



NORTH ATLANTIC SAFETY OVERSIGHT GROUP

THIRTY SECOND MEETING

(Gatwick, United Kingdom, 20-23 May 2025)

Agenda Item 3d: Updates from the NAT project teams of interest to NAT SOG

Oversight of Communication Service Providers (CSPs) and Satellite Service Providers (SSPs) Project Team (CSP/SSP PT) Report.

(Presented by the Project Team Co Leads USA and UK)

SUMMARY

Oversight of Communication Service Providers (CSPs) and Satellite Service Providers (SSPs) PT Report.

1. Introduction

1.1 This working paper presents the Oversight of CSP/SSP PT's discussions regarding whether the current oversight meets Standards and Recommended Practices (SARPs).

1.2 The PT Terms of Reference (ToRs) outcomes were set as follows.

- Statement and evidence of how current CSP and SSP oversight meets Standards and Recommended Practices (SARPs).
- Recommendations to strengthen current oversight arrangements; and
- Recommendations to implement alternative oversight mechanisms to meet predicted future demands, as needed.

1.3 The PT ToRs High Level Tasks are as follows.

- Review State responses to NAT SOG action (NATSOG25/25-01).
- Request responses from outstanding States.
- Review previous data and work conducted by the NAT TIG.
- Ascertain current requirements and gaps in oversight.
- If gaps are identified, determine proposed recommendations; and
- Report back to NAT SOG/32 (This meeting).

1.4 The PT undertook 7 virtual meetings and was attended by Regulators and Air Navigation Service Providers (ANSPs) from the UK, USA, Denmark, Ireland, Iceland Canada and Norway, supported by expertise from Eurocontrol and IATA.

1.5 Members are reminded of NAT SOG 31 IP/04 where it was noted that this subject is extremely complex, with many variables and ‘actors’ involved in the provision of satellite data services, and that there is no consistent approach to contracting satellite data services by States or ANSPs, further adding to the complexities in service provisions across the NAT.

1.6 Members are reminded of NAT SOG31 where the CSP/SSP PT were reminded to focus on the high-level tasks in order to meet the PT Outcomes. The PT acknowledged that direction and this WP sets out the issues that the PT consider are prevalent and offer recommendations to support the safety oversight of CSPs and SSPs.

1.7 Members are to note the importance of data services as evidenced and captured in the forward of ICAO Doc 9925 Manual on the Aeronautical Mobile Satellite (Route) Service, which states the following;

Satellite technology has a unique potential to satisfy many present and future communication, navigation and surveillance (CNS) needs. A key part of system improvement in the future is the introduction of air-ground digital communication services which could provide substantial benefits in air traffic services (ATS) efficiency and capacity, satisfying the needs of air traffic safety as well. Important system considerations include: worldwide interoperability; access by all classes of aeronautical users; the need to accommodate evolutionary system growth in terms of functional capability and capacity in an adaptive manner, considering different requirements in different areas; and the potential for taking advantage of satellite service capability from different service providers.

Accepting to largely replace voice communications with the application of data links to support ATS requires assurance that all relevant elements of data link network(s) and subnetworks (such as a satellite subnetwork) are properly coordinated and interoperable. AMS(R)S is considered a global satellite subnetwork of the aeronautical telecommunication network (ATN) that provides end-to-end voice and data connectivity among end-users, such as air traffic controllers, pilots and aircraft operators. Interoperability with the ATN is assured by means of a standardized architecture for all elements of the ATN, based on ICAO SARPs and guidance material.

2. Discussion

Current Situation

2.1 The North Atlantic’s dependence on satellite services has increased substantially over the past decade and remains a critical element in the H24 delivery of air traffic services. These systems have become integral to enabling reductions in separation minima which, when operating optimally, support operators and ANSPs in the enhancement of efficiency and sustainability whilst also maintaining safety.

