SADIS COST RECOVERY ADMINISTRATIVE GROUP (SCRAG)

FIFTH MEETING

(Paris, 8 and 9 November 2004)

Agenda Item 5: Amendment to Annex II, SADIS Inventory, to the Agreement on the Sharing of Costs of the Satellite Distribution System relating to Air Navigation

AMENDMENT TO ANNEX II, SADIS INVENTORY, TO THE SADIS AGREEMENT

(Presented by the Secretariat)

REFERENCES

SADIS Agreement
SCRAG/5-WP/3
SADISOPSG/9 Executive Summary

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1.   Introduction

1.1   This paper presents a draft amendment to Annex II, SADIS Inventory, to the SADIS Agreement as a result of conclusions of the SADISOPSG, at its Ninth Meeting (SADISOPSG/9, Dakar 1-4 June 2004).

2.   Discussion

2.1   The SADISOPSG reviewed the SADIS inventory and agreed upon some minor amendments to ensure that it would continue to meet the approved operational requirements. The amendments take account of the implementation of the SADIS FTP service as of 1 July 2005.

(9 pages)

2.2   The **Attachment** presents the revised text of Annex II, SADIS inventory, to the SADIS Agreement. Additions and deletions to the actual text of Annex II appear in outline and strikeout formats.

2.3   The proposed amendments have received the consent of the United Kingdom as the SADIS provider, in accordance with Article XVII, paragraph 5 of the SADIS Agreement.

3.   **Action by the Group**

3.1   The Group is invited to review the proposed amendments to Annex II, SADIS inventory, to the SADIS Agreement.

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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 and as listed (in part) in the ICAO ESCRAG/7 Meeting Report.

1.   EQUIPMENT

A. Hub infrastructure and communications circuits

The hub infrastructure connection to the MET Office message switch (TROPICS FROST) consists of a number of units developed in conjunction with Astrium and other suppliers. These are installed either at Bracknell Exeter or at the uplink site at Whitehills, Oxfordshire, UK. The components of the original inventory changed when the Two-Way enhancement project was fully implemented.

i)   **Solely procured for SADIS**

 a)   2 two-way enhanced VSATs for enhanced two-way capability;

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

ii)   **Principally procured for SADIS**

 a)   At the Met Office

  1)   Product display console, including software

 b)   Communications between Whitehills 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 (Whitehills)

  1)   Units forming part of a totally integrated rack structure, with back-up, referred to as Chain A and Chain B (see the list at Sections 4 and 5); and

  2)   Units and services leased from Astrium under contract to Cable and Wireless Communications Ltd.:

   ⸻ 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

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

     e)   Communication link (SVC) between SADIS Gateway and Met Office in support of SADIS 2G service.

iii)   **Not procured principally for SADIS**

     a)   Message switch (FROST): Total investment £~~1.5~~ 1.1M of which ~~1.76~~ 1.33 per cent is attributable to SADIS usage: switching data to operational (1G) broadcast service;

     b)   Message switch (FROST): Total investment £1.1M of which 1.04 per cent is attributable to SADIS FTP usage: switching data to operational FTP service;

     c)   Message switch (FROST): Total investment £1.1M of which 1.33 per cent is attributable to SADIS usage: switching data to 2G service;

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

     ~~b)~~ e)   Message switch (CoreMet System).

     ~~c)   Communication link (SVC) between SADIS Gateway and Met Office.~~

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

B. ISCS data back-up system

ISCS VSAT system, including receiver, cables, break unit and X25 frame relay switch.

Note.— The equipment, including leases, listed above ~~under A and B~~, are being capitalized over the SADIS contract period.

~~**SADIS TWO-WAY DEVELOPMENT**~~
~~**INVENTORY OF DELIVERABLE EQUIPMENT**~~

C. Hub equipment and services located at Exeter and Whitehill

Item	*Description*	*Quantity*

1.   ~~**Bracknell**~~ **Exeter Equipment**

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. ~~Bracknell~~ Exeter **Equipment (Spares)**

2.1	Telecoms interface units Megabox	2
2.2	NMS Spare CPU	
2.3	MemoTech PAD (for NMS)	1 *
2.4	CX1000 Frame Relay Switch (for NMS)	1

