FIFTH MEETING

OF THE SADIS OPERATIONS GROUP (SADISOPSG/5)

(Dakar, Senegal, 5 to 9 June 2000)

INTERNATIONAL CIVIL AVIATION ORGANIZATION

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LIST OF SADISOPSG DECISIONS

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INTRODUCTION

i.1 Place and duration

i.1.1 The fifth meeting of the SADIS Operations Group was held in the conference room of ASECNA Direction Generale, Dakar.

i.1.2 The group was welcomed by Mr. Ousmane Issoufou Oubandawaki, Director General of ASECNA, following which, the meeting was opened at 1000 hours by Mr. Amadou Cheiffou, ICAO Regional Director, West and Central African Office (WACAF), Dakar.

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. T.J. Potgieter 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. H. Cisse, RO/MET and Mrs. M. Obeng, RO/CNS from the WACAF Regional Office and Mr. B. Hellroth, RO/MET, EUR/NAT Regional Office and Mr. J-P. Makosso, ASECNA, Chief, Meteorology, ASECNA

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AGENDA ITEM 1: ORGANIZATIONAL MATTERS

1.1 **Election of Vice-Chairman**

1.1.2 The group elected Mr.W.C.M.van Dijk , member for the Netherlands, as Vice-Chairman on a nomination by Mr.M. Watt, the member for Senegal, duly seconded by Mr. B.V.Perry, member for the UK Provider State.

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

SADIS efficacy questionnaire

2.1 As is customary, the group commenced its discussions by reviewing the completed questionnaires returned by SADIS user States and users. It was noted that forty-seven replies had been received, which was much the same number as at SADISOPSG/4 in 1999 (forty-eight replies).While it had been hoped that the replies would steadily increase with time, it now seemed that perhaps many of those States who were generally satisfied with the SADIS saw little point in responding. The group felt that, if this were indeed the case, then this was a pity because confirmation of satisfactory service was also very important to allow the group to be sure that they were addressing all problems encountered. It was agreed that efforts must continue to be made by ICAO to obtain as many replies as possible. In this regard it was also pointed out that at its last meeting, the group had drafted a conclusion for consideration by the planning and implementation regional groups (PIRGs) calling for SADIS user States to nominate a SADIS Operational Focal Point, and this person should be responsible, *inter alia*, for completing and signing the SADIS questionnaire for their State. The Secretary informed the group that, so far, it had only been possible to submit the draft conclusion to the ASIA/PAC Air Navigation Planning and Implementation Regional Group (APANPIRG) and European Air Navigation Planning Group (EANPG), both of whom had endorsed the conclusion. Due to the timing of the PIRG meetings, the draft conclusion would be submitted for consideration by the AFI Planning and Implementation Regional Group (APIRG) and Middle East Air Navigation Planning and Implementation Regional Group (MIDANPIRG) later this year and early in 2001. Nominations had already been received from nineteen EUR States. It was agreed that once all the nominations were available to ICAO, the next questionnaire in 2001 should be addressed to the States with a copy to the SADIS operational focal points. In order to give effect to this procedure, the group developed the following decision:

Decision 5/1 — SADIS efficacy questionnaire – Consultation with States

That, prior to the SADISOPSG/6 meeting in 2001, the SADIS efficacy questionnaire should be circulated to States, as usual, but in addition a copy should also be sent to the nominated SADIS Operational Focal Points.

2.2 The group next turned its attention to the analysis of the replies received. As had been the case in the last meeting, a number of States (nineteen) had indicated that they had to return equipment to Matra Marconi Space (MMS)* for repair. Again some States complained about the inordinate length of time it took to return equipment to MMS and receive it back. Many of the States involved did not have a spare receiver, which meant that they were without a SADIS receiving capability for a long time. The member for the SADIS provider State, in referring to the Management Report provided to the group, explained the steps that had been taken in discussions with MMS to try to reduce the down time for faulty very small aperture terminals (VSATs). It was also clear that one particular fault that had been identified with the FRAD cards on the 8467 receiver unit accounted for a majority of the problems, which was traced to a faulty design of the FRAD card in one batch. An alternative supplier had since been located and replacement FRAD cards tested successfully. MMS had identified those receivers having the potentially faulty FRAD card and a

*It should be noted that although MMS is used throughout this report, Matra Marconi Space has recently changed it name to ASTRIUM. This new name will be used in future reports.

structured returns programme had been agreed in which the receivers will be returned for replacement of the FRAD card at MMS expense, and with a receiver provided on loan until the faulty receiver is returned and back in operation. The group welcomed this information and expressed its appreciation to MMS and the SADIS Provider State for the expeditious and forthright manner in which the problem had been addressed. The group was advised that this programme had already started and two receivers had been repaired. The group also expressed its satisfaction with the excellent management report provided to the group.

2.3 It was noted that, aside from the foregoing problem with a batch of faulty FRAD cards, and a specific problem with the Seychelles equipment, which had been attended to, the MTBF for the 8467 receivers would have been 248 334 hours against a predicted 150 000 hours. The group expected that the MTBF would become satisfactory once these identified problems had been resolved. However, it was considered that having to send back receivers to MMS every time there was a fault, especially for States not having a spare receiver was not a satisfactory long term situation. It was pointed out on the other hand that States could enter into a variety of maintenance contracts with MMS which could include the temporary provision of a replacement receiver. It was noted that for many developing States such contracts would be a foreign exchange burden on their annual current accounts. While it was appreciated that there may always be occasions when the equipment had to be returned for repair, the overall impression gained by States, including developed States having qualified engineers and technicians, was that the equipment was so temperamental that even the usual first-line repairs were not encouraged to be undertaken in the States themselves. It was considered that the system had now reached a sufficient level of maturity that warranted consideration of providing guidance manuals and training for user States technicians preferably at MMS. The group agreed that, irrespective of the expected improvement in MTBF and also the MTTR figures, consideration should still be given to organizing training courses for technicians and the development of a fist-line maintenance manual, and developed the following conclusion:

Conclusion 5/2 — Training in first-line maintenance and repair of SADIS receiving equipment

That, the SADIS provider State consult with MMS to investigate the feasibility of organizing training courses, and developing a manual, on first-line maintenance and repair of SADIS receiving equipment for technicians responsible for SADIS equipment in user States.