2.2 In recent years there has been an increase in unplanned outages and service degradations across the NAT which have led to cascading effects, such as increased controller workload and delayed critical communication which have undermined the provision of safe and efficient services. Due to the complexity in the number of systems and interfaces involved in the end-to-end transmission of position, communication, and logon messages between pilots and controllers, there are varying manifestations of diminishing services. One area of note where services are interrupted, or experience delay, is when aircraft transition from VHF to SATCOM. Uplink messages continue to be sent via the VHF network after receiving a message advisory indicating VHF loss. (See attachment E - NAT TIG 19 IP08)

2.3 There have been numerous attempts, globally as well as within ICAO NAT Groups, to address availability of CSP/SSP services with nugatory success. It should also be noted that the NAT Scrutiny Group does not have an agreed definition nor ToR of what should be reported as an ‘outage’ nor guidance on how to

measure/account for the magnitude and impact of an outage. Yet it is important to note that the Scrutiny Group does have two ToRs tasking the group to scrutinize vertical and lateral events “to determine and record whether the application of ASEPS/PBCS separation criteria contributed to the occurrence” and indicate this in the NERA.

Oversight.

2.4 All but one NAT member State has reported back how they conduct CSP/SSP oversight, (NATSOG action 25/25-01) and, the consensus is that the responsibility for assuring these services is via the contracts between ANSP/State and the CSPs. These contracts focus on agreed deliverables (as a packaged report) to the ANSP/State. Only the CSP acquire/contract services from the SSPs directly and this service level agreement is not available to the ANSP/State

2.5 There have been previous efforts to define high level performance requirements in the ICAO SARPS regarding CSP or SSP required level of services, most notably within the RCP/RSP specifications within the Performance-Based Communication and Surveillance (PBCS) framework. However, the NAT TIG have struggled through their ongoing work with how to apply the network performance requirements defined in ICAO Doc 9869 *PBCS Manual*, given the complexities of the constituent parts of the end-to-end system and message delivery protocols, to enable scrutiny of the CSP’s/SSP’s performance. This questions the efficacy of the SARPS requirements in providing a mechanism that determines performance acceptability

2.6 In addition, the PBCS Global Charter was created to facilitate co-operation amongst all PBCS stakeholders to achieve the objectives within the PBCS framework. The Charter also makes reference to ICAO Doc 10037, *Global Operational Data Link (GOLD) Manual*. Commitment to compliance is shown when the ANSP, Operator and CSPs (PBCS stakeholders) have signed the Charter. However, ongoing outages and lack of timely and effective response by CSPs and SSPs to problems reported by ANSPs, evidence that the Charter is not effective in improving CSP and SSP performance resulting in the need for continued work by the NAT TIG (see NAT TIG action list excerpts in para 2.17 of this paper). It should also be noted that the OPDLWG recognised as far back as 2017 that the PBCS Charter was never intended to be a long-term solution but was “an option in lieu of or in addition to contractual agreements for CSP compliance” [OPDLWG/5 SoD].

2.7 The PT discussed the difference between the CSP contractual deliverable requirement of **99.9%** (availability/continuity) to meet the RCP240 standard, and the assertion by the ANSPs/States that this is not being achieved. The definition of ‘**continuity**’ assumes that the system is available at the initiation of the transaction, however, some transactions are initiated when the system is unavailable i.e. during an outage. There is no known mechanism to detect loss of connectivity for FANS-1/A technology by the ANSP/State for an unplanned outage until ANSPs experience consecutive failures with operators within their designated airspace. This highlights the inability to verify the differences between the reported service provided by the CSPs and services received by the ANSP/State. However, it should be noted that with ATN technology, mechanisms do exist to detect and report loss of connectivity which allows the end user to be notified when a loss of communication occurs.

2.8 The PT questioned whether the confidence in the system was justified based on the safety requirements of 99.9% for availability, continuity and latency, given that there has been a recognised temporary measure of **99.0%** in place for **latency** (See ATTACHMENT F - OPDLWG6 WP 09) to enable continuation of services. It is not known by the PT whether this change was subject to a safety case review, for how long this temporary measure will be in place nor when it will be reviewed.

2.9 Although there are procedures within ANSPs/States to apply a larger separation when outages occur; it seems this may not be widely known by operators, nor do they know why, they may be instructed to move tracks or levels due to an outage. It is also possible that a loss of separation may have occurred due to the outage and it is unclear whether this is captured within operators’ SMSs. Increased operator awareness of the impact of unplanned outages and the need for reliable availability of service by CSPs should be considered in SMSs and in relation to operator/CSP contracts and, should be raised at appropriate forums. Additionally, this requirement to move from a reduced to a larger separation can add significant workload to the ATCO as

well as overwhelm the HF radio operators relaying position reports and communications messages. Currently this scenario is not captured specifically within the NAT Annual Safety Report (ASR) and it is unclear whether this impacts the Collision Risk Estimate (CRE).

