



International
Civil Aviation
Organization

Organisation
de l'aviation civile
internationale

Organización
de Aviación Civil
Internacional

Международная
организация
гражданской
авиации

منظمة الطيران
المدني الدولي

国际民用
航空组织

Ref.: T 4/9.1.1:AP058/10 (MET)

29 March 2010

Subject: Cost recovery related to the provision
of volcanic ash advisory information

Action Required: Note the information provided

Sir/Madam,

I have the pleasure to draw your attention to the Twentieth Meeting of Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/20) held in Bangkok, Thailand from 7 to 11 September 2009. Reference is made to APANPIRG Conclusion 20/67 which is reproduced for your reference:

Conclusion 20/67 – Cost Recovery by Volcano Observatories

That, the ICAO CNS/MET Sub-group VA/TC Implementation Task Force, in coordination with the VAAC Provider States and the ICAO Secretariat, be invited to investigate examples of agreements between State Volcanic Observatories and the civil aviation authorities that may be used by other States in considering the recovery of the cost in accordance with ICAO provisions.

In this regard I would also like to refer to the International Airways Volcano Watch Operations Study Group (IAVWOPSG) Conclusion 4/9 calling for the fostering of the implementation of the volcano observatory reporting. You may wish to note that as a follow-up of this conclusion ICAO has developed guidance for determining the costs of aeronautical meteorological services specifically for State volcano observatories which will be included in the next amendment of Doc 9161, *Manual on Air Navigation Services Economics*, Appendix 3 (attached hereto for your convenience). In the meantime, this guidance has been included in the *Handbook on the International Airways Volcano Watch*, Doc 9766, paragraph 4.1.3 (attached hereto for your convenience). Moreover, the IAVWOPSG has included a document called *Guidance for Volcano Observatories: the International Airways Volcano Watch* which contains an appendix related to cost and charges in the New Zealand Volcanic Ash Advisory System and can be found on the World Organization of Volcano Observatories (WOVO) website at <http://www.wovo.org>. Appendix 5 to this guidance is attached for your reference.

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Furthermore, the Civil Aviation Authority of New Zealand (CAANZ) has provided a generic template of an agreement to provide International Civil Aviation Organization mandated volcanic ash advisory services between a meteorological service (country or organization) and airline, which is attached for your reference. As suggested by the CAANZ, any such agreement should be evaluated and modified as necessary by legal experts in the particular State.

In light of the above it may be considered that action on the APANPIRG Conclusion 20/67 has been completed through the development of the material referred to above and attached here for your reference.

Accept, Sir/Madam, the assurances of my highest consideration.



Mokhtar A. Awan
Regional Director

Attachments:

- Appendix E to IAVWOPSG/4 report (Appendix 3 to *Manual on Air Navigation Services Economics*, Doc 9161)
- *Handbook on the International Airways Volcano Watch*, Doc 9766, paragraph 4.1.3
- Appendix 5 to the *Guidance for Volcano Observatories: the International Airways Volcano Watch*
- Template of agreement for provision of volcanic ash advisory services

APPENDIX E

Amendment to the

Doc 9161, *Manual on Air Navigation Services Economics*

APPENDIX 3

**Guidance for Determining the Costs of
Aeronautical Meteorological Services****INVENTORY OF FACILITIES AND SERVICES AND THEIR
ALLOCATION BETWEEN AIRPORT AND EN-ROUTE USE**Core facilities and services that may serve both
aeronautical and non-aeronautical requirements

Legend indicating utilization:

A airport;
 E en route;
 mA mainly airport;
 A/E airport and en route;
 mE mainly en route.

