SUMMARY OF DISCUSSIONS AND CONCLUSIONS

OF THE

TWENTY-FOURTH MEETING OF THE NAT SYSTEMS PLANNING GROUP

(Paris, 4 - 15 May 1987)

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INTRODUCTION

1. The Twenty-Fourth Meeting of the North Atlantic Systems Planning Group (NAT SPG) was held in Paris from 4 to 15 May 1987. The Meeting was chaired by Mr. G. Matthiasson, the Member for Iceland.

2. In addition to IAOPA, IATA and IFALPA, the Group had, as usual, also invited Denmark, Norway, Spain and the USSR to attend this Meeting. IAOPA had not been able to attend. A list of participants is at page 3.

3. In order to progress its work efficiently, the Group established a number of sub-groups to deal with particular detailed aspects of some of the subjects considered during the Meeting. These were:

a) a sub-group charged with the scrutiny of navigational performance questions, of which Mr. J. Irving of the United Kingdom acted as Rapporteur;

b) a sub-group dealing with the review of matters related to NAT aeronautical telecommunications, of which Mr. D. Covell of the United States acted as Rapporteur; and

c) a sub-group to consider the mathematical-statistical aspects of separation minima in the NAT Region, of which Mr. W. Cannell of the United Kingdom acted as Rapporteur.

4. During the proceedings two additional working groups were created to address specific matters:

a) a working group dealing with future requirements for data used in assessing the performance of the NAT system, of which Mr. E. Snow of Canada acted as Rapporteur; and

b) a working group charged with the review of the Guidance and information material concerning air navigation in the NAT Region, of which Mr. J. Irving of the United Kingdom acted as Rapporteur.

5. Mr. D. Oudin from the European Office of ICAO served as Secretary of the Meeting and was responsible for the preparation of this Report. He was assisted by Mr. P. Berger, a former member of the European Office Staff and Mr. W. Arcangeletti from the European Office of ICAO. Mr. D. Bartkowski, ICAO Regional Representative, attended the opening meeting and addressed the Group on specific ICAO matters.

6. The Group noted the tragic accident which had occurred to a flight by LOT from Warszawa to New York, shortly after its departure on 9 May 1987 and it wished to place on record its sincere sympathy for the victims, the surviving relatives, the Airline and the Polish authorities.

7. At the closing session of the Meeting, the Chairman informed the Group that this was the last meeting in which "Bill" Arcangeletti of the Paris Office participated because he was going into a well-earned retirement. The same applied to Lincoln Lee of IATA who had been a main-stay of the Group from its very early beginnings and who had, on many occasions, assisted the Group in difficult tidings by his sense of measure, experience and the undestructable good humour and patience. The Chairman was sure that he expressed the feelings of the whole Group when he wished both, Bill and Lincoln, all the best for the future and a long and restful retirement.

8. He also took this opportunity to express the appreciation of the Group to ICAO that it had temporarily recalled Paul Berger from retirement to assist the Group at this meeting. He noted with particular satisfaction that retirement seemed not to have diminished Paul's well-known "performance" and that his contributions to the conduct of the meeting had been up to the standards he had set for himself during his active period as Secretary of the Group from 1966 to 1981.

LIST OF CONCLUSIONS

LIST OF PARTICIPANTS

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Agenda Item 1: NAT air navigation system safety performance review

1.0 Introduction

1.0.1 Under this Agenda Item the Group considered the following specific subjects:

a) the navigation performance accuracy achieved in the NAT Region during the period 1 March 1986 to 28 February 1987;

b) mathematical-statistical aspects of risk assessment methodology;

c) methods of improving the observed standard of navigation performance in the NAT Region; and

d) consideration of methods of improving the current monitoring procedures.

1.1 Navigation performance accuracy achieved in the NAT Region during the period 1 March 1986 to 28 February 1987

1.1.1 The Group completed a scrutiny of observed gross navigation errors in the NAT Region and found that a total of 69 (74)* errors were reported during the period under review. 27 (25)* of these errors occured outside MNPS airspace (MNPSA) and were classified as Table 'CHARLIE' errors. Of the remaining 42 (49)* errors, 1 (0)* error was deleted from the survey as it had not been observed on radar and it could not be positively established that an error had occured. A further 26 (14)* errors were not eligible for inclusion in the risk analysis as defined by NAT SPG/17 (and amended by NAT SPG/23) and were classified as table 'BRAVO' errors. A review of these Table 'BRAVO' errors is given at paras 1.1.8 to 1.1.11. The remaining 15 (29)* errors which form the basis of detailed scrutiny were classified as Table 'ALPHA' errors.

1.1.2 A breakdown of the 15 (29)* errors is given in Attachment A. The format is in accordance with established procedures and, as in previous summaries, the number of errors which are permissible by the collision risk models have been shown. As agreed at NAT SPG/23 the 'Zeta' errors have been further broken down to show the error rates of the 'Random' traffic within the MNPS airspace.

1.1.3 The Group noted that there had been a marked improvement in the observed navigation performance in the NAT MNPS airspace during the period covering the present review. The Eta errors ($\geqslant$ 30NM), and the Zeta errors (50-70NM) for 'All MNPS' traffic had been reduced to approximately 50% of the level of the previous year. Of the Zeta errors, those for 'OTS traffic' showed a major improvement whilst the figures for 'Random' traffic had remained remarkably constant. All error rates were well below those permitted by MNPS requirements.

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* For comparison purposes, corresponding figures for the last monitoring period (1985-86) are shown in brackets

1.1.4 The predominant cause of navigation error was once again that of "Equipment Control Error, including Waypoint Insertion Error". 7 of the 15 Table 'ALPHA' errors fell into this category. At NAT SPG/23 it was agreed that this error classification should be sub-divided in an attempt to define more accurately the most common type of flight deck error. This has been clearly established as some breakdown of crew procedures which allowed the correct insertion of incorrect data into the navigation computer. There were 5 such errors and they appear to be associated with amended route clearances whereby the crew, although acknowledging the new route, leave data on the old route, or some part of it, in the navigation system. There was only one error observed which was attributed to the auto-pilot being disconnected from the navigation computer.

1.1.5 The most impressive improvement revealed by the scrutiny of the Table 'ALPHA' errors was related to the number of aircraft flying in the MNPS airspace without approval. The number of gross errors by aircraft which were not approved for MNPS operations was only 1, compared to 7 in the previous monitoring period.

1.1.6 There were 5 errors which appeared to have been caused by partial failure and/or malfunctioning of the navigation equipment. Four of these were directly attributed to 'OMEGA' equipment, and this question is considered in paras 1.3.1 and 1.3.2 as well as 1.4.4 and 1.4.5. The fifth error, although attributed mainly to Doppler problems, included some difficulty with OMEGA. Once again, the crews concerned with these errors did not advise ATC of any navigation difficulties, although in at least two cases it is known that the crew had serious doubts about the correct functioning of their equipment.

1.1.7 The Group felt that there was value in again presenting a Table showing the error rates of different Groups of operators. The following figures have been provided to highlight error trends as the breakdown of the civil operator Groups has not been clearly defined:

TYPE OF OPERATOR	APPROX PERCENTAGE OF MNPS TRAFFIC	PERCENTAGE/NUMBER OF TABLE A ERRORS	COMPARATIVE 'ETA' RATE
FREQUENT CIVIL MNPS USER	55% (64,072 FLTS)	20%/3	0.47×10^{-4}
OTHER CIVIL MNPS USERS	33% (38,443 FLTS)	53,3%/8	2.08×10^{-4}
MILITARY	12% (13,979 FLTS)	26.7%/4	2.86×10^{-4}

Although the 'ETA' rates of each group have improved over those observed in 1985-86, the percentage breakdown of table 'ALPHA' errors remains almost exactly the same. It is of interest to note that within the 'Other Civil MNPS Users' group, 4 of the 8 errors were attributed to 'private' users.

1.1.8 In reviewing the 26 (14)* Table 'Bravo' errors the Group noted that NAT SPG/23 had agreed that gross errors in the 25NM to 29NM band should be shown in Table 'BRAVO' rather than in Table 'ALPHA', as they did not influence the risk analysis. In each monitoring period (1985-86 and 1986-87) there had been six 25NM to 29NM errors. Thus, to provide a meaningful comparison, the number of Table 'BRAVO' errors for the last monitoring period should be shown as 20.

1.1.9 Even with this correction applied, this year's Table 'BRAVO' figures reflect a 30% increase over 1985-86. As was pointed out at NAT SPG/23, the table 'BRAVO' figures have a recent history of dramatic fluctuation. This is shown in the following table:

COMPARISON OF TABLE BRAVO ERRORS INCLUDING 25NM - 29NM ERRORS	
MONITORING YEAR	NUMBER OF ERRORS
1982 - 83	17
1983 - 84	20
1984 - 85	5
1985 - 86	20
1986 - 87	26

There is no apparent reason for these variations. This period's large 'BRAVO' increase does indicate however that, whatever lessons are to be drawn from the analysis of Table 'ALPHA' errors, there can be no reason for complacency. If the formal risk analysis is disregarded and Tables 'ALPHA' and 'BRAVO' combined, there were 49 gross navigation errors observed in the NAT MNPS airspace in 1985-86 and 41 such errors in 1986-87.

1.1.10 The following table shows a breakdown of the Table 'BRAVO' errors into the established error classifications:

ERROR CLASSIFICATION	NUMBER OF ERRORS
A	4 (4)
B	5 (5)
C1	5
C2	5 > (8)
D	0 (0)
E	0 (0)
F	5 (2)
Unclassified	2 (1)
TOTAL	26 (20)

1.1.11 The Group noted that the breakdown of the Table 'BRAVO' errors compared very closely with the previous period, and provided familiar lessons. Of the 26 errors, 10 were equipment control errors and these included 9 instances of waypoint insertion error. This reinforces the lessons to be drawn from Table 'ALPHA' in highlighting the main cause of gross error.

1.1.12 Similarly there were 5 errors resulting from equipment failure, and of these 4 errors relate to OMEGA equipped aircraft. None of these errors were reported to ATC.

1.1.13 In contrast to the Table 'ALPHA' analysis, Table 'BRAVO' provided 4 instances of errors by aircraft which were not approved for MNPS operations and a further 5 resulted from ATC system loop errors.

1.1.14 The Group then briefly reviewed the Table 'CHARLIE' errors, that is those errors which occured in the NAT Region but outside MNPS airspace. The Group noted that of the 27 (25) errors, 5 occurred above MNPS airspace and 22 below. A full follow-up action was taken on the 15 errors in which the cross track error exceeded 50NM. It was also noted that there were 4 instances where the navigation error was in excess of 100 miles, one of these involving an aircraft being 455 miles away from its planned track.

1.1.15 Of the 5 errors by aircraft operating above MNPS airspace, 2 were due to ATC system loop errors, 2 were probable equipment failures and 1 was a waypoint insertion error.

1.1.16 The Group noted that a survey had been made of all flights which had operated through the Reykjavik OCA within the NAT MNPS airspae during the monitoring period. As in the past two years, the gross error rate observed on these routes did not appear to vary significantly from that, observed for the whole of the MNPS airspace.

1.1.17 With respect to the continued application of ten minutes longitudinal separation in the MNPS airspace, it was noted that there had been three reports of an erosion of this minima in excess of 3 minutes.

1.1.18 At NAT SPG/23 it was agreed that reports of deviations of 300 feet or more from the assigned level should be made. A total of 16 such reports was received by the Central Monitoring Agency, of these there were 3 instances of transponder faults.

1.2 Mathematical-statistical aspects of risk assessment methodology

1.2.1 The Group considered a number of papers relating to mathematical issues and it carried out a calculation of the NAT/MNPS collision risk using occupancy statistics provided by Canada and the United Kingdom and figures for gross error rates in the NAT Region as shown in para 1.1. In dealing with the subject, the following topics were reviewed:

a) 60 NM separation above the MNPS airspace
b) Occupancy
c) FANS scenario development
d) Composite system risk estimates
e) Crossing traffic
f) NAT SPG Collision risk model parameter values
g) Confidence levels for eta and zeta gross error rates
h) NAT MNPS Collision risk.

Use of 60NM lateral separation above the MNPS area

1.2.2 Two papers presented by IATA and by Canada put forward proposals for consideration of the possibility that 60NM lateral separation might be applied between aircraft flying entirely above the MNPSA, if they were MNPS certified (see also para 2.1.1). The Group was concerned that any such extension of the use of 60NM lateral separation above the MNPSA should be based on a proper examination of the collision risks involved. Thus, an assurance was necessary that aircraft to which such a separation standard was applied would meet the error rate requirements of the MNPS, and the error monitoring carried out within the MNPS airspace should be extended to these aircraft as well.

1.2.3 At present, the error monitoring procedures capture gross errors occurring above the MNPS airspace, but these errors are not included in the calculation of the NAT MNPS Collision risk. However, the errors are recorded and there is some evidence to suggest that the error rate above the MNPS airspace exceeds that of the MNPS as a whole. Five gross errors were observed above the MNPS airspace in 1986, of which four were by private aircraft and three by aircraft which appeared to meet MNPS navigational equipment requirements.

Occupancy

1.2.4 Data on NAT lateral occupancy during 1986 was presented by Canada and by the United Kingdom. As in previous years, this data estimated the occupancy at 40°W and 20°W and presented the information in similar form. In both cases, occupancy estimates are based on sampling the traffic for a single day each month (the 15th of the month) and averaging over the twelve months of the year. These results are summarised in Table 1. The estimates of total system occupancy in Table 1 are derived by weighting OTS and random occupancy by the traffic counts taken from the data presented by Canada and the UK.

Table 1

Occupancy estimates for 1986

	CANADA (40°W)			UNITED KINGDOM (20°W)		
	OTS	Random	Total	OTS	Random	Total
Eastbound	1.06	0.25	0.71	0.97	0.15	0.61
Westbound	0.77	0.15	0.54	0.77	0.15	0.53
Total same	0.91	0.21	0.63	0.87	0.15	0.57
Opposite	0.001	0.002	0.002	0.0025	0.0059	0.0039

Same direction occupancy

1.2.5 The Group considered differences in the values calculated for same direction occupancy to be within the bounds of variation which could be expected and which result from statistical fluctuations and from the fact that the traffic structure at 20°W and 40°W may differ. The overall values for Westbound occupancy, calculated in the data from Canada and the UK, are entirely consistent although there is roughly a 10% difference in the Eastbound values. Variations in daily occupancy are somewhat larger, but still within an acceptable range, given the inherent variability of random occupancy and the fact that the disposition of OTS tracks at 20°W and 40°W may be different.

Opposite direction occupancy

1.2.6 The calculated opposite direction occupancy values differ rather more in proportional terms, but the statistical fluctuations in this quantity are expected to be large because of the small sample of proximate aircraft and the level of occupancy itself is in any case very small. Opposite direction occupancy is seen only on a few of the 12 sample days in both Canadian and UK estimates and is all associated either with random traffic or combinations of random and OTS aircraft. Throughout the year, as is the case for the past few years, no opposite-direction tracks have been declared within the OTS.

Occupancy estimates for calculation of risk

1.2.7 The Group decided that, for the calculation of system risk, an average of the estimates of occupancy at 20°W and 40°W should be used. The values obtained from a weighted average of the two estimates with respect to traffic count, rounding upwards where appropriate, are shown in Table 2.

Table 2

Occupancy values for risk calculation

Same direction occupancy		Opposite direction occupancy	
OTS	Random	OTS	Random
0.89	0.18	0.002	0.004

1.2.8 The "occupancy ratio", which indicates the overall level of occupancy in comparison with the values used in the MNPS derivation was estimated to be 1.31 in the case of OTS Traffic and 0.34 in the case of random traffic. The collision risk calculation, using these occupancy values, is presented in para 1.2.41 and Table 4.

Future increases in occupancy

1.2.9 The Group reviewed the prediction of future traffic movements in the North Atlantic, made by the NAT TFG in its latest forecast, in the context of their implications for future increases in occupancy. It is very difficult to determine how future increases in traffic will affect occupancy, because this depends upon the way in which the traffic system is operated. Since no absolutely realiable relationship between traffic levels and occupancy can be established, the Group decided to apply an empirical relationship calculated on the basis of historical data on same direction occupancy from 1981 to 1986. This showed that the ratio between a given percentage change in traffic levels and the resulting percentage change in occupancy was 1: 0.83.