2.10 It should be noted that the PT determined that contracts between CSPs and ANSPs/States have shown to be variable in details covering level of service, durations of acceptable outages, escalation procedures and consequences of failing to meet contractual obligations. Moreover, it is understood that this situation of disparity between contracts also exists between Aircraft Operators and CSPs, including differences in Operators' access to performance data. Some have access to real time data which enable quick investigation, whilst many must wait several months for the reports. **The PT determined that data link performance should be evaluated by the customer to determine if contractual performance obligations (RCP/RSP) are being met.**

2.11 The PT also discussed that some ANSPs/States contract to both CSPs, ARINC and SITA, whereas others only have contracts with one. One ANSP reported that they have contracts with both CSPs for two main reasons, system resilience and message management. The ANSP stated;

- *While they (ANSP) can only transmit “uplink” messages on one CSP connection at a time, if required, they can reconfigure and use the other connection, however, the in-coming “downlink” messages will be lost, with no notice to the sending aircraft.*
- *To reduce reliance on the opaque message management system that operates between ARINC and SITA, some ANSPs can downlink messages from both CSPs without relying on their interlinking network.*

Discussion summary

2.12 Despite RCP240/RSP180 performance being required at a global network level, CSP contracts are agreed separately and privately between service providers and individual ANSPs/States/Operators. Data link performance was not found to be consistent at a service delivery level, therefore, the PT recommends a common set of minimum standards and requirements for services received and a suggested contract template which offers a baseline for ANSPs/States to agree. Also, if useful, Operators are encouraged to utilise the contract template in an effort for greater standardisation of service delivery.

It should be noted that some ANSP members voiced concerns regarding impacts of decisions made following the output of this PT, because these impacts may extend far beyond the NAT. Concern was raised regarding prescribing requirements that may improve the situation for the NAT but, degrades it elsewhere.

2.13 Service and reduced separations have been approved based on expected reliability/continuity of CSP and SSP data yet that data has not shown to be meeting the availability in RCP240/RSP180 requirements. CSPs and ANSPs/States differ on what level of service is provided versus what is received. Therefore, the PT believes the level of service received by the customer is the level of service that needs to be ensured

Regulatory members of the PT advocated pausing any planned work to further reduce separation standards or increase capacity within the NAT until;

- a review is undertaken of the what the required standard should be with regards to availability, continuity and latency, and
- availability can be effectively measured for services received by the ANSP ensuring the requirement is met, and
- the impact of unplanned outages is fully understood and captured within the NAT CRE.

IATA did not support the Regulator view, instead, IATA advocated a data-driven decision-making approach by conducting detailed analysis to understand how occasional data link outages impact critical safety metrics.

With this approach, IATA would be confident that overall safety can be enhanced without stalling technological and operational advancements

2.14 The PT noted with interest that, EU 2023/1768 and EU 2023/1769 refers to EASA ANSPs utilising equipment and/or services for controller/pilot communication requiring to have a certificate issued by a certified EASA DPO (Design or Production Organization) by September 2028.

PT ToRs High Level Tasks - Summary

2.15 1. Review State responses to NAT SOG action NATSOG25/25-01;

State responses were reviewed, and it was agreed that current understanding of oversight responsibility for assuring these services are delivered via the declaration that the ANSP/State regularly review their contract with the CSP.

2.16 2. Request responses from outstanding States.

State responses were received from the majority of NAT SOG members, See NAT SOG25/25-01 for list.

2.17 3. Review previous data and work conducted by the NAT TIG.

Summary of NAT TIG and other expert groups' work is as follows.

NAT TIG/19 WP10 – details impact of Data link outages on HF voice.

NAT TIG/19 Flimsy 02 - option for the NAT TIG to use the outage impact being collected to monitor and report data link network availability against the Performance-based Communication and Surveillance (PBCS) requirements.