Note.— The SADIS provider State should report to the group by e-mail on progress in these consultations, so that firm plans may be developed in time for SADISOPSG/6.

2.4 While acknowledging the efforts made by the United Kingdom provider State and MMS in improving the situation with the MTTR and MTBF, some signs of the positive results of which had already been noticed, the group considered that it was an unnecessary complexity that the only VSAT contracts with MMS, except for the space segment and the maintenance of the hub infrastructure, were with States themselves. This clearly did not facilitate standardization and left the provider State with few grounds on which to discuss these matters with MMS. The group agreed that it would be useful if the SADIS provider State could approach MMS to see if there was some way an agreement, if not contract, could be drawn up between the provider State and MMS stating agreed targets for the returns procedure and VSAT maintenance and repair, including what level of repair States could be expected to attempt themselves and what constituted unavoidable return to factory. This, together with the improvement in MTBF and MTTR expected, and the training envisaged in Conclusion 5/2 above would ensure the reliable operation of the SADIS for all user States. In order to achieve this the group agreed to the following conclusion:

Conclusion 5/3 — Agreement on SADIS VSAT maintenance/repair

That, the SADIS provider State consult with MMS regarding the possibility of their entering into an agreement on the maintenance/repair of SADIS VSATs by MMS and States.

Note.— This would not be intended to replace the contracts entered into by States with MMS which are a matter for the States concerned, but would underpin all such contracts to enable the provider State to assist States and MMS in dealing effectively and expeditiously with SADIS VSAT repairs.

2.5 Another problem concerned reports of lack of access to ADMIN messages on the broadcast. As indicated at the last meeting any lack of access to ADMIN messages was considered unacceptable and, given that the ADMIN headers were now also provided on the SADIS web site, the most likely cause was that some of the older versions of the work station software did not prompt users that an ADMIN message had been received. This led to a discussion on the quality control of such software sold to States as part of the purchase of a work station to process the SADIS data. As matters stood, the SADIS provider State advised the group that they had maintained a strictly neutral stance in this regard and, apart from providing the necessary specifications to manufacturers requesting them and listing the manufacturers who informed them that they offered SADIS work stations, purchase decisions were left to user States. The group fully supported this approach but questioned whether testing software submitted voluntarily by manufacturers and providing a simple yes/no statement whether the software met minimum requirements could not be instituted without relinquishing the neutral stance. The SADIS provider State agreed that this approach warranted study and could be costed for further consideration. The group, therefore, developed the following conclusion:

Conclusion 5/4 — Testing of SADIS workstation software

That, the SADIS provider State study the possibility, and estimated cost, of developing a facility for offering software testing to manufacturers of SADIS workstations.

2.6 The Chairman reported on difficulties with splicing a STAR 4 work station from the International Satellite Communications System (ISCS) broadcast to the SADIS broadcast. No one was in a position to assist in this respect, but the SADIS provider State undertook to discuss this with ALDEN engineers and the Chairman after the meeting.

2.7 Having dealt with the reports of problems, the group next heard reports from members in the various regions served by SADIS and from WMO and IATA. All regions reported satisfaction with the SADIS service and many members emphasized that they now depended on SADIS and interruptions were not acceptable. WMO expressed satisfaction with both the SADIS and ISCS broadcasts indicating that these three broadcasts had markedly improved equal access to high quality data to developing States. IATA expressed its satisfaction with the SADIS. In view of the satisfaction expressed, and taking into account the SADIS questionnaires, the group agreed to develop the following conclusion:

Conclusion 5/5 — Annual statement of operational efficacy of the SADIS broadcast 1999/2000

That:

a) during the period 1999/2000 the SADIS had continued to meet operational requirements; and

b) the Chairman of the SADISOPSG inform the Chairman of (E)SCRAG accordingly.

2.8 The group also agreed that there was no need to amend the questionnaire which could be used to consult States next year. In order to record this the group developed the following decision:

Decision 5/6 — SADIS efficacy questionnaire

That the questionnaire provided at **Appendix B** to this report continue to be used in future consultations with States/users on the operational efficacy of the SADIS broadcast.

Status of Implementation of SADIS

2.9 In reviewing the status of implementation of the SADIS, the group noted that, although the rate of implementation had slowed as would be expected, there were now 87 States with a combined total of 122 SADIS VSAT receivers. The status of implementation of the SADIS is tabulated in **Appendix C** to this report. The group expressed its appreciation to the SADIS provider State, WMO and ASECNA for their assistance in the installation of SADIS VSATs in States through the WMO technical cooperation programme.

2.10 The group heard a report on the implementation of the two ISCS broadcasts provided by the United States, noting with pleasure that, together with SADIS, the three broadcasts combined now served in excess of 150 States worldwide.

2.11 The group was reminded that another roll-over date with potential complications would occur in respect of the GRIB data at 2000-2001. The group was confident, however, that the decoding procedure agreed in WMO which had evidently worked well at the 1999-2000 roll-over would also work satisfactorily next time. The group was informed by the provider State that all of the SADIS work stations manufacturer had been reminded of the potential Y2K roll-over problem associated with the years 2000/2001, and no problems were envisaged.

