



THIRD MEETING
OF THE SADIS OPERATIONS GROUP (SADISOPSG/3)

(Bangkok, 22 to 26 June 1998)

INTERNATIONAL CIVIL AVIATION ORGANIZATION

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ICAO PLANNING AND IMPLEMENTATION REGIONAL GROUPS**

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INTRODUCTION

i.1 **Place and duration**

i.1.1 The third meeting of the SADIS Operations Group was held in the Asia and Pacific (APAC) Office of ICAO from 22 to 26 June 1998.

i.1.2 The meeting was opened at 0900 hours by Mr. L.B. Shah, ICAO Representative, Asia and Pacific Regional Office, Bangkok.

i.2 **Attendance**

i.2.1 The list of participants is given in Appendix A.

i.3 **Officers of the Secretariat**

i.3.1 The Chairman of the group, Mr. R. Baumann from Switzerland, presided over the meeting throughout its duration.

i.3.2 Mr. T. Fox, from ICAO Headquarters, Montreal was secretary of the meeting, assisted by Mr. E. P. Lysakov, Mr. K. P. Rimal and Mr. Li Peng from the APAC Office.

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AGENDA ITEM 1: ORGANIZATIONAL MATTERS**1.1 Election of Vice-Chairman**

The member for South Africa, Mr. T.I.J. Potgieter, was elected Vice-Chairman of the group.

1.2 Adoption of working arrangements

The meeting adopted appropriate working arrangements.

1.3 Adoption of the agenda

The following agenda was adopted:

Agenda Item 1: Organizational matters

- a) Election of Vice-Chairman
- b) Adoption of working arrangements
- c) Adoption of the agenda

Agenda Item 2: Annual statement of SADIS operational efficacy and update of SADIS inventory**Agenda Item 3: Maintenance of the current SADIS broadcast and organization of the flow of OPMET message traffic****Agenda Item 4: Development of the SADIS****Agenda Item 5: SADIS User Guide and amendment process****Agenda Item 6: Future work programme****Agenda Item 7: Other business**

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AGENDA ITEM 2: ANNUAL STATEMENT OF SADIS OPERATIONAL EFFICACY AND UPDATE OF SADIS INVENTORY

2.1 The group commenced its work by conducting a review of the operation of the SADIS since its second meeting. It was noted that, in accordance with Conclusion 2/3 a) of the SADISOPSG/2 Meeting, the Secretary, in consultation with the Chairman and the SADIS provider State, had developed a questionnaire to solicit the views of SADIS user States. The questionnaire had been sent out to all SADIS user States through the relevant ICAO regional offices, with a request that the questionnaire be forwarded to all SADIS users in each State. Completed questionnaires had been received from twenty-two States, and although there were some from each of the regions served, it was clear that the level of response varied from one region to another. It was noted that copies of the completed questionnaires had been provided by the Secretary to the SADIS provider State, to permit an analysis of the problems prior to the meeting. The group discussed ways and means of improving the response to future inquiries.

Means of consultation with SADIS user States

2.2 A number of members indicated that, in fact, they had personally been involved in completing the questionnaire for their State, but the returned questionnaire had clearly not reached ICAO Headquarters through the regional offices. It was noted that there had been a high percentage response from the western part of the Asia Region. A question was raised whether the questionnaire could not be sent by ICAO Headquarters direct to the actual operational SADIS users within the State, thereby cutting out two stages in the current consultation process. It was pointed out, however, that while this might provide an increased number of responses, these responses could not be claimed as having come from the State. Responses from States (i.e. through the civil aviation authority) were fundamental to the ICAO consultation process and cannot be challenged by third parties. Moreover, conducting the consultation process through the regional offices, while adding to the overall time taken, also ensured that the correct level of official in the State was consulted.

2.3 It was acknowledged that this had been the first such consultation among SADIS users, and that the next round in 1999 could be expected to elicit more responses. Of the 53 polled, adding the comments of SADISOPSG members to the 22 returns of questionnaire brought the total to 26, which the group considered was a sufficiently wide consultation on which to base the assessment of SADIS operational efficacy; and in any case far better than what had been available in 1997. It was agreed, therefore, that the current means of consultation should be continued in 1999, but that the attention of SADIS user States should be drawn to the need to consult all the SADIS users within each State. Moreover, in order to facilitate the response of all users in States the following was also agreed:

- a) the questionnaire should be sent to IATA so that they may prompt airline users in States that the questionnaire had been circulated;
- b) the questionnaire should be sent to ASECNA to facilitate the receipt of comments from ASECNA member States; and
- c) a copy of the letter should be sent to SADISOPSG members for information.

In this regard the group reached the following decision:

Decision 3/1 – Dissemination of questionnaire on SADIS operational efficacy

That, for the 1999 consultation with States, the secretary should ensure that the questionnaire is sent to ASECNA, IATA and SADISOPSG members for information purposes.

Questions framed in the questionnaire

2.4 The group considered the manner in which questions had been framed in the questionnaire, in light of the way in which the questions had been answered. It was agreed that the questionnaire should be amended as follows:

- a) the adjective “contracting” should be deleted from para. 1;
- b) para 4 c) to be reworded to read “Do you consider that the ADMIN messages broadcast on SADIS were sufficient to keep you advised of the SADIS broadcast status?”;
- c) para 5 b) i) should have an asterisk relating to a footnote which explains that the “repair by local technicians” should not infringe the warranty of the equipment and the nature of the repairs indicated; and
- d) explanatory remarks should be requested when States indicate anything less than “good” in any response.

Based on the foregoing the group developed the following decision:

Decision 3/2 – SADIS questionnaire

That, the amended SADIS questionnaire provided in Appendix B to this report be used for the 1999 consultation with SADIS user States on the SADIS operational efficacy 1998/99.

Specific comments made by SADIS user States

2.5 The group next reviewed the comments provided by SADIS user States. It was noted that, overall, the comments by SADIS user States had been favourable. However, having said that, the group acknowledged that there was considerable variation between a few States (notably Finland) which had encountered numerous problems, and others which had encountered virtually none. It had been discovered that the accumulation of snow on the VSAT antenna could affect the SADIS signal strength. At the same time, Sweden had only noticed such effects on one occasion, and removal of the snow with a brush had proved effective. Aside from the question of snow accumulation on the antenna, Finland had been extremely unlucky in that they had suffered random outages. Switzerland informed the group that similar symptoms had been encountered due to having faulty chips in their VSAT receiver. The group accepted that detection of such “random faults” were notoriously difficult to isolate and also difficult to duplicate, and the problems experienced by Finland were the subject of ongoing investigations. It was

agreed that although the problem associated with snow accumulation only occurred in specific snow conditions, mention should be made in the SADIS User Guide that such possible effects should be taken into account at the time of purchase of the VSAT antenna. In order to achieve this, the group developed the following decision:

Decision 3/3 - VSAT antennas and the effect of special conditions on signal quality

That,

- a) the SADIS User Guide be amended in consultation with the SADIS provider State to include the need for users to consider the possible effects of special conditions on the signal quality of VSAT antennas; and
- b) the SADIS provider State take account of such possible special conditions in providing advice to potential purchasers of SADIS VSATs.

