



Mr. Paul Smith
Director, Consumers and Markets
UK CAA
CAA House
45-59 Kingsway
London
WC2B 6TE

30 November 2018

IATA Response to NATS (En Route) plc RP3 revised Business Plan (rBP)

Dear Mr. Smith,

Thank you for the opportunity to provide comments from the airline community on the NERL RP3 revised Business Plan (rBP). The airline community and NERL were able to find agreement on a broad range of considerations throughout the consultation process and consider that the RP3 Customer Consultation Working Group Report of the Co-Chairs adequately set-out the areas of agreement. Despite this however, there remain a number of critical aspects of the consultation process and NERL Business Plan which we consider to be of significant concern and on which agreement was not reached.

In terms of the overall approach to consultation, the airline community remains particularly concerned that NERL did not provide meaningful options for key aspects of investment and service evolution. Indeed, neither the iBP nor the consultation materials appeared to respond to the correspondence sent by the UK CAA on 25th May 2018. The provision of options and supporting analysis is a fundamental element for effective consultation. In this respect we consider the meaningfulness of the consultation could be called into question. **(Attachment 1)**

The domestic and oceanic plans operate under different regulatory frameworks under different jurisdictions. With regard to the domestic arrangements, we are mindful that the regulation and targets are not yet set, nor are any implications related to Brexit fully understood. We therefore expect that an appropriate review mechanism will be established in due course to address these eventualities. We also remain keen that the EU regulatory obligations in no way restrict the flexibility we consider essential to address our broad disagreement on the oceanic plan. **(Attachment 2)**

Regarding the change and investment portfolio, the airline community remains broadly supportive of the strategic direction, particularly the need for airspace modernization. However, we are not able to support the costs presented by NERL as being efficient. This is primarily related to the limited options analysis, including project phasing, the level of detail provided, including lack of cost-benefit analysis and the specific and specialized nature of certain investments. **(Attachment 3)**

With respect to matters impacting the whole of NERL, we seek that a stronger governance is established to ensure better transparency and accountability for the ongoing management of the change and investment program. We also consider that NERL needs to do more to address the impact of pensions on its cost base and charges and specifically seek that a new scheme be introduced for new employees. **(Attachment 4)**



In relation to the en route plan, the airline community is open to the need for additional ATCO resources to ensure service quality, however the efficiency of the proposal is not something we are in a position to support. Primarily, we remain concerned at the low level of productivity included in the plan which we would normally expect to be higher considering the magnitude of technology deployment. **(Attachment 5)**

The oceanic plan remains the most important focus of our disagreement. With the exception of the arrangements proposed for the south-east corner airspace, the airline community is strongly opposed to the oceanic plan. Whilst we wholly agree that technology and procedures will need to be enhanced within the North Atlantic (NAT) to maintain and improve safety and to enhance capacity performance in keeping with expected growing demand, the industry is utterly unable to support the charges associated with the approach proposed by NERL. **(Attachment 6)**

Specifically, the USD 40 per flight/hour charge and 12-year contract term proposed by NERL is self-evidently excessive and unreasonable, resulting in a 56% increase in the charge from 2020 to cross the international airspace administered by the United Kingdom. We note that the charging model proposed by NERL's supplier, Aireon, results in flights through other airspace being charged fees as low as USD 1 per flight/hour. We also understand that Aireon's costs are globally consistent at less than USD 1 per flight/hour. It seems clear, therefore, that flights through UK-administered airspace would be cross-subsidizing Aireon's operations outside of UK administered airspace. Particularly objectionable is that the approach to the oceanic plan was largely predetermined by NERL with little regard to the views and concerns of the airline community.

IATA also takes careful note of the primary rationale stated by NERL for the proposed deployment of Space Based ADS-B. Importantly, we cannot support any change that is not fully justified by an appropriate safety case addressing both the design and implementation considerations.

Despite considerable effort to-date, the airline community cannot at this stage validate the NERL fuel saving benefits and continues to work with NERL to better understand how Space Based ADS-B could deliver the fuel and environmental efficiency benefits claimed. The assumption that the alleged cost savings attributable to the new technology would offset the dramatic increase in charges remain unjustified.

IATA fully recognizes the regulatory framework in the UK and considers the process of early consultation for RP3 as an important opportunity to ensure that the views of the airline community are given proper regard in decision making for investments and service improvements. We would be pleased to provide further evidence in support of the views expressed herewith should the CAA wish.

Yours sincerely,

Giancarlo Buono
Safety & Flight Operations
Europe
IATA

CC: Mr. Matt Claydon, Programme Head, European ATM Consumers & Markets, Civil Aviation Authority



Attachment 1: General Consultation Approach

- a. The airline community supports the approach adopted by the UK CAA as set out in CAP 1625, Guidance for NERL in preparing its business plan for Reference Period 3. The intent to ensure NERL took greater ownership of its plan and provided options is clearly desirable. Unfortunately, NERL's initial Business Plan (iBP) provided very limited options and was in many respects inferior to RP2, where airlines were presented both a service-led and a price-led iBP for consultation. We appreciate the correspondence provided by UK CAA to NERL on 25th May 2018 emphasizing the importance of providing early opportunities to address this and improve the iBP.
- b. In practical terms, the planning and scheduling of consultation meetings and the approach to utilize a co-chair model by NERL is an example of best practice. The airline community also well recognizes the resource commitment by NERL and the CAA to develop the materials and conduct the structured consultation process.
- c. Ultimately, conducting consultation that allows meaningful engagement is a prime consideration and in this regard, the airline community has been frustrated that on specific and key topics, the mind-set of NERL appeared to be predetermined, with consultation merely a pro forma process. Indeed, as already noted by the UK CAA correspondence of 25th May 2018, on certain matters there was a clear lack of options. Combined with insufficient detail and justification, difficulties with documentation tracking and a seemingly predetermined outcome as evidenced by the extremely limited magnitude and largely predictable nature of changes between the iBP and rBP, the meaningfulness of the consultation process is highly questionable.



