SADIS COST RECOVERY ADMINISTRATIVE GROUP (SCRAG)

SIXTH MEETING

(Paris, 21 and 22 November 2005)

Agenda Item 2: Consideration of issues relevant to the SCRAG's work addressed by the SADIS Operations Group (SADISOPSG)

REPORTS ON CONCLUSIONS OF THE SADISOPSG/10 MEETING

(Presented by the Chairman of the SADIS Operations Group)

1. Introduction

1.1 This paper includes in **Attachments 1 to 4** the Executive Summary of the tenth meeting of the SADIS Operations Group (SADISOPSG/10, Paris, 24-27 May 2005), as well as two specific Reports from the Chairman of the SADISOPSG Group on SADIS operational efficacy and inventory.

2. Action by the Group

2.1 The Group is invited to review the information presented in this paper

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(15 pages)

ATTACHMENT 2

SWG 5/1.4.1

5 July 2005

To: Chairman, SCRAG

From: Chairman, SADISOPSG

Subject: **Statement of SADIS operational efficacy 2004/2005**

I wish to inform you that the SADISOPSG, in Conclusion 10/6, instructed me to advise you that the operational efficacy of the SADIS had continued to be satisfactory, meeting all operational requirements since the SADISOPSG/9 Meeting (1 to 4 June 2004).

T. van Stijn

ATTACHMENT 3

SWG 5/1.4.1

5 July 2005

To: Chairman, SCRAG

From: Chairman, SADISOPSG

Subject: **SADIS inventory 2004/2005**

I wish to inform you that the SADISOPSG, in Conclusion 10/7 instructed me to forward to you the attached updated SADIS inventory.

T. van Stijn

Attachment
Updated SADIS inventory

TENTH MEETING

SADIS OPERATIONS GROUP

(Paris, France, 24 to 27 May 2005)

EXECUTIVE SUMMARY[1]

1. INTRODUCTION

1.1 The tenth meeting of the SADIS Operations Group (SADISOPSG/10) was held in the European and North Atlantic(EUR/NAT) Regional Office, Paris, 24 to 27 May 2005. The meeting was attended by eighteen experts from eight States, the representative of the focal point of the EUR OPMET Bulletin Management Group (BMG) and three international organizations (the Agency for the Safety of Aerial Navigation in Africa and Madagascar (ASECNA), the International Air Transport Association (IATA) and the World Meteorological Organization (WMO)).

1.2 The Chairman, Mr. T. J. Potgieter, presided over the meeting throughout its duration.

2. FOLLOW-UP OF SADISOPSG/9 CONCLUSIONS

2.1 With regard to the detailed follow-up of the conclusions and draft conclusions, the group noted that action had been completed on all the issues except for Conclusions 9/12 b), 9/20 b) and c), action on which was expected to be completed by the SADISOPSG/11 Meeting (Decision 10/1)

3. OPERATION OF THE SADIS

3.1 The group reviewed the operation of SADIS during 2004/2005 based on the annual management report from the SADIS Provider State and on responses from 52 States to the annual questionnaire.

3.2 With regard to the SADIS annual management report, it was considered desirable from the operational point of view, that annual statistics be included in the management report related to the non-scheduled OPMET messages received at the SADIS uplink station and to aerodromes from where no OPMET data had been received during the monitoring periods (Conclusion 10/2).

3.3 Concerning the annual questionnaire, the responses received had shown that the number of reports of serious difficulties with the SADIS very small aperture terminal (VSAT) had remained low over the past year. However, the group expressed some concern related to the low level of implementation of the BUFR-decoding software amongst the SADIS users. Therefore, the Secretariat was requested to remind the States of the planned discontinuation of the SIGWX forecasts in chart form on 30 November 2006 and the need to procure the necessary decoding software, as a matter of urgency (Conclusion 10/4). The group concluded that the SADIS broadcast had continued to meet the operational requirements during the period under review (Conclusion 10/6). This statement would be sent to the Chairman of the SADIS Cost Recovery Administrative Group (SCRAG). With regard to the format of the questionnaire, the group

[1] The full report is available at the following website: www.icao.int/anb/sadisopsg

considered that four changes thereto were required, concerning, *inter alia*, the end of the time period to be considered, which was brought forward to January to ensure that the results were available in time for the SADISOPSG meetings (Decision 10/5).

