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COMMITTEE FOR EUROPEAN AIRSPACE CO-ORDINATION (CEAC)

WORKING GROUP ON THE OPERATION IN EUROPE OF TURBINE DRIVEN TRANSPORT AIRCRAFT

Note by the Secretary

Herewith the International Civil Aviation Organization Report of the Fifth Special Meeting of the Rules of the Air and Air Traffic Services Committee, European-Mediterranean Region (EUM RAC Sp V Report 18/10/57). This Report was prepared in Lisbon between the 7th and 18th October, 1957.

2. This Report will be considered, if it is deemed desirable, at the Working Group meeting on 3rd, 4th and 5th December, 1957.

(Signed) J. WOIRIN

Palais de Chaillot,
Paris, XVIe.

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2. REPORT OF THE CHAIRMAN

General Comments

2.1 The following report is presented to assist States in making preparation for the consideration of Item 9 of Agenda for the IVth EUM RAN Meeting scheduled for January 1958.

It outlines various suggestions concerning the way in which the EUM Region airspace might be organized to cater for future operational requirements of the turbine engined aircraft.

2.2 The results of the discussions of the Committee on Agenda Items 1 and 2 are contained respectively in Sections 3 and 4 of this Report.

2.3 Attention is called particularly on the Recommendation in paragraph 3.12 concerning the obtaining of information on jet aircraft performance, as it is the only recommendation made by the meeting. It was considered, that generally the Report of the Committee was more of an informative nature, though essential to the planning of air traffic services in the EUM Region, and it was not therefore found necessary to make specific recommendations which are the task of the IV EUM RAN Meeting to formulate.

2.4 Attention is also called on paragraph 3.88 in which it is suggested that States give consideration to the desirability of recommending, at the IV EUM RAN Meeting, the establishment for machinery within ICAO to ensure continuous co-ordination amongst the various States concerned regarding the problems relevant to organization of the EUM airspace.

2.5 It is worthwhile to state here that the meeting appears to have succeeded in covering Items 1 and 2 of its Agenda, in that it has reduced to two the number of 'systems' that could be envisaged for the provision of Air Traffic Services in Europe for the near future, and that it was agreed that these systems would be compatible when they would be used concurrently in adjacent areas (paragraphs 3.67 and 3.68).

2.6 The deliberations of the Committee were greatly facilitated by being able to use a preliminary study made by a group of States of the Region. The contribution of IATA to the meeting was much appreciated.

Visual Meteorological Conditions

2.7 Although this was not specifically part of its Agenda, the Committee gave some consideration to the raising of the VFR criteria, as this is connected with the organization of the airspace in various layers.

2.8 The Committee agreed that there is a need to increase the criteria for visibility and distance from clouds for VFR flights over the values now contained in Annex 2, in view of the increase in speed.

2.9 It was agreed that such increased VFR criteria in the lower and the upper airspace should be those recommended by the 2nd Air Navigation Conference of ICAO, held in 1955 and should apply in controlled airspace and that elsewhere they should apply above 300 metres (3,000 ft.) MSR, or 500 metres (1,700 ft.) GND whichever is the higher.

2.10 Further study was considered necessary for the establishment of criteria to apply outside of controlled airspace below the above-stated levels.

2.11 The Committee also discussed other aspects of the application of VFR, in particular whether the lower minimum height for the operation of IFR flight should be changed when the portion of the airspace in which the lower criteria apply, outside of controlled airspace, would extend higher than 300 metres (1,000 ft.). It finally agreed that this subject be left for discussion at the RAC/SAR Division in 1958 (Item 1 of the Agenda).

2.12 It was restated that no VFR criteria should be applied within the upper controlled airspace since all traffic flying there must be operated under IFR. For the provision mentioned in paragraph 3.54 the increased VFR criteria of the 2nd ANC should be applied.

3. REPORT ON AGENDA ITEM 1

General preliminary examination and discussion of proposals concerning organization and implementation of air traffic services in the EUM Region

INTRODUCTION

3.1 In considering item 1 of the Agenda, the Committee used as a basis for its discussion a study that a group of States had presented following its preliminary discussion of the problem associated with the advent of jet operations and the difficulties that this involves for co-ordination with military traffic in the upper airspace.

3.2 The Committee noted that in a number of cases it had dealt with consideration which were already contained in the report of the JOR Panel. It wants it to be noted, however, that it did not consider the JORP report and there may later be a need to reconcile some of the material in its report with that contained in the JOR Panel report.

3.3 One of the most serious difficulties regarding the planning for air traffic services in Europe is the need to take into account the requirements of "uncontrolled traffic" comprising a substantial portion of military traffic which cannot comply with the procedures generally applied in the provision of air traffic control services laid down in ICAO Standards, recommended Practices and Procedures.

3.4 This has resulted in a number of cases in the restriction of civil air transport to a limited number of controlled airways, the network of which does not cover the requirements of civil air transportation.

3.5 The very great difficulties thus imposed on civil air transport, however undesirable, have been suffered so far, but they will become critical with the advent of turbine engined aircraft.

3.6 It is therefore desirable to avoid that in the upper airspace too much airspace be segregated for the use of any one type of traffic.

3.7 A more flexible system than the airways system was advocated by some States.

THE DISCUSSION

3.8 The meeting considered the problem as follows:

(a) a brief review was made of the systems available to-day in order to select those which could be

considered acceptable to meet the requirements of the EUMED Region;

(b) a description was made of the two systems capable of being implemented in a reasonable time, i.e. the "system of airways" and the system of "predetermined routes in controlled airspace.";

(c) as States were divided as to which of these two systems they would apply, the meeting gave particular attention to considering the methods of integrating the two systems when used in contiguous areas.

THE FACTORS UPON WHICH THE SOLUTION MUST BE BASED

General Criteria

3.9 In giving consideration to the future requirements for controlled airspace in the EUM Region, it is to be noted that:

(a) most modern types of piston-engined aircraft are presently operating up to altitudes about 20,000 feet where their performance is most efficient;

(b) turbo-prop aircraft are operating at altitudes up to 25,000 feet in summer and 30,000 feet in winter and will, in the near future, require to operate at higher altitudes;

(c) in approximately two years time, turbo-jet aircraft will be operating in progressively increasing numbers requiring a range of altitudes from 20,000 feet to at least 40,000 feet.

3.10 One of the most important characteristics of turbine-engined aircraft which must be borne in mind by navigation and ATC system planners is the sensitiveness of these aircraft to height and their needs to fly at optimum cruising altitudes. Deflection from these entails an operating and economic penalty which becomes increasingly more severe with greater deviations from the optimum.

3.11 The Committee considered that it was absolutly essential to know the performance of expected turbine-engined transport aircraft as precisely as possible to help planning air traffic services in a realistic way. It therefore expressed the need for obtaining as much up-to-date information as possible on this subject prior to the IV EUM RAN Meeting. The following recommendation was agreed:

RECOMMENDATION

3.12 The Committee recommends that ICAO take every possible step to secure further information and up-to-date figures on the performance characteristics of turbine-engined transport aircraft.

It is considered that this information when secured should be communicated to States as early as possible and particularly prior to the IV EUM RAN Meeting.

It was noted that the IATA Technical Conference in Miami, in November 1957, might provide a suitable occasion to request the views of the operators regarding their intentions as to how they propose to operate their turbine-engined aircraft, thus providing valuable advice for planning.

The Criteria for the Operators of Transport Aircraft

3.13 (a) optimum flight paths to meet the requirements of transport aircraft and to expedite the maximum flow of traffic, must be established and safeguarded from air to air collision. In establishing such flight paths account must be taken of aircraft performance, specially as regards optimum economic flight path in the vertical plane, from the point of departure to the aerodrome of intended landing, and the choice of flying in either the upper or the lower airspace in the EUM Region should be at the discretion of the operator, since it will primarily be affected by aircraft performance and operational considerations;

(b) direct routings are required as a result of:

(i) the high operating costs associated with the latest types of airline aircraft in service and currently planned, which make it essential to avoid the economic penalties resulting from additional en route flight, time and lower aircraft utilisation;

(ii) the operational necessity to avoid frequent course changes due to the great speeds of these aircraft.

(c) all aircraft flying in the upper airspace on the routes referred to in (a) above, should be operated in accordance with the Instrument Flight Rules, and VMC clearances should not be used, because of:

(i) the absence of an adequate horizon and thus of depth of perspective with resultant difficulties such as the greater need to concentrate on instruments, a greater difficulty of seeing other aircraft and of assessing their relative height;

(ii) the reduced value of maintaining a lookout because of (i) above coupled with:

(iii) the very high speeds of closing and

(iv) the time and space, required for the manoeuvre of high-speed aircraft, and

(v) the increased tempo of activity in the cockpit.

(d) position reporting must be reduced to a minimum;

(e) the number of separate Control Centres to be communicated with and the amount of changes of frequency for air/ground communication must be reduced to a minimum consistent with sound communications and ATC techniques;

(f) only the minimum amount of resetting of altimeters must be required;

(g) the period of time during which aircraft would be required to hold should be kept to an absolute minimum.

The Criteria of Air Traffic Control

3.14 (a) aircraft shall always navigate accurately and report position promptly when required;

(b) holding aircraft must be kept within the holding area and be able to leave the pattern + a predetermined time and point in a manner permitting maximum traffic traffic flow and runway utilization;

(c) direct pilot to controller static and interference free communication by voice or other more suitable means must be provided;

(d) speedy and reliable direct controller-to-controller communications by voice or other more suitable means must be available;

(e) the control system and the extent of any one control area must be so designed that the amount of co-ordination required between adjacent air traffic control units and between civil and military units is kept to a minimum;

(f) all available airspace must be utilized in the most efficient and safest manner possible.

3.15 The Criteria for the Military Services

Air Traffic Control in the upper airspace must be so organized that any loss in tactical freedom in respect of operational, development and training flying is reduced to a minimum.

3.16 The vital need for Civil/Military Co-ordination and Co-operation

In view of the high density of military traffic that will continue to fly in the Upper Airspace, the importance of extremely close co-operation between the civil and military authorities of all countries cannot be over-emphasized. All planning must take into account the need for joint/military civil consultation (see paragraph 3.86).

PLANNING PRINCIPLES

Terminal Area

3.17 To assist in the co-ordination of all air traffic, it is essential that surveillance radar should be installed at all major international Terminal Areas.

3.18 Radar vectoring should be used to the fullest extent in the interest of economizing airspace. However, the basic flight paths for ascents and descents must be defined by a radio-aid to the extent that pilot orientation may be maintained in the case of radar failure.

3.19 Climb-out Procedures

(a) turbine engined aircraft must proceed in a continuous climb from take-off to an initial cruising level of at least 20,000 feet, even if this in some cases can only be achieved by using a slightly more circuitous route;

(b) turbo-prop and high performance piston-engined aircraft also require a continuous climb from take-off to their initial cruising level and have comparable climbing airspeeds. They can, therefore, to some extent be accommodated within the same airspace. With pure jet aircraft, the airspeed in the climb may be more than 100 knots faster than the above aircraft and they must be laterally separated from this traffic when departing along the same route, thus creating a need for additional airspace to cater for climb-out requirements;

(c) in order to avoid the excessive use of controlled airspace climb-out flight paths may have to be combined into a number of specific flight paths serving several routes in the same general direction without adding significantly to route mileage;

(d) existing controlled airspace requires revision to encompass climb-out requirements. The dimensions of the additional airspace required and its integration with existing Terminal Control Areas and Airways are largely dependent upon the availability of suitably located navigation aids and of radar and will therefore have to be determined by a detailed study at each location involved. Furthermore, the proximity of military jet activity imposes special problems which necessitate the closest civil/military co-ordination to ensure most effective use of airspace.

