GEN 3.5 METEOROLOGICAL SERVICES

1. RESPONSIBLE SERVICE

1.1. Met Eireann Aviation Services Division (of the Department of Environment, community and Local Government) is the meteorological Authority for Ireland.

Met Eireann Aviation Services Division is the designated meteorological services provider to air navigation in Ireland under the EU Services Provision Regulation.

Post: Met Eireann,
Meteorological Service,
Met Eireann Headquarters,
Glasnevin Hill,
Dublin 9,

Phone: +353 1 806 4200

Fax: +353 1 806 4247

AFS: EIDBYBYX

Email: met.eireann@met.ie

URL: http://www.met.ie

1.2. Applicable ICAO Documents
ICAO Standards, Recommended Practices and Procedures contained in the following documents are applied:

- Annex 3 - Meteorology,
- DOC 7030 - Regional Supplementary Procedures,
- DOC 7754 EUR Regional Air Navigaion Plan
- DOC 8400 - ICAO Abbreviations and Code
- DOC 9974 - http://www.icao.int/publications/Documents/9974 en.pdf
- ICAO EUR/NAT Volcanic Ash Contingency Plan (VACP) (ICAO EUR Doc 019/NAT Doc 006 Part II) - http://www.paris.icao.int/documents_open/files.php?subcategory_id=63
- EASA Safety Information Bulletin (SIB) 2010 - 17R6 - http://ad.easa.europea.eu/ad/2010-17R6

Differences to these provisions are detailed in subsection GEN 1.7

2. AREA OF RESPONSIBILITY

The meteorological office at Shannon Airport is the meteorological watch office (MWO) designated to maintain the meteorological watch in the flight information region for Shannon FIR/UIR

3. METEOROLOGICAL OBSERVATIONS AND REPORTS

Station and Location Indicator	Type and Frequency of Observation	Types of Report	Details of Observation System and Site		Hours of Operation	Climatological Information
1	2	3	4		5	6
Cork EICK	½ hourly special	Plain language METAR TREND RVR Windshear	Wind	Cup anemometer with digital readout. Anemometer positioned 10M AGL and located to give readings representative of conditions at airfield	H24	Aeronautical Climatological summary available
			Temp	Distant reading thermometer.		
			RVR	IRVR RWY's 17/35 - Touchdown, midpoint and stopend		
			Cloud Height	Ceilometer.		
			Visibility	Visibility reported is minimum visibility.		
			Windshear	Not measured instrumentally		
Dublin EIDW	½ hourly special	Plain language METAR TREND RVR Windshear	Wind	Cup anemometer with digital readout. Anemometer positioned 10M AGL and located to give readings representative of conditions at airfield	H24	Aeronautical Climatological summary available
			Temp	Distant reading thermometer.		
			RVR	IRVR RWY 16 – Touchdown and midpoint. RWY 10/28 – Touchdown, midpoint and stopend.		
			Cloud Height	Ceilometer.		
			Visibility	Visibility reported is minimum visibility.		
			Windshear	Not measured instrumentally		
Shannon EINN	½ hourly special	Plain language METAR TREND RVR Windshear	Wind	Cup anemometer with digital readout. Anemometer positioned 10M AGL and located to give readings representative of conditions at airfield.	H24	Aeronautical Climatological summary available
			Temp	Distant reading thermometer.		
			RVR	IRVR RWYs 06/24 - Touchdown, midpoint and stopend.		
			Cloud Height	Ceilometer.		
			Visibility	Visibility reported is minimum visibility		
			Windshear	Not measured instrumentally		

