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ARRANGEMENTS FOR AVIATION TRAINING IN AFRICA

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FOREWORD

The Council took note of Recommendation No. 4 of the African Air Transport Conference (Addis Ababa, 1964) during the Thirteenth Meeting of its LIV Session (2 April 1965) and, on the basis of proposals by the Secretary General and by the Air Navigation Commission, directed that appropriate studies be made (see Appendices A-1 and A-2). The Council, after having considered these studies, directed the Secretary General to publish them in the form of a Circular.

Of the five paragraphs of Recommendation No. 4, paragraphs 1 and 2 had close connexions with Recommendation 21/1 of the Fourth African-Indian Ocean Regional Air Navigation Meeting or to subsequently framed Resolutions by the Fifteenth Session of the Assembly (A15-8, Appendix H clause 2 and Appendix I clauses 3, 6, 7 and 8), (see Appendices A-3 and A-4). Consequently, the follow-up actions on Recommendation No. 4 in many instances had to be taken in parallel with those required for Recommendation 21/1 and the Assembly Resolutions.

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ARRANGEMENTS FOR
AVIATION TRAINING
IN AFRICA

1. Study of Training Arrangements for Aviation in Africa
(paragraph 1 of ICAO/ECA Recommendation No. 4)

1.1 Follow-up action on this Recommendation was initiated through three sets of State letters. The first set, asking States to carry out Development and Manning Plans, was sent for information to all African States, Contracting States with Territories in Africa, ECA and ASECNA in pursuance of Recommendation 21/1. The second set was addressed for action to African States and Contracting States with Territories in Africa requesting relevant figures extracted from the State's "Development and Manning Plan for Civil Aviation", if such had been made, or of estimated figures if the State had not completed its Plan. The third set of letters was addressed to all Contracting States inviting their attention to Assembly Resolution A15-8, Appendix H clause 2.

1.2 The substantive replies received in answer to the second set of State letters (see Appendix A-5) have been analyzed and evaluated according to the following criteria:

- (a) Data obtained from the Training Assessment, a periodic survey by ICAO of the manpower situation and manpower requirement forecasts of selected States, have been compared with the information received. The Training Assessment covered 11 African States namely: Cameroun, the Democratic Republic of the Congo, Kenya*, Liberia, Morocco, Senegal, the Sudan, Tunisia, Uganda*, the United Arab Republic and the United Republic of Tanzania* for the years 1958 to 1965.
- (b) Data were extracted from Technical Assistance records and were used to assess the training output capacity of training facilities from this source in Africa. The experience gained by the ICAO-assisted training courses in Africa has been used to arrive at a figure averaging 15 per cent for the rate of loss of students entering aviation technical courses. This rate has been applied in an attempt to forecast more accurately the likely requirements for training places in Africa. It is noted, however, that some Africans receive training in non-African schools.
- (c) The "Air Navigation Plan for Africa - Indian Ocean Region" (Doc 7474/8-9-10) has been used. The increase in services to be provided from previous plans to the current one has been assessed. This has been translated to manpower requirement figures and used as a guide to judge the minimum manpower required for the international services in the Plan. The figures have also been used as a yard-stick in comparing the degree of precision of the information received. The degree of accuracy of this information varies: comparison with figures derived from the Air Navigation Plan - which refers only to international services - does not yield a high degree of precision in assessing overall manning requirements.

- (d) Manning figures, obtained through the documentation submitted in connexion with the Fourth African-Indian Ocean Regional Meeting (1964), have also been used for comparisons of accuracy of the information received. The manning information obtained in connexion with the Regional Meeting has been regarded as being the most accurate available, as it was the only set of figures that had been subject to discussion between the Secretariat and officials of States submitting them. As a result many of the originally submitted figures had been adjusted during the Meeting by the respective delegates.
- (e) An adjustment factor has been applied to most of the manpower requirement forecasts, since in many instances the forecast for particular occupations has been shown as remaining constant throughout the five years over which the survey extends which, even if valid as a manpower requirement, could not be valid as a training requirement since there must always be more training places than expected graduates. Experience suggests the use of a yearly turnover of 25 per cent for those classes of staff that can profitably apply the skills acquired in aviation technical training towards some closely related non-aviation occupation e.g. communicators, radio maintenance personnel and the like, and of 15 per cent for those personnel that do not have a readily available non-aviation counterpart occupation such as Air Traffic Controllers. It is recognized that these figures may be comparatively high for some countries, but they are considered appropriate for the Region as a whole.
- (f) The last factor applied in the reassessment of the information received has been a manpower utilization coefficient. It is based on the consideration that the replies have tended to equate the manning of a post for twenty-four hours a day with a requirement for three workers doing eight-hour shifts, but this is not the case. To man a post for twenty-four hours every day of the year requires nearly five men.

