i>	20/02/2020
WP07 App A	2 e)	List of differences in FANS 1/A aircraft implementations (excel)	Iceland <i>(postpone to TIG/10)</i>	20/02/2020
WP08	2 e)	Airbus FANS deployment	Airbus TIG to note	24/02/2020
WP09	2 e)	Use of latitude/longitude information with in CPDLC route clearances	Airbus <i>(postpone to TIG/10)</i>	24/02/2020
WP10	2 e)	Airbus answer to Action 8-12: impact of MicroSLOP on CPLDC downlinks	Airbus <i>(postpone to TIG/10)</i>	24/02/2020
WP11 Rev 1	2 e)	Uplink message latency monitor function data collection	Iceland	06/03/2020
WP11 Rev 1 App A	2 e)	Latency monitor function equipage data (excel)	Iceland	06/03/2020
WP12 Rev 1	2 e)	IATA concerns on data link performance improvement options for VHF to SATCOM transitions	IATA	10/03/2020
WP13	2 e)	IATA concerns over PBCS data integrity	IATA <i>(Referred to TIG analysts)</i>	03/03/2020
WP14	2 e)	AIRBUS PR Briefing	Airbus <i>(postpone to TIG/10)</i>	03/03/2020

WP15	3 a)	NAT Voice Data Consolidation Report	Portugal	06/03/2020
WP15 App A	3 a)	NAT 2019 Data Consolidation Report	Portugal	06/03/2020
WP16	2 e)	Sample sizes in PBCS Non-compliance monitoring	Iceland <i>(Referred to TIG analysts)</i>	06/03/2020
WP17	2 d)	NAT Data Link Equipage update	NAT TIG <i>(Referred to TIG analysts)</i>	06/03/2020
WP17 Appendices A-F	2 d)	Appendix A - UNITED STATES Report on Equipage in New York-East OCA Appendix B - PORTUGAL Report on Equipage in Santa Maria OCA Appendix C – CANADA Report on Equipage in GANDER OCA Appendix D – UNITED KINGDOM Report on Equipage in Shanwick OCA Appendix E – ICELAND Report on Equipage in Reykjavik OCA Appendix F – Combined NAT Report of filing statistics by operator	NAT TIG <i>(Referred to TIG analysts)</i>	06/03/2020
WP18	2 e)	Data Link Outage Update	United Kingdom	06/03/2020
WP18 App A	2 e)	Data link Outage and Operational Impact Template (excel)	United Kingdom	06/03/2020
WP19	2 c)	B757/767 Pegasus-1 Re-display of Old ATC Log Messages	IFALPA <i>(postpone to TIG/10)</i>	09/03/2020
WP19 App A	2 c)	IFALPA comments to NAT SPG Consultation on State Letter	IFALPA <i>(postpone to TIG/10)</i>	09/03/2020
WP19 App B	2 c)	AFS-400 FAA Letter to Boeing	IFALPA <i>(postpone to TIG/10)</i>	09/03/2020
WP19 App C	2 c)	ALPA Pegasus-1 FMS Letter to FAA	IFALPA <i>(postpone to TIG/10)</i>	09/03/2020
WP20	2 a)	Data Link Monitoring Agency (DLMA) Problem Report (PR) Briefing	DLMA <i>(postpone to TIG/10)</i>	10/03/2020
WP21	2 d)	NAT Data Link Performance Update	NAT TIG <i>(Referred to TIG analysts)</i>	10/03/2020
WP21 Appendices A-E	2 d)	Appendix A – NAT PBCS Monitoring Report by Airframe Appendix B – NAT PBCS Monitoring Deficiencies Appendix C – NAT PBCS Monitoring – Filtering Appendix D – NAT PBCS Monitoring – Detected Outages Appendix E – NAT PBCS Monitoring – CSP Notification Summary	NAT TIG <i>(Referred to TIG analysts)</i>	10/03/2020
WP22	2 b)	Report from the NODAR Project Team	United States	10/03/2020