NAT TIG Action 17-5 - Review the timer values documented for SITA and ARINC in the ULT PT final report and confirm whether they are still valid; and check SITA and ARINC compliance with all relevant timer requirements in ARINC 618 and 620 standards.

NAT TIG Action 17-6 - Form a team of the NAT TIG analysts in order to continue developing the process for determining outage impacts and measuring against the RCP240/RSP180 availability requirements.

NAT TIG Action 19-3 - Provide details on the applicable requirements for transitions from VHF to SAT documented in ARINC 618 and 620, current compliance with or issues with compliance by SITA and ARINC and circumstances behind the observed behaviours to help identify areas of deficiency or divergence as well as area in potential need for improvement in the requirements.

NAT TIG Action 19-5 - Discuss and propose a standard template for reporting impacts of data link outages on HF message delivery to the NAT TIG.

NAT TIG Action 19-6 - Investigate the deployment of the FAA outage detection process and provide feedback, in order to take the decision whether the outage impacts detection process currently detailed in the analysts' handbook should be updated according to the proposal.

NAT TIG Action 19-7 - Review the Network Outage Detection and Reporting (NODAR) service list to address the identified gaps (noted in paragraph 3.29); and review the NAT TIG analysts' impact to determine what alignment with the updated NODAR services list is needed.

NAT TIG/18 Sod 3.22 – “NAT DLMA would coordinate with the NAT TIG rapporteur to send a letter to the appropriate management contacts within SITA with details of the failed log requests in order to highlight the problem for SITA and provide a chance for them to resolve the issue of non-provision of requested logs. It was noted that the next step suggested by the NAT TIG would be to propose an ICAO letter to SITA”.

NAT TIG/14 - Development of the Network Outage Reporting and Impact Assessment (NORIA) Handbook and (NODAR) template and taxonomy

Draft NAT SPG Conclusion 61/3 – Provision of reliable data link services by CSPs/SSPs in the NAT - That, the ICAO Regional Director, Europe and North Atlantic, send a letter on behalf of the NAT SPG to Communication Service Providers (CSPs) and Satellite Service Providers (SSPs) emphasising the need for reliable data link services in the NAT.

Draft NAT SPG Conclusion 61/2 – Criticality of the redundant satellite coverage over the NAT Region - That, the ICAO Regional Director, Europe and North Atlantic, send a letter on behalf of the NAT SPG to Inmarsat/Viasat emphasising the criticality of the redundant satellite coverage over the NAT Region in connection with the forthcoming I-8 launches.

Eurocontrol letter sent to SITA CEO for aircraft – 5th August 2024

OPDLWG/6 WP09 - Determine the definition of ‘outage’.

2.18 4. Ascertain current requirements and gaps in oversight.

The PT agreed that the following key points may be contributing factors leading to unreliable service provision which in turn is believed to create barriers to consistent and aligned oversight within the NAT.

Level of oversight cannot be fully determined as sufficient or lacking as there is no mandated standard applicable to CSPs.

Compliance with the PBCS Manual cannot be fully measured due to technical complexities of measuring constituent parts of the end-to-end system and therefore, cannot fully evidence if CSP practices are in line with the PBCS Charter and Gold Manual.

CSP to ANSP/States contracts within the NAT are not consistent in content or detail, different contracts apply despite the Network and the radio link used for both services being exactly the same e.g. CSP to ANSP and CSP to Operator.

Contracts are only with CSPs. The SSP contracts/ internetworking agreements are opaque to ANSP/States/Operators, therefore, there is no direct oversight of SSP performance within contracts.

Some ANSPs/States contract to two CSPs rather than just one. This may be a way to increase resilience and reduce reliance on a single CSP for NAT ANSPs/States.

Operator awareness of unplanned outages as a reason to move to a larger separation standard is limited. Therefore, operators may not be factoring the impact of unplanned outages within the performance acceptability criteria of their contract with their CSP.

Published documents are aspirational at best given the limitations on measuring constituent parts of the whole end to end system.

The safety impact of unplanned outages is not currently captured by the NAT Scrutiny Group because there is not an agreed definition nor ToR of what should be reported as an ‘outage’ nor guidance on how to measure/account the magnitude and impact of an outage. Also, the impact of these outages is not reported in the Annual safety Report (ASR) by the Scrutiny Group or reported in the Annual Safety Report, therefore, is unknown, at a NAT level.