The evaluation made, using the above criteria, showed that a majority of States underestimated their manning requirements. The tabulations of States' replies and the evaluations made thereon, with the above criteria in mind, are explained in the following paragraphs.

1.3 Appendix B sets out in a consolidated but otherwise unmodified form the information received in the replies. In brief, by considering the figures in column (m) which refer to a four-year training requirement, it would appear that the provision of additional training places at the existing aviation training schools could fulfil the training requirement indicated in the replies. However, as mentioned before, the manning requirement assumptions on which these figures are based appear rather unrealistic and the figures are thought to be too low.

1.4 Appendix C summarizes by groups of occupations the information contained in Appendix B. Appendix C column (h) shows, by occupations, the personnel required at the end of 1970 to meet the commitments of the twenty-two States that have given substantive replies. This particular estimate, i.e. column (h), has been based on the criteria described in 1.2. The information shown in Appendix C column (i) is the difference between the figure in column (h) and the number of existing personnel in the twenty-two States. Appendix D is a Training Requirement Projection, by Sub-regions of Africa*, based on criteria set out in paragraph 1.2 above. Of particular interest are the figures in columns (ii) and (iii). The former indicates the number of training places that should be

* The Sub-regions referred to are those recognized by the ECA, namely Northern, Eastern, Central and Western and are shown in Appendix G.

available from now until 1970 to meet the training requirements and the latter (column iii) shows the number of training places required after 1970 to ensure that foreseeable manpower losses in future years could be replaced. In fact the figures in column (iii) represent a standing training requirement for Africa so long as no increase in manpower requirement occurs. Data on flight services personnel (aircraft maintenance, flight operations and pilots) have not been further analyzed in Appendices C, D and F for lack of information that would allow reassessment of figures submitted in the replies.

1.5 Appendix E sets out consolidated information extracted from the Directory of Training Facilities Assisted through ICAO (Doc 8461) and from the Inventory of Training Facilities in Africa (Doc 8639) modified by assigning average figures for numbers of students on each course where such were not available in the respective document. By applying the figures in column (4) of Appendix E to those in columns (ii) and (iii) of Appendix D the additional training requirement is arrived at. This appears in Appendix F. The additional training requirements contained in Appendix F represent those which, if added to the training facilities already available, would be required to permit staffing and maintaining all facilities and services that should be provided by States implementing fully the appropriate Regional Air Navigation Plans. This complete implementation is unlikely since experience shows that States are not in a budgetary position to implement all the facilities and services that they should. In addition, many countries in Africa are unable to provide a sufficient number of qualified candidates for training and, even if they were able to do so, would be unable for budgetary reasons to absorb them in their establishment so that, even if all the additional training places mentioned in Appendix F were to be provided each year to the total of 2 310, it is highly unlikely that they would be filled. The figures in Appendix F therefore represent what would be required in an ideal situation where all air navigation facilities and services required under the Regional Air Navigation Plans could be provided. In a practical sense these figures can only be taken to indicate that there is a need for more training places than are available. These figures could not, and do not, establish precise figures on a country by country basis but they are useful as an indication of the number of new training places required in the African Sub-regions.

1.6 The information provided by Appendices D and E indicates that the existing training facilities in Africa represent only about one half of its currently foreseeable needs and that, with the exception of meteorologists, the existing training facilities are not even sufficient to fulfil the projected training needs caused by manpower losses.

1.7 In principle, the requirement for new training places shown in Appendix F between training facilities required and existing training facilities could be met by a variety of methods. Changes in aviation technology may modify the requirements for training in certain fields in coming years. In particular, the introduction of automatic equipment and processes would offer in the long run a possibility of reducing the numbers of trained personnel required. However, apart from the problem presented by the high cost of automation, the expected savings in personnel requirements are apt to be deceptive. While the number of operational personnel may be reduced, the number of technicians required for installation and, in particular, maintenance, may well offset these reductions and leave overall training requirements substantially unchanged in numbers. Additional training places can be provided by three methods:

- (a) adding to the training capacity of existing training centres;
- (b) establishing new training centres;
- (d) providing additional fellowships for study abroad.

None of the above solutions is mutually exclusive and each should be considered in the light of particular circumstances. It should be pointed out, however, that the expansion of existing training centres, as well as the creation of new centres, present serious problems to governments since they will be required to face increasing expenditures which will not be met by the payment of fees from the expected larger number of trainees. Such expenditures will be necessary to provide additional buildings, classrooms and hostels (capital expenditures) and to meet recurrent operational and maintenance costs. One of the more important problems will also be the additional national instructors required to expand the training capabilities. Already many countries have supplied personnel for instructors at training centres to the point that operational requirements of their ground facilities are sometimes difficult to meet.