Station and Location Indicator	Type and Frequency of Observation	Types of Report	Details of Observation System and Site		Hours of Operation	Climatological Information
1	2	3	4		5	6
Ireland West EIKN	½ hourly Special	Plain language METAR TREND Windshear	Wind	Cup anemometer with digital readout. Anemometer positioned 10M AGL and located to give readings representative of conditions at airfield.	0545-AD CLSD(Local Time)	Aeronautical Climatological summary available
			Temp	Distant reading thermometer.		
			Cloud Height	Ceilometer.		
			Visibility	Visibility reported is minimum visibility		
			Windshear	Not measured instrumentally		
Kerry EIKY	Half Hour Special	METAR Plain Language	Wind	Anemometer positioned 10 meters AGL and located to give readings representative of conditions at airfield	AD Opening Hours	Aeronautical Climatological summary available
			Temp	Distant reading thermometer		
			Cloud Height	Ceilometer		
			Visibility	Visibility reported is minimum visibility		
Sligo EISG	Half Hour Special	METAR Plain Language	Wind	Anemometer positioned 10 meters AGL and located to give readings representative of conditions at airfield	AD Opening Hours	Aeronautical Climatological summary available
			Temp	Distance reading thermometer.		
			Cloud Height	Ceilometer		
			Visibility	Visibility reported is minimum visibility		
Donegal EIDL	Half Hour Special	METAR Plain Language	Wind	Anemometer positioned 10 meters AGL and located to give readings representative of conditions at airfield	AD Opening Hours	Aeronautical Climatological summary available
			Temp	Distant reading thermometer		
			Cloud Height	Ceilometer		
			Visibility	Visibility reported is minimum visibility		
Waterford EIWF	Half Hour Special	METAR Plain Language	Wind	Anemometer positioned 10 meters AGL and located to give readings representative of conditions at airfield	AD Opening Hours	Aeronautical Climatological summary available
			Temp	Distant reading thermometer		
			Cloud Height	Ceilometer		
			Visibility	Visibility reported is minimum visibility		

3.1 Surface Weather Reports

Reports of surface weather observations for the aerodromes at Cork, Dublin, Shannon and Ireland West consist of:

- **Routine:** half-hourly reports in METAR form are disseminated on AFTN and are issued, in plain language, to ATS. They are also included in VOLMET broadcasts.

- **Special:** reports are made whenever a significant deterioration or improvement of weather is observed between the routine observations. They are issued, in plain language, to ATS but are not disseminated beyond the aerodrome. Special reports may also be made on a specific occasion on request by ATS and/or operator.

3.2 Visibility

The visibility reported in all observations is the minimum visibility.

When there are important directional variations in visibility, other values, including in all cases the maximum, will be given in reports for take off and landing, by the addition of "REMARKS" to the reported minimum visibility in plain language messages.

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3.3 Runway Visual Range (RVR)

At Cork, Dublin and Shannon Airports Instrumented Runway Visual Range Systems (IRVR) are installed. RVR values are reported when either the horizontal visibility or the runway visual range is observed to be less than 1500M.

The system at Cork, Dublin and Shannon has a lower limit of between 50M and 75M, dependent on the ambient conditions.

At Cork, Dublin and Shannon, RVR is reported in increments of 25M up to 400M, 50M between 400M and 800M, and 100M between 800M and 1500M, subject to the limiting values.

3.4 Cloud Height

Cloud height is measured by ceilometer at Dublin, Cork, Shannon and Ireland West Airports. The ceilometer readings are representative of cloud conditions over the landing area.

3.5 Surface Wind

Wind Speed and direction are measured at Cork, Dublin, Shannon,Ireland West, Kerry, Sligo, Donegal and Waterford Airports by cup anemometer with digital read-out. At all aerodromes the anemometers are installed 10M AGL. At each aerodrome the anemometer is located so as to give readings representative of conditions on the airfield. Indicators are located in the Meteorological Office and appropriate Air Traffic Service Units. Wind speeds are reported in knots. Wind values are provided in accordance with Annex 3

3.6 Temperature

Distant reading thermometers are installed at Dublin, Cork, Shannon,Ireland West, Kerry, Sligo, Donegal and Waterford Airports in locations, which give readings representative of free-air temperature over the landing area.

3.7 Wind Shear

Low level wind shear is not measured instrumentally at Irish Airports. Reports of wind shear from aircraft about to land or take-off, and/or evidence of its existence as deduced from other available information are, when of a non-transitory nature, included in METARs, and are, in all circumstances included in plain language reports disseminated locally.

4. TYPES OF SERVICE

4.1. All Met Eireann aeronautical meteorological forecast services are provided by the Central Aviation Office (CAO) based at Shannon Airport.

4.1.1. The Objective of Met Eireann, as Met Service provider to the aviation sector in Ireland, is to contribute to the safety, regularity and efficiency of aviation in Ireland and its FIR/UIR.
Owing to the variability of meteorological elements in space and time, to limitations of forecasting techniques and to limitations caused by the definitions of some of the elements, the specific value of any of the elements given in a forecast shall be understood by the recipient to be the most probable value which the element is likely to assume during the period of the forecast. Similarly, when the time of occurrence or change of an element is given in a forecast, this time shall be understood to be the most probable time.

