



**SCRAG/21 - REPORT**

**INTERNATIONAL CIVIL AVIATION ORGANIZATION**

**REPORT OF**

**THE TWENTY-FIRST MEETING OF THE  
SADIS COST RECOVERY ADMINISTRATIVE GROUP  
(SCRAG/21)**

*(Virtual, 1 December 2020)*

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## INTRODUCTION

### Place and Duration

1. The Twenty-First Meeting of the SADIS Cost Recovery Administrative Group (SCRAG) was conducted virtually on Tuesday, 1 December 2020.

### Attendance

2. The meeting was attended by the following Members: Mr. Goama Iboudo from the AFI Region (ASECNA), Ms. Zou Juan from the ASIA/PAC Region, and Mr. Patrick Simon and Mr. Sebastian Stolpmann from the European Region. Also in attendance were 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 2019

**Agenda Item 4:** Review of estimated SADIS costs and cost shares for the period 1 January to 31 December 2021 and estimated costs for the next two to five years

**Agenda Item 5:** Review of the status of SADIS payments for the current year (2020) invoices

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

**Agenda Item 7:** Future work and arrangements for the SCRAG/22 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/21 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/21 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 surpasses 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 63 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 59 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 C.

1.5 The Group discussed increasing the Accession of States to the SADIS Agreement. In this regard the following conclusion was formulated:

***SCRAG Conclusion 21/1 — Accession to the SADIS Agreement***

*The SADIS Manager will liaise with the Met Officers in the ICAO Regional Offices and present information to the relevant PIRG meetings to encourage States who have not yet acceded to the SADIS agreement to do so.*

**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 Thirteenth Meeting of the Meteorology Panel (METP) Working Group on Meteorological Operations Group (WG-MOG) (METP WG-MOG/13, conducted virtually on 25 March 2020) provided by the Rapporteur of the METP WG-MOG.

2.2 In accordance with Action 13/1 of METP WG-MOG/13, 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 Thirteenth 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/10 Meeting (Toulouse, France, 4-5 April 2019).

2.3 The following Actions/Decisions relating to the SADIS Service were documented in the report of the METP WG-MOG/13:

**MOG Action agreed 13/01: SADIS Report: reporting service outages**

That, information on the dates, times and duration of any SADIS system outages is provided in the SADIS management, as the old server uptime metric is no longer appropriate given the AWS technology now used for SADIS.

*Status: will be provided at the next MOG/SADIS meeting in April 2021*

**MOG Action agreed 13/02: AIRMET format issues**

That the AIRMET monitoring information contained in Appendix B to this report be:

- a) forwarded to the relevant regional ICAO Regional Offices as advanced information about AIRMET format issues in view of the applicability date of Amendment 79 to Annex 3; and,
- b) published as an Appendix to the METP-WG/MOG 13 report.

*Status: Complete*

**MOG Action agreed 13/03: OPMET Catalogue**

That,

- a) the OPMET catalogue (using data from the February 2020 monitoring period) is created by the end of April 2020,
- b) this catalogue is then published on SADIS, and <https://www.icao.int/airnavigation/METP/Pages/Public-Documents.aspx> (replacing the previous version)
- c) the MOG members are notified of this publication via e-mail

*Status: Complete.*

**MOG Action agreed 13/04: Annual statement of operational efficacy of SADIS 2019/2020**

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 2019/2020.

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

### **MOG Action agreed 13/05: 2020 SADIS Efficacy Survey**

That the web hosted SADIS Efficacy questionnaire, using the questions shown in Appendix C to the [METP-WG/MOG/13] report, be used for the 2020 survey which will commence on 1 July 2020 and end on 31 December 2020.

*Status: Survey is in progress.*

Documentation relating to SADIS was reviewed and updated, and the following actions agreed:

### **MOG Action agreed 13/06: SADIS Agreement Annex I and II 2020-2021**

That, the Rapporteur of the METP-WG/MOG be invited to immediately forward the updated SADIS Agreement Annex I and II inventory, given in the Appendix D to this report, to the Chair of SCRAG to enable and extraordinary SCRAG meeting to take place in March 2020.

*Status: Complete. This is provided in WP15 and WP12 at SCRAG21\*.*

### **MOG Action agreed 13/07: Status of Implementation of SADIS**

That the ICAO Secretariat be invited to make available the updated Status of Implementation of SADIS document, as shown in Appendix E to this [METP-WG/MOG/13] report, in the ICAO public website (replacing the previous copy).

*Status: Complete.*

### **MOG Action agreed 13/08 — Terms of Reference**

That;

- a) the METP-WG/MOG meeting accepts the proposed updates to the Terms of Reference as shown in Appendix F to this report; and
- b) the ICAO Secretariat make available the updated Terms of Reference document onto the ICAO public website (replacing the previous copy).

*Status: Complete*

### **MOG Action agreed 13/09 — Update of Job Card 008.04**

- a) That the METP-WG/MOG meeting accepts the proposed updates to Job Card 008.03 as shown in Appendix G to this report; and
- b) That the METP-WG/MOG recommend these changes to METP/5.

*Status: In progress.*

\* These updates were provided to the SCRAG20 Extraordinary Meeting

### **MOG Action agreed 13/10 — METP-WG/MOG WAFS and SADIS linkages**

That, the MOG Rapporteur will liaise with the MOG (IAVW) to ensure relevant connections are included on the connectivity diagram, and once updated, will pass it to the ICAO Secretariat for publication on the ICAO website <https://portal.icao.int/METP/MOG/Pages/default.aspx>

*Status: Complete*

### **MOG Decision 13/06 — SADIS User Guide**

That;

- a) the proposed updates to the SADIS User Guide Part 1 and Part 2 are accepted; and,
- b) a final edit of the guide is carried out prior to publication on the ICAO website in November 2020 to ensure that the changes related to the provision of high resolution hazard data sets and IWXXM format OPMET have been accurately documented.

*Status: Complete*

### **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 of 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);
- b) report on progress in respect of a) above to the next WG-MOG Meeting.

*Status: ongoing*

### **SCRAG Conclusion 21/2 —**

*The Group recommended that the Chair of the METP-WG/MOG forward the Annual Statement of Operational Efficacy to the Secretary of the SCRAG, who in turn will send the report to the Chairperson of the SCRAG subsequent to their nomination at the start of the annual SCRAG meeting.*

### **AGENDA ITEM 3: REVIEW OF ACTUAL SADIS COSTS AND COST SHARES FOR THE PERIOD 1 JANUARY TO 31 DECEMBER 2019**

#### **Review of the 2019 Actual SADIS Costs**

3.1 The Group reviewed the actual costs of £ 564 515 for providing the SADIS services in the year 2019. These actual costs are detailed in Appendix E, Column “Actual 2019” and the cost share per State is presented in Column 4 of Appendix D. 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 2019**

Cost Item	Actual Costs (UK £)
UK Met Office	221 947
UK NATS SADIS Gateway	299 261
UK CAA administrative costs	4 003
Sub-total UK	525 211
ICAO support service costs	39 304
<b>TOTAL</b>	<b>564 515</b>

**Review of the 2019 Actual SADIS Cost Shares**

3.2 The Group noted that Libya only received and were assessed for 3 full months of service since they did not received services from late January to September 2019. Also, Jordan only received and were assessed for 10 full months of services since they were disconnected during a portion of April and May 2019.

