



**WORKING PAPER**

**SATELLITE DISTRIBUTION SYSTEM OPERATIONS GROUP (SADISOPSG)**

**THIRTEENTH MEETING**

**Dakar, Senegal, 27 to 29 May 2008**

**Agenda Item 4: Operation of the SADIS**

**4.4: SADIS inventory**

**AMENDMENTS TO THE SADIS INVENTORY**

(Presented by SADIS Provider State)

**SUMMARY**

This paper presents editorial changes and updates to the SADIS inventory proposed by the SADISOPSG for review and endorsement by the group.

**1. INTRODUCTION**

1.1 An updated SADIS inventory is provided in the appendix to this paper for review by the SADISOPSG.

**2. DISCUSSION**

2.1 It may be noted that the updated inventory contains no substantial changes to the current inventory endorsed by the SADISOPSG/12 Meeting.

2.2 The group is invited to review the updated inventory in the appendix to this paper and endorse the changes as suggested. In this context, the group is invited to formulate the following conclusion:

**Conclusion 13/... — SADIS Inventory 2008-2009**

That the Chairman of the SADISOPSG be invited to forward the updated SADIS inventory given in Appendix ...<sup>1</sup> to this report to the Chairman of SCRAG.

**3. ACTION BY THE SADISOPSG**

3.1 The SADISOPSG is invited to:

- a) note the information in this paper; and
- b) decide on the draft conclusion proposed for the group's consideration.

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<sup>1</sup> The inventory is at the appendix to this working paper.

## **APPENDIX**

### **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 Exeter and Whitehill 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 1C)

##### **ii) Principally procured for SADIS**

###### **a) At the Met Office**

See section 1C for itemised components

###### **b) communications between Whitehill and Met Office**

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

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

###### **c) 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 under sections 1C);

- 2) units and services leased from Cable and Wireless Communications Ltd. to support SADIS 1G and 2G services:
  - i) 1 (70 to 140 MHz) convertor
  - ii) use of 1 (140 to C band) convertor
  - iii) 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 sections 1C)
- d) communication link (SVC) between SADIS Gateway and Met Office in support of SADIS 1G service; and
- e) dual contingent communication links (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, £1.21.33M<sup>2</sup> of which 2.472.45 per cent is attributable to SADIS usage: switching data to operational (1G) broadcast service and to 1G monitoring system — Corobor Comparitor.
- b) Message switch (FROST): Total investment, £1.21.33M<sup>2</sup> of which 0.771.28 per cent is attributable to SADIS FTP service usage: switching data to operational FTP service;
- c) Message switch (FROST): Total investment, £1.21.33M<sup>2</sup> of which 0.80.58 per cent is attributable to SADIS usage: switching data to operational (2G) broadcast service and to 2G monitoring system (Corobor Comparitor);

*Note. — The percentage attributable to the SADIS FTP service has increased, in part, due to the provision of the gridded icing/turbulence/CB data on SADIS FTP, and the provision of a contingent FTP feed to supply GRIB and BUFR data during a SADIS FTP service interruption in October 2007*

- 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 the CoreMet System are exclusively for the support of the SADIS gateway function.*

<sup>2</sup> budgeted cost for providing FROST service during the fiscal year 2007~~8~~/2008~~9~~.

**B. ~~ISCS~~ SADIS data back-up system**

ISCS VSAT receiving system, including TCP/IP receiver and cables, on SADIS Provider (UK Met Office) premises.

*Note 1. — This hardware is not currently used in an operational environment*

*Note 2. —: The SADIS Gateway (UK NATS) continues to procure an ISCS VSAT receiving system, including ISDN connection to Whitehill, to provide SADIS data backup.*

**C. Hub equipment and services located at Exeter and Whitehill**

<i>Item</i>	<i>Description</i>	<i>Quantity</i>
<b>1.</b>	<b>Exeter Equipment to support SADIS 1G</b>	
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
1.6	Communications rack floor space in IT hall 1 and space in stores to locate spare equipment	1
<b>2.</b>	<b>Exeter Equipment (Spares) to support SADIS 1G</b>	
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
	<i>Note. — Communication links in support of SADIS 1G service are included in section 1.1 of Inventory.</i>	
<b>3.</b>	<b>Whitehill earth station (SADIS 1G uplink equipment)</b>	
	Telecoms controller Megapac V rack assembly	
3.1	Station interface unit (SIU)	2
3.2	8360 Modulator	2
3.3	8471 Receive Demodulators	2
3.4	8550 Modem Switch	12
3.5	140 - L band upconverter	1
3.6	X Term NMS simulator	2
3.7	Equipment Rack Assembly (Chain 1)	1
3.8	Equipment Rack Assembly (Chain 2)	1
3.9	Communications rack floor space for two communications	1
3.10	racks	2

