



**SCRAG/20 - REPORT**

**INTERNATIONAL CIVIL AVIATION ORGANIZATION**

**REPORT OF  
THE TWENTIETH MEETING OF THE  
SADIS COST RECOVERY ADMINISTRATIVE GROUP  
(SCRAG/20)**

*(Gatwick, 27 November 2019)*

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## INTRODUCTION

### Place and Duration

1. The Twentieth Meeting of the SADIS Cost Recovery Administrative Group (SCRAG) was held at the Civil Aviation Authority CAA Aviation House in Gatwick on Wednesday, 27 November 2019.

### Attendance

2. The meeting was attended by two Members from the European region, Mr. Patrick Simon and Mr. Sebastian Stolpmann. Also in attendance was Mr. Magdy Reda from IATA, the Provider State participants and an ICAO representative. The list of attendees is shown in Appendix A and the working papers issued for the meeting are listed in Appendix B.

### Officers and Secretariat

3. Mr. Patrick Simon (France), was Chairperson of the meeting. Ms. Joanna Zorbas, Joint Financing Officer, ICAO Headquarters in Montréal, served as Secretary.

### Agenda

4. The following agenda was adopted:

**Agenda Item 1:** Review of SCRAG's Terms of Reference, Composition and Working Arrangements

**Agenda Item 2:** Consideration of issues relevant to the SCRAG's work addressed by the Meteorology Panel (METP) Working Group on Meteorological Operations Group (WG-MOG)

**Agenda Item 3:** Review of actual SADIS costs and cost shares for the period 1 January to 31 December 2018

**Agenda Item 4:** Review of estimated SADIS costs and cost shares for the period 1 January to 31 December 2020 and estimated costs for the next two to five years

**Agenda Item 5:** Review of the status of SADIS payments for the current year (2019) invoices

**Agenda Item 6:** Amendments to Annexes of the SADIS Agreement

**Agenda Item 7:** Future work and arrangements for the SCRAG/21 Meeting

**Agenda Item 8:** Other business

**AGENDA ITEM 1: REVIEW OF SCRAG'S TERMS OF REFERENCE, COMPOSITION AND WORKING ARRANGEMENTS**

1.1 Mr. Patrick Simon (France), the first named Party from the European region participated in the capacity of Chairperson for the SCRAG/20 meeting.

1.2 Article VII, paragraph II of the SADIS Agreement states that the SCRAG shall be composed of one Party from each region and that regions, which in the aggregate, are responsible for more than 50 per cent of the total current assessments, shall nominate an additional Party. Only one Party from each region was required for the SCRAG/20 meeting since all the regions have a percentage of total assessments below the 50 per cent level. A second member has been nominated from the European Region by the European Air Navigation Planning Group (EANPG) as the percentage of total assessments for the region approximates and sometimes surpassed the 50 per cent level. Mr. Stolpmann (Germany) is the second named member by the EANPG.

1.3 The Group noted its Terms of Reference assigned by Article VII of the SADIS Agreement, which reads:

“The SADIS Cost Allocation and Recovery (SCAR) arrangement shall be administered by a group, the *SADIS Cost Recovery Administrative Group (SCRAG)* which shall:

- a) assess the annual cost share attributable to each Party, including reassessments arising from new Parties adhering to this Agreement; and
- b) audit the costs of the SADIS provision and any related financial activities, incurred by the Provider State and subject to cost sharing.”

1.4 The Group was informed that ICAO had received a formal notification of accession to the SADIS Agreement from 60 States. Three of these States are not presently receiving the service and four of these States are Least Developed Countries (LDCs), which are exempted from payment of SADIS cost share. The Group was also informed that 58 other States receiving the SADIS service had not yet acceded to the SADIS Agreement. Of these States, 30 are LDCs, which are exempted from payment of SADIS cost share. States that have formally acceded to the SADIS Agreement and States that have not, are listed in Appendix D.

**AGENDA ITEM 2: CONSIDERATION OF ISSUES RELEVANT TO THE SCRAG'S WORK ADDRESSED BY THE METEOROLOGY PANEL (METP) WORKING GROUP ON METEOROLOGICAL OPERATIONS GROUP (WG-MOG)**

2.1 The Group was informed of the main conclusions of the Tenth Meeting of the Meteorology Panel (METP) Working Group on Meteorological Operations Group (WG-MOG) (METP WG-MOG/10, Toulouse, France, 4 to 5 April 2019) provided by the Rapporteur of the METP WG-MOG.

2.2 In accordance with Action 10/1 of METP WG-MOG/10, the Group noted the Statement of SADIS operational efficacy received from the Rapporteur of the METP WG-MOG, relaying the information from the Group at its Tenth Meeting to the SCRAG that the operational efficacy of the SADIS had continued to be satisfactory, meeting all operational requirements since the METP WG-MOG/6 Meeting (Offenbach, Germany, 10 to 11 April 2018).

2.3 The following Actions/Decisions relating to the SADIS Service were documented in the report of the METP WG-MOG/10:

**MOG Action agreed 10/1: Annual statement of operational efficacy of SADIS 2018/2019**

That the Chair of the METP WG-MOG be invited to inform the Chair of the SCRAG that the SADIS continued to meet the operational requirements during the period 2018/2019.

*Status: Complete. This is included in Appendix A.*

**MOG Decision 10/1: 2019 SADIS Efficacy Survey**

That the web hosted SADIS Efficacy questionnaire, using the questions shown in Appendix C to this [METP WG-MOG/6] report, be used for the 2019 survey. The survey will:

- a) commence on 1 July 2019 and end on 31 December 2019;
- b) contain one additional question to ascertain whether the respondent is a primary SADIS user, or uses SADIS for back-up purposes only; and
- c) users will be notified of the survey via SADIS administrative messages, e-mail and ICAO State letter.

*Status: Survey is in progress. Notifications have been sent out.*

**MOG Action agreed 10/2: SADIS Agreement Annex I and II 2019-2020**

That the Chair of the METP WG-MOG be invited to forward the updated SADIS Agreement Annex I and II inventory given in Appendix D to this [METP WG-MOG/6] report to the Chair of SCRAG.

*Status: Complete. This is provided in WP/15 and WP/12 at SCRAG/20.*

**MOG Action agreed 10/3: Status of Implementation of SADIS**

That the Secretariat upload the updated Status of Implementation of SADIS document as shown in Appendix E to this [METP WG-MOG/6] report onto the ICAO public website (replacing the previous copy).

*Status: Complete.*

**MOG Action agreed 10/4: Trial provision of Low-level area forecasts**

That the trial provision of low-level area forecasts in graphical format on SADIS FTP be continued until 2024 unless an IWXXM equivalent is made available by WMO for Low-level area forecasts.

*Status: Continuing.*

**MOG Action agreed 10/5: OPMET data Catalogue**

That:

- a) Patrick and Matt W would provide a SN to METP/WG-MIE regarding the need for ICAO regions to adopt standard procedures for notifying changes to the OPMET data catalogue;

- b) The SADIS Provider State and DMG develop a common catalogue, including regional sections;
- c) Publish the OPMET data catalogue, as presented in Attachment C to SN/6, on the SADIS website; and
- d) Report back to the next MOG meeting with the 2020 update.

*Status: a-c complete.*

In addition, Action carried forward from METP/WG-MOG/6

#### **MOG Action 6/1: Alignment of OPMET content from SADIS and WIFS**

That, in coordination with the European OPMET Data Management Group, the SADIS and the WIFS provider states be invited to:

- a) continue efforts to align the OPMET content of SADIS and WIFS for scheduled OPMET information (METAR and TAF) and non-scheduled OPMET information (such as AIRMET and Special AIREP); and
- b) report on progress in respect of a) above to the next WG-MOG meeting.

*Status: In progress.*

#### **MOG Action agreed 10/6: SADIS gridded data file naming structure**

That the METP WG-MOG recommends the use of the naming convention, proposed in Appendix F to this [METP WG-MOG/6] report, for the WAFS gridded data sets published on SADIS FTP from November 2020 onwards.

*Status: Complete.*

#### **MOG Decision 10/2: SADIS User Guide**

That the proposed updates to the SADIS User Guide, Part 1 and Part 2, be finalized and provided to ICAO for publication on the ICAO METP website.

*Status: Complete.*

#### **MOG Action agreed 10/7: SADIS Workstation User Evaluation Guide**

That:

- a) the “SADIS Workstation User Evaluation Guide”, as contained in the Appendix to SN/11 is approved by the group;
- b) be published in the “documentation” section of SADIS FTP, as well as on the ICAO METP MOG public website; and
- c) users be informed of its publication via SADIS administrative message.

*Status: Complete.*

**MOG Action agreed 10/9: Changes to DOC 8896 – Manual of Aeronautical Meteorological Practice in relation to SADIS**

- a) the METP WG-MOG endorse the proposed updates to Doc 8896 – *Manual of Aeronautical Meteorological Practice*, as shown in Appendix H to this [METP WG-MOG/6] report; and
- b) the Secretary be tasked to amend Doc 8896 accordingly.

