SUMMARY OF DISCUSSIONS AND CONCLUSIONS

OF THE

FIFTEENTH MEETING OF THE NAT SYSTEMS PLANNING GROUP

(Paris, 19 - 28 February 1979)

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1. Introduction

1.1 Convening and Conduct of the Meeting

1.1.1. The Fifteenth Meeting of the NAT/SPG was held in the European Office of ICAO from 19 to 28 February 1979. Further to the usual participation by the Members of the Group, IATA and ILALPA, the Group had also invited Denmark, Iceland, Norway, Spain and Portugal, as well as ACCA, IACA and IAOPA to attend this Meeting because it was felt to be useful if their views were also taken into account on some of the subjects discussed. With the exception of ACCA, IACA and IAOPA, the latter having notified the Group of its non-acceptance of the invitation, all invited States and International Organizations were present.

1.1.2 Shortly before the Meeting its Chairman, Mr. J. G. ten Velden from the Netherlands had informed Members of the Group by letter that, on medical advice, he was unable to participate in the Meeting and that it would therefore be necessary to make arrangements for some other Member of the Group to assume, temporarily, the Chairmanship of the Group. At the opening of the Meeting, the Group, while in closed Session for Members only (see para. 1.1.5 below), agreed to elect a Vice-Chairman and Mr. R. Howley, Member from Ireland, was unanimously elected to this post and, as a consequence, chaired this Meeting of the Group. The Group seized this opportunity to extend their best wishes for a speedy recovery to their absent Chairman.

1.1.3 During the preparations of this Meeting, consultations were once more had on the usefulness of inviting Trinidad and Tobago and Venezuela to participate in this Meeting while it was dealing with the subject of crossing and joining traffic in the NAT Region. (Recommendation 6/15 of the CAR/SAM RAN Meeting 1976 refers). Again, primarily on the advice of the Member of the USA, the Group felt that such participations would, most likely not be justified from a cost effectiveness point of view since work on this subject had already been taken as far as possible under the circumstances in direct consultation between the USA and the two States in question. It was therefore unlikely that participation by these States in the Meeting of the NAT/SPG would advance matters significantly beyond the point now reached. In addition, it was felt that the participation by Spain in this Meeting, which had already been agreed at the Fourteenth Meeting, would ensure adequate representation of relevant user interests in the matter, especially in view of the fact that it was known that in Spain a very detailed study of the situation regarding crossing and joining traffic as it existed at this time in the NAT Region was being prepared.

1.1.4 Some ten days before the start of this Meeting, the Chairman of the Group was advised by the Secretary General of ICAO that the USSR had indicated their interest in participating in this Meeting of the NAT/SPG. After rapid consultation between the Chairman and the other Members of the Group, the Secretary was requested to extend such an invitation on behalf of the NAT/SPG to the USSR. That State was therefore exeptionally participating in this Meeting.

1.1.5 As indicated in para. 1.1.2 above, the Meeting was chaired by Mr. R. Howley, the Member from Ireland, and a list of participants is given on page vii. With the exception of a brief session which was reserved for Members only and during which the question of chairmanship and the position to be taken by Members with regard to co-ordination with other bodies involved in the study of satellite techniques (Conclusion 14/12 refers) was discussed, the Meeting was conducted throughout as an open Meeting.

1.1.6 For Agenda Item 6 (review of the HF situation) the Group created an ad-hoc drafting group and Mr. R. M. Whitford from Ireland acted as its Rapporteur.

1.1.7 Mr. P. Berger served as Secretary of the Meeting, assisted by Messrs. E. Cerasi and C. Eigl. Messrs. W. Arcangeletti F. E. Sperring participated part-time in the Meeting and acted as advisors on communications questions. All five are Members of the European Office of ICAO.

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Item 4: Continuation of work on the resolution of problems created by crossing and joining traffic in the NAT Region.

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Item 8: Review of future trends in navigation and ATS in the NAT Region including the use of aeronautical satellite techniques.

Item 9: Any other business

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b) operations in the NAT Region by aircraft equipped with VHF only;

c) International General Aviation Flights through Iceland in 1976 and 1977; and

d) supplementary flight plan information in case of SAR action.

e) arrangements for the next Meeting.

Item 10: Miscellaneous

LIST OF CONCLUSIONS

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LISTE DES PARTICIPANTS

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Agenda Item 1: Continued work on measures required to permit the application of 60NM lateral separation in the MNPS airspace of the NAT Region at the earliest feasible date.

1.1 Introduction

1.1.1 In its Conclusion 14/1, the Group, at its Fourteenth Meeting, had stated that, in its view, ICAO should make it permissible, as of 5 October 1978, to apply 60NM lateral separation in the MNPS airspace of the NAT Region. However, it had also agreed that provider States concerned should take, not later than 11 August 1978, a firm decision whether the date of 5 October 1978 should also be the date at which they would actually start using such separation in day-to-day operations. This latter safeguard had been taken because monitoring of the navigation performance of aircraft, operating in the MNPS airspace, had shown that there were still a number of gross errors observed which, when applied to the mathematical-statistical model employing the target level of safety, rendered the practical use of this separation marginal.

1.1.2 In a Meeting, held in early August 1978 amongst provider States in London, where latest data on observed gross errors up to the end of July 1978 was available, it was found that, contrary to expectations, the number and size of observed gross errors had not diminished to the point where the practical use of 60NM lateral separation as of 5 October 1978 would be possible without any reservation. The United Kingdom, acting on behalf of provider States present at the Meeting in London, had therefore notified ICAO accordingly and had also stated that, at the London Meeting, the next target date for the use of 60NM lateral separation had tentatively been agreed as being 19 April 1979.

1.1.3 In the light of this information, the Air Navigation Commission of ICAO had subsequently proposed to the Council that the applicability date of the relevant Regional Supplementary Procedures be changed accordingly and the Council of ICAO, on 27 November 1978, had acted accordingly. In taking this decision, the Council had however stated that it expected the ANC to report further on this matter if additional difficulties were expected with regard to the new date of 19 April 1979 for the application of 60NM lateral separation.

1.1.4 As to the proceedings at the Meeting amongst provider States in August 1978 in London, it was noted that considerable discussion had arisen at that Meeting on the relative importance which should be attributed to different groups of gross errors when applying them to the mathematical-statistical model. In fact, a detailed screening of the reported gross errors by that Meeting had revealed that generally these could be classified into the following four categories:

a) flights which either claimed that they were unaware of the MNPS requirements or which had simply ignored them;

b) flights which, due to the recent re-equipment (mainly OMEGA) had either experienced technical defects or had committed operating errors which were probably due to the comparative unfamiliarity of the flight crew with the use of the equipment;

c) flights where gross errors were caused by insufficient application of prescribed operating and verification procedures, especially with respect to the insertion of way-points into the electronic data processing equipment on board aircraft; and

d) flights which were subject to what was at the time of the Meeting referred to as "ATC system errors" (subsequently re-named "ATC system loop errors") which were in fact misunderstandings which had occurred in the communication loop between the controller and the pilot concerning the route to be followed.

1.1.5 There was therefore agreement amongst the Members of the Group that it would be essential to resolve the above mentioned questions at this Meeting of the NAT/SPG so that a common position could be taken in any further discussion of this complex subject. As a consequence, the Group agreed that, at this Meeting, the Agenda Item would have to be dealt with under the following aspects and in the order listed:

a) review of the mathematical-statistical model and its possible future refinement;

b) review of gross errors in navigation observed during 1978; and

c) proposed action regarding the application of 60NM lateral separation in the NAT Region.

1.2 Review of the mathematical-statistical model

1.2.1 Under this subject, IATA had submitted a paper which, while not aimed at the floccipaucinihilipilification of the model, nevertheless pointed out a number of aspects where IATA felt that inputs made into the model were unduly conservative, thus possibly contributing to the fact that a comparatively small number of observed gross errors tended to prevent the very vast majority of operators from obtaining the operational benefit which would result from the application of 60NM lateral separation in the MNPS airspace of the NAT Region. After making a reminder that some errors might be independent of the particular lateral separation in use, IATA raised the following points:

a) the fact that from looking only at specific, limited areas of the NAT Region i.e. the end points of the routes and observing errors therein, conclusions drawn from the model were based on the assumption that errors of similar magnitude would occur anywhere along the length of the route;

b) the use of unnecessarily large dimensions to define, in the model, the volume of airspace occupied by an aircraft;

c) the assumption in the model, of small vertical displacements of aircraft from their assigned level; and

d) the fact that, in the model, no allowance was made for avoidance action by pilots based on the timely sighting of other aircraft in their proximity.

1.2.2 The Group considered these points and with regard to a) it was stated that, though for some of the types of navigation equipment used the relatively small errors due to normal navigation might somewhat increase with the flight time, the blunder errors which were mainly responsible for the collision risk could occur anywhere during the oceanic crossing. Only at the entry to the oceanic area were they less likely to occur because many aircraft would still be under radar monitoring and had other means such as VOR to check their navigation.

1.2.3 With regard to point b) it was pointed out that the volume of airspace occupied by an aircraft in the model had been agreed at previous meetings as a compromise between the metal-to-metal contact and the effect of vortices. Theoretical investigations on this latter effect indicated that the agreed compromise was not over-cautious.

1.2.4 With regard to point c) it was pointed out that, in lieu of practical data, an assumed value for vertical overlap had been agreed to during NAT/SPG 4 and that, if height keeping has truly improved then the lateral collision risk would have increased. With regard to vertical velocity it was stated that this had a negligible effect on the calculation of the collision risk. In fact, if it were neglected completely, the collision risk would be reduced by about 4.4 per cent.