2.6 As a result of the ensuing discussion, it emerged that some States were not aware of the Admin message headers used, which meant that the filter masks either were, or were not, detecting these messages, depending how they were used. However, the SADIS provider State confirmed that the headers were included in the SADIS User Guide. The group, nevertheless, considered that the question of message headers was of such critical importance to the proper functioning of the various aeronautical communications systems that listings of all OPMET and ADMIN messages headers must be provided to the key communication centres directly, and through the ICAO regional COM/MET sub-groups. It was agreed that the list of Admin message headers (including those allocated specifically to address work station suppliers) could best be developed by an *ad hoc* SADISOPSG working group. In this regard the group developed the following conclusion:

Decision 3/4 — Listing of SADIS ADMIN message headers

That an *ad hoc* working group of the SADISOPSG be established to develop a listing of SADIS Admin message headers for forwarding to the ICAO regional COM/MET sub-groups concerned and relevant key communications centres.

2.7 In response to a question concerning the time frame envisaged for this task, it was indicated that an information paper (IP) would be developed by the *ad hoc* SADISOPSG working group for submission to the next MOTNEG meeting in late October 1998, and this IP could be sent simultaneously to other COM/MET sub-groups concerned. The IP would then be submitted for the information of each COM/MET sub-group at its next meeting.

2.8 Finally, the group heard reports from each member regarding the operational status of the VSATs in their respective States. It was noted with satisfaction that the additional States which will install SADIS VSATs during the next two years, due to WMO VCP support provided by the United Kingdom and ASECNA, could markedly increase the number of respondents to the 1999 consultation.

2.9 At this point in the discussions the representative from IATA's Asia/Pacific Office drew the group's attention to the fact that some airlines had been denied direct access to the SADIS in some States in Asia and that this was also brought up at the COM/MET/NAV/SUR Meeting in the previous

week. The Secretary informed the group that this matter was outside the terms of reference of the group, and therefore was not pursued.

SADIS provider State/service provider management report

2.10 The group next turned its attention to the management report which had been requested in SADISOPSG/2, Conclusion 2/3 b). The group expressed its appreciation to the SADIS provider State and service provider for the effort which had clearly gone into the preparation of the report. In examining the report, the group first dealt with the number of VSATs which had had to be returned to Matra Marconi, and the average length of time which had elapsed between the user shipping the equipment and receiving it back. The impression given by the completed questionnaires had been that most of the States responding had returned the VSAT for repairs. The member for the provider State countered that this was certainly a misleading interpretation because, during the fourteen month period (26 January 1997 to 9 March 1998), while twenty-nine pieces of equipment had been returned for repair, most items returned were Data Receive Only (DROs) of which around 230 were in use operationally.

2.11 This led the group to speculate whether the MTBF specifications were being met. In this regard, it was agreed that it would be useful if the SADIS provider State could provide comments on the rate of returns and failures in the context of the actual MTBF figures, when available. It was agreed that the SADIS provider State would arrange for a statement of MTBF, and the type and number of components returned to be included in future SADIS management reports. IATA expressed the view that the current failure rate was unacceptable from an operational point of view, and was very unusual for VSATs in general, which were known to be very robust. In order to clarify the issue further, the group developed the following conclusion:

Conclusion 3/5 - Provision of MTBF figures for the SADIS VSAT returned for repair

That, the SADIS provider State arrange for the provision of actual MTBF figures for the SADIS VSAT, in time for inclusion in the 1999 management report.

2.12 Continuing with its review of the SADIS management report, the group discussed the “returns procedure” and the elapsed time between shipping to Matra Marconi for repair and the receipt back of the repaired equipment. The consensus seemed to be that the elapsed time was usually between two and three months. The member for the SADIS provider State advised the group that Matra Marconi quoted an average time in factory (in/out) of one month and one day. This did not cover shipping both ways which were subject to the vagaries of customs clearance, wrong addressing & non-adherence to the “returns procedure” published as Amendment No. 2 to the SADIS User Guide. As the date of this amendment was 3 March 1998, it was likely that the benefit therefrom would be more evident in the next reporting period 1998/99.

2.13 The group acknowledged that the elapsed time between shipping from the State and return to that State had shown some improvement recently. Nevertheless, it felt that losing a VSAT for up to three months was unacceptable operationally and was tantamount to saying that every VSAT needed a spare to cover such an eventuality. In order to assist in improving this situation, the group developed the following decision:

Decision 3/6 - SADIS VSAT returns procedure

That, the Secretary should draw the attention of Secretaries of ICAO regional COM/MET sub-groups concerned to the “SADIS VSAT equipment returns procedure” given in the SADIS User Guide and routinely circulate to these Secretaries all future amendments to the SADIS User Guide.

2.14 Having reviewed:

- a) user States’ and members’ reports on the operational efficacy of SADIS;
- b) the management report provided by the SADIS provider State and the service provider for the period 1997/98; and
- c) noting IATA’s report that the SADIS had continued to meet user requirements;

the group agreed that the SADIS had continued to meet the operational requirements during this period and developed the following conclusion:

Conclusion 3/7 - Annual statement of operational efficacy of SADIS 1997/1998

That,

- a) during the period 1997/98 the SADIS had continued to meet the operational requirements; and
- b) the Chairman of the SADISOPSG inform the Chairman of the (E)SCRAG accordingly.

2.15 Finally, the group listed changes which it would wish to see in the next management report for 1998/1999, as follows:

- a) Section 3, 3.1.3 to be amended to indicate the elapsed time for returned faulty components from shipping from the State and return to that State;
- b) delete Section 5, as this concerned future developments;
- c) in Section 6, 6.1 include categorization of “help desk” inquiries to assist in identifying difficulties;
- d) in Section 6, 6.2 refer to average elapse times listed in a) above,
- e) in Section 6, 6.3, list SADIS User Guide amendments and their respective dates of issuance.