Attachment 2: Regulatory Framework Considerations

- a. The timing of the development and consultation of the NERL Business Plan is such that neither the RP3 regulation nor targets have been finalized. Whilst the benefits of early planning are fully supported, it is the case that subject to Brexit specificities, any UK RP3 Performance Plan will be required to make adequate contribution to EU-wide targets. The airline community therefore expects a full process of review and analysis of the NERL Business Plan in the context of a finalized EU regulation and targets. Additionally, the advice of NERL regarding the impact of draft targets on the Business Plan is not sufficiently detailed and cannot be fully supported by the airline community at this stage.
- b. We note that the RP3 Business Plan for NERL includes both the domestic and oceanic services; an approach which is presumably convenient for NERL's internal planning processes but which gives insufficient recognition to the material differences, from a customer viewpoint, between the two realms in terms of actual service delivery and regulatory jurisdiction. Considering that the oceanic service provided by NERL is undertaken outside of the EU Performance and Charging Scheme jurisdiction and that there is considerable disagreement on this aspect of the Business Plan as it relates to Space Based ADS-B deployment on the NAT, the airline community urges the CAA to separate consideration of these services. Importantly, since regulation of the oceanic service is not driven by the EU regulatory schedule, as it is for the domestic service, separate consideration and decision making by the CAA would allow both NERL and the airline community much needed additional flexibility to review and address areas of disagreement.
- c. In relation to the oceanic service proposal for the NAT, the airline community is seeking a continuation of the existing oceanic regulatory arrangements for introducing new technologies as set out in CAP 1254 para 3.11. To facilitate the CAA's understanding of our views and concerns with the oceanic plan, further particulars are provided at Attachment 6.



Attachment 3: Change and Investment Portfolio

- a. The airline community is supportive of the broad strategic thrust and scope of the RP3 Change Portfolio to replace outdated technology and modernize airspace. However, we are not in a position to support the costs presented by NERL at between £725m and £800m, including contingency. Specifically:
 - i. The airline community does not have sufficient detailed expertise or information to understand whether the technology solutions are the right ones/most efficient ones and have asked for more detail to help inform their view.
 - ii. Enhanced governance in RP3 of projects would be appropriate and in particular help address concerns on airspace change dependencies.
 - iii. Whilst a capex contingency fund held at the portfolio level is in principle more efficient than if contingency was built into each project, airlines are not in a position to support the proposed amount of contingency given its relationship to the not-supported Change Portfolio cost.

- b. Airspace modernisation and tools are critical to meet current demand, not just future demand because the airspace is already constrained. Additionally:
 - i. The schedule for enablers of LAMP Phase 1 & 2 to take place in 2023/24 remains a matter of concern for the airline community. Whilst the consultation did not result in identification of an earlier possible delivery schedule, we see significant risk of a deferral into RP4.
 - ii. Airlines believe that the funding for a wider airspace modernisation Program management Office (PMO) should come from government using models similar to those for rail (HS2).
 - iii. Further to the issue of funding, the airline community believe that a final decision on whether NATS ought to assume that wider co-ordination role on its own, including the PMO function, should be made via the CAA's Draft Airspace Modernisation Strategy consultation and the CAA's final determination on this issue.

- c. The structure of the technology plan to deliver 3 programmes is supported: Delivering DSESAR, Technical Resilience and Business Resilience. However the airline community is not in a position to assess if the capex requirement of £527m is efficient. Given the often very limited supplier base for the very specific and specialised nature of the developments that NERL requires, airlines feel they must rely upon NERL procurement processes to seek efficient pricing and value for money.
 - i. Airlines have repeatedly requested business cases for the sub-programmes to understand their specific benefits. Unfortunately, only limited information has been provided to date.
 - ii. In terms of productivity delivered through technology, the airline community considers that the estimated productivity benefits of DSESAR are unacceptably low at only 2% in RP3 and that benefits in RP4 are dependent on aircraft equipage factors that currently are unlikely to be fully realizable.
 - iii. It appears to be the case that DSESAR and other technology initiatives plan to simply automate existing processes and NERL has not taken a more progressive look at processes that may lead to greater productivity gains.
 - iv. The airline community is not able to adequately determine the effectiveness or efficiency of the Technical Resilience investment. In particular the proposed technical service risk metric reduction of c£53m requires further details in order to be adequately understood.



- v. The airline community is not able to adequately determine the effectiveness or efficiency of the Business Resilience investment. In particular the proposed technical service risk metric reduction of c£49m requires further details in order to be adequately understood.
- vi. In terms of Project Options, the delay of FourSight into RP4 is not agreed. Clearer understanding of the business benefits that are achievable by FourSight alone, in light of the associated ExCDS development, is needed before removing the £60m investment could be supported. In particular, the NERL advice that delaying FourSight will present risks regarding capacity and performance moving into RP4 strongly suggests that it should be moved from core to wider rather than removed completely.