1.2.10 Applying this factor to the 19% rise in traffic levels, predicted by the NAT TFG in the interval between 1986 and 1992, indicated that the occupancy might be expected to change by about 16% during the same period. This is a very imprecise estimate which could be applied either to the OTS or to random traffic occupancy.

FANS Scenario Development

1.2.11 The Group discussed a summary of the studies being conducted by the UK for the FANS Committee in the context of the North Atlantic airspace scenario. The feeling was expressed that caution should be used when predicting the reductions in separation which could accompany the implementation of improved communication/navigation/surveillance (CNS) equipment, since these should depend upon the safety of such reductions being demonstrated. As an example, automatic dependant surveillance (ADS) might be expected to eliminate a proportion of, but not all, gross errors, and would not therefore necessarily allow a reduction of lateral separation to 30NM. Furthermore, any advantage, claimed for improved CNS equipment, would require investment also in ground equipment for safety benefits to be realized.

1.2.12 The Group wished to reinforce the point that the safety, associated with particular separation minima, depends heavily on the shape of the distribution of navigational errors, and also the risk depends upon the interaction between "core" errors and errors in the tail region at deviations of about the separation standard. Any modelling of lateral collision risk needs to take account of this and of the fact that lateral error distributions typically depart considerably from the Gaussian form, with heavily emphasized tails. The effect of any particular navigation/surveillance system on collision risk will depend upon:

(a) the extent to which gross errors occur, at or around the separation standard;

(b) the spread of the core distribution (since a more compact core, combined with deviations of exactly the separation standard, could lead to significant increases in risk.)

1.2.13 The summary suggested that an automatic dependant surveillance system might lead to the possibility of reduced longitudinal separation. The group noted however that the interaction between longitudinal and lateral risk through possible increases in lateral occupancy should be carefully considered. A similar interaction will occur between longitudinal separation and vertical occupancy, which will need to be considered if a reduction in vertical separation were contemplated.

Composite system risk estimates

1.2.14 Two papers were presented by the United Kingdom on subjects relating to the calculation of collision risk in an assumed future composite organized track system (OTS) with tracks spaced at 30NM plus 1000 feet. The first of these papers considered the risk associated with step-climbs in a composite system, the second dealt with the risk from contingencies and attempted to estimate the "total risk" associated with composite and rectangular systems. The United States also presented two papers on this topic.

Step-climbs in a composite OTS

1.2.15 A number of assumptions made in the calculation of the risk of step-climbs, were discussed by the group. In order to derive an expression for this risk component it is necessary to assume that a climbing aircraft will cross the level of previously diagonally separated aircraft only once. This was thought to be reasonable. The assumption was also made that opposite direction diagonal occupancy for aircraft engaged in step-climbs would be zero. This is the case provided that, as is expected, "even-level" composite tracks are only published within the OTS and no diagonal occupancy is therefore possible between OTS and random aircraft.

1.2.16 It was pointed out that, in order for aircraft to meet the MNPS criteria, a value of $P_y(30)$, the lateral overlap probability at 30NM lateral separation, might be in excess of the value assumed in the UK paper. The distribution assumed in the original MNPS would lead to a value of 3.4×10^{-5}. However, this was rather academic since the current performance, particularly with regard to the standard deviation criterion, is substantially better than this.

1.2.17 The assumption which caused the group most concern was the value of diagonal occupancy assumed for a future composite system. The value of 1.0 taken in the UK paper was somewhat at variance with previous discussions within the NAT SPG, where a value of between 2 and 3 times the same direction rectangular lateral occupancy was considered appropriate. The diagonal occupancy depends upon the loading of the odd and even-level tracks, which is an unknown quantity, and the risk associated with step-climbs in the composite system is directly dependent on its value.

Contingency risk

1.2.18 In its consideration of contingency risk, and the calculations presented thereon the Group's discussions centred on the behaviour of aircraft which suffered contingencies. The assumption made by the UK was that all contingencies would result in aircraft turning immediately perpendicular to their original track, drifting downwards in altitude and taking up a position laterally separated (by either 30NM or 15NM in the rectangular and composite system respectively) whilst flying in the same direction to the adjacent traffic. However, reference to the contingencies which were recorded in 1986 indicated that other types of behaviour might also occur, for example:

(a) emergency descents;

(b) turnbacks, associated with drift-down;

(c) turnbacks, not involving drift-down.

The causes of contingencies occurring in the MNPS in 1985 and 1986 are shown in Table 3.

TABLE 3

CONTINGENCIES IN MNPS AIRSPACE 1985-1986

Reason/cause	1985			1986		
	Shanwick OTS (TOT)*	Gander OTS (TOT)	Santa Maria (TOT)	Shanwick OTS(TOT)	Gander OTS(TOT)	Santa Maria (TOT)
A. ENGINE	12 (18)	13 (25)	(5)	12 (18)	24 (35)	(3)
B. HYDRAULIC	3 (4)	2 (2)	(0)	3 (4)	0 (0)	(0)
C. WINDOW/ WINDSHIELD	0 (0)	1 (4)	(2)	0 (0)	0 (0)	(0)
D. FUEL	2 (4)	0 (3)	(1)	2 (4)	1 (2)	(2)
E. WEATHER	0 (3)	2 (4)	(0)	0 (3)	1 (5)	(0)
F. NAVIGATION	1 (2)	1 (1)	(1)	1 (3)	1 (1)	(2)
G. BOMB SCARE	2 (3)	0 (0)	(1)	2 (3)	2 (2)	(2)
H. MEDICAL	4 (5)	4 (4)	(0)	4 (5)	1 (1)	(3)
I. OTHER EQUIPMENT	3 (5)	1 (2)	(1)	3 (4)	0 (1)	(2)
J. PRESSURIZATION	1 (1)	1 (2)	(3)	1 (1)	1 (3)	(2)
K. UNKNOWN or MISC.	1 (2)	3 (10)	(10)	1 (2)	2 (2)	(12)

* Total number in oceanic control area (OCA).

1.2.19 The Group agreed that on the basis of the calculations in the UK paper the contingency risk in both, rectangular and composite systems was negligible in comparison to the other components of risk. However as stated above the calculations did not take account of all contingency flight profiles, for example those associated with turnbacks and emergency descents, which in some cases would result in a higher level of risk.

Total collision risk of composite and rectangular OTS

1.2.20 On the subject of total risk in the composite and rectangular systems, the Group considered the validity of each component risk in turn. In relation to the step climb risk, the same questions which were raised with regard to step-climbs also applied to contingencies. However, in the latter case the diagonal occupancy used was accepted as a reasonable estimate, because it was based on a simulated composite system, using conservative assumptions about the utilization of composite tracks.

1.2.21 In relation to the composite system diagonal risk, the Group noted that the estimate for $P_z(1000)$ was provisional and should be treated with caution. However, an increase of two orders of magnitude in the value of $P_z(1000)$ would be necessary for it to have any appreciable effect on the total risk calculation. Further refinements of the value of $P_z(1000)$ may be expected as the RGCS Panel continues its work.

1.2.22 The lateral component of the risk in both composite and rectangular systems is the dominant contribution, according to the calculations conducted in the UK paper. This was judged by the group to be a fair representation of the facts. However the lateral risk, associated with each type of system, varies directly with the lateral occupancy. Thus, any improvement in risk, expected from a composite system, depends upon a reduction in lateral occupancy actually being achieved. The paper presented a fairly optimistic scenario in this respect, since it assumed in estimating the lateral occupancy of the composite system that aircraft have no preference for flight planning on rectangular tracks rather than on composite tracks. This high utilization of composite tracks may not be realized in practice, and thus the potential risk benefits of the composite system may not be as large as suggested in the UK paper. A further point that should be recognized is, that the estimated risks depend upon an assumption of the same zeta error rate for each system. This may not be appropriate if a change to the system were to cause additional errors to occur in the early stages of its application.

1.2.23 Finally, on the subject of composite separation, the Group considered a further paper presented by the US. A number of comments were made in relation to statements appearing in the paper which bore on collision risk assessment. On the issue of lateral occupancy the Group agreed, as recorded above, that any risk advantage that a composite system might have rests upon a reduction of lateral occupancy. Such a reduction could only be achieved if additional composite tracks did not lead to increased density of traffic at the "core" of the OTS. It was noted that, on a relative basis, the "total" risk of a composite system as compared to a rectangular system was not particularly sensitive to the assumed standard deviation of aircraft track keeping. In this sense the proposed composite monitoring criterion of 4.25NM is not implicit in composite separation. To meet a defined target level of safety, the standard deviation in a composite system, as in a rectangular system, must, of course, be limited.

1.2.24 The US paper also made a number of points about monitoring criteria appropriate to a composite system.

1.2.25 As regards vertical performance, which the US suggested would need to be certificated, the Group noted that, on present evidence, the aircraft appear to perform satisfactorily. The 30NM/1000ft composite system is not as sensitive to vertical performance as a 1000ft rectangular system. It was also noted that the RGCSP is in the process of defining performance standards for 1000ft separation above FL290. As has been recognized in the past by the NAT SPG (see summary of NAT SPG/23, para 4.5.7), additional monitoring procedures would be necessary for the composite system, for example to assess the diagonal occupancy and the number of step-climbs per crossing.

Crossing traffic at 1000ft separation

1.2.26 The Group discussed a UK paper, giving estimates of the risk associated with aircraft crossing the OTS at 1000ft separation using a provisional estimate of $P_z(1000)$. It was suggested that a more realistic value of the occupancy should be used, 0.89 instead of 0.77. This would increase the calculated crossing risk by 16%. It was also noted that, as traffic density on the OTS tracks is highly variable, the risk for any individual crossing would also be variable, depending on the time of the crossing in relation to the maximum flow in the OTS.

1.2.27 The assumptions used in the paper in relation to the OTS traffic density were representative of a particular view about how such a facility would be used. Refined risk estimates could be made if there were a better understanding of the number of aircraft which might cross the OTS if such a system were implemented, the angle of crossing and the time at which the crossing took place. It was noted that if such crossings were allowed in random airspace, the risk would probably be lower, again the use of such operations in practice would need to be considered.

NAT SPG Collision Risk Model Parameter Values

Vertical performance

1.2.28 Two papers presented information on subjects relevant to NAT Collision risk model parameter values. The Group considered first an analysis of height keeping performance of NAT aircraft, using data derived from the vertical data collection carried out under the sponsorship of Eurocontrol. This presented estimates of the overlap probabilities $P_z(0)$ and $P_z(1000)$ associated with separations of zero and one thousand feet.

1.2.29 It was noted that the uncertainty associated with the estimate of $P_z(1000)$ would be expected to be high since it depends on the tail region of the distribution of height-keeping data where few data points are available. The value of $P_z(0)$ should be reasonably accurate, since more data were used to estimate the shape of the distribution in the core region on which $P_z(0)$ principally depends. However, some account should be taken of measurement error, since this will inflate the observed standard deviation and lead to an underestimate of Pz(0).

1.2.30 It was suggested that changes in the aircraft population would probably occur in the period before vertical separation was reduced. If this affected height keeping performance, some variation in the values $P_z(1000)$ and $P_z(0)$ were likely to occur.

1.2.31 The risk estimates for the NAT Region, as presented, appear to be slightly in excess of some values for the target level of safety, suggested by members of RGCSP for vertical separation. It was the Group's view that considerable further study would be necessary to determine whether a reduction to 1000ft separation above FL290 in the MNPS airspace would be feasible.

Individual parameter values

1.2.32 The Group raised the question of whether aircraft dimensions used in the collision risk calculation should be based on conservative or average values. Also, changes in aircraft population might occur in the future which would have some effect on the average dimensions.

1.2.33 It was noted that an examination of aircraft relative velocities on the track system in the Eastern and Central Pacific area had, in the mid-1970s led to an estimate of 29 Kts. However, the traffic may have changed in the intervening period and was not directly relevant to the NAT system because of a more heterogeneous mixture of aircraft types.

1.2.34 In relation to the vertical relative velocity, the question of "soft" altitude mode in flight management (FMS)/performance management (PMS) systems was again raised.

1.2.35 The Group noted the work which had been done on estimating the relative lateral velocity at 60NM lateral separation. The calculation was based on an assessment of the effect of waypoint insertion and ATC-loop errors because adequate data could not be obtained for other types of error. Given the uncertainty associated with the original estimate of 47 Kts, and given the higher value of 80 Kts resulting from a study of the UK, it was felt that there was a case for amending the assumed value.

1.2.36 The vertical overlap probability $P_z(0)$ had been discussed previously. A higher value than the currently assumed value of 0.25 would seem appropriate, probably of the order of 0.4 as suggested by the UK.

1.2.37 The Group questioned the occupancy assumptions made in the UK paper, since they applied only to the OTS and were inflated values relative to the current OTS occupancy estimates. Measurement is the preferred method of assessing occupancy because of the dynamic range involved, and this is carried out on a regular basis in the NAT region and reported to the NAT SPG annually.

1.2.38 The feeling of the Group was that, given that the combined effect of all the changes to parameter values suggested by the UK was, to increase the estimated collision risk for any given value of zeta, serious consideration should be given to changing the parameter values used by the NAT SPG in future years. It should, however, be recognized that, if the collision risk model parameter values were changed, this might lead to a requirement for changes in the MNPS criteria.

Confidence levels for gross error rates

1.2.39 In a paper of the USA a technical issue was raised which was related to the quality of the statistical decision that the rate of zeta errors is or is not in conformance with the proportion described in the MNPS. This is of particular value when considering the rate at or near the action limit. The paper points out that the statistical confidence varies with the number of observation and improves with greater sample sizes, and could have merit when comparing rates of the OTS, random and total system performance on a yearly basis, as is the current practice.

1.2.40 This point was considered necessary to complete the record on this statistical process. Knowledge of the relative levels of confidence, associated with the sample size, would be helpful in the event that the zeta error rate rise to near critical levels in the future or, if during the course of future deliberations, new lower monitoring levels come to be established. The paper pointed out that judgements of the system risk, made by the NAT SPG each year, would also be subject to uncertainty, but it was not clear how the level of confidence in the estimate could be calculated.

NAT MNPS Collision risk estimates for 1986

1.2.41 The calculation of the NAT MNPS collision risk ratio (i.e. the level of risk in proportion to the target level of safety) was conducted for OTS and random traffic separately. This is the method adopted for the last two years, to take account of the historical differences in occupancy and zeta error rates associated with the OTS and random traffic. The values obtained were then combined, weighted by traffic count, to produce an overall MNPSA risk ratio. The estimates of the risk ratios for OTS and random traffic are shown in Table 4. Zeta error rates were taken from Attachment A.

1.2.42 The number of aircraft flying within the OTS and in random airspace within the MNPSA must be known for the weighted average risk to be calculated. The method adopted to estimate the traffic count was documented at NAT SPG/23. The OTS traffic was taken from Attachment A, which gave the figure of 69896 aircraft. Random traffic is rather difficult to calculate accurately, given that not all of it is monitored. From the report of the NAT TFG, it is noted that, in 1986, 141400 aircraft flew across the North Atlantic. Subtracting the OTS traffic given above from the estimated total NAT traffic for 1986 provides an estimate of total NAT random traffic, and factoring with a value of 0.938 takes account of random aircraft above and below the MNPSA. By this means, the number of random aircraft in 1986 was estimated to be 67098, giving an estimated total traffic sample of 136994 aircraft in the MNPSA. The overall risk ratios are presented in Table 4.

Table 4

Calculation of risk ratio for the NAT MNPS airspace (MNPSA)

	OCCUPANCY RATIO		ZETA RATIO		RISK RATIO
OTS	1.31 (1.31)	x	0.11 (0.92)	=	0.14 (1.21) Model 1
			0.16 (0.68)	=	0.21 (0.89) Model 2
RANDOM	0.34 (0.46)	x	0.66 (0.76)	=	0.22 (0.35) Model 1
			0.48 (0.76)	=	0.16 (0.35) Model 2
MNPSA	(Model 1) = 0.18 (0.78)				
	(Model 2) = 0.19 (0.62)				

(All numbers in brackets are NAT SPG/23 estimates for 1985)

1.2.43 The Group concluded that, during 1986, the risk was well within the target level of safety as a result of the very good navigational performance demonstrated during the year. A comparison of 1986 estimates with those of previous years is given in Table 5, which indicates a considerable improvement since 1984. The trend is due entirely to improved navigational performance, with occupancy ratios maintaining similar values to those in the past two years.