1.2.5 With regard to point d) it was suggested that timely sighting of opposite-direction aircraft was very unlikely. If it were assumed that in 50% of the cases in same-direction situations a successful evasive action could be made, then the collision risk would be reduced by about 7%. As the analysis of this effect was very difficult and the gain would be small, the meeting agreed that for the time being this effect would not be investigated in more detail.

1.2.6 A further paper, presented by the Member of the Netherlands, dealt with the question of a mathematical method of "weighting" of the various gross errors observed and this not only with respect to their attribution to anyone of the four groups of errors mentioned in para. 1.1.4 above, but also with respect to the size of the observed deviation, i.e. those of 30NM deviation from track or more and those falling within the band from 50 to 70NM off track. The extremely thorough study, made in the paper, suggested that, if a more complex process of attribution of specific importance to observed gross errors based on the reported causes would be introduced into the mathematical-statistical model, this could result in a considerable complication of the assessment process. In addition such a revised assessment process would require that the weighting factors of all errors could be ascertained with comparatively high reliability. In summary, the paper concluded that:

a) a careful analysis of the collision risk, due to the important types of errors analyzed has shown that weighting factors of less than 1 for errors between 50 and 70NM would be associated with larger weighting factors for the errors of 30NM or more, these in several cases being larger than 1;

b) in view of the fact that the change in the number of gross errors which could be tolerated is small and that there may be considerable uncertainty in the assessment of the type of error which has occurred, it is not advisable that a weighting process, based on the categorization of the error according to specific groups, is made unless the cause and physical description of all the errors can be ascertained reliably.

However, the Group was unable to accept these conclusions without reservation and therefore decided that further work was required before common agreement could be reached on this subject.

1.2.7 It was however noted that the information which became available during the analysis mentioned above seemed to indicate that a re-appraisal of the effect of large errors and of the requirement concerning errors of 30NM and more appears necessary. In addition, it appeared that the application of weighted data to the statistical acceptance methodologies merited further investigation.

CONCLUSION 15/1 - FURTHER WORK ON METHODOLOGY

That further work be done on:

a) the re-appraisal of the effects of large errors and of the requirements concerning errors of 30NM or more;

b) the application of weighted data to the statistical acceptance methodologies; and

c) the application of operational evaluation concerning gross errors for inclusion as input into the mathematical modelling.

1.2.8 From the above, it became apparent that follow-up action on observed gross errors, and more especially their causes and when or where they occurred was gaining in significance. It was for this reason that the Group made a review of the existing guidance material on the conduct and follow-up of monitoring by provider States. In doing so it accepted a proposal by the United Kingdom that, to facilitate the review of observed gross errors, a special form be developed and appended to the notification letter to operators and States of Registry which is to be sent in all those cases where a flight has been observed to be 25NM or more off its assigned track. The revised guidance material on this subject is included in Appendix A to the Report on this Item and supersedes in toto that contained in the "Guidance and Information Material concerning Air Navigation in the NAT Region", (First Edition, pages 3-21 and 3-22) as well as the material contained in Attachment 2 of Appendix D to the Report on Item 1 of the Summary of NAT/SPG 14, (pages 1-D-5 and 1-D-6 refer).

1.2.9 At the Meeting in London in August 1978 certain difficulties were experienced to explain the significantly different rates at which errors occurred on the Western and Eastern boundaries of the Oceanic area. There appeared to exist the possibility for flights, having deviated from their assigned track to take corrective action to regain their track before they could be observed on radar, thus reducing their errors by proportions which would eliminate them from inclusion in that category considered as having committed a gross error (25NM or more off track). A paper presented by the United Kingdom seemed to show that such corrective action would be detected by monitoring agencies. After discussion, the Group concluded that it may be possible for gross errors on tracks aligned on points situated North of 52N at 50W or on points South of 48N at 50W to be undetected or to be reduced in magnitude by the time they were detected. A possible reason for this might be that the operationally useable coverage of some VORs located in Canada extended considerably beyond that of the radar stations observing flights exiting from the NAT Region.

1.2.10 Therefore in order to establish a ratio between the total of air traffic observed by radar and those flights of that traffic having deviated from their assigned track by 25NM or more, it was agreed that radar observations by Canada should only be counted for flights cleared to cross longitude 50W at points located within 48N and 52N inclusive. This decision was taken on the assumption that the ratio of deviating aircraft to the total of traffic operating outside this area would not be significantly different. In addition, it was agreed that deviations from track by 25NM or more observed by radar stations in Canada outside the above area should, in any case, be subject to the same follow-up action as that applied throughout the NAT Region.

CONCLUSION 15/2 - USE OF RADAR OBSERVATIONS BY CANADA FOR ASSESSMENT PURPOSES

That only flights which have been cleared to cross 50W between 58N and 52N inclusive should be considered for assessment purposes in conjunction with the mathematical-statistical model for the assessment of the risk of collision in the NAT Region.

1.2.11 While on this subject, the Group also noted that the rate of observed deviations on exit from the NAT Region was lower on the east coast of North America when compared with those observed on the European side of the North Atlantic. A number of theories, explaining this phenomenon were advanced including the fact that the vast majority of westbound flights were conducted during daytime while the bulk of the eastbound flights operated at night causing possible different fatigue effects on the flight crews and also the fact that INS equipment, when used on eastbound flights was slightly less accurate than when used in westbound direction. However, none of the above theories could be substantiated and the Group therefore contented itself with noting the fact without further explanation.

1.3 Review of gross errors in navigation observed during 1978

1.3.1 The UK Member presented the Group with a paper which showed that in 1978 a total of 39 gross errors (i.e. observed deviations from track of 30NM or more) had been observed and 15 of these errors had been deviations which were in the band from 50 to 70NM off track, while the MNPS allowance for the total amount of traffic observed, i.e. 57580 flights, were 31 and 8 errors respectively. Therefore, while the total of gross errors committed during 1978 in the most critical band between 50NM and 70NM off track represented only 0.02% of the total traffic observed, it was nevertheless evident that the MNPS criterion for the application of 60NM lateral separation in the NAT Region had not been achieved though the data for the last three months showed a considerable improvement (see Appendix B). It was, however, thought that such an improvement should be shown over a longer period before 60NM separation could be applied with reasonable confidence and it was felt to be advisable to arrange for a further observation period before it could be decided by the providers to request their Air Traffic Control Services engaged in oceanic air traffic control to use 60NM lateral separation in MNPS airspace.

1.3.2 At the same time it was also noted that provider States conducting monitoring activities in the NAT Region were vigorously pursuing their efforts to reduce, to the minimum, the exceedingly small minority of offenders which continued to prevent now for some time already the vast majority of operators from obtaining the benefits likely to be achieved with the application of 60NM lateral separation in the MNPS airspace of the NAT Region. It was expected that States of Registry concerned would also continue to contribute to these efforts by appropriate corrective action.

1.3.3 In this context the Group also noted a paper presented by the United Kingdom which showed the general behaviour of observed NAT traffic with regard to lateral navigation accuracy. From this paper it became apparent that this had considerably improved over the years as is shown in the following table:

Year	% Within 5 NM	% Within 10NM
1972	53.3	85.6
1977	86.1	94.4
1978	87.5	98.3

The sample of 5669 Eastbound flights observed by radar stations in Ireland and the United Kingdom had Standard Deviation of 3.888NM and that 95% of that traffic was operating within 7.81NM of the assigned track, i.e. well within the MNPS requirement.

1.3.4 The Group felt that since the above improvements were mainly due to the efforts of the vast majority of operators and the contributions made to these efforts by organizations such as IATA and IFALPA, it would only be right to seize this opportunity to express, to all concerned, its appreciation for the efforts made to achieve the common objective of rendering air navigation in the NAT Region safer.

1.4 Proposed action regarding the application of 60NM lateral separation in the NAT Region

1.4.1 In view of the situation described in para. 1.3 the Group agreed that a further observation period should be established, extending from 2 November 1978 to 31 August 1979 and that data on observed deviations from track should once more be collected and

assessed so that it could be presented to the 16th Meeting of the NAT/SPG which is tentatively planned to be held from 1 to 10 October 1979. In addition, and in view of certain results achieved in the recent past with observed offenders, the Group agreed that the new target date for the practical application of 60NM lateral separation in the MNPS airspace of the NAT Region should be established as 24 January 1980 at 1000 GMT with a publication date of the corresponding AIRAC NOTAM Class II of 29 November 1979. These provisions were made in order to:

a) allow sufficient time for a further assessment of the situation by NAT/SPG/16;

b) allow time for informing ICAO of the view of the Group should these, contrary to present expectations, require yet another postponement of the date of applicability of the relevant Regional SUPPs;

c) permit provider States to prepare and issue the relevant AIRAC NOTAM Class II and operators to incorporate necessary documentation into airline operating manuals and familiarize flight crews concerned with the new procedures.

CONCLUSION 15/3 - REVISED APPLICATION DATE FOR THE USE OF 60NM LATERAL SEPARATION IN MNPS AIRSPACE IN THE NAT REGION

That the new date for the application of 60NM lateral separation in the MNPS airspace of the NAT Region should be 24 January 1980 at 1000 GMT and that this should be announced by provider States concerned by an AIRAC NOTAM Class II on 29 November 1979, unless otherwise decided by the 16th Meeting of the NAT/SPG in the light of data on observed gross errors collected during the period from 2 November 1978 to 31 August 1979.

1.4.2 In this context it was also noted that, with the introduction of 60NM lateral separation in the MNPS airspace, a transition problem will arise with respect to aircraft which, in the course of their flight, are leaving the MNPS airspace while still in oceanic airspace because, while they were provided with 60NM lateral separation in MNPS airspace, they would, outside that airspace, require 90NM or 120NM lateral separation. This problem will occur mainly on the Northern, Western and Southern boundaries of the MNPS airspace and States concerned were therefore requested to immediately initiate studies on this subject so that proposals for appropriate transition procedures can be considered at NAT/SPG 16.