General analysis and forecast offices.....	A/E
Meteorological data processing	A/E
Commonly used meteorological telecommunications facilities and services	A/E
Surface synoptic observation stations	mE
Climatological observation stations (precipitation stations to be excluded).....	mE
Upper-air observation stations	E
Weather radar	A/E
Meteorological satellite image reception	mE
Core training	A/E
Core research	A/E
Core technical support (including administration).....	A/E
State volcano observatories ¹	A/E ²

¹ Reasonable costs for the transmission of information about re-eruption volcanic activity (or cessation thereof); a volcanic eruption (or cessation thereof) and/or volcanic ash in the atmosphere to associated ACC, MWO and VAAC

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**INVENTORY OF FACILITIES AND SERVICES
AND THEIR ALLOCATION BETWEEN IFR AND VFR TRAFFIC**

. . .

**Core facilities and services that may serve both
aeronautical and non-aeronautical requirements**

Legend indicating utilization:

I IFR;
V VFR;
mI mainly IFR;¹
I/V IFR and VFR;
mV mainly VFR

General analysis and forecast offices	mI
Meteorological data processing	mI
Commonly used meteorological telecommunications facilities and services	mI
Surface synoptic observation stations	mI
Climatological observation stations (precipitation stations to be excluded).....	mI
Upper-air observation stations	mI
Weather radar	mI
Meteorological satellite image reception	mI
Core training	mI
Core research	mI
Core technical support (including administration)	mI
State volcano observatories.....	mI

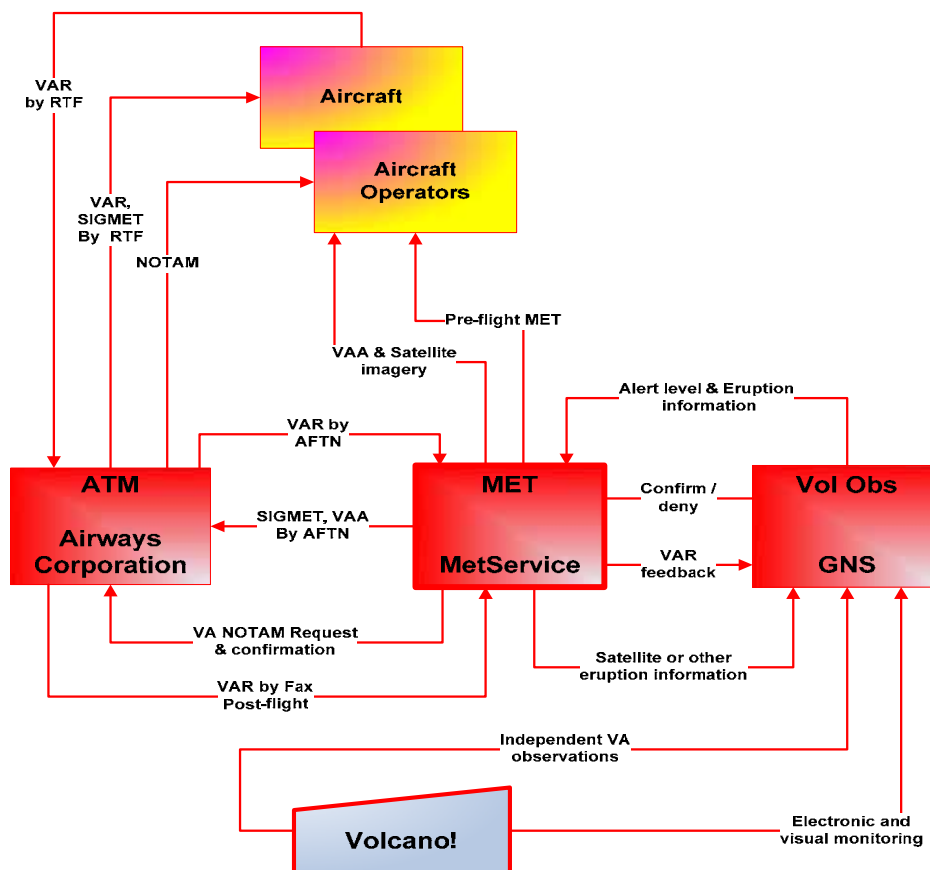
¹ "Mainly IFR" means core facilities and services that may serve both aeronautical and non-aeronautical requirements more than 90 per cent (as identified by the States concerned)