3.20 Descent Procedure

(a) the ATC System should permit continuous descent of turbine-engined aircraft from at least 20,000 feet to the runway;

(b) holding should be accomplished at a fix suitably located in relation to the point from which continuous descents can be made. The holding fix should be on the in-bound routing to the destination aerodrome, or where this is impracticable, near the destination aerodrome itself;

(c) the minimum holding level should normally be at 20,000 feet but holding patterns may in particular circumstances be required at approximately 15,000 feet. A separate study will be needed to determine the lateral dimensions of the holding areas, the rate of turn and the pattern to be used. The turn should not exceed the "G" loading presently experienced in piston engined aircraft at 160 knots IAS. The rate of descent should be established with due regard to the need for depressurizing the cabin.

3.21 Lateral Separation

It is envisaged that much greater use will have to be made of lateral separation for the following reasons:

(i) a greater proportion of the flight will consist of climb and descent due to higher cruising levels;

(ii) the greater airspeed differentials, particularly between jet aircraft and other types of aircraft require more airspace to allow aircraft to proceed in the same direction at the same cruising level;

(iii) to facilitate flight level changes between opposite direction high speed aircraft.

3.22 Pre-Departure Procedures

The Air Traffic Control Organization should be so organized that delays can be absorbed by aircraft prior to engines starting. There is also a requirement for a full clearance to cruising altitude to be given before take-off.

3.23 Missed Approach Procedures

The missed approach procedures should permit aircraft to climb rapidly to the cruising level required for the diversion airport and particular attention should be devoted to this in discussing requirements at specific terminal areas. This requirement may necessitate a missed approach procedure different from that used by piston-engined aircraft.

3.24 Expected Approach Times

With the advent of turbine engined aircraft, there will be a need to have expected approach time issued not later than the time at which descent into the lower airspace would be commenced.

THE VALUE OF VARIOUS SYSTEMS TOWARDS MEETING THE CRITERIA

(as stated in paragraphs 3.9 to 3.15)

The Creation of an Upper Airways System overlying the existing Airways System

3.25 It was considered whether a feasible and economical means of meeting the criteria would be by extending the present airways system vertically so as to include the highest flying turbine-engined aircraft.

3.26 This solution would make use of existing navigational facilities and in order to reduce the amount of position reporting, procedures could be designed whereby aircraft were required to report only at, say, every other point. This would seek to retain the existing geographical pattern of the airways whilst modifying the present procedures.

3.27 Certain disadvantages of such a system readily spring to mind because the lower system was planned with aircraft of different operating characteristics from those of turbined-engined types. For example:

(a) - the frequent changes of heading, the numerous changes of control and the increased route mileage resulting from the numerous "dog legs";

(b) - wherever high-flying aircraft mingled with slower types in the lower levels the more stringent reporting procedures would perforce apply to both;

(c) - frequent changes of radio frequency for communications would be required of both types.

3.28 Special procedures would have to be designed for use in those Upper Airways overlying a lower airways system.

3.29 The above-mentioned disadvantages are considered to be serious enough to rule out the idea of vertically extending the existing airways as the solution.

Advisory service in the upper airspace

3.30 ICAO Procedures (document 4444-RAC/501/6, Part VII, section 1) recognize a place for an Air Traffic Advisory Service,

the objective of which is to make information on collision hazards more effective than it would be if only a flight Information Service were provided.

3.31 However, there is no obligation for aircraft to use Air Traffic Advisory Service and it does not afford the degree of safety and cannot assume the same responsibilities as Air Traffic Control Service because it does not provide a complete protection of aircraft against collisions.

3.32 Air Traffic Advisory Service is therefore not considered a satisfactory solution to the problem of separation of aircraft in the upper airspace.

An Area System of Air Traffic Control

3.33 With a full Area Control Service permitting complete freedom of choice of track, an operator can select the route and height which, in his opinion, are the most desirable. He will be guided in his choice by the forecast wind and weather, and he will determine that flight path which is calculated to get him most quickly to his destination with maximum fuel reserves. In flight, he may request an amended clearance to cover a change of his intentions as filed in his flight plan, should he so wish. Separation is then provided by air traffic control to all aircraft without restricting the military pilot's tactical freedom to fly wherever he needs after proper co-ordination has been effected with air traffic control.

3.34 For the above system to work, adequate radio aids to navigation, radar coverage, and rapid and reliable communications must be available. There is also the very difficult problem of how to present information to the Air Traffic Controller so that he can quickly foresee possible conflicts in flight paths. He must be further assisted by computers to determine the point of any such conflict, and to calculate any necessary reclearances.

3.35 It was recognized that the area system of control was the ideal type of system for application in the European-Mediterranean airspace and that it should be the ultimate aim. However, due to certain technical administrative and financial aspects, a complete freedom of route selection was not considered practical at this time.

A System of Predetermined Routes in Controlled Airspace

3.36 Such a system would provide a first step towards the area system of control described in 3.33 to 3.35.

3.37 Basically, it would retain the concept of the provision of air traffic control in broad areas - not limited to corridors as in the case of an airways system - but air traffic in such areas would normally be required to adhere to predetermined routes, in a manner similar to the routes now prescribed in many of the busiest terminal control areas.

However since the area wherein the predetermined routes are situated would be controlled airspace the granting of direct clearances would be possible when traffic situation permitted.

3.38 The network of predetermined routes would be such as to offer a variety of routes to provide for flexibility and to allow for spreading of air traffic so as to facilitate the granting of clearances as close as possible to the optimum flight path or to expedite the flow of traffic.

3.39 This system would not prevent the practicability of using automation to assist in the provision of air traffic control, a method which does not appear to be possible with random routes as would be the case with an area system of control.

3.40 Greater utilization of airspace would be effected since the maximum degree of co-ordination of civil and military interests could be achieved.

When it would be necessary to reserve some airspace for other than controlled traffic, the density of the network of routings would permit the minimum detour to be imposed on controlled air traffic. Furthermore, the more direct routings would be re-opened to controlled air traffic as soon as the uncontrolled traffic would no longer use the relevant airspace, provided the required co-ordination is achieved between air traffic control and the authorities responsible for the uncontrolled traffic.

A System of Airways in the Upper Airspace

3.41 A general solution to the problem of organizing ATC services in the upper airspace which will permit evolution towards the systems described in paragraphs 33 and 36 can be found within the following general outlines.

3.42 Separation must be offered along recognized routes grouped together into a limited number of airways, so as not to add excessively to route mileage, but at the same time to permit that measure of freedom of flight necessary for military purposes.

3.43 Such airways of agreed width, height and orientation must be agreed internationally after military considerations have been taken into account in accordance with the requirements of paragraph 13 and so as to meet the operators' needs as far as possible.

3.44 Because of their performance characteristics, it is economically expensive for turbine-engined aircraft to be denied their optimum cruising altitudes, the rapid climb thereto, and desired descent therefrom. Such sensitivity in the height requirement means that ATC might often have to resort to lateral rather than vertical separation.

3.45 Such separation can be achieved only by providing discrete tracks laterally separated. Radar cannot be relied on

for this purpose because of the limited capacity of the radar operator to pass vectors for aircraft to fly. The solution must lie in planning for dual or multi-track, rather than single airways and this will become increasingly important with the growth of traffic to be expected in the coming years.

DISCUSSION OF AN INTERIM AIR TRAFFIC CONTROL PLAN FOR THE UPPER AIRSPACE

3.46 The Committee agreed that:

(a) both the "airways system" and the "predetermined routes in controlled airspace system" might be successfully implemented in areas of the EUM Region, and that

(b) they have in common a number of characteristic features.

3.47 It therefore examined both systems in detail and the result of such an examination is reported hereafter. First, each system is considered individually; then principles are evolved regarding their integration where they would be applied in adjacent areas.

DISCUSSION OF THE INTERIM UPPER AIRWAYS SYSTEM

Description of the Upper Airways System in Detail

3.48 When the operational requirement for an upper airway has been established it should be met by designating an airways marked by existing or planned aids to navigation wherever there are sufficiently accurate. The required airway width is a function of the accuracy of the track-defining navigation aids and the precision with which the aircraft can follow the defined tracks. Dual, and possibly triple track airways may become necessary in the next few years, and if these are to be contained in airways of reasonable width, the accuracy of position fixing and track following must necessarily be high. This requirement will also apply just as strictly in the approach to, as within busy terminal areas.

3.49 To safeguard aircraft beyond radar range and to permit lateral separation of opposite direction traffic, recourse must be had in planning to multiple tracks defined by highly accurate radio aids to navigation.

3.50 To illustrate the direct effect of track following accuracy on upper airway width, two examples have been taken:

(i) if dual tracks are to be provided and radar separations of 5 n.m. used, the airway must be 25 n.m. wide if the accuracy of track-keeping is 5 n.m.;

(ii) if military considerations restrict the width of the airway to 10 n.m. and radar separations of 5 n.m.

are used, dual tracks can be provided only if the track-keeping accuracy is of the order of 1 n.m.

In view of the very stringent accuracy requirement that (ii) above represents, it is recommended that planning of airways should be based on a width greater than 10 n.m. wherever civil/military agreement can be reached to this effect.

3.51 As regards the height and vertical extent of the airway, considerations determining the choice of the lower level are set out in paragraph 60 below (Uniform Plane of Division). The upper level must be fixed after due attention has been paid to:

(a) the performance in height of transport aircraft;

(b) the preservation of tactical freedom for military aircraft that may not be sufficiently safeguarded by the crossing procedures outlined in paragraph 3.53 below.

3.52 It is considered that the upper limit of the upper airspace should initially be limited to that agreed as the ceiling for crossing in VMC, viz not about 40,000 ft. (see paragraph 57). This figure should be reviewed from time to time in the light of operating experience and changes in the traffic densities and should be lower where aircraft operating conditions so permit. Every effort must, however, be made to improve ATC techniques so as to permit a raising of the upper limit where necessary to meet the expected needs of new high flying transport aircraft.

The Procedures for Crossing Traffic

3.53 Owing to the high speeds of closing and reduced conspicuity of aircraft in the upper airspace, the VFR rules cannot be said to be adequate for the protection from collision of aircraft flying in VMC in the upper airspace. Moreover, as aircraft flying in the upper airways may be ascending and descending during the "en route" phase of flight, complete reliance cannot be placed on the quadrantal system for the protection of either the aircraft flying along the airways or aircraft crossing them. The aim, therefore, should be to improve ATC techniques and organization so that at all times and without delay, aircraft may be controlled and cleared safely across the upper airways. The ultimate goal is to ensure that all traffic along or across an upper airway is under air traffic control and properly cleared:

(a) by obtaining an air traffic control clearance using procedural methods and specifying the time, place and height to cross;

(b) by the use of agreed radar procedures, initially this would be by the use of primary radar, later to be supplemented by secondary radar surveillance techniques.

3.54 However, it was recognized that the above was not always possible at this stage and that crossing of airways should be

accepted due to military requirements at the present time as an interim measure, without an air traffic control clearance, provided the aircraft is operated in VMC (see paragraph 55 below) and provided:

(a) the crossing is made as much as possible at an angle of 90 degrees;

(b) the crossing is made as much as possible in straight level flight.

3.55 The Committee desired to emphasize that the procedures in 54 are accepted as a purely temporary measure until new procedures are developed which would permit all aircraft to be controlled in the upper controlled airspace.

3.56 When the procedure in 54 is applied, avoiding action should be initiated by the pilot of the crossing aircraft immediately it is apparent that aircraft are flying on collision courses and the manoeuvre should be pronounced to give a clear indication that avoiding action is in fact being taken.

3.57 Information at present available suggests that crossing in VMC cannot be accepted above 40,000 ft. Further study will be necessary on this subject, including that of night crossing, and it is desirable that countries should make available any information in their possession relevant to this question in order to assist in further determining the values to be agreed.