2.19 5. *If gaps are identified, determine proposed recommendations.*

Given the gaps identified at 2.18, the PT propose the following recommendations:

1. That the NAT SOG suggest a set of minimum deliverables/ requirements from the CSPs/SSPs to be captured within individual contracts, to ensure a standard level of service to ANSPs (and possibly operators) and, to agree upon auditable metrics for State oversight (to include SSP requirements as CSPs contract them). (See Attachment A)
2. That ANSPs/ States consider the feasibility of contracting to two CSPs to enable resilience and reduce reliance.
3. Recommend a review of the current data link safety assessments to confirm (or not) if the RCPs/RSPs are acceptable.
4. Recommend investigating how to better enable CSPs meeting RCP240/ RSP180 requirement of received 99.9% availability and continuity.
5. Recommend that the safety impact of unplanned CSP/SSP outages on the NAT is determined and to support this, that outages and impacts are consistently reported and that contingency procedures are being consistently applied across the NAT.
6. Recommend that the ICAO NAT MWG calculate how unplanned data outages impacts the Collision Risk Estimate (CRE) in the NAT.
7. Recommend that data link network performance, including measurements to determine acceptability of service outages, should be included within the NAT Annual Safety Report.
8. Recommend CSP/SSP outages should be added as a Safety Key Performance Indicator (SKPIs) to the list of NATSOG SKPIs.
9. Recommend the NAT TIG and NAT SPG should initiate additional communication with the upper management of CSPs and SSPs to ensure a common understanding of the criticality of their networks and services on enabling safe and efficient NAT operations.
10. Recommend ANSPs raise awareness and engage with operators on the issue of outages and ATM impacts.
11. Recommend guidance on CSP oversight to be included in the PBCS Manual.
12. Recommend a feasibility study is carried out on ability to migrate to other technologies in the NAT e.g. ATN (Ref para 2.7).
13. Recommend that the NAT Scrutiny Group record and analyse outages when definition/ guidance is agreed and the task is clarified in their TORs if required.

2.20 6. Report back to NAT SOG/32

The 3 Project Outcomes assigned by the NAT SOG PT ToRs and associated PT responses are as follows;

1. Statement and evidence of how current CSP and SSP oversight meets Standards and Recommended Practices (SARPs).

The PT agree that this cannot be fully achieved within current SARPS.

2. Recommendations to strengthen current oversight arrangements.

The PT propose recommendations for consideration as listed at 2.19

3. Recommendations to implement alternative oversight mechanisms to meet predicted future demands, as needed.

The PT propose caution as per para 2.13 and that recommended actions at para 2.19, should be considered prior to proposing alternative oversight.

2.21 Based on the foregoing, the following NAT SOG Decision is proposed:

Draft NAT SOG Decision 32/WP/04_1 – Oversight of Communication Service Providers (CSPs) and Satellite Service Providers (SSPs) Project Team (CSP/SSP PT)

That;

- a) the NAT SOG, recognise that the CSP/SSP PT objectives and high-level tasks have been met/completed, and
- b) disband the NAT SOG Oversight of Communication Service Providers (CSP) and Surveillance Service Providers (SSP) Project Team (OCS PT).

The following Attachment(s) is(are) provided with this working paper as separate files.

Attachment A - NAT SOG Oversight of Communication Service Providers (CSP) and Surveillance Service Providers (SSP) Project Team (OCS PT) Term of Reference (ToRs)

Attachment B – Suggested Contract Content

Attachment C – List of PT Attendance and Meetings

Attachment D – Letter to CEO SITA from Eurocontrol

Attachment E – NAT TIG/19 – IP08

Attachment F – OPDLWG6 – WP09

Attachment G – NAT TIG/19 – WP10

Attachment H – NAT TIG/19 – FL02

Attachment I – NAT TIG/18 SoD

Attachment J – NAT TIG/14 WP14

3. Action by the Meeting

3.1 The NAT SOG is invited to:

- a) note the information and recommendations provided;
- a) amend as necessary and endorse the NAT SOG Decision in 2.21 and
- b) provide further direction as deemed necessary.

— END —