*Status: In progress. Changes will be incorporated into the Doc 8896 update in 2020.*

**AGENDA ITEM 3: REVIEW OF ACTUAL SADIS COSTS AND COST SHARES FOR THE PERIOD 1 JANUARY TO 31 DECEMBER 2018**

**Review of the 2018 Actual SADIS Costs**

3.1 The Group reviewed the actual costs of £ 559 231 for providing the SADIS services in the year 2018. These actual costs are detailed in Appendix F, Column “Actual 2018” and the cost share per State is presented in Column 4 of Appendix E. A summary of these costs is presented in Table 1 (A).

**TABLE 1 (A)**  
**SUMMARY OF ACTUAL SADIS COSTS**  
**FOR THE PERIOD 1 JANUARY TO 31 DECEMBER 2018**

<b>Cost Item</b>	<b>Actual Costs (UK £)</b>
UK Met Office	222 826
UK NATS SADIS Gateway	297 561
UK CAA administrative costs	4 003
Sub-total UK	524 390
ICAO support service costs	34 841
<b>TOTAL</b>	<b>559 231</b>

**Review of the 2018 Actual SADIS Cost Shares**

3.2 The Group noted that Libya did not receive SADIS services throughout 2018 and as a result, no costs related to 2018 were assumed by the State. Also, Nigeria only received and were assessed for 10 full months of services since they were disconnected during a portion of January and February. In addition, two other States were disconnected for a portion of the year; consequently, Saudi Arabia was assessed for five full months of services and Viet Nam for 11 full months.

3.3 The Group determined that the actual cost shares for the period 1 January to 31 December 2018 be borne by the States’ party to the SADIS Agreement which are not exempted because they are on the list of the Least Developed Countries (LDCs). On the basis of the number of available tonne-kilometres (ATKs) in scheduled services for 2018, in accordance with Article XI, paragraph 3, of the SADIS Agreement the cost share in percentage terms and the share in £ sterling to be borne by each State participating in the SADIS Cost Allocation and Recovery (SCAR) Arrangement are shown in Appendix E.

3.4 The Group noted the adjustment for 2018; an over-recovery of £39 539, is the difference between the 2018 actual costs and the 2018 estimated costs approved by the SCRAG/18 meeting, as indicated in Table 1 (B).

**TABLE 1 (B)**

**ADJUSTMENT OF ACTUAL SADIS COSTS TO ESTIMATED SADIS COSTS  
FOR THE PERIOD 1 JANUARY TO 31 DECEMBER 2018**

	<b>Cost Item</b>	<b>Actual Costs (UK £)</b>	<b>Reference</b>
(1)	2018 Actual Cost	559 231	Table 1 (A)
(2)	2018 Estimated Cost	598 770	SCRAG/18 Report, Table 3
(3)	Over-recovery for 2018 (to be subtracted from the amount billed in 2020)	-39 539	(1) - (2) <i>(see Appendix E, column 6 and Appendix I, column 2)</i>

The Group formulated the following Conclusion:

***SCRAG Conclusion 20/1*** —

*The actual cost shares for 2018, as shown in Appendix E to the SCRAG/20 Report for the States participating in the SCAR Arrangement are approved by the SCRAG/20 meeting, with consequential adjustments to be made by the United Kingdom in its billing of these States for 2020, in accordance with Article XI, paragraph 3, of the SADIS Agreement.*

3.5 The Group received information from the Observer from the United Kingdom on the status of payment of the cost shares of 2018 as at 25 October 2019. It was noted that a total amount of £ 691 824 was collected for 2018 (see Appendix G, page G-2). A balance of £ 592.53, which represents the sum of five States with balances owed, remains outstanding. Outstanding 2018 credits total £ 307.49, resulting in a net balance of £ 285.04, as indicated in the final column of Appendix G, page G-2.

3.6 The Group noted the information presented by the United Kingdom regarding the depreciated assets as at 31 December 2018 (see Appendix C).

3.7 The Group noted that, consistent with Conclusion 14/7, which was reached during the SCRAG/14 meeting, the small additional costs incurred in the process of obtaining payment of SADIS invoices (these include bank charges and courier costs), have been added to the administrative costs for the SADIS Provider State.

3.8 Having noted the information in Table 1 (A) and paragraphs 3.4 to 3.7 above, the Group agreed that the over-recovery of SADIS cost shares for the year 2018 amounts to £ 35 247, as shown in Table 2. The over-recovery of 2018 is the amount subject to collection for 2018 (£ 657 489), less the amounts collected for 2018 (£ 691 824).

**TABLE 2**  
**OVER-RECOVERY FOR 2018**

		<b>UK £</b>	<b>References</b>
(1)	Actual costs for 2018	559 231	Table 1 (A)
(2)	Over-recovery for 2016	98 258	SCRAG/18 Report, Table 2
(3)	Subject to collection for 2018	657 489	(1) + (2)
(4)	Collected from States for 2018 (as at 25 October 2019)	-691 824	Appendix G – page G-2 (column 3 minus column 5)
(5)	Collected from States for years prior to 2018 (as at 25 October 2019)	-912	Appendix G – page G-3 (column 3)
(6)	Over-recovery for 2018 (to be subtracted from the assessments for 2020)	-35 247	(3) + (4) + (5) (see Appendix H, column 5)

The Group formulated the following Conclusion:

**SCRAG Conclusion 20/2 —**

*An over-recovery, amounting to -£35 247 of the SADIS cost shares for the year 2018, will be taken into account in the calculation of the SADIS cost shares for the year 2020, in accordance with Article XI, paragraph 4, of the SADIS Agreement.*

**AGENDA ITEM 4: REVIEW OF ESTIMATED SADIS COSTS AND COST SHARES FOR THE PERIOD 1 JANUARY TO 31 DECEMBER 2020 AND ESTIMATED COSTS FOR THE NEXT TWO TO FIVE YEARS**

**Review of the 2020 Estimated SADIS Costs**

4.1 The Group reviewed the cost estimates for providing the SADIS services for the year 2020. It should be noted that on 6 November 2019, SADIS was moved from on-premise FTP service to being hosted on Amazon Web Services (AWS) infrastructure. This change has been incorporated into the cost structure from 2020 onwards and is detailed in Appendix F and working papers 10 and 14.

4.2 The cost estimates for 2020 are detailed in the column “Est 2020”, in Appendix F, and total £ 506 555. A summary of these costs are presented in Table 3.

**TABLE 3**  
**SUMMARY OF ESTIMATED SADIS COSTS**  
**FOR THE PERIOD 1 JANUARY TO 31 DECEMBER 2020**

<b>Cost Item</b>	<b>Estimated Costs</b> (UK £)
UK Met Office	189 960
UK NATS SADIS Gateway	270 595
UK CAA administrative costs	4 500
Sub-total UK	465 055
ICAO support services costs	41 500
<b>TOTAL</b>	<b>506 555</b>

4.3 The Group considered the over-recovery in Table 2 in the calculation of the amount to be assessed under the SADIS Agreement for 2020. The calculation of the amount to be assessed is presented in Table 4.

**TABLE 4**  
**AMOUNT TO BE ASSESSED UNDER THE SADIS AGREEMENT FOR 2020**

		UK £	References
(1)	Over-recovery for 2018	-35 247	Table 2
(2)	Estimated costs for 2020	506 555	Table 3
(3)	<b>Amount to be assessed for 2020</b>	<b>471 308</b>	(1) + (2) <i>(see Appendix H, column 6)</i>

4.4 The Group determined that the cost shares for the period 1 January to 31 December 2020, be borne by the States' party to the SADIS Agreement which are not exempted because they are on the list of the Least Developed Countries, on the basis of the number of available tonne-kilometres (ATKs) in scheduled services for 2018, in accordance with Article XI, paragraph 3, of the SADIS Agreement.

4.5 The cost share in percentage terms and the share in £ sterling, minus the share of over-recovery for 2018, attributable to each State, are shown in Appendix H. Appendix I shows the amounts to be billed to each State in 2020, corresponding to the adjustment for 2018 (Appendix E), plus the assessment for 2020 (Appendix H), less any deduction of unused credit balances or other adjustments from previous years.

**TABLE 5**  
**AMOUNT TO BE BILLED UNDER THE SADIS AGREEMENT FOR 2020**

		UK £	References
(1)	Amount to be Assessed for 2020	471 308.00	Table 4
(2)	Adjustment of Actual SADIS Costs to Estimated Costs for 2018	-39 539.00	Table 1 (B)
(3)	Deduction of Unused Credit Balances from Previous Year or Other Adjustments	-205.18	Appendix I <i>(column 4)</i>
(4)	<b>Amount to be Billed for 2020</b>	<b>431 563.82</b>	(1)+(2)+(3) <i>(see Appendix I, column 5)</i>

The Group formulated the following Conclusion:

**SCRAG Conclusion 20/3 —**

*The estimated cost shares for 2020 as shown in Appendix H to the SCRAG/20 Report for each State participating in the SCAR Arrangement are approved by the SCRAG/20 meeting for collection by the United Kingdom.*

### Cost Estimates for the Years 2021 to 2023

4.6 The Group considered the estimates provided by the United Kingdom (Appendix F) and summarized in Table 5 of providing the SADIS services for the years 2021 to 2023, as well as the estimates for the United Kingdom administrative costs and the costs of ICAO support services. It should be noted that future costs for the next generation of SADIS system that are scheduled to come into operation by November 2022, have not yet been quantified and, as a result, are not included in the estimated cost figures in Table 6.