Altimeter Setting Procedures

3.58 It was noted that a number of States have already indicated their agreement to the use of the ICAO standard altimeter setting procedure to be used in the lower airspace as well as in the upper airspace. Some delegations, although noting this with satisfaction, could not indicate definitely their position on this question at this time. The importance of reaching agreement on this question at the IV EUM RAN Meeting was stressed.

Height of the Uniform Plane of Division between "lower" and "upper airspaces"

3.59 The guiding principle must be to choose a height which is high enough to segregate those aircraft whose performance characteristics or route sector distances do not demand their penetration into the upper airspace for a justifiably long enough period, and low enough to ensure that aircraft wishing to use the upper airspace can, in fact, do so. Further, the effect of drawing the level at too low a figure would be to produce a disproportionate workload on the Air Traffic Control Officers for the upper airspace and to increase the problem of co-ordination.

3.60 From the evidence available it is considered that the uniform plane of division should initially be drawn at 20.000 ft. It is pointed out that this value must be examined in the light of developments and of further experience gained in the operation of the system

Vertical separation standard

3.61 It is envisaged that any increase in the 1,000 feet vertical separation standard at high levels will seriously limit:

(a) the number of levels available in high holding patterns, and

(b) the available cruising levels that are operationally acceptable.

3.62 Concerning the vertical separation standards in the upper airspace a 1,000 foot vertical separation is necessary and a more accurate altimeter as well as an accurate height lock on the auto pilot are necessary to make this possible. If such an altimeter is not available during the period under review, it may be necessary to apply 2,000 feet vertical separation between aircraft operating above a specific altitude.

3.63 In this connection, it is noted that an altitude of 29,000 feet has been temporarily adopted at which 2,000 feet separation would apply in the North Atlantic area. Further study will be required before a definite viewpoint can be formulated.

DISCUSSION OF THE INTERIM PREDETERMINED ROUTES IN CONTROLLED AIRSPACE SYSTEM

3.64 Generally, the discussion of various features of the airways system and particularly of the major problems which require solutions for the system described in the above section, would apply to the system of predetermined routes in controlled airspace.

3.65 It is outlined only that "Uncontrolled traffic"(1) would be under constant supervision. As required, information on controlled traffic using the predetermined routes will be furnished to the military units so that the necessary co-ordination may be effected. Moreover, this system would present the advantages described in paragraph 3.38.

3.66 Designators will be given to the predetermined routes.

INTEGRATION OF THE TWO SYSTEMS OF AIRWAYS AND PREDETERMINED ROUTES

3.67 It was recognised that the system of controlled airways and the system of predetermined routes were compatible and that both systems could be applied in the same or different FIRs in the EUM Region provided they formed a co-ordinated network allowing the continuous flow of traffic from one system to the other.

3.68 It was stressed that particular care should be taken to ensure, that at the connecting points, the flow of traffic from one system should not exceed the traffic capacity of the other system.

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(1) See paragraph 3.3

ORGANIZATION OF THE UPPER AIRSPACE

3.69 In order to overcome frequent changes of communications frequencies and changes of control between adjacent ATC units, it appears at first that the geographical areas over which designated control units exercise their authority should be increased.

3.70 But it was recognized, however, that a reduction of change of communications and control could be met through proper co-ordination and transfer of control amongst adjacent ATC centres, as in such case it might not be required for the aircraft to call all the centres of the regions traversed, when the period for which it would be overflying such region would be shorter than the interval normally used in position reporting.

3.71 In planning the locations of the Centres responsible for the upper airspace account must be taken of the liaisons necessary between the controllers responsible for the lower airways and FIRs and those responsible for the upper airspace. The upper centre must be so sited as to facilitate all the essential liaisons both rapidly and closely.

3.72 When there will be a number of lower FIRs and lower Area Control Centres within the boundary of an upper FIR:

(a) in some cases it may be possible to locate all the elements of the Centres responsible for the upper airspace at one place, in which circumstances a joint military/civil Centre of the upper airspace is suggested, located at a suitable communications point, or

(b) co-ordinating civil elements may be attached to military control centres located within the boundaries of the upper FIR in order to ensure co-ordination between controlled traffic on the one hand and "uncontrolled traffic" (1) on the other. Information derived from military units should be co-ordinated with all relevant civil movements by the appropriate upper area control centre.

3.73 It is essential that only one ATC authority be in charge of providing air traffic control service for a given block of airspace, irrespective of whether the personnel and facilities employed are predominantly civilian or predominantly military.

3.74 A proposal for an international agency supervising the ATC organization for the Upper Airspace for the whole of the EUM Region was considered, but the Committee did not accept this plan since it did not believe that it could be provided effectively in the near future.

THE PHASING OF IMPLEMENTATION OF THE INTERIM UPPER AIR TRAFFIC CONTROL PLAN

3.75 A basic upper airspace organization should be introduced as soon as possible, and in any event prior to 1960. It is considered that in areas where implementation of a system of upper airways or route-determined routes in controlled airspace, is deemed desirable, it

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(1) See paragraph 3.3

should be phased so that there will be no sudden and major upheaval of the existing Air Traffic Control system, but rather a gradual superimposition of the new system as a process of evolution. A plan of phased implementation would give the greatest flexibility to the system, most easily permitting amendment in the light of experience.

3.76 The first phase should consist of a limited number of the more important flight paths, that is, those with the greatest traffic density based on the number of operations (of all sorts, scheduled, non-scheduled, military, etc....) above the agreed dividing plane. Density of civil traffic should not be taken as the only criteria to determine the requirement for control, however, as all transport aircraft should be entitled to full protection, whatever the density of their traffic and as the need for protection will be greater in an area of intense activity of "uncontrolled traffic" whatever the density of civil traffic. Other phases would have four main aims and should be kept under constant review:

(a) as a first step in the development of the new system, the upper level of existing airways should, whenever suitable and so required, be raised to the agreed lower level of the upper system. In some specific cases, a level higher than that of the floor of the upper system may initially be required;

(b) the maximum upper height limit of the upper controlled airspace should be increased as and when required;

(c) the upper controlled airspace should be increased as and when the development of the new system and military considerations permit;

(d) crossings in VMC without appropriated separation procedures should be eliminated as and when military considerations permit. (See paragraphs 3.54 and 3.55)

EFFECTS UPON THE EXISTING LOWER AIRWAYS SYSTEM

3.77 In considering the most suitable system for use in the Upper Airspace, due regard must be had to the effect upon the existing lower airways system. The major problems appear to be:

(a) the fact that the upper airways and predetermined routes will not necessarily overlie the existing airways network:

(b) the difficulty of getting aircraft up into, and down from the upper airspace without disorganizing the lower traffic.

3.78 Since the upper and the lower airways will not necessarily be coincident, procedures must be devised which will cover the

possibility of the need for aircraft to change altitude from one system to the other whilst en route, unless such changes can always be made without undue inconvenience where the former do in fact overlie the latter. Even more important is the need to ensure that jet aircraft will be able to take the best possible advantage of their operating characteristics during the climb and descent phases. It may not, unfortunately, in many cases be possible to provide additional controlled airspace at the lower levels to give these aircraft the ideal - lateral separation from the lower level aircraft - either on the climb out, or on the descent into the terminal area. This problem requires further examination.

REQUIREMENTS FOR FULLY MEETING THE CRITERIA

(set out in paragraph 3.9 to 3.15)

Airborne equipment

3.79 In order to ensure that aircraft flying in the upper airspace stay within the airway or along the predetermined route, and communicate successfully with the appropriate air traffic control centres, it may be necessary internationally to agree standards of performance of equipment to achieve this. Aircraft not so equipped may have to be denied the right of flying in the upper controlled airspace. The importance of accurate navigation - both in the horizontal and in the vertical plane, i.e. the requirement for more precise altimetry - and rapid communications cannot be over-emphasized.

3.80 Exploitation of the use of secondary radar to facilitate identification by ground radars is very important.

3.81 The development and use of proximity warning indicators and of means for increasing aircraft conspicuity by day and by night should be actively studied.

Ground Navigational and Air Traffic Control Aids

3.82 Reference has already been made in paragraph 3.49 above to the effect of navigational accuracy on the width of airways.

3.83 In order to achieve the maximum utilisation of airspace with separation standards, it is essential to exploit as fully as possible the extensive use of primary radar, supplemented by secondary radar provided that agreed standard of separation and application are employed.

3.84 It has also been pointed out that the upper airways should be defined as far as possible by existing aids, but it must be recognised that additional and/or more precise aids may be required to meet the special needs of turbine-engined aircraft. It seems clear that the desirability from the air traffic control point of view of providing an area navigation system to meet the ultimate route requirements of civil transport should be studied.

Communications in and between ATC units

3.[illegible] The increased speeds to be expected from next-type aircraft emphasize the need for speed and reliable Inter-Centre communications to permit all the necessary liaisons between Air Traffic Control units in charge of control in the lower and upper airspace.

3.[illegible] Flight Plans, Departure Messages and other communications must be handled with rapidity and the fait minutes transit times should be carefully established by the ICAO Committee of the IV E/M ICAO Division.

CIVIL/MILITARY COORDINATION AND COOPERATION

2.[illegible] A [illegible] continual review of the complex problems involved in the whole subject, an appropriate machinery should be employed. In addition a close co-ordination will become more and more necessary, not only between limited groups of States but between all States members in the ICAO Region.

2.[illegible] It is therefore suggested that States give particular consideration to the [illegible] ICAO Meeting, that the ICAO Council [illegible] suitable machinery within ICAO be provided for the [illegible] of information relevant to the evaluation of the problems involved in civil/military co-ordination with the [illegible] requirements.

4. AGENDA ITEM 4

Establishment of a broad outline plan for air traffic services in the EUR Region

INTRODUCTION

4.1 The Committee examined separately the requirement for routes in:

(a) the upper airspace
(b) the lower airspace.

UPPER AIRSPACE

4.2 The Committee, when considering a network of flight paths in the upper airspace to meet the requirements of civil air traffic in the EUR Region, taking into account the requirements of air traffic control, based its review on a chart presented by IATA.

4.3 Chart No. 1 shows a route pattern which is intended to provide States with guidance on the intentions of neighbour States with regard to an upper flight path network, in order that they may plan their route system accordingly and arrange for necessary co-ordination. The chart should be read, however, only in conjunction with the commentary by States, contained in Appendix "A". These comments and those by IATA represent the initial reaction after discussion at this meeting. It should be noted, however, that dotted lines mean that States have not as yet agreed to these routes but that they are willing to study the proposed route further. Full lines on the chart indicate that a route has been accepted in principle by the States concerned. Over territory under the jurisdiction of States not represented at this meeting, routes are shown by a crossed line.

4.4 An enlarged chart (Chart No. 2) shows the route patterns in the area roughly encompassed by straight lines between the following points: London-Paris-Geneve-München-Hamburg-back to London, as it was found that more accurate information was required by States in this area in order to come to a common approach to the problem.

4.5 The numbering of the flight paths is not intended to provide for a designator system, but was chosen for convenient reference only. The numbers may therefore cover an entire route or a segment.

4.6 It should be borne in mind that the charts do not reflect routing in the immediate vicinity of major terminals, nor are the positions for the various significant points along the route exactly defined.

4.7 Furthermore, the Committee did not adopt any principle with regard to the lateral or vertical extent of the volume of airspace to be protected along the routes indicated, nor do they reflect States' position with regard to the system of air traffic control to

be adopted for the control of air traffic in the upper air space. Lines shown, therefore, are intended to give only an approximate position of the possible centre lines of future flight paths in the upper airspace.

LOWER AIRSPACE

4.8 The Committee examined a list of requirements presented by IATA for changes to the lower system of routes.

4.9 The comments made during the examination are recorded in Appendix "B" of the Report.

5. STATEMENTS BY DELEGATIONS

5.1 Statement by the delegation of Poland

5.1.1 Poland accepts in principle and will study the routes indicated in Chart 1 of this report. However, it is pointed out that high-flying traffic over Poland will have to be channelized and that it will have to enter or leave Polish territory via specified entry and exit points.