Attachment 4: Whole of NERL Considerations

- a. The airline community notes that the Opex Flexibility Fund (OFF) and Wider Plan Regulatory Mechanism are retained within the rBP. The principle of allowing NERL the option to convert opex into capex during RP3 using an OFF is supported. However, the FAS facilitation fund which it replaces had both a narrower scope and the size of the pot was lower, at £15m rather than the £35m proposed by NERL in RP3 at £7m pa. In line with the way in which the FAS facilitation fund was managed the airline community would want the wider OFF to be subject to forward-looking joint governance as part of a revised SIP governance process. We also believe NERL need to justify further why the £7m pa number is the “right” number.
- b. The airline community supports the wider plan regulatory mechanism however we believe it would be appropriate, in light of the large scope of the RP3 plan and the principle of equitability for there to be a symmetrical mechanism put in place, i.e. NERL, the airline community and CAA can agree new scope to be added to RP3, likewise if a project is stopped or deemed surplus to requirements an adjustment should be made to prices to return the value of that proposed investment to airspace users. Both opex and capex proposals should be subject to airline and CAA consultation. The airline community notes that NERL has proposed this could cover future service pension costs and the CAA should review whether this is appropriate in light of NERL assurances on pensions during the CCWG process.
- c. The various contingency mechanisms proposed by NERL for RP3 give a far greater level of scope and flexibility than in previous regulatory periods. We are concerned that this coupled with the large size of the rBP may allow too great a level of flexibility and so will require robust NERL-airline governance mechanisms via the SIP and CAA oversight. Without these it may be more appropriate to take a more rigid view of both the use of the OFF and wider plan regulatory mechanism that limits its use.
- d. The airline community notes that the rBP includes changes to the NERL cost of capital for RP3, with the proposed increase in the cost of equity being of primary concern (**Appendix 1**). In NERA’s September 2018 updated report, NERA addresses the CAA’s comments on their cost of capital submission in the NERL iBP, which were raised by the CAA in discussions with NERL. We see validity in the comments and positions presented by the CAA, in particular related to:
 - i. UK regulators have proposed reductions in real-RPI vanilla WACC in recent documents, and the CAA has asked NERL to address why the trend in returns for air traffic services is different to other regulated sectors, and why NERL would require a higher cost of equity and required return in RP3 than in RP2.
 - ii. The CAA argues that there is wide range of sources pointing to lower TMR than NERL proposal, and they point to international TMRs as an example.
 - iii. The CAA argues that forward-looking approach is relevant for consideration when estimating TMR.
 - iv. On asset beta comparators, the CAA commented that there is now enough data for ENAV to be considered as a beta comparator and the comparator choices should be carefully assessed.
- e. In relation to the DC pension costs, the airline community would like NERL to create a new, lower cost, DC pension scheme for new employees. Such a plan could be introduced within the early years of RP3 in order to reduce the cost burden of overly generous pension provision on customers.



- f. The airline community is keen that the SIP governance be enhanced for RP3. We consider that the specificities of the enhanced governance should be developed through the course of consultation during 2019.
- g. The evolution of governance to support UK airspace modernization remains the subject of ongoing consultation. Considering that very recent developments require additional scrutiny, we intend making a further submission to the CAA specifically in relation to our views on airspace modernization governance and oversight.



Attachment 5: Core En Route Plan

- a. The initial approach by NERL to the en route traffic forecast was considered unnecessarily conservative and excluded a number of likely airport capacity changes. Whilst this has now been taken account of to some extent, the airline community encourage NERL to continue to engage further with STATFOR to see if consistency can be achieved.
- b. In terms of ATCO resource levels, the airline community is somewhat supportive of a need for greater resource levels but raises the following concern:
 - i. The level of ATCO FTE increase may be required to assure service quality during RP3. We nevertheless remain concerned that despite significant modernization of systems and delivery of sophisticated decision support tools, the fundamental approach to training, licencing and deployment of ATCO staff remains the same or very similar to long held practices. The airlines seek a greater challenge of the NERL approach to ATCO resource management to drive a greater level of efficiency.
- c. In terms of other grade FTE, the airline community sees a need for NERL to be challenged to think more creatively about how they cover this work with less FTE without any reduction in quality/timescales.



Attachment 6: Oceanic Plan

- a. The airline community has carefully considered the oceanic plan and in particular as it relates to the implementation of services using Space Based ADS-B.
- b. The oceanic plan investments, costs and charges related to the south-east corner airspace continue to be supported by the airline community. Importantly, the benefits, costs and charges associated with this service change have been well covered in detailed consultations including other options and are well understood by the airline community.
- c. In contrast, the oceanic plan investments, costs and charges related to the NAT service changes using Space Based ADS-B are not supported by the airline community. The airline community has communicated its concerns and opposition to the proposed charges for these services to both NERL and Nav Canada (**Appendix 2**). Both NERL and Nav Canada provided responses (**Appendix 3 and 4**).
- d. The airline community is fully aware that future demand for international air transportation will require greater efficiency in the management of oceanic air traffic, and that Space-Based ADS-B therefore represents a potentially important improvement. We have noted and carefully considered the information provided by NERL to-date regarding safety, capacity, flight-efficiency, costs and charges. We also note the procurement considerations that arise with third-party transactions such as those between NERL with its proposed Space Based ADS-B provider, Aireon, in which NATS (Services) Limited (NSL) took an equity stake in early 2018.
- e. The airline community hopes that the safety and efficiency improvements attributed to Space-Based ADS-B will in fact be realized, although they have not yet been appropriately demonstrated. The airline community's primary objection at this point, however, is to the associated charges that have been proposed for the new service. Specifically, NERL proposes to implement in 2020 a charge from Aireon of £31.29 per flight in addition to the £55.95 NERL charge (2017 CPI prices). The Aireon charge represents a 56% increase to the charge that would otherwise apply.
- f. The airline community has been advised by NERL that the Aireon charge of £31.29 per flight is directly derived from the charge notified by Aireon during the 21st April 2016 consultation meeting at which the Aireon "Global Pricing Plan" was presented. The charge basis as advised by NERL is USD 40 per flight/hour. The airline community understands that other airspace may be charged fees by Aireon as low as USD 1 per flight/hour, depending upon airspace characteristics, benefits and competition. Considering that Aireon's costs are globally consistent, this pricing plan obviously cross-subsidizes operations outside of UK administered airspace that use the Aireon Space Based ADS-B service. Additionally, the cross-subsidization may apply directly to Aireon's profit margin since analysis indicates the operating cost of Aireon is likely to be less than USD 1 per flight/hour. This approach to pricing would thus appear to run directly counter to the obligations of states under ICAO principles and bilateral air services agreements.
- g. The NERL proposal includes a contract with Aireon for a 12-year period. The airline community has been advised by NERL that this is a requirement by Aireon. The airline community summarizes the proposed situation as that of a monopoly entering into a contract with another monopoly, where contract costs are being passed onto a competitive market without the ability to say no. These proposed arrangements are therefore unacceptable to the airline community.