SADIS inventory

2.12 The group reviewed the SADIS inventory throughout the meeting as each relevant agenda item was discussed. It was noted that the proposed inventory took account of the enhancement of the hub and three two-way VSATs, ready for the two-way trials, and recorded the de-commissioning of some pieces of equipment in January this year. The most important change, however, was the inclusion of the SADIS Gateway Function from January 2001, it being assumed for the sake of budgetary planning that the gateway contract would be let this year and the gateway function commissioned in 2001. This major development had already been approved by the EANPG, noted by the other relevant PIRGs and approved

by Council. The United Kingdom provider State had subsequently been invited by ICAO to implement the gateway function. There being no further comments on the inventory, the group agreed to develop the following conclusion:

Conclusion 5/7 — SADIS inventory 2000/2001

That, the Chairman of the SADISOPSG forward the updated SADIS inventory as given in **Appendix D** to this report to the Chairman of the (E)SCRAG.

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

3.1 Under this agenda item the group reviewed the content of the broadcast, the flow of message traffic and the monitoring of the OPMET data available at the SADIS uplink station for uplink on SADIS.

Monitoring of the SADIS broadcast

3.2 The group began its discussions with the monitoring of the OPMET data on the broadcast, having the benefit of two recent analyses of OPMET data availability on which to base these discussions. The first analysis identified OPMET data required in accordance with Annex 1 to the SADIS User Guide but which was not received, or received irregularly. It was noted that the monitoring period covered 72 hours of data, which necessarily provided only a snapshot of the situation. Nevertheless, a number of interesting points could be drawn from the analysis. Firstly, the analysis was broken down into regions and the data availability varied considerably from one region to another. Worst reception was for OPMET data from the PAC region, although it should be mentioned that a comparatively low number of METARs and TAFs were required from this region. The next worst was the ASIA Region, followed by the AFI Region. The group found these figures disturbing because, in the course of discussions in the ASIA/PAC Regions regarding the possible need for a SADIS two-way VSAT in western Asia, the group was advised that there was no need because the AFTN worked very well in these regions. A similar consideration applied to the AFI region in that the group had been advised at its last meeting that the reception of AFI OPMET data in the EUR region (and hence available for uplink on SADIS) was assured due to use of very reliable high speed GTS circuits between the AFI Region and Paris and Frankfurt.

3.3 The second analysis sought to identify missing OPMET data at the SADIS uplink station during a 72 hour period at the beginning of the EUR Bulletin Management Group (BMG) regular monitoring period. A subsequent 72 hour period was monitored for comparison purposes. Threshold values were assigned for the receipt of METARs and TAFs, and those falling below these values were classed as sporadic. Overall, the percentage of sporadic aerodromes lay between 11 and 14 per cent in the first period and 4 to 11 per cent in the second. The apparent lack of consistency being of some concern.

3.4 The group agreed that effective monitoring of the OPMET data on the SADIS broadcast was essential and in accordance with the group's terms of reference. Although monitoring had been done

regularly in the past, it was considered that it was time to put the process on a more structured basis. The group looked at ways and means of achieving this with the minimum expenditure of time and resources. It was clear that the definition of "threshold" values for irregularly received data was critical because this could cause a high number of alarms at the SADIS gateway if a very rigid system were to be introduced. Moreover, a number of issues had a bearing on the definition of "sporadic", for example, were all aerodromes included and in this case how to make due allowance for those aerodromes which were not operating for 24 hours; what length of monitoring period would be appropriate; the need to distinguish METARs, which had rapidly reduced relevance if received more than two hours late, from TAFs whose periods of validity overlapped. The group was reminded that monthly statistics of the availability of AFTN circuits were compiled by States and sent to the ICAO regional offices. Following a long discussion, the group recalled that the EUR BMG OPMET tables had already been adopted by the group for inclusion in the SADIS User Guide as Annexes 2 and 3 and that these tables were automated and updated monthly. The question was whether these tables could form the basis for a special monitoring process, either regularly or at random on demand. It was also considered that the MOTNEG could assist in this regard, perhaps even standardizing the monitoring process for OPMET data on the AFS(EUR Region), not just on the SADIS broadcast.

3.5 The Chairman of the MOTNEG advised the group that the MOTNEG and the BMG would be willing to assist the SADISOPSG in exploring ways and means to assess the SADIS performance in comparison to the requirements. The group agreed that, before any new monitoring procedure was undertaken by the BMG, a further consultation with States regarding Annex 1 to the SADIS User Guide (also essentially the EUR Table MET 2 in the EUR (FASID)) would be appropriate. As with the previous two consultations, the ICAO Paris office could provide the draft of the letter and arrange for it to be sent to States and users from all regional offices. This would provide the most up-to-date basis on which to begin the new monitoring procedure. It appeared that the earliest that a reasonable number of replies from States might be expected was January 2001. Based on the foregoing considerations, it was agreed that the BMG through the MOTNEG should be invited to establish a special monitoring procedure comparing the actual OPMET data transmitted on SADIS with the Annex 1 requirements and including WS OPMET data. The analysis of the results of the monitoring should highlight the efficiency of the SADIS broadcast and thereby identify problem areas where required OPMET data was lacking. The special monitoring procedure should use the existing BMG monitoring infrastructure, and the results of the monitoring analysis should be provided to the SADISOPSG and MOTNEG Secretaries who would circulate the information to the members of their respective groups and to the ICAO Paris office which could send the information to other regional offices for appropriate follow-up action, in respect of missing OPMET data. In this regard, the group agreed to develop the following conclusion:

Conclusion 5/8 — Special monitoring of the SADIS broadcast OPMET data

That,

a) ICAO should undertake another consultation with States with a view to updating Annex 1 to the SADIS User Guide;

b) the BMG through the MOTNEG be invited to establish a special monitoring procedure, during a period of one week, of the SADIS broadcast OPMET output as compared to the updated Annex 1 requirements; and

c) the analysis of the broadcast output should be provided as soon as possible to the BMG

focal point, the MOTNEG and SADISOPSG Secretaries, and the ICAO Paris regional office. The latter should forward the analysis to all other regional offices for appropriate follow-up action in respect of missing OPMET data.