5.1.2 In addition, the exact routing of the routes to be established in Poland will have to be studied, but it is intended to provide them along straight lines as far as possible.

ROUTES IN THE UPPER AIRSPACE

COMMENTS ON CHARTS 1 AND 2

(See Section 4 of the Report)

Route	Significant Points	Comments by States	Comments by IATA
1.	Stockholm-Prestwick	Sweden: Route via Göteborg proposed but agreeable to routing via Oslo. Denmark: Route Stockholm-Göteborg-Prestwick not acceptable. Norway: Route from Stockholm via Oslo-Stavanger to Prestwick acceptable. UK: Able to provide one route only from Prestwick via East Coast of England (possibly Berwick) where it should link with routes from Scandinavia.	Proposed solution by States not acceptable. Route Stockholm-Göteborg-Berwick would be acceptable.
2.	Oslo-Prestwick	Implementation in accordance with statements for Route 1.	Requirement acceptable.
3.	Stockholm-London	Sweden: Routing via Göteborg acceptable. Denmark: Suggests routing via Kobenhavn, Hamburg and Amsterdam. Direct routing and routing proposed by Sweden not possible because of military requirements. Germany: Would accept direct route Kobenhavn-Helgoland-London or route suggested by Denmark. Netherlands: Will study requirement in connection with suggested alternatives. UK: Agreeable to route Amsterdam-London.	Routing is not considered adequate and therefore is not acceptable. Routing Kobenhavn-Amsterdam could be considered.
4.	Stockholm-Kobenhavn	Agreed by States.	Requirement met.

Route	Significant Points	Comments by States	Comments by IATA
5.	Oslo-London	Norway:) Agree to direct Denmark:) routing UK: Can only accept one route in general direction of Amsterdam from London. Is willing to consider route from Oslo to join Amsterdam-London route east of Clacton if question of navigational aids can be resolved. Netherlands: Agree to study alternative proposal by UK.	Route to point on Amsterdam-London within London FIR is acceptable; however doubts exist on ability to define junction adequately by navigational aids.
6.	Oslo-Kobenhavn	Agreed by States.	Requirement met.
7.	Bergen-London	Norway: Suggests routing via Stavenger. UK: Considers route should join R3 at point of intersection with R5.	Portion Bergen-Stavanger acceptable; reminder of route not acceptable.
8.	Kobenhavn-Prestwick	Denmark: In agreement. UK: Considers route will have to come to point specified for R1 and R2.	Acceptable if point on east coast of England is navigationally well defined.
9.	Kobenhavn-Stornoway-NAT Region	Denmark: Considers route should go via Billum, otherwise in agreement. UK: Cannot accept Billum-Stornoway but could accept Billum-Prestwick-Stornoway or Billum-Berwick-Stornoway. Navigational aid situation would render ATC at present impossible.	Kobenhavn-Billum acceptable. Remainder of route not acceptable.
10.	Kobenhavn-Sumburgh-NAT Region	Denmark: Agrees with routing via Billum. UK: Considers it is the same as R9 - will see if R9 and R10 cannot be combined into one route.	Kobenhavn-Billum acceptable-other suggestions not acceptable.

Route	Significant Points	Comments by States	Comments by IATA
11.	Kobenhavn-Hamburg	Denmark: } In agreement. Germany: }	Acceptable.
12.	Hamburg-Stornoway-NAT Region	Germany: In agreement. Netherlands: Will study. UK: Will see if a solution in conjunction with R9 and R10 can be found.	Reserve position.
13.	Hamburg-Prestwick	Germany: Suggests combine route with R12 up to Helgoland. Netherlands: Will study. UK: In agreement if routing joins R1 and R2 before reaching Berwick.	Hamburg-Helgoland acceptable. Position reserved for remainder.
14.	Hamburg-Amsterdam-London	Germany: Suggests routing via Eelde. Netherlands: Will study. UK: Accepts one route: Amsterdam-London.	Direct route or routing via Eelde acceptable.
15.	Amsterdam-Orkney Isles-NAT Region	Netherlands: Will study. UK: Will study in relation with R10 and R12.	Position reserved.
16.	Amsterdam-Ottringham-Prestwick-NAT Region	Netherlands: Will study. UK: Considers that a route Amsterdam-Ottringham may be possible - navigational aids may make provision of ATC impossible.	
17.	Amsterdam-London	States in agreement.	In agreement.
18.	Ottringham-Northern Ireland-NAT Region	UK: Accepts route via Manchester-Prestwick-NAT only.	Not acceptable.
19.	Billum-Ottringham-Manchester-Shannon	Denmark: Will study. UK: Cannot accept, propose Billum-Amsterdam-London-Shannon. Ireland: Could accept route via Dublin-Shannon from FIR boundary.	Proposal by Ireland accepted.
20.	London-Manchester-Prestwick-Stornoway-NAT Region	UK: In agreement.	Requirement met.

Route	Significant Points	Comments by States	Comments by IATA
21.	London-Isle of Man-Northern Ireland-NAT Region	UK: Agree to route London-Prestwick-NAT	
22.	London-Dublin	UK: Does not believe route requires priority consideration - not in agreement. Ireland: In agreement and supports suggestion.	Insists strongly on this route because of existing operational requirements.
23.	London-Bristol-Strumble-Shannon-NAT Region	UK: In agreement. Ireland: In agreement up to NAT Region.	Requirement met.
23a	5110N 1000W - Strumble	Ireland: Suggests this route. UK: Will study.	Appreciates Ireland's suggestion and supports it.
23b.	5420N 1000W - Strumble	Ireland: Suggests this route. UK: Will study.	Appreciates Ireland's suggestion and supports it.
24.	London-SW tip of England-NAT Region	UK: Cannot accept present routing. On combined portion with R23 up to Bristol ATC will be available, for the remainder no possibility of implementation.	
25.	Kobenhavn-Warsaw	Denmark: Studying the question. Sweden: Suggests a more southern routing in order to avoid Swedish territory. Poland: Accepts route in principle, detailed routing to be studied.	
26.	Kobenhavn-Berlin-Praha-Wien	Denmark: Studying the question. East Germany: No information available. Czechoslovakia: No information available. Austria: In agreement, depending on Czech position.	

Route	Significant Points	Comments by States	Comments by IATA
27.	Kobenhavn-München-Roma	Denmark: Considers not possible as separate route, suggests combine with R26. East Germany: No information available. Germany: States exit points from Czechoslovakia established (Cheb, Klatovy), these would have to be observed. Italy: Suggests München-Bolzano-Roma. Austria: Will study question.	The section Münich-Roma as per Italy's proposal acceptable.
28.	München-Venezia-Roma	Italy: Proposes München-Bolzano-Firenze-Roma and branch from Bolzano to VOR Chioggia. Austria: Will study question. Germany: In agreement.	
29.	Hamburg-Frankfurt-Zurich-Milano-Roma	Germany: Proposes routing via Rodenberg VOR, otherwise in agreement. Switzerland: Suggests follow route of existing airway. Italy: In agreement with route Milano-Firenze-Roma.	Acceptable.
30.	Hamburg-Paris	Germany: Suggests routing via Dortmund. Belgium: States that they plan to have only two main routings in Belgium whose centre lines are not yet defined. Position will therefore depend on where this route can be fitted into Belgian routings. France: Agrees in principle, but decision depends on Belgian position.	

Route	Significant Points	Comments by States	Comments by IATA
31.	Amsterdam-Berlin-Warsaw	Netherlands: Studying the question. Germany: No objection but wishes routing via Rodenberg. E. Germany:) No information Poland: Accepts this route in principle, detailed routing to be studied.	Proposal by Germany acceptable.
32.	Amsterdam-Frankfurt-München-Skopje-Salonika-Athenai-Sitia-Alexandria	Netherlands: Will be considered. Germany: Propose route via Dortmund. Austria: Suggests route be combined with R37, under study. Yugoslavia, Greece, Egypt: No information.	
33.	Amsterdam-Nice	Netherlands: Will be considered. Belgium: Will be one of the 2 main routings, alternative routing via split point to Marville appears possible. France: Suggest routing via Marville and Luxeuil for this route. Switzerland: Should be routed via Genève.	
34.	Amsterdam-Paris	Netherlands: In agreement. Belgium: Will be part of one of the two main routings. France: Accepts route via Cambrai.	
35.	London-Düsseldorf-Berlin	UK: In agreement via Belgian routings. Belgium: In agreement if it follows one of their 2 routings to split point. Germany: Propose routing from Düsseldorf via Warburg-Hehlingen because of corridor question.	

Route	Significant Points	Comments by States	Comments by IATA
36.	London-Bruxelles-Frankfurt-Praha	UK: In agreement. Belgium: In agreement if it follows one of their two routings. Germany: In agreement. Czechoslovakia: No information.	
37.	London-München-Beograd-Istanbul	UK: Is ready to connect to Belgian routes but will have to study route via Strasbourg. Belgium: Same routing as for R35 and R36 but prefers German proposal. France: Route via Marville-Strasbourg may be possible, will be studied. Germany: Direct route from Strasbourg to München accepted. Austria: Under study. Turkey: Direct route Beograd-Istanbul not possible, route Beograd-Alexandroupolis-Istanbul agreed.	
38.	London-Zurich-Milano-Brindisi-Citia	UK: Same position as for R37. Germany: Agree to direct route Strasbourg-Zurich. France: Same routing as R37 until Marville, from there direct route to Zurich or route Marville-Strasbourg-Zurich. Switzerland: For portion Zurich-Milano same as R29. Italy: From Milano routing via Firenze to Brindisi. Greece: No information.	
39.	London-Dijon-Genève-Elba	UK: Suggests routing via Paris, details left to France. France: In agreement. Switzerland: In agreement. Italy: Route via Genoa suggested for ATC reasons but will accept direct routing Genève-Torino-Elba.	

Route	Significant Points	Comments by States	Comments by IATA
40.	London-Poitiers-Toulouse-Barcelona-Palma-Alger-direction of Kano	UK: Will study route from Seaford to west of Paris FMA, however details of route yet to be decided by France and UK. France: High military traffic density exists in area of Tours, therefore suggests routing from Paris West to Tours to a point south of it (4550N 00 50E) from there direct to Toulouse and Barcelona. Spain: Route Toulouse-Barcelona so far not considered but will be studied. Barcelona-Palma-Alger agreed. France: Palma-Alger accepted.	
41.	London-Bilbao-Madrid-Gibraltar-Casablanca	UK: Direct routing at present not possible. Will study whether R41 cannot be routed via Cherbourg. France: Would agree to routing via Cherbourg-Nantes to Madrid. Spain: Agrees to French proposal and accepts route. Morocco: Acceptable.	
42.	London-Lisboa-AFI Region	UK: Suggests combine routing with R41. France: Supports UK suggestion and would like to have combined routing until Nantes. From there branch off to Lisboa. Spain: Agrees in principle, but will have to study Portuguese proposal. Portugal: Requests route be established via Vilar Formoso-Tomar to Lisboa. Route south of Lisboa accepted.	

Route	Significant Points	Comments by States	Comments by IATA
43.	Bruxelles-Manchester	UK: Only route via London to Manchester available. Belgium: Would agree to link up with any by-pass route by UK from the Belgian coast. Up to this point it would have to follow Belgian main routing.	
44.	Bruxelles-Zurich	Belgium: Suggests route from Bruxelles to split point thence to Marville. France: Agrees to direct route from Marville to Zurich as per R38. Switzerland: Agrees.	
45.	Frankfurt-Berlin	Germany: Agrees Note: Connected with question of Berlin air corridors.	
46.	Frankfurt-Linz	Germany: Suggests routing via Nürnberg to Linz. Austria: Agrees.	Acceptable.
47.	Frankfurt-Stuttgart-Venezia	Germany: Suggests route via München-Bolzano-VOR Chioggia (same as R28 from München). Would study direct route if traffic requires. Italy: Would accept route Stuttgart-Bolzano-VOR Chioggia. Austria: Would study direct route from Stuttgart, route via München acceptable.	
48.	Frankfurt-Genève-Montélimar-Barcelona	Germany: Direct route via Strasbourg acceptable, will study direct route Frankfurt-Luxeuil. France: Frankfurt-Strasbourg accepted. Will study route Frankfurt-Luxeuil. Luxeuil-Genève accepted. Route Genève-Montélimar-Barcelona accepted.	