WP23	2 e)	PBCS Filtering	Portugal ( <i>Referred to TIG analysts</i> )	10/03/2020
<i>IP</i>	<i>Agenda item</i>	<i>Title</i>	<i>Presented by</i>	<i>Portal</i>
IP01		List of documentation	Secretariat	12/03/2020
IP02		Tentative Work Schedule	Secretariat	12/03/2020
IP03	1 d)	ICAO Update	Secretariat ( <i>TIG to note</i> )	06/02/2020
IP04	4 a)	NAT Project Teams Progress Report	Secretariat ( <i>TIG to note</i> )	17/02/2020
IP04 App A	4 a)	NAT Project Teams Progress Report Matrix (excel)	Secretariat ( <i>TIG to note</i> )	17/02/2020
IP05	1 c)	Summary of Discussions of the North Atlantic Procedures & Operations Group 9th Meeting (NAT POG/9, Paris, France, 2 to 6 March 2020)	Secretariat ( <i>TIG to note</i> )	10/03/2020
IP05 App D	1 c)	Appendix D Data link outage activity	Secretariat	10/03/2020
IP06	2 e)	Integration of CPDLC within the flight deck	Airbus ( <i>postpone to TIG/10</i> )	24/02/2020
IP06 App A	2 e)	CPDLC integration in the flight deck (PowerPoint presentation)	Airbus ( <i>postpone to TIG/10</i> )	24/02/2020
IP07	2 e)	Status of Pegasus I FMC Redisplay of stale CPLDC messages	Boeing ( <i>postpone to TIG/10</i> )	06/03/2020
IP08	2 e)	Operational effects of Micro-SLOP on IGA Aircraft	IBAC ( <i>postpone to TIG/10</i> )	06/03/2020
IP09	1 c)	Reply from USA dated 27 January 2020 to EUR/NAT 20-0011.TEC (NAE/CUP) NAT SPG Consultation – NAT OPS Bulletin - ACARS Data Link Oceanic Clearance Flight Crew Procedures (Serial no: 2020_001)” of 6 January 2020	Secretariat ( <i>TIG to note</i> )	09/03/2020
IP09 App A	1 c)	ICAO EUR/NAT SL 20-0011.TEC “NAT SPG Consultation – NAT OPS Bulletin – ACARS Data Link Oceanic Clearance Flight Crew Procedures (Serial no: 2020_001	Secretariat ( <i>TIG to note</i> )	09/03/2020
IP09 App B	1 c)	Appendix A to ICAO EUR/NAT SL 20-0011.TEC “NAT OPS Bulletin (Serial no: 2020_001) “ACARS Data Link Oceanic Clearance Flight Crew Procedures	Secretariat ( <i>TIG to note</i> )	09/03/2020
IP09 App C	1 c)	Reply to EUR/NAT 20-0011.TEC from the USA dated 27 January 2020	Secretariat ( <i>TIG to note</i> )	09/03/2020
IP10	1 c)	Reply from USA dated 27 January 2020 to EUR/NAT SL 20-0009.TEC (NAE/CUP) NAT SPG Consultation – NAT OPS Bulletin – Waypoint Insertion/Verification Special Emphasis Items (Serial no: 2018_003 Rev 1)	Secretariat ( <i>TIG to note</i> )	09/03/2020

IP10 App A	1 c)	ICAO EUR/NAT SL 20-0009.TEC (NAE/CUP) “NAT SPG Consultation –NAT OPS Bulletin - Waypoint Insertion/verification Special Emphasis Items (Serial no: 2018_003 Rev 1)”	Secretariat ( <i>TIG to note</i> )	09/03/2020
IP10 App B	1 c)	Appendix A to ICAO EUR/NAT SL 20-0009.TEC (NAE/CUP) NAT OPS Bulletin (Serial no: 2018_003 Rev 1) - Waypoint Insertion/Verification Special Emphasis Items	Secretariat ( <i>TIG to note</i> )	09/03/2020
IP10 App C	1 c)	Reply to EUR/NAT 20-0009.TEC from the USA dated 27 January 2020	Secretariat ( <i>TIG to note</i> )	09/03/2020
IP10 App D	1 c)	Appendix A to Reply from USA EUR/NAT 20-0009.TEC NAT OPS Bulletin – Response Attachments	Secretariat ( <i>TIG to note</i> )	09/03/2020
IP11	2 e)	Performance-based Communication and Surveillance (PBCS) Monitoring: FANS over Iridium	United States ( <i>postpone to TIG/10</i> )	10/03/2020
IP12	2 e)	Measuring actual Communication Performance (ACP)	United States ( <i>postpone to TIG/10</i> )	10/03/2020
<b>PR</b>	<b>Agenda item</b>	<b>Title</b>	<b>Presented by</b>	<b>Portal</b>
PR01	2 e)	Inmarsat update	Inmarsat	18/03/2020
<b>FLIMSY</b>	<b>Agenda item</b>	<b>Title</b>	<b>Presented by</b>	<b>Portal</b>
IP13	2 d)	List of documentation	IATA	16/03/2020