3.6 The group made a review of the three OPMET Annexes to the SADIS user Guide and requested members to inform ICAO regional offices if there were any changes required to the contents of Annex 1 related to their States. A query was raised about some apparent discrepancies between Annexes 2 and 3, which should simply be the inverse of each other. The representative for the EUR BMG undertook to check that the two tables were indeed fully comparable.

Content of the SADIS broadcast

3.7 The points identified in the foregoing analyses of the availability of OPMET data on the SADIS broadcast and a report presented by the Chairman of MOTNEG on activities concerning EUR OPMET exchange since the last meeting of the group, formed the basis of the discussions on the current content of the broadcast and the reliability with which OPMET data was received for uplink on SADIS. It was noted that the MOTNEG/5 meeting had proposed a revised EUR OPMET update procedure which took into account some of the comments made by the SADISOPSG at its fourth meeting. The residual items of concern to the group were the need to explicitly indicate in the flow diagram and the EUR OPMET update procedure, that consultation with States occurred before the BMG proceeded with its processing of the request from a user, and the SADISOPSG was in the consultation loop in cases where any changes affected the SADIS broadcast content. It was agreed that the SADIS Provider State could act in this capacity on behalf of the SADISOPSG, and would report to the Chairman and Secretary if it were considered that such changes warranted the attention of the group. On this basis, the Chairman of MOTNEG undertook to present these residual proposals to the BMG. A copy of the proposal is given in **Appendix E**. Other work by the EUR BMG was reviewed including proposals for monitoring, and the recent introduction of the new addressee indicator "EU" for OPMET data sent to Europe from other regions.

3.8 The group was advised that two EANPG conclusions had been referred to the SADISOPSG and the MOTNEG for action. The first concerned a requirement to test the distribution of volcanic ash advisories on the SADIS and study the distribution of NOTAMs for volcanic ash and ASHTAMs on the SADIS broadcast. In this context, the group was informed that it was not possible to send NOTAMs or ASHTAMs to the SADIS uplink station due to the non-WMO format/headers used. Such headers could not be handled by the London switch because it was a pure WMO GTS-based switch. At the same time it was well known that the ROBEX and AMBEX Schemes got around a similar problem by using a dummy WMO header inside the usual AFTN envelope. The group was informed that tests using this procedure had been successful in routing NOTAMs for volcanic ash from the International NOTAM offices (NOF) in Ecuador, Peru and Mexico to the United States switch at KWBCYMYX, which then switched them using the dummy WMO header to the Washington VAAC. The only drawback was the need for the NOFs involved to issue a separate NOTAM manually using the dummy WMO header. This was being organized for those VAACs requiring it under the ICAO International Airways Volcano Watch (IAVW), and the NOFs approached so far had agreed to do this, as necessary, as a matter of aviation safety. Some members questioned the requirement for NOTAMs for volcanic ash on the SADIS, but it was pointed out that it was not the business of the group to comment on requirements, but simply to comply with the EANPG request and study their distribution on SADIS. It was agreed that a working group should be formed comprising France, United Kingdom, ASECNA, the Chairman of the MOTNEG and the Secretary to organize a series of tests using the dummy address procedure. ASECNA offered the services

of the International NOTAM Offices in Dakar and Madagascar to originate the test NOTAMs, the contents of which would be developed by the working group. As regards the need to test the distribution of VA advisories, the group felt that the same working group could be charged with this task also. In order to accomplish this, the group agreed to develop the following conclusion:

Conclusion 5/9 — Tests for the distribution on SADIS of NOTAMs and advisories for volcanic ash

That, a working group be formed comprising France, United Kingdom, Chairman of MOTNEG, ASECNA and the Secretary to test the existing distribution of volcanic ash advisories on the SADIS, and the possibility of distributing NOTAMs for volcanic ash and ASHTAMs on SADIS in the future.

3.9 The second request from the EANPG concerned the distribution of tropical cyclone advisories on the SADIS. In this case the matter was simpler as the originators were meteorological centres and the only action required was for the ICAO regional offices to request the six tropical cyclone advisory centres (TCAC) to add the appropriate address to their address lists. The group therefore developed the following conclusion:

Conclusion 5/10– Distribution of tropical cyclone advisories on SADIS

That, the ICAO regional offices concerned request the TCACs in their regions of accreditation to address their TC advisories to the SADIS uplink centre at the appropriate address.

Note.— The address will be provided by the SADIS provider State to the Secretary.

3.10 Discussion next turned to problems with data content identified by members representing regions. Members from the AFI Region and WMO drew the attention of the group to difficulties in receiving OPMET data from Freetown and Roberts Field, collectives from Niamey, and Tenerife, Sal Island and Las Palmas. It was clear that the first two were caused by civil unrest, and the last three due to changes in the AMBEX TAF Collection Centres (TCCs). The group was informed that problems occurred in the EUR OPMET data bases due to use of incorrect coding of Australian SIGMET messages. The Secretary undertook to investigate through the ICAO regional office concerned.

