

SADIS COST RECOVERY ADMINISTRATIVE GROUP
TENTH MEETING

(Paris, November 6 2009)

Review of Additional SADIS Costs

(presented by the United Kingdom)

References

SADIS Agreement

SCRAG Reports 8/9

SADISOPSG Reports 13/14

1. INTRODUCTION

At the SCRAG/9 meeting the Group noted that as agreed by the SADISOPSG/13, additional costs arising from the development of SADIS were included in the estimates for 2009. These are:

- a trial of compressed GRIB 2-coded WAFS forecast on SADIS 2G (estimated cost of £30 000 in 2009);
- implementation of the SADIS FTP enhancements in two phases; phase 1 would be of little impact to the SADIS users and would consist of the completion of the implementation of a SADIS FTP enhanced service by 31 January 2009 (estimated cost of less than £5 000);
and
- decommissioning of SADIS 1G hub equipment at Exeter and Whitehill (estimated cost of £4 510).

The SCRAG also noted the substantial increase to the estimated costs for 2009 and future years. It accepted the new costs agreed by the SADISOPSG/13 indicated in paragraph 4.3 but it asked for further information on the following additional costs:

- UK MET Office costs:

- Service desk equipment costs (£35 000)
- Serial communications costs and maintenance (£24 000)
- Help desk-technical team leader (£15 000)
- Help desk-network systems supervisor (£20 000)
- CIDA and infrastructure engineer (£12 500)

- NATS Gateway Costs:

- Air traffic services assistant (increase of £201 646)

The explanation provided by the service Provider is that the UK policies and protocols require making due allowance for full resource costs, overheads, finance charges and other costs not previously included.

The SCRAG agreed with the principle that the service Provider be able to charge the full costs of the services but considering the substantial increase in the costs and the need to receive comprehensive additional information on these, it agreed to apply only 80% of the 2009 estimated costs for the purpose of the calculation of the assessments in 2009. It agreed however that the 2009 actual costs will be chargeable on the basis of the costs determined after proper review by the SADISOPSG and the SCRAG and that the difference will be charged in the adjustment of the 2009 actual costs when calculating the assessments for 2011.

2. DISCUSSION

The SADIS Provider State produced WP/20 for consideration by the SADISOPSG/13 meeting. A copy of the WP is provided at the Appendix.

The SADISOPSG noted with some concern the increases in human resources included in the SADIS Inventory, which had led to substantial additional costs to be allocated to the SADIS programme; it did, however, realize that such increases were the result of an omission in the inventory since a number of years. The group noted that the SCRAG/9 Meeting while concurring with the principle that the SADIS Provider State be able to charge the *full* costs related to the services provided, had agreed that only 80 per cent of the 2009 estimated costs should be applied in the calculation of the assessments for 2009 and that the difference would be charged in the adjustment of the 2009 actual costs (when calculating the assessments for 2011). The SCRAG had suggested that the SADISOPSG should assess the need for services corresponding to the additional costs. Accordingly, the group reviewed the description of the additional costs and concurred that they were in accordance with current and future service level requirements for the SADIS service.

In this regard, the SADISOPSG/13 meeting formulated the following decision and conclusion:

Decision 14/6 — Assessment of additional SADIS costs

That, the additional costs proposed by the SADIS Provider State are in accordance with current and future service level requirements for the SADIS service.

Conclusion 14/7 — Review of additional SADIS costs

That, the Chairman of the SADISOPSG be invited to forward the background information related to the additional SADIS costs given in Appendix E to this report, together with the statement that the services outlined therein are in accordance with current and future service level requirements, to the Chairman of the SCRAG.

3. ACTION

The SCRAG/10 is invited to note the information contained in this paper and the above Decision and Conclusion formulated by the SADISOPSG/13 meeting.