**APPENDIX C****NAT TIG/9 - FOLLOW UP ACTIONS***(paragraph 2.1 refers)*

<b>ID</b>	<b>TASK</b>	<b>WHO</b>	<b>WHEN</b>	<b>Ref</b>
R-01	Submit problem reports (PR) via the NAT DLMA website and feedback on the outstanding PRs. Provide the problem reports analysis.	All/DLMA	At every meeting	
R-02	Provide HF networks operations report.	Aeradio representatives	At every spring meeting	
R-03	Provide the results of PBCS RCP and RSP monitoring using the common template. — Optionally include assessment of PORT using the 12 sec filter value — Include availability estimates	ANSPs	At each meeting Jan-June inclusive and \ July to December	3.4
R-05	Collect AFN logon and ADS-C/CPDLC, RNP and ADS-B usage and equipage statistics per month broken down by OTS/non-OTS, and, where possible, by operator, comparing inconsistencies per operator between filed and actual equipage and send the data to the United States.	ANSPs & service providers	One month before every meeting	3.22
R-06	ANSPs to report what ADS-C periodic intervals they are using and what plans they have for changes to the ADS-C periodic intervals in the future so as to create a list to be included in regional documentation.	ANSPs	Every fall meeting	3.46
R-07	CSPs and SSPs to provide reports of failures and developments in the system that affect NAT operations	ARINC (Collins), SITA, Inmarsat and Iridium	At every meeting	6.3 e)
7-8	Submit a proposal for amendment of ICAO PBCS Manual appendix D to PBCS project team	PBCS PT members	Next PBCS PT meeting	3.10
7-16	Review PR 2558-SH (Delayed or failed messages during media transitions) and provide their feedback	ARINC (Collins) and SITA	NAT TIG/10	3.43 a)
7-19	Provide feedback on Network 1 in the FANS 1/A tracker	ARINC (Collins) and SITA	NAT TIG/10	3.43

ID	TASK	WHO	WHEN	Ref
7-24	Provide feedback on the “Ack and Toss” issue (State Letter Ref.: EUR/NAT 19-0001.TEC (NAE/CUP) dated 02 January 2019 – <i>Follow-up on the NAT IMG Dec 53/1</i> )	ARINC (Collins)	NAT TIG/10	5.3
7-27	Provide inputs (an initial paper for discussion) on the work programme item k ( <i>investigate the impact of the differences in ground system implementations</i> ) for further elaboration.	NAT DLMA	NAT TIG/10	6.3 k)
7-28	Investigate on the issue and provide inputs on the work programme item n ( <i>examine possible fine tuning of CSP/SSP timers, number of transmission retries and retry intervals taking into account aircraft timers and any other currently existing ground timers</i> ) for further elaboration.	SITA and Rapporteur	NAT TIG/10	6.3 n)
8-3	Investigate the reasons of low performance level of Iridium considering that the overall Iridium performance had been improving, however, remained below the aggregate 99% for the NAT and below 95% for one FIR	Analysts sub-group	NAT TIG/10	3.2
8-5	Examine the feasibility of using more reliable statistical methods, such as bootstrapping (with further support from Iceland) and report to the NAT TIG/9 and PBCS NPRH PT	Analysts sub-group	NAT TIG/10	3.15
8-9	Provide further information on how ground systems process media advisory messages	ARINC (Collins) and SITA	NAT TIG/10	3.35
8-10	Investigate if media advisory message data can be provided to Iceland to enable calculation of the performance of the Airbus and Boeing media advisory policies. Iceland will specify the data required	ARINC (Collins), SITA and Rapporteur	NAT TIG/10	3.40 (Linked to 8-8)
8-11	Provide information on the implementation of an uplink delivery timeout function in the ground network for the USA Datacomm program	FAA, ARINC (Collins) and SITA	NAT TIG/10	3.52
8-12	Investigate the operational effect of offsets in tents of a NM (micro-SLOP) on downlink CPDLC messages	Airbus, Boeing and IBAC	NAT TIG/10	3.63
8-13	With regard to the issue of prepending Flight ID to all uplinks displayed to flight crew: a) Investigate the feasibility <b>b) Bring the issue to the attention of the OPDLWG at the global level</b>	a) ANSPs <b>b) IATA and IFALPA</b>	NAT TIG/10 <b>TBD</b>	3.67
9-1	with regard to the issue of prepending Flight ID to all uplinks displayed to flight crew, FAA provide IP on the relevant outcome of the OPDLWG discussions to NAT TIG/10	FAA	NAT TIG/10	2.3