3.11 A proposal was made to the group that general aviation message-type forecasts should be distributed on the SADIS. This received support and it was agreed that, at least for the EUR Region where such message-type forecasts (GAFOR, GAMET/AIRMET) were issued, this should be proposed to the next METG meeting in order to validate the operational requirement and make an appropriate proposal to the EANPG. AFI members also expressed a similar interest, although it was not known if any AFI States issued GAMET/AIRMET. It was agreed, therefore, to develop the following conclusion to be referred to the METG:

Conclusion 5/11 — Distribution of GA forecasts on SADIS

That, the METG consider if there is an operational requirement to distribute EUR general aviation forecasts, such as GAFOR, GAMET/AIRMET by SADIS.

3.12 It was agreed that AFI members would also raise this proposal in the AFI MET sub-group, in order to validate the requirement in the AFI Region, as necessary.

Back-up arrangements between the two WAFCs (London and Washington)

3.13 The member for the United States briefed the group on the current status of planning and implementation for the back-up arrangements between the London and Washington WAFCs. The group considered that this matter was of very high importance, as it would permit each WAFC to have the ability to supply their WAFS products and data for uplink on both the ISCS and SADIS broadcasts. This would ensure that user States and users would have an uninterrupted capability to receive the minimum set of data and products. This minimum set would include WAFC data and products required in Annex 3, para. 3.2 and OPMET message data identified in the ICAO regional plans to support international civil aviation. In answer to a question regarding the perennial problem of headers when messages were transferred from one system to another, the United States member indicated that the correct headers employed by the WAFC that is out of service would be used by the other WAFC when sending back-up data and products. As far as user States and users were concerned, the transfer would be seamless and transparent. The group was aware that these matters were being planned in the WAFS Study group and through regular inter- WAFC consultations. However, in view of the prime importance of this information for the ISCS and SADIS, the group agreed to reproduce the salient points of the back-up arrangements in **Appendix F** to this report.

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AGENDA ITEM 4: DEVELOPMENT OF THE SADIS

4.1 Under this agenda item, the group heard reports from the Rapporteurs of its Two-way Operational Clearance Team, Gateway Working Group, Technical Development Team and Strategic Assessment Team.

SADIS enhanced two-way capability

4.2 The group was advised that the two-way enhancement programme was nearing completion. The SADIS Hub and the existing "old-type" two-way VSAT in London had been upgraded, those in Pretoria and Zurich were in the process of being reconfigured using software provided by MMS. It was noted with pleasure that the costs of this exercise would fall within the existing enhancement contract. The original requirement agreed by the group was to have five centres in the enhancement trials, and to this end, five VSATs had been purchased under the ICAO cost allocation and recovery scheme administered by (E)SCRAG. Two VSATs remained to be allocated to a site for the trials. The group recalled that, in order to obtain trial data from a broad range of sites (in respect of region, position under the footprint and varying mixes of data for uplink), the group had sought the advice of the PIRGs concerned. The APIRG had selected Cairo, Dakar, Nairobi and Pretoria and APANPIRG had suggested Singapore or Thailand depending on further consultations with these States regarding the costs involved. Following SADISOPSG/4, the EANPG had agreed that Moscow would be a suitable site providing that questions of an operational and financial nature could be clarified. As a result of discussions with the Russian Federation, the group was informed that the question of siting the two-way SADIS VSAT in Moscow should be postponed for two years. Confirmation was also to be sought from Switzerland that they wished to take part in the enhancement trials. Egypt indicated that their new automated switching centre was already linked to a number of networks and therefore, declined to take part in the trials. However, this situation could change in the future. The group, therefore, had listed the stations and agreed that from a technical standpoint they should be considered in the order: Singapore or Thailand, Moscow, then Dakar then Nairobi. In the event, Singapore, Thailand and Moscow declined the offer to take part in the trials. Switzerland indicated that they would continue with their two-way VSAT, and would take part in the trials.

4.3 In view of the foregoing, the group now had to decide where to site the two unallocated two-way VSATs. The Member for Senegal, supported by ASECNA and WMO, proposed that the next installation of an unallocated SADIS two-way VSAT should be in Dakar. In support of this proposal he drew the attention of the group to the key role played by the Dakar telecommunications centre in the AMBEX, the AFTN, the WMO GTS and the ASECNA satellite system. He emphasised that Dakar was in a position to collect a considerable amount of AFI OPMET data, and the siting of a two-way VSAT in Dakar would permit this data to be uplinked to London to the great benefit of other ICAO regions. The proposal was supported by IATA, who considered that Niamey might also be a suitable site for a two-way VSAT in view of communications problems with that AMBEX collection centre. In this regard, the group was aware that the APIRG had selected Dakar. ASECNA indicated that, as the technical organization responsible for air navigation services in the States concerned, they had planned for the location to be Dakar, in accordance with the APIRG conclusion, and could not change these plans . If Niamey were to be considered as a two-way site in addition to Dakar then this would be a different matter. It was mentioned that it would be appropriate to confirm that there would be no difficulties with two-way transmission due to Dakar being located at the edge of the INTELSAT footprint. This was thought to be unlikely because Dakar already successfully operated a one-way SADIS VSAT. However, contact was made with MMS engineers who assured the group that there would be no difficulty siting the two-way in Dakar assuming a

clear line of site to the satellite. Having heard the technical justifications for siting the next SADIS two-way VSAT in Dakar, the group had to obtain assurance that the resources to support the installation and operation of the two-way VSAT would be available so that the trials programme could be conducted in Dakar. In this regard it was understood that the State concerned would have to be provided with detailed costs before any contract could be drawn up. The member for the SADIS provider State indicated that budgetary costs were given in the management report, which covered installation and commissioning, shipping, insurance, licences and Hub demodulator, and these figures could be firmed up in consultations between the United Kingdom, Senegal, MMS and ASECNA. It was noted that the installation would have to be done by MMS engineers. Noting that MMS engineers would be on site, the question was asked whether they could provide maintenance and fault-finding training for ASECNA technicians. The United Kingdom provider State indicated that this would almost certainly be possible, with the proviso that the longer the MMS engineers remained on site, the higher the cost would be. This could form part of the discussions referred to above. Taking into account the foregoing arguments, the group agreed that, in accordance with APIRG Conclusion 9/26, the next unallocated SADIS two-way VSAT should be located in Dakar, and in order to give effect to this, developed the following conclusion:

Conclusion 5/12 — Location of SADIS two-way VSAT in Dakar

That,

a) having examined the technical and operational aspects, and having received assurance of financial support for its installation and operation, the group agreed that, in accordance with APIRG Conclusion 9/26, the next unallocated SADIS two-way VSAT should be located in Dakar, and take part in the SADIS enhanced two-way trials;

b) the SADIS provider State should obtain from MMS detailed costs to be borne by the State and provide these to Senegal, together with any other relevant information which would assist the State in the installation and commissioning of the VSAT.

4.4 Following the foregoing conclusion regarding the siting of the fourth two-way VSAT, the group next considered the timing of the trials now that the commissioning of the enhanced VSAT was completed for London, and was imminent in Pretoria and Zurich. The group felt strongly that no more time should be lost, and it was agreed that interim trials should begin as soon as the other enhanced two-way VSATs were fully commissioned. This would be followed by the full trials when four enhanced two-way VSATs were in operation. In this regard, the group developed the following conclusion:

Conclusion 5/13– Interim SADIS enhanced two-way VSAT trials

That, pending the commissioning of the remaining unallocated SADIS enhanced two-way VSATs, the SADIS two-way operational clearance team should organize interim trials involving London, Pretoria and Zurich, as soon as practicable. The outline of the interim trial is provided in **Appendix G** to this report. The final trial should be undertaken by the team as soon as the fourth enhanced two-way VSAT in Dakar came on line.

4.5 This led to a discussion regarding the siting of the fifth and last unallocated two-way VSAT. The group had two potential sites pre-approved by the APIRG (Cairo and Nairobi) both of which had declined to install a two-way and one other site conditionally approved by the EANPG (Moscow). In the case of the latter site the member for the Russian Federation informed the group that, as already reported to ICAO, the question of siting a two-way VSAT in Moscow for the enhanced two-way trials could not be discussed because of unfavourable internal economic conditions and the current reorganization of the Federal Aviation Authority of Russia. Moreover, the group should note that the three one-way VSATs in Moscow were unserviceable, after sending the receivers back to MMS for repair three times. In view of this, the Russian Federation considered it unreasonable to purchase another system at this time. Probably in two years it would be possible to return to the question. On the other hand, guarantees had been given by Roshydromet and Federal Aviation that in the near future required OPMET data will be transmitted by AFTN and financed centrally, which will mean free access to the Vnukovo OPMET data base. This will be in addition to the OPMET data already being transmitted by GTS through Prague and Vienna. OPMET data requirements, including those for the new polar air routes have been satisfied. If there is an urgent need for additional OPMET data, a request could be presented to the Russian authorities who will discuss the matter.

4.6 It was clear that on technical or financial grounds there appeared to be no strong reason to select any one of these three sites over the others. There appeared to be three options: leave the fifth VSAT in the warehouse; or, use it for spares; or restrict the trials to four sites (see para. 4.4 above) and, on completion of the trials, offer the fifth VSAT as an operational system. The group favoured the latter option and agreed that the regional COM/MET planning sub-groups concerned should be invited to consider if there was an appropriate site that could be proposed to the respective PIRGs. The group, therefore, developed the following conclusion:

Conclusion 5/14 — Allocation of fifth SADIS enhanced two-way VSAT

That, the regional COM/MET planning sub-groups concerned be invited to consider if they could advise a site for the installation of the fifth enhanced SADIS two-way VSAT for use operationally following the SADIS enhanced two-way VSAT trials. If such a site were to be identified, the group should propose its selection to the respective PIRGs for endorsement.

Note. — The State for any site proposed should be in a position to satisfy the same criteria asked of the Moscow site by the EANPG in its Conclusion 41/22 and of confirmation of the availability of financing for the installation and operation of the two-way VSAT. The VSAT and receiver would be at no cost to the State concerned. However, installation and operation of the two-way VSAT would have to be paid for by the State.

4.7 Looking ahead, the group discussed the procedure for deciding on sites for SADIS two-way VSATs after the trials had been completed successfully and during the operational phase. The Secretary explained that the siting of two-way VSATs was in the purview of the PIRGs concerned and all the PIRGs concerned had endorsed the two-way VSAT siting criteria developed by SADISOPSG/2. The SADISOPSG was at liberty, of course, to propose sites to the relevant PIRG, but the approval of the PIRG was essential. However, the APIRG and EANPG had already selected a number of sites, and these could be planned for at anytime by the group, so long as the State in which the VSAT was to be sited agreed. The MIDANPIRG had not spoken on the question of SADIS two-way VSATs and the APANPIRG had stated

that, at present, there was no requirement for two-way VSATs in their regions. In view of this the group would not consider sites in the ASIA/PAC Regions unless the APANPIRG instructed the group to do so. The group expressed its appreciation to the operational clearance team for the efficient manner in which it had progressed its tasks. It was understood that details of the progress of the interim trials would be posted on the SADIS Web site for convenience of all members and SADIS users. In view of the fact that the Rapporteur of the team had retired, the group thanked Mr. R. Orrell for standing in and reporting to the fifth meeting of the group, and agreed to confirm him as the Rapporteur for the team.