1.4.3 While on this subject, the Group also noted that a proposal for amendment of the Regional SUPPS, applicable in the NAT Region and aimed at the need to insert the letter X in Item 10 of the flight plan to indicate that a flight was capable of complying with the MNPS, (Conclusion 14/2 refers) had met with certain difficulties in its formal processing. In fact, during the consultation of States, the United Kingdom proposed a different text to that agreed at the 14th Meeting of the NAT/SPG which would have meant that, by inserting the letter X in Item 10 of the flight plan, the pilot confirmed "that the flight has been certified as complying with the MNPS". On the other hand, the USA, in commenting on the above proposal, stated that, while they agreed with this procedure during a trial period in order to confirm or refute its need, it was, at this time, not prepared to agree to include this provision in the Regional SUPPS.

1.4.4 In the ensuing discussions on this subject, the Group noted that its Member of the USA had presented a working paper containing a proposal for the amendment of Annex 6 Parts 1 and 11, which, if accepted, should render the insertion of the letter X in the flight plan superfluous. As there was general agreement that the proposal of the USA constituted the preferable solution to the problem in question, the Group concentrated on this, on the understanding that the existing temporary provisions regarding the insertion of the letter X in Item 10 of the flight plan as published by provider States should be maintained until such time as it is no longer required. It was also understood that that part of the formal proposal, dealing with this specific subject, submitted by Canada to ICAO as a consequence of Conclusion 14/2, should be withdrawn and that Canada should inform the European Office of ICAO of this fact at the earliest possible time. This was agreed by the Member of Canada.

1.4.5 As to the proposal regarding Annex 6 Parts I and II, the Group agreed that:

a) para. 7.2 of Chapter 7 of Annex 6, Parts I and II should be amended by the insertion of a new paragraph after the existing para. 7.2.1 with the following wording:

"7.2.X For flights in defined portions of the airspace where, based on Regional Air Navigation Agreement, minimum navigation performance specifications (MNPS) are prescribed, aircraft shall be provided with navigation equipment which:

a) continuously provides indications to the flight crew of adherence to or departure from track to the required degree of accuracy at any point along that track; and

b) has been authorized by the State of Registry for the MNPS operations concerned."

b) the present paragraph 7.2.2 of Chapter 7 of Annex 6 Parts I and II be amended so that its provisions not only apply to the existing paragraph 7.2.1 but also to the new paragraph in a) above.

1.4.6 The Group noted that its Member of the USA was prepared to request his Administration to formally submit the above proposal for amendment to ICAO and it also expressed it unanimous hope that, in view of the importance attached to this proposal by the Group, it would receive accelerated action by ICAO, independent of any other work now undertaken within that Organization in order to update Annex 6 in other respects.

1.4.7 The representative of IFALPA pointed out that the changes made under this item, and possibly others yet to be made in the course of this Meeting, tended to render the First Edition of the "Guidance and Information Material on Air Navigation in the NAT Region" still more out of date than was already the case because of the lapse of time since its issue. He therefore wanted to state that at least his Organization felt that this document, when kept in an up-to-date state was of considerable value and he therefore requested that arrangements be made to prepare a Second Edition at the earliest possible time. The Secretary informed the Group that this was already on the work programme of the European Office of ICAO and that it was hoped that it could be produced within the next three months.

CONCLUSION 15/4 - PROPOSAL FOR AMENDMENT OF ANNEX 6 PARTS I AND II

That:

a) the Member of the USA take necessary action to ensure that the proposal for amendment of Annex 6 Parts I and II described in para. 1.4.6 be formally submitted to ICAO at the earliest possible time; and

b) in view of its importance for the further development regarding the application of the concept of MNPS in specified portions of the airspace in the NAT Region, ICAO take action to ensure speediest possible processing of such a proposal to obtain its early inclusion in Annex 6.

Appendix A
to Item 1

REVISED PROVISIONS REGARDING FOLLOW-UP ACTION ON OBSERVED AND REPORTED DEVIATIONS

Note: The following material was developed at the 15th Meeting of the NAT/SPG. It supersedes in toto the material contained in:

a) pages 3-21 to 3-22 of the "Guidance and Information Material" concerning Air Navigation in the NAT Region; and

b) pages 1-D-5 and 1-D-6 of Summary NAT/SPG/14.

1. Notification by the observing authority

1.1 Taking into account that slightly different administrative arrangements within the States engaged in monitoring will exist, follow-up action on observed deviations from track by 25NM or more should, in general, be as follows:

a) the observing ATC unit should, if at all possible, inform the pilot of the aircraft concerned of the observed error and also that an error report must be processed;

b) commercial operators should be notified, either directly by the observing ATC unit or by any other agency designated by the State concerned, by the speediest means available (telephone, AFTN, telex as appropriate) and with the least possible delay of the observed deviation (for the format of such a message Attachment 1 refers). This should be followed as soon as possible by a written confirmation (Attachment 2 refers).

c) if so indicated to the monitoring authority, the State of Registry of the operator concerned should also be notified of the observed deviation in the same manner.

Note: Canada, Denmark, France, Iceland, Ireland, Norway, Portugal, Sweden, the UK and the USA have already stated this requirement. (Deviations involving SAS flights need only be addressed to Sweden).

d) deviations by non-commercial operators should be notified to the State of Registry of the operator concerned in accordance with the provisions in b) above and also to the operator if this is possible.

2. Further follow-up action by the operator and/or the State of Registry

2.1 Subsequent follow-up action on observed deviations of 25NM or more, notified in accordance with the above provisions, should initially be conducted between the operator and a designated agency of the State having responsibility for the ATC unit on the understanding that:

a) monitoring States may, if they so wish, request the assistance of other States engaged in monitoring activities; and

b) the State of Registry of the operator concerned should conduct further investigation if deemed necessary.

3. Follow-up action by monitoring States

3.1 Monitoring States should, prior to each NAT/SPG Meeting, provide the Group with monitoring data, together with any other relevant information in order to permit it to make a continuous assessment whether observed deviations remain within the tolerances on which the MNPS are based. Nevertheless, should data indicate that tolerance limits are approached or exceeded, the Group will propose appropriate corrective measures.

Attachment 1
to Appendix A
to Item 1

MESSAGE FORMAT FOR THE INITIAL NOTIFICATION OF OPERATORS AND/OR STATES OF REGISTRY OF AN OBSERVED DEVIATION

1.1 The following format should be used for messages serving as an initial notification of an observed deviation of 25NM or more from track.

1.2 This format should be used regardless of the means of communication chosen for the transmission of the initial notificiation

GROSS NAVIGATION ERROR MESSAGE

REPORTING AGENCY

DATE

TIME

AIRCRAFT IDENTIFICATION (and operator if not evident from identification)

LOCATION AND EXTENT OF OBSERVED DEVIATION

FULL REPORT FOLLOWS

SIGNATURE

Attachment 2
to Appendix A
to Item 1

FORMAT OF WRITTEN CONFIRMATION TO OPERATORS AND/OR STATES OF REGISTRY OF AN OBSERVED DEVIATION

1.1 The following is the proposed format of the written confirmation which should be sent to operators and/or States of Registry, following their initial notification in accordance with Attachment 1.

1.2 This written confirmation should be sent as soon as possible after the observed deviation to permit investigation while records are still available. It should consist of the letter shown hereunder and two copies of the attached Error Report Form, one of which is intended for retention by the operator and/or State of Registry.

1.3 If no initial notification could be sent the written report should nevertheless be made in the same way as shown hereafter.

GROSS NAVIGATION ERROR

Dear Sir,

States responsible for the provision of air traffic services in the North Atlantic Region have been instructed by ICAO to monitor and notify operators and States concerned of aircraft deviations of 25NM or more from assigned track so that they may take prompt and effective action to prevent a repetition.

A gross navigational error has been reported in respect of the following flight :

Aircraft Identification: Type:

Departure: Destination:

Date: Cleared Track:

Cleared flight level:

The notification should then contain information on the following:

- Radar observed position and time
- Displacement from cleared track
- Action taken by ATC (if any)

Comments by crew on being notified of error:

Other comments:

Detailed explanation should be provided on the attached Error Investigation Form and an investigation of this gross navigational error is requested. In your reply, you are also requested to indicate the corrective action taken.

Yours faithfully,

ERROR INVESTIGATION FORM

REPORTING AGENCY	REPLY ADDRESS

PLEASE COMPLETE PART 2 (AND PART 3 IF APPROPRIATE) OF THIS FORM AND RETURN ONE COPY TO THE ABOVE REPLY ADDRESS WITH THE LEAST POSSIBLE DELAY. THANK YOU FOR YOUR CO-OPERATION.