- h. The airline community does not consider the arrangements proposed by NERL for services using Space Based ADS-B to be efficient. Presently, Aireon has no competitor and the obstacles to new market entrants are daunting considering the need to compete with Aireon in the supply of services to an Aireon shareholder.
- i. Considering that current system safety levels in oceanic services are more robust than ever and that the current level of demand is being successfully accommodated by the current system, there is no time critical need for technology improvements in the NAT. There is also no compelling justification for continuing the linking of the oceanic plan to the RP3 process at a time when the airline community objects so strongly to the current proposal – and most importantly to being subjected to excessive pricing over the NAT. The airline community strongly urges that the oceanic plan be separated from the RP3 process. This would allow additional time and flexibility, not afforded by the constraints of the EC RP3 regulatory process, to explore alternative arrangements that are more in keeping with the pricing principles enshrined in ICAO guidance and bilateral air services agreements, and to develop a better understanding of the performance characteristics of Space-Based ADS-B than exists among subject matter experts within the airline community today. Should this timeframe extend beyond 2020, we would support an annual review of key performance metrics to consider the appropriateness of services using Space Based ADS-B and propose the continuation of the existing CAA determined oceanic regulatory arrangements for introducing new technologies as set out in CAP 1254 para 3.11.

Appendix 1

The Business Plan proposed by NERL includes changes to the Cost of Capital for RP3, with proposed increases in the Cost of Equity being of primary concern. It is understood that NERA Economic Consulting provided supporting analysis for the proposed changes, and that analysis is explored below, focusing on the increase in Cost of Equity.

In summary, the proposed increase in the Cost of Equity has resulted from:

- An increase in the Asset Beta – analysis by NERA proposed to increase the Asset Beta for NERL by changing previously used estimation methodology and adopting a narrow, solely international set of proxy Asset Betas from European airports, using a short observation history. NERA suggests to use ADP as a proxy for the lower bound Asset Beta, and another set of international airports for the upper bound Asset Beta. NERA also suggests that Asset Beta should be increased because NERL’s financial standing may be threatened by swings in traffic volumes given the traffic risk sharing structure. The higher proposed asset beta leads to the calculation of a higher Equity Beta.
- An increase in the Equity Risk Premium - NERA suggests to estimate the Equity Risk Premium by calculating Total Market Return and subtracting the risk-free rate. While the basis for this approach is sound, the adjustment to the Total Market Return varies between the lower and upper bound with respect to RPI adjustments and is estimated from a relatively short investment holding periods, leading to a significantly higher Total Market Return compared with RP2. The higher TMR leads to the calculation of a higher Equity Risk Premium.

In response to the above proposed changes to the Cost of Equity calculation, we would remark the following:

- The estimation of Asset Beta based on airports is not an appropriate approach for an ANSP.
- We would like to understand the underlying assumptions in the NERA/NERL analysis on the interaction of traffic risk sharing mechanisms and operating costs. We believe that any assessment along these lines be undertaken ex post, using actual data on costs and revenues.
- We do not have full confidence in the use of TMR as the approach to calculating Equity Risk Premium because the values are delinked from recent realities, and therefore previous returns are not serving as a guidance for reduced investor’s expectations we see today.

The points below respond to the NERA Economic Consulting papers on the “*Weighted Average Cost of Capital for NATS (En-route) plc at RP3*” and “*NERL’s Asset Beta for RP3*”, parts of which appear to be reflected in the NERL “*RP3 Initial Business Plan Key Assumptions and Performance Metrics*” presentation. In addition, the points below are consistent with our views on the most recent (September 2018) update by NERA to NERL’s WACC for RP3.

The points elaborate on the summary remarks above related to the proposed increase in the Cost of Equity.