Update of SADIS inventory

2.16 The group made a review of the latest SADIS inventory as given in the report of the fourth meeting of (E)SCRAG (Norrköping, 2-3 September 1997) and identified the need to indicate in para A (Hub Infrastructure etc.) under equipment “Not procured principally for SADIS”, sub para. b) that the content be moved under heading of the “SADIS Gateway” and not as part of the Hub Infrastructure. The group also included as an addendum, headings to cover future costs of the SADIS two-way enhancement once the actual test-sites were known (see para 4.25). Having reviewed the inventory, the group developed the following conclusion:

Conclusion 3/8 — SADIS inventory 1998-99

That the Chairman of the SADISOPSG forward the updated SADIS inventory given in Appendix C (Part I) to this report to the Chairman of (E)SCRAG.

2.17 The point was raised that the current inventory headings and layout were rather difficult to understand. It was agreed that there would be merit in separating the different functions within the SADIS and reflecting this in the inventory. Such separation of functions would render it far easier to allocate costs for each function, and also facilitate the inclusion of cost allocation for any requirement for non-MET information collected/disseminated on SADIS, which may be stated by the PIRGs in the future. The group identified three main functions of the SADIS as follows:

- a) SADIS communications function;
- b) SADIS OPMET gateway function; and
- c) SADIS VSATs.

2.18 It was agreed that this proposal should be brought to the attention of the (E)SCRAG for consideration at their next meeting, and the following conclusion was developed accordingly:

Conclusion 3/9 — Re-arrangement of SADIS inventory

That the (E)SCRAG consider the re-arrangement of the SADIS inventory along the lines of Appendix C, Part II to this report.

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AGENDA ITEM 3: MAINTENANCE OF THE CURRENT SADIS BROADCAST AND ORGANIZATION OF THE FLOW OF OPMET MESSAGE TRAFFIC

3.1 The group noted that, on the procedural side, the processing of SADISOPSG (draft) Conclusions for action, as necessary, by the PIRGs and ANC/Council had continued to proceed satisfactorily. It had been expected from the outset that the inter-regional nature of the group would render this process rather complex and time consuming. However, so far, the work of the group had not been constrained by this process.

3.2 The customary review of the status of SADIS VSAT installations was made and the list of the installed stations updated. The listing under China was amended by the deletion of VSAT installations at Kai Tak by Cathay Pacific and Lufthansa airlines, in line with information provided by China to the Asia/Pacific COM/MET/NAV/SUR Sub-group Meeting (Bangkok, 15-19 June 1998). It was noted that, as of 1 May 1998, there were 71 SADIS VSATs installed in 53 States. Access to the SADIS had been requested and authorized for 86 States. The group was informed that the list of SADIS VSAT installations was to be included in the relevant regional air navigation plans, for information purposes. The updated list of SADIS VSAT installations is provided in Appendix D to this report.

Content of the SADIS broadcast

3.3 It was noted that the addition of the requirement for T + 6 HR and T + 36 HR forecast GRIB data was part of Amendment No. 71 to Annex 3, for applicability on 5 November 1998. In this context, the group was informed that, although the T + 6 HR and T + 36 HR forecast data was included on the SADIS broadcast, only the T + 36 HR data was repeated at 0600 HR and 1800 HR. IATA confirmed that, even though the repeated T + 6 HR forecast data was “in theory” outdated at the time of receipt, it was still useful for interpolating between forecasts, and should be repeated. It was agreed that, although the requirement for repeated T + 6 HR and T + 36 HR data had not been specified in the original proposal, it was possible to accede to IATA’s request. The UK provider State was asked to issue an Admin message on the SADIS broadcast indicating when the repeat of T + 6 HR forecast GRIB data was to be implemented.

3.4 The question of back-up for WAFS T4 facsimile charts between the London and Washington WAFCs was raised, in the context of the splitting of bulletins in the United States in accordance with WMO procedures. The group was advised that there was no specific back-up of WAFS T4 facsimile charts. However, recent contacts between experts from WAFS London and WAFS Washington had resulted in a plan of action to overcome a planned temporary outage at Kansas City in early 1999, which would help define more clearly the problems associated with back-up procedures and how these could be overcome. Moreover, this issue was likely to be overtaken by events because, as reported under Agenda Item 5, the two WAFCs expected by 1999 to produce global objective “first guess” fields for SIGWX in BUFR, (with a minimum of forecaster intervention), which would be tested in the aviation community. Once such SIGWX forecasts in BUFR were available as a routine, then mutual SIGWX back-up between the two WAFCs was feasible. However, this would only benefit those users able to ingest and process SIGWX in BUFR code. The group agreed that it would be necessary to ensure that users were made aware that the future lay with the BUFR code, and that account should be taken of this in their future planning.

3.5 The group was informed that there had been some misinterpretation of the SADISOPSG/2 draft conclusion concerning low-level SIGWX charts on SADIS. Apparently, this conclusion had been interpreted as meaning that no low-level SIGWX forecasts could be transmitted on SADIS, including both those in T4 format and those which in the future might be in BUFR code. The group agreed that this had not been the intent of the conclusion, which at the time it was drafted, had not considered the use of BUFR code in the medium term. It was agreed, therefore, that the operative clause in the conclusion should be taken to mean the following:

“low-level SIGWX forecasts in T4 facsimile format should not be considered for inclusion on the SADIS broadcast”

It was noted, moreover, that although this clarified the fact that low-level SIGWX forecasts in BUFR code might be considered for future inclusion on the SADIS broadcast, an operational requirement for this had not yet been stated by any of the PIRGs concerned.

3.6 The group next turned its attention to a request made by Finland in its questionnaire on the SADIS operational efficacy, that the SIGWX forecasts in T4 facsimile format should be repeated. In view of the fact that it was considered most unusual for such forecasts to be rendered sufficiently unusable to warrant a repeat, it was felt that Finland’s problem could have been related to its overall problem with the SADIS installation. The group agreed, therefore, to take no action at this stage, pending resolution of Finland’s difficulties with its VSAT equipment.

OPMET messages on SADIS

3.7 The group returned to the discussion of the long-standing problem of ensuring that key communications centres had access to complete lists of OPMET message headers. This problem had been exacerbated by the increasing tendency forward global exchange requirements. This meant that reliable information on “global” OPMET message headers was also required in order to route the messages to the correct destinations. In this connection, the group was disturbed to learn that, as a result of a detailed evaluation made for a one month period by Sweden, it was found that over 500 SIGMET messages were missing from the SADIS broadcast as compared to the Kobenhavn data base. The parallel figures for METARs and TAFs were more or less comparable between SADIS and the terrestrial data base. The missing SIGMETs were not only from non-EUR regions, but also from within the EUR Region itself.