3.4 With regard to the SADIS operational focal points, the group concurred that the focal points provided useful contacts for the SADIS Provider State and the ICAO regional offices to resolve operational issues and agreed that ICAO should consult all of the SADIS user States to make sure that the information included remained current and that the e-mail addresses were included, if available (Conclusion 10/3).

3.5 The group reviewed the SADIS inventory 2005/2006. In order to ensure that SADIS continued to meet the approved operational requirements, amendments to the inventory were made based on proposals by the SADIS Provider State to take account, *inter alia*, of the completion of the implementation of SADIS second-generation broadcast (SADIS 2G). The updated inventory would be forwarded to the Chairman of the SCRAG (Conclusion 10/7).

3.6 With regard to the SADIS implementation, the group noted that the number of States and users had remained unchanged during 2004/2005 with eighty-five Contracting States now operating a total of 130 SADIS VSAT receivers and three FTP servers. It was concluded that the potential growth had ceased except for the number of FTP users which was expected to increase in the future.

4. CONTENT OF THE SADIS BROADCAST

4.1 OPMET data

4.1.1 The group considered the format and content of Annex 1 to the *SADIS User Guide* (SUG) which lists the requirements of OPMET data to be broadcast on the SADIS. With regard to the format of Annex 1, it was agreed that the Secretariat should implement the database-oriented format, as soon as practicable, and, in any case, no later than the SADISOPSG/11 Meeting (Conclusion 10/8).

4.1.2 Concerning the content of Annex 1, two specific proposals made by IATA addressing: a) the total lack of OPMET data from some aerodromes; and b) the need to harmonize the detailed requirements to the actual availability of OPMET data were endorsed by the group (Conclusions 10/9 and 10/10).

4.2 WAFS forecasts

4.2.1 The WAFS forecasts included in the SADIS broadcast are displayed in Annex 4 to the SUG. With regard to Annex 4, the group endorsed changes thereto related to:

a) the introduction of medium-level SIGWX forecasts for the NAT Region;

b) the elimination of wind and temperature forecasts in chart form as of 1 July 2005; and

c) the elimination of GRIB forecasts for FL 530 by 31 August 2005 as a result of discontinuation of supersonic operations (Decision 10/11).

5. DEVELOPMENT OF THE SADIS

5.1 Report of the SADISOPSG Gateway Development Team

5.1.1 The Rapporteur of the SADISOPSG Gateway Development Team reported on the progress made since the SADISOPSG/9 Meeting and drew the group's attention to the need to make changes to the real-time monitoring at the SADIS gateway related to SIGMET validation as soon as compliance by States would become more widespread and, in any case, no later than the SADISOPSG/11 Meeting (Conclusion 10/12).

5.2 Report of the SADISOPSG Strategic Assessment Team

5.2.1 Based on a report provided by the Rapporteur of the SADISOPSG Strategic Assessment Team, the group reviewed the format and content of the strategic assessment tables and requested that ICAO forward copies of the tables to the PIRGs concerned so that they may form the basis for the next regional update in respect of future SADIS requirements (Decision 10/13 and Conclusion 9/14).

5.3 Report of the SADISOPSG Technical Developments Team

5.3.1 With regard to the implementation of the SADIS 2G, the group was pleased to note that the broadcast had been declared operational by the SADIS Provider State in November 2004 as a result of successful completion of the SADIS 2G test-runs in Zurich, Switzerland. These test had shown that the SADIS 2G receiving units offered reliable reception, comparable to the SADIS 1G receivers.