APPENDIX 5 – Cost and Charges in the NZ Volcanic Advisory Ash System

System Background

The CAA is responsible for ensuring a satisfactory means exists whereby civil aviation aircraft operations can be safely carried out near volcanic ash. To this end the CAA has facilitated the New Zealand Volcanic Advisory Ash System (VAAS). The VAAS is intended to inform civil aviation in New Zealand of any volcanic ash risk using the standard ICAO standards and systems. The VAAS also covers New Zealand's implementation of its IAVW responsibilities.

A schematic of the NZ VAAS is shown below. A full description of the NZ VAAS is attached in Appendix 7.



Briefly, under the NZ VAAS:

- The CAA is not responsible for providing any service to airlines to directly assist them with operations during volcanic events. The CAA remains a facilitator of the system.
- Meteorological Service of New Zealand Ltd (MetService) provide timely Volcanic Ash Advisories (VAAs) and Volcanic Ash SIGMETs and any other volcanic activity or ash information packages required pursuant to New Zealand's ICAO obligations. MetService has overall management responsibility for the VAAS.
- Airways Corporation (ATS provider and ACC operator) provide the NOTAM service, access to volcanic ash SIGMET and appropriate VAR information pursuant to New Zealand's ICAO obligations. It is also collects from aircraft VAR information and disseminates this information immediately to MetService, GNS and accessible aircraft operators.

- The Institute of Geological Sciences (GNS) as the official volcano observatory keeps MetService informed as to any volcanic activity taking place in New Zealand, through the issue of formal communications including the VONA.
- Aircraft operators are expected to ensure their aircraft do not operate in volcanic ash. They are also expected to provide Volcanic Activity Reports (VARs) when appropriate.

Funding Background

In New Zealand there is very little government funding applied or available for providing infrastructural services to civil aviation. The funding system is essentially one of user pays with a few small exceptions.

The CAA, as the Meteorological Authority under the Convention (Annex 3), contracts MetService to provide the meteorological products the State is obliged to provide. The CAA pays only a small amount for the provision of a few discrete services, the remainder and the large majority of MetService's cost in providing the requisite information is met by airlines through direct contracts (with MetService).

The provision of information on volcanic ash is a relative new-comer to the oversight responsibilities of the CAA and the operational responsibilities of MetService. Hence the funding is

Funding Structure

The funding structure of the VAAS/IAVW obligations is best shown in tabular form:

Service provider	Service	Funds provided by
MetService	Management of VAAS	Airlines contract
	Management of Wellington VAAC	CAA
	Evaluation of data - trajectory modelling	Airlines contract
	Communications with GNS	Airlines contract
	Provision of SIGMET	CAA
	Management of NOTAM	Airlines contract
	Provision of VAA	Airlines contract
Airways (ATS)	Communication of VAR	Airlines charges
	Communication of VAA	Airlines charges
	Communication of SIGMET	Airlines charges
	Filing and communication of NOTAM	Airlines charges
GNS	Monitoring of key NZ volcanoes 24/7	Government
	As possible, the provision of advice on other volcanoes in the Wellington VAAC area	MetService
	Provision of 24/7 advisory information to MetService including VONA and VAB	MetService
	Communication of advisory information	MetService

All of the costs generated by the Airways effort in the VAAS are met through the standard en-route charges on airlines and aircraft operators.

MetService has clauses in its contracts with all airlines operating in and to New Zealand that covers the provision of the VAAS and parts of its IAVW operations. The funds collected in this manner from the airlines are used to pay for the volcano observatory services provided by GNS and for MetService's own costs.

However, the bulk of the GNS volcano observatory costs are met through broad funding from the government. The basis of that funding is for the general protection and warning of the public. There are only marginal costs on this to make information available for the VAAS system and these are reflected in the charges to MetService.