PART 1

OPERATORS NAME:

AIRCRAFT IDENTIFICATION:

DATE AND TIME OF OBSERVED DEVIATION:

POSITION AND EXTENT OF OBSERVED DEVIATION:

OBSERVED BY: (STATE RADAR UNIT)

PART 2

2.1 Type and Number of Navigation Equipment on Board Aircraft (Mark as Appropriate)

INS		OMEGA	DOPPLER	OTHER (Specify)
SINGLE		SINGLE	SINGLE	
DUAL	TRIPLE	DUAL	DUAL	

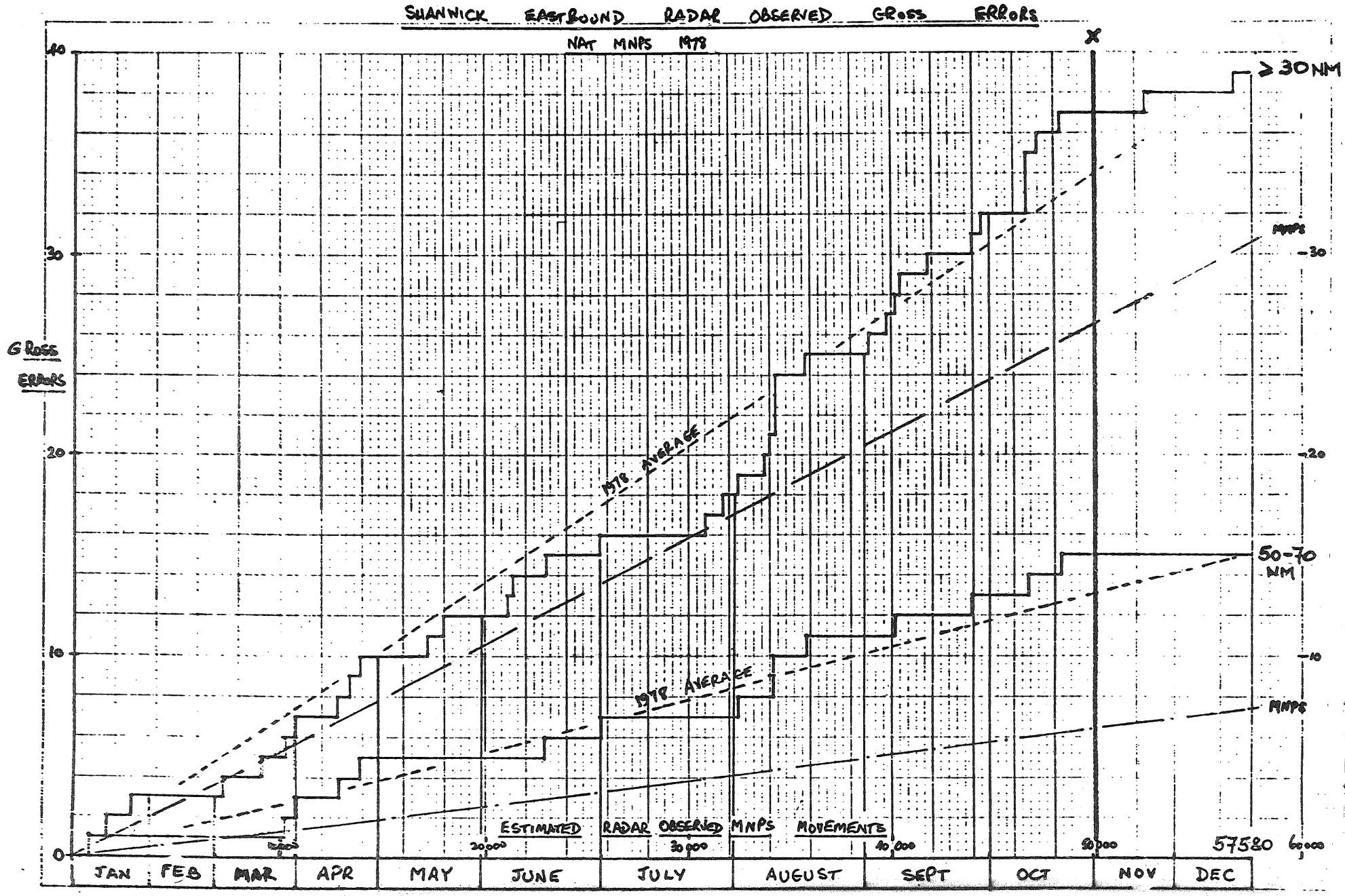
2.2 Give detailed description of incident including, estimated maximum distance off tra ck, estimated longitude at that time and if relevant, duration of equipment failure. (Continue overleaf if required)

PART 3 (Only to be completed in case of partial or full navigation equipment failure)

indicate number of equipment units which failed

INS	OMEGA	DOPPLER	OTHER

Circle estimated longitude (to nearest 5 degrees) at time of failure:
60W 55W 50W 45W 40W 35W 30W 25W 20W 15W 10W


SHANWICK EASTBOUND RADAR OBSERVED GROSS ERRORS
NAT MNPS 1978
GROSS ERRORS
40
30
20
10
0
1978 AVERAGE
1978 AVERAGE
ESTIMATED RADAR OBSERVED MNPS MOVEMENTS
10,000
20,000
30,000
40,000
50,000
57580
60,000
JAN
FEB
MAR
APR
MAY
JUNE
JULY
AUGUST
SEPT
OCT
NOV
DEC
X
≥ 30 NM
MNPS
30
20
50-70 NM
10
MNPS

Agenda Item 2: Review of the situation regarding the use of longitudinal separation in the NAT Region on the basis of the results of the data collection in summer 1978

2.1 Introduction

2.1.1 Under this Item the Group dealt with three specific subjects as follows:

a) further action with regard to the proposal for amendment of the Regional SUPPS on adherence by pilots to the ATC approved Mach Number;

b) a progress report by the United Kingdom on the data collection on longitudinal separation between aircraft on the OTS in the NAT Region; and

c) information on mathematical-statistical work done in this and related fields by the USA.

2.2 Amendment of the Regional SUPPS

2.2.1 At its 13th Meeting, the Group had agreed that the provisions in the Regional SUPPS regarding adherence to the ATC approved Mach Number by pilots should be amended because it had been found that the existing provisions had given rise to undesirable interpretations by at least one operator (Conclusion 13/10 refers). However, when the formal proposal for amendment by the United Kingdom had been circulated, it had been found that the proposed new text still gave rise to difficulties and adverse comments had in fact been received from IFALPA and from the USA.

2.2.2 When reviewing the comments made by IFALPA, the Group admitted that the revised text, which had been proposed as a consequence of discussions at the 13th Meeting, lent itself to misinterpretation by those who had not been present during the discussions of the 13th Meeting. As to the comments made by the USA, it was found that these had also been provoked by the fact that the proposed amendment, while eliminating one ambiguity, tended to introduce others, thus only shifting the problem rather than eliminating it.

2.2.3 After detailed discussion it became apparent that, while everybody was able to agree that the present specification stating that "turbojet aircraft operating within controlled airspace shall adhere to the Mach Number approved by Air Traffic Control within a tolerance of

± 0.01..." would be improved by the deletion of the words "within a tolerance of ± 0.01", it was felt that the Note which, in the proposal, was to be added at the end of this paragraph was causing major difficulties. At the 13th Meeting, this Note had been added in order to explain that ATC, as was usual in other respects, was also making certain allowances with respect to adherence to the Mach Number in order to compensate for the fact that the pilot, for obvious reasons, could not, at all times, be expected to maintain the aircraft at constant speed. In this case, the allowance was, in fact, a built-in element of the applied separation minimum itself. However, since the ATC procedures contained no such explanatory notes regarding vertical and lateral station keeping of aircraft, even though there the same conditions prevailed, it was felt that, in the light of comments received on the proposal, this Note was in fact doing more harm than good.

2.2.4 It was therefore agreed that the proposal should be limited to the deletion of the words referring to the tolerance in the procedure itself but that the accompanying note should be withdrawn and that this new proposal should, once more, be submitted to the European Office of ICAO by the United Kingdom. In proposing this action, the Group had also taken account of the fact that, at present, work on the question of Mach meters was being undertaken within ICAO. It was, however, felt that, since this dealt with the Mach meter as an instrument, such work should not delay, or otherwise influence, the processing of the new proposal once this had been received by ICAO.

CONCLUSION 15/5 - AMENDMENT TO THE REGIONAL SUPPS REGARDING ADHERENCE TO THE APPROVED MACH NUMBER BY PILOTS

That:

a) the provisions in paragraph 2.2.2 in Part 1 of DOC 7030 regarding adherence to the ATC approved Mach Number be amended so that the words "within a tolerance of ± 0.01" be deleted; and

b) the Member of the UK take necessary action with his Administration to have this amendment formally proposed to ICAO for application in the CAR, NAT, PAC, SAM and SEA Regions.

2.3 Data collection on longitudinal separation

2.3.1 At the LIM NAT RAN Meeting in September 1976, IATA had proposed that, under specified conditions, the present longitudinal separation of 15 minutes be reduced to 10 minutes. In its Recommendation 1.3/4 the Meeting had recommended that, in order to prove the feasibility of this proposal, a data collection be made by Canada, Ireland and the United Kingdom and that the results of this survey be made available to the NAT/SPG for review and development of appropriate proposals for action.

2.3.2 At its 14th Meeting, the NAT/SPG had approved the proposals for such a data collection made at that time by the UK and these are reflected in the Report on Item 5 of the Summary of NAT/SPG/14.

2.3.3 At this Meeting, the UK presented to the Group a paper containing the interim report on the collection and analysis of data on longitudinal separation between aircraft operating in the OTS of the NAT Region. It described in detail:

a) the manner in which data had been collected;

b) the methods used to ensure that radar observations regarding the position of aircraft were verified;

c) the methods used to ensure that no errors were introduced by inaccurate time-keeping on the ground; and

d) the degree of intervention by ATC in cases where longitudinal separation had eroded.

2.3.4 The following interim conclusions were drawn in this paper, on the basis of an analysis of pairs of aircraft operating at the same approved Mach number:

a) the use of 15 minutes longitudinal separation appears to give a risk level well within the target level of safety;

b) the degree of ATC intervention in case of erosion of longitudinal separation between aircraft and the reasons for such erosions should be examined in greater detail since it could be expected that a reduction in longitudinal separation would lead to an increase in the number of interventions required;

c) narrow-bodied aircraft appeared to be able to adhere less precisely to their ATC approved Mach Number, probably because of less sophisticated equipment; and

d) a reduction in longitudinal separation would require greater accuracy in position reports because, while at present an error of 3 minutes represented 20% of the total separation applied, the same error would represent 33% if 10 minutes longitudinal separation were applied.

2.3.5 Before entering into a detailed review of the paper and discussing further action by it on this subject, the Group wanted to express its appreciation for the work done by all concerned and especially those in the UK Administration who had undertaken the laborious task of the initial analysis of the voluminous data collected.