3.3 The Group determined that the actual cost shares for the period 1 January to 31 December 2019 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 2019, 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 D.

3.4 The Group noted the adjustment for 2019; an over-recovery of £47 916, is the difference between the 2019 actual costs and the 2019 estimated costs approved by the SCRAG/19 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 2019**

	Cost Item	Actual Costs (UK £)	Reference
(1)	2019 Actual Cost	564 515	Table 1 (A)
(2)	2019 Estimated Cost	612 431	SCRAG/19 Report, Table 3
(3)	Over-recovery for 2019 (to be subtracted from the amount billed in 2021)	-47 916	(1) - (2) <i>(see Appendix D, column 6 and Appendix H, column 2)</i>

The Group formulated the following Conclusion:

**SCRAG Conclusion 21/3 —**

*The actual cost shares for 2019, as shown in Appendix D to the SCRAG/21 Report for the States participating in the SCAR Arrangement are approved by the SCRAG/21 meeting, with consequential adjustments to be made by the United Kingdom in its billing of these States for 2021, 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 2019 as at 2 November 2020. It was noted that a total amount of £ 551 876 was collected for 2019 (see Appendix F, page F-2). A balance of £ 76.80, which represents the sum of three States with balances owed, remains outstanding. Outstanding 2019 credits total £ 741.62, resulting in a net balance of £ -664.82, as indicated in the final column of Appendix F, page F-2.

3.6 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.

3.7 Having noted the information in Table 1 (A) and paragraphs 3.4 to 3.6 above, the Group agreed that the under-recovery of SADIS cost shares for the year 2019 amounts to £ 13 628, as shown in Table 2 below. The under-recovery of 2019 is the amount subject to collection for 2019 (£ 566 155), less the amounts collected for 2019 and prior years (£ 552 527).

**TABLE 2**  
**OVER-RECOVERY FOR 2019**

		UK £	References
(1)	Actual costs for 2019	564 515	Table 1 (A)
(2)	Under-recovery for 2017	1 640	SCRAG/19 Report, Table 2
(3)	Subject to collection for 2019	566 155	(1) + (2)
(4)	Collected from States for 2019 (as at 2 November 2020)	-551 876	Appendix F – page F-2 <i>(column 3 minus column 5)</i>
(5)	Collected from States for years prior to 2019 (as at 2 November 2020)	-651	Appendix F – page F-3 <i>(column 3)</i>
(6)	Under-recovery for 2019 (to be subtracted from the assessments for 2021)	13 628	(3) + (4) + (5) <i>(see Appendix G, column 5)</i>

The Group formulated the following Conclusion:

***SCRAG Conclusion 21/4*** —

*An under-recovery, amounting to £13 628 of the SADIS cost shares for the year 2019, will be taken into account in the calculation of the SADIS cost shares for the year 2021, 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 2021 AND ESTIMATED COSTS FOR THE NEXT TWO TO FIVE YEARS**

**Review of the 2021 Estimated SADIS Costs**

4.1 The Group reviewed the cost estimates for providing the SADIS services for the year 2021. 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 E and working paper 9 and SCRAG/20 working paper 14.

4.2 The cost estimates for 2021 are detailed in the column “Est 2021”, in Appendix E, and total £ 522 950. 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 2021**

Cost Item	Estimated Costs (UK £)
UK Met Office	207 450
UK NATS SADIS Gateway	275 900
UK CAA administrative costs	1 000
Sub-total UK	484 350
ICAO support services costs	38 600
<b>TOTAL</b>	<b>522 950</b>

4.3 The Group considered the under-recovery in Table 2 in the calculation of the amount to be assessed under the SADIS Agreement for 2021. The calculation of the amount to be assessed is presented in Table 4.

**TABLE 4**  
**AMOUNT TO BE ASSESSED UNDER THE SADIS AGREEMENT FOR 2021**

		UK £	References
(1)	Under-recovery for 2019	13 628	Table 2
(2)	Estimated costs for 2021	522 950	Table 3
(3)	<b>Amount to be assessed for 2021</b>	<b>536 578</b>	(1) + (2) <i>(see Appendix G, column 6)</i>

4.4 The Group determined that the cost shares for the period 1 January to 31 December 2021, 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 2019, in accordance with Article XI, paragraph 3, of the SADIS Agreement.

4.5 The cost share in percentage terms and the share in £ sterling, plus the share of under-recovery for 2019, attributable to each State, are shown in Appendix G. Appendix H shows the amounts to be billed to each State in 2021, corresponding to the adjustment for 2019 (Appendix D), plus the assessment for 2021 (Appendix G), less any deduction of unused credit balances or other adjustments from previous years.

**TABLE 5**

**AMOUNT TO BE BILLED UNDER THE SADIS AGREEMENT FOR 2021**

		<b>UK £</b>	<b>References</b>
(1)	Amount to be Assessed for 2021	536 578.00	Table 4
(2)	Adjustment of Actual SADIS Costs to Estimated Costs for 2019	-47 916.00	Table 1 (B)
(3)	Deduction of Unused Credit Balances from Previous Year or Other Adjustments	-239.40	Appendix H (column 4)
(4)	<b>Amount to be Billed for 2021</b>	<b>488 422.60</b>	(1)+(2)+(3) (see Appendix H, column 5)

The Group formulated the following Conclusion:

**SCRAG Conclusion 21/5 —**

*The estimated cost shares for 2021 as shown in Appendix G to the SCRAG/21 Report for each State participating in the SCAR Arrangement are approved by the SCRAG/21 meeting for collection by the United Kingdom.*

4.6 The Group noted that the 2020 ATKs that will be reported by State next year may vary with regards to the individual State's historical levels and trends due to the impact of COVID-19 on the aviation industry. This may, as a consequence, impact the prorated cost allocation between States for SADIS services that will be determined next year for the 2022 assessment calculation.

**Cost Estimates for the Years 2022 to 2024**

4.7 The Group considered the estimates provided by the United Kingdom (Appendix E) and summarized in Table 5 of providing the SADIS services for the years 2022 to 2024, as well as the estimates for the United Kingdom administrative costs and the costs of ICAO support services.