Table 5

Risk ratios by year, 1984-1986

	1984	1985	1986
Model 1	0.90	0 78	0.18
Model 2	0.75	0.62	0.19

Future work

1.2.44 In view of what has been said in para 1.2.38, it appeared advisable to the Group to consider the need for a complete review of the risk model parameter values used so far and the resulting effect on risk assessments. This appeared advisable not only because the constant application of plausible parameter changes, whilst not producing a current risk estimate in excess of the target level of safety (TLS) might result in a risk estimate increase by a factor of 2.5 to 2.82, but also in order to take account of new developments regarding the traffic in the NAT Region between now and the end of the century.

1.2.45 In addition, the Group considered that the time was right for a review of the fall-back procedures, which had been developed in 1981, to be used in the event that system risk estimates reached the action level which the Group had set itself.

1.2.46 The Group therefore invited States concerned to make any material on this subject available to it as soon as it became available and to put this matter on its work programme.

1.3 Methods of improving the observed standard of navigation performance

1.3.1 In considering the methods by which the observed standard of navigation performance might be improved, the Group noted that, as in 1985-86, the number of errors attributed to some failure of, or problem with, OMEGA equipment was disproportionately high. Of the 15 Table ALPHA errors, 5 errors (33%) were related to the use of OMEGA. Coarse estimates of the percentage of OMEGA equipped aircraft operating in MNPS airspace indicated that this figure was unlikely to exceed 11%.

1.3.2 A study of the achieved navigation accuracy of 155 OMEGA equipped aircraft leaving Shanwick OCA indicated a mean track keeping accuracy of 0.1NM South of track with a standard deviation of 3.3NM. It was clear that within the area of the study the OMEGA system accuracy was well within the requirements of MNPS. In noting the various inputs from States, the Group agreed that the Central Monitoring Agency should present all available information on the difficulties currently being experienced with OMEGA to the "Commanding Officer, OMEGA Navigation System Centre", together with an expression of the concern of the NAT SPG as expressed at this Meeting. It is understood that the latter has agreed to examine the reported difficulties with a view to their elimination, in co-operation with the International OMEGA Association (IOA).

1.3.3 The Group then considered the question of MNPS approvals for aircraft equipped with flight management systems (FMS). It was agreed that aircraft equipped with a single FMS should be approved for MNPS operations on the 'Special Routes' only. The Group recommended that provisions be developed specifying that, for full MNPS approval, FMS equipped aircraft should have two serviceable FMS on entry into MNPS airspace. On operations along 'Special Routes, in MNPS airspace the requirement should be one serviceable FMS on entry. The Group also considered that an emergency drill, covering a complete FMS failure, should be included in the NAT MNPS Operations Manual.

1.3.4 In its review of gross navigation errors, the Group noted with appreciation that, during the monitoring period, Gander OAC had detected and corrected 46 incidents which, without this intervention, might have developed into gross errors. It was also appreciated that evidence on these cases had been provided to the Group by Canada. It was hoped that information on this type of ATC interventions could, in future, also be provided by other provider States as it helped to complete the monitoring survey.

1.3.5 The Group also dealt with the comparatively by rare occasion where pilots were about to arrive at the oceanic boundary without having yet received a valid oceanic clearance. During the discussion it became, however, apparent that conditions under which such incidents had occurred in the past were subject to so many variables that a generally applicable solution could not be found. Nevertheless, the Group felt it necessary to draw provider States' attention to this question with the request to ensure that adequate co-ordination arrangements between domestic and oceanic ACC's are provided (and necessary provisions regarding pilots' action are published) to prevent such situations.

1.3.6 The Group noted that, once again, there were several instances where waypoint insertion errors were associated with revised route clearances when crews failed to insert the new route correctly into the control display unit (CDU). The Group considered that, in the guidance given to crews, it should be stressed that before transmitting position reports, the coordinates of the present and forward positions must always be checked against those shown in the steering CDU. This would afford ATS an opportunity to detect and prevent an incorrect routeing.

1.4 Methods of improving the current monitoring procedures

1.4.1 During the Meeting, the Group established a small working party which reviewed the draft 5th Edition of the Guidance and Information Material as prepared by the European Office of ICAO. The essence of the amendments to this document, resulting from this review is shown under Item 5.3.

1.4.2 The Group then considered a series of spot-checks carried out by Canada, the UK and the US to determine the MNPS approval status of selected operators and also the correct insertion of the letter 'X' (denoting MNPS approval) in field 10 of the ICAO flight plan by MNPS users. It was observed that, to date, in these checks, no operator had been positively identified as non-approved for MNPS operations. Little satisfaction was, however, to be gained from this, as many States had not replied. Three States were noted as regular 'non-responders' to both spot-checks and to requests for assistance in the routine investigation of gross errors. The Group proposed that a standard letter be developed which could be despatched to such States by the European Office of ICAO, seeking co-operation, and perhaps enclosing copies of the Guidance and Information Material and the NAT MNPS Operations Manual. It would be the responsibility of the State carrying out the routine check, or of the Central Monitoring Agency (CMA) in the pursuit of gross error investigations, to advise the European Office of ICAO of the details of particular problems. It was the opinion of the Group that the spot checks were of value and should be continued during the next monitoring period.

1.4.3 The Group noted the offer by Canada to extend their monitoring window along the southern limits of the Gander/Moncton FIR boundary The CMA agreed to investigate the full implications of such an extension, noting that this would include traffic from the USA which had undertaken short flights over water on crossing the proposed window.

1.4.4 In the consideration of the gross errors by OMEGA equipped aircraft, the Group felt that particular efforts should be made to obtain as much detail of the incident as possible. It was suggested that, in the case of a detected gross error, the ground station, in its initial notification to the pilot, should enquire whether OMEGA was being used for steering and if so, request the pilot to record which OMEGA/VLF signals were being used and the corresponding signal strengths.

1.4.5 In the subsequent letter of notification, the provider State concerned should include a further letter to the operator concerned, requesting it to forward the following information to the "OMEGA Navigation System Centre":

a) type and make of receiver;
b) current modification;
c) geographic location where problems occurred
d) OMEGA/VLF signals being used and signal strength;
e) any indication of equipment failure;
f) any previous problems with installation;
g) any faults found during ground check;
h) any rectification work carried out.

A copy of this letter should also be sent to the CMA which, in its follow-up action should advise the State of Registry of this request and seek its assistance in obtaining the necessary information.

CONCLUSION 24/1 - ACTION TO STUDY OMEGA NAVIGATION ERRORS

That Provider States:

a) endeavour to ensure that, when a gross navigation error is detected, ground services concerned enquire whether an OMEGA navigation system was being used for steering and if so, the pilot be requested to record which OMEGA/VLF signals are being used and the corresponding signal strengths; and

b) send a letter to the operator concerned, requesting that the following information be forwarded to the "Commanding Officer, Omega Navigation System Center":*

i) type and make of receiver;
ii) current modification;
iii) geographic location where problems occurred
iv) OMEGA/VLF signals being used and signal strengths;
v) any indication of equipment failure;
vi) any previous problems with installation;
vii) any faults found during ground check;
viii) any rectification work carried out.

* Note: A copy of this letter should also be sent to the CMA who will advise the State of Registry and seek its assistance in obtaining the necessary information.

1.4.6 The Group considered a paper which contained the replies of States to the State Letter issued by the European Office of ICAO as a consequence of NAT SPG/23 Conclusion 23/1. The Group was most appreciative of the efforts of the European Office of ICAO in circulating the letter to all States concerned. The response from States, outside the immediate environment of EUR and NAT provider and user States, was apparent indifference. Only Hungary replied to confirm that no aircraft of that State was approved for MNPS operations. There were 14 replies from EUR and NAT provider and user States, 13 States confirmed that they had MNPS certified aircraft on their registers and that they followed the prescribed certification procedure. Only 3 States certified General Aviation (GA) aircraft for MNPS operations and there was little information given on these aircraft or on military aircraft. Insufficient information was received on OMEGA equipped aircraft.

1.4.7 In the discussion which followed, various proposals were put forward as means of tightening the approval procedures for GA aircraft:

a) it was felt that in some cases, in applying ICAO Documentation on MNPS (Doc 7030 - Regional Supplementary Procedures and also ICAO Annex 6 Parts I and II), insufficient emphasis was placed on the fact that the concept of MNPS encompassed a number of measures and provisions which were inseparably related to each other, thus forming an MNPS approval package - equipment standards, installation, maintainance procedures and crew training and continued proficiency. In the opinion of one State, the impression was created that only the necessary navigation equipment standards needed to be met in order to obtain MNPS certification, this being particularly relevant to GA aircraft;

b) States should be urged to maintain detailed records of all their GA Operators holding a current MNPS certification; and

c) GA MNPS certification should be limited in validity to a maximum of 2 years and that, in the event of a gross navigation error, the operators'MNPS certification should be reviewed.

1.4.8 These measures were accepted by the Group and it was agreed that they should be included in the relevant parts of the ICAO Guidance and Information Material.

CONCLUSION 24/2 - MNPS CERTIFICATION OF GENERAL AVIATION AIRCRAFT

That

a) in certifying aircraft for MNPS operations, all aspects upon which the MNPS concept is based be covered by the appropriate authorities;

b) States maintain a current detailed record of all their general aviation aircraft and their operators which have been certified for MNPS operations; and

c) the validity of MNPS certifications for general aviation aircraft be limited to 2 years before renewal and that, in case of a reported gross navigation error, the MNPS certification concerned should be made the subject of a special review.

1.4.9 In conclusion the Group observed that two operators had each committed three gross navigation errors during the monitoring period. It was the wish of the Group that the CMA should write to the State of Registry of each operator, on behalf of the NAT SPG, drawing attention to the errors and seeking confirmation that adequate measures had been taken towards preventing further errors. It was also drawn to the attention of the Group that a further operator had already experienced three gross navigation errors in the period which commenced on 1 March 1987. The Group felt that, in this case, similar action to that outlined above should be taken by the CMA.

CONCLUSION 24/3 - ACTION BY THE CENTRAL MONITORING AGENCY (CMA)

That the Member of the UK, as head of the CMA and acting on behalf of the Group, write to the States of Registry of those operators who had each experienced three gross errors in the preceeding twelve months, drawing attention to the Group's concern.

Classification according to cause (See Note 1)	⩾30 NM ETA. ERRORS	ERROR					
		50-70 NM (ZETA ERRORS)					
		TOTAL MNPS TRAFFIC		OTS TRAFFIC		RANDOM TRAFFIC	
		Model1	Model 2	Model 1	Model2	Model 1	Model 2
A	1 (7)	0	0	0	0	0	0
B	1 (1)	0	0	0	0	0	0
C1	2 ⩾(11)	0	0.46	0	0.46	0	0
C2	5 ⩾(11)	2	0.92	0	0	2	0.92
D	0 (2)	0	0	0	0	0	0
E	1 (1)	0	0	0	0	0	0
F	4 (4)	3	3	1	1	2	2
Not classified	1 (3)	0	0	0	0	0	0
TOTAL	15	5	4.38	1	1.46	4	2.92
Total in last period	29	13	10.68	9	6.68	4	4
OBSERVED TRAFFIC		116494		69896		46598	
Last monitoring period		115784		75259		40525	
Permissable number of errors within MNPS airspace*	61.74 (5.3 x 10^{-4})	15.14 (1.3 x 10^{-4})		9.08 (1.3 x 10^{-4})		6.05 1.3 x 10^{-4})	
Permissable number of errors before action based on operational judgement is required*	92.61 (7.95 x 10^{-4})	22.71 (1.95 x 10^{-4}		13.62 (1.95 x 10^{-4})		9.08 (1.95 x 10^{-4})	

Note 1: The letters in the Classification Column mean:

A: Aircraft not certified for MNPS Operation

B: ATC system Loop error

C1: Equipment Control error including inadvertent waypoint insertion

C2: Waypoint insertion error due to the correct entry of incorrect position

D: Other navigation errors, including equipment failure notified to ATC in time for action.

E: Other navigation errors, including equipment failure notified to ATC too late for action.

F: Other navigation errors, including equipment failure of which notification was not received by ATC.

* It is to be noted that the figures shown are dependant on the amount of traffic observed during the monitoring period.

Agenda Item 2: NAT Air Navigation System operations review

2.0 Introduction

2.0.1 Under this Agenda Item, the Group considered the following specific subjects:

a) air traffic services operations;

b) communication operations; and

c) determination of the efficiency level of the NAT air navigation system and the service provided to the airspace users.

2.1 Air Traffic Services Operations

Under this heading, the Group dealt with the following matters regarding NAT air traffic services operations:

a) application and refinement of separation standards;

b) review of domestic/oceanic interface problems and transition problems adjacent to NAT MNPS airspace;

c) review of possible further short-term ATS improvements and determination of action for their implementation;

d) extended-range twin-engined aircraft operations in the NAT Region;

e) airspace organization in the Miami, New York and San Juan Oceanic Control Areas; and

f) review of ATS operational contingency planning in the NAT Region, as necessary.

2.1.1 Application and refinement of separation standards

Expanded application of MNPS separation minima

2.1.1.1 As to the application of separation minima in general, the Group considered a proposal by its Member of Canada to apply 60NM lateral separation between MNPS certified aircraft regardless whether they were operating in MNPS airspace (MNPSA) or above. The proposal was based on the fact that 60NM lateral separation could be applied to certified aircraft even after leaving or prior to entering the MNPSA while this did not apply to fully certified MNPS aircraft crossing the North Atlantic above that airspace. For example, two Eastbound flights departing from the North-Eastern coast of North America could be separated by 60NM when entering the MNPSA and keep the same type of separation when cleared to fly above FL400, whereas aircraft departing from Central or Western USA, which never entered the MNPSA but flew above it for reasons of efficiency, had to be provided with 120NM lateral separation.

2.1.1.2 Although presented for the purpose of promoting further thoughts on this matter in order to make a firm proposal later, two options were presented by Canada: raising the upper limit of the MNPSA, or to amend the NAT SUPPs (Doc 7030) so as to permit the application of reduced separation minima between MNPS certified aircraft while operating above the MNPSA.

2.1.1.3 In the ensuing discussion the Group noted that the question of higher flight levels over the North Atlantic had also been addressed by IATA, which foresaw a possible future need to extend the MNPSA to include FL 410. Flights concerned, including extended-range operations by twin-engined aircraft (ETOPS), would constitute 6 to 7% of the total traffic in the NAT Region, with a likely probability of continued growth. In this context the Group found it useful if, in addition to data available from the North Atlantic Traffic Forecasting Group (NAT TFG), more information could be obtained by extraction from existing automated systems as well as from IATA. As to the second option, some Members felt that it would dilute the MNPS concept. However, it would also pose the problem for ATC to be aware to which aircraft reduced separation could be applied because they were MNPS certified (see also para 1.2.2).

2.1.1.4 The Group noted that Canada and the US would study the matter further, taking into account the views expressed at this meeting, and would present a consolidated proposal at the next meeting, on the basis of additional suggestions that other NAT provider States were invited to forward to Canada. This will include studies by the US , in co-operation with US operators, as to the impact of raising the upper limit of the MNPSA to include FL410.

CONLCUSION 24/4 - EXPANDED APPLICATION OF MNPS SEPARATION MINIMA

That Canada and the US undertake a study on the possible expanded application of MNPS separation minima to MNPS certified aircraft when operating above the Minimum Navigation Performance Specification Airspace (MNPSA) for consideration at the next Meeting of the NAT SPG.

Minimum longitudinal separation between MNPS certified aircraft

2.1.1.5 Addressing the question of minimum longitudinal separation between turbojet aircraft meeting the MNPS (ICAO SUPPs - Doc 7030/4 - NAT/RAC, para 7.2.2 refers), the Member of Iceland reported that some difficulties had been experienced in the practical application of this procedure in Northern latitudes due to the narrow angles between diverging tracks, particularly when applied to flights on polar tracks. In some cases it could take up to 70 minutes flying time from the common entry point before the required 60NM lateral separation were achieved and this occurred well beyond the next significant point. Noting that any proposed change to the Regional Supplementary Procedures could entail complex modification to the software of existing flight data processing systems, the Group agreed to consider this matter further at its next meeting. It requested its Member of Canada to include this subject in their proposal for review at NAT SPG/25.

2.1.2 Review of domestic/oceanic interface problems and transition adjacent to NAT MNPS airspace

Shannon Oceanic Transition Area (SOTA)

2.1.2.1 Further to discussions on this subject at the last two Meetings, the Group was presented with a consolidated proposal by its Member of Ireland. It was recalled that the Shannon Ocanic Transition Area (SOTA) concept foresaw the delegation of ATC to Shannon ACC within a specified portion of the Shanwick OCA between FL 55 and FL 660.