Appendix



International Civil Aviation Organization

SADISOPSG/14-
WP/20
14/4/09

WORKING PAPER

SATELLITE DISTRIBUTION SYSTEM OPERATIONS GROUP (SADISOPSG)

FOURTEENTH MEETING

Bangkok, Thailand, 15 to 17 July 2009

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

ANALYSIS OF KEY SADIS SERVICE ELEMENTS AND THEIR RELATED COSTS

(Presented by SADIS Provider State)

SUMMARY

This working paper discusses the key SADIS service elements, as specified in Annex I to the SADIS Agreement and highlights additional costs that were presented to SCRAG/9 as required to fulfil the service but which had not been previously accounted for. Furthermore, in light of discussion at SCRAG/9 and follow-up discussion between the Chairman of SCRAG and the Chairman of SADIS Operations Group, issues relating to future service provision are discussed that may warrant further study.

1. INTRODUCTION

1.1 There are some 150 organisations in over 90 States that receive SADIS directly and many others that utilise the meteorological information delivered via SADIS. The SADIS Agreement places obligations on the SADIS Provider State to provide, operate and maintain the SADIS as approved by the Council and do so in conformity with all relevant ICAO standards and recommended practices. The SADIS service is defined in Annex I to the SADIS Agreement:

1. Broadcast service

- a) distribution of WAFS upper wind/temperature forecasts in GRIB code (including scheduled repeat of whole data set);
- b) distribution of WAFS upper wind/temperature forecasts in T4 facsimile chart form;
- c) distribution of WAFS SIGWX forecasts in T4 facsimile chart form;
- d) distribution of WAFS SIGWX forecasts in numerical code form as determined by ICAO;
- e) distribution of OPMET information in alphanumeric format (METARs, TAFs, SIGMET, special AIREPs, volcanic ash and tropical cyclone advisories) from

- those regions whose OPMET information is needed to satisfy approved requirements in the regions served by SADIS; and
- f) distribution of amendments to the foregoing, as necessary, and responses to requests for repeat of data as determined by the SADISOPSG.

2. Collection service

- a) collection of relevant OPMET information by the SADIS Gateway, including the Two-Way facility, from States in accordance with approved requirements stated by PIRGs and actioned by SADISOPSG; and
- b) monitoring and validation of data received at the SADIS Gateway, including the Two-Way, to the required standards, for the provision of real-time scheduled reports and for off-line quality control analysis.**

3. Back-up service

Reception of US ISCS broadcasts for back-up purposes.

4. User support service

- a) 24-hour help line/faults desk; and
- b) dissemination of amendments to the SADIS User Guide via the SADIS broadcast (and by customary hard copy).

1.2 It is noted that the service specification given in Annex I is now a little out of date; in particular it does not take into account the developments in regards to the SADIS FTP Service infrastructure. Revised text is suggested for the Group's consideration at Appendix A. In this context, the group is invited to formulate the following conclusion:

Conclusion 14/xx— Update of Annex I to the SADIS Agreement

That, the Secretariat be invited to forward the updated Annex I to the Agreement on the Sharing of Costs of the Satellite Distribution System for Information relating to air navigation, as proposed in Appendix A, to the Secretary of SCRAG.

1.3 The SADIS Cost Recovery and Administrative Group/9 (SCRAG) meeting, held in London, UK in October 2008, expressed concern over the substantial increase in the estimated costs of the SADIS service for 2009 and beyond, as compared to 2008. As a result of these concerns, SCRAG determined that only 80% of the 2009 estimated costs could be applied for the purpose of the calculation of the assessments in 2009. SCRAG provide assurance that actual costs for 2009 would be recoverable using the normal adjustment mechanism two years in arrears but the meeting requested further information on these additional costs be made available for review by the SADISOPSG and the SCRAG. Following the meeting, on 10 November 2008, the Chairman of SCRAG wrote to the Chairman of the SADIS Operations Group requesting that the costs be reviewed.

1.4 As part of a general review of the service, the SADIS Provider State has considered the key elements that make up the SADIS service and discusses in this paper why these elements, and their related costs, are regarded as essential. It also explores potential strategic changes to the SADIS service, in order to improve the cost effectiveness of service provision. The SADIS Provider State invites the SADIS Technological Developments Team to review these issues and to consider generating its own recommendation to the SADIS Operations Group.