3.8 The group expressed its concern over this information, noting that the SIGMET was arguably the most important MET message from the standpoint of flight safety. It was confirmed that, although the Brussels OPMET centre acted as back-up in case of an outage to feed the SADIS uplink, no routine exchange of OPMET data took place from Brussels to London. When discussing further the problems encountered with the SADIS operational broadcast associated with “timeliness”, IATA asked about the timeliness of reception of non-EUR OPMET data at the SADIS Gateway. The member for the SADIS provider State confirmed that due to the slowness of the terrestrial link and compilation of bulletins at the regional collection centres, data reception often does not meet the requirements for timeliness specified in Annex 3 and, that delays may be as long as 40 minutes.

3.9 The group agreed that, although the problem had existed for some time, the need for virtually global exchange of OPMET data now made the situation serious. The group was aware that continuous efforts had been made by regional COM centres and the ICAO regional COM/MET sub-

groups to deal with these problems, and the trend to global OPMET exchanges had made it increasingly difficult for a regional group to keep up with the changes (e.g bulletin headers) made in other, often distant, regions. The specific problem that the group was concerned with was the negative effect this had on the SADIS broadcast.

3.10 In the ensuing discussion, the group explored ways and means by which the problems could be addressed. In this regard, a proposal was made that a SADIS regional interface should be developed, which established direct real-time contact by e-mail between the existing layer of co-ordination, which comprised the various ICAO regional COM/MET sub-groups, and the layer of co-ordination between senior operational personnel in COM centres in all regions.

3.11 The group also considered an alternative proposal that arrangements should be made to establish a SADIS regional interface for the Secretaries of the relevant regional sub-groups to be put in e-mail contact with the four SADISOPSG members from AFI, ASIA, EUR and MID Regions.

3.12 At this point in the discussions, the group was provided with information on the existing ICAO procedures for inter-regional co-ordination in identifying, reporting and resolving problems in communications. In this context the group remarked on the benefits which had accrued by having the opportunity to have Secretaries of regional sub-groups attending the SADISOPSG meeting. The group considered that it had gained a great deal by seeing how these problems were handled in the ASIA/PAC Regions. Following a long discussion, the group agreed that it would be appropriate to take maximum advantage of these regional co-ordination procedures in resolving the problems identified in para 3.7 above. Moreover, it was understood that reports would be prepared by members as necessary, regarding to what extent this inter-regional co-ordination had facilitated the resolution of these problems.

3.13 The group was informed by the Chairman of the MOTNEG of the situation of OPMET collection in the EUR Region and, in particular, the MOTNEG activities in this field. It was noted that problems of inter-regional OPMET exchange continued between some regions, and the problem discussed above concerning OPMET message headers caused difficulties. Information was also provided to the group of the measures being taken to improve OPMET data collection in the EUR Region, including the work of the OPMET bulletin management group to institute EUR OPMET data update procedures, the use of web sites to provide updated information, and the interim PDN routing of non-EUR OPMET data.

AGENDA ITEM 4: DEVELOPMENT OF THE SADIS**SADIS enhanced two-way VSAT capability**

4.1 The group heard a report from its SADIS two-way operational clearance team concerning progress on the following tasks:

- a) endorsement of the two-way procurement specifications;
- b) determination of the objectives of the test programme on the collection element of SADIS;
- c) conduct of the test programme as determined in a) above;
- d) endorsement of the test report prepared by South Africa, Switzerland and the United Kingdom for presentation to the SADISOPSG; and
- e) refinement of the two-way installation instructions in order to remove any ambiguity that may exist.

4.2 It was noted with satisfaction that the two-way procurement specifications had been endorsed by the team, and that a tender had been offered to the current SADIS service provider. The reply to tender had been reviewed by the SADIS provider State project board which, following a re-scheduling of costs over the period and consultation within (E)SCRAG and ICAO Montreal, had accepted the proposal. Contract negotiations between the SADIS provider State and the service provider were currently in progress.

4.3 A question was raised why the contract had not gone to open tender. In this context, the group recalled that the SADISOPSG/2 meeting had previously noted in para 3.22 that “because the enhanced two-way system was an extension of the existing two-way system, it was indicated that the contract would have to be restricted to the current service provider”. However, if the reply to tender had proposed costs which were unacceptable, then recourse to open tender would have had to be considered. In the event, this did not occur and the reply to tender, modified as necessary, had been accepted.

4.4 The group next moved on to review the report on progress on the remaining tasks of the team related to the two-way tests. The group was informed that tests had begun using the three two-way VSATs (non-enhanced) already installed in London, Pretoria and Zurich. Although these two-way VSATs were of the pre-enhancement type, the tests served to identify issues related to the exchange of data, and of engineering, as follows:

- a) data traffic
 - N the flow of traffic through the UKMO message switch
 - N the means by which the data flows could be increased at the UKMO
 - N the standards required of the two-way VSAT

- N the standards required of message switches and data display systems when using the proposed enhanced two-way VSAT; and

b) engineering

- N to determine the criteria to establish the basic requirements and resources for future operational acceptance of a two-way system on site.

4.5 The results of the trials were included in Chapter 5 of the management report*. Essentially, all three SADIS two-way VSATs were fully “operational” and it had been demonstrated that London could receive both character data files and T4 data files on the message switch. Considerable experience had been gained in the installation of the two-way VSATs and bringing the equipment up to “operational” status. This experience would be of considerable assistance in developing guidance for future SADIS two-way VSAT installations. In regard to the enhancement of the existing SADIS two-way VSATs, it was indicated that the service provider was in the process of designing specific firmware to upgrade these systems. The details of the SADIS two-way enhancement project and the final procurement specifications are given in Appendix E.

4.6 Consideration next had to be given to the extension of the two-way test to other sites in order to expand the testing “envelope” to include the widest variety of data traffic mix and local communications arrangements. The group recalled that in order to accomplish this the SADIS cost allocation and recovery scheme included costs for four two-way VSATs for test purposes. (i.e. in addition to the London site). Two of them were so far located in Pretoria and Zurich, and suitable sites had to be selected for the other two units. In this regard, the group considered that the maximum test benefit from these two units would be obtained by siting one in the north African/Middle East environment and the other in the western part of the Asia Region. It was emphasized that the siting decision was not a trivial one because, although the cost of the two-way VSAT itself was covered under the SADIS cost allocation and recovery scheme, those States in which a test site was selected would have to agree to provide resources in the form of local staff to operate and maintain the system using a comprehensive set of spare parts, and to provide the necessary test statistics as part of a tightly-scheduled test project, resources for installation/commissioning, shipping, licensing and registration.