**TABLE 6**

**SUMMARY OF ESTIMATED SADIS COSTS  
FOR THE YEARS 2022, 2023 AND 2024**

<b>Cost Item</b>	<b>Estimated Costs 2022 (UK £)</b>	<b>Estimated Costs 2023 (UK £)</b>	<b>Estimated Costs 2024 (UK £)</b>
UK Met Office	208 450	209 150	194 150
UK NATS SADIS Gateway	282 900	289 800	294 900
UK CAA administrative costs	1 000	1 000	1 000
Sub-total UK	492 350	499 950	490 050
ICAO support services costs	42 500	43 500	44 000
<b>TOTAL</b>	<b>534 850</b>	<b>543 450</b>	<b>534 050</b>

4.8 The Group noted that an additional working paper or presentation will be presented next year to outline options that could be considered as a basis for assessing States for SADIS services in the future. This future change in policy should be established to address Amazon Web Service specific operational issues (these include multiple users within a state, 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 (2020) INVOICES**

5.1 The Group reviewed WP/12 on the status of payment for the current (2020) year, presented by the United Kingdom.

5.2 The Group formulated the following Conclusion:

***SCRAG Conclusion 21/6*** —

*With the assistance of ICAO Regional Met Officers, the SADIS Provider will continue to make all efforts to contact and remind the States of their outstanding payments. 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 20 January 2021, have cumulative outstanding payments over GBP 100 due for any invoice dated 2020 or earlier.*

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

6.1 The Group reviewed Annex I and Annex II, SADIS Services, to the SADIS Agreement. No changes were proposed by the METP WG-MOG since the SCRAG Extraordinary meeting conducted on 25 March 2020. Annex I appears in Appendix I, and Annex II appears in Appendix J and include the changes that should be proposed by the SADIS provider at the next METP WG/MOG meeting.

**AGENDA ITEM 7: FUTURE WORK AND ARRANGEMENTS FOR THE SCRAG/22 MEETING**

7.1 The Group determined that the Twenty Second SCRAG meeting will be conducted virtually in November 2021. The means of conducting future meetings will be determined on a case to case basis in consideration of whether significant changes are being made to the SADIS service provision or cost recovery mechanism.

**AGENDA ITEM 8: OTHER BUSINESS**

8.1 The Group expressed its appreciation for the ICAO Secretariat support received during the meeting and the assistance provided by the UK Met Office in conducting the virtual meeting.

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## APPENDIX A

### LIST OF PARTICIPANTS

#### Members

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## APPENDIX B

### LIST OF SCRAG/21 WORKING PAPERS

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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/13 meeting	United Kingdom
4	3	2019 ICAO actual SADIS administrative costs	Secretariat
5	3	2019 actual SADIS costs	United Kingdom
6	3	Status of payments for the year 2019	United Kingdom
7	3	Summary of actual costs and cost shares for the year 2019	Secretariat
8	4	2021 ICAO estimated SADIS administrative costs	Secretariat
9	4	Estimated SADIS costs: two to five years	United Kingdom
10	4	Summary of estimated costs and assessments for the year 2021	Secretariat
11	6	Amendment to Annex II, SADIS Inventory, to the SADIS Agreement	Secretariat
12	5	Status of payments for the current (2020) year	United Kingdom
13	6	Amendments to Annex I of the SADIS Agreement	United Kingdom
14	5	Credit balances	Secretariat

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## APPENDIX C

### STATES WHICH FORMALLY ACCEDED TO THE SADIS AGREEMENT

STATES	LDC's Exempted
Albania	
Armenia	
Australia	
Austria	
Bahrain	
Belarus	
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	
Kyrgyzstan	
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	
Tajikistan	
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	
Luxembourg	
Malawi	X
Maldives	
Mali	X
Malta	
Mauritania	X
Montenegro	
Mozambique	X
Namibia	
Niger	X
Nigeria	
North Macedonia	
Qatar	
Rwanda	X
Sao Tome and Principe	X
Saudi Arabia	
Serbia	
Seychelles	
Somalia	X
South Africa	
South Sudan	X
Sudan	X
Togo	X
Turkey	
Uganda	X
Yemen	X
Zambia	X
Zimbabwe	

## APPENDIX D

### ACTUAL COST SHARES FOR THE PERIOD 1 JANUARY TO 31 DECEMBER 2019\* AND ADJUSTMENT FOR 2019

STATES	2019 Available Tonne-Kilometres in Scheduled Services (000)	Percentage Cost Share	Share of 2019 Actual Costs (£ Sterling)	Share of 2019 Estimated Costs (SCRAG/19) (£ Sterling)	Adjustment for 2019 (£ Sterling)
Albania	32 926	0.004%	20.81	8.82	11.99
Algeria	1 017 224	0.114%	642.90	777.97	- 135.07
Armenia	41 901	0.005%	26.48	9.72	16.76
Australia	25 432 328	2.847%	16 073.65	19 148.42	- 3 074.77
Austria	6 716 134	0.752%	4 244.71	3 146.54	1 098.17
Azerbaijan	737 382	0.083%	466.04	1 517.30	- 1 051.26
Bahrain	2 816 182	0.315%	1 779.87	2 160.01	- 380.14
Belgium	6 003 179	0.672%	3 794.11	4 788.63	- 994.52
Bosnia and Herzegovina	2 477	0.000%	1.57	0.39	1.18
Botswana	17 926	0.002%	11.33	10.90	0.43
Bulgaria	154 248	0.017%	97.49	162.22	- 64.73
Cabo Verde	202 226	0.023%	127.81	58.74	69.07
Cameroon	38 560	0.004%	24.37	35.88	- 11.51
China: - Beijing	180 564 619	20.216%	114 119.82	114 601.35	- 481.53
- Hong Kong	37 213 551	4.166%	23 519.58	28 495.86	- 4 976.28
- Macao	895 026	0.100%	565.67	570.73	- 5.06
Congo	53 812	0.006%	34.01	58.22	- 24.21
Côte d'Ivoire	408 025	0.046%	257.88	85.31	172.57
Croatia	223 364	0.025%	141.17	167.18	- 26.01
Cyprus	43 202	0.005%	27.30	96.51	- 69.21
Czechia	995 371	0.111%	629.09	829.53	- 200.44
Denmark	2 379 649	0.266%	1 503.98	1 729.93	- 225.95
Egypt	5 341 307	0.598%	3 375.79	3 762.34	- 386.55
Equatorial Guinea	51 842	0.006%	32.77	38.14	- 5.37
Estonia	72	0.000%	0.05	0.96	- 0.91
Eswatini	3 950	0.000%	2.50	1.78	0.72
Finland	6 920 080	0.775%	4 373.60	4 462.02	- 88.42
France	35 887 000	4.018%	22 681.18	25 862.88	- 3 181.70
Gabon (note 1)	3 063	0.000%	1.94	2.08	- 0.14
Georgia	193 721	0.022%	122.43	93.70	28.73
Germany	43 461 686	4.866%	27 468.50	33 222.96	- 5 754.46
Ghana	39 163	0.004%	24.75	20.81	3.94
Greece	1 732 026	0.194%	1 094.67	1 199.05	- 104.38
Hungary	7 329 894	0.821%	4 632.61	3 251.21	1 381.40
Iceland	2 224 645	0.249%	1 406.01	2 344.04	- 938.03
India	29 797 548	3.336%	18 832.54	20 950.90	- 2 118.36
Indonesia	16 043 150	1.796%	10 139.54	13 364.69	- 3 225.15
Iraq	793 628	0.089%	501.59	287.21	214.38
Ireland	24 984 585	2.797%	15 790.67	17 188.96	- 1 398.29
Israel	4 448 531	0.498%	2 811.55	3 360.21	- 548.66
Italy	7 816 577	0.875%	4 940.21	6 524.96	- 1 584.75
Jordan (note 2)	1 437 710	0.161%	908.66	1 310.93	- 402.27
Kazakhstan	2 015 038	0.226%	1 273.54	1 427.74	- 154.20
Kenya	3 145 197	0.352%	1 987.82	1 465.36	522.46
Kuwait	3 813 972	0.427%	2 410.49	1 155.12	1 255.37
Latvia	873 512	0.098%	552.07	424.73	127.34
Libya (note 3)	73 945	0.008%	46.73	0.00	46.73
Lithuania	657	0.000%	0.42	281.17	- 280.75