4.1.2. Forecast Services provided
Met Eireann issues, as routine:

- Terminal Aerodrome Forecasts (TAF),

- low level significant weather charts,
- search and rescue forecast,
- live Enroute briefing line service,
- bespoke forecast products,
- local warnings for Aerodromes
  and
- SIGMET services for Irelands FIR/UIR.

TAFs issued by Airport		
Airport	9 hour TAF	24 hour TAF
Dublin		•
Shannon		•
Cork		•
Ireland West		•
Kerry	•	
Sligo	•	
Donegal	•	
Waterford	•	
Casement	•	

4.1.3. Not more than one TAF shall be valid for an aerodrome at any given time.

4.1.4. The issue of a new aerodrome forecast, such as a TAF, shall be understood to cancel automatically any forecast of the same type previously issued for the same place and for the same period of validity or part thereof.

4.2. The CAO may be contacted as follows:

Post: Central Aviation Office,
Met Eireann,
Wing 5,
Shannon Airport,

Phone: + 353 61 712 950

Fax: + 353 61 712 960

Email: avops@met.ie

4.3. Meteorological self briefing
Meteorological self briefing for operators and flight crew members is available via an internet based Meteorological Self Briefing (MSB) system. This system is available at https://briefing.met.ie/.

URL: https://briefing.met.ie/

To obtain registration on the system, users are required to provide the following data via email to

Email: briefing@met.ie

- contact details;
- area of activity (e.g. private pilot, airline etc)

- username (user defined)
- password (user defined)

The following up to date information is provided:

- SIGWX charts
- Upper wind and Temperature charts
- METAR (including TREND as issued) for the aerodromes of departure and intended landing, and for en-route and destination alternate aerodromes.
- TAF or Amended TAF for the aerodromes of departure and intended landing, and for en-route and destination alternate aerodromes.
- SIGMET information
- Aerodrome warnings for the local aerodrome

Personal briefing on en-route weather conditions is available from the duty aviation forecaster. This briefing service is provided via premium rate telephone service (see GEN 3.5.9 for telephone numbers)

4.4. Meteorological services, including briefing consultation and documentation, is provided in accordance with arrangements made between the operator and the relevant meteorological office at Cork, Dublin, Shannon and Ireland West airports.

4.5. Warnings, in accordance with local arrangements for the protection of parked aircraft and aerodrome facilities and services, are issued by the Central Aviation Office. These warnings relate to strong winds, occurrence of snow and ground temperature below 00 degrees Celsius.

5. NOTIFICATION REQUIRED FROM OPERATORS

5.1. Flights Originating at Shannon, Cork and Dublin Airports:

In general, meteorological documentation required by a flight crew is readily accessible from the self-briefing units based at Shannon, Cork and Dublin airports. However, if meteorological documentation and/or briefing are required for a flight to a destination not well serviced by the SBU, then notification should be furnished to the aerodrome meteorological office, by the operator, as soon as possible and not less than three hours before ETD of the flight.
Flights originating at Ireland West Airport:
Notification should be furnished to the aerodrome meteorological office by the operator as soon as possible and not less than three hours before ETD of the flight. This notification applies equally to scheduled and non-scheduled flights.

5.2. If the operator has not a representative at the aerodrome concerned, messages from the operator's representative at another aerodrome or from the aircraft commander in flight containing the required information will be accepted as notification (provided they are received at the times indicated in paragraph GEN 3.5.5.1 above). Communications should be specifically addressed to the meteorological office at Cork, Dublin, Shannon or Ireland West as appropriate.

5.3. When notification as specified above is not given to the aerodrome meteorological office, every endeavour will be made to provide the best service possible in the time available, but in such circumstances no guarantee can be given that the services will include more than a briefing without documentation.