4.7 Looking at the criteria for the deployment of two-way VSATs developed by the group, which had been endorsed by the PIRGs (see para 4.10 below), one consideration should be data sparse areas, which indicated COM problems of one sort or another. On the other hand, the State taking part in the two-way test programme also had to have available considerable engineering expertise in order to conduct the tests in tandem with the other four sites.

4.8 The group noted that the current three sites (London, Pretoria and Zurich) had been selected in the full knowledge of the EANPG and APIRG. Moreover, APIRG had since selected Cairo, Dakar and Nairobi as prospective SADIS two-way VSAT sites, in addition to Pretoria. Following along these lines, therefore the group agreed that assistance from APANPIRG should be sought urgently to propose a suitable test site in the western part of the ASIA Region, bearing in mind the implications referred to above for the State proposed. The group emphasized that the reference to “urgency” pertained to the two-way contract let to the service provider which envisaged a specific time scale for

* As this chapter dealt with “future developments”, it would not be included in future management reports (see para 2.15 b))

the SADIS two-way test programme. In order to accommodate these various conflicting requirements, the group was advised that, if a short working paper could be drafted by the operational clearance team, explaining in detail the foregoing considerations and seeking assistance to identify a suitable test site, this could be presented to the next meeting of APANPIRG in August 1998. While it was possible that APANPIRG could identify a suitable site at the meeting, it was more likely that they would refer the matter to the AFS sub-group for advice. This latter group was scheduled to meet next in February 1999 and the advice provided could then be forwarded to APANPIRG by correspondence. This meant that a decision might be expected, at the earliest, by the end of February/early March 1999.

4.9 Some members expressed concern that this length of time could have consequences for the contract with the service provider and increase the costs. As these costs were currently borne by a comparatively small number of EUR States, this would not be favourably received. Following a lengthy discussion, the group agreed that there appeared to be no reasonable alternative to the course of action proposed above and, therefore, developed the following conclusion:

Conclusion 3/10 — Identification of SADIS two-way test site

That, the SADIS Two-way Operational Clearance Team develop a working paper for submission to APANPIRG/9 (August 1998) detailing:

- a) the objectives of the SADIS two-way test programme;
- b) the results obtained so far in other regions;
- c) resources to be provided by State of test site;
- d) duration of tests; and
- e) additional considerations (such as licensing and customs clearance)

together with a request for assistance in identifying a suitable test site in the Western part of the Asia Region, based on the above considerations, for continuance and extension of the current SADIS two-way test programme.

Note : 1) The draft paper should be sent to the APAC Regional Office by mid July 1998; and

- 2) the test results would continue to be reviewed by the SADISOPSG Two-way Operational Clearance Team and reported to the SADISOPSG.*

4.10 The group noted that the PIRGs had endorsed the criteria for the deployment of two-way VSATs developed at the SADISOPSG/2 meeting. In this regard the group recalled that the question of location of two-way VSATs and the usefulness of installing two-way VSATs at the nine volcanic ash advisory centres (VAAC) had been discussed at SADISOPSG/2 and was included in the two-way deployment criteria. This would ensure that volcanic ash advisories (FVs in message and/or graphical format) would reach the WAFCs for immediate uplink on the satellite broadcasts. The group agreed that this requirement should be proposed formally to the PIRGs concerned and developed the following draft conclusion for endorsement:

(Draft) Conclusion — Location of two-way VSATs (SADIS and ISCS) at volcanic ash advisory centres (VAAC)

That, the VAAC provider States consider the installation of two-way VSATs (SADIS or ISCS), as appropriate to ensure that their volcanic ash advisories in message and graphical formats could be transmitted to the WAFCs for immediate uplink on the SADIS and ISCS satellite broadcasts.

Note:— Designated VAACs are located in Argentina (Buenos Aires), Australia (Darwin), Canada (Montreal), France (Toulouse), Japan (Tokyo), New Zealand (Wellington), United Kingdom (London), and United States (Anchorage and Washington).

Future introduction of the BUFR code for WAFS products

4.11 Information was provided to the group on the BUFR trials being conducted by the two WAFCs. This was of considerable interest to the group due to the potential for markedly more efficient use of the SADIS bandwidth. The BUFR trials were reported to have been successful, and the stage had been reached when a guidance document “Basic Guidelines for the Production of SIGWX charts from BUFR messages” had been produced by the London WAFC and provided to work station suppliers. The group was informed that the introduction of the BUFR code for WAFS SIGWX forecasts would be included in Amendment No. 72 to Annex 3 (applicability November 2001). The group considered that, although the use of the BUFR code itself by the WAFC was of no direct concern to the SADISOPSG, the SADIS communication aspects certainly were. It was considered, therefore, that it was important that tests on the SADIS broadcast be initiated as soon as practicable. In order to achieve this the group developed the following conclusion:

Conclusion 3/11 — BUFR transmission tests on SADIS

That, in order to assess the communication implications for SADIS, the London WAFC consider:

- a) arranging tests of BUFR transmissions on a vacant PVC on SADIS;
- b) promulgating information concerning the start of transmission and the PVC to be used to users by (repeated) Admin. message and by information displayed on the proposed SADIS web site*.

SADIS strategic assessment

4.12 The report of the SADIS Strategic Assessment Team was presented to the group. The group noted with satisfaction that the team had been successful in developing a set of tables which could be used to provide information on the prospective requirements for 5 years ahead, region by region, for the inclusion of products/data on the SADIS. This information was required in order to give the SADISOPSG some idea of possible future bandwidth requirements and type of data. The group agreed

*See paras 7.1 and 7.2 and Conclusion 3/17 of this report.

that a proposal should be sent to the relevant PIRGs that consideration be given to requesting the appropriate sub-groups to complete the blank tables annually, and in this regard developed the following draft decision:

(Draft) Decision [...] — SADIS Strategic Assessment Tables

That, the appropriate sub-group(s) of the APANPIRG, APIRG, EANPG and MIDANPIRG maintain the SADIS Strategic Assessment Tables at Appendix F on an annual basis and forward them to the SADISOPSG in time for each SADISOPSG meeting.

SADIS Gateway Function

4.13 The group heard the report of its Gateway Working Group and expressed appreciation to the working group and its Rapporteur Mike Williams, for the effort put into the report and the development of the procurement specifications based upon the SADIS Gateway High-Level Technical Requirements. The report referred to the segmentation of messages by the United States in respect of T4 charts, which was in accordance with WMO regulations, and also OPMET messages, which continued to cause some difficulty. Difficulties continued with some States not adhering to WMO code formats. Work was proceeding slowly on the SADIS Gateway Handbook, but due to pressure of work it could not be completed.