As a general indication:

1. MetService collects a six figure sum from airlines to manage and operate its part of the VAAS, the majority of which it pays to GNS.
2. The CAA pays MetService a smaller amount for the provision of all types of SIGMET warnings including volcanic ash SIGMET and for the operation of the Wellington VAAC. Note that it is intended to shift these charges to airlines in the near future.
3. The funding from Government for the monitoring of New Zealand volcanoes is part of a ten year programme that is presently being reviewed.

It is essential that the foregoing arrangements be made in every State concerned and their efficacy continually maintained. In the case of volcanic ash, the hazard to jet transport aircraft is greatest within the first few hours following an eruption; hence speed of notification between all links in the chain of communication is critical. States may wish to consider drawing up letters of agreement between the parties involved, in particular, the civil aviation and meteorological authorities and the vulcanological agency, to record the agreed responsibilities of each party. Since Annex 3, paragraph 3..6 requires that selected State volcano observatories should send information about preruption volcanic activity, a volcanic eruption and/or volcanic ash in the atmosphere to associated ACC, MWO and VAAC, the State concerned, may, if it so wishes, recover reasonable costs related to the transmission of such information.

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4.1.3 It is essential that the foregoing arrangements be made in every State concerned and their efficacy continually maintained. In the case of volcanic ash, the hazard to jet transport aircraft is greatest within the first few hours following an eruption; hence speed of notification between all links in the chain of communication is critical. States may wish to consider drawing up letters of agreement between the parties involved, in particular, the civil aviation and meteorological authorities and the vulcanological agency, to record the agreed responsibilities of each party. Since Annex 3, paragraph 3..6 requires that selected State volcano observatories should send information about pre-eruption volcanic activity, a volcanic eruption and/or volcanic ash in the atmosphere to associated ACC, MWO and VAAC, the State concerned, may, if it so wishes, recover reasonable costs related to the transmission of such information.

1. The ASHTAM is a special series NOTAM specifically for volcanic activity.

Template of agreement for provision of volcanic ash advisory services

1. Title of Agreement	Agreement to Provide International Civil Aviation Organization Mandated Volcanic Ash Advisory Services
2. Parties	- Meteorological Service of (Country) or (Organisation) - Airline (Airline)
3. Agreement dated	(Day Month Year)
4. Background	<p>Under the International Civil Aviation Organization (“ICAO”) and the International Civil Aviation Chicago Convention of 1944 (“the Convention”), the provision of meteorological services to international aviation within a State is the responsibility of the designated National Meteorological Authority in that State.</p> <p>The role of the Meteorological Authority in (State) rests in the (Organisation) under delegation from (government Minister or other legal framework).</p> <p>The Meteorological Authority is required by the (State) Government to meet (State) obligations under the Convention to:</p> <ul style="list-style-type: none"> (a) undertake those ICAO responsibilities of a technical or safety nature associated with, but not limited to, the work of the ICAO Air Navigation Bureau and the Technical Co-operation Bureau; (b) determine the minimum level of services and the minimum number of facilities to be provided by (State) in order to ensure the safe conduct of international air navigation in the region and to ensure that the ICAO Regional Air Navigation Plans specify at least the minimum level of services and number of facilities and that those services are provided and those facilities implemented; and (c) administer (State) participation in those ICAO forums that are associated with those aspects of work where the (Organisation) is the designated State Authority. <p>To meet (State) responsibilities to national and international air navigation under the Convention, the (organisation), as the Meteorological Authority (State), provides meteorological information to international aviation users in accordance with the standards, requirements and recommended practices contained in Annex 3 to the Convention.</p> <p>The (Organisation) is mandated by ICAO and (State) Government to charge international aircraft operators within the airspace managed by (State) the full costs of providing such services and the ancillary support functions and other related services. This reflects international practice mandated through the Convention and its Annexes to charge such costs to international user airlines and aircraft operators.</p> <p>As a matter of policy, the (Organisation) acknowledges the uncertainty inherent in meteorological information and supports the view that suppliers of Meteorological Information cannot be held liable for any direct or consequential loss, damage, or expense incurred as a result of the Meteorological Information being or, purportedly being, wholly or partially incorrect, unavailable, interrupted or erroneous.</p>
5. Interpretation	<p>In the construction of this Agreement unless the context requires otherwise -</p> <ol style="list-style-type: none"> 1. Headings and sub-headings appear as a matter of convenience and shall not affect the construction of this Agreement. 2. References to Recitals, Clauses and Schedules are to Recitals, Clauses and Schedules of this Agreement.