Route	Significant Points	Comments by States	Comments by IATA
48.	(Contd.)	Switzerland: Agrees with French proposal. Spain: Agrees on route Montélimar-Barcelona.	
49.	Frankfurt-Bilbao-Lisboa	Germany: Suggests routing via Strasbourg. Will study route Frankfurt-Luxeuil. France: Accepts route from Strasbourg to Dijon. Will study Frankfurt-Luxeuil thence to point 4550N 00 50E on R40 - Bordeaux to Bilbao. Spain: Agrees Portugal: Route would have to come to Vilar Formoso and then follow itinerary of R42.	
50.	Paris-Frankfurt-Warsaw	France: Agrees. Germany: Requests routing via Luxembourg. If other routing necessary, question will have to be restudied. Belgium: Accepts Marville-Luxembourg. Eastern Germany: No information. Poland: Accepts this route in principle detailed routing to be studied.	
51.	Paris-München-Wien	France: Direct route Paris-Strasbourg acceptable. Germany: Direct route Strasbourg-München in direction Linz acceptable. Austria: Proposed route acceptable.	Requirement met.
52.	Paris-Zurich-Zagreb-Beograd	France: Route Paris-Luxeuil-Zurich acceptable. Switzerland: Agrees up to Zurich continuation suggested via Bregenz. Austria: Is ready to study routing via Bregenz-Innsbruck-Klagenfurt-Zagreb, would however prefer routing via Salzburg. Italy: No objections to route Innsbruck-Klagenfurt if it does not pass over Italian territory. Yugoslavia: No information but route Zagreb-Beograd at present exists.	

Route	Significant Points	Comments by States	Comments by IATA
53.	Paris-Lyon-Nice-Ajaccio-Cagliari-Tunis	France: Acceptable. Italy: Acceptable.	Requirement met.
54.	Paris-Marseille-Tunis	France: Route Paris-Marseille accepted will probably be moved slightly to west. Italy: Direct route Marseille-Tunis not possible because of military requirements on Sardinia. Would suggest routing from Marseille via Alghero to Cagliari from there combined with R53.	
55.	Paris-Barcelona	France: Suggest routing via Perpignan. Spain: Will study route Perpignan-Barcelona.	
56.	Paris-Bordeaux-Madrid	France: Proposes combination with route 40 via Tours and point 4550N 00 50E then Bordeaux direct to Madrid. Spain: Accepts this route.	
57.	Paris-Brest-NAT Region	France: Acceptable. UK:) Continuation of this Ireland:) route in NAT Region acceptable.	Requirement met.
58.	Paris-Southern tip of England-5110N 1000W-NAT Region	France: Suggests route Paris-Cherbourg to point in SW England, which should be specified by UK. UK: Will have to study this route. Ireland: Accepts this route.	
59.	Paris-Bristol-Dublin-5420N-1000W NAT Region	France: Decision on French position depends on UK position but agrees in principle. UK: Direct route from Paris via Bristol to Dublin in UK FIR not possible because of military requirements, suggests routing via route 23. However, will consider combination with R58. Ireland: Requests more upper air routes leading from Ireland to the south-east, is therefore ready to accept this route and wishes its inclusion in the Plan.	

Route	Significant Points	Comments by States	Comments by IATA
60.	Cherbourg-Brest-NAT Region	Note: The requirement for this route to be studied further by IATA.	
61.	Zurich-Wien	Switzerland: Acceptable. Austria: Request routing via Salzburg to Wien direct. Germany: No objection to Austrian proposal, suggests routing via Bad Tolz.	
62.	Zurich-Genève-Toulouse-Madrid-Lisboa	Switzerland: Agreeable. France: Will accept route Genève-Toulouse, prefers direct route between Toulouse-Madrid. Spain: For route between Toulouse and Madrid there are serious difficulties because of military requirements, however will study whether re-routing around existing danger areas is possible. Route from Madrid to Lisboa acceptable. Portugal: Accepts route from Portalegre to Lisboa.	Is willing to accept slight deviation between Toulouse and Madrid.
63.	Wien-Warsaw	Austria: Acceptable. Czechoslovakia: No information. Poland: Accepts this route in principle, detailed routing to be studied with Czechoslovakia.	
64.	Wien-Budapest-Beograd	Austria: Acceptable. Hungary:) No information. Yugoslavia:)	
65.	Wien-Beograd-Salonika	Austria: Is ready to study this route but cannot accept direct route from Wien to Beograd because of danger areas at Austrian-Hungarian border. Suggests route from Wien in direction of Budapest to suitable turning point within Hungary, from there direct to Beograd. Hungary:) No information. Yugoslavia:)	
66.	Genève-Brest-NAT Region	Switzerland: Acceptable. France: Suggests route via point ESE of Dijon-Tours-Brest.	Proposal acceptable.

Route	Significant Points	Comments by States	Comments by IATA
67.	Genève-Milano-Brindisi-Kerkyra-Athenai	Switzerland: Acceptable. Italy: Will study routing with Switzerland - at present the only routing available is from Genève via Turino to Milano. Routing from Milano as R38 to Brindisi, otherwise acceptable. Greece: No information but the route Brindisi-Kerkyra-Athenai is already implemented.	
68.	Milano-Montélimar-Toulouse	Italy: Agrees to route up to Montélimar via Turino. France: Agrees to this route in principle but considers it is connected with the problem raised for R62 with regard to continuation from Toulouse to Madrid.	
69.	Milano-Nice-Palma-Oran	Italy: Will have to study Milano-Nice segments since there at present exist difficulties because of military requirements in area SW of Milano. France: Suggests that this route be combined with R71 up to point to be defined by France and Spain. Urges Italy to consider this route by taking into account the traffic utilising R71. Agrees to portion Palma-Oran. Spain: Agrees to consolidation of routes up to the points mentioned by France, otherwise no objection.	
70.	Montélimar-Bordeaux-NAT Region	France: Suggests a route commencing at point between Marseille-Nice to be defined by France and then direct to Bordeaux in order to relieve possible traffic congestion over Montélimar. (See also R74).	
71.	Nice-Barcelona-Madrid-south of Porto-NAT Region	France: Suggests combination with R69 up to turn-off point towards Palma. Spain: Acceptable up to Madrid. In view of Portuguese position agreeable to routing Madrid-Portalegre. Routing Madrid-Vilar Formoso will have to be studied. Portugal: Requests route via Portalegre in Lisboa because route via Vilar Formoso to a point south of Porto conflicts with military requirements. Is willing however to study route Vilar Formoso to point south of Porto.	Pressing operational requirements exist for the routing from Madrid via Vilar Formoso to a point S of Porto.

Route	Significant Points	Comments by States	Comments by IATA
72.	Marseille-Palma	France: Accepts this route in principle but points out that it will create ATC problem because of intersection with Routes 69 and 71. Suggests, therefore, that route be directed to point of diversion between Routes 69 and 71 to reduce this problem. Spain: Will have to study this question but favours French position with regard to common intersection.	
73.	Marseille-Bône	France: Acceptable.	Requirement met.
74.	Roma-Elba-Nice-Montélimar-Brest-NAT Region	Italy: Acceptable. France: Suggests that this route be brought to point where R70 commences, from there it would continue in a general direct line to Brest - the exact routing to be defined by France.	Requirement met.
75.	Rome-Ajaccio-Barcelona-NW tip of Spain-NAT Region	Italy: Acceptable. France: Will have to study this question with regard to existing danger areas at Corsica. Spain: Will study the portion to Barcelona. From Barcelona to Burgos difficulties exist. Will however study this question considering the possible establishment of a navigational aid east of Zaragossa which might also serve R62.	
76.	Rome-Tunis	Italy: Would suggest route via Ponza, otherwise acceptable. France: Acceptable.	
77.	Rome-Palermo-Tripoli	Italy: Suggests combine with R76 up to Ponza, otherwise acceptable. UK: Within Malta FIR acceptable.	
78.	Rome-Caraffa-Alexandria-Cairo	Italy: Acceptable. Egypt: No information.	
79.	Rome-Brindisi	Italy: Acceptable, is studying dual routing, outbound traffic to be routed Roma-Ponza-Napoli-Brindisi, inbound traffic to be routed Brindisi-Roma direct.	

Route	Significant Points	Comments by States	Comments by IATA
80.	Barcelona-Bordeaux-Strumble-Dublin	Spain: Will study route Barcelona-Toulouse-Bordeaux with France. France: Accepts Spanish suggestion up to Toulouse, suggests then routing via Bordeaux and Nantes or from Toulouse to point 45 00N 0050E to Nantes. However, routing acceptable up to Nantes. UK: The portion Strumble-Dublin is acceptable, portion Strumble-Nantes within UK FIRs will have to be studied. At present difficulties exist. Ireland: Acceptable.	
81.	Madrid-NW tip of Spain-NAT Region	Spain: Acceptable.	Requirement met.
82.	Madrid-Alger	Spain: } Acceptable. France: }	Requirement met.
83.	Madrid-Oran	Spain: } Acceptable. France: }	Requirement met.
84.	Lisboa-Poitiers	Portugal: Route should be combined with Routes 42 and 49 in Portugal. Spain: Route should be combined with R49 in Spain. France: Suggests route to go to Nantes instead of Poitiers.	
85.	Lisboa-Sevilla-Oran	Portugal: } Spain: } Acceptable. France: }	Requirement met.
86.	Casablanca-Oran-Alger-Nice-Tunis	Morocco: } Acceptable. France: }	Requirement met.
87.	Tunis-Tripoli	France: Acceptable.	Requirement met.

Route	Significant Points	Comments by States	Comments by IATA
88.	Corfu-Citi-Lod	Italy: Acceptable. Greece: No information but route exists. UK: Would suggest junction with R90 at point of intersection with R100. (Note: UK advises that acceptance of upper air routes within FIR Nicosia is based only on consideration of routing. Possibility of providing ATC on these routes has not yet been considered.) Israel: Acceptable. (Note: The suggested junction of R88 and R90 by the UK is intended to cater for present navigational situation only. Individual routes 88 and 90 up to Lod would be possible whenever navigational assistance permits.)	
89.	Korkyra-Selonika-Istanbul	Greece: No information. Turkey: Accepts routing via Alexandroupolis.	
90.	Selonika-Rhods-Lod	Greece: No information. Turkey: Acceptable. UK: Acceptable with provision made for R88 Israel: Acceptable	
91.	Athens-Istanbul-Ankara-Van.	Greece: No information but route already exists. Turkey: At present no direct route between Athens and Istanbul is possible because of military requirements - however, question is under study. Istanbul-Ankara is acceptable via Yalova, Ankara-Van is acceptable, provided technical and financial means permit Turkey to establish direct routes.	
92.	Athens-Rhods-Nicosia-direction of Baghdad	Greece: No information. UK: Acceptable provided route will follow established air corridor over Cyprus as long as it exists. Syria: No information.	