5.4 Report of the SADISOPSG workstation software team

5.4.1 The group was pleased to note the report of the Workstation Software Team which indicated that the 56th Session of the WMO Executive Council had been informed of plans to move to SADIS 2G workstations and of needs to assist least-developed countries (LDC) in the acquisition of new workstations. In addition, WMO had sent a letter to African, Asian and European Permanent Representatives in January 2005 advising States to upgrade their visualization software and workstations by the required dates.

5.5 Visualization software for BUFR-coded WAFS forecasts

5.5.1 In view of the numerous changes which had taken place over the last year, the group felt that time had come to update the visualization software criteria to include the display of the following features:

a) GAMET and AIRMET (currently from the EUR Region);
b) SWM charts derived from BUFR-coded forecasts;
c) jet depth information on SIGWX charts derived from the BUFR-coded forecasts;
d) ASHTAM and NOTAM for volcanic ash; and
e) GRIB- and BUFR-encoded data using the refined requirements.

Furthermore, the group agreed that the production of compliant charts from the GRIB and BUFR-coded forecasts without manual intervention should form part of the updated criteria (Decision 10/15). Since the decoding software had not been evaluated against the revised criteria, the group agreed that it would be

beneficial that the SADIS Provider State would conduct a further software evaluation in 2005 and report results thereof to the SADISOPSG/11 Meeting (Conclusion 10/16).

5.6 SADIS Second-generation two-way programme (SADIS 2G+)

5.6.1 Concerning the second generation two-way programme (SADIS 2G+), the report of the *ad-hoc* working group suggested that it would be feasible to obtain missing OPMET data from AFI, ASIA and EUR Regions using terrestrial links, with no need to deploy SADIS 2G+ VSATs. The group agreed therefore that there was no need to pursue work on the SADIS 2G+ and that the work programme should be amended accordingly (Decision 10/17).

5.7 Internet-based SADIS FTP service

5.7.1 The group noted that, during September 2004, the SADIS Provider State had contracted an independent information technology security specialist to assess the current practice employed for delivering the SADIS FTP service. The review had concluded that the security measures were considered appropriate for the provision of the service as a back-up source of data, but further enhancements would be beneficial for those users accessing the service as their primary source of WAFS and OPMET data. The group agreed that implementation of these enhancements should be endorsed, in principle, in view of the increasing number of users deriving their OPMET and WAFS data from the FTP service. The implementation of some of the suggested enhancements would require considerable effort; therefore, it was agreed that the SADIS Provider State should present an implementation plan to the SADISOPSG/11 Meeting (Conclusion 10/18).

5.8 Use of SADIS to carry ASHTAM and NOTAM for volcanic ash

5.8.1 In order to finalize the implementation plan for the dissemination of ASHTAM and NOTAM for volcanic ash on the SADIS, the group agreed that outstanding issues related to routeing, storage and display of ASHTAM and NOTAM for volcanic ash should be addressed by the SADIS Provider State in time for the SADISOPSG/11 Meeting (Conclusion 10/19).

6. SADIS USER GUIDE (SUG)

6.1 The group reviewed the new Chapter 3 of the SUG developed by the SADIS Provider State related to the SADIS 2G, together with Appendices A, B, I and L, which had been subject to consequential amendments, and a new Appendix L listing the SADIS 2G hardware, and data processing and display suppliers. The group instructed the Secretariat to insert the material developed into the SUG and place it on the SADISOPSG website (Conclusion 10/20).

7. FUTURE WORK PROGRAMME

7.1 The group reviewed and updated its work programme and executive summaries for the tasks in the work programme (Decision 10/21).

8. OTHER BUSINESS

8.1 With regard to the back-up configuration, the group agreed that, in order to improve the reliability of current back-up procedures, the SADIS Provider State should present proposals for changes to the back-up configuration based, *inter alia*, on a possible direct link between WAFC Washington and the SADIS gateway, in time for the SADISOPSG/11 Meeting (Conclusion 10/22).