4.8 One residual issue was brought to the group's attention. This concerned the fact that the existing "old" two-way VSATs currently being upgraded, unfortunately, contained various hardware components that had become obsolete and were no longer manufactured. However, in the course of the upgrade of the Hub, a small number of these type of components had been released which, although they would not constitute full sets of spares, would assist to some extent. This appeared to mean that, at some time in the not too distant future, the enhanced "old" VSATs will have to be replaced. This would have to be costed by the SADIS provider State and the estimated costs provided to (E)SCRAG at the appropriate time. It was confirmed that the two remaining enhanced two-way VSATs (one of which was now allocated for installation in Dakar) were not of this type.

SADIS Gateway Function

4.9 The group heard a report from the member for the SADIS Provider State, on behalf of the Rapporteur of the SADISOPSG Gateway Working Group, regarding progress in the tendering process for the SADIS Gateway Function. At the time of the fourth meeting of the group in early June 1999, it had been expected that the contract would have been let by the end of June 1999*. In the event, however, this initial procurement exercise did not identify a supplier who could deliver, with a high degree of confidence, the required level of functionality for the SADIS gateway, as specified. The group was further informed that, following the initial procurement exercise, the procurement process was reviewed. A new approach was undertaken in which suppliers were invited, through the European Union Journal, to submit descriptions of "off-the-shelf" solutions which could satisfy the very high level list of requirements for the data management system specified for the SADIS Gateway Function. The responses to this invitation were examined and visits arranged to a number of potential suppliers or sites where their equipment was installed, in order to assess the proposed systems. This process was now complete and a more detailed functional specification was currently being prepared. This functional specification would be distributed to a small number of suppliers who had demonstrated their ability to provide operationally-proven systems. The responses would be subjected to a tender evaluation board for assessment. The assessment process would include a suite of tests to prove connectivity of the system to a variety of interfaces in the operational environment. Following completion of this assessment, a contract was expected to be let in August 2000.

4.10 The information provided by the SADIS provider State was viewed with some concern by a number of members of the group. In particular there was uneasiness in respect of the change in procurement process, especially as this had not been discussed in the gateway working group. In fact the working group had not met now for two years, since before SADISOPSG/3 in 1998 and no information had

* A letter received from the United Kingdom provider State after SADISOPSG/4 was included as Appendix M to the report and indicated that the contract was expected to be let in the first quarter of 2000.

been provided to members of the SADISOPSG Gateway Working Group between meetings*. Others viewed the situation as one of "force majeur", considering that the provider State evidently had little choice if suppliers refused to design a one-off "dedicated" system against the specifications. The question now at issue was how could the proposal of the SADIS provider State be approved by the SADISOPSG in time for letting the contract in August 2000, in view of the fact that no information was available on the subject from its gateway working group. The SADIS provider State suggested that the SADISOPSG could if it so wished delegate approval of the proposed technical solution to its gateway working group, and this could be done by correspondence. In this context, the group was advised, and agreed, that such an important and complex decision should not be taken by correspondence, especially as the gateway working group had not had a meeting for a long time. Asked with what confidence the member for the SADIS provider State had that the Gateway High Level Technical Specifications could be met with this revised technical solution, he responded that he had a good level of confidence that the specifications would be met.

4.11 The group found itself in a difficult situation, there was no dispute that the SADIS Gateway Function was urgently needed and all reasonable efforts had to be made to achieve this, so long as the specifications could be met. After a long discussion, and in consultation with the Chairman of the MOTNEG, the group agreed that it was prepared to delegate the final approval of the proposed technical solution for the SADIS Gateway Function to a joint meeting of the SADISOPSG Gateway Working Group (comprising Netherlands (replacing Switzerland), United Kingdom, United States, Chairman of the MOTNEG and IATA) and the MOTNEG working group. The group requested the SADIS provider State to circulate the details of the proposed technical solution to the members of the two working groups by e-mail as soon as possible after this meeting, and arrange for the Rapporteur of the SADISOPSG Gateway Working Group, in coordination with the Rapporteur of the MOTNEG Working Group, to call a meeting of the two working groups soon afterwards. It being understood that if there was no consensus reached in the joint working groups on the suitability of the proposed technical solution, no contract would be let and the matter would be referred back to the MOTNEG later this year and the SADISOPSG in 2001. In this regard, the group reached the following conclusion:

Conclusion 5/15 —Final approval of technical solution for SADIS Gateway Function

That, a joint meeting of the SADISOPSG Gateway Working Group and the MOTNEG Working Group consider and, if found satisfactory, approve, the technical solution for the SADIS Gateway Function proposed by the SADIS provider State .

SADIS BUFR trials

4.12 A report on the SADIS BUFR trials was provided to the group by the SADIS provider State. The group was pleased to learn that the tests transmitting BUFR messages on PVC 3 had been successful and there had been no reports of interference with the data on the other ports. As had been agreed, the trials were intended to test the effect on the existing SADIS broadcast and to permit interested States to test decoding of the BUFR messages. A number of minor problems had been encountered all of which had been, or could be, solved. In view of the fact that the test transmission had gone so well, the group focussed on the decoding of the BUFR messages. While this was the responsibility of the WAFS Study Group, the SADISOPSG had an interest due to the impact the operational use of BUFR would have

* The Rapporteur informed the Chairman and Secretary by e-mail on 10 October 1999 of the problems encountered with the tendering process and the provider State's proposed course of action in this regard. This course of action, *inter alia*, envisaged convening the SADISOPSG Gateway Working Group before the contract was let in 2000.

on bandwidth. Clearly it could not be used operationally until States were in a position to decode the messages and produce charts to the correct specifications in Annex 3. The group was informed that the WAFSSG had indeed recommended that the two WAFCs should consult with software vendors and work together in developing appropriate software to decode BUFR messages and manipulate the output to produce charts to specification. Some software was already available and the UK MET Office would provide a basic software that could decode BUFR but not manipulate the output. It was agreed that the SADIS provider State should continue to broadcast BUFR on SADIS in order that States may develop their expertise in decoding and using BUFR messages. Although this would not be declared "operational" before Amendment 72 to Annex 3 became applicable in November 2001, States could begin to make use of this new source of data as soon as they were able.