1.7.1 A general suitable solution to the problem of providing adequate training facilities to meet the aeronautical training requirements of Africa cannot be easily found without a meeting of minds of the governments concerned. ICAO will be instrumental in encouraging the appropriate measures to that effect. In any event, it would appear essential, in the light of the information provided, that periodic reassessment by States of their manpower and training requirements is carried out with a view to determining the most appropriate method of ensuring that needs are met. ICAO advice will be available from the Regional Offices and the Technical Assistance Missions.

2. Inventory of Existing Training Facilities in Africa
(paragraph 2 of ICAO/ECA Recommendation No. 4)

2.1 Follow-up action on this Recommendation has been completed by the preparation of the ICAO Document "Inventory of Training Facilities in Africa" (Doc 8639-AN/886) which uses the format adopted for Doc 8461 and lists all the existing African aviation training courses. It also includes information on technical, college and university courses which, while not aimed at imparting specialized aviation training, are thought useful in the aviation training scheme by offering subjects either closely related to, or suitable as background subjects in, aviation technical training. Several international sources have been consulted in the process of compiling the information.

3. Establishing an Aviation Training Centre in each Sub-region of Africa
(paragraph 3 of ICAO/ECA Recommendation No. 4)

3.1 The training requirement survey in Africa (paragraph 1 above) indicates a requirement for additional training places. In the course of any future action aimed at filling the training gap the intent of this Recommendation would govern consideration for the location of new training facilities. It is, however, noted that the existing training centres are already dispersed among the Sub-regions of Africa (see Appendix G)*.

* The Sub-regions referred to are those recognized by the ECA, namely Northern, Eastern, Central and Western and are shown in Appendix G.

4. Availability of Suitable Applicants
(paragraph 4 of the ICAO/ECA Recommendation No. 4)

4.1 This Recommendation has been brought to the attention of African Governments through Supplement No. 1 to the Report of the African Air Transport Conference (Doc 8462-AT/719). While insufficient time has elapsed since this Recommendation was made to enable any action that African Governments might have taken to become effective it is to be noted that the provision of students to fill available training places is one of the essential factors in fulfilling a State's Manning Plan. It is foreseeable that, unless radical increases can be made by the African Governments in the numbers of students they make available for training, any benefits to be expected by increasing the total of training places in Africa will be jeopardized.

4.2 The number of unoccupied places at ICAO-assisted training centres is estimated at 5 per cent of the total of the places available. This figure of 5 per cent cannot be substantially reduced due to a variety of factors including late withdrawals. It will be realized that a training centre cannot always attain 100 per cent attendance, especially where training is being accomplished on a sub-regional basis.

5. Establishing Preparatory Training Centres
(paragraph 5 of ICAO/ECA Recommendation No. 4)

5.1 The possibility of establishing preparatory training centres has been explored with several international organizations. However, no conclusions have been reached so far, nor does it seem likely that a substantial measure of success can be foreseen in this connexion, though every possible opportunity that offers for the establishment of preparatory training centres will continue to be encouraged by ICAO. Use is made whenever possible of training facilities that can help to meet aviation needs. This is the case in connexion with the Aviation Training Centre in Nairobi (EACSO) where radio maintenance students receive part of their training in a national polytechnic institution.

5.2 The Training Facilities assisted through ICAO have always provided and continue to provide, either separately or as an integral part of their courses, such preparatory courses as are needed to allow the students to comprehend fully, and follow, the technical course proper. This often has to include even language instruction. While courses offered by various assistance programmes other than those of ICAO often have considerable value as background courses for aviation technical students, they are nevertheless uneconomical when assessed on the basis of hours of training spent in relation to knowledge acquired which is of use in the future aviation occupation. Aviation procedures, codes and ground equipment are quite specific and different from those used in non-aviation communications or meteorology. Such subjects as mathematics and physics require a different emphasis when offered as background knowledge for aviation or non-aviation students.

5.3 ICAO has made consistent efforts through the ACC Subcommittee on Education and Training to reach agreement on the desirable position of vocational training in the scheme of general education. This has been necessary since in most countries the emoluments of aviation personnel are related to the civil service pay structure and, as such, the aviation technical personnel tend to be underpaid, since civil service salary schemes are usually geared to "the number of years of general education" of the employee and also, often do not include adequate compensatory provisions for shift work. People in the technical