6. AIRCRAFT REPORTS

Reports are required to be issued by aircraft whenever the following conditions are encountered during the climb-out, en-route or approach phases of the flight:

- Severe icing
- Moderate and severe turbulence
- Thunderstorms with or without hail (that are obscured, embedded, widespread or in squall lines)

- Volcanic ash cloud observed/encountered
- Wind shear
- Other meteorological conditions which in the opinion of the pilot-in-command may affect the safety or markedly affect the efficiency of other aircraft operations

7. VOLMET SERVICE

Name of Station	CALLSIGN/ IDENT/ abbreviation (EM)	Frequency	Broadcast Period	Hours of Service	Aerodromes / Heliports included	REP, SIGMET INFO FCST & Remarks
1	2	3	4	5	6	7
SHANNON	SHANNON VOLMET	3413 kHz HN (during night propagation conditions) 5505 kHz H24 8957 kHz H24 13264 kHz HJ (during day propagation conditions)	00-05	H24		SIGMETS
					Bruxelles National, Amsterdam Schipol,	TAFS
					Bruxelles National, Amsterdam Schipol, Frankfurt, Hamburg, Munchen,	METARS
			05 - 10	H24	London Heathrow, London Gatwick, Stansted,	TAFS
					London Heathrow, London Gatwick, Stansted, Prestwick, Glasgow,	METARS
			10 - 15	H24		SIGMETS
					Dublin, Shannon,	TAFS
					Dublin, Shannon, Manchester, Keflavik,	METARS
			15 - 20	H24	Santa Maria, Lisboa, Madrid,	TAFS
					Santa Maria, Lisboa, Madrid, Lajes,	METARS

Name of Station	CALLSIGN/ IDENT/ abbreviation (EM)	Frequency	Broadcast Period	Hours of Service	Aerodromes / Heliports included	REP, SIGMET INFO FCST & Remarks
1	2	3	4	5	6	7
			20 - 25	H24		SIGMETS
					Paris Charles De Gaulle, Paris Orly,	TAFS
					Paris Charles De Gaulle, Paris Orly, Zurich, Geneve, Milano Malpensa,	METARS
			25-30	H24	Stockholm Arlanada, Manchester, Shannon, Kobenhavn Kastrup, Bergen, Dublin, Helsinki Vantaa,	METARS
			30 -35	H24		SIGMETS
					Frankfurt, Koln Bonn,	TAFS
					Frankfurt, Koln Bonn, Dusseldorf, Munchen, Luxembourg,	METARS
			35 - 40	H24	Keflavik, Glasgow, Manchester,	TAFS
					London Heathrow, London Gatwick, Keflavik, Glasgow, Manchester,	METARS
			40 - 45	H24		SIGMETS
					Oslo Gardemoen, Cobenhagen Kastrup,	TAFS
					Oslo Gardemoen, Cobenhagen Kastrup, Goteborg Landvetter, Stockholm Arlanda, Bergen, Helsinki Vantaa,	METARS

Name of Station	CALLSIGN/ IDENT/ abbreviation (EM)	Frequency	Broadcast Period	Hours of Service	Aerodromes / Heliports included	REP, SIGMET INFO FCST & Remarks
1	2	3	4	5	6	7
			45 - 50	H24	Zurich, Geneve,	TAFS
					Zurich, Geneve, Paris Charles de Gaulle, Paris Orly,	METARS
			50 - 55	H24		SIGMETS
					Hamburg,	TAFS
					Bruxelles National, Amsterdam Schipol, Frankfurt, Koln Bonn, Hamburg,	METARS
			55-00	H24	Roma Fiumicino, Milano Malpensa,	TAFS
					Roma Fiumicino, Milano Malpensa, Torino, Lisboa, Lajes, Santa Maria,	METARS
DUBLIN	Dublin VOLMET	127.0MHz	Continuous	H24	Reports for: Dublin, Shannon, Cork, Belfast, Glasgow, Preswick, Manchester, London/Heathrow, London/Gatwick,	Plain Language (En) Broadcast continuous through the 24 hours. Reports, plus landing forecasts in the TREND form are broadcast in the sequence listed. The reports broadcast are the latest available. If a new report is not available the earlier one will be reported for one hour only, together with time of observation.

The above table indicates the current VOLMET Broadcast content and sequence.

SIGMET denotes the time-blocks during which SIGMET'S are broadcast.

8. SIGMET SERVICE

8.1 General

Post: Central Aviation Office,
Met Eireann,
Wing 5,

Shannon Airport,
Co. Clare,

Phone: + 353 61 712 950

Fax: + 353 61 712 962

Email: avops@met.ie

8.2 Meteorological Watch

The meteorological watch for the Shannon FIR/UIR is performed by Meteorological Office based at Shannon Airport (EINN).