Future technical developments

4.13 It was noted that the TCP/IP protocol had been made available by MMS, as requested, comprising two options, one an external converter between the VSAT (composite port) and the work station, and two, the replacement of the FRAD card in the VSAT by a TCP/IP card. The group congratulated its Technical Developments Team on providing such timely advice which had enabled the SADIS to keep pace with technical developments. It was also noted with regret that Leif Bergman, the Rapporteur had moved into private industry and was no longer available to the group. The group expressed its appreciation for the excellent work done by Leif and wished him well in his new career. Mr Wil van Dijk was appointed Rapporteur of the team. The group also heard of some difficulties with obtaining specifications from MMS to permit the mapping of output to the external ports of the converter. On checking with MMS by phone, it transpired that in fact a multi-tasking method was used and mapped to one port. The group felt that prospective buyers of the converter should be provided with such critical information otherwise they would be unable to connect the VSAT to their communications system. The SADIS provider State reminded the group that the converter had only been on the market for two months, and indicated that both MMS and themselves would be willing to assist any States that encountered difficulties.

SADIS Strategic Assessment Tables

4.14 The group reviewed the updated SADIS Strategic Assessment Tables received from AFI, ASIA and EUR regions, but no updated tables had been received from the MID Region. Aside from the inclusion of NOTAMs for volcanic ash and ASHTAMs, and for EUR and ASIA the deletion of general AIS requirements, no significant changes had been reported. Some members questioned the usefulness of these tables if some were not completed and most showed no changes over what had been estimated at the beginning of the exercise by the SADIS provider State. Most members, however, felt that it was early days, and the non-synchronization of all the various meetings militated against a perfect response. The group, therefore, noted that there was nothing in the tables which had a significant impact on the current bandwidth and left the matter of the usefulness of the tables until the group saw the responses at its sixth meeting.

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AGENDA ITEM 5: SADIS USER GUIDE AND AMENDMENT PROCESS

5.1 The group reviewed and approved the proposed amendments to the guide for the second edition. The issuance of this edition had been held back pending finalization of new Annexes 2 and 3 based on the BMG OPMET tables. The group was informed that the guide would soon be placed on a newly-created ICAO SADIS web site which, with the exception of Annex 1, would be down-loadable. There was a remaining amendment to be made in the list of WAFS charts given at the end of existing Annex 2. It was agreed that if the existing Annex 1 were to be put on the web site before the consultation with States and users referred to in Conclusion 5/8 above had been completed, references to the relevant State letters should also be included. The three annexes should be aligned, as a number of discrepancies had been noticed.

5.2 The group agreed that, as few reports now came in concerning the "effects of extreme weather" on the VSATs, it was not necessary to include this in the guide. However, the situation would be reviewed at each SADISOPSG meeting.

5.3 Information was provided to the group about the SADIS web site provided by the SADIS Provider State. The group expressed its satisfaction with this site, and noted that feedback from user States had been very positive. A news page had been added at:

http://www.met-office.gov.uk/SADIS/SADISnewspage.html

The SADIS Annexes 2 and 3 were available at:

http://www.met-office.gov.uk/SADIS/sadis/Intro.htm

The transmission of operational ADMIN messages had begun in May 2000, these were in addition to the existing regular ADMIN messages on the broadcast. The MMS receiver report, which detailed the problems and proposed solution related to the FRAD card, had also been placed on the web site.

AGENDA ITEM 6: FUTURE WORK PROGRAMME

6.1 The group reviewed and updated its work programme and executive summaries to take account of its decisions/conclusions developed at this meeting . In view of the withdrawal of Switzerland from the group, it was agreed that Mr. Wil van Dijk would be the replacement on the SADISOPSG Gateway Working Group. In reply to a question regarding MOTNEG involvement in the group, it was indicated that the Chairmen of the MOTNEG in his *ex officio* capacity represented MOTNEG interests on the group. In addition, a number of the members of the SADISOPSG Gateway Working Group were also members of the MOTNEG. The updated work programme, executive summaries, terms of reference and composition of working groups are given in **Appendix H**. The group agreed that the executive summaries for tasks were useful to members and should be continued.

6.2 In considering the possible impact of the SADIS broadcast of the production of SWM charts by WAFCs following the transfer of RAFC responsibilities to the WAFCs, the group was advised that the WAFCs would be expected to produce the SWM charts required regionally for "limited geographical areas", in accordance with Annex 3, 3.2.5, 3.3.7 and 9.6.1. Planning for the SADIS broadcast would, therefore, have to take account of these requirements in due course.

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AGENDA ITEM 7: OTHER BUSINESS

7.1 The group confirmed that it continued to be necessary to schedule annual meetings of the group for the foreseeable future. Regarding the venue for the next meeting in 2001, it was noted that the group had so far managed to hold a meeting in all ICAO regions served by SADIS except the MID Region. It was agreed, therefore, that the Secretary should investigate the possibility of holding the next meeting in the MID Region, and failing that, to approach ICAORD EUR/NAT Regional Office, Paris with a view to holding the next meeting in Paris. There being no further business and following a closing speech by Mr. Youssouf Mahamat, Director of Operations of ASECNA, the meeting closed at 1230 hours.

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