Route	Significant points	Comments by States	Comments by I.F.A.
93.	Rhods-Beyrouth-Damascus-direction of Khader	Greece: No information UK: Route would have to be merged with R92 over Cyprus to follow corridor. Lebanon: No objection, but will have to co-ordinate with Syria because of geographical situation, results are expected by the IV ANP RAN Meeting. Syria: No information.	
94.	Kitia-Mersa Matruh	Greece: } No information. Egypt: }	
95.	Istanbul-direction of Baghdad	Turkey: Route to be combined with R91 up to Ankara, from there acceptable. Syria: No information.	
96.	Istanbul-Tyron-Cairo	Turkey: Suggests routing Istanbul-Yeleva-Tyron-Nicosia because of military requirements. UK: Route suggested by Turkey would have to follow corridor over Cyprus, otherwise acceptable. Egypt: No information.	
97.	Tyron-Nicosia-Lod	Turkey: Suggests combination with R96 up to Nicosia. UK: Route over Cyprus to follow corridor, as R96, otherwise acceptable. Israel: Acceptable.	
98.	Ankara-direction of Baghdad	Turkey: Route to be combined with R95 Syria: No information.	
99.	Nicosia-Beyrouth-Damascus-direction of Baghdad	UK: } Same position as for Lebanon: } R93. Syria: No information.	
100.	Beyrouth-Port Said-Cairo	Lebanon: Acceptable UK: Acceptable Egypt: No information	

Route	Significant Points	Comments by States	Comments by IATA
101.	Ankara-Silifke-Beyrouth	Turkey: Acceptable UK: Suggests routing via existing reporting point 421A. Lebanon: Agrees in principle but position depends on the result of study by UK.	
102.	Lod-Silikfe-Diarbekir-Zaweh-direction of Teheran	Israel: Suggests that this route join R101 at a point in FIR Nicosia to be defined by the UK up to Silifke. UK: Suggests routing Lod via existing reporting points 422B, 421A to Silifke. Turkey: Route Lod-Silifke proposed by UK agreed but continuation in Turkey at present not acceptable, however will study this question. Syria: No information	Urges that a suitable route be found, if possible directly between Lod and Adana, as this route is considered essential.
103.	Wien-Umago-Roma	Austria: Suggests that this route go from Wien to Klagenfurt to Umago. Yugoslavia: No information. Italy: Objects to route Klagenfurt-Umago as it would penetrate part of an Italian prohibited area at Trieste, is agreeable however to route Umago-VOR Chioggia-Ferrara-Roma.	
104.	" München-Praha	Germany: Acceptable if route goes via Klatovy. Czechoslovakia: No information.	
105.	Helsinki-Stockholm	Finland: } Acceptable. Sweden: }	
106.	Helsinki-Kobenhavn	Finland: Requests that this route be as direct as possible. Sweden: Would accept direct route from Helsinki to Herrakra, is at present unable to provide ATC on this route, possibility of doing so will be studied. Denmark: Accep table if route is combined with R4 within Denmark.	

ROUTES IN THE LOWER AIRSPACE

COMMENTS OF STATES CONCERNING REQUIREMENTS OF IATA WORKING BOARD TO AIRWAYS, MODIFICATION OF ADVISORY ROUTES AND ESTABLISHMENT OF NEW AIRWAYS TO SUPPLEMENT THE NETWORK OF NEW AIRWAYS AND ADVISORY ROUTES

A. COMMENTS REGARDING AIRWAYS

Airway designation	IATA Requirements	Comments by States
A3	Immediate implementation is required of the Paris/Genève sector.	France: Difficulties have so far existed with regard to military traffic between Troyes and Dijon. Will be implemented in approximately three months. Switzerland: Airway is implemented.
A4	Prestwick Terminal Control Area should be extended to the east and south in order that flights between Deans Cross and Edinburgh and vice versa can be included in controlled airspace.	United Kingdom: Airway between Deans Cross and Falkirk is soon to be implemented. Portion between Falkirk and Edinburgh is under study but no date of implementation can be given.
A5	Immediate implementation is required of the sector in France.	France: Implementation is being studied by France in connection with proposed routing of B3 from the UK to Switzerland. Proposes replacement of NDB St. Quentin by NDB Cambrai. Belgium: Is ready to connect existing A5 to any point specified by France.
A6	i) The sector Silly/Dijon should be on a more direct route via Reims. ii) Immediate implementation is required of the sector between Lyon and Silly.	France: Military difficulties exist on routing Silly-Reims, proposes therefore Silly-Chatillon-Troyes. Belgium: Vertical extent of airway between 4500 and 20000 feet MSR. Altitudes from 2500-4500 feet MSR available on request only.

Airway designator	IATA Requirements	Comments by States
A9	Kobenhavn TMA should be extended to permit more direct routings for transit traffic.	Denmark: TMA Kobenhavn will be extended but more direct routing not possible. Switzerland: Proposes retain direct VOR routing from Zürich to Milano
A10	In Yugoslavia the position should be clarified. The route is designated as an airway, whereas only Air Traffic Advisory Service is being provided. Positive control is required and should be implemented immediately. Until this is practicable, the Administration should inform all pilots that they are only providing Advisory Service.	Note: It is recommended that Yugoslavia provide more detailed information on the provision of ATS services in Yugoslavia and that its aeronautical information publications be used for this purpose.
A12	Immediate implementation is required in Austria and Italy.	Germany: A12 is implemented in Germany. ATS inter-communications requirements between Milano, Wien and München ACCs are not adequate at present. Austria: At present insufficient co-ordination between Wien and Milano ACCs. Will prepare a W/P on this subject in co-operation with Germany and Italy for IV EUM RAN. Germany and Italy agree.
G1	i) Alignment between London and Bruxelles should be in accordance with the North Channel Airways Plan. ii) Between Olno and a northerly point in the Frankfurt TMA the airway should be direct (See Red 10). iii) The airway should be realigned between Nürnberg/Linz/Wien with possible extension to south-east. (See also recommendation concerning Nürnberg/München/Linz).	i) United Kingdom: Implementation is in progress but retarded because of difficulties with the installation of facilities. Implementation expected at beginning of 1958 Belgium: Ready for implementation, is awaiting implementation in the UK. ii) Belgium: For direct route, difficulties with military exist. At present under study together with Germany. Germany: Plans for direct route are being studied. For implementation a long range radar is required, this should be installed by 1959. Until then no possibility of implementation. Plans for dual airways are being considered but no date of implementation can be given.

Airway Designator	IATA Requirements	Comments by States
G1 (Contd.)		iii) Germany: Direct route Nürnberg-Linz is being studied but military difficulties exist at present. Requests however that airway Nürnberg-München-Linz be retained if necessary with different designator. Austria: Agrees in principle to direct route Nürnberg-Linz, but further study is required, also wishes present airway Linz-München to be retained. Ireland: Is considering extension of G1 via Shannon and Kilkee FM to boundary of NAT Region.
G2	Immediate implementation is required between Amsterdam FIR boundary and Ottringham.	Netherlands: Airway is implemented and considers that navigational situation in FIR Amsterdam is adequate for the provision of ATC. United Kingdom: Navigational situation for the provision of ATC is not adequate. In addition heavy military traffic in this area. Provision of a limited number of altitudes for civil air traffic is under study but no date of implementation can be given. Ireland: Intends to extend G2 from Dublin to Shannon
G4	Immediate implementation in accordance with present EUM Regional Plan is required between Paris and Zürich.	France: Implementation depends on the provision of suitable navigational aids at Luxeuil (NDB, VOR). Upon installation of aids, airway will be implemented. No exact date for implementation can yet be given but should be possible within the foreseeable future.

Airway Designator	IATA Requirements	Comments by States
G5	Immediate implementation is required between Lyon and Swiss border and airway should be extended from Lyon to Toulouse and Madrid (See ADR 249)	France: Regarding portion Genève-Lyon, implementation should be possible very soon. Switzerland: Implementation of this portion depends only on formal approval of operational agreement between Genève and Marseille ACCs. France: Regarding portion Lyon-Toulouse route Genève-Montélimar-Toulouse is suggested, agrees to study direct route Lyon-Toulouse. Switzerland: Agrees to route Genève-Montélimar, would suggest route Genève-Toulouse to coincide with possible upper route. France: Regarding Toulouse-Madrid, ATS inter-communications between Bordeaux and Madrid ACCs insufficient, are under study together with Spain. It is planned to provide radio-telephony link between these ACCs, on its completion no difficulties for implementation. Spain: ATS inter-communications are under study. Route Toulouse-Madrid will have to be studied.
G6	Military activity at present precludes airway being extended direct to Venezia. This sector should be implemented when civil/military co-ordinated control is established.	Italy: Heavy military traffic in this area, therefore at present only route Milano-Parma-Ferrara-ADR 512 to Venezia available. No other solution can be offered at present.
G7	i) Immediate implementation is required in Portugal and between Bagur and Marseille. ii) Extension to Genova is required.	Portugal: Airway will be implemented within 3 months. Spain: Airway up to Barcelona implemented agrees in principle to implementation up to Marseille but requires further study. France: For ATS inter-communications with Spain, the remarks under G5 apply, otherwise ready to implement up to Genova. Italy. Will be studied.

Airway Designator	IATA Requirements	Comments by States
G8	i) Immediate implementation is required in Italian FIR and in Turkey.	i) Italy: VHF relay station at Caraffa will be installed. Upon installation airway will be implemented. Note: It should be noted that a WP for the IV EUR RAN on AFS intercommunications requirements between ACCs Brindisi and Athenai has been prepared.
	ii) Extension of the airway is required to Teheran.	ii) Turkey: Within Turkey ATC will be provided up to Ankara. From Ankara to Teheran only 15 movements a week, therefore only ADR will be provided.
G12	Immediate implementation is required in Turkey and airway should be extended from Salonika direct to Brindisi and Roma.	Turkey: Will soon be implemented. Greece: No information. Albania: No information. Italy: Complete VHF coverage will be installed, then conversion of ADRs 315 and 319 into airways possible.
R1	The airway should be directly aligned between Dunsfold/Channel Islands.	United Kingdom: At present no possibility for airway on this route, will consider route Seafor Cherbourg if France agrees. Has sent proposal to France. France: Co-ordination amongst national authorities not yet completed. Difficulties at Cherbourg with Navy. Is ready to accept UK proposal in principle and will try to get at least some altitudes on this route for civil traffic.
R5	The airway should be extended from Lanark to North Berwick. Note: See comments under A4.	United Kingdom: Will implement in 1958 but route probably not exactly via Lanark but via this general direction.
R6	Airway should be extended from Hamburg to Helgoland.	Germany: Is planned, at present difficulties with danger area Cuxhaven. This area might be deleted, then implementation early in 1958.

Airway Designator	IATA Requirements	Comments by States
R7	Airway should be implemented with direct routing between Luxembourg and Zürich.	France: Airway until Strasbourg implemented. Establishment of a military TMA at a later date envisaged but only preliminary studies so far. Germany: Proposes meeting of interested States in order to resolve entire ATC problem in area Strasbourg-Bâle-Zürich-Stuttgart-Strasbourg (R7, R15, B30), will initiate preparatory action.
R8	Should be implemented.	Portugal: Will be implemented within 3 months.
R9	Immediate implementation is required of the sector between Lisboa and San Sebastian.	Portugal: Will be implemented within 3 months, via Corucho-Tomar. Spain: Agrees to this airway up to Burgos where it joins R10.
R10	i) The airway should be realigned with direct routing Luxembourg to a southerly point in the Frankfurt TMA (see Green 1).	i) Belgium: At present studies with Germany on direct route from Frankfurt to Luxembourg. Germany: Studies in progress in connection with problem of airway G1. Will provide as first step a navigational aid at Kirn (south of Hahn NDB) to provide direct route Frankfurt-Kirn-Luxembourg, route Frankfurt-Kirn to be implemented soon.
	ii) The airway should be realigned between Madrid and Bordeaux and should be routed over San Sebastian as planned by the Spanish Administration.	ii) Spain: Agrees to direct route from Bordeaux to Madrid. Present R10 to be retained as alternate routing.
	iii) There should be co-ordination of military and civil traffic operating in the Sevilla FIR with special attention being given to non-civilian traffic operating to and from Gibraltar.	iii) Spain: Problem of co-ordination between Sevilla ACC and Gibraltar is under study.
	iv) The alignment of R10 at Larache should be adjusted.	iv) Morocco:)Co-ordination between Spain:)Sevilla & Casablanca ACCs and routing of R10 at present under study.