4.	<b>Whitehill earth station SADIS 1G (spares)</b>	
4.1	8471 Receive Demodulators	1
4.2	Station interface unit (SIU)	1
4.3	MegaPAC V rack assembly	2
4.4	MegaPAC V Frad units	2
4.5	140 - L band upconverter	1
4.6	8360 Modulator	1
4.7	8550 Modem Switch	1
5.	<b>Whitehill services (leased from Cable &amp; Wireless)</b>	
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.	<b>Test Rig at Poynton</b>	
6.1	Enhanced (SADIS 1G) Simulator	1
7.	<b>ISDN back-up service to Washington (NWSG)</b>	
7.1	MegaPAC 2003 router (MP-2003)	1
7.2	MegaPAC 2003 router plus expansion (MP-2003-3-B)	1
7.3	ISDN 2e circuit	1
7.4	A/B switch	1
7.5	Interface cables	1
	<i>Note.— Hardware listed items under Section 7 are located at Whitehill.</i>	
8.	<b>SADIS FTP Service</b>	
8.1	HP L2000 servers with 2Gb RAM	2
8.2	18Gb internal disk drives	2
8.3	DVD-ROM	2
8.4	Processors	2
8.5	Licenses, misc. support and maintenance costs	1

**9. Operational SADIS 2G Infrastructure**

9.1	FROST port	1
9.2	MegaPAC V System Dual PSU	3*
9.3	MegaPAC 2003 (Exeter)	3*
9.4	Uplink modem (Comtech EF Data SDM-300a)	3*
9.5	Communications cabinet and lease	1
9.6	MegaWatch including Enterprise Reports, and PC	1
9.7	Corobor comparator software and PC	1
9.8	XIO Modules	12**
9.9	SIO Modules	3*
9.10	8Mb RAM Modules	3*
9.11	Communications rack floor space at Exeter in IT hall 1 and IT hall 2, and at Whitehill	3
9.12	Space in stores at Exeter to locate spare hardware	1
9.13	VadEGDE 4202 – 1U	2
9.14	WAN module	2
9.15	Comtech EF Data SMS 301 – redundancy switch	2*
9.16	Interface cabling	15

*\*Note 1.— Includes one unit/module stored as a cold spare.*

*\*\*Note 2. — Includes four modules stored as cold spares.*

**2. PROCURED SERVICES**

- A. Space segment annual lease: 4-21.5MHz wide frequency band of which 57% is utilised dedicated to support SADIS 1G and 2G, with minimum data rates at 38.4 Kbps for both services;
- B. Annual maintenance of Met Office Exeter and Whitehill uplink site equipment (1G, 2G and SADIS FTP server); and
- C. Gateway function:
  - i) communication circuits between Met Office and NATS infrastructure site; and
  - ii) system maintenance.

**3. ANNUAL STAFF REQUIREMENTS****A. United Kingdom Met Office****i) Service Desk**

*Note.— The Service 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 limited on-call capability.*

*Normal working hours*

*Skill*

1. Service Desk (first point of contact)

Scientific supervisor

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

*24-hour support*

*Skill*

1. Operations Systems Analyst (OSA)
2. ~~Networks and services engineer (NSE)~~  
Technical Team Leader (TTL)

Systems analyst

3. Networks and Systems Supervisor (NSS)

Computer engineer  
Technical supervisor

4. ~~Nowcasting and Service Continuity Manager (NSCM)~~

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Operations Service Delivery (OSD) Service Assurance Scientist

*Normal working hours support*

*Skill*

1. Change and problem manager (CPM)
2. Additional Service Desk operator

Systems analyst  
Systems analyst

*Note.— The total support for SADIS is considered as 1 percent of the total support provided by the Service Desk and operational support function. These functions comprise 4 \* 24-hour rosters of six staff each, an additional three-man team (CPM), and one further 5-roster team providing further (normal-working-hours) Service Desk support.*

**ii) Additional support**

*Additional support*

*Skill*

- |  |  |
|--|--|
| 1. Systems integration team            | 30 per cent of network computer engineer |
| 2. Administrator                       | 75 per cent of executive office          |
| 3. International aviation management   | 15 per cent of manager                   |
| 4. Data traffic                        | 5 per cent communications engineer       |
| 5. Contract Procurement and Management | 5 per cent of senior procurement officer |
| 6. UNIX support                        | 10 per cent of computer engineer         |
| 7. Web team support                    | 10 per cent of web site designer         |

*Note.— Support by the UNIX Team of the SADIS FTP Service will incur some additional costs in excess of simple human resources. These costs are applied to all internet facing services and primarily relate to costs associated with ensuring high levels of IT security.*

**B. NATS infrastructure site – CACC (OPMET Gateway function)**

*Note.— The CACC provides the OPMET Gateway function, which is provided from a single operational site, but with full capability at an alternative site. Staff are available either on a 24-hour basis, or as a daytime support with on-call capability. The staff is made up of 6 watches of 1 ATSA4 (air traffic*



*services assistant) and 1 ATSA3 each (operations), 1 ATCE4 (air traffic control engineer) (engineering watchkeeping) and 3 ATCE4 (engineering day support).*

*24 hour support*

*Skill*

- |                              |                                 |
|------------------------------|---------------------------------|
| 1. Operational staff support | 10 per cent of ATSA4            |
|                              | 10 per cent of ATSA3            |
| 2. Engineering staff support | 10 per cent of systems engineer |

*Day Support*

- |                                    |  |
|------------------------------------|--|
| 3. SADIS administration support    | 40 per cent of ATSA-ATSC T & SC        |
| 4. Engineering (including on-call) | 7.510 per cent of 75 per cent of ATCE4 |

### C. Bought-in Services

Additional support and maintenance agreements with third parties are in-place to provide third line support of the SADIS 1G and 2G services.

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