2.1.2.2 The Group noted that the proposal had progressed to a stage where agreement in principle had been reached between Ireland and the United Kingdom and that further discussions concerning procedural matters had already taken place between France, Ireland and the United Kingdom. The proposal was now submitted to the NAT SPG for endorsment before a further assessment of requirements regarding facilities, manpower, etc., supporting the SOTA procedures was pursued. Keeping in mind that the new airspace organization could be implemented by the end of 1988 at the earliest, the Group endorsed the concept on the understanding that development and operational costs involved would be co-ordinated with the airspace users before its implementation.

CONCLUSION 24/5 - IMPLEMENTATION OF THE SHANNON OCEANIC TRANSITION AREA (SOTA)

That:

a) States involved in the planning of the Shannon Oceanic Transition Area (France, Ireland and the UK) conclude appropriate procedures for its operation with the objective of their implementation by the end of 1988;

b) as soon as practicable, Ireland co-ordinate with IATA (and with any State which informs the Member of Ireland of its interest) regarding the costs involved and the associated recovery method to be used; and

c) the NAT/SPG be kept informed of developments.

Polar Track Structure (PTS)/EUR ATS route network interface

2.1.2.3 Pursuant to NAT SPG Conclusion 23/6, an Informal Meeting was held at the European Office of ICAA on 25 February 1987 to discuss harmonization problems between the EUR ATS route system and the Polar Track Structure (PTS). This meeting was attended by Denmark, Iceland, Norway and IATA. It was recalled that the main matter of concern was that the PTS are ATS routes not formally established within Norwegian FIRs and therefore not published in the AIP Norway. PTS are, however, published by Iceland and shown in the North Atlantic MNPS Airspace Operations Manual in a way that users of the airspace assume that PTS are ATS routes also established in Norwegian FIRs. This again, has led companies, publishing navigation charts for the area in question, to show PTS as ATS routes existing within Norwegian FIRs. Based on this, operators have for some years filed, flown and reported on ATS routes which were not identifiable with reference to Norwegian aeronautical publications. Anchored at some of the same landfall points in Norway as those of PTS, a number of RNAV routes spreads out towards the Greenwich Meridian. These RNAV routes are part of the European ANP and published as available ATS routes in the AIP Norway.

2.1.2.4 From the discussion at the Informal Meeting, it appeared that it would be prudent, formally to establish a PTS within Norwegian FIRs but, as these routes will be extending over the high seas, they would be subject to the provisions in Annex 11, paragraph 2.1.2 and its associated Note 2. However taking into account that additional material, clarifying the intent of Annex 11, were being developed by ICAO, Norway had been invited to present its detailed proposals to the European Office of ICAO for further advice, pending the availability of new or additional guidance on this matter by ICAO.

2.1.2.5 The Group noted the intention of Norway to implement the ATS routes in question as soon as possible, in order to be able to provide flight information service to flights operating along those routes. It was also noted that Norway had started to co-ordinate the matter with their immediate neighbours prior to the Informal Meeting. In view of those developments and the relative urgency to establish an interface between the PTS and its landfall points in Norway, the Group felt it advisable to recommend the implementation of the relevant ATS route network on a trial basis in compliance with Annex 11 pending completion of additional guidance by ICAO.

CONCLUSION 24/6 - IMPLEMENTATION OF THE PTS/EUR INTERFACE

That Norway be invited to implement, on a trial basis, supplementary ATS routes extending from Flesland, Vigra, Trondheim and Alta through the Stavanger FIR, the Trondheim FIR and the Bodø Oceanic FIR to join the PTS as published for the Reykjavik CTA, pending completion of appropriate guidance by ICAO.

2.1.3 Review of further short-term ATS improvements and determination of action for their implementation

Voice communication requirements - Gander OAC/Søndrestrøm FIC

2.1.3.1 The Member of Canada raised the question of lack of voice communications between Gander OAC and Søndrestrøm FIC. It was recalled that air traffic services over Southern Greenland above FL195 within the Gander Oceanic CTA are provided without the benefit of such facility. In addition, the increase of traffic in recent years rendered AFTN communications inadequate to cope with the complex traffic situations as they occasionally occurred.

2.1.3.2 The Group noted that under the present arrangements, the existing voice communications (two voice circuits between Gander and Reykjavik and one between Reykjavik and Søndrestrøm) would permit, with regard to present loading, the establishment of direct voice contact between Gander OAC and Søndrestrøm FIC. In addition, by utilizing the switching equipment at Reykjavik it would be possible to relieve controllers at Reykjavik from the tedious task of acting as a relay, whilst retaining the option to use the switch to provide a stand-by Gander/Shanwick voice link if required. It was emphasized that there appeared to be some urgency to improve and facilitate the handling of traffic operating to/from airports in Southern Greenland. The proposed voice link would also provide for improved airspace utilization around the Greenland corridor and better assistance to in-flight contingencies, including extended range operations of twin-engined aircraft. The Group therefore agreed that this question should be resolved as early as possible. (See also para 2.2.3).

CONCLUSION 24/7 - VOICE COMMUNICATIONS BETWEEN GANDER OAC AND SØNDRESTRØM FIC

That Canada, Denmark and Iceland make arrangements, as soon as possible, to permit voice communications between Gander OAC and Sondrestrom FIC, utilizing existing voice circuits and the switching equipment available at Reykjavik.

Other improvements required

2.1.3.3 Under this Item, the representative of IATA raised a number of issues which, in his opinion should receive attention by States concerned:

a) reroutings of Eastbound flights at or before the day time OTS, in order to avoid Track "A";

b) delays in obtaining replies from Gander OAC to pilots' requests;

c) night time OTS unsuitable to diversified traffic;

d) application of the datum line technique South of the OTS; and

e) lack of standardization of track signals.

2.1.3.4 The Group noted the points raised by IATA and agreed that States concerned should take appropriate action in order to eliminate, or reduce to the maximum extent possible, the shortcomings mentioned.

2.1.3.5 Addressing the subject of determination of the Westbound OTS, the Member of the UK emphasized that more operators should notify Shanwick OCA of their requirements for a Minimum Time Track (MTT). This input was essential for the Shanwick OAC when establishing the OTS. At present only one third of the operators flying within the OTS were providing this information. The IATA respresentative informed the Group that operators had already been requested to make their requirements known.

2.1.3.6 In the same context the point was made that, in filing flight plans, compliance by operators with the ICAO format still left much to be desired. The representative of IATA stated that action had been taken with operators to achieve better adherence to prescribed formats.

2.1.4 Extended-range twin-engined aircraft operations in the NAT Region

2.1.4.1 Further to discussions of extended range operations by twin-engine jet aircraft (ETOPs) in the NAT Region at its 23rd Meeting, the Group took up this subject in order to see whether new developments had come to light. From statistical data presented by the Member of Canada, it was noted that these operations now constituted some 6 to 7% of the total operations passing through the Gander Oceanic Control Area. From the forecasts, prepared by the NAT Traffic Forecasting Group, it was also noted that, by 1992, it was expected that such operations would constitute some 7% of the total traffic operating in the entire NAT Region and that a continuous growth of this type of operations could be expected.

2.1.4.2 The Member of Canada also pointed out that arrangements, whereby operators intending to start this type of operation in the NAT Region, had established prior contact with Gander OAC to obtain first hand information on the requirements and conditions of operations which flight crews were expected to meet, had given satisfactory results.

2.1.4.3 The Member of the UK informed the Group of certain difficulties Shanwick OAC had encountered with some ETOPs which were reluctant, or not prepared at all, to accept small re-routings in their initial oceanic clearance. It appeared that this was more due to procedural provisions, established by the operators for flight crews engaged in ETOPs, than by compelling operational reasons and it was hoped that operators concerned, in the light of experience, were prepared to modifty their internal operating instructions.

2.1.4.4 In view of this situation, the Group endorsed the proposal by Canada for prior contacts by operators with ATC before starting ETOPs in the NAT Region, as it was felt that this could materially assist in overcoming, from the very start, the types of problems mentioned.

2.1.4.5 In the context of ETOPs, the Group was presented with a proposal from IATA that two person-flight crews, when operating in the NAT Region should be exempted from the requirement to make en-route meteorological reports. While this proposal applied at this time particularly to ETOPs, it was nevertheless noted that, in future, this could also apply to three and four engined aircraft, since there was a clear trend towards reduction of flight crew numbers for these types of aircraft also.

2.1.4.6 When considering this proposal, the Group noted that its unrestricted application could have serious repercussions on the quantity and quality of actual MET information provided by aircraft in flight. While it was felt that an exemption procedure for ETOPs (and/or two-person flight crews of other types of aircraft) operating along the Organized Track Structure (OTS) would not create too many difficulties because other aircraft could substitute for the exempted flights, the situation was slightly different as far as aircraft operating on random tracks were concerned. In this context, Canada informed the Group that in the Gander OAC 45% of the present ETOPs were operating in this mode. It was also noted that, as two-person flight crews were extended to other types of aircraft, there may be difficulties for ATC to determine which flights were operating in this configuration, in order to make their choice in the designation of those from which MET reports were expected.

2.1.4.7 In view of this situation, it was therefore agreed that, for the time being, ATC should make efforts to relieve ETOPs from the requirement for MET reporting in the OTS, but that this matter needed to be kept under review if and when a more widespread use of the two-person flight crews composition was adopted by operators for flights in the NAT Region.

2.1.4.8 In summary, the Group agreed that, for the time being, ETOPs operating within the OTS should be exempt from MET reporting, but that in the case of random operations by ETOPs no such blanket exemption was possible, even though OACs concerned would use discretion in designating ETOP flights for MET reporting.

2.1.4.9 With respect to the provision of meteorological information to ETOPs in flight, the Group was informed that there could be routine requirements, additional to those now covered in the NAT HF VOLMET broadcasts. A detailed review, conducted at this meeting and based on requirements presented by the representative of IFALPA, showed that this was not yet the case, except for the technical points mentioned under item 2.2. (para 2.2.21 refers). It was however pointed out that, should such new requirements materialize, it would be necessary to present these at the earliest possible time for consideration, because experience had shown that modifications to the content and/or schedule of the NAT HF VOLMET broadcasts required extensive negotiations and comparatively long lead-times for their introduction, once they were agreed.

2.1.5 Airspace organization in the Miami, New York and San Juan Oceanic Control Areas

2.1.5.1 At its 23rd Meeting, the Group had been presented with a proposal by the US, to reorganize the traffic pattern along the East coast of the USA and down to the Carribean Region. The reason for this proposal was that air traffic services, involved in handling this traffic (New York Oceanic ACC, Miami ACC and San Juan ACC in the CAR Region) were, at times, unable to accommodate the traffic demand under existing organizational and procedural arrangements. At its 23rd Meeting, the Group had therefore reviewed a detailed proposal for amendment of the RAC Regional Supplementary Procedures, applicable in the NAT and CAR Regions which the USA intended to present to ICAO for formal processing. At the same time, it had retained two points covered by the proposal for further consideration. These concerned:

a) the feasibility of reducing longitudinal separation in the area concerned from the present 15 minutes to 10 minutes in conjunction with the application of the Mach number technique; and

b) the authorization for aircraft to operate on a specified number of "special routes" with a reduced navigation fit.

In addition, it had been noted that the US would continue its work on the subject and keep the NAT SPG informed of further developments.

2.1.5.2 At this meeting, the Group was now presented with additional documentation on this subject. Discussions made it appear adviseable that the proposal presented to NAT SPG/23 required modification in order to reflect latest developments resulting from continued work on this subject by the US Administration.

2.1.5.3 As to the operational aspect of the re-organization of the airspace along the East coast of the USA down to and into parts of the CAR Region, the Group noted from documentation, presented by the Member of the US at this meeting, that latest intentions were, to proceed in accordance with a plan envisaging four phases of development as follows:

a) standardization of separation minima applicable in the area in question;

b) re-organization of the existing ATS route structure (at present based on a spacing of 90NM between adjacent tracks);

c) inclusion of the airspace in question in the designated airspace wherein MNPS apply; and

d) a realignment of the boundary in the Southwestern part of the NAT Region between it and the CAR Region so that specified parts of the Miami Oceanic FIR and the San Juan Oceanic FIR would become part of the NAT Region.

This latter development resulted from studies in the US which envisaged the extension of the New York Oceanic FIR, incorporating part of the Miami Oceanic FIR and also part of the San Juan Oceanic FIR and including all this airspace in the NAT Region.

2.1.5.4 The documents presented by the Member of the US showed that it was intended to realize phases a) and b) above within the next eighteen months while the implementation of phases c) and d) was expected to be completed within the next three years, even though it was expected that necessary work on them would be started as of now.

2.1.5.5 In the ensuing discussion, the Member of the US informed the Group that, at present, during peak periods of traffic, ATC concerned with traffic in that area was required to resort to traffic flow management measures, in order to keep traffic demand within the limits of the ATC systems capacity He also pointed out that, while previously delays to individual flights of up to 40 minutes had been a frequent occurrence, the flow control management measures had permitted to reduce these in recent times to 30 minutes but that, for obvious reasons, this was still unsatisfactory to both the operators and the ATC services concerned. He also pointed out that a number of alternative measures had been considered with respect to their effects on the traffic flow, but that it had been found that the solution now proposed appeared to offer the best solution. The proposed delay of three years for the inclusion of the airspace in question in the designated MNPS airspace (see para 2.1.5.3 above) was mainly due to the fact that, for an appreaciable number of aircraft operating in that area, retro-fitting of navigation equipment was required in order to qualify for operations in accordance with MNPS and that, therefore, the ability of operators to effect this had to be taken into account.

2.1.5.6 The Group appreciated the work done by the US and hoped that realization would be pursued with all necessary diligence. As to an operational assessment of the proposal, discussions concentrated on two aspects, which had already been presented to the Group for review at NAT SPG/23, i.e.:

a) the proposed reduction of longitudinal separation in the area in question from 15 minutes to 10 minutes associated with the application of the Mach number technique; and

b) the establishment of a specified number of "special routes" between the East coast of the USA and Bermuda which, even after the airspace in question was included in the designated MNPS airspace, could be flown by aircraft equipped with a single long range navigation equipment only.

2.1.5.7 With respect to a) above, the Member of the UK pointed out that, in his view, the reduction of longitudinal separation in association with the application of the Mach number technique was not necessarily dependant on the application of the MNPS. The fact, that such a reduction had previously been effected for the MNPS airspace only, was more due to the assessments being based on data collected only in MNPS airspace than by being directly linked to the MNPS requirements. He therefore felt that, provided the data collection in the area in question was conducted and the collected data was assessed in accordance with the methodology developed by the NAT SPG, there was no objection to the planned reduction if the results of the assessment indicated its feasibility, of which he had little doubt. It was noted that such data had, in fact, been collected and had been presented to NAT SPG/23.

2.1.5.8 With regard to the "special routes" mentioned in b) above the Group felt that the US approach to this matter was basically sound. It was also felt that, with the possible exception of one route, the distances involved, in which aircraft were required to operate without navigational guidance from short range navigation aids and/or without monitoring by radar facilities, were within acceptable limits. The only point where further refinements to the proposed provisions regarding operation on these routes appeared to be possible concerned:

a) the likely effects of erroneous meteorological forecasts on the flight path of aircraft, having lost the use of their long-range navigation equipment, on those portions of the route where this was the only aid at their disposal; and

b) the determination of the permissible navigational error, allowing continuation of the flight to destination, at the edge of the area where guidance by short-range aids and radar monitoring ceased to exist and failure of the long-range navigation equipment occurred.

2.1.6 Review of ATS operational contingency planning in the NAT Region, as necessary

2.1.6.1 Further to discussions on the subject of contingency planning at NAT SPG/23, the Group made another review of the situation. In doing so, it noted a confirmation from its Member of Canada that the agreement announced by him at NAT SPG/23, between his Administration and the Canadian Air Traffic Controllers Association to the effect that services over the high seas would not be affected in case of domestic industrial disputes, was confirmed. In addition, the Member of the UK indicated that, in case of withdrawal or reduction of services in the oceanic airspace, the UK Administration no longer believed it necessary to close the use of this airspace completely to operators. Contingency plans, to accommodate operations through the Shanwick OAC if ATC services were withdrawn, were being developed and would be the subject of discussions with adjacent States in due course.

2.1.6.2 The Member of the US suggested to the Group that the development of a detailed contingency plan for the NAT Region as a whole was neither required nor desirable because of the many imponderables and variables which were to be expected with each specific contingency.