- Asset Beta: At the outset of their analysis, NERA surveys the asset betas for regulated utilities and finds an increase since the start of RP2 - the trend may well apply to NERL as well, but the justification process they describe and apply raises some concerns.
 - Fundamentally, we do not agree that airports are an appropriate proxy for the Asset Beta of an ANSP. The variations in aircraft movements are far lower than the variations in passenger volumes – airlines do not have the flexibility to alter capacity easily, so during periods of demand changes it is load factors (passengers) that will shift first rather than capacity (aircraft movements). As a result, with airports having a larger part of their revenue on a per passenger basis the variability their revenue is higher. Furthermore, variability is also higher for airports due to a share of their revenue coming from non-aeronautical activities.
 - If an entity is not listed, relevant comparators must be used to come up with an asset beta for that entity. In RP2, the CAA used Heathrow and Gatwick for asset beta proxies for NERL. LHR and GLW are acceptable proxies simply because their asset beta is lower than traded airports. NERA says that this should not be done for RP3, because these airports are also not listed and have had their asset betas estimated using European airports that are listed – that said, the alternatives presented by NERA raise some concerns and lead to asset betas higher than those of the local airports previously used.
 - NERA recommends that for a lower bound estimate of asset beta, that ADP is used as a proxy – it is not clear why one entity is chosen, and then a different broader sample for the upper bound. Furthermore, using sufficient data points to cover variations in risks over time is important, and given that RP3 could be 5 years, then using the 5Y asset beta makes more sense. NERA suggests to use the 2Y asset beta for ADP as the lower bound for NATS (the 2Y asset beta is higher than the 5Y). This is a very narrow sample and too short – NERA themselves stress the importance of a substantial estimate window.
 - ENAV was listed about a year and a half ago so it's potentially a (more direct) proxy for NATS asset beta. However, NERA strongly advise against this because of the short period since the listing. The trading period is no excuse not to use the information from a listed ANSP; the values are a reflection of today's market realities and expectations. If they are low they are not low because there is no long enough reference period but because it simply reflects the markets.
 - The traffic risk exposure is another key factor for NERA suggesting an upward adjustment for the asset beta for NERL. NERA argues that despite the traffic risk sharing NERL' operating costs are not flexible enough to adapt to swings in demand (in the near/medium term), making them more exposed to profit volatility. Traffic risk sharing eliminates a large portion of risk which contributes to lower fluctuations and therefore is reflected in a company's (lower) beta. That costs cannot be adjusted quickly enough cannot be held as an excuse as similar asset heavy companies face the same constraints and are capable of addressing those (e.g. utilities). When looking at planned and actual financial data for NERL from RP1 and RP2, there is no indication of the lower than expected traffic volumes causing any financial concern in terms of both costs and profits. In fact, looking at the financial data over the period of 2012 to 2016 shows that the variation in planned vs actual determined costs for NERL is significantly greater than the drop in revenues from the lower than expected traffic. Furthermore, the actual profit achieved over that period for NERL was 10.5%, well above the regulated (planned) profit of 7.5%. We would like to understand the underlying assumptions in the NERA/NERL analysis on the interaction of traffic risk sharing mechanisms and operating cost elasticity. Our assessment of what actually happened, with an ex post analysis, does not show that

financial standing is compromised in terms of revenues/costs and profits when there are notable swings in traffic volumes. It is imperative to base the analysis on actual data rather than planned; the cost surpluses are consistently positive irrespective of traffic volatility.

- Total Market Return (TMR) and Equity Risk Premium (ERP):
 - The concept of the TMR applies a logic which looks back to market situations not found in the last decade. As such, previous returns are not serving as a guidance and instead what needs to be applied is the reduced investor's expectations we see today. Although often used as a method to take TMR minus the RFR, this approach might be valid only if the TMR does apply today's market environment. Simply using past returns is not correct and will result in delivering yields far off any real expectations.
 - Furthermore, when selecting the TMR (lower and upper bound) NERA makes some assumptions that may not be entirely sound, at least in the way they are explained. For example, they choose the long-run TMR range from investment holding periods that are different for the upper and lower bound, and are also seemingly 'short' (1Y and 5Y). Moreover, they only make an adjustment for RPI formula changes over time to the lower bound and not the upper bound TMR estimate. It is widely accepted that changes over time in the RPI calculation mean that some adjustments should be taken into account when dealing with long-term TMR averages. The overall result of the higher TMR range is that the implied ERP is also higher.



Martin Rolfe
Chief Executive Officer
UK NATS
4000 Parkway, Whiteley,
Fareham, Hants PO15 7FL

Neil Wilson
Chief Executive Officer
NAV CANADA
P.O. Box 3411 Station 'T'
Ottawa, ON K1P 5L6

1 November 2018

IATA Position – Proposed Space-based ADS-B Deployment

Dear Mr. Rolfe and Mr. Wilson,

As you are aware IATA has been closely engaged with both NATS and NAV CANADA regarding the proposal for service changes across the North Atlantic (NAT) using Space-based ADS-B. I am writing to detail the position of IATA, following extensive consultation with member airlines and other stakeholders, in relation to the proposal for these service changes.

The implementation of services using Space-based ADS-B offers the potential for performance improvements, however, the current terms proposed by NAV CANADA and NATS remain unacceptable to our member airlines.

For airlines, the safety of our service remains the primary consideration. We have therefore carefully analysed information sources from operators, service providers, regulators and ICAO concerning North Atlantic operations. The clear outcome is that we remain confident today's operation is safe, and that the significant ground and air investments already made ensures risk levels are acceptable. In forming this conclusion, we have taken careful note of the most recent ICAO North Atlantic Region's 2017 Annual Safety Report, published June 2018. We also note the advice of the NAT service providers, that the Oceanic operation is safe. Importantly, we are aware that not all NAT service providers and regulators including the U.S. Federal Aviation Administration (FAA) see a safety case to implement service changes using Space-based ADS-B for Oceanic services at this point in time. The airline community is convinced that investment decisions related to safety performance must be based on data and analysis. Airlines continue to fund significant investment to improve safety performance globally and we encourage the maximization of existing capabilities to ensure safety performance remains acceptable. Finally, in assessing the future evolution of safety performance, we have also given



detailed consideration to the anticipated traffic growth expected for the NAT in coming years.