Airway Designator	IATA Requirement	Comments by States
R11	i) Implementation of the airway is required between Strasbourg and Herrenberg. ii) The airway should be extended from Strasbourg to Paris.	i) Germany: Problem is linked with B7, remarks made there apply. France: Agrees with Germany. ii) France: Route Strasbourg-Chaumont-Paris under study. Later more direct route within military TMA Metz planned.
R14	Should be retained as an airway to serve traffic operating out of Dublin to the south-east. (See requirement for new airway London/Dublin).	United Kingdom: Intends to retain this airway. Ireland: Proposes to extend airway to 5420N 1000W.
R15	Airway should be extended from Olno to Chatillon.	Belgium: At present not possible because of military requirements.
B3	Dublin/London/Zürich - this airway should be routed Zürich-St. Quentin and then either to Lydd or to join G1 on the SE coast of England approximately 5110N 0125E and from London via Nevin to Dublin.	United Kingdom: Airway London-Dublin so far not possible, only G1 and R14 are available. With regard to London-Zürich, it is planned to provide two separate airways from Lydd and Dover to Cap Gris Nez for traffic in opposite directions. France: Suggests routing from Cap Gris Nez via Cambrai to Chatillon-Troyes-Luxeuil-Zürich as initial airway. More direct routes will depend on experience gained in operation of military TMA Metz. Switzerland: Suggests route Cambrai-Luxeuil. France: Explains its willingness to provide most direct route but points out serious difficulties. Will make every effort to find best possible solution.
B9	Immediate implementation of this airway is required.	Austria: Already implemented on route Linz-Graz-Zagreb.
B28	This airway should be extended from Napoli to Brindisi.	Italy: VHF coverage not yet available, therefore airway at present not possible. Upon provision of planned VHF coverage, airway will be implemented.

Airway Designator	IATA Requirement	Comments by States
A9 A12 A14 B23 B24	In Italy the restrictions imposed on civil operations using airways should be eliminated, i.e. the vertical segregation of civil and military operations which precludes civil operators from using optimum cruising altitudes (1). To achieve this civil and military air movements should be fully co-ordinated.	Italy: Military difficulties are being overcome. Altitude restrictions on airways no longer required. Official notification via NOTAM will be effected.

1) (Altitude slots)

II. REQUIRED CONVERSION OF EXISTING OR PLANNED ADVISORY ROUTES INTO AIRWAYS

ADR.	IATA Requirements	Comments by States
141	The present alignment of this route is not satisfactory; it should be realigned and extended from Kristiansand to Aalborg and from Kobenhavn via Rønne to Warsaw. (At present ADR 141)	Denmark: ADR deleted as of 1/6/57 A/Y cannot be provided. Route may be flown with the provision of FIS only. Norway: Requirement for route to Kristiansand cannot be met.
160		United Kingdom: Is in process of transforming this ADR into an airway, date envisaged is Summer 1958.
161		United Kingdom: Is in process of transforming this ADR into an airway, date envisaged is Summer 1958. Ireland: Considers implementation of airway from Shannon FIR boundary to 5110N 1000W to connect with airway in United Kingdom.
200		Germany: Conversion is under study. Belgium: Conversion possible within present limits. Further extension under study. Netherlands: Routing through Netherlands is under study.
246		United Kingdom: Remarks under airway R1 apply. France: Will have to be studied in conjunction with R1.
247	Should be aligned between Paris and Cherbourg, extended from Cherbourg to Roborough, St. Mawgan then to Shannon Control Boundary. (At present recommended as ADR 247 to Cherbourg).	Ireland: Requires this airway to come to point 5110N 1000W. United Kingdom: Plans routing via Plymouth NDB. This facility to be installed within five months, had made offer to IATA that they could use this route at present time. However, initially only available as ADR. France: Will implement as ADR, conversion to airway in co-ordination with UK.
249		France: Points out that pressing military requirement exists for establishment of this airway on route from Strasbourg via Luxeuil-Dijon-Moulin to Chateauroux. This would also cover route at present planned as ADR 252.

DR.	IATA Requirements	Comments by States
51		France: As result of recent discussions with Spain, no difficulties are expected if ATS inter-communications problem can be resolved. Spain: Accepts this airway.
52	No requirement for this route if G5 is extended.	France: With regard to Lyon-Nice, a direct route Paris-Lyon-Nice is under study for portion, Lyon-Bordeaux possible consolidation with ADR 249 planned. (See above).
55		France: Airway is under study, direct route conflicts with military requirements, therefore route via St. Tropez NDB envisaged if difficulties cannot be overcome.
56		France: Accepts this airway in principle. Depends, however, on position of Italy. Italy: Difficulties in ATS inter-communications between Roma and Marseille have been overcome. They still exist between Roma and Cagliari and between Roma and Tunis. Therefore, at present no possibility of implementation.
57		France: Portion of airway from Marseille to Palma dependent on solution of ATS inter-communications problem otherwise no difficulties. Spain: Agrees to this airway but will have to study further.
06		Italy: Accepts this airway. France: Portion Ajaccio-Roma as airway possible. In view of lack of adequate navigational aids on portion between Ajaccio and Barcelona, the provision of ATC does not appear possible, therefore considered as ADR only. Spain: States that it is opposed on principle to air traffic advisory service. Will consider only airways or FIS.
11		Italy: Upon completion of VHF relay station at Monte Circeo, further study will be made, especially with regard to ATS inter-communications between Roma and Malta ACCs. Preliminary discussions on this problem already held. United Kingdom: Implemented in Malta FIR as CTA. ATS inter-communications problem under study.

ADR.	IATA Requirements	Comments by States
312		Italy: When VHF coverage available, conversion to airway will be possible. Greece: No information. United Kingdom: Within FIR Nicosia, provision of air traffic advisory service only at present envisaged. FIC will start operation in near future. Israel: No information.
314		Italy: Same position as for ADR 312. Greece: } No information. Egypt: }
318		Switzerland: Proposes route to VOR Chioggia instead of Treviso. Advises that installation of VOR at Monte Ceneri not possible because of terrain. Italy: Is under study, proposal by Switzerland to extend this airway to VOR Chioggia instead of Treviso is not possible.
321		Italy: This route is under study, depends on provision of full VHF coverage.
346		France: This airway under study.
372		Greece: No information. United Kingdom: Only ADR can be provided (see under ADR 312 above). Routing over Cyprus will have to follow established corridor. Lebanon: Airway accepted, should be routed from Nicosia to Sidon NDB for eastbound traffic. Westbound traffic to go from Damas via Beyrouth to Nicosia. Final decision on this proposal depends on Syria. Syria: No information.
373		Greece: No information. United Kingdom: Remarks on ADR 372 apply. Israel: No information.
374		Greece: } No information. Egypt: }
375	Requests also extension to Mersa Matruh.	Greece: } No information. Egypt : }
411		Lebanon: Accepts this airway. United Kingdom: Acceptable as ADR only.

ADR.	IATA Requirements	Comments by States
422		United Kingdom: Acceptable as ADR only and on condition that aircraft comply with corridor regulations. Israel. No information.
452		Italy: Because of ATS inter-communications difficulties, acceptable as ADR only. United Kingdom: At present implemented as ADR only, because of ATS inter-communications and COM difficulties.
312 373 411 422	The problems relating to co-ordinating all traffic operating in the EASTERMED Area on these ADRs should be resolved as soon as possible.	Note: This meeting endorses the requirement of IATA and in view of the forthcoming IV NUM RAT Meeting requests States concerned to review this problem in co-operation with the ICAO Regional Office in order to arrive at a possible solution for the elimination of this serious deficiency.

III. NEW AIRWAYS REQUIRED WITHIN THE EUM AIRWAYS NETWORK

(Note: Numbers assigned to routings are for reference only, they should not be regarded as designators).

No.	Significant Points	Comments by States
1	Basel-Strasbourg-Frankfurt	Germany:) Remarks for airways R7 and R15 France:) apply to portion Bâle-Strasbourg. Germany: Strasbourg-Frankfurt not acceptable.
2	Berlin-Warsawa	Poland: This airway is implemented. Eastern Germany: No information.
3	Budapest-Beograd	Hungary:) Yugoslavia:) No information.
4	Budapest-Bucuresti-Istanbul	Hungary:) Rumania:) No information. Turkey: For military reasons, only route acceptable from Alexandroupolis to Istanbul via existing route.
5	Frankfurt-Cheb-Praha	Germany: At present no plans or intentions for this route. Czechoslovakia: No information.
6	Genova-Firenze-Gargano-Brindisi	Italy: Has route under study.
7	Clacton-Hanstholm-Kristiansand-Skien	Norway: Because of military requirements, airways other than those already existing not possible. Denmark: No possible.
8	Ottringham-New Galloway	United Kingdom: Because of military requirements not possible. Implementation would depend on adoption of an entirely new concept of civil-military co-ordination. No possible date can be given.
9	Strasbourg-Düsseldorf	France: Will study if Germany agrees. Germany: Neither direct route nor route via Luxembourg direct to Düsseldorf possible.
10	Wien-Beograd-Sofia-Istanbul	Austria: Direct route not possible because of danger areas along Austrian-Hungarian border. However, airway G1 extended up to border. Hungary:) Yugoslavia:) No information. Bulgaria:) Turkey: For military reasons direct route not possible, would have to be routed via Alexandroupolis.

No.	Significant Points	Comments by States
11	Wien-Budapest-Istanbul	Austria: Gl extended up to Hungarian border in direction of Budapest. Hungary: No information. Yugoslavia: No information. Turkey: Same as for Route 10 above.
12	Hanstholm-Clacton	United Kingdom: Airway Clacton-Amsterdam exists. An additional route is not possible, therefore route not acceptable. Netherlands: Airway Amsterdam-Oslo exists via R1, A7. Denmark: Cannot accept direct airway.
13	Bremen-Helgoland-Berwick	Germany: Airway Bremen-Helgoland at present not envisaged. United Kingdom: Would agree to link up such a route with the planned airway Prestwick-Berwick-North Sea. Under study.
14	Ankara-Gemerek-Diyarbakir-Kirkut	Turkey: Proposed route not acceptable. Traffic will have to use existing route, which will be ADR only.
15	Ankara-Elazig-Van	Turkey: Route will be provided as ADR only.
16	Nicosia-Baghdad	United Kingdom: Is willing to provide this route but as ADR only, would suggest however that IATA reconsider this requirement. Lebanon: Requires further study. Syria: No information.
17	Ankara-Baghdad	Turkey: Present route Ankara-Gemerek-Elazig-Siirt available only and only as ADR.
18	Istanbul-Alexandria	Turkey: Direct route not possible, would suggest route Istanbul-Yalova-Afyon-Silifke-Nicosia as ADR only. United Kingdom: Agrees to routing, provided route follows corridor over Cyprus. Otherwise acceptable only as ADR.
19	Lod-Adana-Elazig	Israel: No information. Lebanon: Objects to direct route as this would penetrate TMA Beyrouth. United Kingdom: In view of Lebanon's position, a route from Lod to reporting points 422B & 421A to Silifke would be acceptable. Turkey: Will study military difficulties.