**TABLE 6**  
**SUMMARY OF ESTIMATED SADIS COSTS**  
**FOR THE YEARS 2021, 2022 AND 2023**

Cost Item	Estimated Costs 2021 (UK £)	Estimated Costs 2022 (UK £)	Estimated Costs 2023 (UK £)
UK Met Office	199 750	204 230	196 800
UK NATS SADIS Gateway	276 245	283 145	289 945
UK CAA administrative costs	4 500	4 500	5 000
Sub-total UK	480 495	491 875	491 745
ICAO support services costs	42 500	43 500	44 500
<b>TOTAL</b>	<b>522 995</b>	<b>535 375</b>	<b>536 245</b>

4.7 The Group concluded that a future policy should be established, through an amendment to Annex I to the Agreement, to address Amazon Web Service specific operational issues (these include excessive downloads, monitoring policies and best practice guidance). The technical details are to be determined by the METP WG-MOG.

#### **AGENDA ITEM 5: REVIEW OF THE STATUS OF SADIS PAYMENTS FOR THE CURRENT YEAR (2019) INVOICES**

5.1 The Group reviewed WP/13 on the status of payment for the current (2019) year, presented by the United Kingdom.

5.2 The Group formulated the following Conclusion:

#### ***SCRAG Conclusion 20/4*** —

*The Group agreed that the SADIS Provider State be invited to withdraw access to the secure SADIS FTP for those States who, as at 1200 UTC on 22 January 2020, have cumulative outstanding payments over GBP 100 due for any invoice dated 2019 or earlier.*

#### **AGENDA ITEM 6: AMENDMENTS TO ANNEXES OF THE SADIS AGREEMENT**

6.1 The Group reviewed Annex I, SADIS Services, to the SADIS Agreement. No changes were proposed by the METP WG-MOG. Annex I appears in Appendix J.

6.2 As a result of its review, the Group adopted the following Conclusion:

**SCRAG Conclusion 20/5 —**

*With the consent of the United Kingdom as the SADIS Provider State, in accordance with Article XVII, paragraph 5, of the SADIS Agreement, Annex I, SADIS Services, of the SADIS Agreement is maintained as indicated in Appendix J to the SCRAG/20 Report.*

6.3 The Group reviewed the amendments to Annex II, SADIS Inventory, to the SADIS Agreement as proposed by the METP WG-MOG and agreed upon by the United Kingdom as the SADIS Provider State. These amendments were necessary to ensure that the inventory would continue to meet the approved operational requirements. The additions and deletions to the existing text of Annex II appear in outline and strikeout formats in Appendix K.

6.4 As a result of its review, the Group adopted the following Conclusion:

**SCRAG Conclusion 20/6 —**

*With the consent of the United Kingdom as the SADIS Provider State, in accordance with Article XVII, paragraph 5, of the SADIS Agreement, Annex II, SADIS Inventory, of the SADIS Agreement is amended as indicated in Appendix K to the SCRAG/20 Report.*

6.5 Subsequent to the METP WG-MOG/10 meeting, the SADIS infrastructure was significantly updated. It was moved from an on-premise system to one which uses Amazon Web Services infrastructure. In addition, the SADIS support staff allocation was restructured. These changes that impact both Annex I and Annex II of the Agreement will be presented to the next MOG meeting in March 2020. The Group agreed to hold an extraordinary SCRAG meeting, via teleconference, in April 2020, in order to expedite the publication of the updated Annexes.

**SCRAG Conclusion 20/7 —**

*The Group agreed to hold an extraordinary meeting via teleconference in April 2020 to review the amendments to Annex I and Annex II of the SADIS Agreement, proposed by the METP WG-MOG meeting in March 2020.*

**AGENDA ITEM 7: FUTURE WORK AND ARRANGEMENTS FOR THE SCRAG/21 MEETING**

7.1 The Group will determine if the Twenty First SCRAG meeting can be coordinated with another cost recovery meeting and possibly be held in Geneva in November/December 2020, hosted by IATA. This planning will be finalized in March 2020 and communicated to the Members and planned participants accordingly. In the event this cannot be accommodated, the meeting will be held at the UK CAA Offices.

**AGENDA ITEM 8: OTHER BUSINESS**

8.1 The Group expressed its appreciation to the UK CAA Offices in Gatwick for their hospitality and ICAO's Secretariat support received during the meeting.

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## APPENDIX A

### LIST OF PARTICIPANTS

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## APPENDIX B

### LIST OF SCRAG/20 WORKING PAPERS

Working Paper No.	Agenda Item	Subject	Presented by
1	1 to 9	Provisional agenda	Secretariat
2	1, 3 & 4	Status of accession to the SADIS Agreement	Secretariat
3	2, 4 & 6	Reports on Conclusions of the METP WG-MOG/10 meeting	Rapporteur, METP WG-MOG
4	3	2018 ICAO actual SADIS administrative costs	Secretariat
5	3	2018 actual SADIS costs	United Kingdom
6	3	Status of payments for the year 2018	United Kingdom
7	3	Summary of actual costs and cost shares for the year 2018	Secretariat
8	3	Depreciated assets: SADIS costs	United Kingdom
9	4	2020 ICAO estimated SADIS administrative costs	Secretariat
10	4	Estimated SADIS costs: two to five years	United Kingdom
11	4	Summary of estimated costs and assessments for the year 2020	Secretariat
12	6	Amendment to Annex II, SADIS Inventory, to the SADIS Agreement	Secretariat
13	5	Status of payments for the current (2019) year	United Kingdom
14	4	SADIS AWS running costs	United Kingdom
15	6	Amendments to Annex I of the SADIS Agreement	United Kingdom
16	3	SADIS Gateway Costs	United Kingdom
17	5	Credit balances	Secretariat

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**APPENDIX C**

**INVENTORY OF ASSETS EMPLOYED BY THE  
UNITED KINGDOM TO PROVIDE SADIS SERVICES**

<b>(1) Inventory of Assets: 2019</b>	<b>(2) Original Value</b>	<b>(3) Depreciated charges in 2019</b>	<b>(4) Total accumulated depreciation</b>	<b>(5) Net depreciated value at end of 2019</b>	<b>(6) Net depreciated value at end of 2020</b>
<b>Original HUB Investment, Trial Systems and Capitalized Operation Asset</b>	£713,769	£0	£713,769	£0	£0
<b>Two-Way Hub enhancement, VSATS and development</b>	£375,000	£0	£375,000	£0	£0
<b>SADIS 2G Operational System</b>	£87,428	£0	£87,428	£0	£0
<b>SADIS 2G Hardware Refresh</b>	£59,988	£0	£59,988	£0	£0
<b>SADIS Gateway</b>	£227,462	£0	£227,462	£0	£0
<b>SADIS Gateway Mid-life upgrade</b>	£187,330	£37,466	£149,864	£37,466	£0
<b>SADIS Uplink replacement hardware</b>	£28,220	£0	£28,220	£0	£0
<b>Total UK</b>	£1,679,197	£37,466	£1,641,731	£37,466	£0

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**APPENDIX D**

**STATES WHICH FORMALLY ACCEDED TO THE SADIS AGREEMENT**

STATES	LDC's Exempted
Albania	
Armenia	
Australia	
Austria	
Bahrain	
Belgium	
Botswana	
Cameroon	
China	
Congo	
Côte d'Ivoire	
Croatia	
Cyprus	
Czechia	
Democratic People's Republic of Korea *	
Democratic Republic of the Congo	X
Denmark	
Egypt	
Estonia	
Finland	
France	
Gabon	
Georgia	
Germany	
Greece	
Hungary	
Israel	
Italy	
Jordan	
Kazakhstan	
Kuwait	
Latvia	
Lithuania	
Madagascar	X
Mauritius	
Mongolia *	
Morocco	
Netherlands	
Norway	
Oman	
Pakistan	
Poland	
Portugal	
Republic of Moldova	
Romania	
Russian Federation	
Senegal	X
Slovakia	
Slovenia	
Spain	
Sweden	
Switzerland	
Thailand	
Tunisia	
Turkmenistan *	
Ukraine	
United Arab Emirates	
United Kingdom	
United Republic of Tanzania	X
Viet Nam	

\* Although they formally acceded to the SADIS Agreement, these States do not presently receive the service.