~~**3.** **Communication link Whitehill / Bracknell**~~

~~3.1 Fibre optic 64 Kbps circuits — 2 *~~

4 3. **Whitehill earth station (uplink equipment)**

4 3.1	Telecoms controller Megapac V rack assembly	2
4 3.2	Station interface unit (SIU)	2
4 3.3	8360 Modulator	2 *
4 3.4	8471 Receive Demodulators	12
4 3.5	8550 Modem Switch	1 *
4 3.6	140 - L band upconverter	2
4 3.7	X Term NMS simulator	1
4 3.8	Equipment Rack Assembly (Chain 1)	1 *
4 3.9	Equipment Rack Assembly (Chain 2)	1

5 4. **Whitehill earth station (spares)**

5 4.1	8471 Receive Demodulators	1
5 4.2	Station interface unit (SIU)	1
5 4.3	Megapac V rack assembly	2
5 4.4	Mega PACV Frad units	2
5 4.5	140 - L band upconverter	1
5 4.6	8360 Modulator	1
5 4.7	8550 Modem Switch	1

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

6 5.1	70 MHz to 140 MHz converters	2 *
6 5.2	140 MHz to C band converter	2 *
6 5.3	Satellite Hub leased bandwidth	1 slot *

~~**7.** **TWO-WAY VSAT Systems (2 in number)**~~

~~7.1 Channel master 2.4 metre type approved antenna — 2~~
~~7.2 5 watt C Band Outdoor unit assembly — 2~~
~~7.3 Low noise block downconverter — 2~~
~~7.4 RF Integration kit — 2~~
~~7.5 Indoor unit rack assembly — 2~~
~~7.6 Station interface unit (SIU) — 2~~
~~7.7 8471 Receive Demodulators — 2~~
~~7.8 Telecoms interface units Megabox — 2~~
~~7.9 8371 Modulator — 2~~
~~7.10 Tool kit — 2~~
~~7.11 Cross-site cables set — 2~~

8 6.   Test Rig at Poynton

8 6.1   Enhanced (SADIS 1G) Simulator   1

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

9 7.1   FROST or TROPICS port   1
9 7.2   Megapac   1 4
9 7.3   QPSK Modulator (Comtech EFD)   1
9 7.4   QPSK De-Modulator/Receivers (Comtech EFD and Radyne Comstream)   2
9 7.5   Modem running Viterbi or Turbo coding with concatenated
         Reed Soloman coding   1
9 7.6   ISDN service between Bracknell and Whitehill   1
9 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*
10.4   Uplink modem   3
10.5   Communications cabinet and lease   1
10.6   Network Management System and licenses   1
10.7   MegaWatch and PC   1
10.8   Corobor comparator software and PC   1
10.9   SMS-301 Switch   1

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

(*) Denotes equipment reused from original broadcast system.

2. PROCURED SERVICES

A.   Space segment annual lease: ~~900 MHz radio~~ 1.2 Mhz wide frequency band dedicated to SADIS with data rates at 38.4 Kbps ~~for the one-way channel and 19.2 Kbps for the two-way channel~~;

B.   Annual maintenance of Met Office and Whitehill~~s~~ site equipment which is not leased; and

C.   Gateway function:

      i)   Communication link 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. ~~Help desk (first point of contact)~~	~~Scientific supervisor~~
2. ~~Operational supervisor~~	~~Technical meteorologist~~
3. ~~Systems supervisor~~	~~Computer engineer~~
4. ~~HQ maintenance support~~	~~Telecommunication technical officer~~
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 ~~10%~~ 1 per cent of the total support ~~offered by the four posts~~ provided by the help desk and operational support function. These ~~four posts are directly involved with SADIS operations and form part of a total roster of eight different skills and 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	~~2% of engineer~~
	20~~%~~ per cent of network computer engineer
2. Administrator	~~55%~~ 75 per cent of executive officer
	~~70% of support specialist and meteorologist (providing support to ICAO Regions, SADIS users and SADIS User Guide)~~
3. International aviation management	15 per cent of manager
4. Data traffic	5 per cent communications engineer

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.

~~Development & enhanced 2-Way Field Trial Support and other projects~~

~~Manpower~~	~~10% of engineer~~
	~~10% of data traffic manager~~
~~Budgets~~	~~Travel/Expenses (Consultants fees etc.)~~

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 ~~(providing 24 hours x 7 days cover)~~ (H24/365)
2. Engineering staff support	~~20%~~ 10 per cent of systems engineer
3. SADIS administration support	75 per cent of day support engineer 50% per cent of ~~administrative~~ air traffic services assistant ~~(working 40 hour week)~~

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