No.	Significant Points	Comments by States
20	Nice-Ajaccio-Malta	France: Route Nice-Ajaccio is under study Italy: Direct route not possible, proposes route Ajaccio-Alghero-Cagliari-Malta. United Kingdom: Agrees to airway in Malta FIR.
21	Roma-Catania-Khartoum	Italy: Will Study. United Kingdom: Direct route acceptable but requests IATA to reconsider this requirement view of possible traffic density.
22	Catania-Malta	Italy: Will study. United Kingdom: Direct route not acceptable, would have to join ADR 311 at Malta FIR boundary.
23	London-Paris-Tours-Toulouse-Barcelona	United Kingdom: This airway will require installation of a navigational aid at Seaford. Planned for next year. France: Agrees in principle to this airway via Paris West-Tours-Point 4550N 0050E-Toulouse-Barcelona, details will have to be studied. Spain: No airway envisaged between Toulouse and Barcelona.
24	Toulouse-Valencia-Oran	France: Will provide VOR at Toulouse and accepts airway to connect it at any point Spain wishes. Spain: Suggests routing via Barcelona, direct routing would have to be studied.
25	Madrid-Tanger	Spain: Believes that present routing of airway R10 is adequate, no provision for direct route envisaged.
26	Vilar Formoso (& or Porto)-Channel Islands	Portugal:)Depending on provision of Spain:)direct ATS communications between Lisboa and Madrid ACCs. France: Airway would have to be routed via Nantes to Chersey, for other routings position reserved.
27	Sofia-Salonika	Bulgaria:) Greece:) No information.
28	Zagreb-Split-Brindisi	Yugoslavia: No information. Italy: Under study with Yugoslavia regarding navigational aids and ATS inter-communications.

No.	Significant Points	Comments by States
29	Beograd-Split-Roma	Yugoslavia: No information. Italy: Same remark as for Route 28
30	Zürich-Bolzano	Switzerland:) Direct airway is not Italy:) acceptable. Route via E. end of Bodensee under study. Austria: Route via Bodensee will be studied.
31	Caraffa-Benina-Mersa Matruh	Italy: Acceptable after VHF coverage and ATS inter-communications with Malta have been resolved. United Kingdom: Acceptable as ADR only. Egypt: No information.
32	Kobenhavn-Berlin-Praha-München	Denmark: Envisages airway to Berlin. Eastern Germany: No information. Germany: Route Berlin-München would have to enter Germany over one of specified entry points, there following existing airways. For portion Berlin-Praha: Eastern Germany:) No information. Czechoslovakia:)
33	Ploneis-Montélimar	France: At present provisional agreement with one airline to use this route. Routing suggested: Brest-Nantes-Poitiers-Montélimar. This will be studied but at present airway not possible.
34	Lugo-Barcelona	Spain: Routing of airway from Lugo via Burgos to Barcelona will have to be studied.
35	Bordeaux-Montélimar	France: Route is under study, points out that this is one of many diagonal routes across France which present considerable difficulties to ATC.
36	Klagenfurt-Chioggia	Austria: Proposes route as direct as possible. Italy: Direct route VOR Chioggia-Klagenfurt not possible. Route via Umago and point east to Klagenfurt would be immediately acceptable. Yugoslavia: No information.

No.	Significant Points	Comments by States
37	Istanbul-Afyon-Silifke-Beyrouth	Turkey: Accepts this route up to reporting point 421A, however as ADR only. United Kingdom: Would have to be ADR in FIR Nicosia. Lebanon: Accepts this airway.
38	Strumble-5420N 1000W	Ireland: Proposes this direct airway.

AVI/26-NS/61

CHART

PRESENT POSITION OF STATES WITH
OF FLIGHTS IN THE UPPER AIRSPACE
POSITION ACTUELLE DES ETATS QUI
DE L'ESPACE AERIEN SUPERIEUR DE
MEDITERRANEE.

——— ROUTES ACCEPTED IN PRINCI
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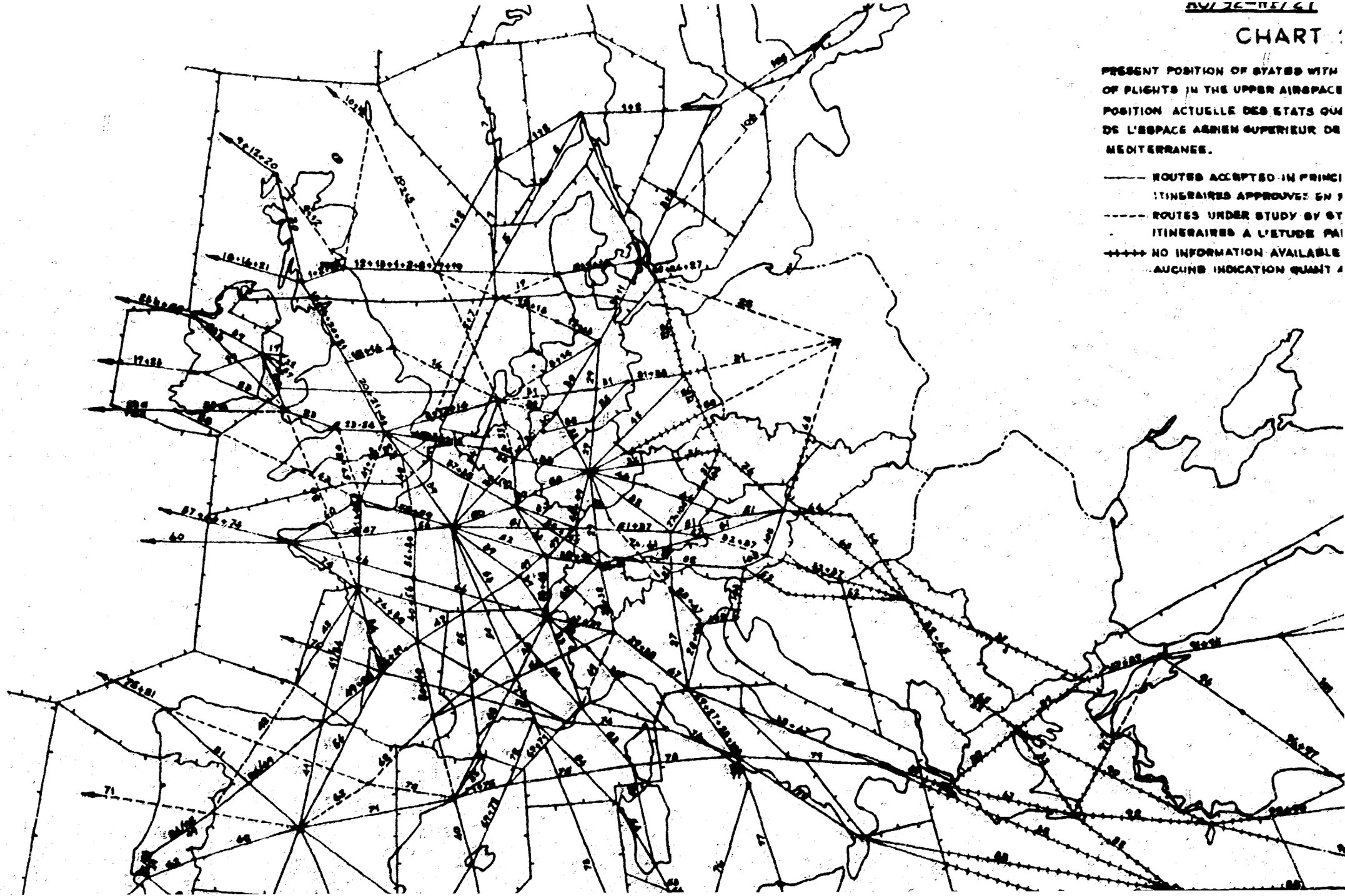

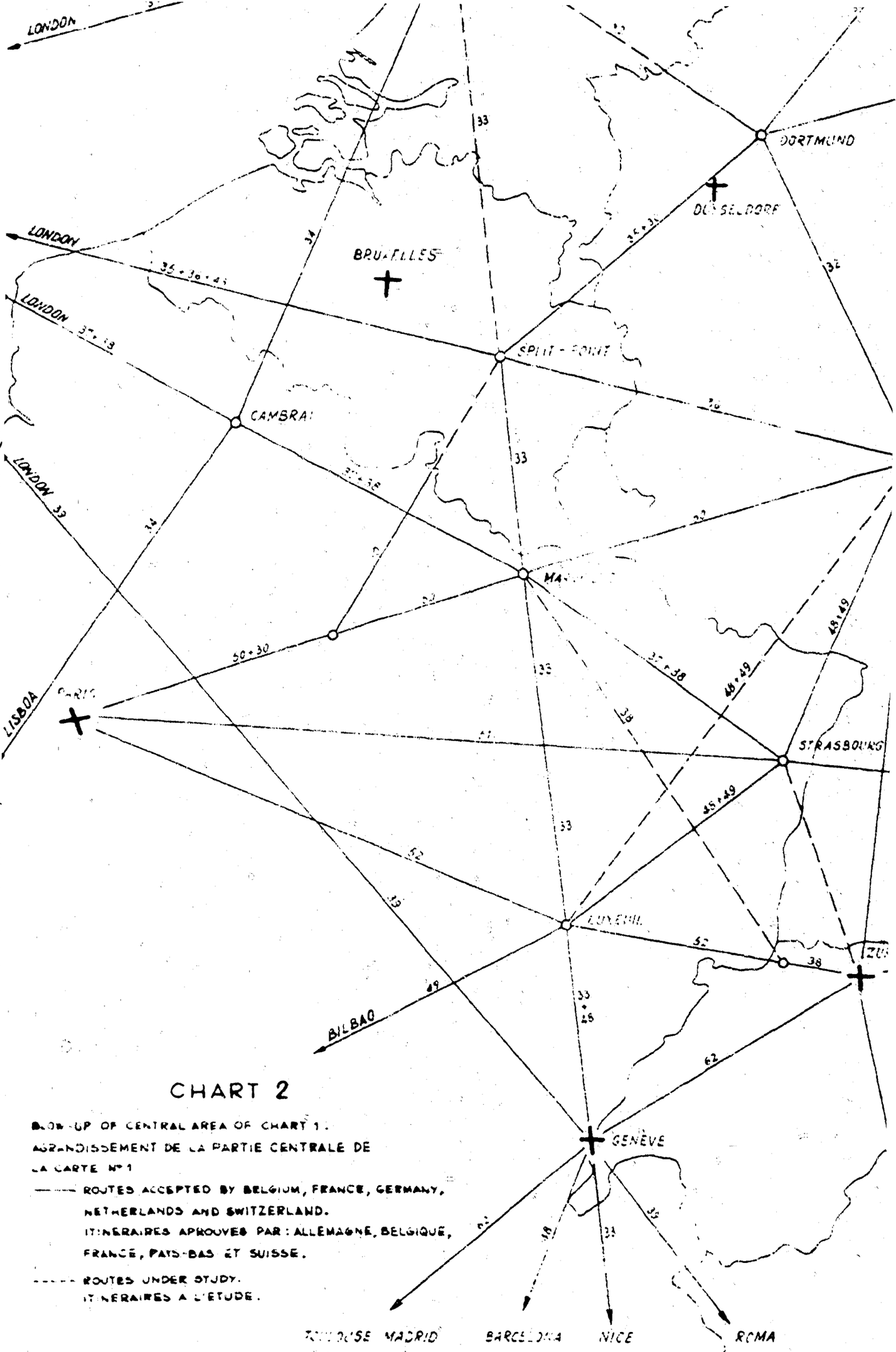

CHART 2

BLOW-UP OF CENTRAL AREA OF CHART 1.
AGRANDISSEMENT DE LA PARTIE CENTRALE DE LA CARTE Nº 1

——— ROUTES ACCEPTED BY BELGIUM, FRANCE, GERMANY, NETHERLANDS AND SWITZERLAND.
ITINERAIRES APROUVES PAR : ALLEMAGNE, BELGIQUE, FRANCE, PAYS-BAS ET SUISSE.

- - - - - ROUTES UNDER STUDY.
ITINERAIRES A L'ETUDE.