## STATES WHICH HAVE NOT YET ACCEDED TO THE SADIS AGREEMENT

STATES	LDC's Exempted
Algeria	
Angola	X
Azerbaijan	
Bangladesh	X
Benin	X
Bosnia and Herzegovina	
Bulgaria	
Burkina Faso	X
Burundi	X
Cabo Verde	
Cambodia	X
Central African Republic	X
Chad	X
Comoros	X
Djibouti	X
Equatorial Guinea	
Eswatini	
Ethiopia	X
Gambia	X
Ghana	
Guinea	X
Guinea-Bissau	X
Iceland	
India	
Indonesia	
Iraq	
Ireland	
Kenya	
Lao People's Democratic Republic	X
Liberia	X
Libya*	
Malawi	X
Maldives	
Mali	X
Malta	
Mauritania	X
Montenegro	
Mozambique	X
Namibia	
Niger	X
Nigeria	
Qatar	
Republic of South Sudan	X
Rwanda	X
Sao Tome and Principe	X
Saudi Arabia	
Serbia	
Seychelles	
Somalia	X
South Africa	
Sudan	X
North Macedonia	
Togo	X
Turkey	
Uganda	X
Yemen	X
Zambia	X
Zimbabwe	

\* State does not presently receive the service.

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## APPENDIX E

### ACTUAL COST SHARES FOR THE PERIOD 1 JANUARY TO 31 DECEMBER 2018\* AND ADJUSTMENT FOR 2018

STATES	2018 Available Tonne-Kilometres in Scheduled Services (000)	Percentage Cost Share	Share of 2018 Actual Costs (£ Sterling)	Share of 2018 Estimated Costs (SCRAG/18) (£ Sterling)	Adjustment for 2018 (£ Sterling)
Albania	25 697	0.003%	17.32	3.00	14.32
Algeria	1 016 425	0.122%	685.04	802.43	- 117.39
Armenia (note 1)	13 161	0.002%	8.87	9.50	- 0.63
Australia	25 062 003	3.020%	16 891.09	19 454.86	- 2 563.77
Austria	3 569 172	0.430%	2 405.52	3 075.54	- 670.02
Azerbaijan	708 371	0.085%	477.42	1 468.20	- 990.78
Bahrain	3 171 783	0.382%	2 137.69	1 770.42	367.27
Belgium	5 599 873	0.675%	3 774.16	4 781.85	- 1 007.69
Bosnia and Herzegovina (note 1)	528	0.000%	0.36	0.38	- 0.02
Botswana	16 892	0.002%	11.38	14.03	- 2.65
Bulgaria	214 247	0.026%	144.40	163.77	- 19.37
Cabo Verde	124 389	0.015%	83.83	81.71	2.12
Cameroon	44 985	0.005%	30.32	69.36	- 39.04
China: - Beijing	164 621 282	19.840%	110 950.17	107 281.01	3 669.16
- Hong Kong	37 121 115	4.474%	25 018.60	28 124.16	- 3 105.56
- Macau	761 574	0.092%	513.28	601.78	- 88.50
Congo	74 770	0.009%	50.39	84.82	- 34.43
Côte d'Ivoire	145 851	0.018%	98.30	79.34	18.96
Croatia	218 583	0.026%	147.32	161.90	- 14.58
Cyprus	68 450	0.008%	46.13	42.02	4.11
Czechia	1 169 298	0.141%	788.07	1 436.42	- 648.35
Denmark	2 161 793	0.261%	1 456.99	1 694.87	- 237.88
Egypt	5 019 869	0.605%	3 383.25	4 092.19	- 708.94
Estonia	1 854	0.000%	1.25	78.78	- 77.53
Eswatini (note 1)	2 414	0.000%	1.63	1.78	- 0.15
Finland	6 234 176	0.751%	4 201.66	4 248.35	- 46.69
France	34 372 287	4.142%	23 165.97	26 116.97	- 2 951.00
Gabon (note 1)	2 815	0.000%	1.90	2.07	- 0.17
Georgia	202 171	0.024%	136.26	67.56	68.70
Germany	42 224 429	5.089%	28 458.09	35 216.73	- 6 758.64
Ghana	24 467	0.003%	16.49	23.79	- 7.30
Greece	1 617 697	0.195%	1 090.28	1 322.61	- 232.33
Hungary	5 014 002	0.604%	3 379.30	2 800.75	578.55
Iceland	3 667 617	0.442%	2 471.87	1 909.45	562.42
India	30 943 098	3.729%	20 854.79	18 963.27	1 891.52
Indonesia	18 866 843	2.274%	12 715.73	13 410.19	- 694.46
Iraq	297 886	0.036%	200.77	89.83	110.94
Ireland	23 495 994	2.832%	15 835.65	13 256.27	2 579.38
Israel	4 455 167	0.537%	3 002.66	3 717.65	- 714.99
Italy	7 278 929	0.877%	4 905.80	5 480.66	- 574.86
Jordan	1 719 630	0.207%	1 158.98	1 432.54	- 273.56
Kazakhstan	2 149 684	0.259%	1 448.83	1 561.99	- 113.16
Kenya	2 026 116	0.244%	1 365.55	1 549.75	- 184.20
Kuwait	3 499 566	0.422%	2 358.61	1 622.42	736.19
Latvia	702 183	0.085%	473.25	351.55	121.70
Libya (note 2)	0	0.000%	0.00	278.50	- 278.50
Lithuania	648	0.000%	0.44	291.56	- 291.12

**ACTUAL COST SHARES FOR THE PERIOD 1 JANUARY TO 31 DECEMBER 2018\*  
AND ADJUSTMENT FOR 2018**

STATES	2018 Available Tonne-Kilometres in Scheduled Services (000)	Percentage Cost Share	Share of 2018 Actual Costs (£ Sterling)	Share of 2018 Estimated Costs (SCRAG/18) (£ Sterling)	Adjustment for 2018 (£ Sterling)
Maldives	120 329	0.015%	81.10	93.40	- 12.30
Malta	481 392	0.058%	324.44	244.82	79.62
Mauritius	1 408 856	0.170%	949.53	1 062.01	- 112.48
Montenegro	66 735	0.008%	44.98	124.35	- 79.37
Morocco	4 066 149	0.490%	2 740.47	3 187.23	- 446.76
Namibia	325 283	0.039%	219.23	244.02	- 24.79
Netherlands	23 442 562	2.825%	15 799.63	16 571.82	- 772.19
Nigeria (note 3)	511 482	0.062%	344.72	476.07	- 131.35
North Macedonia (note 1)	48 996	0.006%	33.02	35.37	- 2.35
Norway	6 942 899	0.837%	4 679.32	7 332.06	- 2 652.74
Oman	3 850 292	0.464%	2 594.99	2 457.94	137.05
Pakistan	3 058 905	0.369%	2 061.62	3 412.29	- 1 350.67
Poland	2 902 449	0.350%	1 956.17	1 262.27	693.90
Portugal	6 531 384	0.787%	4 401.97	4 254.34	147.63
Qatar	46 297 898	5.580%	31 203.50	29 471.90	1 731.60
Republic of Moldova	266 019	0.032%	179.29	157.68	21.61
Romania	874 601	0.105%	589.46	601.89	- 12.43
Russian Federation	39 421 168	4.751%	26 568.77	26 533.41	35.36
Saudi Arabia (note 4)	5 828 583	0.702%	3 928.30	9 110.20	- 5 181.90
Senegal	2 317	0.000%	1.56	1.21	0.35
Serbia	438 667	0.053%	295.65	383.17	- 87.52
Seychelles	131 675	0.016%	88.75	218.97	- 130.22
Slovakia	0	0.000%	0.00	2.42	- 2.42
Slovenia	160 467	0.019%	108.15	122.27	- 14.12
South Africa	6 064 022	0.731%	4 086.98	5 064.98	- 978.00
Spain	18 151 271	2.188%	12 233.45	12 900.68	- 667.23
Sweden	2 181 937	0.263%	1 470.56	1 728.04	- 257.48
Switzerland	11 386 025	1.372%	7 673.86	7 753.46	- 79.60
Thailand	22 090 786	2.662%	14 888.58	14 046.63	841.95
Tunisia	923 359	0.111%	622.32	683.86	- 61.54
Turkey	35 185 078	4.240%	23 713.76	27 146.61	- 3 432.85
Ukraine	2 312 063	0.279%	1 558.27	1 226.06	332.21
United Arab Emirates	80 957 393	9.757%	54 563.03	67 049.76	- 12 486.73
United Kingdom	55 046 849	6.634%	37 100.04	38 611.92	- 1 511.88
Viet Nam (note 5)	8 515 735	1.026%	5 739.37	6 076.67	- 337.30
Zimbabwe	30 417	0.004%	20.50	31.64	- 11.14
<b>TOTAL</b>	<b>829 753 826</b>	<b>100.000%</b>	<b>559 231.00</b>	<b>598 770.00</b>	<b>- 39 539.00</b>

\* Least Developed Countries are exempted.

Note 1: 2018 ATKs were not received for Armenia, Bosnia and Herzegovina, Eswatini, Gabon and North Macedonia.

The number of ATKs shown is the latest available adjusted based on the annual growth rate of ATKs for the specific Region.

Note 2: No charges were applied to Libya for 2018 as they did not receive any services throughout the year.

Note 3: In accordance with the months for which services were received, Nigeria's share of actual 2018 costs was calculated based on 10 full months of service.