	<ol style="list-style-type: none"> 3. The singular includes the plural and vice versa, and words importing one gender include any other gender. 4. A reference to a person includes a reference to a body corporate, to a Government entity and to an unincorporated body or person. 5. Reference to any Party includes the successors and any permitted assignees of that Party. 6. Any obligations not to do anything shall be deemed to include an obligation not to suffer, permit or cause that thing to be done. 7. References to dates and times are references to (Country) dates and times. 8. Abbreviations where found are ascribed the meanings set out thereto in this Agreement.
<p>6. Services to Be Provided</p>	<ol style="list-style-type: none"> 1. (Organisation) shall provide to aviation users, as/on behalf of the Meteorological Authority the Meteorological Services set out in Schedule 1 to this Agreement. 2. The (Airline) agrees that (Organisation) is the sole provider of the services set out in Schedule 1 to this Agreement, and that it will not enter into any other agreement with any other entity for the provision of those services. 3. In providing the Meteorological Services, (Organisation) will provide a professional service with the due care, diligence and skill properly expected of a competent and experienced organisation normally providing such meteorological services. 4. If, for any reason, the (Airline) or (Organisation) is of the opinion that any Meteorological Information supplied pursuant to this Agreement is inaccurate or incorrect, (Organisation) will use its best endeavours to withdraw the relevant Meteorological Information and replace it with accurate information as soon as practicable. 5. (Organisation) will, if requested by (Airline), provide oral information to clarify any Meteorological Information that it has supplied pursuant to this Agreement.
<p>7. Variation</p>	<ol style="list-style-type: none"> 1. Provided that the (Airline) has given (Organisation) not less than 24 hours notice, the (Airline) may request (Organisation) to make minor modifications to the (Airline) requirements under this Agreement, where “minor modifications” is understood to mean modifications that (Organisation) can implement without materially affecting its other business and operations. (Organisation) will not unreasonably withhold agreement to meet such requests.
<p>8. Force Majeure</p>	<ol style="list-style-type: none"> 1. Both Parties shall use their best endeavours to fulfil their respective obligations under this Agreement including during national emergency, war or industrial action. 2. Notwithstanding clause (immediately above), neither Party shall be liable for any external act, omission or failure to fulfil its obligations under this Agreement if such act, omission or failure arises from Force Majeure as defined in Clause (below). 3. "Force Majeure" means any circumstance arising, which is beyond the control of either Party by any cause whatsoever including, but not limited to, negligence of a third Party. The Party who cannot perform its obligation under this Agreement shall take all reasonable steps necessary to mitigate any loss caused by Force Majeure, and notify the other Party of the circumstances as soon as practicable.