In relation to the proposed terms for NAT Oceanic service changes using Space-based ADS-B, the airline community is opposed to the proposed data charge of USD \$40.00 per flight hour. The airline community is aware that the charging model for Space-based ADS-B offers a tiered structure from USD \$40.00 to USD \$1.00 per flight hour. We therefore consider that this model seeks to use operations in the NAT to cross-subsidize operations in other parts of the world; an approach that is unacceptable for the airline community. Additionally, a 12-year contract term, even supported by the possible use of break clauses, is considered to represent an unacceptable risk for our members.

We remain open to future discussions on the implementation of service changes using Space-based ASDS-B, and therefore seek a mechanism of periodic review and consultation to ensure that proper consideration would be given should the business case and terms be adequately revised. It is expected that the outcome will adhere to the broad ICAO Charging principles of non-discrimination, cost-relatedness, and transparency as a result of an open consultative Collaborative Decision Making (CDM) process.

IATA therefore urges both NAV CANADA and NATS to revise and defer the proposals for Oceanic service changes using Space-based ADS-B. We are resolute that the proposed service changes must not progress without the support of the airline community and consider that the respective regulatory framework and processes will support this position.

Yours sincerely,

Gilberto Lopez-Meyer
Senior Vice President,
Safety & Flight Operations
IATA

Gilberto Lopez Meyer
Senior Vice President Safety & Flight Operations
IATA, 800 Place Victoria, PO Box 113
Montreal, Quebec - Canada

05 November 2018

Dear Mr Lopez Meyer,

Subject: Your letter of 1 November

Thank you for your letter of 1 November. Martin Rolfe asked that I respond on his behalf.

Implementation of Space Based ADS-B on the North Atlantic will revolutionise the operation in a similar way that the introduction of RADAR did in domestic airspace some 70 years ago. It will deliver significant safety benefits including the ability to automatically check selected and cleared flight level as was implemented using Mode S in domestic airspace over 10 years ago and has made a huge difference to the risk of level busts. It will also allow aircraft to plan and operate the routes, levels and speeds that they ideally want to fly, saving an average of between 400kg and 650kg of fuel per flight as the service evolves, which will more than offset the additional data charges. Traffic has already grown by over 20% since 2014 and is expected to grow by a further c.15% by the end of RP3 and we need create additional capacity to efficiently manage this growth. For these reasons we believe that implementing Space Based ADS-B is not only the right thing to do but has a very strong case based both on safety and on operational savings.

We spent a significant amount of time over the past 4 years thoroughly consulting with airlines and IATA on the subject of modernising the Oceanic service using space based ADS-B. This included holding a number of workshops requested by IATA. During the recent RP3 customer consultation it was acknowledged by IATA that the ICAO target level of safety on the North Atlantic cannot be met using current technology and procedures. Space based ADS-B offers the ability to meet the target level of safety and deliver a 76% improvement in vertical safety risk which simply cannot be ignored. That view is shared by ICAO.

The safety improvement from real time surveillance across the busiest (un-surveilled) oceanic airspace anywhere in the world is obvious. The practicality of deploying Space Based ADS-B has been proven and agreed by the global aviation authority and it can be done at much better than the cost neutral basis that ICAO originally required. We simply cannot wait until safety degrades further away from the global target level of safety when an ICAO agreed positive business case solution practically exists.

At the recent RP3 consultation which included a number of workshops, we walked through the benefits case with IATA and airlines in great detail, clearly demonstrating that airlines stand to realise fuel savings benefits which have been independently verified and represent a payback which is far greater than any additional data costs. At that consultation meeting, IATA acknowledged that there are benefits and that the analysis carried out by its members had

limitations in that they assumed all flights today achieved their filed route, level and speed. In reality for Westbound operations (even after PBCS), 40% do not get what they file. This will only get worse as traffic continues to grow and additional benefits from variable Mach and UPRs simply add further to the benefits case. The benefits analysis shows that airlines will continue to get a positive net benefit even with a fuel price of \$300 USD per tonne and looking at today's IATA fuel price monitor the price is nearer to \$750 per tonne. IATA has not shared any alternative benefits analysis.

At the request of our customers, in 2019 we are also delivering a solution based on space based ADS-B in the SE corner of the North Atlantic which allows a number of carriers to avoid unnecessary spend on FANS datalink equipage and maintain access to the routes which would otherwise be lost. It will also increase capacity on these important routes. The rate for this volume of airspace has been secured at a lower level.

We are not proposing to pass on the data charge on a per flight hour basis and have included alternative charging options within our consultation which include the option of a fixed rate based on an initial forecast traffic volume or other alternatives based on customer consultation.

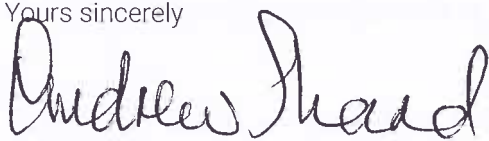
On the subject of the charging model, airlines and IATA (under NDA) were presented with the Euroconsult report findings which clearly show that the rate of return expected by Aireon is reasonable and is similar to that for other ATM investments. We note that IATA has not presented any modelling of your own to back up your assertions. It would simply seem that IATA is trying to apply commercial leverage on price without consideration of the data that has been presented nor offering any analysis of your own.

With regard to your assertion that the contract term results in unacceptable risk, we have already confirmed that the contract will be aligned to reference periods and includes break clauses. There are also specified availability and termination provisions if the overall technical performance measures are not achieved and rights in the case of a Force Majeure Event, together with a rigorous supplier performance regime. Hence, we have taken all possible steps to minimise customers' risk. The 12 year term is somewhat irrelevant in many respects but does provide protection from upward prices.