Note 4: In accordance with the months for which services were received, Saudi Arabia's share of actual 2018 costs was calculated based on 5 full months of service.

Note 5: In accordance with the months for which services were received, Viet Nam's share of actual 2018 costs was calculated based on 11 full months of service.

## APPENDIX F

### SADIS COST ESTIMATES FOR 2020 TO 2023 FOR SADIS SERVICES PROVIDED BY THE UNITED KINGDOM METEOROLOGICAL OFFICE

**TABLE 1: UKMO Cost and manpower resource projections until year 2023 (at 2019 prices)**

INVENTORY REF:	Note	DESCRIPTION	Actual 2018	FOO 2019	Est 2020	Est 2021	Est 2022	Est 2023
<b>UK MET OFFICE COSTS</b>								
<b>1. Equipment</b>								
<b>Principally procured for SADIS</b>								
comms link SADIS Gateway & Met Office	a		3,340	3,340	3,500	3,500	3,500	3,500
<b>Not procured principally for SADIS</b>								
message switch	b		5,364	6,220	5,500	5,500	6,000	0
internet bandwidth (FTP)	c		12,960	8,021	0	0	0	0
FTP equipment running costs	d		24,288	24,000	0	0	0	0
AWS Servers	e	Server running costs	0	0	9,000	10,000	11,000	10,000
AWS data egress	f	Data download costs	0	0	2,400	6,000	7,200	5,000
AWS Contingency	g		0	0	1,710	2,400	2,730	2,250
AWS Cloud Operations Expertise	h		0	0	5,000	5,000	5,000	5,000
Service Desk Equipment Costs	i		10,307	10,308	11,000	12,000	12,000	13,000
<b>Equipment sub total</b>			<b>56,259</b>	<b>51,889</b>	<b>38,110</b>	<b>44,400</b>	<b>47,430</b>	<b>38,750</b>
<b>2. Next Generation SADIS service provision</b>								
IWXXM OPMET	j	AWS Server running costs	0	0	0	tbd	tbd	tbd
		AWS Data download costs	0	0	0	tbd	tbd	tbd
Gridded data API		AWS Server running costs	0	0	0	tbd	tbd	tbd
		AWS Data download costs	0	0	0	tbd	tbd	tbd
SIGWX API		AWS Server running costs	0	0	0	tbd	tbd	tbd
		AWS Data download costs	0	0	0	tbd	tbd	tbd
<b>Development sub total</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>3. Annual Staff Requirements</b>								
<b>Operating Support</b>								
	k	Help Desk 0.3%	5,916	5,000				
	k	Technical Team Leader 3.5%	12,161	12,999				
	k	Network Systems Supervisor 7%	24,320	25,997				
	l	First Line Support			4,800	5,000	5,250	5,500
	m	Second Line Support			20,500	21,000	21,500	22,000
	n	Third and Fourth Line Support			15,000	15,500	16,000	16,500
<b>Additional Support</b>								
Systems Integration Team	k	Network computer engineer	5,144	5,499				
Message Switching Manager	k	Message Switching Manager	5,144	5,500				
Data Traffic	k	Communications Engineer	1,863	2,000				
Message Switching Team	k	Technical Officer	5,592	5,800				
Administrator	o	Executive Officer	63,615	64,000	65,000	66,000	66,000	66,000
International Aviation Management	o	Aviation Manager	8,155	8,200	8,400	8,600	8,600	8,600
Contract Procurement and Management	o	Senior Procurement Officer	1,491	1,500	1,600	1,600	1,600	1,600
Invoice Administration	o	Finance Officer & Business Acct	13,392	14,000	14,500	15,000	15,000	15,000
<b>Travel Costs</b>								
	p	METP-WG/MOG meetings & SCRAG	1,000	1,200	400	1,000	1,200	1,200
<b>Staff Requirement and travel sub total</b>			<b>147,793</b>	<b>151,695</b>	<b>130,200</b>	<b>133,700</b>	<b>135,150</b>	<b>136,400</b>
<b>Administrative costs</b>								
	q	Cost of Capital	18,237	18,500	21,000	21,000	21,000	21,000
	r	Admin charges	537	350	650	650	650	650
<b>Total UKMO Costs</b>			<b>222,826</b>	<b>222,434</b>	<b>189,960</b>	<b>199,750</b>	<b>204,230</b>	<b>196,800</b>

TABLE 2: NATS and other SADIS Cost Projections until 2023 (at 2019 prices)

INVENTORY REF:			Actual 2018	FOO 2019	Est 2020	Est 2021	Est 2022	Est 2023
2		<b>NATS Gateway Costs</b>						
		<b>Staff Costs</b>						
	s	Operational Staff	215,775	215,000	225,000	229,000	235,000	241,000
		Engineering Staff	5,073	7,052	7,000	7,200	7,300	7,400
		Administration Staff	24,289	26,946	27,800	28,500	29,300	30,000
		<b>Staff Costs sub total</b>	<b>245,137</b>	<b>248,998</b>	<b>259,800</b>	<b>264,700</b>	<b>271,600</b>	<b>278,400</b>
	t	Communications	0	0	345	345	345	345
		Maintenance	9,689	9,600	9,700	9,700	9,700	9,700
		T&RE	876	1,000	750	1,500	1,500	1,500
	u	Cost of Depreciated Capital						
		Capital Investments	37,466	37,466	N/A	N/A	N/A	N/A
		Interest at 5.88%	4,393	2,197	N/A	N/A	N/A	N/A
		<b>Total NATS Gateway Costs</b>	<b>297,561</b>	<b>299,261</b>	<b>270,595</b>	<b>276,245</b>	<b>283,145</b>	<b>289,945</b>
3		<b>CAA Administration Costs</b>	<b>4,003</b>	<b>4,500</b>	<b>4,500</b>	<b>4,500</b>	<b>4,500</b>	<b>5,000</b>
4		<b>ICAO Administration Costs</b>	<b>34,841</b>	<b>41,500</b>	<b>41,500</b>	<b>42,500</b>	<b>43,500</b>	<b>44,500</b>
		<b>TOTAL SADIS COSTS</b>	<b>559,231</b>	<b>567,695</b>	<b>506,555</b>	<b>522,995</b>	<b>535,375</b>	<b>536,245</b>

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## APPENDIX G

### STATUS OF PAYMENT OF THE ASSESSMENT FOR 2018 AS AT 25 OCTOBER 2019

(£ Sterling)

STATES	Total amount billed for 2018 (SCRAG/18 Report, Appendix I)	Amount Collected as at 25 October 2019	Administrative Charges Applied	Application of credit balance (or part of)	Unpaid amount (excess paid) as at 25 October 2019
Albania	-21.14				- 21.14
Algeria	941.35	941.35	12.02		0.00
Armenia	9.68				9.68
Australia	20363.93	20363.93			0.00
Austria	3164.19	3164.19	7.00		0.00
Azerbaijan	2749.66	2749.66	2.00		0.00
Bahrain	1849.06	1849.06	12.00		0.00
Belgium	5155.21	5155.21	7.00		0.00
Bosnia and Herzegovina	-1.36		9.00	- 1.36	0.00
Botswana	-10.79				- 10.79
Bulgaria	183.85	183.85			0.00
Cabo Verde	10.35	10.35			0.00
Cameroon	75.14	75.14			0.00
China: - Beijing	134040.03	134040.03	15.00		0.00
- Hong Kong	30503.02	30503.02	12.00		0.00
- Macau	746.83	746.83			0.00
Congo	105.52	105.52			0.00
Côte d'Ivoire	122.08	122.08	6.61		0.00
Croatia	171.15	171.15	7.00		0.00
Cyprus	-72.63				- 72.63
Czechia	1986.67	1986.67			0.00
Democratic People's Republic of Korea	-89.42				- 89.42
Denmark	240.04	240.04			0.00
Egypt	4622.62	4622.62	25.00		0.00
Estonia	90.60	90.60			0.00
Eswatini	1.83				1.83
Finland	5150.02	5150.02			0.00
France	25510.94	25510.94	4.00		0.00
Gabon	4.05	4.05			0.00
Georgia	75.65	75.65			0.00
Germany	38466.82	38466.82			0.00
Ghana	22.39	22.39			0.00
Greece	1857.21	1857.21	7.00		0.00
Hungary	3587.73	3587.73			0.00
Iceland	2983.43	2983.43			0.00
India	23741.77	23741.77	25.50		0.00
Indonesia	16760.41	16760.41			0.00
Iraq	89.91				89.91
Ireland	15343.67	15343.67			0.00
Israel	3996.62	3996.62			0.00
Italy	6275.09	6275.09	5.00		0.00
Jordan	1456.36	1456.36			0.00
Kazakhstan	1679.21	1679.21	33.21		0.00
Kenya	1330.24	1330.24			0.00
Kuwait	1835.34	1835.34			0.00
Latvia	366.29	366.29	4.00		0.00

**STATUS OF PAYMENT OF THE ASSESSMENT FOR 2018  
AS AT 25 OCTOBER 2019**

(£ Sterling)