2.1.6.3 Other Members of the Group indicated that they were involved in developing contingency plans for their national airspaces and were making broad arrangemments for services over the high seas likely to be affected, but that, after careful consideration it was felt that international co-ordination in this field should not be carried to extremes. In fact, it was believed to be sufficient if:

a) adjacent States ensured that they were mutually aware of each other's plans in this field and had concluded arrangements for necessary rapid relief action in case of a likely contingency; and

b) all provider States in the NAT Region were prepared to render maximum mutual assistance to each other whenever one, or more of them was faced with such an event.

In the latter respect, it was also noted that past experience had shown that contingencies were not of a stable nature, but were frequently subject to evolution. It was therefore desireable to react to such evolution in a dynamic manner in order to ensure that, at any given time, the best was made of the existing circumstances.

2.1.6.4 As to a question whether, in case of a contingency in the oceanic airspace, the provisions regarding MNPS continued to apply and that relief measures (and especially the provision of separation and/or in the absence of air traffic control the systematic spacing of aircraft upon entry) could continue to be done by taking account of compliance with MNPS by aircraft, it was confirmed that the MNPS provisions would continue to be applicable without modification. It was believed essential that this condition should be brought to States and operators' attention in unequivocal terms whenever, in case of an actual contingency, appropriate relief measures were published.

2.1.6.5 In summary the Group agreed that, in case of contingency,:

a) oceanic airspace should be made available to flight operations under conditions stipulated by the States concerned, which will constitute the optimum environment under prevailing circumstances;

b) all provider States affected by a contingency, whether directly or indirectly, will co-operate to the best of their ability to reduce the detrimental effects of such an occurrence to their minimum; and

c) provisions regarding navigational performance by aircraft and/or other operational provisions, addressed to pilots and related to the effective operation of the oceanic air navigation system, will remain in force and measures, taken by provider States in accordance with a) above, will take this into account.

2.2 Communications operations

General

2.2.1 The discussions on this item were broadly separated into two main subjects, i.e those dealing with:

a) Fixed services; and
b) Mobile services.

Under these two main headings, the following specific subjects regarding NAT aeronautical telecommunications were discussed:

Fixed services :

i) requirements for fixed circuits in the Northern part of the NAT Region.

Mobile services:

i) Routine review of the HF and General Purpose (GP) VHF communications situation in the NAT Region;

ii) ATS fixed message format for air-ground communications;

iii) Communication message intercept procedures in the NAT Region;

iv) VOLMET broadcasts;

v) VHF GP cover charts;

vi) SELCAL;

vii) NAT VHF air-to-air frequency

FIXED SERVICE

Requirements for fixed circuits in the Northern part of the NAT Region

2.2.2 The Group reviewed the previously established requirements for fixed circuits in the Northern part of the NAT Region, which were supported by the SCOTICE-ICECAN cable system. These requirements had remained unchanged for the last four years and had constituted the basic operational reference for a gradual development of the NAT AFTN/AFS configuration, along with the discontinuance of old cables and the introduction of new facilities. Some engineering re-arrangements of the system had been, or were expected to be made, based on recommendations by an informal Group of AFS specialists from the NAT provider States. This Group will hold its Seventh Meeting on 18-22 May 1987.

2.2.3 The Group noted the requirement for the provision of a speech link between Gander OAC and Sondrestrom FIC as presented by Canada (para 2.1.3 and Conclusion 24/7 refer). It also noted that this can be met by existing voice circuits between Gander OAC and Reykjavik ACC and between Reykjavik ACC and Sondrestrom FIC, with the provision of existing switching equipment at Reykjavik ACC, and it therefore endorsed this arrangement. In addition, it noted that, with the implementation in 1986 of a second speech-plus-data circuit between Gander and Prestwick, the switching at Reykjavik of the Gander-Reykjavik-Prestwick omnibus circuit had been set in the open state, but remained available for use as required. This had resulted in the availability of two voice circuits between Gander OAC and Reykjavik. Other important developments noted by the Group were, the establishment of a satellite link between Canada and Iceland and the planned provision of satellite services between Canada and Greenland (VISTA). A new configuration of the NAT AFTN/AFS system will be developed by the above mentioned Seventh Informal NAT/AFTN/AFS Meeting, taking into account the planned use of the new satellite services and the expected discontinuance of the ICECAN/North and SCOTICE/North cables by the end of 1987.

2.2.4 New circuit requirements were submitted to the Group. These were, the upgrading of the Ballygireen-London and Reykjavik-London AFTN circuits and the establishment of 2 additional dedicated data links, one between Reykjavik/OAC and Gander/OAC and the other between Reykjavik/OAC and Prestwick/OAC. The Group endorsed all these requirements and requested the European Office of ICAO to bring them to the attention of the Seventh Informal NAT AFTN/AFS Meeting.

MOBILE SERVICES

Routine review of the HF and GP VHF communications situation in the NAT Region

2.2.5 The Group reviewed the results of the 1986 NAT HF and GP VHF data collection exercise, which had been made in accordance with Conclusion 23/8 of the NAT SPG/23 Meeting. As called for by that conclusion, the arrangements for the conduct of the exercise were the same as for 1985. The data collection was intended to include total HF and GP VHF message traffic for each station, broken down by time, frequency and family for each selected day. Unfortunately, no total message data was available from the Ballygireen station for any of the collection dates due to a computer malfunction. It was, therefore, not possible to collate total message traffic on a system-wide basis and the statistics presented to the Group had to be restricted to position report messages on both HF and GP VHF.

2.2.6 The dates for the data collection were selected on the basis of the Westbound alignment of the Organized Track System (OTS). They were: 3 July 1986 (North-about), 7 July 1986 (Southabout) and 20 July 1986 (Great circle). The total number of position reports for the three days of the data collection was 7792 messages on HF and 2477 messages on GP VHF. Noting that, according to the results of previous exercises, the position reports represent some 50% of the total number of air-ground messages, the latter number could be taken to be of the same order as that, found in the case of the 1985 data collection (15560 HF and 4391 GP VHF). It was also noted that the distribution of message traffic among HF families was comparatively even, apart from a slight overcharging on Family "D" on 3 July 1986 and some occasional overloadings during peak hours on the 8 MHz frequencies of Families "B", "C" and "D" and on GP VHF. It was therefore agreed that there was no immediate requirement to change the existing arrangements for NAT HF traffic management.

2.2.7 The mean delay* of position report messages was 2.74 minutes, which compared favourably with the 1985 figure of 3.14 minutes. The Shannon Aeradio had the highest peak hour load of 86 position report messages on 20 July 1986 (0400-0500 UTC). In the case of Gander, the average delay time was 3 minutes, i.e. less than in 1985 (4.12 minutes). This was largely due to a lower incidence of long delays.

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* Delay is the time period which has elapsed between the moment an aircraft passes over a reporting point and the moment the air-ground radio station has completed reception of the corresponding position report. Mean delay is obtained by dividing the total delay by the number of messages.

2.2.8 With regard to harmful interference to NAT HF channels, a series of measurements, conducted by three Canadian monitoring stations in the period 18 August - 31 October 1986, showed cases of interfering signals. Cases of interference to VHF channels were also reported by Iceland and Ireland. Ireland indicated that, due to local interference problems, procedures had been initiated for the replacement of one NAT and one VOLMET HF channels. Some interferences had been identified to originate from stations located in the Eastern part of Europe. The Group proposed that, in such cases, action should be taken through the European Frequencvy Co-ordinating Body (EUR FCB), noting that such an informal procedure had proved quite effective on past occasions.

2.2.9 As already indicated, overloads on 8 MHz HF channels of the "B", "C" and "D" families, as well as on GP VHF (127.9 MHz) were reported to occur on occasion. While confirming that additional frequencies may be required to cope with this situation, the Group refrained from making any specific suggestion at this stage, in view of the anticipated implications, notably financial, associated with the introduction of new frequencies. However, it was agreed that the NAT provider States concerned and the airspace users would study this matter further and would present appropriate documentation and proposals to the NAT SPG/25 Meeting. In the case of GP VHF, the study should address the possible requirement for an additional channel for use in the Icelandic airspace.

2.2.10 The findings of the 1986 HF and GP VHF data collection exercise proved, once again, that the situation concerning NAT frequency utilization did not vary significantly from year to year. This led the Group to consider, whether the exercise should continue to be routinely conducted on a yearly basis, noting that it involved intensive labour and the allocation of the scarce resources available. While recognizing that the information derived from the exercise was quite useful, the Group was of the opinion that it could, in future, be effected on a less demanding schedule. It was therefore agreed that the next NAT HF and GP VHF data collection and evaluation exercise should not be conducted before 1989. In the event that NAT States, individually or collectively, require partial exercises for specific operational circumstances prior to 1989, these would be conducted by the States concerned, if necessary in co-operation with each other.

CONCLUSION 24/8 - FUTURE NAT HF AND GP VHF DATA COLLECTIONS

That the next NAT HF and GP VHF data collection be conducted in 1989.

Note: The arrangements for the planning and execution of the above exercise will be determined by the NAT SPG/25 Meeting.

2.2.11 In the framework of its review of the situation of the NAT air-ground communications, the Group noted with appreciation that a new VHF station, operating on 132.2 MHz, had been put into service on 9 April 1987 in the Faroe Islands. At present, the facility is provided primarily for direct pilot-controller communications for aircraft arriving at, or departing from, the Faroe Islands. The facility is remotely controlled from Reykjavik OAC.

2.2.12 In the context of a general assessment of the future rôle of HF communications in the NAT Region, in relation to the possible use of satellite communications, data-links etc., the Member of Ireland informed the Group that his administration was considering an economic study of the future of the Shanwick HF air-ground station at Ballygireen in the light of new developments. Discussions at this Meeting showed however that, for a considerable time to come, HF air-ground communications were expected to constitute an indispensable element of the total communications system of the NAT Region and that facilities rendering this service would therefore have to be maintained.

ATS fixed message format for air-ground communications

2.2.13 The Group noted that, in the follow-up of NAT SPG/23 Conclusion 23/11, the UK, in consultation with the other NAT Provider States, had developed a proposal for amendment of the Regional Supplementary Procedures (Doc 7030) aimed at introducing in the NAT Region standardized ATS fixed message formats for the efficient handling of such information through data processing facilities. According to this proposal, the word "POSITION" should be spoken to identify any position report message being transmitted. In this regard, it was recalled that a proposal for amendment to the PANS-RAC (Doc 4444) had been submitted earlier by Canada, which included, in part, that it should not be required to use the prefix "AIREP" or "AIREP SPECIAL" in position reports which contained operational and/or MET information, but to use the word "POSITION" instead. However, the Air Navigation Commission had decided that the AIREP and AIREP/SPECIAL prefixes should be retained.

2.2.14 While recognizing that regional procedures should not deviate from agreed world-wide provisions, the Group nevertheless felt that, if pressing new operational and technical requirements required a deviation from established methods, this was sufficient reason for their modification. To support this, the Group stressed once more that, on the one hand, messages other than position reports were relatively seldom transmitted while, on the other hand, provisions for the handling of other prefixes by automatic data processing equipment not only introduced an unacceptable and unnecessary complexity, but would also cause unjustified costs, especially in view of the fact that the extensive use of the proposed new method in the NAT Region had shown that it was entirely satisfactory.

2.2.15 In view of this situation, there was unanimous agreement by the Group that a revised proposal for amendment of the relevant parts of the PANS-RAC (and, if necessary, other affected ICAO documents) should be prepared by Canada and re-submitted to ICAO for processing. In addition, the Members of the Group agreed to advise their home administrations of the situation, with a view to ensuring that the Canadian proposal would be given full support.

CONCLUSION 24/9 - PROPOSAL FOR AMENDMENT OF THE PANS-RAC IN RESPECT OF POSITION REPORTS

That:

a) In order to permit the most efficient method for the direct input of messages into the flight data processing systems, implemented or being implemented by NAT Provider States, the PANS-RAC (Doc 4444) be amended to the effect that the prefix "POSITION" shall be used in all reports on aircraft position, whether or not inclusive of operational/MET data; and

b) accordingly, Canada pursue the original amendment to the PANS-RAC (Doc 4444) and other affected ICAO documents, if any, as a matter of urgency.

2.2.16 The European Office of ICAO, was requested to bring the views of the Group on this matter as soon as possible, to the attention of ICAO Headquarters, together with all relevant supporting considerations.

Communication message intercept procedures in the NAT Region

2.2.17 It was reported to the Group that an analysis of the communication intercept procedures had been conducted by NAT provider States, in follow-up of Conclusion 23/9 of the NAT SPG/23 Meeting. The results showed a duplication of some 30% of the intercepted messages.

2.2.18 While recognizing that the above amount of duplicated messages was excessive and called for a careful review of the situation, the Group was of the opinion that it did not diminish the operational value of air-ground messages being copied and properly relayed to addressees by the intercepting station. It therefore agreed that the concept of basic network operation in respect of intercept principles should not be modified. Rather, short-term improvement should be sought through co-operative working arrangements between the States concerned aimed at eliminating or reducing redundant interception of air-ground messages, in particular those intercepts duplicated over fixed communication systems.

CONCLUSION 24/10 - NAT MESSAGE INTERCEPT PROCEDURES

That:

a) the procedures currently applied in the NAT Region for the interception and the transmission via fixed circuits of aircraft messages remain in force, and

b) States concerned ensure that NAT aeronautical stations adhere to established operating procedures for the interception and retransmission of air-ground messages, with a view to eliminating or reducing redundancy.

HF VOLMET broadcasts

2.2.19 As agreed at the NAT SPG/23 Meeting, the operational value of the HF VOLMET broadcasts from Gander and New York had been investigated to ascertain whether the demand justified its continued availability, in particular during off-peak traffic periods. A ten-day survey provided evidence of a continuing need for the VOLMET broadcast from Gander and New York and there was strong support from States and operators concerned for retention of the present broadcast schedules. The Group, therefore, agreed that no change should be made to the schedule of the above broadcasts, considering that any reduction would inevitably result in an increase in air-ground communications, thus possibly creating congestion on the channels concerned.

2.2.20 As to the transmission technique used, the Member of Ireland informed the Group that studies for the possible automation of the Shannon VOLMET broadcast were now being made and it was expected that this method could result in significant financial savings, if it were adopted. The representative of IATA stated that, with regard to this broadcast, in recent months it had been made more reliable than in the past and he hoped that this reliability could be maintained.

2.2.21 The question of contents of the Shannon VOLMET broadcast was also discussed in relation to requirements for MET information by twin-engined jet aircraft engaged in extended operations (ETOPs) in the NAT Region. (See also para 2.1.4). Information on these requirements presented by IFALPA showed, however, that these were already covered in the present broadcasts and it was therefore agreed that there was no need for action in this respect, other than for providers to ascertain that the VOLMET broadcasts were made in accordance with the provisions of the NAT Regional Plan. As to possible future new requirements to cater for ETOPs, the Group expected that these would be presented to it in due time (and with the necessary supporting evidence) for consideration as and when required.

VHF GP cover charts

2.2.22 The Group was presented with a revised chart showing NAT VHF cover at 30000ft, prepared by the UK from inputs supplied by the NAT Provider States. It was the feeling of the Group, based on actual experience, that there may be gaps in covers shown in that chart and that the covers presented by States may have been slightly on the optimistic side. The Group was therefore of the opinion that the States concerned should review their presentations, make such adjustments to the chart as considered necessary and send revisions, if any, to the UK for action, as warranted. The Members of States concerned undertook to promote relevant action, within their home administrations. It is intended to review this point at NAT SPG/25.

2.2.23 It was also reported to the Group that the subject of NAT VHF cover was under active study in Canada and that it was intended to include related documentation in the Canadian AIP. In relation to this study, Canada sought the Groups' support for the proposal that the 30000ft cover should be of the same scale, and cover the same geographical area as those concerning cover at 10000 and 15000ft, now contained in the ICAO Guidance and Information Material concerning Air Navigation in the NAT Region. The Group recognized the need to ensure the necessary correlation with the ICAO Guidance Material and to encourage inter-State co-ordination as to map selection.

2.2.24 Another point brought forward by Canada was, that it intended to prepare, in co-ordination with the NAT SPG, a GP VHF cover chart for their national AIP depicting the minimum altitude at which continuous communications cover exists across the Northern part of the North Atlantic. While appreciating the merits of such an initiative, the Group considered that the determination of the potential value of such a chart to users posed a complex problem which required further study, at least until States concerned had presented their revised data, if any, for the 30000ft chart (see paragraph 2.2.22).