2. TECHNICAL ISSUES RELATED TO CURRENT SERVICE PROVISION

2.1 The SADIS 1st Generation broadcast was terminated on 5 January 2009, following operational running of the SADIS 2G broadcast for around 3 years. However, owing to the rate of development within the telecommunications industry, a number of hardware elements that are used as part of the SADIS 2G are approaching the point at which they are considered to be nearing the end of their useful life and need to be replaced or upgraded. If this is not done, in the first instance support and maintenance costs become significantly more expensive (and potentially uneconomical) but ultimately a failure of a critical component could interrupt delivery of the SADIS service and leave the Provider State in breach of its obligations under the SADIS Agreement. Therefore, new equipment as well as additional ongoing support and maintenance costs will be required in the short-term to ensure the ongoing capability of the SADIS service. This issue is more fully addressed in a separate Working Paper, however the key point to note is that there is likely to ongoing ad hoc requirements for equipment replacement as they reach the end of their useful lives.

2.2 The SADIS Cost Recovery and Administrative Group/9 meeting, held in London in October 2008, noted that £300K of previously un-recovered costs were proposed to being charged to the SADIS cost recovery scheme for the first time in 2009 by both Met Office and NATS. In simple terms, the UK Met Office operates the SADIS broadcast and FTP service; NATS operates the SADIS Gateway.

2.3 The Group noted that SADISOPSG/13 had agreed that certain additional costs arising from the development of SADIS were appropriate to be included in the estimates for 2009. These were:

- Compressed GRIB2 trial broadcast over SADIS 2G (estimated £30 000);
- Phase 1 of SADIS FTP enhancements (estimated £5 000);
- Decommissioning of SADIS 1G equipment (estimated £4 510).

However SCRAG queried the inclusion of the following additional costs:

UK Met Office costs:

- UK Met Office service desk equipment costs (£35 000)
- UK Met Office serial communications costs and maintenance (£24 000)
- UK Met Office helpdesk technical team leader (£15 000)
- UK Met Office helpdesk network systems supervisor (£20 000)
- CIDA and infrastructure engineer (£12 500)

NATS Gateway Costs:

- SADIS Gateway staffing costs (increase of £201 646)

2.4 In both cases these additional costs arose from ongoing analysis of the Met Office and NATS resource allocation and cost base and the identification of elements that are utilised as part of the SADIS service but, until 2009, for a number of reasons had not been allocated to SADIS previously.

2.5 The Met Office uses a number of facilities and systems that serve many different sectors and customers. The Met Office Service Desk is one such function, acting as the focal point for all technical enquiries to the Met Office. The Met Office uses Remedy IT Service Management Suite, a commercial off the shelf system supplied by BMC, to process and track all enquiries, faults and system changes. This forms part of the Met Office's Quality Management System. It was identified that previously no allocation of costs had been made to SADIS, when in fact there are a significant number of calls logged relating to SADIS and its associated data, for which a share of the costs are appropriate. It remains an essential part of the SADIS and Met Office system.

2.6 It was also identified on the Met Office Service Desk that a number of issues required the attention of the Service Desk shift managers, the Technical Team Leader and Network Systems Supervisors; the share allocated to SADIS is 4% and 7% respectively. The cost reflects the requirement to have H24 rosters of these two posts and includes all related staff costs such as pay, allowances, National Insurance contributions and superannuation as well as allowances for management support and training. Without these key members of staff input, resolution of technical issues would be delayed; this would particularly affect those faults and interruptions that occur outside of normal working hours. In respect of the Provider State's obligations under ICAO Annex 10 in terms of service availability, such input is essential.

2.7 Communications expertise lies at the very heart of the SADIS service. It should be appreciated that there is a significant amount of telecommunication links and other hardware that is required to route the information from the two WAFCs, VAACs etc. to SADIS, for which SADIS has been allocated a proportion of the costs of these links and associated maintenance. The accredited engineers, who are part of the Met Office Coordinated Design Installation Authority (CIDA) team, ensure that such links are installed and maintained in accordance with the standards required by UK Government.

2.8 NATS' audit during 2008 examined the resources that were being utilised at the Gateway function. The audit established that the total amount of time that NATS staff were conducting SADIS work was 630 staff days; this was far in excess of what had been allocated to SADIS previously. Again the cost allocated reflects the requirement to have H24 rosters and includes all related staff costs such as pay, allowances, National Insurance contributions and superannuation as well as allowances for management support and training.