**ACTUAL COST SHARES FOR THE PERIOD 1 JANUARY TO 31 DECEMBER 2019\*  
AND ADJUSTMENT FOR 2019**

STATES	2019 Available Tonne-Kilometres in Scheduled Services (000)	Percentage Cost Share	Share of 2019 Actual Costs (£ Sterling)	Share of 2019 Estimated Costs (SCRAG/19) (£ Sterling)	Adjustment for 2019 (£ Sterling)
Maldives	147 413	0.017%	93.17	98.10	- 4.93
Malta	457 815	0.051%	289.35	237.29	52.06
Mauritius	1 306 243	0.146%	825.57	1 059.25	- 233.68
Montenegro	63 717	0.007%	40.27	46.15	- 5.88
Morocco	4 321 769	0.484%	2 731.43	3 000.69	- 269.26
Namibia	72 052	0.008%	45.54	251.71	- 206.17
Netherlands	24 482 793	2.741%	15 473.53	18 242.27	- 2 768.74
Nigeria	530 828	0.059%	335.49	320.68	14.81
North Macedonia (note 1)	51 789	0.006%	32.73	36.19	- 3.46
Norway	7 318 524	0.819%	4 625.43	5 776.08	- 1 150.65
Oman	4 512 913	0.505%	2 852.24	2 756.65	95.59
Pakistan	3 228 165	0.361%	2 040.25	3 232.01	- 1 191.76
Poland	3 628 909	0.406%	2 293.53	1 657.29	636.24
Portugal	7 184 391	0.804%	4 540.65	4 750.30	- 209.65
Qatar	50 229 225	5.624%	31 745.70	31 069.54	676.16
Republic of Moldova	303 742	0.034%	191.97	188.08	3.89
Romania	956 510	0.107%	604.53	619.15	- 14.62
Russian Federation	46 534 849	5.210%	29 410.79	28 662.57	748.22
Saudi Arabia	14 687 053	1.644%	9 282.46	9 792.33	- 509.87
Senegal	64 610	0.007%	40.83	1.80	39.03
Serbia	498 737	0.056%	315.21	376.45	- 61.24
Seychelles	95 618	0.011%	60.43	220.32	- 159.89
Slovakia (note 1)	2 005	0.000%	1.27	1.40	- 0.13
Slovenia	108 498	0.012%	68.57	124.77	- 56.20
South Africa	6 433 685	0.720%	4 066.20	4 787.81	- 721.61
Spain	19 904 518	2.228%	12 579.98	12 214.46	365.52
Sweden	2 455 493	0.275%	1 551.91	1 785.90	- 233.99
Switzerland	11 790 036	1.320%	7 451.50	8 016.05	- 564.55
Thailand	23 575 473	2.639%	14 900.09	15 349.52	- 449.43
Tunisia	889 236	0.100%	562.01	726.01	- 164.00
Turkey	36 999 504	4.142%	23 384.30	26 508.67	- 3 124.37
Ukraine	2 329 295	0.261%	1 472.15	1 435.97	36.18
United Arab Emirates	89 627 487	10.034%	56 646.05	63 452.99	- 6 806.94
United Kingdom	53 371 592	5.975%	33 731.72	38 554.72	- 4 823.00
Viet Nam	10 577 184	1.184%	6 684.96	6 590.04	94.92
Zimbabwe (note 1)	33 093	0.004%	20.92	23.68	- 2.76
<b>TOTAL</b>	<b>893 196 575</b>	<b>100.000%</b>	<b>564 515.00</b>	<b>612 431.00</b>	<b>- 47 916.00</b>

\* Least Developed Countries are exempted.

Note 1: 2019 ATKs were not received for Gabon, North Macedonia, Slovakia and Zimbabwe.

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

Note 2: In accordance with the months for which services were received, Jordan's share of actual 2019 costs was calculated based on 10 full months of service.

Note 2: In accordance with the months for which services were received, Libya's share of actual 2019 costs was calculated based on 3 full months of service.

**APPENDIX E**

**SADIS COST ESTIMATES FOR 2021 TO 2024 FOR SADIS SERVICES PROVIDED BY THE UNITED KINGDOM METEOROLOGICAL OFFICE**

TABLE 1: UKMO Cost and manpower resource projections until year 2024 (at 2020 prices)			Actual 2019	FOO 2020	Est 2021	Est 2022	Est 2023	Est 2024
INVENTORY REF:	Note	DESCRIPTION						
<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	7,000	6,000	4,000	4,500	4,500
<b>Not procured principally for SADIS</b>								
message switch	b		4,000	4,000	5,000	5,000	5,000	5,000
internet bandwidth (FTP)	c		8,021	0	0	0	0	0
FTP equipment running costs	c		24,246	0	0	0	0	0
AWS Servers	d	Server running costs	0	36,000	45,000	45,000	45,000	30,000
Service Desk Equipment Costs	c		10,307	0	0	0	0	0
		<b>Equipment sub total</b>	<b>49,914</b>	<b>47,000</b>	<b>56,000</b>	<b>54,000</b>	<b>54,500</b>	<b>39,500</b>
<b>2. Next Generation SADIS service provision</b>								
WAFS 0.25 degree and IWXXM data set up.	e	Data feed set up costs for SADIS FTP	0	7,000				
IWXXM OPMET API	f	AWS Server running costs		0	0	0	tbd	tbd
Gridded data API	f	AWS Server running costs		0	0	0	tbd	tbd
SIGWX API	f	AWS Server running costs		0	0	0	tbd	tbd
		<b>Development sub total</b>	<b>0</b>	<b>7,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>3. Annual Staff Requirements</b>								
<b>Operating Support</b>								
	c	Help Desk 0.3%	4,845	0	0	0	0	0
	c	Technical Team Leader 3.5%	12,998	0	0	0	0	0
	c	Network Systems Supervisor 7%	25,996	0	0	0	0	0
	g	First Line Support		4,500	4,800	5,000	5,000	5,000
	h	Second Line Support		20,000	20,500	20,500	20,500	20,500
	i	Third and Fourth Line Support		3,500	15,000	15,000	15,000	15,000
<b>Additional Support</b>								
Systems Integration Team	c	Network computer engineer	5,499	0	0	0	0	0
Message Switching Manager	c	Message Switching Manager	5,499	0	0	0	0	0
Data Traffic	c	Communications Engineer	2,171	0	0	0	0	0
Message Switching Team	c	Technical Officer	5,645	0	0	0	0	0
Administrator	j	Executive Officer	65,734	64,235	65,000	66,000	66,000	66,000
International Aviation Management	j	Aviation Manager	8,073	7,665	8,000	8,500	8,500	8,500
Contract Procurement and Management	j	Senior Procurement Officer	1,737	1,560	1,600	1,600	1,800	1,800
Invoice Administration	j	Finance Officer & Business Acct	12,852	14,465	14,500	15,000	15,000	15,000
<b>Travel Costs</b>								
	k	METP-WG/MOG meetings & SCRAG	919	75	400	1,200	1,200	1,200
		<b>Staff Requirement and travel sub total</b>	<b>151,968</b>	<b>116,000</b>	<b>129,800</b>	<b>132,800</b>	<b>133,000</b>	<b>133,000</b>
<b>Administrative costs</b>								
	l	Cost of Capital	19,754	20,000	21,000	21,000	21,000	21,000
	m	Admin charges	311	250	650	650	650	650
		<b>Total UKMO Costs</b>	<b>221,947</b>	<b>190,250</b>	<b>207,450</b>	<b>208,450</b>	<b>209,150</b>	<b>194,150</b>