For the reasons stated above, we remain convinced that this change to the concept of operations on the North Atlantic must not be delayed.

NERL has now submitted its revised Business Plan to the CAA, which includes space-based ADS-B over the Ocean from 1 January 2020. This is now a decision for the CAA.

Yours sincerely



Andrew Shand
NATS General Manager Customer Affairs

Cc: Neil Wilson CEO NAV CANADA

November 6, 2018

Gilberto Lopez Meyer
Senior Vice President Safety & Flight Operations
International Air Transport Association
800, Place Victoria, Suite 6035, PO Box 113
Montreal, Quebec
H4Z 1M1

Dear Mr. Lopez Meyer,

Subject: IATA Position – Proposed Space-based ADS-B Deployment

Thank you for your letter dated November 1, 2018. Mr. Wilson has asked that I respond on his behalf. I would start by saying we respectfully disagree with what you have written. Your letter contains a number of factual errors and assumptions and makes a number of false statements. We regret that you have chosen to circulate this letter to your member airlines without confirming your facts first. Your letter has damaged the relationship that NAV CANADA has with your organization. My comments on your letter on air space modernization are as follows.

We fundamentally disagree with the implicit premise in your letter that today's levels of safety and efficiency are in effect, "good enough". We are pleased that you have confirmed that your member airlines are continuing to make investments to improve their safety performance. The provision of a safe service for those using Canadian controlled airspace remains our highest priority and our ultimate obligation, superseding all others.

We differ from your stated view and the stated view of your airline stakeholders that "today's operation is safe enough, and that significant ground and air investments already made ensures risk levels are acceptable". What is good enough today is not good enough. Our objective is to reduce existing safety risk levels today, tomorrow and into the future. We strive for continuous improvement. We seek ways to improve our safety performance.

As stated in our 2017 Annual Report, our strategies and investments consider longer term actions in order to address any evolving safety risks arising from air space changes. We evolve our methods of operations to improve safety, and where we deem appropriate to our ultimate mandate, we make investments in and introduce modern technologies that improve safety.

You conclude risk levels are acceptable to IATA and its members. We disagree. Your safety conclusion relies on your use of ICAO's North Atlantic Region's 2017 Annual Safety Report. However, we note that current ICAO safety targets, in relation to estimated vertical collision risk, today are not being met. They will only be met with the introduction of space based surveillance technology. Current ground based systems and procedures will not allow this to occur.

We don't believe ICAO's targets were set to be aspirational. We believe that implementing this safety standard, in the busiest Oceanic traffic flow in the world, is in the interest of every member of the travelling public that crosses the North Atlantic. Our calculations show that the additional cost to individual members of the general public, flying on the North Atlantic to reach that safety target, is minimal.

You may recall a presentation to you and the IATA OSC in April 2017 in Seoul Korea by our EVP of Service Delivery. In it, he provided information which is contrary to your view. The presentation included a summary of analysis jointly undertaken by the ICAO NAT Region Mathematician Working Group Analysis and Scrutiny Group of 2015/2016 data. This analysis concluded that if Space Based ADS-B (SB ADS-B) had been in service we would have seen a 76% reduction in vertical collision risk.

Your reference to neighbouring ANSPs is incorrect. I draw your attention to a recent publication in Aviation Daily (October 2, 2018) which refers to the FAA's evaluation of SB ADS-B. I would also draw your attention to the NAT business case presented at the ICAO NATSPG, which included a paper delivered by the US based on a study they requested from MIT that indicated a reduction of 60% in conflicts over the North Atlantic.

Your letter contradicts what had previously been provided to us in writing. We are pleased that IATA and its members have now recognized there may be potential for performance improvements. As recently as the end of September, IATA staff were adamant there were no benefits which could be obtained from SB ADS-B.

By using satellite surveillance, we can safely reduce the minimum distance between aircraft to optimize and then remove the oceanic organized track system. We expect around 90% of traffic across the North Atlantic will be allocated requested flight trajectory, compared with around 60% at present. We understand that UK NATS has stated around 80% of traffic will fly without speed restriction. Currently all aircraft fly at an allocated fixed speed. Combined, we believe these are substantial benefits to promoting efficient aircraft operations, to improving on time gate access and airport operations, and to your stakeholder customer's convenience. We think your member carriers would be wise to make use of these available opportunities as their competitors will do so, even if they do not.

Flight efficiency will reduce your stakeholder's fuel burn and CO₂ emissions. Depending on the aircraft type, fuel savings could be between 406Kg and 649Kg of fuel, equivalent to around 1290Kg to 2060 kg of CO₂ emission per flight. We recognize that some airlines disagree with these calculations to some extent. Without SB ADS-B, we see no measurable opportunity to change our current operations, or to improve constrained flight operations.

You state that the proposed approach is to charge airlines on a cost per hour basis. That is not correct. It is not our current approach. It has not been our approach for some period of time. It is also not consistent with the flat monthly fee we are being charged by Aireon.

Early in the consultation process, we heard the airlines' concerns to a proposed per hour charge. We responded to their input and changed our thinking. We are proposing a charging approach, which will follow our current methodology, for calculating domestic enroute service fees.

Our approach to cost recovery has evolved through what has been an informal but open consultative collaborative decision-making process. We note that our discussions on this subject have been ongoing with IATA and the member carriers for more than two years.

Your letter implies that we are proposing a charging structure which does not follow ICAO principles. That is incorrect. Our approach, using weight and distance, exactly matches what you indicate are the broad ICAO charging principles of non-discrimination, cost relatedness, and transparency.