2.3.6 In the detailed discussion of the paper it became apparent that there were two main aspects which had to be kept in mind. These were:

a) the effect which a reduction of longitudinal separation could have on other forms of separation and thus on the overall question of occupancy of the airspace including the nature of the traffic flow, in the mathematical-statistical model in which the collision risk is compared with the target level of safety in the NAT Region; and

b) the cost effectiveness consequences which might result from the increased workload imposed on ATC by more frequent interventions with the flow of air traffic (which may be required if 10 minutes longitudinal separation were applied) when compared with the benefits which might be obtained by operators with this type of separation.

2.3.7 With regard to a) the representative of the USSR stated that his Administration was greatly interested in this aspect of the work because he felt that this was not only applicable to the situation in the NAT Region, but would also have to be taken into account in other environments.

2.3.8 As regards b) above, the UK Member pointed out that this aspect would receive particularly careful consideration in future work done by his Administration on this subject.

2.3.9 As to the question of further work in this field, the UK Member pointed out that the final analysis of the data on longitudinal separation collected during the summer of 1978 was expected to be completed by mid-1979 and that it would therefore be possible to present the final results of their work to the next Meeting of the NAT/SPG. He also stated that in presenting these results, the UK would make alternative proposals for proposed action in this field taking especially into account cost effectiveness considerations.

2.3.10 The representative of IATA stated that, under the circumstances, he found the proposed course of action acceptable and he pointed out that a number of airlines were in the process of testing flight management systems on-board aircraft which included the automatic control of adherence to a specified Mach Number by the aircraft. He felt that this should assist in overcoming problems now encountered in this respect and also that, in future, this might permit even further reductions in longitudinal separation. In addition, he pointed out that, it faced with the alternatives of stricter adherence to the approved Mach number in order to achieve a reduction in longitudinal separation versus a more flexible application of the Mach number technique in order to conserve fuel, IATA would, in the NAT Region, prefer the first alternative.

2.3.11 Finally, he stated that in the view of his Organization, the studies should not exclusively concentrate on the suitability of reducing longitudinal separation under specified conditions from 15 to 10 minutes, but should also cover any intermediate value which appeared to be acceptable.

2.4 Mathematical-statistical work done by the USA

2.4.1 The Member of the USA presented the Group with a paper describing initial work done by his Administration in developing a mathematical-statistical model for the assessment of collision risk and also brought to the attention of the Group similar work being performed in the USSR. These efforts applied not only to traffic operating on parallel tracks as they existed for instance in the Organized Track System but could also be applied to traffic operating in a random fashion in a given portion of the airspace. In presenting this paper he pointed out that it reflected only initial work done on this subject and that much more work was required on such a model before it could be used for application to a given situation.

2.4.2 In view of this situation, the Group refrained from entering into a detailed discussion of the paper itself. However, it wished to place on record its appreciation of the work done and requested the USA that it should continue its studies in this field so that, at a later date, it could be taken into consideration when conditions required the need for such a model.

Agenda Item 3: Review of the situation regarding the use of composite separation and determination of its priority use in relation to reduction in longitudinal separation.

3.1 Introduction

3.1.1 Consideration of this Item was sub-divided into the following three parts:

a) the general question of extending the use of composite separation versus a reduction of longitudinal separation;

b) the possible intermediate use of reduced lateral separation and resultant use of composite separation should the use of 60NM lateral separation remain impracticable for a prolonged period; and

c) short-term measures for the increased use of composite separation under the present operational environment.

3.2 Composite versus reduced longitudinal separation

3.2.1 The Group noted that, at the LIM NAT RAN Meeting 1976, the possibility had already been envisaged to introduce a composite separation, composed of 30NM lateral and 1000 feet vertical separation once it had been found that this was feasible when 60NM lateral separation was applied in the NAT Region. Following on to what has been said on the subject of reduction of any type of horizontal separation under Item 2, the Group believed that, apart from a feasibility study of the use of this type of composite separation regarding the collision risks involved, it would also have to take into account:

a) cost effectiveness considerations (i.e. ATC workload and resulting increased costs versus benefits derived for operators); and

b) the possibilities in the transition areas on either side of the North Atlantic to accommodate traffic on such composite tracks within the domestic flow of air traffic.

3.2.2 In any case, the Group felt that, even if feasible, the introduction of 30NM lateral combined with 1000 feet vertical separation, could not be considered seriously for application in the MNPS airspace of the NAT Region before the end of 1980. However, in view of the long

lead-times required to conclude necessary arrangements for the tie-up of composite routes in the transition area with the domestic ATS route network, it would nevertheless appear desirable that Provider States concerned (i.e. Canada, Ireland, the UK and the USA) undertake earliest initial work on this subject so that, once the use of this type of composite separation is agreed, its application is not delayed due to unresolved problems in the transition areas.

3.3. Intermediate use of composite separation

3.3.1 The Member of the USA presented the Group with a paper in which it was proposed that, should it be found that the application of 60NM lateral separation would, against expectations, not be feasible for a prolonged period, consideration should be given to the introduction of 90NM lateral separation and the use of composite separation based on 45NM lateral combined with 1000 feet vertical separation. He stressed however the fact that this proposal should, in no way, detract from efforts by all concerned to permit the use of 60NM lateral separation, at the earliest possible time. In fact, his proposal was to be considered more as a fall-back possibility if difficulties with the use of 60NM lateral separation should continue to persist.

3.3.2 On this understanding the Group agreed to retain the proposal for consideration at such time when no other alternative was left to it regarding improvements of the operations in the NAT Region. However, it was pointed out that, should this proposal have to be considered seriously, this would not only cause problems to the computer programmes for the data processing equipment used by the Oceanic Control Centres but also to those used by airlines in establishing computer generated flight plans. This was due to the fact that, if 45NM composite separation was used, the scanning process for the most preferable route across the North Atlantic would have to be done at intervals of 15 minutes of latitude as compared to the present scanning at one degree of latitude and this would lead to certain complications for the operators. As to the data processing equipment used by OACs, a similar complication in the programming of routes could be anticipated.

3.4 Short term measures regarding composite separation

3.4.1 With regard to the use of composite separation in the present environment, the representative of IATA pointed out that operators had encountered certain difficulties with some operations because of dispositions taken by Canada with respect to domestic airspace which prevented the continuation of composite tracks in that airspace. The Member of Canada informed the Group that work on this subject was going

on in his Administration and that certain improvements to the present situation could be expected by mid-March and still further improvements by mid-May 1979.

3.4.2 As to the request by IATA for more extended use of composite separation as of now, the Member of the UK reminded the Group once more of the fact that this depended not only on the capacity of the ATC system for the NAT Region, but was essentially determined by conditions in the transition areas allowing traffic, operating on composite tracks, to be incorporated into the domestic flow of air traffic and this on either side of the North Atlantic (i.e. possibilities for the establishment of additional composite tracks on the Eastern side of the North Atlantic could only be exploited if such a track was also acceptable on the Western side, and vice versa).

Agenda Item 4: Continuation of work on the resolution of problems created by crossing and joining traffic in the NAT Region

4.1 Under this Item, the Group noted a progress report made by the Member of the USA regarding negotiations which the USA had had with States located South of the USA and concerned with the handling of traffic flows operating between Europe and the Carribean Region and points beyond. It was noted that these negotiations had led not only to a greater awareness of the problems which confronted States and operators in the CAR Region, or those conducting operations between that Region and Europe, but they had also helped to further the understanding amongst CAR States of the problems with which NAT provider States were confronted.

4.2 As a result of these negotiations it had also become apparent that the group of States interested in the problems, in the NAT Region had become considerably larger than that mentioned in Recommendation 6/15 of the CAR/SAM RAN Meeting 1976, i.e. Trinidad and Tobago and Venezuela. In fact, the Group felt that the intent of this Recommendation could be served much better if it were left to the USA to continue its negotiation with States concerned and that the Member of the USA in the light of developments, would agree with CAR States concerned who should come and when to attend a NAT/SPG Meeting. The Member of the USA accepted this commitment and agreed to notify the Chairman in good time prior to a future NAT/SPG Meeting when a representative delegation of CAR States could be expected to participate in the NAT/SPG Meeting concerned.

4.3 As to the subject itself, the Group noted with appreciation a study which had been made by Iberia and which represented the traffic situation during a week at the end of June/beginning of July 1978. Most Members and participants in this Meeting not yet having had an opportunity to review this voluminous study in the required detail, it was agreed that it should be retained for further consideration by those concerned in sub-para. b) of Conclusion 14/7.

4.4 An initial review of the study had, however, brought to light two facts already, namely;

a) that aircraft operating on random tracks in the NAT Region were normally provided with vertical or longitudinal separation and were rarely re-cleared by ATC from their planned track. Restrictions therefore applied nearly exclusively to the flight level at which such flights were cleared; and

b) that under the existing circumstances, the OACs in the area concerned was doing a very commendable job in providing air traffic control under difficult circumstances, Santa Maria OAC with its large number of contiguous FIRs being especially mentioned.

4.5 The Group also took note of a different, less ambitious study which had been carried out by IATA. This study, and the resultant discussion, highlighted the following points:

a) there were a number of different areas where conflicting NAT traffic flows crossed and thus created problems;

b) most, but not all of these are South of approximately 40N, and some of them were outside the NAT Region, e.g. in San Juan and Piarco FIRs;

c) the penalties which accrued were giving concern to a large number of operators;

d) the amount of traffic in these areas was likely to increase fairly rapidly.

4.6 Referring therefore to the work, to be conducted in accordance with Conclusion 14/7 sub-para. b), the Group hoped that this would be undertaken as early as possible and pursued with all due urgency by all parties concerned. In this context, the Group noted a statement by the representative of Portugal that as of 19 April 1979, better inter-area communications were expected to be brought into operation between Madrid ACC and Santa Maria OAC and that this would assist in better co-ordination between the two centres.