SELCAL

2.2.25 The Group was informed that all aeronautical stations serving the NAT Region were now equipped with the 16-tone ground station tone sending equipment. With regard to SELCAL errors, seven cases of SELCAL code duplications and 21 cases of incorrect coding were reported to have occurred over a period of 3 months.

2.2.26 Noting the above information, the Group confirmed the view, also expressed at its previous meeting, that further improvement could be expected as more aircraft were being equipped with SELCAL equipment capable of operating on all the 16-tones.

NAT VHF air-to-air frequency

2.2.25 The Group was informed that harmful interference had been experienced on frequency 131.800 MHz, which had been assigned for NAT air-to-air use in accordance with earlier provisions. The interference had probably arisen from improper use of the frequency, i.e. use in areas which were not out of range of VHF ground stations also operating on this or on an adjacent frequency.

2.2.26 While not intending to come back on its previous decision concerning the assignment of the above frequency, the Group envisaged the possibility that another frequency, selected from the sub-band 136-137 MHz, could be assigned in the future for NAT air-to-air communication purposes. It was recalled that the additional band was to be allocated to aeromobile services with effect from 1 January 1990. It was agreed that this matter would be given further consideration before that date.

2.3 Determination of the efficiency level of the NAT air navigation system and the service provided to the airspace users

2.3.1 The Group noted that, for a number of years, some NAT provider States had been providing statistical data on the operation of their oceanic ACCs to the NAT SPG. This data had been mainly related to the question, to which extent OACs, in issuing oceanic clearances, had been able to meet pilots' intentions with regard to their route of flight, the desired level and also requests for step-climb while en route. At NAT SPG/22, this had lead the Group to propose that studies should be made, permitting an assessment of the ATS system efficiency when measured against a suitable set of parameters (Conclusion 22/7 refers). By the 23rd Meeting of the Group, it had, however, been found that this could develop into a formidable task and it was therefore at this meeting agreed to limit, at least for the time being, information provided by States to that, which showed the degree to which ATC had been able to meet pilots' requirements (Conclusion 23/13 refers). At the same meeting, provider States had also been requested to provide other significant information on flight operations handled by their oceanic ACCs (Conclusion 23/12 refers).

2.3.2 Consequently, at this Meeting, the Members of Canada, Iceland, the UK and the US presented such information. However, in the absence of specific provisions regarding the type, format and other details in which this data was to be presented, the data provided varied considerably in scope as well as in its presentation, even though appreciable efforts had been extended by the States concerned in its collection.

2.3.3 Nevertheless, the data concerning the oceanic ACCs Gander, New York, Reykjavik and Shanwick showed that, in 1986, more than 85% of the aircraft, operating in the NAT airspace, had been cleared by ATC on the routes and levels requested by them in their flight plan and/or on entry into oceanic airspace. While recognizing that this measure of system performance must, by necessity, be incomplete because it does not take account of other constraints, having already imposed on the pilots' original intentions, it is nevertheless an approximate indication of the performance of the system and, when conducted over a number of years, it can give a comparative indication of its functioning. In addition, such information can also be used in simulations studies by States of potential ATC system improvements.

2.3.4 In the light of these considerations and having noted that, during discussion, the use of the word "efficiency" had given rise to considerable semantic difficulties, the Group agreed that:

a) data collected by States should, in future, be used to permit an assessment of the performance of the ATC system in its existing configuration;

b) data should, as far as possible, be presented in a standardized manner to facilitate comparison where this was possible, but should nevertheless take account of specific local conditions peculiar to a particular OAC; and

c) the collection and collation of the data should not impose an undue workload on the OACs concerned.

2.3.5 As to the data itself, this should cover the following;

a) total number of operations in the area of responsibility of each OAC;

b) division of the total traffic according to main characteristics, i.e.:

i) random versus OTS traffic in the Gander and Shanwick OCAs

ii) polar versus random traffic in the Reykjavik OAC; and

iii) fixed versus random traffic in the New York and Santa Maria OACs.

c) utilization of flight levels in relation to the direction of flight, when possible; and

d) data on en-route step-climbs within the OAC, if possible.

2.3.6 In addition to the above main statistical data, provider States should, for monitoring purposes, provide data on:

a) spot checks on aircraft intending to operate in the MNPS airspace, as to their certification;

b) spot checks on flight plans with regard to the use of the letter "X", to indicate that the flight in question is certified for MNPS operations; and

c) data on the number of MNPS certified aircraft operating within oceanic airspace, but outside the MNPS airspace.

It was also agreed that Canada would continue to monitor, and report on the average number of tracks contained within the published Organized Track System both for East- and West-bound traffic flows.

2.3.7 The Group hoped that the increased use of automation within OACs will assist in easing the burden imposed on OACs by the above requirements and will permit provider States to comply with the Group's request for statistical data.

CONCLUSION 24/11 - COLLECTION OF DATA ON THE OPERATION OF THE ATC SYSTEM

That Canada, Iceland, Portugal, the UK and the USA make appropriate arrangements for the collection of statistical data regarding the operation of their oceanic ACCs in accordance with the provisions in Attachment A to the Summary of this item and on the following items:

a) spot checks on aircraft, intending to operate in MNPS airspace, as to their certification;

b) spot checks on flight plans as to the use of the letter "X" to indicate MNPS certification; and

c) number of MNPS aircraft operating in oceanic airspace but outside the MNPS airspace;

and make this available at NAT SPG Meetings.

Attachment A to
Summary on Item 2

SPECIFICATIONS FOR THE PROVISIONS OF STATISTISCAL DATA BY OACs TO THE NAT SPG

1. The presentation of total traffic in each area and the comparison between pilots'intentions and ATCs ability to meet them should be made in accordance with the following six categories:

a) number of aircraft cleared on the requested track and at the requested or higher flight level;

b) number of aircraft cleared on a different track but at the requested flight level or higher;

c) number of aircraft cleared on a requested track but at the next flight level below the one requested;

d) number of aircraft cleared on the requested track but at two flight levels below the one requested;

e) number of aircraft cleared on the requested track but more than two flight levels below the flight level requested; and

f) number of aircraft cleared on a different track and at one or more flight levels below the one requested.

Note 1: "Next flight level" and "flight level(s) below" refer to the normal level spacing as appropriate i.e. 1000ft below FL290 and 2000ft above FL290.

Note 2: for the purpose of the Santa Maria analysis, the cleared route/level will be compared to that requested by the pilot if different from the flight plan. This may also be applicable to the Reykjavik data particularly the non-polar traffic.

Note 3: For the purpose of the Shanwick analysis, the cleared route/level will be compared to that requested by the pilot.

Note 4: "Different track" implies a clearance which was issued by ATC that differs from flight plan or initial pilot request. The difference may be, in some cases only, slight while in other cases, re-routing could be significant.

2. The data provided by the US will refer to traffic operating in the West Atlantic Route System (WATRS), which is predominantly oriented North/South. As the amount of East/West traffic operating on OTS or random is insignificant, New York OAC will not report in detail on this traffic, but rather include it in its overall traffic figures.

3. Canada and UK will show operations within and above MNPS airspace. Data from Portugal and the US will include traffic operating at all flight levels.

4. New York OAC will provide traffic management information and some indication of ATC ground imposed delays to traffic operating in the WATRS area.

5. Santa Maria OAC will provide data on crossing flows, as opposed to the main East/West flows.

6. The 1987 data will be collected on the first and 15th of each month. Commencing in January 1988 the dates will be the 4th and 15th of each month.

7. Particular anomalies pertaining to any of the NAT areas, such as ATC imposed delays, should be recorded when reporting on any particular centre's operation.

8. When completing the actual report, every attempt should be made to list all categories in the areas reviewed, Should there be no traffic recorded against a specific category, this should be shown by "zero" against that particular category.

Agenda Item 3: Technological developments of interest to the NAT Region

3.0 Introduction

3.0.1 Under this Item the Group considered the following specific subjects:

a) ATC automation and traffic display systems in Oceanic Area Control Centres (OACs);

b) developments in air navigation systems (e.g. Global Positioning System);

c) data link developments; and

d) automatic dependent surveillance.

3.1 ATC automation and traffic display systems

3.1.1 Under this heading, the Group was presented with a detailed long term plan for Reykjavik ACC. This development has been found necessary in view of the limited capacity of the present system and taking into account forecast traffic growth until the end of the century. The average annual increase, calculated by the Icelandic administration and based on past statistical data, is estimated to be 2.1%, a figure which was confirmed by the findings of the NAT TFG. An additional factor, leading to an increase of air traffic, was the potential reduction in lateral separation within the MNPS airspace, which would tend to bring a larger number of tracks from the OTS into the southern part of Reykjavik CTA.

3.1.2 Technical improvements aimed at reducing current operational shortcomings had been split. Intermediate requirements for the next 5 to 6 years included the opportunity for increased SSR coverage by the provision of radar data from 2 more radar sites, the installation of an automated flight data processing system (FDPS), an increase in the VHF cover and the integration of radar data into the FDPS. A long term programme, extending from 1992 to the beginning of the next century, foresaw the use of automated dependant surveillance (ADS) and the use of SSR data from radar stations in Greenland. (For a tentative planning schedule see Attachment A).

3.1.3 The Member of the United Kingdom informed the Group that the flight data processing system at Prestwick OAC had been introduced into operational service on 31 March 1987. Restrictive measures which had been imposed initially had been removed, however, arrangements within the ATC system to deal with FDPS unexpected failures had been maintained. It was reported that the new system was a considerable improvement and that the refinement of operating techniques was expected to result in noticeable benefits to operators. Like in the case of any major system evolution, the FDPS would be constantly monitored as operational experience was gained and this might produce enhancements to both techniques and software. However, it was hoped that changes could be kept to a minimum, in order to maintain stability of the system. In addition, any modification of the NAT system, which might have an impact on FDPS, should not be considered without a careful assessment of what the potential effect would be.

3.1.4 In this context the representative of IATA expressed his concern about the number of failures that had beset the FDPS during the first weeks of operation, causing considerable penalties to operators.

The Member of the UK stated that some initial problems were inevitable with the introduction of a new computer system of this kind. All failures are analysed and solutions to prevent recurrence put into effect as quickly as possible. Although no specific assurance could be given on the future performance of the system, the Group could be assured that all possible measures were being taken to prevent further failures. It could be anticipated that reliability would improve as experience with the system was gained.

3.1.5 With respect to the Gander automated air traffic system (GAATS), the Group noted that a number of improvements had been completed lately. They mainly concerned the up-grading of the GAATS software in order to provide for a data-link with the flight data processing system (FDPS) in Prestwick OAC and the capability to introduce, as necessary, requirements for either 30NM/1000ft or 60NM/1000ft composite separation. In addition further improvements were expected in 1987/88 which included a data link to the national flight data processing system and an up-grading method for coding and transferring weather forecast data. The Member of Canada assured the Group that GATS would remain operational until it has been replaced by a fully commissioned flight data systems modernization project (FDMP) in the early 1990s. It was understood that all current and forthcoming improvements, brought about by Canada, would be compatible with the systems developed in the UK and in Iceland.

3.1.6 The Member of the US presented an update of the implementation status of the oceanic display and planning system (ODAPS), described in detail at NAT SPG/23. Upon recommendation of operating personnel, a conflict resolution capability is to be included as a future enhancement. Although some difficulty had been encountered with the overlap of the NAS computer and the ODAPS installation, the programme foresaw on-site delivery of the rest of the equipment in November 1987. Begin of operational use is expected by mid-1988. The system, is expected to be fully compatible with adjacent systems and after adding the ADS function will provide for both data-link and digitized voice communications between pilot and controller.

3.1.7 The Member of Portugal reported that, upon completion of the description of the operational requirements, shortly due, work on technical specifications for a new OAC will follow, allowing a call for tenders expected in 1988.

3.1.8 The representative of IATA, whilst giving a cautious welcome to the reports of the provider States regarding automation and compatibility between systems, expressed concern regarding any tendency for automation to increase rigidity. He, therefore, urged States to bear in mind that the operators would not want to state an operational requirement for automation which did not retain flexibility.

3.2 Developments in navigation systems (e.g. Global Positioning System)

3.2.1 Further to the presentation made at the last meeting (NAT SPG/23 Report, para 3.3 refers) on the Global Positioning System (GPS), the Group noted that the current programme by the United States was based on a planned constellation of twenty-one satellites (18 primary + 3 spares). The full implementation of the GPS was expected by the end of 1990.

3.3 Data-link developments

3.3.1 The Member of Canada provided the Group with an update on the test programme, initially carried out during Summer 1985 in conjunction with Air Canada, to evaluate data-links as a possibility for oceanic clearance delivery in hard-copy form on the flight deck. Following the positive results achieved during 1985, the programme was improved and reactivated when the Air Canada B767 service was resumed in Spring 1986.

3.3.2 The Group noted that the initial special arrangements between ATC and Air Canada was limited in geographic scope and had imposed an additional work-load on controllers. However, it was now integrated in the GAATS and suited for up-link clearance delivery in an automatic mode to the flight when the oceanic planner activated the assigned route. With the recent installation of a ground network of VHF data-link stations throughout Canada, Gander OAC was now able to uplink Oceanic clearances to Air Canada B767, entering oceanic airspace through all reporting points between BANCS and PRAWN. Once the message is printed on the flight deck, receipt of the clearance is acknowledged by the crew through the data-link for a manual comparison check in the center and validated by a routine VHF readback. In addition, the clearance is also received by flight dispatch for comparison with the flight planned route. If the cleared route differs from the flight planned route, a new flight plan is prepared and sent to the pilot to match the cleared route.

3.3.3 The Group noted that, in addition to the current development of the system, Canada intended to further improve the data-link to cover also acknowledgement and automated comparison functions and to expand the programme, subject to appropriate agreements under negotiation, to VHF data-link equipped aircraft operating within the coverage of Air Canada's air/ground communication system (AGCS).

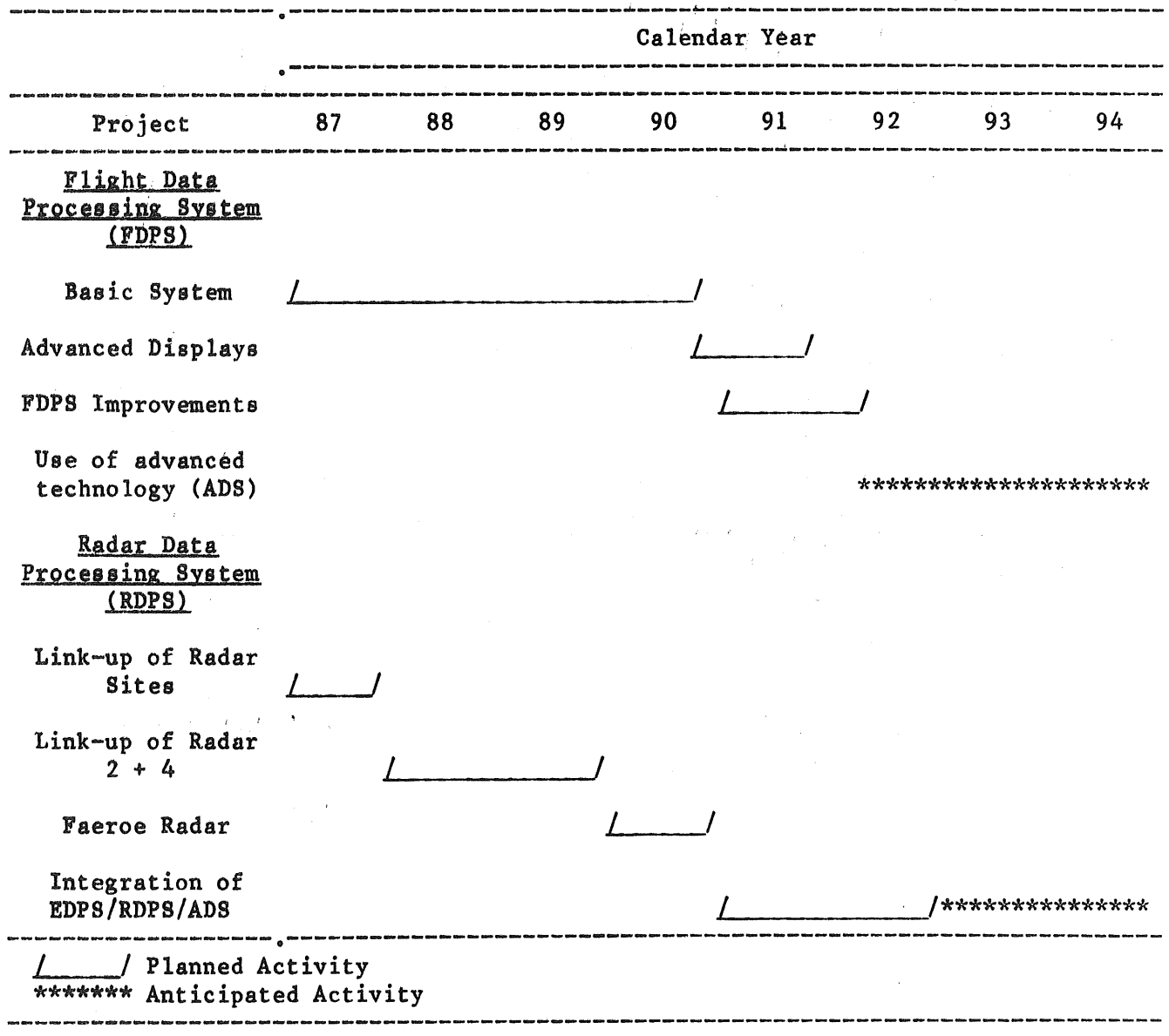
3.3.4 In the ensuing discussion on the subject, it was noted that on the Eastern side of the Atlantic, further development of a data-link capability was being pursued by IATA, in conjunction with SITA.