3. TECHNICAL ISSUES RELATING TO FUTURE SERVICE PROVISION

3.1 There are a number of developments that should be taken into account when discussing the long-term future of the satellite broadcast:

- The accelerated development of the public internet infrastructure and the forthcoming introduction of ICAO Recommended Practices for the dissemination of meteorological information by the internet
- Global introduction of the ATN Aeronautical Message Handling System (AMHS)
- Enhancements to the bandwidth and connections to the Global Telecommunication System (GTS).

3.2 Additionally, the introduction of gridded significant weather data, that is envisaged to replace the current SIGWX forecasts charts and digital representation of the SIGWX elements, will place significant bandwidth issues on the current broadcast. Even if, following testing, it is considered that compressed gridded SIGWX data can be carried over the satellite broadcast, the continued requirement to distribute global OPMET along with the gridded SIGWX and other meteorological data may require the current broadcast data rate to be reviewed and increased. As a result, it is highly likely that a third generation satellite broadcast system will be required with potential significant upgrade cost implications for users.

3.3 It is recognised that terrestrial links in some States remain below that acceptable for the effective distribution of meteorological information. However the proliferation of communication providers offering internet connections via satellite is expected to continue and the resulting cost per unit of data (or equivalent) to decrease. This may offer an alternative option for those States who wish to continue to receive meteorological data via a satellite delivery mechanism. It is also noted that there are a number of other agencies that are placing WAFS data on their own satellite broadcasts (e.g. RETIM, EUMETCAST), with footprints that overlap the area covered by SADIS.

3.4 Therefore the TDT may wish to give some consideration to future requirements for the SADIS satellite broadcast beyond the time that BUFR encoded SIGWX and GRIB1 encoded global gridded forecast data production and transmission requirements cease under ICAO Annex 3 provisions.

3.5 A requirement for the SADIS Gateway functionality was envisaged from the earliest days of the introduction of the SADIS service. It was considered that a system of automatic processing would validate the OPMET or WAFS messages to ensure that high quality OPMET data was provided to States. The SADIS Operations Group/4 meeting in 1999 noted that possible alternatives to automatic processing were either to let the data pass through the system unchanged or to accept an unnecessarily high level of operator action which would impact on the costs of operating the SADIS Gateway.

3.6 However, the recently updated 3rd edition of the SADIS Operations Gateway Handbook provides procedures on how validation takes place, a number of which require manual intervention. For example:

- Bulletins that fail to correspond to the format shall be rejected to an operator position for inspection.
- Bulletins containing any reports that fail against the validation rules shall be rejected to the error queue for inspection and, if appropriate, repair.
- The Gateway will ensure that all bulletins have an associated period that specifies how long in advance of their data time they can be received. Such a period to be defined according to the AHL. Any entities received earlier than this defined time will be rejected to a dedicated holding queue for further processing.
- Only bulletins with AHLs that correspond to an entry in the agreed routing directory will be switched. Those bulletins that do not correspond will be passed to a dedicated holding queue for future processing.
- The Gateway will carry out an automatic syntactic analysis of WMO messages and reject any with detected errors to a dedicated holding queue for further processing. Such checks relate to the message envelope and structure rather than the encoded contents.

Note. — Gateway operators are not authorised to modify actual meteorological data, e.g. visibility, QNHs etc., but only items such as bulletin headers, location indicators and observation times.

3.7 Since the concept of the SADIS Gateway was first developed, there have been a number of developments to improve the compliance of meteorological information. The ICAO Universal Safety Oversight Audit Programme has been extended to include all ICAO Annexes, including Annex 3 and a sample of OPMET is assessed for compliance. Additionally the Planning and Implementation Regional Groups (PIRGs) have established a deficiencies register, whereby individual States can be identified publicly as non-compliant in particular fields. Using these two mechanisms it is expected over time that this will reduce the amount of non-compliant OPMET.

3.8 Additionally, there remains an issue that there could be two versions of the same OPMET bulletin i.e. one disseminated by the State and another returned, corrected, over the satellite broadcast. As noted above, this would only apply to information relating to bulletin headers, location indicators and observation times etc. and not actual meteorological data. At present the OPMET data on the SADIS FTP site is non-quality controlled but there are mature development plans to feed the SADIS FTP with OPMET data from the SADIS Gateway.