We have consistently advised IATA that our preferred approach for North Atlantic Oceanic enroute service charge is to use a weight distance approach. This methodology is supported by ICAO. Our approach will be the same as we use for our domestic enroute service fees and one which your member airlines are familiar with and have accepted. Following the charging principles in our governing statute, our preference is to use similar charging methodologies when similar types of services are being provided.

We understand that UK NATS is also proposing an approach, which would see prices calculated by dividing costs by forecast traffic for each year, which is consistent with their current Oceanic charging methodology.

You imply that neither UK NATS or NAV CANADA will follow a regulatory framework to implement new service charges. That is not correct. UK NATS is currently in a formal consultative process with both the carriers and IATA. NAV CANADA must follow a formal regulatory framework in order to make any changes to service fees.

Your comments on cross subsidization are inaccurate and wrong. Revenues from surveillance service sales from other parts of the world actually serve to reduce the cost for the North Atlantic surveillance. Without those world-wide revenues, and based on a service only provided for the North Atlantic, those surveillance costs would be significantly higher. Aireon's business model considers the world-wide revenues required to offset operating expenses. Airlines flying

on the North Atlantic routes actually benefit from revenue earned on the world-wide sale of the surveillance technology.

As already provided to IATA and your member carriers, through the UK NATS regulatory hearing, Euroconsult has presented its analysis of the Aireon surveillance charges. They demonstrate the return being earned by Aireon is reasonable. This would imply that the data service fees being charged to Air Navigation Service Providers are reasonable for the surveillance services being provided.

Your comments on a 12-year term as representing an unacceptable risk for your members are also inaccurate and factually incorrect. The contracts with Aireon require Aireon to provide a service. If no service is provided, no fee is paid. Your members are not exposed to either a technology or deployment risk. They will only pay for the service when it is provided.

Your stakeholders make strategic investments in technologies, aircraft and operations that benefit their operations in both the short and longer term. We make similar investments, however with a longer-term perspective, driven by the regulatory constraints of our environment and the statute that we operate under. We invest in business cases where the financial or business returns may not be immediate, but where over time we will obtain the best strategic value or benefit. Business decisions with Investment horizons exceeding 10 years are normal for our business.

You suggest we should be constrained to using technology that dates from the 1940's - even if it could be utilized over the North Atlantic. We don't think so. We continue to invest in new technologies, in new procedures and the redesign of our air space to improve safety, to reduce the risk of significant delays in air traffic and congestion, and the noise experienced by communities. Our investments in CAATS and GAATS are proof of this longer-term strategic approach to making ongoing investments in air navigation service modernization. Our investment in SB ADS-B is part of that longer-term modernization strategy.

We disagree with your short-term view on pricing. Purchasing a data service contract for a 12-year term is appropriate for a service which will be fundamental to our surveillance of the North Atlantic, and which will become part of our integrated surveillance network. There is a cost in time and money to our changing service providers or service platforms. There are no viable alternative providers at the current time and due to the long lead time to design and deploy space-based systems, it is unlikely there will be for the foreseeable future. Due to the operational dependency on SB ADS-B technology for North Atlantic surveillance, and to reduce operations risk, a long-term contract is preferred.

We look at our investment in purchasing SB ADS-B surveillance no differently than we would a capital investment in other surveillance technologies. We do not buy radar systems with the expectation of only using them for a short time period. We consider these technologies, as we do our investment in SB ADS-B and the purchase of the service, to be multi year investments. We take the same risk on the emergence of new or cheaper technologies when we make investments in ground based surveillance, communications or ILS systems. Your members

You think we should wait until there is a safety concern before we implement a solution. We don't. We continually strive to improve our safety performance and are convinced that the deployment of SB ADS-B, and our use of that system, will deliver transformational safety benefits. We understand that many of your members state that safety improvement is a number one priority of their airline. We are not sure why IATA does not have the same view.

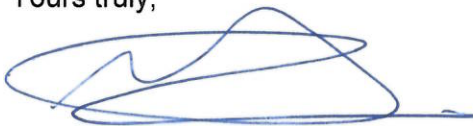
Even though we may have looked at our investment in SB ADS-B as being for the long term, safety and operating benefits will be immediate. There will be no phase in or waiting period for those improvements. They will be available when the system goes into operation.

Additional costs will be offset to carriers through the capacity and fuel cost savings that cannot be delivered by current available alternate ground based technologies. There are social benefits that airlines can point to in their ability to be able to lower CO₂ emissions. A number of your member airlines, who report annually on their progress in reducing green house gas emissions, will be able to point to this technology as being beneficial. Our purchase of SB ADS-B surveillance will provide immediate benefits today and in the future as airspace in Canada and over the North Atlantic becomes increasingly busy, complex and capacity constrained.

We would have thought our relationship with IATA was better and that you would have at least attempted to verify your facts before putting them in writing. Your letter leaves the question of how we might productively discuss the issue of SB ADS-B very much an open question.

We remain fully committed for the reasons noted above and believe it is in the best interest of every member of the travelling public that we implement SB ADS-B surveillance in Canadian controlled airspace.

Yours truly,

A handwritten signature in blue ink, appearing to read 'Alexander (Sandy) Struthers', with a long horizontal line extending to the right.

Alexander (Sandy) Struthers
Executive Vice-President, Finance & Chief Financial Officer
NAV CANADA

cc: Martin Rolfe, Chief Executive Officer, UK NATS
Jeff Miller, Assistant Director, SFO – The Americas, IATA
Federico Munoz, Charges Manager, Airport, Infrastructure, The Americas, IATA