3.4 Automatic dependant surveillance (ADS)

3.4.1 The Group reviewed the subject of automatic dependant surveillance in the context of studies of current and future NAT operations for the ICAO FANS Committee carried out by the United Kingdom. It was noted that, coincident with the NAT SPG Meeting, a Working Group of the FANS was meeting in Brussels to consider specific aspects related to the introduction of ADS. It was noted that the cost effectiveness of ADS, when used in oceanic areas and those without radar cover, still remained unproven to operators. The Group believed that ADS would not be available before the period 1995-1998 and it alone would hardly lead to cost effective results. It could, however, contribute to achieve a better overall navigation performance, when associated with satellite quality navigation systems, in particular in the field of lateral accuracy.

Attachment A
to Summary on Item 3

TENTATIVE PLANNING SCHEDULE FOR ATC IN ICELAND



Agenda Item 4: Planning

4.1 Air navigation systems planning and production of statistical supporting data on future traffic demand

4.1.1. Under this Item, the Group reviewed the NAT Traffic Forecasts for the period 1987 to 1992 with projections to 1995 and the years 2000 and 2010 as prepared by the NAT Traffic Forecasting Group during its Meeting from 24 April to 1 May 1987 in the European Office of ICAO. From this, the Group noted that it could be expected that air traffic in the NAT Region would continue to grow, though at a slightly slower rate than the one experienced last year.

4.1.2 In reviewing the forecasts, the question was raised whether yearly changes were such, that it was absolutely essential to produce a new forecast every year or, whether it was possible to leave an interval of two years between successive forecasts. After a brief discussion, the Group felt that it would be useful to obtain the views of the Chairman of the NAT TFG on this and the Member of the UK accepted to do this and inform the Group of the results of these discussions.

4.1.3 In any case, it was noted that the NAT TFG had already made firm plans for its meeting in May 1988 in Montreal, in association with a workshop with aviation experts from the North American continent. It was, therefore, agreed that a proposal, if any, dealing with this subject would only be made at the next meeting of the Group.

4.2 Development of medium and long-term NAT Air Navigation Plans

4.2.1 The Group noted that a number of subjects, which might have significant effects upon the medium and long-term planning in the NAT Region, were now under consideration by world-wide bodies within ICAO, such as the Panel on the Review of the General Concepts of Separation (RGCSP), (i.e. the general application of 1000ft vertical separation above FL290) or the Future Air Navigation Systems (FANS) Committee which, inter alia, also looked at the North Atlantic as a sample of a simple oceanic airspace structure.

4.2.2 While following closely these developments -and this is recorded in the relevant parts of this summary- it was, nevertheless, felt that conceptual work on a medium and long-term plan, specifically directed at the NAT Region, could only usefully be done, once these world-wide activities had produced definitive results. It was also felt that, if work on this subject were now undertaken by the NAT SPG, this could easily result in a duplication of effort and this had to be avoided.

4.3 Further efforts towards the introduction of 30NM/1000ft composite separation in the NAT MNPS airspace and its implications in the oceanic/domestic interface areas

4.3.1 Further to discussions at a number of previous meetings (see in particular para 4.5 of NAT SPG Summary/23), the Group once more discussed the prospects of applying composite separation based on 30NM lateral, combined with 1000ft vertical separation within the Organized Track System (OTS) established by Gander and Shanwick OACs. To this extent, the Group had before it a number of papers, prepared mainly by its Members of the UK and the US, dealing with the mathematical-statistical as well as the safety and operational aspects of this question. Since the mathematical-statiscal and risk aspects have been dealt with under Item 1 (see paragraph 1.2), the Group, under this Item, concerned itself mainly with the safety and operational aspects which were still open.

4.3.2 In this respect, the Group was presented with a paper from its Member of the US which indicated that as far as the USA were concerned, the following points still needed clarification and/or resolution before the US was in a position to agree to the application of the proposed type of separation:

a) measures ensuring that the creation of tracks in the OTS, based on the use of composite separation, will not lead to a compression of traffic around the "core" area of the OTS, thus increasing occupancy and the associated risk ratios to an unacceptable levels;

b) development of contingency procedures for aircraft, required to depart from their assigned track and level in the OTS with composite tracks, without being exposed, or exposing others, to unacceptable risks;

c) the need for re-certification of aircraft, now qualified for MNPS operations, to a smaller value (4.25NM) of standard deviation and a possible certification of altimetry systems of aircraft; and

d) development of international as well as national legislative material ensuring compliance and, if necessary enforcement of compliance, with the revised MNPS.

At the same time, the paper presented by the Member of the US proposed the establishment of a Working Group to resolve these problems.

4.3.3 After extensive discussion by the Group, in which it was found that different opinions existed on this matter which could not be reconciled in the time available at this meeting, the Group agreed to form a small working party, composed of the Members of Canada, the UK and the US and observers from IATA and IFALPA, with the task to clearly identify the contentious points and to make proposals for the manner in which they could possibly be resolved.

4.3.4 The working party identified six points which appeared to require resolution and concluded to the following:

a) it confirmed that the original intent of introducing 30NM/1000ft composite separation into the OTS had been one of improving the operating efficiency of the ATC system. However, further studies had shown that the economic benefits derived from the use of composite separation would only be marginal. Over the years, emphasis on introducing such a system had therefore shifted mainly towards allowing the introduction of system changes that would minimize the economic penalties, associated with modifications required to maintain acceptable safety levels if an when the safety assessment showed that action was called for. The envisaged planned and phased implementation would thus forestall the need for urgent and drastic action on the part of ATC if the safety of operations appeared to be jeopardized;

b) it agreed that the Member of the US would review data on the vertical performance of aircraft, presented to this meeting, with a view to re-assessing the need for re-certification of the lateral performance of aircraft; other Members did not consider that such re-certification would be necessary. The Member of the US would also review the stated need for the certification of aircraft altimetry systems;

c) it agreed that the introduction of composite tracks into the OTS would not be used to reduce the overall width of the OTS as it now existed and that, if monitoring of the occupancy within the OTS showed that the desired reduction in occupancy, resulting from the dispersion of traffic on more tracks, was not being achieved, the OACs concerned would resort to overt intervention action in order to achieve such a reduction;

d) it agreed that no further action in respect of ICAO provisions, relating to the use of composite separation in the NAT Region, would be justified until the outstanding points had been resolved;

e) it examined two limited/partial composite separation track schemes that had been prepared to reflect the concern which had been expressed about contingency procedures by the US and IFALPA, particularly as regards descents with a nominal separation of 15NM in respect of adjacent tracks. The limitations inherent in such schemes, coupled with the uncertainty about their future expansion potential, suggested to Canada, the UK and IATA that their usefulness might not provide sufficient guarantee that the effort, involved in their implementation, would be justified. The Member of the UK agreed to examine the possibilities of further simulation work in this field; and

f) it agreed that it would be necessary to monitor composite system occupancy -both lateral and diagonal- initially on a monthly basis.

4.3.5 After a brief review, the Group accepted the findings of the working party as an acceptable compromise and the US Member stated that he expected that work by the US, mentioned therein, could be completed by Spring 1988. The UK Member, while not able to state a firm date for the work to be done by the UK, nevertheless assured the Group that it would be pursued as speedily as was possible.

4.3.6 In view of this situation, the Group noted that the provider States directly concerned with the operation of a composite system (Canada and the UK) had already included the necessary software in their automated systems to accommodate such a system and agreed that the start of use of composite separation in the OTS should be aimed for some time in 1989/90. For obvious reasons, the representative of IATA regretted this further delay. However, in the light of discussions at this meeting, he accepted that the Group had no other choice left to it.

4.4. <u>Consideration of the possible introduction of reduced vertical separation above FL290 in the NAT Region</u>

4.4.1 With regard to the reduction of vertical separation above FL290 to 1000ft, the Group considered this under the following two aspects:

a) to reduce vertical separation to 1000ft between aircraft on crossing tracks; and

b) a general reduction of vertical separation above FL290 to 1000ft throughout the NAT Region or in specified parts therein.

4.4.2 With respect to a) above, a general assessment of the mathematical statistical assessment of the risks involved had shown that application of this proposed procedure appeared to be worthwhile of a closer review. It was, however, pointed out that in order, to make a realistic assessment of the risks involved, it would be necessary to specify, in more detail, how such a system would be operated in practice. The reasons for these were, that the risks would depend on the number of aircraft using such a procedure, the number of tracks crossed and the angle at which they are crossed.

4.4.3 In view of this situation, and also taking account of what is being said below on the general reduction of vertical separation above FL290, the Group felt that, preparatory to further action in this field, it might be advisable to request Members, able to do so, to provide possible application scenarios and/or associated conditions as soon as possible so that preparatory mathematical-statistical assessment work of the risks involved could be undertaken. The Member of the UK agreed to carry out this analysis.

4.4.4 As to the general reduction of vertical separation above FL290, the Group noted that this subject was being handled by the RGCS Panel and the Member of the UK who is also participating in the the work of this Panel, informed the Group that it was likely that, by the end of 1988, the RGCS Panel, would be in a position to present firm proposals on this subject. As indications at present are that, with a number of provisos, such a general reduction appears to be feasible, the question was raised whether, under these circumstances it would be worthwhile to pursue work on the special case regarding traffic on crossing tracks as mentioned above.

4.4.5 After careful consideration of all the pros and cons the Group agreed that :

a) preliminary work, as indicated above on the crossing case and also on the case of a general reduction, should be pursued in order to be prepared, whenever the occasion for application arose; and

b) no regionally limited measures regarding a general application of reduced vertical separation above FL290 should be taken before the RGCS Panel had completed its work and it could, in its light, be decided whether specific work related to the NAT Region was required at all.

4.5 Monitoring of the activities of the FANS Committee and providing input as required

4.5.1 The Member of the UK informed the Group that the UK had been requested by the ICAO Committee dealing with the Future Air Navigation Systems (FANS) to prepare studies for that Committee regarding current and future NAT operations. He pointed out that this was done in order to provide information on one of five possible scenarios with which the FANS Committee concerned itself, i.e. the North Atlantic, representing a comparatively simple airspace structure. The UK Member presented the latest results of these studies to the Group for information, pointing out that these were mainly related to the major East-West traffic flow operating across that Region.

4.5.2 Upon request from the Member of Iceland, he pointed out that the studies did not cover traffic on the polar tracks because this was beyond the simulation capabilities of the UK. He gratefully accepted, however, the offer by Iceland to provide the UK with relevant data on this matter, so that it could be used as appropriate.

4.5.3 With relation to a progress report on the activities of the FANS Committee, presented by the ICAO Secretariat, the Group wanted to be assured that the FANS Committee would take due account of the work already done by the NAT SPG at its 23rd and at this Meeting and that any future work of the NAT SPG would also receive appropriate attention. The Group was assured that the Secretary of the FANS Committee had already taken necessary action to this effect.

Agenda Item 5: General matters

5.0 Introduction

5.0.1 Under this Item, the Group discussed the following specific subjects:

a) interception of civil aircraft;

b) formation flying in the NAT Region;

c) updating of the NAT Guidance and Information Material and the NAT MNPS Operations Manual and consolidation of documentation relevant to NAT operations;

d) preparation for the LIM NAT (RAC/COM/MET) RAN Meeting;

e) status of outstanding proposals for amendment of the NAT Regional Supplementary Procedures;

f) provision of alerting service.

5.1 Interception of civil aircraft

5.1.1 The Group recalled that the subject of interception of civil aircraft had been discussed extensively at the two previous meetings. As a result of these discussions, it had been recognized that there was merit in pursuing technical possibilities which could assist in the detection of aircraft straying from track or proceeding towards sensitive airspace. In addition, the Group had confirmed the need to explore all possible avenues to assure that appropriate co-ordinations arrangements existed, covering assistance to aircraft straying from track when operating on polar tracks.

5.1.2 Reviewing the situation at this time, the Group found that the difficulties, noted earlier in assigning discreet SSR codes, still persisted. Although a feasible proposition for some States, this method was expected to raise problems in the transition area between the NAT and EUR Regions, in view of the fact that the number of codes in the EUR Region was already nearing exhaustion. The advantage of assigning a discreet code to an aircraft for this purpose alone remained unclear and it appeared that the use of SSR mode A Code 2000 seemed to cover the requirements.

5.1.3 Recalling the invitation by the Air Navigation Commission, addressed to regional working groups, to take action concerning interception of civil aircraft and considering that the procedures in the MNPS airspace covered the aspect of monitoring of track-keeping performance adequately, the Group felt that it had done all it could in this field and agreed to delete the subject from its work programme.

5.2 Formation flying in the NAT Region

5.2.1 The subject of formation flying by civil aircraft in the NAT Region had been discussed extensively on previous occasions and especially at NAT SPG/23. At that meeting, it had been agreed that there was a need for ICAO to concern itself with the question of formation flying by civil registered aircraft in the controlled airspace of the NAT Region, in the context of a review of the applicable world-wide provisions (Conclusion 23/15 refers).

5.2.2 The Group was informed that, in response to NAT SPG Conclusion 23/15, the Air Navigation Commission had agreed, on 3 February 1987, to include the subject in the Technical Work Programme of the Organization in the air navigation field. The object of this new task-formation flights by civil aircraft in controlled airspace- was, to determine whether ICAO provisions permitted formation flying by civil aircraft in controlled airspace under IFR and whether military type aircraft, bearing a civil registration in such operations, should be considered to be civil aircraft. Some date in 1988 was estimated as a target for final action by the ANC, which would possibly result in amendments to Annexes 2 and 11.

5.2.3 With regard to the conduct of such flights in the NAT Region, it was noted that the problems, which had given rise to discussion in the NAT SPG, had not re-occurred in the Shanwick OCA during the period 1986/87, but that they still persisted in the Gander and Reykjavik FIRs.

5.3 Updating of the NAT Guidance and Information Material and the NAT MNPS Operation Manual

5.3.1 The Group made a review of the documentation applicable to flight operation in the NAT Region. It reviewed the revised draft Fifth Edition of the NAT Guidance and Information Material which had been prepared by the European Office of ICAO in February 1987. In general terms, the content of the document was found satisfactory and needed no major changes.

5.3.2 However, information made available to the Group made it appear advisable to make minor changes to the material, covering the following subjects:

- use of Omega, FMS and Loran C;
- guidance on the approval procedure for IGA aircraft;
- buffers to be provided around airspace reservations; and
- advice to IGA pilots.

5.3.3 The Group noted that the updated material and amendments, as agreed at the Meeting, would be incorporated in the Fifth Edition of the NAT Guidance and Information Material prior to distribution to States.

5.3.4 In relation to the Guidance Material, the Group noted that the above-mentioned amendments could also require consequential amendments to the NAT Operations Manual, prepared by the UK Administration in co-operation with IATA and published by the UK. The Member of the UK and the observer from IATA informed the Meeting that they were prepared to look into this matter and, if found necessary, to take necessary measures to provide for a new edition of the NAT Operations Manual so that it could appear approximately at the same time when the Fifth Edition of the NAT Guidance and Information material would be issued.