SADIS Gateway High-Level Technical Requirements

4.14 The group reviewed the final draft of the SADIS Gateway High Level Technical Requirements and made a few minor amendments, primarily of an editorial nature. It was noted that the requirements for automatic error correction had been amended to take account of EANPG Conclusion 39/17. The question was raised whether the SADIS provider State had resolved the question of automatic error correction and potential legal liability. The United Kingdom member indicated that, following receipt of a legal opinion on the matter from the Director of the ICAO Legal Bureau (D/LEB), they were content to include a “waiver” in both the SADIS Gateway Handbook and the SADIS User Guide. Advantage would be taken of the offer from D/LEB to provide assistance in drafting appropriate text. The group recalled that this matter had arisen because considerable doubt had existed regarding the potential liability for a COM centre in amending OPMET messages from other States and transmitting them for use by third parties.

4.15 Following the review and amendment of the draft SADIS Gateway High-Level Technical Requirements the group, including IATA, endorsed the SADIS Gateway High-Level Technical Requirements and developed the following conclusion:

Conclusion 3/12 — SADIS Gateway High-Level Technical Requirements

That, the SADIS Gateway High-Level Technical Requirements given in Appendix G, approved by the SADISOPSG, be used as the basis for procurement specifications for the SADIS Gateway Function.

4.16 Returning to the question of the SADIS ADMIN messages, the group welcomed a proposal from the Chairman of the MOTNEG that the SADIS broadcast should be used to carry both

SADIS and non-SADIS ADMIN messages. It was agreed that the SADIS and non-SADIS ADMIN messages should be identifiable and all ADMIN messages should use the “NOXX” format. The SADISOPSG Chairman offered to draft an information paper for the next MOTNEG meeting listing the SADIS ADMIN message headers, developed by the *ad hoc* group under SADISOPSG/3, Conclusion 3/4. The Chairman of the MOTNEG would do the same for the ADMIN messages to be used in the EUR Region. It was agreed that these information papers could be forwarded by the Secretary to the other regional sub-groups concerned explaining that they were welcome to develop their own Admin. message headers using the WMO NOXX format proposed by the MOTNEG and transmit them on the SADIS if they so wished.

AIS information on SADIS

4.17 The group reviewed the state of progress on the study requested by the EANPG (and since extended to other regions at the request of the respective PIRGs). It was noted that a report (termed at the time an “interim” report) had gone to EANPG/39. The EANPG had not provided any further instructions except to indicate that it would be premature to provide this report to the AIS/MAP Divisional Meeting (Montreal, 1998), because no operational requirement had been stated. The United States member reiterated that the United States had grave reservations about introducing AIS information on the ICAO satellite broadcasts in light of the fact that the AIS information set had not been defined.

4.18 The representative from the IATA Asia/Pacific Office expressed the view that SADIS had been introduced as a very low cost solution for point to multipoint WAFS distribution when the slow means of communication (HF) and capacity of such channels were inadequate to deal with the large volumes of MET data which required to be processed and then returned via broadcast for the benefit of the ‘end user’ viz the airlines. He repeated his earlier statement that airlines had been denied the installation and use of their own SADIS VSAT in some States in the Asia Region. In this context he also expressed the view that in the future, in the ATN-environment there may be cheaper means available for collection of MET data than via two-way SADIS. The group was not able to share this opinion. The Secretary explained that the satellite broadcast had been recommended by the COM/MET Divisional Meeting (1982) in Recommendation 4.2/3 a) as the suitable means to disseminate WAFS data. This was primarily because of its capability to disseminate, in a cost-effective manner, WAFS graphical data (upper wind and SIGWX charts) as well as digital grid point data. However, the divisional meeting had also recommended in Recommendation 4.1/4, approved by the ICAO Council, that the satellite broadcast, as part of the aeronautical fixed system, could potentially be expanded to accommodate other aeronautical traffic. Currently, the satellite broadcasts carried WAFS charts and data and OPMET messages, in response to approved operational requirements stated by the relevant ICAO PIRGs. The SADISOPSG had not in the past, and could not in the future, propose any expansion of the SADIS broadcast, this could only be done by the PIRGs. In this regard the SADISOPSG had been requested by the PIRGs to study the feasibility of the inclusion of AIS information on SADIS, in co-ordination with the relevant regional sub-groups. At the request of the PIRGs this task was now part of the SADISOPSG terms of reference.

4.19 It was recalled that the “interim” report to the EANPG had indicated that there was no technical reason to prevent AIS information to be carried on the SADIS — in short, it was indeed technically feasible. The group agreed that in order to take the study any further, details of which type of AIS information might be considered would be needed. The group considered that, in the absence of an operational requirement such details would not likely be forthcoming from any of the PIRGs

concerned. Under these circumstances, the group agreed to inform the PIRGs of this and developed the following draft conclusion for endorsement by the relevant PIRGs:

(Draft) Conclusion — Study on the collection/dissemination of AIS information on the SADIS broadcast called for by EANPG Conclusion 38/25

That,

- a) the study by the SADISOPSG had confirmed that the collection/dissemination of AIS information on the SADIS was technically feasible;
- b) the study could not be taken any further in the absence of an operational requirement specifying the type of AIS information which might be collected/disseminated;
- c) the study should be discontinued pending the statement of such an operational requirement by one of the PIRGs concerned.

Institutional issues which could affect future development of the SADIS

4.20 The group noted that the pace of technological developments and the pressure from suppliers and users for SADIS to keep pace with these developments, rendered it necessary for the SADISOPSG to develop proposals for the development of the SADIS, in line with its terms of reference. However, the group was finding it increasingly difficult to develop such proposals, which affected all regions under the SADIS footprint, while the voluntary cost allocation and recovery scheme was still narrowly based on the EUR Region. It was felt that the extension of the scheme to the other regions concerned and the associated technical involvement of the States from the other regions participating in the scheme, would give the group confidence that its proposals for the development of the SADIS would meet the requirements of all the regions concerned.

4.21 The group was aware that the Letter of Agreement for participation in the voluntary cost allocation and recovery scheme had only recently been approved by the ICAO Council as part of the EANPG/39 report. The group was informed that this Letter of Agreement would be sent to all States covered by the SADIS footprint, together with an explanation of the benefits of the SADIS enjoyed by States utilizing SADIS. In this context, the group noted that the installation of SADIS units was proceeding steadily in all the regions concerned (see para.3.2), but the equivalent technical and financial involvement was not equally apparent. In view of the foregoing, the group considered that it was duty bound to bring these matters to the attention of the APANPIRG, APIRG, EANPG and MIDANPIRG. In this regard the group agreed to the following draft conclusion:

(Draft) Conclusion — Technical and financial commitment to SADIS

That, States under the coverage of SADIS footprint, be encouraged to consider the implementation of the SADIS component of the AFS and their technical and financial commitment to SADIS.