TABLE 2: NATS and other SADIS Cost Projections until 2024 (at 2020 prices)

INVENTORY REF:	Note	DESCRIPTION	Actual 2019	FOO 2020	Est 2021	Est 2022	Est 2023	Est 2024
<b>NATS Gateway Costs</b>								
<b>Staff Costs</b>								
	n	Operational Staff Air Traffic Services Asst.	215,000	225,000	229,000	235,000	241,000	245,000
		Engineering Staff Maintenance Engineer	7,052	7,000	7,200	7,300	7,400	7,500
		Administration Staff Administration Officer	26,946	27,800	28,500	29,300	30,000	30,900
		<b>Staff Costs sub total</b>	<b>248,998</b>	<b>259,800</b>	<b>264,700</b>	<b>271,600</b>	<b>278,400</b>	<b>283,400</b>
		Maintenance	9,600	9,700	9,700	9,700	9,700	9,700
	o	T&RE	1,000	0	1,500	1,600	1,700	1,800
		Cost of Depreciated Capital						
		Capital Investments	37,466	0	N/A	N/A	N/A	N/A
		Interest at 5.88%	2,197	0	N/A	N/A	N/A	N/A
		<b>Total NATS Gateway Costs</b>	<b>299,261</b>	<b>269,500</b>	<b>275,900</b>	<b>282,900</b>	<b>289,800</b>	<b>294,900</b>
	p	<b>CAA Administration Costs</b>	<b>4,003</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>
	q	<b>ICAO Administration Costs</b>	<b>39,304</b>	<b>41,000</b>	<b>38,600</b>	<b>42,500</b>	<b>43,500</b>	<b>44,000</b>
		<b>TOTAL SADIS COSTS</b>	<b>564,515</b>	<b>501,750</b>	<b>522,950</b>	<b>534,850</b>	<b>543,450</b>	<b>534,050</b>

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## APPENDIX F

### STATUS OF PAYMENTS OF THE ASSESSMENTS FOR 2019 AS AT 2 NOVEMBER 2020

STATES	(£ Sterling)				
	Total amount billed for 2019 (SCRAG/19 Report, Appendix I)	Amount Collected as at 02 November 2020	Administrative Charges Applied	Application of credit balance (or part of)	Unpaid amount (excess paid) as at 02 November 2020
Albania	-6.75				- 6.75
Algeria	505.15	505.15	12.38		0.00
Armenia	0.00				0.00
Australia	15,288.78	15,288.78			0.00
Austria	2,667.79	2,667.79			0.00
Azerbaijan	2,282.05	2,282.05			0.00
Bahrain	2,238.12	2,238.12			0.00
Belgium	4,176.63	4,176.63			0.00
Bosnia and Herzegovina	0.00				0.00
Botswana	-10.73				- 10.73
Bulgaria	148.77	148.77			0.00
Cabo Verde	-26.13				- 26.13
Cameroon	-0.54	-0.54			0.00
China: - Beijing	111,994.66	111,994.66			0.00
- Hong Kong	23,554.51	23,554.51	25.00		0.00
- Macau	494.08	494.08			0.00
Congo	13.86	13.86			0.00
Côte d'Ivoire	82.29	82.29	4.58		0.00
Croatia	147.49	147.49			0.00
Cyprus	0.00				0.00
Czechia	206.58	206.58			0.00
Denmark	-55.85				- 55.85
Egypt	3,069.85	3,069.85			0.00
Equatorial Guinea	38.24	38.24			0.00
Estonia	-67.80				- 67.80
Eswatini	1.53				1.53
Finland	4,362.20	4,362.20			0.00
France	20,207.82	20,207.82			0.00
Gabon	-0.67	-0.67			0.00
Georgia	0.00				0.00
Germany	25,727.31	25,727.31			0.00
Ghana	10.60	10.60			0.00
Greece	966.31	966.31			0.00
Hungary	3,400.12	3,400.12			0.00
Iceland	3,150.50	3,150.50			0.00
India	21,608.81	21,608.81			0.00
Indonesia	13,756.41	13,756.41			0.00
Iraq	453.27	453.27			0.00
Ireland	19,403.71	19,403.71			0.00
Israel	2,455.86	2,455.86			0.00
Italy	7,349.83	7,349.83			0.00
Jordan	917.14	917.14			0.00
Kazakhstan	1,021.65	1,021.65			0.00
Kenya	1,130.46	1,130.46			0.00
Kuwait	539.84	539.84			0.00
Latvia	447.33	447.33			0.00

**STATUS OF PAYMENT OF THE ASSESSMENT FOR 2019  
AS AT 2 NOVEMBER 2020**

(£ Sterling)					
STATES	Total amount billed for 2019 (SCRAG/19 Report, Appendix I)	Amount Collected as at 02 November 2020	Administrative Charges Applied	Application of credit balance (or part of)	Unpaid amount (excess paid) as at 02 November 2020
Libya	-474.70				- 474.70
Lithuania	174.61	174.61			0.00
Maldives	187.93	187.93			0.00
Malta	155.15	155.15			0.00
Mauritius	1,225.75	1,225.75			0.00
Montenegro	28.76	28.76			0.00
Morocco	2,035.27	2,035.27	12.00		0.00
Namibia	74.82				<b>74.82</b>
Netherlands	16263.52	16263.52			0.00
Nigeria	193.27	193.27			0.00
North Macedonia	31.65	31.65			0.00
Norway	7,539.94	7,539.94			0.00
Oman	2,956.15	2,956.15			0.00
Pakistan	2,916.18	2,916.18	25.00		0.00
Poland	2,004.65	2,004.65	0.45		0.00
Portugal	4,279.58	4,279.58			0.00
Qatar	32,311.97	32,311.97	43.00		0.00
Republic of Moldova	187.02	187.02			0.00
Romania	525.51	525.51			0.00
Russian Federation	25,190.54	25,190.54	37.79		0.00
Saudi Arabia	7,406.21	7,406.21	15.00		0.00
Senegal	-28.62	-28.62			0.00
Serbia	337.00	337.00			0.00
Seychelles	212.94	212.94			0.00
Slovakia	0.45				<b>0.45</b>
Slovenia	80.95	80.95			0.00
South Africa	3,581.75	3,581.75			0.00
Spain	9,261.70	9,261.70			0.00
Sweden	415.26	415.26			0.00
Switzerland	7,164.86	7,164.86	15.00		0.00
Thailand	14,448.19	14,448.19			0.00
Tunisia	705.39	705.39	10.77		0.00
Turkey	23,371.98	23,371.98			0.00
Ukraine	1,475.65	1,475.65			0.00
United Arab Emirates	51,206.39	51,206.39	30.00		0.00
United Kingdom	33,495.69	33,495.69			0.00
Viet Nam	6,716.42	6,716.42			0.00
Zimbabwe	-99.66				- 99.66
<b>TOTAL</b>	<b>551 211.20</b>	<b>551 876.02</b>	<b>230.97</b>	<b>0.00</b>	<b>- 664.82</b>