STATES	Total amount billed for 2018 (SCRAG/18 Report, Appendix I)	Amount Collected as at 25 October 2019	Administrative Charges Applied	Application of credit balance (or part of)	Unpaid amount (excess paid) as at 25 October 2019
Libya	490.01				490.01
Lithuania	586.77	586.77			0.00
Maldives	212.49	212.49			0.00
Malta	164.88	164.88	7.00		0.00
Mauritius	1236.29	1236.29			0.00
Montenegro	284.91	284.91			0.00
Morocco	4470.60	4470.60	45.33		0.00
Namibia	237.08	237.08			0.00
Netherlands	15740.37	15740.37			0.00
Nigeria	301.88	301.88			0.00
North Macedonia	38.39	38.39			0.00
Norway	11289.92	11289.92	7.00		0.00
Oman	3614.17	3614.17			0.00
Pakistan	4922.36	4922.36	32.00		0.00
Poland	1497.65	1497.65			0.00
Portugal	4132.51	4132.51			0.00
Qatar	41387.81	41387.81	7.00		0.00
Republic of Moldova	198.07	198.07	24.00		0.00
Romania	711.19	711.19			0.00
Russian Federation	27080.21	27080.21	40.62		0.00
Saudi Arabia	6396.28	6396.28	15.00		0.00
Senegal	-40.40			- 40.40	0.00
Serbia	534.50	534.50			0.00
Seychelles	254.39	254.39	22.24		0.00
Slovakia	1.10				1.10
Slovenia	128.82	128.82			0.00
South Africa	4767.95	4767.95	7.00		0.00
Spain	14668.23	14668.23	7.00		0.00
Sweden	757.65	757.65			0.00
Switzerland	8020.71	8020.71	15.00		0.00
Thailand	14450.95	14450.95			0.00
Tunisia	593.02	593.02			0.00
Turkey	35257.75	35257.75			0.00
Ukraine	1591.27	1591.27			0.00
United Arab Emirates	79745.18	79745.18	6.00		0.00
United Kingdom	41073.55	41073.55			0.00
Uzbekistan	-713.27		9.00	-713.27	0.00
Viet Nam	7911.35	7911.35	7.00		0.00
Zimbabwe	-113.51				- 113.51
<b>TOTAL</b>	<b>691 353.70</b>	<b>691 823.69</b>	<b>444.53</b>	<b>- 755.03</b>	<b>285.04</b>

## G-3

**STATUS OF PAYMENT OF BALANCES FOR YEARS PRIOR TO 2018  
AS AT 25 OCTOBER 2019**

(£ Sterling)

<b>STATES</b>	<b>Balance due for years prior to 2018</b>	<b>Amount Collected as at 25 October 2019</b>	<b>Administrative Charges Applied</b>	<b>Application of credit balance (or part of)</b>	<b>Unpaid amount (excess paid) as at 25 October 2019</b>
Democratic People's Republic of Korea	229.75				229.75
Eswatini	5.31				5.31
Ghana	22.61	22.61			0.00
Iran (Islamic Republic of)	14 548.16				14 548.16
Libya	889.65	889.65			0.00
Kuwait	176.43				176.43
Syrian Arab Republic	2 266.26				2 266.26
Turkmenistan	1 228.35				1 228.35
<b>TOTAL</b>	<b>19 366.52</b>	<b>912.26</b>	<b>0.00</b>	<b>0.00</b>	<b>18 454.26</b>

## APPENDIX H

### ESTIMATED COST SHARES AND ASSESSMENTS FOR THE PERIOD 1 JANUARY TO 31 DECEMBER 2020 \*

STATES	2018 Available Tonne-Kilometres in Scheduled Services (000)	Percentage Cost Share	Share of 2020 Estimated Costs (£ Sterling)	Share of Under-recovery for 2018 (£ Sterling)	Amount to be Assessed for 2020 (£ Sterling)
Albania	25 697	0.003%	15.51	- 1.08	14.43
Algeria	1 016 425	0.121%	613.59	- 42.69	570.90
Armenia	13 161	0.002%	7.94	- 0.55	7.39
Australia	25 062 003	2.987%	15 129.35	-1 052.73	14 076.62
Austria	3 569 172	0.425%	2 154.63	- 149.92	2 004.71
Azerbaijan	708 371	0.084%	427.63	- 29.76	397.87
Bahrain	3 171 783	0.378%	1 914.73	- 133.23	1 781.50
Belgium	5 599 873	0.667%	3 380.51	- 235.22	3 145.29
Bosnia and Herzegovina	528	0.000%	0.32	- 0.02	0.30
Botswana	16 892	0.002%	10.20	- 0.71	9.49
Bulgaria	214 247	0.026%	129.34	- 9.00	120.34
Cabo Verde	124 389	0.015%	75.09	- 5.22	69.87
Cameroon	44 985	0.005%	27.16	- 1.89	25.27
China: - Beijing	164 621 282	19.618%	99 378.04	-6 914.90	92 463.14
- Hong Kong	37 121 115	4.424%	22 409.15	-1 559.27	20 849.88
- Macau	761 574	0.091%	459.74	- 31.99	427.75
Congo	74 770	0.009%	45.14	- 3.14	42.00
Côte d'Ivoire	145 851	0.017%	88.05	- 6.13	81.92
Croatia	218 583	0.026%	131.95	- 9.18	122.77
Cyprus	68 450	0.008%	41.32	- 2.88	38.44
Czechia	1 169 298	0.139%	705.88	- 49.12	656.76
Denmark	2 161 793	0.258%	1 305.02	- 90.81	1 214.21
Egypt	5 019 869	0.598%	3 030.38	- 210.86	2 819.52
Equatorial Guinea	46 929	0.006%	28.33	- 1.97	26.36
Estonia	1 854	0.000%	1.12	- 0.08	1.04
Eswatini	2 414	0.000%	1.46	- 0.10	1.36
Finland	6 234 176	0.743%	3 763.43	- 261.87	3 501.56
France	34 372 287	4.096%	20 749.75	-1 443.80	19 305.95
Gabon	2 815	0.000%	1.70	- 0.12	1.58
Georgia	202 171	0.024%	122.05	- 8.49	113.56
Germany	42 224 429	5.032%	25 489.91	-1 773.63	23 716.28
Ghana	24 467	0.003%	14.77	- 1.03	13.74
Greece	1 617 697	0.193%	976.57	- 67.95	908.62
Hungary	5 014 002	0.598%	3 026.84	- 210.61	2 816.23
Iceland	3 667 617	0.437%	2 214.06	- 154.06	2 060.00
India	30 943 098	3.688%	18 679.63	-1 299.76	17 379.87
Indonesia	18 866 843	2.248%	11 389.47	- 792.50	10 596.97
Iraq	297 886	0.035%	179.83	- 12.51	167.32
Ireland	23 495 994	2.800%	14 183.99	- 986.95	13 197.04
Israel	4 455 167	0.531%	2 689.48	- 187.14	2 502.34
Italy	7 278 929	0.867%	4 394.12	- 305.75	4 088.37
Jordan	1 719 630	0.205%	1 038.10	- 72.23	965.87
Kazakhstan	2 149 684	0.256%	1 297.71	- 90.30	1 207.41
Kenya	2 026 116	0.241%	1 223.12	- 85.11	1 138.01
Kuwait	3 499 566	0.417%	2 112.61	- 147.00	1 965.61
Latvia	702 183	0.084%	423.89	- 29.50	394.39