SADIS VSAT receiver upgrades

4.22 The group was informed that the SADIS provider State was receiving an increasing number of requests from workstation suppliers and users concerning the future possibility of providing an output on the SADIS VSAT using Transmission Control Protocol/Internet Protocol (TCP/IP). IATA confirmed their strong support for providing a VSAT receiver with TCP/IP output, indicating that many organizations, including the International Telecommunication Union (ITU), considered that this was likely to be a strong trend in the future. The group was also aware that the status of the TCP/IP protocol for use in the WMO GTS would also have to be ascertained. The general feeling of the group was that this was likely to be a significant development which should be monitored closely by the SADISOPSG. It also raised the question of how to deal with any future technological changes which would impact the SADIS (see para 4.20 above). The group was aware that the driving force behind this change was the high cost of X.25 cards which, because of the steady fall in price of computer work stations, were now of the same order of costs as the workstation itself. Moreover, the continued decrease in price of workstations meant that this adverse cost ratio would probably be exacerbated. The workstation suppliers considered that the introduction of TCP/IP support would reduce the cost of communications workstations and provide other benefits due to the fact that this protocol was also used in the internet and local area networks. The group considered the pros and cons of the possible use of the TCP/IP protocol between the SADIS VSAT and SADIS user equipment as described in Appendix H.

4.23 In considering how best to deal with this issue, the group was advised that, in evaluating options for the next generation of VSATs, it seemed logical that this could best be achieved by the development of protocol options available to the user, paid for by the user, which did not affect existing VSATs and retained authorized controlled access. In order to achieve this, it would be necessary to conduct a full study to assess the overall impact on the SADIS and provide a costed technical specification. Moreover, the study itself would have to be conducted with the assistance of the service provider who would undoubtedly charge for this work one way or the other.

4.24 IATA was of the view that no such study was required by the service provider as the benefits of the TCP/IP protocol were well known. The group did not share this viewpoint as proprietary components would be affected. If it were not possible to accommodate the study within the budgeted costs, (E)SCRAG would have to be informed of the estimated cost of the study, which might have to be approved by the PIRGs. The group agreed that the matter was important and urgent and that it would not be sufficient simply to monitor developments. It was agreed, therefore, that a Technological Developments Team to work primarily by correspondence should be established, whose main task would be to monitor trends and, if a TCP/IP study were to be approved, to review the study and report to the SADISOPSG. It was agreed that the team would comprise experts from Switzerland, the SADIS provider State, the United States and IATA. The group was informed that IATA would investigate the availability of a suitable expert. In this regard the group developed the following decision:

Decision 3/13 — Technological Developments Team

That, a team of technical experts be established comprising experts from the SADIS provider State, Switzerland, United States and IATA (the possibility of IATA providing an expert will be determined later) with the adviser to Switzerland (Sweden) as Rapporteur, to monitor, review and report on technological developments which could have a significant impact on the SADIS with terms of reference as given in Appendix I.

SADIS two-way installation issues

4.25 The group was informed that the full costs of the two-way VSAT test programme had not been included in the budgeted costs approved by the (E)SCRAG, because the locations of the test sites had not been known at the time. Moreover, the actual cost of the two enhanced two-way VSATs, still to be acquired for the test programme would be higher than the budgeted cost due to the fact that installation, licensing and spares had not been included in the original cost estimate, and the spares costs were comparable to the cost of the VSAT itself. It was agreed that the Two-way Operational Clearance Team should seek ways to complete the test programme using the minimum of spares, but in any case the (E)SCRAG should be made aware of this situation. The group also agreed that the overall cost of the future enhanced two-way VSATs should be brought to the attention of the (E)SCRAG. However, it was appreciated that the costs issues were outside the mandate of the SADISOPSG. It was agreed, therefore, that an addendum should be included with the SADIS Inventory referred to in Conclusion 3/8, providing the list of required equipment, but with the customary omission of estimated costs (see para. 2.16 and Appendix C).

AGENDA ITEM 5: SADIS USER GUIDE AND AMENDMENT PROCESS

5.1 The group next proceeded to review the SADIS User Guide and the “interim” amendment process. First of all the group collated a number of items which should form part of Amendment No. 3, these included:

- a) page 3-1 *delete* footnote and related asterisk in paragraph 3.1.3. Council had approved the implementation of the SADIS Gateway in the United Kingdom;
- b) page 4-2 *amend* ICAO postal address;
- c) Appendix D *amend* SADISOPSG terms of reference in accordance with Appendix M of SADISOPSG/2 report;
- d) Appendix F *insert* new WAFS maximum areas of coverage “J” and “K”, possibly add area of coverage for MEA chart (MID requirement), *amend* EUR chart in accordance with latest EUR requirement;
- e) Appendix G *align* in accordance with charts described in d) above;
- f) Annex 2, *align* T 4 charts with Appendix F (in d) above), *insert* additional “FV” bulletins as VAACs indicate their volcanic ash advisory abbreviated headings.

5.2 In addition, it was agreed that the list of Admin. message headers requested under SADISOPSG/3, Conclusion 3/4 should be included in an amendment to the guide as soon as they became available. The same applied to the list of headers for VAAC volcanic ash advisories in message and graphical format, which the group was informed were currently being collected. The group reviewed the “faulty equipment returns procedure” which had been the subject of Amendment No. 2. It was agreed that it was probably too early to draw any firm conclusions, but there was a distinct impression among members that the situation had improved.

5.3 Few comments were received on the current Annexes 1 and 2 to the guide except that the Scandinavian aerodrome location indicators were out of date. It was noted that these changes had come into force after Amendment No. 2. This prompted a discussion on how these annexes could be kept up to date with the comparatively frequent changes to location indicators. The group was aware that such changes were promulgated by NOTAM and ICAO regional offices were informed, but it was agreed that the guide could only follow the official ICAO list of location indicators (Doc 7910) which was issued four times per year.