**STATUS OF PAYMENT OF BALANCES FOR YEARS PRIOR TO 2019  
AS AT 2 NOVEMBER 2020**

STATES	Balance due for years prior to 2019	(£ Sterling)			Unpaid amount (excess paid) as at 02 November 2020
		Amount Collected as at 02 November 2020	Administrative Charges Applied	Application of credit balance (or part of)	
Armenia*	9.68				9.68
Democratic People's Republic of Korea	229.75				229.75
Eswatini*	7.14				7.14
Iran (Islamic Republic of)	14 548.16				14 548.16
Kuwait	176.43	176.43			0.00
Libya**	490.01	474.70			15.31
Slovakia*	1.10				1.10
Syrian Arab Republic	2 266.26				2 266.26
Turkmenistan	1 228.35				1 228.35
<b>TOTAL</b>	<b>18 956.88</b>	<b>651.13</b>	<b>0.00</b>	<b>0.00</b>	<b>18 305.75</b>

\* As per SCRAG Conclusion 19/6, invoices under GBP 30 are not invoiced.

\*\* The £490.01 balance due for Libya was offset by a 2019 credit of £474.70.

## APPENDIX G

### ESTIMATED COST SHARES AND ASSESSMENTS FOR THE PERIOD 1 JANUARY TO 31 DECEMBER 2021 \*

STATES	2019 Available Tonne-Kilometres in Scheduled Services (000)	Percentage Cost Share	Share of 2021 Estimated Costs (£ Sterling)	Share of Under-recovery for 2019 (£ Sterling)	Amount to be Assessed for 2021 (£ Sterling)
Albania	32 926	0.004%	19.00	0.50	19.50
Algeria	1 017 224	0.112%	587.01	15.30	602.31
Armenia	41 901	0.005%	24.18	0.63	24.81
Australia	25 432 328	2.806%	14 676.23	382.46	15 058.69
Austria	6 716 134	0.741%	3 875.68	101.00	3 976.68
Azerbaijan	737 382	0.081%	425.52	11.09	436.61
Bahrain	2 816 182	0.311%	1 625.13	42.35	1 667.48
Belarus	489 859	0.054%	282.68	7.37	290.05
Belgium	6 003 179	0.662%	3 464.25	90.28	3 554.53
Bosnia and Herzegovina	2 477	0.000%	1.43	0.04	1.47
Botswana	17 926	0.002%	10.34	0.27	10.61
Bulgaria	154 248	0.017%	89.01	2.32	91.33
Cabo Verde	202 226	0.022%	116.70	3.04	119.74
Cameroon	38 560	0.004%	22.25	0.58	22.83
China: - Beijing	180 564 619	19.925%	104 198.38	2 715.39	106 913.77
- Hong Kong	37 213 551	4.106%	21 474.82	559.63	22 034.45
- Macao	895 026	0.099%	516.49	13.46	529.95
Congo	53 812	0.006%	31.05	0.81	31.86
Côte d'Ivoire	408 025	0.045%	235.46	6.14	241.60
Croatia	223 364	0.025%	128.90	3.36	132.26
Cyprus	43 202	0.005%	24.93	0.65	25.58
Czechia	995 371	0.110%	574.40	14.97	589.37
Denmark	2 379 649	0.263%	1 373.22	35.79	1 409.01
Egypt	5 341 307	0.589%	3 082.31	80.32	3 162.63
Equatorial Guinea	51 842	0.006%	29.92	0.78	30.70
Estonia	72	0.000%	0.04	0.00	0.04
Eswatini	3 950	0.000%	2.28	0.06	2.34
Finland	6 920 080	0.764%	3 993.37	104.07	4 097.44
France	35 887 000	3.960%	20 709.30	539.68	21 248.98
Gabon	3 063	0.000%	1.77	0.05	1.82
Georgia	193 721	0.021%	111.79	2.91	114.70
Germany	43 461 686	4.796%	25 080.42	653.59	25 734.01
Ghana	39 163	0.004%	22.60	0.59	23.19
Greece	1 732 026	0.191%	999.50	26.05	1 025.55
Hungary	7 329 894	0.809%	4 229.86	110.23	4 340.09
Iceland	2 224 645	0.245%	1 283.78	33.45	1 317.23
India	29 797 548	3.288%	17 195.26	448.11	17 643.37
Indonesia	16 043 150	1.770%	9 258.02	241.26	9 499.28
Iraq	793 628	0.088%	457.98	11.93	469.91
Ireland	24 984 585	2.757%	14 417.85	375.73	14 793.58
Israel	4 448 531	0.491%	2 567.11	66.90	2 634.01
Italy	7 816 577	0.863%	4 510.71	117.55	4 628.26
Jordan	1 725 252	0.190%	995.59	25.94	1 021.53
Kazakhstan	2 015 038	0.222%	1 162.82	30.30	1 193.12
Kenya	3 145 197	0.347%	1 815.00	47.30	1 862.30
Kuwait	3 813 972	0.421%	2 200.93	57.36	2 258.29
Kyrgyzstan	355 761	0.039%	205.30	5.35	210.65
Latvia	873 512	0.096%	504.08	13.14	517.22