**ESTIMATED COST SHARES AND ASSESSMENTS  
FOR THE PERIOD 1 JANUARY TO 31 DECEMBER 2020 \***

STATES	2018 Available Tonne-Kilometres in Scheduled Services (000)	Percentage Cost Share	Share of 2020 Estimated Costs (£ Sterling)	Share of Under-recovery for 2018 (£ Sterling)	Amount to be Assessed for 2020 (£ Sterling)
Libya	279 079	0.033%	168.47	- 11.72	156.75
Lithuania	648	0.000%	0.39	- 0.03	0.36
Maldives	120 329	0.014%	72.64	- 5.05	67.59
Malta	481 392	0.057%	290.61	- 20.22	270.39
Mauritius	1 408 856	0.168%	850.49	- 59.18	791.31
Montenegro	66 735	0.008%	40.29	- 2.80	37.49
Morocco	4 066 149	0.485%	2 454.64	- 170.80	2 283.84
Namibia	325 283	0.039%	196.37	- 13.66	182.71
Netherlands	23 442 562	2.794%	14 151.73	- 984.70	13 167.03
Nigeria	613 778	0.073%	370.52	- 25.78	344.74
North Macedonia	48 996	0.006%	29.58	- 2.06	27.52
Norway	6 942 899	0.827%	4 191.27	- 291.64	3 899.63
Oman	3 850 292	0.459%	2 324.33	- 161.73	2 162.60
Pakistan	3 058 905	0.365%	1 846.59	- 128.49	1 718.10
Poland	2 902 449	0.346%	1 752.14	- 121.92	1 630.22
Portugal	6 531 384	0.778%	3 942.84	- 274.35	3 668.49
Qatar	46 297 898	5.517%	27 948.96	-1 944.74	26 004.22
Republic of Moldova	266 019	0.032%	160.59	- 11.17	149.42
Romania	874 601	0.104%	527.98	- 36.74	491.24
Russian Federation	39 421 168	4.698%	23 797.64	-1 655.88	22 141.76
Saudi Arabia	13 988 598	1.667%	8 444.59	- 587.59	7 857.00
Senegal	2 317	0.000%	1.40	- 0.10	1.30
Serbia	438 667	0.052%	264.81	- 18.43	246.38
Seychelles	131 675	0.016%	79.49	- 5.53	73.96
Slovakia	0	0.000%	0.00	0.00	0.00
Slovenia	160 467	0.019%	96.87	- 6.74	90.13
South Africa	6 064 022	0.723%	3 660.71	- 254.72	3 405.99
Spain	18 151 271	2.163%	10 957.50	- 762.44	10 195.06
Sweden	2 181 937	0.260%	1 317.18	- 91.65	1 225.53
Switzerland	11 386 025	1.357%	6 873.48	- 478.27	6 395.21
Thailand	22 090 786	2.633%	13 335.69	- 927.92	12 407.77
Tunisia	923 359	0.110%	557.41	- 38.79	518.62
Turkey	35 185 078	4.193%	21 240.41	-1 477.95	19 762.46
Ukraine	2 312 063	0.276%	1 395.74	- 97.12	1 298.62
United Arab Emirates	80 957 393	9.648%	48 872.10	-3 400.61	45 471.49
United Kingdom	55 046 849	6.560%	33 230.49	-2 312.22	30 918.27
Viet Nam	9 289 893	1.107%	5 608.09	- 390.22	5 217.87
Zimbabwe	30 417	0.004%	18.36	- 1.28	17.08
<b>TOTAL</b>	<b>839 116 304</b>	<b>100.000%</b>	<b>506 555.00</b>	<b>-35 247.00</b>	<b>471 308.00</b>

\* Excludes exempted Least Developed Countries, States for which the access to SADIS is not operational and States which do not receive SADIS service.

## APPENDIX I

### AMOUNTS TO BE BILLED FOR THE PERIOD 1 JANUARY TO 31 DECEMBER 2020 (£ Sterling)

STATES	Adjustment for 2018 (Appendix E)	Assessment for 2020 (Appendix H)	Deduction of Unused Credit Balance from Previous Years	Total Amount to be Billed for 2020
Albania	14.32	14.43	- 28.75	0.00
Algeria	- 117.39	570.90		453.51
Armenia	- 0.63	7.39	- 6.76	0.00
Australia	- 2 563.77	14 076.62		11 512.85
Austria	- 670.02	2 004.71		1 334.69
Azerbaijan	- 990.78	397.87		- 592.91
Bahrain	367.27	1 781.50		2 148.77
Belgium	- 1 007.69	3 145.29		2 137.60
Bosnia and Herzegovina	- 0.02	0.30	- 0.28	0.00
Botswana	- 2.65	9.49	- 6.84	0.00
Bulgaria	- 19.37	120.34		100.97
Cabo Verde	2.12	69.87	- 26.13	45.86
Cameroon	- 39.04	25.27		- 13.77
China: - Beijing	3 669.16	92 463.14		96 132.30
- Hong Kong	- 3 105.56	20 849.88		17 744.32
- Macau	- 88.50	427.75		339.25
Congo	- 34.43	42.00		7.57
Côte d'Ivoire	18.96	81.92		100.88
Croatia	- 14.58	122.77		108.19
Cyprus	4.11	38.44	- 42.55	0.00
Czechia	- 648.35	656.76		8.41
Denmark	- 237.88	1 214.21	- 55.85	920.48
Egypt	- 708.94	2 819.52		2 110.58
Equatorial Guinea	0.00	26.36		26.36
Estonia	- 77.53	1.04		- 76.49
Eswatini	- 0.15	1.36		1.21
Finland	- 46.69	3 501.56		3 454.87
France	- 2 951.00	19 305.95		16 354.95
Gabon	- 0.17	1.58	- 1.41	0.00
Georgia	68.70	113.56	- 30.67	151.59
Germany	- 6 758.64	23 716.28		16 957.64
Ghana	- 7.30	13.74		6.44
Greece	- 232.33	908.62		676.29
Hungary	578.55	2 816.23		3 394.78
Iceland	562.42	2 060.00		2 622.42
India	1 891.52	17 379.87		19 271.39
Indonesia	- 694.46	10 596.97		9 902.51
Iraq	110.94	167.32		278.26
Ireland	2 579.38	13 197.04		15 776.42
Israel	- 714.99	2 502.34		1 787.35
Italy	- 574.86	4 088.37		3 513.51
Jordan	- 273.56	965.87		692.31
Kazakhstan	- 113.16	1 207.41		1 094.25
Kenya	- 184.20	1 138.01		953.81
Kuwait	736.19	1 965.61		2 701.80
Latvia	121.70	394.39		516.09
Libya	- 278.50	156.75		- 121.75
Lithuania	- 291.12	0.36		- 290.76

**AMOUNTS TO BE BILLED**  
**FOR THE PERIOD 1 JANUARY TO 31 DECEMBER 2020**  
**(£ Sterling)**

STATES	Adjustment for 2018 (Appendix E)	Assessment for 2020 (Appendix H)	Deduction of Unused Credit Balance from Previous Years	Total Amount to be Billed for 2020
Maldives	- 12.30	67.59		55.29
Malta	79.62	270.39		350.01
Mauritius	- 112.48	791.31		678.83
Montenegro	- 79.37	37.49		- 41.88
Morocco	- 446.76	2 283.84		1 837.08
Namibia	- 24.79	182.71		157.92
Netherlands	- 772.19	13 167.03		12 394.84
Nigeria	- 131.35	344.74		213.39
North Macedonia	- 2.35	27.52		25.17
Norway	- 2 652.74	3 899.63		1 246.89
Oman	137.05	2 162.60		2 299.65
Pakistan	- 1 350.67	1 718.10		367.43
Poland	693.90	1 630.22		2 324.12
Portugal	147.63	3 668.49		3 816.12
Qatar	1 731.60	26 004.22		27 735.82
Republic of Moldova	21.61	149.42		171.03
Romania	- 12.43	491.24		478.81
Russian Federation	35.36	22 141.76		22 177.12
Saudi Arabia	- 5 181.90	7 857.00		2 675.10
Senegal	0.35	1.30		1.65
Serbia	- 87.52	246.38		158.86
Seychelles	- 130.22	73.96		- 56.26
Slovakia	- 2.42	0.00		- 2.42
Slovenia	- 14.12	90.13		76.01
South Africa	- 978.00	3 405.99		2 427.99
Spain	- 667.23	10 195.06		9 527.83
Sweden	- 257.48	1 225.53		968.05
Switzerland	- 79.60	6 395.21		6 315.61
Thailand	841.95	12 407.77		13 249.72
Tunisia	- 61.54	518.62		457.08
Turkey	- 3 432.85	19 762.46		16 329.61
Ukraine	332.21	1 298.62		1 630.83
United Arab Emirates	- 12 486.73	45 471.49		32 984.76
United Kingdom	- 1 511.88	30 918.27		29 406.39
Viet Nam	- 337.30	5 217.87		4 880.57
Zimbabwe	- 11.14	17.08	- 5.94	0.00
<b>TOTAL</b>	<b>- 39 539.00</b>	<b>471 308.00</b>	<b>- 205.18</b>	<b>431 563.82</b>

## APPENDIX J

### AMENDMENT TO ANNEX I, SADIS SERVICES, TO THE SADIS AGREEMENT

#### SADIS SERVICES

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*Editorial note. — No Changes proposed by METP WG-MOG*

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#### ANNEX I

#### SADIS SERVICES

*Note.— A glossary of abbreviations as used in this Annex is provided at the end of the Annex.*

##### 1. Internet based (FTP) service

A summary of products available on SADIS. Detailed descriptions are contained within the SADIS User Guide (Parts 1 and 2) of the service.

- a) distribution of WAFS upper-air forecasts in GRIB2 code form;
- b) distribution of WAFS SIGWX forecasts in BUFR code form;
- c) distribution of WAFS SIGWX forecasts in PNG chart form;
- d) distribution of OPMET information in alphanumeric format (METARs, TAFs, SIGMET, special AIREPs, volcanic ash advisories, tropical cyclone advisories and space weather advisories) from those regions whose OPMET information is needed to satisfy approved requirements in the regions served by SADIS;
- e) distribution of meteorological information in graphical format (e.g. Volcanic Ash Graphics).

##### 2. Collection service

- a) collection of OPMET information by the SADIS Gateway from States in accordance with approved requirements stated by PIRGs and actioned by Meteorological Operations Working Group (WG-MOG), the Working Group tasked by the Meteorology Panel (METP) to oversee the operational provision of SADIS;
- b) monitoring, validation and repair of data received at the SADIS Gateway to the required standards, for the provision of real-time scheduled reports and for off-line quality control analysis.