Agenda Item 5: Determination of the format and data content of a revised NAT Traffic Forecast

5.1 Under this Item, the Group had before it two papers, one from the present Rapporteur of the NAT Traffic Forecasting Group (NAT/TFG), Mr. W. T. Tucker of Canada, and one from its Member of the UK, the latter having been prepared by the UK Member of the NAT/TFG. Both papers reflected the results of a meeting of the NAT/TFG held in September 1978 in Ottawa, at which the consequences of Conclusion 14/9 of the NAT/SPG on the revised NAT Traffic Forecast were reviewed. The Group noted that, with one exception, the NAT/TFG had adopted the proposals made by the NAT/SPG at its 14th Meeting the exception being that different statistics and forecasts for the "Average Day" as compared with the "Busy Day" need not be prepared since a review of actual traffic data had shown that there was no significant difference between them.

5.2 The Group also agreed to a proposal that the results of the actual data collection of each year should be shown in graphical form, while the forecast for the five years ahead should be made in tabular form. It further agreed with the more detailed description of the nine routes to which traffic in the NAT Region should be related, as well as with the grouping of aircraft types into categories as proposed by the NAT/TFG.

5.3 Finally, it confirmed that the yearly seven day data collection should be:

a) from 0001 GMT on 1 July to 2400 GMT on 7 July; and

b) from 0001 GMT on 1 November to 2400 GMT on 7 November;

and that deviations from these periods should only be made in case the data collection during such a period would not be representative of the weekly traffic cycle within the season during which it was made. (paras. 4.3.2 and 4.3.3 of the Summary of NAT/SPG 14 refer).

5.4 Even though the Group had stated at its 14th Meeting that the method used for the 10 year projection was satisfactory, the Group now felt that the effort required to produce such a projection was, most probably, not worthwhile because of the extremely limited use which was made of it, mainly because of its highly hypothetical nature. It was therefore agreed that, at least as far as the NAT/SPG was concerned, this projection could be eliminated entirely from the forecast without a loss to planners.

5.5 The Group noted that the first forecast in the revised format would be developed at a Meeting of the NAT/TFG which that Group intended to hold in July 1979 in the European Office of ICAO.

5.6 As to the data collection to be made by the NAT/TFG in Summer and Autumn 1979, the Group noted that the requirements for actual traffic data were identical to those which had appeared in 1978 also that the Member of the USA would inform his Administration concerning its repsonsibility to collect and collate this data as agreed in a previous Meeting.

5.7 The Group was informed by Canada that New York OAC and San Juan ACC had not made available to the NAT/TFG data on actual traffic which should have been collected during the two seven-day periods in July and November 1978. It had therefore to be expected that the NAT/TFG, when preparing the forecast based on 1978 traffic data would have to make assumptions in this respect.

Agenda Item 6 : Review of the HF air-ground communications situation in the NAT Region.

6.1 Consideration of the results of the 1978 annual HF data collection

6.1.1 The Group reviewed the analysis, presented by the United Kingdom, of the data collected in the course of the 1978 exercise, as called for by Conclusion 14/15 of the NAT/SPG/14 Meeting. The arrangements for the data collection had been the same as for the 1977 exercise, i.e. data relating to three days when the alignment of the organized track system was Northabout, Central and Southabout respectively. The dates selected were : 28 July (Central track structure), 2 August (Northabout) and 4 August (Southabout).

6.1.2 A comparison of HF traffic figures with those of 1977 showed an 11.75 % increase in the total number of position reports. It was, however, observed that this could not be taken as evidence of a corresponding growth of traffic in the NAT Region, since the selection of different dates for the data collection exercise might well have resulted in slightly different figures being obtained.

6.1.3 The loading on the four HF families was, in general, similar to that of 1977, with family C carrying the heaviest load whilst the load on the other three families was equally distributed. It could be confirmed that the night load fell on the 2 and 5 MHz frequency orders and the day load on the 5 and 8 MHz orders. The fact that, once again, very little use of the 13 MHz order frequencies was reported, led the Group to confirm the opinion previously expressed that frequencies in the 11 MHz order might be more suitable. The latter frequencies were, in fact, currently used by HF stations in the Northern part of the NAT Region (Cambridge Bay, Churchill, Bødo, Frobisher, Søndrestrom and Iceland). It was, however, the view of the Group that while a wider use of the 11 MHz order frequencies should be encouraged, the requirement for the 13 MHz order frequency assignments should be retained to cater for particular propagation conditions, especially during summer. It was noted, in this connexion, that proposals to the 1979 ITU WARC for frequency allotments to the Aeronautical Mobile Service included assignments in both orders of frequencies.

6.1.4 Shannon Aeradio again had the heaviest peak load of 65 reports per hour. As it could be expected, HF participation by Søndrestrom was minimal, the majority of reports being on GP VHF. The message delays (*) were of 3.15 minutes in the mean, confirming a tendency to reduction (4.08 minutes in 1975 and 3.57 minutes in 1977). A significant reduction in message mean delays was noted, in particular, with respect to the Santa Maria station (from 5.32 minutes in 1977 to 3.49 minutes in 1978).

(*) For the definition of delay time, cf. NAT/SPG/14 Report, page 9-1).

6.1.5 As agreed at the NAT/SPG/14 Meeting (cf. Report of that Meeting, paragraph 9.1.5) a survey was carried out by Gander and Shannon in July 1978 on aircraft SSB capability. That survey had shown an SSB/DSB capability ratio of 86% : 14%, representing a significant increase over the 1977 figure (79% : 21%). While noting the continuing progress towards the full implementation of airborne equipment SSB capability, the Group nevertheless deemed it advisable to remind all the users of the NAT airspace of the dates adopted by ICAO for the implementation of the new ITU provisions regarding the conversion from DSB to SSB mode of operation. It was recalled that, according to the transition programme recommended by the 1978 ICAO COM Divisional Meeting, for all frequencies involved in international operations the introduction of SSB classes of emission should be completed by 1 February 1982 so as to permit all the necessary frequency changes to be effected by 1 February 1983 at the latest (cf. Doc 9239, COM/78, page 1-25, Rec. 1/3)

CONCLUSION 15/ 6 CONVERSION FROM HF DSB TO HF SSB MODE OF OPERATION

That States concerned with air operations in the NAT Region be reminded of their responsibility to ensure that their operators meet the dates recommended by ICAO for the full transition from DSB to SSB mode in the operation of their aircraft stations.

Note : The dates referred to in this Conclusion are indicated in Recommendation 1/3 of the ICAO COM Divisional Meeting in 1978 preparatory to the ITU WARC (1979).

6.1.6 On account of the satisfactory load balance among the NAT HF families, the Group confirmed its previous conclusion that, for the time being, there was no need to amend the current arrangements for the assignment of traffic to those frequency families. Since no overloading was reported, the Group also agreed that the introduction of a fifth family would not be required in the immediate future.

Operation of Family C frequencies at Santa Maria

6.1.7 In connexion with the reviaw of the above data collection, the Group noted that very little use of Family C frequencies was made at the Santa Maria station (as an average, no more than 8 contacts per day had been recorded at that station). The Group therefore concurred with the view expressed by the Representative for Portugal that operation of Family C frequencies should be discontinued at Santa Maria. It was noted that this would not affect the current COM Regional Supplementary Procedures but would require a formal proposal for amendment to the NAT COM Plan, which Portugal would present in due course.

Implementation of full A3H/A3J capability at Shannon

6.1.8 The Group was informed that Ireland was in a position to introduce dual mode (A3H/A3J) operation on HF NAT Family D at Shannon as from 1 April 1979 (cf. Conclusion 14/15 (c) of the NAT/SPG/14 Meeting). As a consequence, it was in this regard agreed that Ireland and the other States employing Family D would issue an appropriate NOTAM, not later than 22 March 1979 to the effect that HF Family D would be converted to A3/A3H/A3J operations as from 19 April 1979.

6.1.9 The Group then considered a draft proposal by Ireland to amend the NAT COM Supplementary Procedures. It was noted that SSB-equipped flights on northerly routes would, by virtue of that proposal, be required to operate on a dual mode HF Family. To avoid such penalization and taking into account the considerations in paragraph 6.1.6 above, it was agreed that the proposal for amendment of the COM Supplementary Procedures, to be presented by Ireland, should not aim to alter the current table of distribution of the NAT HF traffic between the four frequency families but simply to modify the Note relating to northern routes to read "All aircraft flying polar routes should normally use Family D".

Continued review of the NAT HF communications situation

6.1.10 The Group confirmed its previous conclusion that it was necessary to keep the NAT HF communications situation under continued close review and that this item should continue to be included on a routine basis in the Agenda of NAT/SPG Meetings. Accordingly, it was agreed that, it was necessary to carry out a further data collection exercise, similar to the one reported on above and with the same arrangements, based on 1979 data.

CONCLUSION 15/7 DATA COLLECTION ON NAT HF AIR-GROUND COMMUNICATIONS

That :

a) a three-day data collection exercise be conducted in 1979 with the same arragements as agreed for 1978, noting that :

1) Ireland will co-ordinate the exercise and select the dates ;

2) the United Kingdom will collate and analyze the results ;

3) States concerned should retain message data for July and August 1979 until the dates have been selected ;

4) Søndrestrom data should be included ; and

5) completed data forms should be addressed to :

Civil Aviation Authority (CG2)
Room T1113
Space House
43-59 Kingsway
London WC2B 6TE

b) Shannon and Gander, in co-ordination, make as accurate a check as possible of the NAT/SSB airborne capability in July 1979 and January 1980.

Agenda Item 7: Review of work undertaken in the field of ATS data exchange in the NAT Region and its consequence on the operation of aeronautical fixed and mobile services in the medium and long term.