8.2 Concerning the suppliers of hardware for the SADIS 2G programme, it was noted with some concern that BURS Ltd. would no longer supply SADIS VSAT hardware. Furthermore, the two remaining vendors, L-Teq or Vados systems, would offer the hardware for the SADIS 2G programme in a partnership. The group agreed that no immediate action was required; however, the situation would be monitored by the SADIS Provider State which would report back to the group, as necessary.

8.3 In view of the forthcoming retirement of the current chairman, Mr. T. Potgieter, the group elected Mr. T. van Stijn as the new chairman.

— END —

SADIS INVENTORY

The inventory items identified below cover the equipment and staffing required to provide, operate and maintain the SADIS. The inventory includes: hub infrastructure (including all additions following the completion of the hub enhancement project) and communications circuits, ISCS data back up system, procured services, and staff. It should be noted that some equipment items are under lease and form part of a wider infrastructure. Costs of individual items cannot be separated from the required infrastructure that includes a significant part of the development of the software and technical configuration. The inventory is in accordance with the SADIS User Guide.

1. EQUIPMENT

A. Key components of Hub infrastructure and communications circuits

The SADIS 1G hub infrastructure connection to the MET Office message switch (FROST) consists of a number of units developed in conjunction with EADS Astrium and other suppliers. These are installed either at Exeter or at the uplink site at Whitehill, Oxfordshire, UK.

Additional hub infrastructure has been installed at Exter and Whitehall to provide resilient SADIS 2G service. This hardware is physically separate from the SADIS 1G infrastructure.

i) **Solely procured for SADIS (major components)**

SADIS gateway function software (developed specifically for the gateway as part of the NATS CoreMet system; see items under "Not procured principally for SADIS").

Hewlett Packard L-class servers to provide SADIS FTP service (see Section 1 C)

ii) **Principally procured for SADIS**

a) At the Met Office

~~1) Product display console, including software~~ See Section 1 C for itemized components.

b) Communications between Whitehill and Met Office

1) 2 Fibre Optic 64 Kbps circuits in support of SADIS 1G service; and

2) 2 Fibre Optic 64 Kbps circuits in support of SADIS 2G service

c) At the uplink site (Whitehill)

1) Units forming part of a totally integrated rack structure to provide SADIS 1G service, with back-up, referred to as Chain A and Chain B (see the list ~~at~~ under Section~~s 4 and 5~~ 1.C); ~~and~~

2) Units and services leased from ~~Astrium under contract to~~ Cable and Wireless Communications Ltd. to support SADIS 1G and 2G services :

- 1 (70 to 140 MHz) convertor
- Use of 1 (140 to C band) convertor
- Use of satellite hub C~~:~~ (Lease represents only a very small part of this large aperture) for SADIS 1G and 2G services; and

3) Units forming part of a totally integrated rack structure to provide SADIS 2G service, with back-up (see the list under Section 1 C)

d) Communication link (SVC) between SADIS Gateway and Met Office in support of SADIS 1G service; and

e) Communication link (~~SVC~~ utilising WMO TCP/IP sockets protocol) between SADIS Gateway and Met Office in support of SADIS 2G service.

iii) **Not procured principally for SADIS**

a) Message switch (FROST): Total investment, 1.~~1~~2M[1] £ of which ~~1.33~~ 2.69 per cent is attributable to SADIS usage: switching data to operational (1G) broadcast service and to 1G monitoring system — Corobor Comparitor (breakdown: 1.34 per cent to supply operational broadcast; 1.35 per cent to supply monitoring facility);

b) Message switch (FROST): Total investment, 1.~~1~~2M[1] £ of which ~~1.04~~ 1.06 per cent is attributable to SADIS FTP usage: switching data to operational FTP service;

c) Message switch (FROST): Total investment, 1.~~1~~2M[1] £ of which ~~1.33~~ 1.14 per cent is attributable to SADIS usage: switching data to 2G service;

Note.— The SADIS 2G monitoring system (Corobor Comparitor) not activated at the time of the SADISOPSG/10 Meeting; implementation expected before the SCRAG/5 Meeting.

d) Allocated bandwidth (2 Mbps bursting to 4 Mbps) between server and Internet Service Provider (ISP) in support of the SADIS FTP service; and

e) Message switch (CoreMet System);

Note.— Some elements of ~~this~~ the CoreMet System are exclusively for the support of the SADIS gateway function.