3.9 The introduction of the Regional OPMET Data EXchange (RODEX) affords the opportunity to review the allocation of costs of OPMET collection, validation, repair, distribution and engineering, since there will be overlap between work carried out for SADIS and work carried out under the European RODEX scheme. This will be looked at in greater detail in the next few months, with further information available at the European Met Group and Coordination Group (sub-groups of the European Air Navigation Planning Group) as well as SCRAG.

3.10 The Technical Developments Team may wish to consider the value that the Gateway delivers in helping to ensure that SADIS disseminates an authoritative source of information; OPMET is quality controlled prior to dissemination on the broadcast and centrally reduces the amount of effort (and possible confusion and delay) for individual States, airlines and flight planning organisations over trying to obtain data that would otherwise be missing due to, for example, the wrong bulletin header or time being used.

4. CONCLUSION

4.1 The SADIS Provider State recognises that the recent increases in allocated costs to SADIS were significant and had not been fully discussed at SADISOPSG/13 prior to inclusion in the 2009 cost base. However, the cost allocation issues were identified subsequent to the Group's meeting in May 2008. Once such issues are identified, it is incumbent on the service provider, by law, to ensure that costs are allocated to the areas in which they fall. In accordance with the request from SCRAG, more detailed explanations of the roles of personnel and systems have been provided. Such resource requirements arise from the need to deliver the high quality and reliable service that the Provider State is obliged to provide.

4.2 The current requirements for the SADIS Gateway function are well defined in the SADIS Operations Gateway Handbook. The resources that are required to support and deliver these requirements are significant but should be considered against the value that is derived from States, operators and other users not having to carry out a similar task, repeated many times over. The root of the difficulty lies with States issuing OPMET information that does not conform to ICAO Annex 3 or WMO Doc 386; progress to remove deficiencies is slow and it is unrealistic to expect that all deficiencies will be eradicated in the short term. Additionally, the introduction of RODEX will result in some overlap between work carried out for SADIS and work carried out under the European RODEX scheme, which will result in sharing of some of these costs currently allocated solely to SADIS. The full details are yet to be determined but updates will be available at MetG, COG and SCRAG/10.

4.3 All costs that are allocated to SADIS are fully audited to ensure that there is no 'double accounting' and to ensure that there are no inappropriate costs being allocated to SADIS from the Provider State's Air Navigation Service charge cost-base. The Provider State would welcome verification of this work by independent auditors, should SADIS users feel that this provides complete assurance.

4.4 The strategic future of the SADIS service needs to be considered carefully. At present the system provides a high quality, resilient service that enables the SADIS Provider State to meet its obligations under the SADIS Agreement, ICAO Annex 3 and ICAO Annex 10. However, development of the public internet infrastructure and general improvements to ICAO and WMO telecommunications networks, over time, may lead to the satellite broadcast becoming a legacy system to a small number of countries whose terrestrial telecommunications systems are unreliable or sufficiently extensive. A well thought-out strategy for determining at what point the satellite broadcast is no longer required and the associated transition arrangements are essential to ensure that States and users have sufficient time to take appropriate action. At the same time there are currently a number of resource intensive manual operations carried out by the SADIS Provider State that are required to meet the current SADIS service requirements. It may be worthwhile to look at how these activities could be modified to further automate these processes, however it should be recognised that there may be some resulting impacts on current service levels which would need to be considered further by the Group before any changes were introduced.

4.5 **Accordingly, the group is invited to formulate the following draft conclusion:**

Conclusion 14/..— Review of the SADIS service

That, the SADIS Provider State, in co-ordination with the SADIS Technical Development Team, be invited to conduct a detailed review of the SADIS service, in time for SADISOPSG/15. The review should consider alternative methods of service provision that reduce costs, including further automation of services and include an analysis of the potential impacts of such alternatives.

5. ACTION BY THE SADISOPSG

The SADISOPSG is invited to:

- (i) note the information contained in this paper; and
- (ii) decide on the two draft conclusions proposed for the group's consideration.