5.4 The group considered a proposal by the member for the SADIS provider State that a new annex be added to the SADIS User Guide which, essentially, would be the inverse of Annex 2. The latter annex listed the bulletins (region by region) and the aerodromes contained therein. The proposed new annex listed the aerodromes and then indicated in which bulletins the SA, FC and FT were to be found. The group expressed considerable interest in this proposal and appreciation for the work done by the SADIS provider State in producing the document. The proposal was strongly supported by IATA. A general suggestion was made that all pages of the guide should show a date which was current with the

latest amendment, even though undated pages automatically default to the date of the edition of the SADIS User Guide. It was agreed that this suggestion would be investigated by ICAO. In view of the breadth of support for the proposal, the group agreed that the new annex should be included in the SADIS User Guide as Annex 3 and developed the following conclusion:

Conclusion 3/14 — New Annex 3 to the SADIS User Guide

That, a new annex be included in the SADIS User Guide as Annex 3, as shown in Appendix J to this report.

5.5 The group recalled that the current amendment process for the SADIS User Guide had been labelled as “interim”, with a view to the group reviewing the process at a later date. In this context, the group considered that the process had proved satisfactory so far and no proposals were forthcoming for any changes. In view of this, the group agreed that it would become increasingly anomalous to continue to refer to the process as “interim”, and that this qualification should be deleted. In order to achieve this, the group reached to following decision:

Decision 3/15 — SADIS User Guide amendment process

That, the qualification “interim” no longer be used as a qualification of the SADIS User Guide amendment process.

AGENDA ITEM 6: FUTURE WORK PROGRAMME

6.1 The group reviewed and updated its work programme and executive summaries to take account of decisions/conclusions developed, at this meeting. It was confirmed that the executive summaries provided useful information to members and should be continued. The updated work programme and executive summaries are given in Appendix K to this report.

AGENDA ITEM 7: OTHER BUSINESS

7.1 The group considered a proposal by the SADIS provider State that a SADIS web site should be created by the London WAFC, which would facilitate the amendment of SADIS User Guide annexes and the issuance of Admin. messages. The group felt that, in principle, this was an interesting proposal. IATA strongly supported the proposal. A number of members expressed concern regarding the proposed amendment of the annexes to the SADIS User Guide through the medium of the web site. The group had agreed at its first meeting that amendments to the SADIS User Guide had to be approved by ICAO and there was no reason to change this procedure. If amendments appeared through a non-ICAO controlled medium, there could be doubt about their authenticity. The United States member informed the group that the United States Authorities had addressed this issue by placing official documents on the servers, but including a disclaimer that indicated that the information was not to be used for operational purposes, recourse must be made to the official hard-copy amendment. It was noted that the legal power of such a disclaimer may vary from State to State and international official documents had to be considered in this environment. There was also the question of the need for the provision of the information from ICAO documents in the official ICAO languages to be considered.

7.2 The group agreed that the creation of a SADIS web site at the London WAFC was a good idea, and appreciation was expressed for the work involved in developing the proposal. However, it was also agreed that, for the time being, the web site should be restricted to the general information items about SADIS and ADMIN messages proposed by the United Kingdom Member, but should not include any of the annexes to the SADIS User Guide until this had been studied further by ICAO and the SADIS provider State and considered by SADISOPSG/4. In this regard the group developed the following conclusion:

Conclusion 3/16 — SADIS web site

That, in order to facilitate the provision of information to SADIS users,

- a) a SADIS web site be created at the London WAFC providing general information on the SADIS broadcast; and
- b) the SADIS provider State and ICAO investigate further the feasibility of including the annexes to the SADIS User Guide on the SADIS web site.

Year 2000 computer date problem

7.3 The group heard a report from the SADIS provider State concerning the steps taken to ensure that the various components of the SADIS were “Year 2000 computer date problem” compliant. In particular, the group was apprised of the procedures developed by WMO for the interpretation of the date in the GRIB code by workstations. The agreed procedure was as follows:

As far as GRIB1 was concerned the format would not change, neither for T4 charts nor for alphanumeric OPMET. However, the software used to consider the dates would expect the year byte in year 2000 to be ‘0’ and not ‘100’.

For example:

On December 31	1999	-	the year byte will be 99	-	and the century 20
On January 1	2000	-	the year byte will be 100	-	and the century 20
On December 31	2000	-	the year byte will be 100	-	and the century 20
On January 1	2001	-	the year byte will be 1	-	and the century 21

7.4 IATA stated that several of its airlines were spending millions of dollars ensuring that their aircraft were Y2K compliant. IATA had also started on a Y2K project costing nearly 20M USD to assist airport and air navigation service providers. This was to increase awareness of the problem and to guide these service providers to identify and locate problems on their equipment. IATA was pleased to be informed that the SADIS was Y2K compliant. However, it raised doubts as to whether the AFTN circuits and some of the message switches involved in providing the necessary data to WAFC London were Y2K compliant. IATA also requested that the compliance of other (non-SADIS) aviation MET equipment should be looked into by those responsible for their operation.

Expansion of membership of the ((E)SCRAG)

7.5 A question was raised again concerning the future expansion of the States volunteering to participate in the SADIS cost allocation and recovery scheme to other regions, in addition to Europe. It was noted that such matters were outside the terms of reference of the SADISOPSG. However, the group was informed that a Letter of Agreement which had recently been developed by ((E)SCRAG (see para. 4.21) would be provided to States in the areas covered by the SADIS footprint, through the ICAO regional offices, under cover of a letter explaining the SADIS voluntary cost allocation and recovery scheme.

Visit to Bangkok International Airport

7.6 At the invitation of Mr. Thosakdi Vanichkajarn, the group visited the meteorological and communications facilities at Bangkok International Airport. Among other interesting features, the group was able to monitor the SADIS equipment in operation.

Next meeting of the group

7.7 The group agreed that the management of the SADIS and the pace of technological developments which impacted the SADIS required that annual meetings would be necessary for the foreseeable future. Regarding the venue, the member for South Africa, who represented the AFI Region on the group, suggested that the next meeting be held in the AFI Region and, if a suitable venue could not be found, his administration would consider inviting the group to meet in Pretoria, South Africa. It was agreed that holding SADISOPSG/3 with access to advice from ICAO regional technical officers had provided an invaluable insight for the group into the regional aspects of the SADIS, and that great benefit could be derived from extending this experience to other regions served by SADIS. It was agreed that the site for SADISOPSG/4 should be co-ordinated by the Chairman and Secretary, and a proposal made in sufficient time for members to plan their 1999 itinerary.

7.8 The group expressed its deep appreciation to Mr. L. B. Shah, ICAO Representative, Asia and Pacific Regional Office, Bangkok for inviting the group to hold its third meeting in the Bangkok Office, and for the exemplary support provided by the ICAO APAC Regional Office staff.