<b>ID</b>	<b>TASK</b>	<b>WHO</b>	<b>WHEN</b>	<b>Ref</b>
9-2	Provide information on the existing ATSP implementations that prepending A/C identification to CPDLC messages	Ireland	NAT TIG/10	2.4
9-3	Discuss how to handle the issue of multiple operator codes associated with the same airframe, and differences in observed filing of P2/RSP180 between NAT FIRs, in the monitoring results and provide feedback to NAT TIG/10	Analysts sub-group	NAT TIG/10	3.5
9-4	Submission of the draft data link performance report and equipage statistics (January-December 2019) to NAT IMG/56	Secretariat	NAT IMG/56	3.7
9-5	Provide latency monitor function equipage data to the NAT IMG, SOG and SPG	Secretariat	NAT IMG/56, NAT SOG/22, NAT SPG/56	3.9
9-6	finalize the template and services list, in coordination with the CSPs, and propose actions needs for the formal coordination with other ICAO regions to the NAT TIG/10	NODAR PT, ARINC (Collins) and SITA	NAT TIG/10	3.12
9-7	provide further information on the implications of the proposed change to the non-aviation customers and any flexibility there may currently be with using different formats	ARINC (Collins) and SITA	NAT TIG/10	3.14
9-8	Extension of the NODAR PT to September 2020	Secretariat	NAT IMG/56	3.15
9-9	United Kingdom to fill the web-based outage template for the period 1 <sup>st</sup> January to current date and the NAT ATSPs subsequently start entering data in accordance with the approved process.	ANSPs United Kingdom	ASAP	3.22
9-10	investigate whether there are activities or groups at the global or regional level that are presently addressing problems with ADS-B technology, including interoperability issues for terrestrial and/or space-based ADS-B and provide feed-back to NAT TIG/10	All	NAT TIG/10	3.28
9-11	NAT Voice com status and performance annual report	Secretariat	NAT IMG/56	4.4
9-12	Extension of the SATVOICE PT to April 2021	Secretariat	NAT IMG/56	4.6
9-13	Provide relevant outcome of TIG/9 to the NAT IMG/56 for further action/endorsement	Secretariat	NAT IMG/56	All

**APPENDIX D**

**LATENCY MONITOR FUNCTION EQUIPAGE DATA**

*(paragraph 3.9 refers)*

APPENDIX ISSUED SEPARATELY

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**APPENDIX E**

**ADVISORY TEMPLATE**

*(paragraph 3.10 refers)*

APPENDIX ISSUED SEPARATELY

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## APPENDIX F

## CHANGES TO NAT OPS BULLETIN 2019\_003 REV2

(paragraph 3.25 refers)

PROBLEM / ISSUE	SOLUTIONS / ACTIONS
<p><b>2. VHF to SATCOM Transitions</b></p> <p>2.1 Transitions from using VHF to using SATCOM, especially when they occur repeatedly in a short period of time, reduce datalink performance because the ACARS protocols are generally not designed to maximize performance but rather to minimize cost by persistently attempting to use less costly VHF.</p>	<p><i>Solution a): Disable VHF datalink just prior to entering oceanic airspace</i></p> <p>Implement flight crew procedures to disable VHF datalink (usually by placing the VHF radio used for VHF datalink into voice mode) just prior to entering oceanic airspace or prior to leaving contiguous VHF coverage in order to proactively force SATCOM use. Conversely, enable VHF datalink when exiting oceanic airspace or entering contiguous VHF coverage.</p> <p><i>Caution: In the event of an oceanic diversion, when SATCOM and HF data link (if installed) are lost or otherwise unavailable, flight crews will need to re-enable VHF data link to provide ACARS AOC communication with company.</i></p>
	<p><i>Solution b): Implement more precise VHF region definitions</i></p> <p>In avionics that offer the capability to prefer specified subnetworks in defined geographic regions (including 777 DCMF and 787 CMF), implement more precise VHF region definitions that exclude areas of the world with only intermittent VHF subnetwork coverage in order to force SATCOM use in those areas. Such areas, in which the DLMA has observed consistent performance problems, include the North Pacific near the Aleutian Islands and the Kamchatka Peninsula, the South Pacific near New Caledonia and Vanuatu, and the North Atlantic near Bermuda and the Azores.</p> <p><i>Caution: In the event of an oceanic diversion, when SATCOM and HF data link (if installed) are lost or otherwise unavailable flight crews will not have ACARS AOC communication with company.</i></p>
	<p><i>Solution c): Implement the ARINC 618 RAT1 timer</i></p> <p>Upgrade ACARS router avionics (CMU or equivalent) software to include the new ARINC 618 RAT1 timer when it becomes available. This timer is intended to improve performance for FANS downlink messages during VHF-to-SATCOM transitions by additionally attempting to send a message via SATCOM when attempts to send it via VHF have not been successful for 60 seconds (such as when exiting land-based VHF coverage). This feature is available on some new aircraft types and will gradually become available for retrofit via software updates on existing aircraft.</p>

— END —