**ESTIMATED COST SHARES AND ASSESSMENTS  
FOR THE PERIOD 1 JANUARY TO 31 DECEMBER 2021 \***

<b>STATES</b>	<b>2019 Available Tonne-Kilometres in Scheduled Services (000)</b>	<b>Percentage Cost Share</b>	<b>Share of 2021 Estimated Costs (£ Sterling)</b>	<b>Share of Under-recovery for 2019 (£ Sterling)</b>	<b>Amount to be Assessed for 2021 (£ Sterling)</b>
Libya	295 779	0.033%	170.69	4.45	175.14
Lithuania	657	0.000%	0.38	0.01	0.39
Luxembourg	11 290 986	1.246%	6 515.69	169.80	6 685.49
Maldives	147 413	0.016%	85.07	2.22	87.29
Malta	457 815	0.051%	264.19	6.88	271.07
Mauritius	1 306 243	0.144%	753.79	19.64	773.43
Montenegro	63 717	0.007%	36.77	0.96	37.73
Morocco	4 321 769	0.477%	2 493.96	64.99	2 558.95
Namibia	72 052	0.008%	41.58	1.08	42.66
Netherlands	24 482 793	2.702%	14 128.28	368.18	14 496.46
Nigeria	530 828	0.059%	306.32	7.98	314.30
North Macedonia	51 789	0.006%	29.89	0.78	30.67
Norway	7 318 524	0.808%	4 223.30	110.06	4 333.36
Oman	4 512 913	0.498%	2 604.27	67.87	2 672.14
Pakistan	3 228 165	0.356%	1 862.88	48.55	1 911.43
Poland	3 628 909	0.400%	2 094.13	54.57	2 148.70
Portugal	7 184 391	0.793%	4 145.89	108.04	4 253.93
Qatar	50 229 225	5.543%	28 985.77	755.36	29 741.13
Republic of Moldova	303 742	0.034%	175.28	4.57	179.85
Romania	956 510	0.106%	551.97	14.38	566.35
Russian Federation	46 534 849	5.135%	26 853.85	699.81	27 553.66
Saudi Arabia	14 687 053	1.621%	8 475.45	220.87	8 696.32
Senegal	64 610	0.007%	37.28	0.97	38.25
Serbia	498 737	0.055%	287.81	7.50	295.31
Seychelles	95 618	0.011%	55.18	1.44	56.62
Slovakia	2 005	0.000%	1.16	0.03	1.19
Slovenia	108 498	0.012%	62.61	1.63	64.24
South Africa	6 433 685	0.710%	3 712.69	96.75	3 809.44
Spain	19 904 518	2.196%	11 486.30	299.33	11 785.63
Sweden	2 455 493	0.271%	1 416.99	36.93	1 453.92
Switzerland	11 790 036	1.301%	6 803.67	177.30	6 980.97
Tajikistan	373 697	0.041%	215.65	5.62	221.27
Thailand	23 575 473	2.602%	13 604.69	354.54	13 959.23
Tunisia	889 236	0.098%	513.15	13.37	526.52
Turkey	36 999 504	4.083%	21 351.30	556.41	21 907.71
Ukraine	2 329 295	0.257%	1 344.17	35.03	1 379.20
United Arab Emirates	89 627 487	9.890%	51 721.31	1 347.85	53 069.16
United Kingdom	53 371 592	5.889%	30 799.12	802.61	31 601.73
Viet Nam	10 577 184	1.167%	6 103.77	159.06	6 262.83
Zimbabwe	33 093	0.004%	19.10	0.50	19.60
<b>TOTAL</b>	<b>906 216 254</b>	<b>100.000%</b>	<b>522 950.00</b>	<b>13 628.00</b>	<b>536 578.00</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 H

### AMOUNTS TO BE BILLED FOR THE PERIOD 1 JANUARY TO 31 DECEMBER 2021 (£ Sterling)

STATES	Adjustment for 2019 (SCRAG/21-WP/7)	Assessment for 2021 (Attachment A)	Deduction of Unused Credit Balance from Previous Years	Total Amount to be Billed for 2021
Albania	11.99	19.50	- 31.49	0.00
Algeria	- 135.07	602.31		467.24
Armenia	16.76	24.81	- 41.57	0.00
Australia	- 3 074.77	15 058.69		11 983.92
Austria	1 098.17	3 976.68		5 074.85
Azerbaijan	- 1 051.26	436.61		- 614.65
Bahrain	- 380.14	1 667.48		1 287.34
Belarus		290.05		290.05
Belgium	- 994.52	3 554.53		2 560.01
Bosnia and Herzegovina	1.18	1.47	- 2.65	0.00
Botswana	0.43	10.61	- 11.04	0.00
Bulgaria	- 64.73	91.33		26.60
Cabo Verde	69.07	119.74		188.81
Cameroon	- 11.51	22.83	- 11.32	0.00
China: - Beijing	- 481.53	106 913.77		106 432.24
- Hong Kong	- 4 976.28	22 034.45		17 058.17
- Macao	- 5.06	529.95		524.89
Congo	- 24.21	31.86		7.65
Côte d'Ivoire	172.57	241.60		414.17
Croatia	- 26.01	132.26		106.25
Cyprus	- 69.21	25.58		- 43.63
Czechia	- 200.44	589.37		388.93
Denmark	- 225.95	1 409.01		1 183.06
Egypt	- 386.55	3 162.63		2 776.08
Equatorial Guinea	- 5.37	30.70		25.33
Estonia	- 0.91	0.04		- 0.87
Eswatini	0.72	2.34		3.06
Finland	- 88.42	4 097.44		4 009.02
France	- 3 181.70	21 248.98		18 067.28
Gabon	- 0.14	1.82	- 1.68	0.00
Georgia	28.73	114.70		143.43
Germany	- 5 754.46	25 734.01		19 979.55
Ghana	3.94	23.19		27.13
Greece	- 104.38	1 025.55		921.17
Hungary	1 381.40	4 340.09		5 721.49
Iceland	- 938.03	1 317.23		379.20
India	- 2 118.36	17 643.37		15 525.01
Indonesia	- 3 225.15	9 499.28		6 274.13
Iraq	214.38	469.91		684.29
Ireland	- 1 398.29	14 793.58		13 395.29
Israel	- 548.66	2 634.01		2 085.35
Italy	- 1 584.75	4 628.26		3 043.51
Jordan	- 402.27	1 021.53		619.26
Kazakhstan	- 154.20	1 193.12		1 038.92
Kenya	522.46	1 862.30		2 384.76
Kuwait	1 255.37	2 258.29		3 513.66
Kyrgyzstan		210.65		210.65
Latvia	127.34	517.22		644.56
Libya	46.73	175.14	- 121.75	100.12
Lithuania	- 280.75	0.39		- 280.36

## H-2

**AMOUNTS TO BE BILLED  
FOR THE PERIOD 1 JANUARY TO 31 DECEMBER 2021  
(£ Sterling)**

STATES	Adjustment for 2019 (SCRAG/21-WP/7)	Assessment for 2021 (Attachment A)	Deduction of Unused Credit Balance from Previous Years	Total Amount to be Billed for 2021
Luxembourg		6 685.49		6 685.49
Maldives	- 4.93	87.29		82.36
Malta	52.06	271.07		323.13
Mauritius	- 233.68	773.43		539.75
Montenegro	- 5.88	37.73		31.85
Morocco	- 269.26	2 558.95		2 289.69
Namibia	- 206.17	42.66		- 163.51
Netherlands	- 2 768.74	14 496.46		11 727.72
Nigeria	14.81	314.30		329.11
North Macedonia	- 3.46	30.67		27.21
Norway	- 1 150.65	4 333.36		3 182.71
Oman	95.59	2 672.14		2 767.73
Pakistan	- 1 191.76	1 911.43		719.67
Poland	636.24	2 148.70		2 784.94
Portugal	- 209.65	4 253.93		4 044.28
Qatar	676.16	29 741.13		30 417.29
Republic of Moldova	3.89	179.85		183.74
Romania	- 14.62	566.35		551.73
Russian Federation	748.22	27 553.66		28 301.88
Saudi Arabia	- 509.87	8 696.32		8 186.45
Senegal	39.03	38.25		77.28
Serbia	- 61.24	295.31		234.07
Seychelles	- 159.89	56.62		- 103.27
Slovakia	- 0.13	1.19	- 1.06	0.00
Slovenia	- 56.20	64.24		8.04
South Africa	- 721.61	3 809.44		3 087.83
Spain	365.52	11 785.63		12 151.15
Sweden	- 233.99	1 453.92		1 219.93
Switzerland	- 564.55	6 980.97		6 416.42
Tajikistan		221.27		221.27
Thailand	- 449.43	13 959.23		13 509.80
Tunisia	- 164.00	526.52		362.52
Turkey	- 3 124.37	21 907.71		18 783.34
Ukraine	36.18	1 379.20		1 415.38
United Arab Emirates	- 6 806.94	53 069.16		46 262.22
United Kingdom	- 4 823.00	31 601.73		26 778.73
Viet Nam	94.92	6 262.83		6 357.75
Zimbabwe	- 2.76	19.60	- 16.84	0.00
<b>TOTAL</b>	<b>- 47 916.00</b>	<b>536 578.00</b>	<b>- 239.40</b>	<b>488 422.60</b>