5.3.5 In the context of the provisions contained in the NAT Guidance and Information Material, concerning the preparation of a summary of radar-observed deviations from tracks of flights in the NAT Region, the Member of Ireland questioned the continued need for States for reporting such data to ICAO. It was noted that, since 1980, the Central Monitoring Agency (CMA), set up by the UK, was collecting and circulating data regarding navigation performance in the NAT Region on a regular basis, which duplicated the data published by ICAO. It was therefore agreed that data need no longer be sent to the European Office of ICAO.

5.3.6 The Group noted that, in view of this situation, the European Office of ICAO would canvas NAT States on the need to continue publication of its summary, indicating that this information, together with other relevant data, was also shown in the Summaries of the NAT SPG.

5.4 Preparation of the Limited NAT (RAC/COM/MET) RAN Meeting

5.4.1 Recalling its discussion at its last Meeting (Summary of NAT SPG/23, para 5.4 refers), the Group was informed that the Council of ICAO, when reviewing the tri-annual programme of air navigation meetings for 1988 to 1990, had made tentative provision for such a meeting in 1989. In view of pending developments regarding future planning (see para 6.3), the Group felt that it would be premature at this time to express its views on either the substance to be dealt with by that meeting or on the date proposed. It therefore agreed that this matter should be more thoroughly reviewed at its next meeting, in order to prepare a position on this matter.

5.5 Monitoring and processing of outstanding proposals for amendment of the NAT Regional Supplementary Procedures and of the NAT Regional Air Navigation Plan

5.5.1 The Group was informed about the status of proposals for amendment concerning the NAT Region. It was noted that an update of the situation had already been circulated amongst Members in January 1987 in accordance with its guidance at the last Meeting. This material was further updated by the Secretariat and presented to the Group at this Meeting in tabular form.

5.5.2 The Group reviewed the status of all proposals for amendment related to the NAT Region and individual comments by Members were noted as appropriate. With respect to amendment of the NAT Regional SUPPS (Serial No. NAM/CAR-85/2), the Member of Canada indicated that his Administration had now published a Second Edition of the "Guidance Documents concerning the Application of Separation Criteria between Aircraft in the NAT Region". This edition contained also additional material submitted by the UK and agreed upon by NAT SPG/22. The Member of Canada indicated that further follow-up of the document would be undertaken by his Administration and amendments disseminated as required, in loose-leaf form. A sufficient number of copies had been produced and additional request could be addressed to the Canadian Administration or alternatively to the European Office of ICAO.

5.5.3 With respect to the proposal for amendment to the NAT Regional SUPPS (Doc 7030/4 - Part ATS 1) related to abbreviated read-back procedures, the Group noted that the matter had been referred back to the UK upon receipt of comments from States and ICAO Headquarters. The Member of the UK informed the Group that, in co-operation with the Member of Ireland, a new text had been prepared and, prior to presenting it for final processing by ICAO, he wanted to be assured that this text met with the approval of the Group. The text, as accepted by the Group at this Meeting, is shown hereunder and will now be forwarded to ICAO for further processing:

"Amend para 6.1.1.2 to read:

> 6.1.1.2 On receipt of an abbreviated clearance, the pilot shall read back the contents of the clearance message. In addition, when cleared to follow one of the organized tracks, the pilot of a subsonic aircraft shall read back full details of the track specified by the code letter, except where alternative produres using VHF exist, which include provision for the confirmation of cleared track by the pilot."

5.5.4 The Member of Iceland presented to the Group an amendment to the NAT Regional SUPPS (Doc 7030/4 - Part 3, MET) to include, in para 1.1, a reference to Reykjavik and Søndrestrøm Flight Information Region in relation to MET reporting. This amendment was felt necessary in order to reflect the current situation, whereby aircraft flying in the Reykjavik FIR/CTA make, record and report routine meteorological observations. The proposed amendment was accepted by the Group on the understanding that Iceland will now submit it formally to ICAO for further processing.

5.6 Provision of alerting service

5.6.1 At the last Meeting, NAT SPG Members were requested to study all aspects related to the provision of alerting service, particularly the provisions concerning the declaration of uncertainty, alert and distress phases, with particular emphasis on the oceanic operational environment, aircraft speed parameters, reporting procedures, ATC automation and expected technological developments (Conclusion 23/16 refers). The study had been found necessary in view of a possible need to reduce the length of the response time period to such occurrences, taking into account current aircraft speeds over the North Atlantic.

5.6.2 In response to the request made at NAT SPG/23, the Member of the US presented detailed information on the current procedures, applicable in his State, concerning Search and Rescue (SAR) actions, when required. Based on a number of considerations, such as false alarms caused by a reduction of the response time, survivability possibilities in the North Atlantic, use of emergency frequency and the perspective offered by advanced technical equipment, the study suggested that, at this time, there did not appear to be a need to review existing material covering SAR procedures. In particular, no change seemed to be required to the length of the period of time beyond which an aircraft is considered overdue in the North Atlantic. Expressing its concurrence with this view, the Group was of the opinion that the work carried out by the FANS Committee (including studies on the concept of automatic dependent surveillance and the use of improved communications satellite technology in the North Atlantic), as well as the activities related to the COSPAS/SAR SAT programme would, in due course, demonstrate that solutions to improvements in response time would stem from the development of advanced technology rather than by major changes in SAR procedures.

Agenda Item 6: Updating of the work programme of the NAT SPG

6.1 Review of the future work programme

6.1.1 The Group undertook its customary review of its future work programme, updating and amending it as required. As a result of this review, the following items were retained:

PART 1 - AIR NAVIGATION SYSTEM SAFETY PERFORMANCE REVIEW

1. Target level of safety factors:

   a) Lateral performance;
   b) Longitudinal performance;
   c) Vertical performance;
   d) Occupancy; and
   e) Others;

2. ATC System Loop Errors;

3. Preparatory work for a basic review of the risk model, the target level of safety and possibly the MNPS values.

PART 2 - AIR NAVIGATION SYSTEM OPERATIONS REVIEW

1. Air Traffic Services Operations:

   a) Application and refinement of separation standards;

   b) Domestic/oceanic interface problems, and transition problems adjacent to NAT MNPS airspace;

   c) Possible further short-term ATS improvements and determination of action for their implementation;

   d) Extended-range twin-engined aircraft operations in the NAT Region;

   e) Airspace organization in the Miami, New York and San Juan Oceanic Control Areas; and

   f) ATS operational contingency planning in the NAT Region, as necessary.

2. Communications Operations:

   a) Fixed services; and
   b) Mobile services.

3. Determination of the performance assessment of the NAT air navigation system and the services provided to the airspace users by ATC.

PART 3 - TECHNOLOGICAL DEVELOPMENTS

1. ATC automation and traffic display systems in Oceanic Area Control Centers;

2. Developments in navigation systems (e.g. Global Positioning System);

3. Data link developments;

4. Automatic dependent surveillance; and

5. Other technological developments of relevance to the NAT Region.

PART 4 - PLANNING

1. Air navigation systems planning and production of supporting statistical data on future traffic demand;

2. Development of medium and long-term NAT Air Navigation Plans;

3. Use of 30NM/1000ft composite separation in the NAT MNPS airspace and its implications in the oceanic/domestic interface areas;

4. Possible introduction of reduced vertical separation above FL290 in the NAT Region;

5. Possible introduction of reduced lateral separation above FL400; and

6. Monitoring of the activities of the FANS Committee and providing input as required.

PART 5 - GENERAL MATTERS

1. Formation flying in the NAT Region;

2. Monitoring of processing of outstanding proposals for amendment of the NAT Regional Supplementary Procedures and the NAT Regional Air Navigation Plan;

3. Updating of the NAT Guidance and Information Material and the NAT MNPS Operations Manual; and

4. Preparation for the LIM NAT (RAC/COM/MET) RAN Meetings.

6.2 Working arrangements

6.2.1 As usual, at the opening of the Meeting, Members presented considerable amounts of working papers and/or information papers for publication and distribution at the Meeting and this caused a certain loading of the Secretarial and reproduction facilities available at the Paris Office.

6.2.2 In view of this situation, and because of the present, somewhat critical situation at the European Office, the Group, once more, recognized that efforts should be made by its Members and contributing observers, to produce supporting documentation for meetings as early as possible prior to the meetings and make it available to the Paris European Office 6 weeks before the start of the meeting. In expressing these feelings, the Group was fully aware that, in many cases, constraints, imposed on Members while engaged in work in their home administrations did not permit them to comply with these arrangements, but it was nevertheless believed that efforts in this direction should be made whenever this was possible.

6.2.3 As to the presentation of documentation it was noted that this Meeting saw a particularly big proliferation of information papers (IPs). In fact, the number of IPs was nearly identical to that of the Working Papers submitted and proceedings at the Meeting showed that, in treating the documentation, very rarely a difference was made between these two types of documentation. It was therefore believed more efficient if, in future, the designation "Information Paper" was restricted to papers meeting the intent implied by its designation and that matters, requiring consideration by the Group other than mere acknowledgement, should be designated as Working Papers.

6.2.4 Since, at the opening of the Meeting, the ICAO Representative had informed the Group of the fact that the Organization was, at the moment, passing through a period of austerity, and nevertheless assuring the Group of the fullest possible support by the European Office of ICAO, the Group wanted to place on record its appreciation of the assistance it had so far received on the occasion of its meetings on the premises of the European Office of ICAO.

6.2.5 At the same time and in view of the continued tasks confronting the Group, it expressed its hope that ICAO would be able to continue to provide the NAT SPG with the required level of services and support, considered essential for the efficient conduct of its work.

6.3 Arrangements for the next meeting

6.3.1 Even though the Group usually meets at yearly intervals, it was noted that, with respect to its next meeting, it may be advisable to slightly deviate from this customary arrangement. The reason for this was, that the NAT TFG had planned its next meeting for early May 1988 in Montreal with the possible result that its forecasts, normally used at meetings of the NAT SPG, were most likely not available before the end of May 1988. In addition, the RGCS Panel intended to hold a meeting in the first quarter of 1988 and it was expected that this could produce results regarding vertical separation, which the Group would wish to take into account at its next meeting. The same applied for the next meeting of the FANS Committee whose results would also be of considerable interest to the NAT SPG. In view of this, the Group agreed that its next meeting (NAT SPG/25) should be postponed until autumn 1988 and, for planning purposes, it retained the dates from 19 - 30 September 1988. The venue of the meeting was again the European Office of ICAO.

Agenda Item 7: Election of Chairman

7.1 The Group unanimously re-elected Mr. G. Matthiasson (Iceland) as its Chairman and elected Mr. P. Rosa (Portugal) as its Vice-Chairman.

7.2 Recalling past practice of leaving the duration of the mandate opened until such time when a request by a member, or by the incumbent of any of the posts, was put forward, the Group agreed that, on this occasion, both the Chairman and the Vice-Chairman had been elected for an indefinite period. Mr. Matthiasson and Mr. Rosa expressed their gratitude for the confidence placed in them by the Group and accepted the election.

Agenda Item 8: Any other business

8.0 Intruction

8.0.1 Under this Item, the Group dealt with three subjects as follows:

a) Application for admittance as observer by IFATCA;

b) Trans-Atlantic races; and

c) Similarity of call-signs of aircraft operating in the NAT Region.

8.1 Application for admittance as observer by IFATCA

8.1.1 In December 1986, the Executive Secretary of the International Federation of Air Traffic Controllers Associations (IFATCA) wrote to the Secretary General of ICAO, seeking admittance as observer at future meetings of the NAT SPG. An initial reply to the request was sent, to the effect that it was a matter for the Group itself to invite participation of other States or observers. IFATCA was advised that NAT SPG/24 would consider the application.

8.1.2 In the ensuing discussion, the Group recalled the proceedings of the Special North Atlantic Meeting, Montreal, 1965 as recorded under Agenda Item 4 in Doc 8499, SP/NAT (1965) which, in Recommendation 4/1 of that Meeting (approved by the ICAO Council), described the creation of the NAT SPG and its working methods. These working methods stipulate that the size of the Group should be kept small, since a large Group would be unwieldy and not suited to the performance of its task (para 4-1.4.2 of Doc 8499). Nevertheless, in para 4-1.4.3 provision was made for the Group, in the development of its task, to invite other States, not Members of the Group, to designate experts to assist the Group when it considered this to be essential.

8.1.3 At present, attendance by observers is limited to IATA, IFALPA and IAOPA, representing legitimate users' interest in the NAT Region, in which the Group is particularly interested and which otherwise could not be obtained in the desired consolidated form.

8.1.4 When considering the request, the Group felt that it was not lacking inputs representing ATC requirements and took also into consideration that all its reports are routinely circulated to IFATCA for information, review and comment. So far, no comment on its work from IFATCA had reached the NAT SPG. Furthermore, the request from IFATCA did not state any particular reason, justifying its participation on a routine basis in meetings of the NAT SPG.

8.1.5 The Group expressed its appreciation for the interest shown in the work of the NAT SPG and noted that IFATCA had been invited to participate as observer in the work of the Special Committee on Future Air Navigation Systems (FANS) from the outset. It appeared, therefore, to the Group that any specific contribution, that IFATCA might wish to present for the development of new and advanced techniques and methods on air navigation, could best be presented through the FANS Committee, in view of their world-wide scope.

8.1.6 The Group requested the Secretary to ensure that NAT SPG reports will continue to be sent to IFATCA in the usual manner. It was hoped that this arrangement would keep IFATCA fully abreast of developments. Should it be found that in future, IFATCA raises specific points of interest to the Group, these would then be dealt with in the most appropriate manner.

8.1.7 In view of this situation, the Group expressed regret that it was not able to accede to the request of IFATCA at this time and requested its Chairman to bring the views of the NAT SPG to the attention of that organization.

8.2. Trans-Atlantic races

8.2.1 The UK Member informed the Group that there were plans to hold a 2 balloon transatlantic race in 1987 and to organize a trans-Atlantic balloon race in 1988 and that it was likely that some twenty balloons would participate in the latter event. The US Member stated that he had also heard of the 1988 project, as well as the Member of Canada.

8.2.2 Without possessing further details, the Group confirmed that if, such races were to take place, measures had to be taken to prevent balloons from entering MNPS airspace. In addition it was agreed that any Member, obtaining further details on these projects would keep other Members informed.

8.2.3 In the same vein, the Member of Canada stated that he had heard rumors about a trans-Atlantic rally with some thirty aircraft participating, which was supposed to be held in June of this year. The Member of Iceland stated that he was in possession of information regarding a round-the-world air race to be held in 1989 by GA aircraft and that he was prepared to make this information available to other Members.

8.2.4 With respect to the two latter events, the Group felt that States confronted with requests for services for these two latter events should, in any case, insist vis-à-vis the organizers that the provisions regarding general aviation operations in the NAT Region had to be respected.

8.3. Similarity of aircraft call-signs

8.3.1 The Member of Canada informed the Group that Gander OAC was experiencing rather frequently the situation whereby aircraft with similar call-signs operated simultaneously within the same airspace. He pointed out that this gave rise to difficulties and could result in dangerous situations. To illustrate this he quoted a recent case where two aircraft, whose call-sign was only different by one digit in the flight number, were operating in the Gander OCA in close proximity to each other. When one of the two aircraft received a re-clearance, the other mistook this for being directed to it and started to execute the clearance not destined for it and it was only possible to avoid a critical situation by a rapid intervention on the part of the controller.

8.3.2 He therefore requested IATA to approach its operators with a request that necessary measures be taken to avoid such situations. The representative of IATA informed the group that IATA was well aware of this problem and that, for some time, repeated efforts had been made, not only within airlines but also between them, to find an acceptable solution. It had been found, however, that no easy solution was in sight and that he could therefore not make any promises. He, therefore, suggested that, in cases like the one reported by the Member of Canada, the OAC concerned should get in contact with the operator or operators concerned and try to find specific solutions.

8.3.3 The member of the US informed the Group that, by using stored information in the flight data processing systems serving the West Atlantic Air Route Structure (WATRS), designations for new flights by operators were submitted to the ACCs concern for approval and were checked against available data for possible conflicts. If such a conflict was detected, the ACC concerned offered an alternative proposal for designation to the operator concerned.

8.3.4 It was found that this method could not yet be applied by other ACCs, even though it was retained as an interesting possibility and the Group therefore noted that Oceanic ACCs would have to continue to follow-up individual cases with operators concerned in the hope that specific, particularly troubling cases be resolved on an ad-hoc basis.

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