7.1 Under this Item, the Member of the UK informed the Group of the results of a meeting which had been held in November 1978 in London amongst provider States concerned, IATA and IFALPA regarding the arrangements for the trial application of new or revised ATS Messages in the NAT Region (Conclusion 14/18 refers). He informed the Meeting that full agreement had been reached regarding arrangements for this trial application during 1979 and that preparations by States concerned were well under way. It could therefore be expected that, at the next NAT/SPG Meeting, at least initial results of this trial application could be made available to the Group.

7.2 Under the same Item IATA presented a paper in which they pointed out that systems now exist which provide for direct computer input of data obtained from pilots without, however, requiring the same degree of rigidity in adherence to specified message formats as required in the trial application.

7.3 In the discussion of this paper, IATA was assured that one of the major purposes of the trial application was exactly, to evaluate this method for the direct insertion of pilot derived flight data into data processing equipment used by the Oceanic Control Centres, and this based on practical experience gained during the trial application. In fact, the whole trial was aimed at this specific objective.

7.4 In this context, attention was also drawn to the recent establishment of a "Radio Telephony Study Group" within ICAO which was given the task of eliminating a number of ambiguities which existed in the present phraseology. It was pointed out that this Group might also look into the question of developing phraseology, not only for the ground services but also for routine communications by pilots. It was therefore suggested that this development should be kept in mind by the Group in further work on this subject.

Agenda Item 8: Review of the future trends in navigation and ATS in the NAT Region including the use of aeronautical satellite techniques

8.1 Introduction

8.1.1 At its 14th Meeting, the NAT/SPG in Conclusion 14/12, had requested its Members to"investigate with their home Administrations, improved possibilities for the exchange of information between those concerned with operational air navigation problems in the NAT Region and those engaged in studies on the technical possibilities offered by satellites as cost effective measures for resolving such problems and to present their proposals in this respect prior to NAT/SPG 15".

8.1.2 In the meantime, this Conclusion had been used by the Committee charged with the review of the application of satellite and other techniques to civil aviation as the basis for its request to the Chairman of the NAT/SPG to be permitted to attend NAT/SPG 15 during that time when this subject was considered by the Group. In addition, the Secretary of the Group had been invited to participate in the Meeting of one of the working groups of this Committee where questions of an operational nature and relevant to the NAT Region were discussed and this invitation had been accepted.

8.1.3 As a consequence, Members of the Group had agreed prior to the Meeting that:

a) at its opening session a brief Meeting of Members only should be held at which the Group would establish its position with respect to Conclusion 14/12; and

b) half a day's discussions should be provided for Item 8 in the presence of representatives of the Committee mentioned in para. 8.1.2. above.

8.1.4 The Report on this Item therefore deals with the following two points:

a) the common position of the NAT/SPG with regard to Conclusion 14/12; and

b) consideration of Item 8 in the presence of representatives of the"Committee to review the Application of Satellites and other Techniques to Civil Aviation".

8.2 NAT/SPG position regarding Conclusion 14/12

8.2.1 In a brief Session, reserved for Members of the Group only, the Group made a survey of the position of each of its Members with respect to Conclusion 14/12. This revealed that there was unanimous agreement on the need to ensure liaison between the NAT/SPG and other bodies involved in the planning of future facilities and services likely to be used for air navigation purposes in the NAT Region, be this only in order to ensure that such planning took due account of practical operational and environmental conditions governing air navigation in the NAT Region.

8.2.2 As it was noted that three of the States, having nominated Members to the NAT/SPG, were also represented in the Committee mentioned above (i.e. Canada, the UK and the USA) the Group agreed that these Members should ensure, through appropriate arrangements within their home Administrations, that:

a) the Committee representatives of the Administrations were fully briefed on developments in the NAT/SPG; and

b) the NAT/SPG Members were also fully aware of the activities of the Committee;

thus ensuring that necessary "cross-fertilization" would be achieved. In addition the Group expected that any of the three Members concerned, either individually or jointly, would inform the NAT/SPG as a whole of any matters on which it might be desirable to develop a common position for presentation to the Committee.

CONCLUSION 15/8 - LIAISON BETWEEN NAT/SPG AND OTHER BODIES ON NAT AIR NAVIGATION MATTERS

That:

a) the Members of Canada, the United Kingdom and the USA take necessary action to ensure full co-ordination between them and those representatives of their home Administrations participating in the activities of the "Committee to review the Application of Satellite and other Techniques to Civil Aviation", and

b) any of the Members listed above inform, either individually or jointly, the NAT/SPG of any developments likely to require the development of a common position for presentation to that Committee.

8.3 Discussion in the presence of Committee representatives

8.3.1 At the open Session on this subject, the Committee representative Mr. R. E. Cox from the United Kingdom, gave a brief history of developments which had led to the formation of the "Committee" to conduct its assigned task. In doing this, he laid particular stress on the fact that the Committee, in no way, intended to develop technical solutions to a problem for which an operational requirement had not yet been determined but that its work was primarily concentrated on the investigation of potential system options which appeared to merit consideration in planning terms extending up to the year 2000.

8.3.2 In the light of experience with the speed, with which changes to the air navigation system could be implemented in the NAT Region, the Group agreed that, even if tangible results from such studies were only expected to materialize by about 1995, preliminary studies on system options would have to be completed some time in 1983 in order to provide necessary lead-times to both providers and users, should the provision of additional and/or new facilities be required by 1995.

8.3.3 The Group then informed the representative of the Committee of the decision taken by the Group with regard to Conclusion 14/12 as recorded in para. 8.2 and Conclusion 15/8 above, and it noted that this met with the full concurrence of Mr. Cox.

8.3.4 As to the administrative arrangements for such co-operations and co-ordination in view of past experience it was pointed out that the three designated States (Canada, the United Kingdom and the USA) might wish to pay particular attention to the fact that their representation in the Committee ensured a reasonable balance between technical and operational expertise and know-how so that full account was taken of all relevant factors throughout future studies conducted in this field.

8.3.5 The Group was then informed that, as a consequence of a contribution to the work of the Committee made by the USA an Oceanic Area System Improvements Study (OASIS) was already under way and that this was conducted by SRI International. This study was to be conducted in five stages as follows:

a) Stage 1: Development, integration and modification of models concerning traffic forecasting, flight economy and communication systems. Target date for completion: May/June 1979.

b) Stage 2: System audit of present or planned systems and forecast requirement. Target date: July/August 1979.

c) Stage 3: First assessment of possible improvements covering feasibility assessments, cost comparison and optimum configuration. Target date: November/December 1979.

d) Stage 4: Presentation of draft final report of the study for review and comment. Target date: August/September 1980.

e) Stage 5: Presentation of the final report. Target date: November/December 1980.

8.3.6 In presenting this programme, Mr. Cox wished to stress the fact that, taking into account the complexity of the study, it was unlikely that this report, after completion, could already be considered as the final work on this subject. He therefore requested the Group to keep this in mind when the report was made available and that comments made on it should not be limited to criticism only but should, if at all possible, contain suggestions for improvements which could be made in subsequent work on this matter.

8.3.7 While on this subject, the UK presented the Group with a paper which offered some thoughts on the potential use of improved communication and other techniques in the NAT Region. In this paper it was suggested that improvements aimed at air-ground communications only were not sufficient. In addition, it indicated that if consideration was given to the provision of a traffic surveillance system in the NAT Region, this would have to be an independent system based on the present radar surveillance concept because any dependent surveillance system, based on the collection of positional data from aircraft, suffered essentially from two shortcomings:

a) the positional information obtained could only be as accurate as that available to the pilot; and

b) it required co-operation by each and every participant in the system.

8.3.8 In summary, in this paper it was suggested that significant improvements from such a future system could only be obtained if it provided the following features:

a) capability of digital exchange of routine ATS data between aircraft and the relevant ground services;

b) direct pilot/controller communication for the exchange of non-routine messages; and

c) provision of an independent traffic surveillance system for air traffic control purposes.

In addition, cost effectiveness considerations based on a system providing the above features, would then have to show that the benefits accrued from such a system would compensate for the higher charges and costs which might result for users from the provision of such a system.

8.3.9 While the Group found the above views interesting, it wished however to place on record that these did not represent the views of the Group at this time and that much more detailed discussion within the Group was required on this subject before it would be possible to present a common position meeting with the endorsement of all Members of the Group.

Agenda Item 9: Any other business

9.1 Introduction

9.1.1 Under this Item the Group dealt with the following subjects:

a) amendment to the Regional SUPPS regarding flight planning and position reporting in the NAT Region;

b) operations in the NAT Region by aircraft equipped with VHF only;

c) International General Aviation Flights through Iceland in 1976 and 1977;

d) supplementary flight plan information in case of SAR action; and

e) arrangements for the next Meeting.

9.2 Regional SUPPS regarding flight planning in the NAT Region

9.2.1 The representative of Iceland presented a paper to the Group which described certain difficulties encountered by Reykjavik OAC due to the fact that flights, planning their flights through the Reykjavik FIR, could, in accordance with the Regional SUPPS on this subject, do this in three different ways:

a) the method prescribed for flights operating generally in an East-West direction;

b) the method prescribed for flights operating generally in a North-South direction; and

c) the method prescribed for flights operating North of 70N.

9.2.2 When displaying the route of flight on flight progress strips in accordance with these methods it was sometimes difficult for the controllers in Reykjavik OAC to determine the lateral and longitudinal spacing of aircraft and they were therefore obliged to plot the route of the aircraft in question on a chart, thus distracting their attention from the flight progress board for an undue length of time. It was obvious that such a situation could lead to compromising air safety.

9.2.3 In the paper it was therefore proposed that the relevant provisions in Doc 7030, i.e. paragraph 4.1.1.1 and 5.2.2.1 in Part 1, be amended so as to provide for a more uniform description of the route to be flown in the flight plan.