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## APPENDIX I – for information purposes

### AMENDMENT TO ANNEX I, SADIS SERVICES, TO THE SADIS AGREEMENT to be proposed at the next METP WG-MOG meeting

#### SADIS SERVICES

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

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

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

Products available on SADIS:

- 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 OPMET information in IWXXM format (METARs, TAFs, SIGMET, AIRMET, volcanic ash advisories, tropical cyclone advisories and space weather advisories) from those States who are distributing their data internationally via the Regional Opmet Centres.
- f) 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/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; and
- 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.

#### **6. Fair Use of SADIS Products**

- a) The use of SADIS is continually monitored to ensure the volume of data being downloaded is not excessive and does not impede the operation of the SADIS FTP Servers;
- b) A user who is responsible for >10% of the total volume of data being downloaded from SADIS FTP Server in a single week will be considered as excessive usage; and
- c) If users are deemed to be excessively downloading data then the SADIS Manager will contact the user with a request to the use to reduce the volume data being downloaded. The SADIS Manager may, at their discretion, limit or terminate access to the SADIS FTP server without recourse to the user if the excessive use continues.

#### **7. Security**

- a) The SADIS FTP server will be continually monitored for lawful security purposes.
- b) Users are not permitted to share passwords and are responsible for keeping passwords secure.
- c) The SADIS Manager reserves the right to suspend or terminate a user's access to the SADIS FTP Server if the users use of the system or the user has failed to observe the obligations of 7 b) has resulted or is likely to result in an increased risk to security of the SADIS FTP Server.
- d) The SADIS Manager reserves the right to restrict access to the SADIS FTP Server in the event of a security threat and users acknowledge that access to the SADIS FTP Server may be restricted or unavailable until such time the security threat has been resolved.

### 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>IWXXM</i>	The ICAO Meteorological Information Exchange Model is a data format for reporting aviation weather information in XML/GML format
<i>METAR</i>	Routine aviation weather report in code form
<i>METP</i>	Meteorology Panel
<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>	The oversight of the SADIS service is undertaken by the Meteorological Panel (METP) which has tasked Met Operations Group (WG-MOG/SADIS) to carry out this responsibility, each year they meet to ensure the service is meeting the users' needs.

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APPENDIX J – for information purposes

AMENDMENT TO ANNEX II, SADIS INVENTORY, TO THE SADIS AGREEMENT  
to be proposed at the next METP WG-MOG meeting

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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ANNEX II

SADIS INVENTORY

(2020-2021)

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

SADIS infrastructure consists of the following:

i) Solely procured for SADIS (major components)

NIL

*Note: In November 2019 SADIS FTP was migrated to use Amazon Web Services infrastructure (see Section 2A) which is a procured service.*

ii) 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) NATS SADIS gateway function software (developed specifically for the gateway as part of the NATS CoreMet system);

c) Met Office operational monitoring software;

*Note. — This enables the operational monitoring of the SADIS FTP service and ensures problems can be identified and resolved in a timely manner.*

d) Met Office Service Desk equipment;

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

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<sup>1</sup> budgeted cost for providing MetSwitch service during the fiscal year 2018/2019.

## B. SADIS data back-up system

The recognized back-up for SADIS FTP in the event of a failure 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.*

## 2. PROCURED SERVICES

### A. Amazon Web Services (AWS) elements used by the Met Office in the operation of SADIS FTP:

AWS Service	Specification	Quantity	What the service is used for:
EC2	t3.medium 2* vCPU ( <i>Intel Xeon Platinum 8000 series</i> ) 4 GiB Memory  Network Bandwidth: ≤5Gbps; EBS Bandwidth ≤1.50 Gbps)	3	2* FTP Server and 1 Apps Server
S3	N/A	612	Data Storage: Ingestion; FTP Content; IWXXM; AuthN; Logs & Alerts.
DynamoDB	1x Table Primary partition key: report_id Read/write capacity mode: On-Demand	1	Stores incoming IWXXM reports from AV OPMET Data Services
Route53	N/A	1	DNS
Lambda	N/A	N/A	Various Serverless Functions including housekeeping, Log formatting, Alerting Management, packaging IWXXM data, etc
Cloudwatch	N/A	N/A	Log Aggregation
NAT Gateway	N/A	1	Access
VPC	N/A	1	
Kinesis Data Stream	N/A	1	Log Entry Routing
Kinesis Firehose	N/A	2	
DynamoDB	N/A		Alert Management
Athena	N/A		

### B. NATS Gateway function:

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

### 3. ANNUAL STAFF REQUIREMENTS

#### A. Met Office

##### i) First Line Support

###### *Help Desk*

###### *Skill*

1. Service desk (first point of contact)

Incident Management and customer enquiries

*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.*

##### ii) Second Line Support

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

###### *Skill*

1. Shift Leader (ITCS)
2. Networks Incident Manager (NIM)

Technical Supervisor, incident handling  
Service Continuity, system monitoring

##### iii) Third and Fourth Line Support

###### *Normal working hours support and “best endeavors”*

###### *Skill*

1. Message Switching Manager
2. Message Switching Staff
3. AWS Technical Support

Incident handling, server adjustments  
Incident handling and account changes  
AWS expertise, support and guidance

##### iv) Additional support

###### *Day support*

###### *Resource*

1. Administrator
2. International aviation management
3. Contract procurement and management
4. Invoice Administration

144 staff-days of senior stakeholder relationship manager (SADIS manager)

14 staff-days of aviation business head

4 staff-days of senior procurement manager

20 staff-days of finance assistant and  
15 staff-days of senior finance manager

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

*Note 1. — Data Services provide 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 to provide the SADIS Gateway service is the standard required staff days needed to provide the SADIS service. It comprises 6 watches providing the H24 element of the service and day support administrative staff. The cost recovery NATS submits to the SCRAG will represent actual staff-days required to provide the service.*

*Role and Responsibilities*

*Resource*

- |   |                          |
|---|--------------------------|
| 1. Operational Staff<br>- Operational Staff relates to the H24 function in ROC LONDON. Monitor, validate, record & report on issues raised through the SADIS Gateway operation.                         | 521 staff-days per annum |
| 2. Engineering Staff<br>- Engineering Staff includes the duties carried out by the Engineering Day support team and an H24 engineers for the support of SADIS.  | 20 staff-days per annum  |
| 3. Administration Staff<br>- The Administration Office carries out the documentation creation and amendments, adaptation changes, investigations and meeting attendance of the SADIS Gateway operation. | 63 staff-days per annum  |

**C. Bought-in services**

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