	<p>4. If the Force Majeure event results in the Party affected being unable to fulfil its obligations under this Agreement for more than (number) days, that Party may terminate this Agreement upon giving a further (bigger number) days notice to the other Party.</p>
9. Indemnity	<p>1. (Organisation) shall be liable to the (Airline) in contract, tort, or otherwise only for any loss or damage arising directly from this Agreement that results from any proven act, omission, error, default or delay on the part of (Organisation). In no event will (Organisation) be liable to the (Airline) for any incidental, indirect, special or consequential loss or damage, including, but not limited to, loss of use, revenue, profits or savings.</p>
10. Implementation	<p>1. This service shall commence on the _____ day of _____ 20xx and shall continue in force until terminated in accordance with clause (General, 6)</p> <p>2. No persons other than the contact persons listed in Schedule 2 to this Agreement or their delegate are authorised under this Agreement to request or accept any changes, whether of a minor or major nature, in any regard whatsoever to this Agreement. Any changes to this Agreement must be agreed by (Organisation) and (Airline).</p> <p>3. Both Parties shall keep confidential the terms of this Agreement and its Schedules, and any information obtained through the performance of this Agreement, and shall not divulge the same to any third Party without the prior written consent of the other Party except when such information has already entered the public domain.</p>
11. Intellectual Property	<p>1. The copyright and all intellectual property rights arising in and to the Meteorological Services, which are produced by (Organisation) under this Agreement, shall remain the sole and absolute property of (Organisation).</p> <p>2. Both Parties agree that they shall not, during the period of this Agreement, or after the termination thereof, make use of any confidential information or confidential intellectual property acquired in the course of carrying out their obligations under this Agreement whether such information or intellectual property relates to the affairs, business, property or transactions of either Party or any customer or client of either Party for the benefit of or to the detriment of the other Party or any other person.</p> <p>3. Both Parties shall notify the other Party as soon as practicable of any infringement or suspected infringement of the other Party's Intellectual Property.</p>
12. General	<p>1. The services and fees set out in Schedules (x) and (y) to this Agreement shall apply for (number) year (s) from the commencement date of this Agreement, apart from any adjustment affected by additional services as provided for in this Agreement. The services and fees shall be reviewed in good faith by the Parties at each (number) anniversary of this Agreement. In the event that the Parties are unable to reach agreement and one Party exercises the right to terminate this Agreement in accordance with clause (6 below) of this Agreement, then during the period that the cancellation notice applies (Organisation) shall continue to provide previously agreed services at previously agreed fees.</p> <p>2. The Parties shall endeavour to resolve any dispute as to the interpretation of this Agreement by direct negotiation between the (Airline) and (Organisation) . Any dispute not so resolved by negotiation shall be referred to determination by a single arbitrator if the Parties can agree on one, and otherwise by two arbitrators, one appointed by each Party to the dispute and their umpire appointed by the (Country) Law Society in the case of</p>

	<p>disagreement, and otherwise in accordance with the provisions of the (relevant legislation), or any other statutory provisions relating to arbitration.</p> <p>3. No reference to arbitration shall be deemed to suspend payments due under this Agreement other than in respect of those payments or parts of the payments due which directly relate to matters which are genuinely in dispute between the Parties. All payments which are otherwise due shall be made without deduction or set off pending the result of such arbitration.</p> <p>4. The Parties agree that during the course of a dispute, the Parties shall continue to fulfil all of their obligations in this Agreement except for those obligations which are the subject of the dispute.</p> <p>5. All previous agreements and understandings, verbal, written, or inferred, pertaining to the supply of Meteorological Services or other services by (Organisation) to the (Airline) are superseded by this Agreement.</p> <p>6. Either Party shall have the right to cancel this Agreement at any time upon giving (number) calendar months notice to the other Party.</p> <p>7. This Agreement shall be construed under and governed by the laws of (State).</p> <p>8. All notices and other communications provided for or permitted under this Agreement shall be in writing made by facsimile, e-mail, personal delivery or by post to the Parties contact personnel identified in Schedule 2 at their facsimile number or address and shall be marked for the attention of the person, from time to time designated for the purpose by the addressee to the other Party.</p> <p>9. No communication shall be effective until received. Communications shall, however, be deemed (in the absence of evidence to the contrary) to be received:</p> <p style="margin-left: 40px;">a. In the case of a letter, on the (number) Working Day after posting; and</p> <p style="margin-left: 40px;">b. In the case of an e-mail, facsimile or personal delivery, on the Working Day on which it is dispatched; or if delivered after (time) on the next Working Day; or if on a non Working Day then on the next Working Day after the date of dispatch or delivery.</p> <p>10. In the event of any part of this Agreement being or becoming void or unenforceable then that part shall be severed from this Agreement, to the extent that all parts that shall not be or become void or unenforceable shall remain in full force and effect and be unaffected by any severance.</p>	
13.Subcontracting	1. Neither Party may assign or be relieved of its rights or obligations under this Agreement, without the prior consent in writing of the other Party, whose consent shall not be unreasonably withheld.	
14.Schedules	1. Schedules 1, 2, (x, y and z), shall form part of this Agreement.	
15.Execution	IN WITNESS of which this Agreement has been executed.	
16.(Signatories)	SIGNED for (Organisation) by (Title) (Person) In the presence of (Witness)	SIGNED for (Airline) by (Title) (Person) In the presence of (Witness)
17.Schedule 1 - Services to be Provided and Charges	<p>Part A – Services to be Provided</p> <p>1. (Organisation) agrees to provide (Airline), with information relating to volcanic activity, as it may affect the operations of its aircraft in (State) airspace and the area of responsibility of the (Name of Meteorological Watch Office(s) - MWO) covering the area (full description of Flight information Region served by the MWO(s)).</p>	