9.2.4 The Group after having noted the difficulties encountered by Iceland, concurred with the suggestion and, as a consequence, developed the following proposal for amendment of the relevant provisions in Doc. 7030, Part 1:

a) that para. 4.1.1.1 in Part 1 of Doc 7030 be deleted in toto and replaced by the following:

"4.1.1.1 Flights conducted wholly or partly outside the organized tracks shall be planned along great circle tracks joining successive significant points and flight plans shall be made in accordance with the following:

4.1.1.1.1 Flights operating between North America and Europe shall generally be considered as operating in a predominantly East-West direction. However, flights planned between these two continents via the North Pole shall be considered as operating in a predominantly North-South direction.

4.1.1.1.2 Flights operating predominantly in an East-West direction

1) For flights operating South of 70N, the planned tracks shall normally be defined by significant points formed by the intersection of half or whole degrees of latitude with meridians spaced at intervals of 10° from the Greenwich meridian to longitude 70W.

2) For flights operating North of 70N the planned tracks shall normally be defined by significant points formed by the intersection of parallels of latitude expressed in degrees and minutes with meridians normally spaced at intervals of 20° from the Greenwich meridian to longitude 60°W.

3) The distance between significant points shall, as far as possible not exceed one hour's flight time. Additional significant points should be established when deemed necessary due to aircraft speed or the angle at which the meridians are crossed, e.g.:

a) with intervals of 10° of longitude (between 5W and 65W) for flights operating South of 70N; and

b) with intervals of 20° of longitude (between 10W and 50W) for flights operating North of 70N.

4) However, when the flights time between successive significant points is less than 30 minutes, one of these points may be omitted.

4.1.1.1.3 Flights operating predominantly in a North-South direction

For flights whose flight paths are predominantly oriented in a North-South direction, the planned tracks shall normally be defined by significant points formed by the intersection of whole degrees of longitude with specified parallels of latitude which are spaced at five degrees."

b) that para. 5.2.2.1 in Part 1 of Doc 7030 be deleted in toto and replaced by the following:

"5.2.2.1 Air traffic services may require any flight operating predominantly in an East-West direction to report its position at any of the intermediate meridians spaced at intervals of :

a) 10° of longitude South of 70N (between 5W and 65W); and

b) 20° of longitude North of 70N (between 10W and 50W)".

9.2.5 The Group requested the representative from Iceland to take necessary action with his Administration to have the above proposal for amendment of the Regional SUPPS formally submitted to ICAO at the earliest possible time.

CONCLUSION 15/9 - AMENDMENT TO DOC 7030

That:

a) the Regional Supplementary Procedures in Part 1 of Doc 7030, and applicable in the NAT Region, be amended as shown in para. 9.2.4; and

b) the Representative of Iceland take necessary action with his Administration to have this proposal formally presented to ICAO.

9.3 Operations by aircraft equipped with VHF only

9.3.1 IATA presented the Group with a paper in which it was proposed to permit certain aircraft, equipped with VHF air ground communication equipment only, to operate flights in the NAT Region provided such flights stayed North of a line extending from Shannon to 61N 1820W. The reason for this proposal was that, when operating on such a track, aircraft operating above FL290 would be continuously within VHF air ground communication coverage and would not be required to make the detour via 61N 10W or points East thereof.

9.3.2 In the ensuing discussion on this proposal, it was pointed out that this proposal suffered essentially from three shortcomings:

a) the assumed operationally usable VHF coverage above FL290 in the area in question upon which the proposal was based was optimistic;

b) even if this coverage existed, it would mean that aircraft, while operating in the Shanwick Control Area, could only communicate on VHF either with the Scottish ACC or with the radio station serving Reykjavik ACC, thus requiring either controllers in Scottish ACC or communicators serving the Reykjavik ACC to assume relay functions, with a resultant increase in workload for both Shanwick OAC and the operating positions being in VHF contact with the aircraft concerned; and

c) while the IATA proposal was aimed to facilitate only a limited number of ferry operations of their Member airlines, there existed no possibility to restrict the use of this procedure to those operations only, thus opening the possibility for a potentially much larger Group of users to take advantage of this possibility with the resultant increase in workload both to controllers and communicators concerned.

9.3.3 It was for the above reasons that the Group felt unable to retain the proposal by IATA. It was, however, pointed out that the route via 61N 10W or points East thereof would continue to be available to flights concerned.

9.3.4 While on the subject of VHF air-ground communications, the representative of IFALPA drew attention to the fact that, according to observations made by Members of his Organization, the improper use of frequency 121.5MHz seemed to persist in the NAT Region. He therefore wished to draw the attention of the Group once more to Recommendation 4/4 of the LIM NAT RAN Meeting 1976 which encouraged NAT States to apply necessary enforcement measures whenever cases of wilful misuse of 121.5MHz by inadequately equipped aircraft were discovered. He was assured that in all such cases necessary corrective action was already being taken, to the extent that this was possible.

9.4 IGA flights through Iceland

9.4.1 Under this Item the representative of Iceland presented the Group with information on the number of IGA flights across the North Atlantic which had operated through Iceland in the Years 1976 and 1977. From this paper it was noted that the number of such operations had risen from some 1250 in 1976 to some 1450 in 1977.

9.5. Supplementary flight plan information in case of SAR action

9.5.1 The United Kingdom Member informed the Group that, on a number of occasions when SAR activities had to be initiated for aircraft which were overdue on flights across the North Atlantic, it had either not been possible to obtain the required supplementary flight plan information from the aerodrome of departure or to obtain

it only after extreme delays. In all cases this had referred either to IGA flights or to ferry flights which had made a direct crossing from North America to Europe. He proposed therefore that a procedure should be included in the Regional SUPPS making in mandatory for such flights to systematically include the supplementary flight plan information in the ATS flight plan message addressed to the Oceanic ACC concerned by such flights.

9.5.2 In the discussion it was found that the roots of the problem encountered in certain cases might be associated with the following:

a) flight plans could, in the USA be filed with a "flight service station" which was different from the aerodrome of departure; and/or

b) the holder agency of that information was not operated on an H24 basis; and/or

c) the holder agency was not familiar with the relevant RQS procedure prescribed in the PANS-RAC.

9.5.3 It was therefore agreed that, before creating new SUPPS on this subject, it may be more profitable to explore whether, by appropriate internal arrangements in the USA (and if required also in Canada) the problem could not be resolved. One suggestion made in this respect was that arrangements could be made whereby the supplementary flight plan information would be sent, as a matter of routine to the first Oceanic ACC in North America concerned with such a flight where it would be kept in store in case it was needed.

9.5.4 Both the Members of Canada and of the USA agreed to look into this matter and, if required, take speedy and appropriate corrective action.

9.6 Arrangements for the next Meeting

Items for consideration

9.6.1 Without being able to establish a firm agenda for its next Meeting, because this depended very much on developments during the next seven to eight months, the Group believed it useful to list those items which, as a result of this Meeting and in the light of its longer-term programme established at the 13th Meeting, should be retained for consideration at NAT/SPG 16. Apart from the usual items, such as a review of the HF situation etc. these were:

a) the question of lateral separation in the MNPS airspace of the NAT Region;

b) continued work on the question of longitudinal separation in the NAT Region;

c) problems created by crossing and joining traffic in the NAT Region; and

d) the question of ATS data exchange between OACs and resultant provisions in the light of trials made during 1979.

Date and place of the next Meeting

9.6.2 After having been informed of the overall commitments of the European Office of ICAO, and taking into account all other relevant factors, the Group agreed that the next Meeting should tentatively be planned to be held from 1 to 10 October 1979 in the European Office of ICAO. In retaining this date, the Group hoped that ICAO would again find it possible to provide the Group with the required secretarial assistance.

Participation in the next Meeting

9.6.3 Further to the usual participation by Denmark, Iceland, Norway, Portugal, IATA and IFALPA, the Group agreed that Spain, as well as the USSR should be invited to participate in the next Meeting because the list of items, retained for consideration at that Meeting was of considerable interest to these two States. In addition, in spite of the fact that both IACA and ACCA had not found it possible to attend this Meeting even though this would have been useful, the Group agreed, once more, to invite these two Organizations to participate in the next Meeting of the Group.

Agenda Item 10: Miscellaneous

10.1 Fuel conservation studies

10.1.1 In conjunction with the Meeting of the NAT/SPG, the Member of the USA had organized a presentation, outside the time of the Meeting itself, of a study made by the National Aeronautics and Space Agency (NASA) of the USA and which was aimed at fuel savings in commercial air transport operations by the provision of improved meteorological data to airline operators and aircraft prior and during flight operations. This presentation was made by Mr. R. Steinberg of NASA and the Group was provided with an Information Paper on the subject.

10.1.2 The Group noted the work under way on this subject and also that initial results from that study could not be expected to become available before the end of 1979 at the earliest. It nevertheless wished to place on record its appreciation of having been given an introduction to these studies at this stage.

10.2 Cost models for the NAT Region

10.2.1 In addition, Mr. V. Attwooll of the UK presented to the Group two papers which described models which were being developed in order to assess the cost of flight operations in the NAT Region under varying operating conditions. It was pointed out that the studies presented were intended to be made available by the UK to

a) those conducting the "OASIS" study, to be taken into account in Stage 1 of that study (Conclusion 15/8 and para. 8.3.5 refer); and

b) those concerned with the review of cost effectiveness studies regarding NAT operations.

10.2.2 The Group appreciated the studies done by the UK and hoped that work on them would be continued and results would be presented to the Group as they became available for review as appropriate.

LIST OF NAMES AND ADDRESSES OF THE MEMBERS OF THE NORTH ATLANTIC SYSTEMS PLANNING GROUP/

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