[1] budgeted cost 1.195466 M for providing TROPICS/FROST service during the fiscal year 2005/2006

B. ISCS data back-up system

ISCS VSAT system, including TCP/IP receiver, and cables~~, break unit and X25 frame relay switch.~~

Note.— The equipment, including leases, listed above are being capitalized over the SADIS contract period.

C. Hub equipment and services located at Exeter and Whitehill

Item	*Description*	*Quantity*
1.	**Exeter Equipment to support SADIS 1G**	
1.1	Network Management System (NMS Computer)	1
1.2	MemoTech PAD (for NMS)	1
1.3	Telecoms interface units Megabox	2
1.4	CX1000 Frame Relay Switch (for NMS)	1
1.5	Product display console including software (COROBOR)	1
2.	**Exeter Equipment (Spares) to support SADIS 1G**	
2.1	Telecoms interface units Megabox	2
2.2	NMS Spare CPU	1
2.3	MemoTech PAD (for NMS)	1
2.4	CX1000 Frame Relay Switch (for NMS)	1
3.	**Whitehill earth station (SADIS 1G uplink equipment)**	
3.1	Telecoms controller Megapac V rack assembly	2
3.2	Station interface unit (SIU)	2
3.3	8360 Modulator	2
3.4	8471 Receive Demodulators	12
3.5	8550 Modem Switch	1
3.6	140 - L band upconverter	2
3.7	X Term NMS simulator	1
3.8	Equipment Rack Assembly (Chain 1)	1
3.9	Equipment Rack Assembly (Chain 2)	1
4.	**Whitehill earth station SADIS 1G (spares)**	
4.1	8471 Receive Demodulators	1
4.2	Station interface unit (SIU)	1
4.3	Megapac V rack assembly	2
4.4	Mega PACV Frad units	2
4.5	140 - L band upconverter	1
4.6	8360 Modulator	1

4.7	8550 Modem Switch	1

5. Whitehill services (leased from ~~Astrium under contract to~~ Cable & Wireless)

5.1	70 MHz to 140 MHz converters	2
5.2	140 MHz to C band converter	2
5.3	Satellite Hub leased bandwidth	1 slot

6. Test Rig at Poynton

6.1	Enhanced (SADIS 1G) Simulator	1

7. Communications equipment for SADIS second generation (2G) trial

7.1	~~FROST port~~	~~1~~
~~7.2~~	Megapac 2003	~~4~~1
~~7.3~~	~~QPSK Modulator (Comtech EFD)~~	~~1~~
~~7.4~~7.2	QPSK De-Modulator/Receivers (Comtech EFD~~ and Radyne Comstream~~)	~~2~~1
~~7.5~~	~~Modem running Viterbi with concatenated Reed Soloman coding~~	~~1~~
~~7.6~~	~~ISDN service between Bracknell and Whitehill~~	~~1~~
~~7.7~~	~~ISDN call charges for the duration of the trial~~	

Note. — One QPSK De-modulator/Receiver (Comtech EFD) and MegaPAC located in Zurich for use in the SADIS 2G trial.

8 ISDN back-up service to Washington (NWSTG)

8.1	Mega PAC 2003 router (MP-2003)	1
8.2	Mega PAC 2003 router plus expansion (MP-2003-3-B)	1
8.3	ISDN 2e circuit	1
8.4	A/B switch	1
8.5	Interface cables	1

Note.— Hardware listed items under Section 8 are located at Whitehill.