2. The nature of the volcanic activity information and warnings supplied by (Organisation) will be that set out in Annex 3 to the Convention and all subsidiary technical documents related thereto and maintained by the International Civil Aviation Organization (ICAO). Such information will be in the form of (SIGMET's, VAA, NOTAM - specify)
3. This information will primarily be conveyed via (communication channel) and (Airline) acknowledges and accepts that (Organisation) is reliant on (communications entity, company or system) for the timely dispatch of volcanic activity information.
4. (Airline) agrees and accepts that the provision of such information is partly dependent on information received by (Organisation) from (State) volcano observatories operated by (Agency Name) and that the cost of providing such information to (Organisation) is incorporated in charges set out in this Schedule to the Agreement.
5. Neither (Organisation) nor its contractors, agents and employees makes any representation as to the timely dispatch of all the information from (State) volcano observatories operated by (Agency Name) to (Organisation) which forms the basis for the Volcanic Ash Advisory System Services and the accuracy, completeness and content of that information or the continued supply of that information;

Part B – Service Variation

6. It is acknowledged by both Parties that the services to be supplied by (Organisation) as set out in Part A of this Schedule will vary from time to time in accordance with changes promulgated by ICAO regarding responsibilities and services set out in Annex 3 and subsidiary technical documents related thereto.
7. (Organisation) is expected to fulfil these changing requirements within the time frames prescribed by ICAO unless otherwise agreed by the (Airline). The costs associated with such changes are considered to be a part of the full and reasonable costs associated with the services provided under this Agreement)
8. The (Organisation) is entitled to make variations to Part A of this Schedule where it reasonably believes that such changes are required to meet its obligations as the Meteorological Authority. In such circumstances (Organisation) must give at least (number) months notice to (Airline) of its intention to vary this Schedule.

Part C - Charges

9. The (Airline) agrees to pay (Organisation) a fee of (amount) per annum, invoiced on a monthly pro-rata basis within (number) days of receipt of an invoice from (Organisation).
10. The (Airline) accepts that the fees are based on the type of aircraft used, the MCTOW and flight activity for each month of operation in (State). (Describe charging algorithm as appropriate)
11. All charges under this Agreement are in (State currency) and (exclude/include) all applicable taxes.
12. The (Airline) accepts that the fees under this Agreement do not cover any related proprietary services that the (Organisation) may develop and implement in the future, wholly outside the gambit of the services set out in Annex 3 to the Convention and all subsidiary technical documents related thereto and maintained by the International Civil Aviation Organization (ICAO).

18.Schedule 2 - Contact Personnel	(Organisation) Positions/Persons Address Telephone Email Fax	(Airline) Positions/Persons Address Telephone Email Fax
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