##### 3. Back-up service

The recognised back-up to failure if the SADIS FTP service is via the USA administered, WAFS Information File Service (WIFS). SADIS FTP users are encouraged to arrange back-up accounts with the WIFS provider via <https://aviationweather.gov/wifs/>.

*Note 1: - Usage restrictions apply. Further information is provided in the SADIS User Guide Part 1 (Administrative)*

*Note 2: - It is the responsibility of the SADIS FTP user to arrange and test back-up accounts with WIFS.*

##### 4. User support service

- a) 24-hour help line/faults desk;
- b) dissemination of administrative messages, including amendments to bulletin headers given in the SADIS User Guide (Parts 1 and 2).

## 5. File transfer protocol service

Provision of facilities dedicated to establishing and receiving an FTP connection, using password protected access, to the SADIS FTP server that enables the transfer of WAFS upper-air forecasts in GRIB code, WAFS SIGWX forecasts in BUFR code, WAFS SIGWX forecasts in PNG chart form and OPMET data over the Public Internet. The FTP service implements Digital Signatures and Digital Certificates to confirm data integrity and authenticity of the data.

### Glossary of abbreviations

<i>AIREP</i>	Air report
<i>BUFR</i>	Binary Universal Form for the Representation of meteorological data (code)
<i>FTP</i>	File Transfer Protocol (Internet based)
<i>GRIB2</i>	Gridded binary edition 2 (code)
<i>ISDN</i>	Integrated Services Digital Network
<i>METAR</i>	Routine aviation weather report in code form
<i>METP</i>	Meteorology Panel
<i>NWSTG</i>	National Weather Service Telecommunications Gateway (Washington, USA)
<i>OPMET</i>	Operational meteorological (information or data)
<i>PIRG</i>	ICAO planning and implementation regional group
<i>PNG</i>	Portable Network Graphics (image format)
<i>SADIS</i>	Secure Aviation Data Information Service
<i>SADIS FTP</i>	Internet based provision of SADIS
<i>SADIS Gateway</i>	The United Kingdom message-handling system which receives data from the Aeronautical Fixed Service for transmission on SADIS
<i>SADISOPSG</i>	SADIS Operations Group. Tasked with the oversight of SADIS until its dissolution in 2015. Superseded by Meteorological Operations Working Group (WG-MOG) under the Meteorology Panel (METP). Reference retained for historical purposes.
<i>SIGMET</i>	Information of specified en-route weather phenomena which may affect the safety of aircraft operations
<i>SIGWX</i>	Significant weather
<i>TAF</i>	Aerodrome forecast in code form
<i>WAFS</i>	World area forecast system
<i>WG-MOG</i>	Meteorological Operations Working Group (under METP)

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## APPENDIX K

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

#### SADIS INVENTORY

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*Editorial note. — Changes proposed by METP WG-MOG are highlighted in tracked-change mode as deletions or additions*

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#### SADIS INVENTORY

(2019-2020)

The inventory items identified below cover the equipment and staffing required to provide, operate and maintain the Secure Aviation Data Information Service (SADIS). The inventory includes: communications circuits, communications back-up system, procured services, and staff. It should be noted that some equipment items form part of a wider infrastructure. Costs of some 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 SADIS FTP infrastructure and communications circuits

1. The SADIS FTP hub infrastructure connection to the Met Office message switch (MetSwitch) consists of a number of units installed at Exeter.

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”).

Dell Poweredge R900 servers to provide the SADIS FTP service (see Section 1 C).

ii) **Principally procured for SADIS**

a) At the Met Office;

See Section 1 C for itemized components

iii) **Not procured principally for SADIS**

a) Met Office Message switch (MetSwitch): Total investment £328K<sup>1</sup> of which 1.23 per cent is attributable to the SADIS FTP service usage: switching data to operational FTP service;

b) ~~Allocated bandwidth 42 Mbit/sec bursting to 60 Mbit/sec between server and Internet Service Provider (ISP) in support of the SADIS FTP service. Individual client connections have a maximum throughput of 4098 Kbit/sec.~~ Share of the total SADIS Providers 3Gbps internet connection, with SADIS traffic packet prioritised above general web traffic (but below some critical traffic).

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<sup>1</sup> budgeted cost for providing MetSwitch service during the fiscal year ~~2017~~2018/20182019.

- c) NATS Message switch (CoreMet System);

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

- d) SADIS FTP equipment running costs;

*Note. — This comprises support and maintenance of the servers underpinning the SADIS FTP services, a share of the cost for the underlying storage capacity on which the SADIS FTP services are reliant, and operational monitoring of the SADIS FTP services by Tivoli ensuring problems can be identified and resolved in a timely manner.*

- e) Met Office Service Desk equipment; and

*Note. — Equates to 3.5 per cent of the total share of Met Office IT Operations equipment.*

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

The recognised back-up to failure if the SADIS FTP service is via the USA administered, WAFS Information File Service (WIFS). SADIS FTP users are encouraged to arrange back-up accounts with the WIFS provider via <https://aviationweather.gov/wifs/>.

*Note 1: - Usage restrictions apply. Further information is provided in the SADIS User Guide Part 1 (Administrative)*

*Note 2: - It is the responsibility of the SADIS FTP user to arrange and test back-up accounts with WIFS.*

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

<i>Item</i>	<i>Description</i>	<i>Quantity</i>
<b>1.</b>	<b>SADIS FTP service</b>	
1.1	Dell Poweredge R900 servers with 14 Gb RAM	2
1.2	Dell Poweredge R900 (4 core) servers with 32 Gb RAM *	2
1.3	Shared Storage Arrays (analogous to hard disk storage, but with dynamic upper limit)	2
1.4	VMWave Virtual Platform with Red Hat Linux 5.3 OS	2
1.5	Intel Xeon X7350, 2.93 GHz Processors	2
1.6	Licenses, misc. support and maintenance costs	1

*Note 1. — Item 1.2 relates to Digital Signing servers.*

*Note 2. — Items listed under Section 1 are located at Exeter.*

## 2. PROCURED SERVICES

- A. Annual maintenance of Met Office Exeter on-site equipment (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.*

##### *Help Desk*

##### *Skill*

- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. Service desk (first point of contact)</li> <li>2. Additional Service Desk operator</li> </ol> | <p>Incident Management<br/>Customer Enquiries</p> |
|---|---|

*Note. — Total support for SADIS provided by the Met Office Service Desk team equates to 0.3 per cent of the total Weather Desk budget.*

##### *24-hour IT Operations support*

##### *Skill*

- |  |  |
|--|--|
| <ol style="list-style-type: none"> <li>1. Shift Leader (ITCS)</li> <li>2. Networks Incident Manager (NIM)</li> </ol> | <p>Technical Supervisor<br/>Service Continuity</p> |
|--|--|

*Note. — Total support for SADIS provided by the Met Office IT Operations team equates to 3.5 per cent of the total IT Operations budget.*

##### *Normal working hours support*

##### *Skill*

- |   |                           |
|---|---------------------------|
| <ol style="list-style-type: none"> <li>1. Change and problem manager (CPM)</li> </ol> | <p>Process Specialist</p> |
|---|---------------------------|

#### ii) Additional support

##### *Day support*

##### *Resource*

- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. Systems integration team</li> <li>2. Message Switching Manager</li> <li>3. Administrator</li> <li>4. International aviation management</li> </ol> | <p>14 staff-days of<br/>network computer engineer<br/>15 staff-days of MSS manager<br/><del>140</del>144 staff-days of executive officer<br/><del>15</del> 14 staff-days of manager</p> |
|---|---|

5. Data traffic	5 staff-days of communications engineer
6. Contract procurement and management	4 staff-days of senior procurement officer
7. Message switching Team	15 staff-days of technical officer
8. Invoice Administration	20 staff-days of invoicing officer and 15 staff-days of business accountant

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

*Note 1. — Data Services provides the OPMET Gateway function, which is provided from a single operational site, but with a full capability at an alternative site. Staff are available either on a 24-hour basis, or as a daytime support with on-call capability.*

*Note 2. — The resource demand of 604 days required to provide the SADIS Gateway service comprises 6 watches of 1 ATSA4 and 1 ATSA3 each (Operations), 1 ATCE4 (Engineering Watchkeeping) and 3 ATCE4 (Engineering Day Support) and 2 Gateway day support administrative staff.*

*24-hour support*

*Resource*

1. Air Traffic Services Assistant	521 staff-days per annum
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Note. — Total support for SADIS provided by the 24 hour support for the OPMET Gateway function equates to 36 per cent of the Data Services Met Service H24 support and 18 per cent of the total Data Services Helpdesk budget.

2. H24 Maintenance Engineering	10 staff-days per annum
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*Day Support*

*Resource*

3. Administration	54 staff-days per annum
4. Meeting Attendance	6 staff days per annum
5. Staff Training and Documentation	3 staff days per annum
6. Day Support Engineering	10 staff days per annum

Note. — Total support for SADIS provided by the day support for the OPMET Gateway function equates to 5 per cent of the total day support budget.

**C. Bought-in services**

Additional support and maintenance agreements with third parties are in place to provide third line support of the SADIS FTP services.