9. SADIS FTP service ~~provision~~

9.1	HP L2000 servers with 2Gb RAM	2
9.2	18 Gb internal disk drives	2
9.3	DVD-ROM	2
9.4	Processors	2

Note.— The SADIS FTP service as of 1 July 2005.

10. Operational SADIS 2G Infrastructure

10.1	Frost port	1
10.2	MegaPAC V	3*
10.3	MegaPAC 2003	~~3~~4*
10.4	Uplink modem (Comtech EF Data SDM-300a)	3
10.5	Communications cabinet and lease	1
~~10.6~~	~~Network Management System and licenses~~	~~1~~
10.~~7~~6	MegaWatch and PC	1
10.~~8~~7	Corobor comparator software and PC	1
10.~~9~~8	~~SMS-301~~ Comtech EF Data CR100 redundancy switch	1
10.9	X10 Modules	8
10.10	SIO Modules	2
10.11	8 Mb RAM Modules	2

*Note.— * Includes one unit stored as a cold spare.*

2. PROCURED SERVICES

A. Space segment annual lease: 1.2 Mhz wide frequency band dedicated to SADIS with minimum data rates at 38.4 Kbps;

B. Annual maintenance of Met Office and Whitehill site equipment (SADIS 1G, 2G and FTP server) which is not leased; and

C. Gateway function:

i) Communication ~~link~~ circuits between Met Office and NATS infrastructure site; and
ii) System maintenance.

3. ANNUAL STAFF REQUIREMENTS

A. Met Office of the UK

i) **Help Desk**

Note.— The Help desk acts as a first point of contact for all inquiries, including those concerning the OPMET Gateway function. Complex inquiries will be passed to a relevant expert. Experts are available either on a 24-hour rota basis, or as a daytime support with a call-out capability.

Normal working hours *Grade and skill*

1.	Help desk (first point of contact)	Scientific supervisor

Note.— Outside normal working hours, the helpdesk facility is provided by the 24-hour positions below.

24-hour support	*Grade and skill*
1. Operations systems analyst	Systems analyst
2. Production systems analyst	Systems analyst
3. Networks and services engineer	Computer engineer
4. Networks and systems supervisor	Technical supervisor

Note.— The total support for SADIS is considered as 1 per cent of the total support provided by the help desk and operational support function. These functions comprise 4 X 24-hour rosters of six staff each and a three-man team providing the normal working-hour help desk.

ii) **Additional support**

Additional support	*Grade and skill*
1. Systems integration team	20 per cent of network computer engineer
2. Administrator	75 per cent of executive officer
3. International aviation management	15 per cent of manager
4. Data traffic	5 per cent communications engineer
5. Contract procurement, management and invoicing	5 per cent of senior procurement officer
6. UNIX support	10 per cent of computer engineer
7. Web-team support	10 per cent of website designer

Note.— As a result of the audit of SADIS costs required by SCRAG, the help desk costs have been re-assessed and reduced to a level of 1 per cent of the total support offered.

~~iii) **SADIS second generation (2G) trial**~~

~~*Second generation trial*~~	~~*Grade and skill*~~
~~1. Manpower~~	~~5 per cent of engineer~~
	~~5 per cent of specialist~~
~~2. Budgets~~	~~Engineering consultancy~~

~~iv) **SADIS second generation (2G) operational implementation project**~~

~~*Second generation roll-out*~~	~~*Grade and skill*~~
~~1. Manpower~~	~~15 per cent project manager~~
	~~15 per cent network computer engineer~~
	~~5 per cent engineering consultancy for systems support and maintenance~~
~~2. Budgets~~	~~Engineering consultancy~~

B. NATS infrastructure site (OPMET Gateway function)

Note.— See also note under 3. A, "Help desk", above.

24-hour support	*Grade and skill*
1. Operational staff support	50 per cent of air traffic services assistant (H24/365)
2. Engineering staff support	10 per cent of systems engineer
3. SADIS administration support	75 per cent of day support engineer
	50 per cent of air traffic services assistant

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