The MWO issues SIGMET information to ATS units within the Shannon FIR and agreed adjacent FIRS.

A meteorological warning (SIGMET) will be issued by the meteorological watch office when the following weather phenomena are occurring or expected to occur in the flight information region EISN FIR/UIR:

8.2.1 At subsonic levels

1. Obscured or embedded thunderstorms (with or without heavy hail)
2. Frequent thunderstorms (with or without heavy hail)
3. Thunderstorms in squall line (with or without heavy hail)
4. Severe turbulence
5. Severe icing
6. Freezing rain.
7. Tropical cyclones with 10 minute mean surface wind speed of 63?/HR (34 ?) or more.
8. Severe turbulence
9. Severe icing
10. Heavy dust storm
11. Heavy sand storm
12. Volcanic ash

8.2.2 At transonic and supersonic

1. Moderate turbulence
2. Severe turbulence
3. Isolated cumulonimbus
4. Occasional cumulonimbus
5. Frequent cumulonimbus
6. Hail
7. Volcanic ash

SIGMET for supersonic and transonic levels (SIGMET SST) are issued by London for the Shannon *FIR*/*UIR*..

ATS Units provided with SIGMET information includes ATS units within the Shannon FIR and agreed adjacent FIR's.

8.3 Local Warnings for Aerodromes

Met Eireann Central Aviation Office issues warnings for aerodromes for the following phenomena:

1. Frost Warning:
   Issued when the ground and/or air temperature are expected to fall below zero degrees Celsius at the following airports - EINN, EIDW, EICK, EIKN,EIME.
2. Gale and Squall warning:
   Issued whenever the mean speed of the surface wind is expected to exceed 34kts or when gusts in excess of 39kts are expected at the following airports- EINN, EIDW, EICK, EIKN, EIME,
3. Snow Warning:
   Issued whenever snow is likely to occur at the following airports- EINN, EIDW, EICK, EIKN, EIME,
4. Wind Shear:
   Issued for the following airports - EINN EICK EIDW EIKN
5. Turbulence Warning:
   Issued for EINN only.

6. Low-Level inversion warnings:
Issued for the following airports - EINN EIDW EICK EIKN.

8.4 Aircraft Meteorolocical Observations and Reports

8.4.1 Routine Aircraft Observations
Routine Aircraft Observations are not required in the Shannon FIR/UIR.

8.4.2 Special Aircraft Observations
Special Aircraft Observation are required in the Shannon FIR/UIR whenever:

i. Severe turbulence or severe icing is encountered;
or

ii. Moderate turbulence, hail or cumulonimbus clouds are encountered during transonic or supersonic flight;
or

iii. other meteorological conditions are encountered which, in the opinion of the pilot in command, might affect the safety or markedly affect efficiency of other aircraft operations, for example, other en-route weather phenomena specified for SIGMET messages, or adverse conditions during the climb –out or approach not previously forecast or reported to the pilot in command. Observations are required if volcanic ash cloud is observed or encountered, or if pre-eruption volcanic activity or a volcanic eruption is observed;
or

iv. Exceptionally, they are requested by the meteorological office providing meteorological service for the flight: in which event the observation should be specifically addressed to that meteorological office.

9. OTHER AUTOMATED SERVICES

Service Name	Information Available	Area,route and aerodrome coverage	Telephone, telex and Telefax numbers and remarks
1	2	3	4
Meteorological Service Databank	METAR 9HR TAF 18/24 HR TAF, SIGMET	Ireland, UK and neighbouring areas,	Data regarding this service is available from the Meteorological Service Provider
Met Fax			The customer specifies the products and dates of transmission. This service is provided by prior arrangement with the Central Aviation Office Operations Manager, Met Eireann, Shannon Airport. Tel 00 353 61 712 950
En-route briefing	Personal briefing by duty forecaster detailing expected enroute weather conditions.		Tel: 1570 23 42 34
OPMET data not published			Tel: 1570 20 21 22

10. GUIDANCE ON AIRCRAFT OPERATIONS WHERE VOLCANIC ASH CONTAMINATION MAY BE A HAZARD FOR FLIGHT OPERATIONS

10.1 Key Principles

- The operator is responsible for the safety of its operations under the oversight of their respective State regulatory authority. The guiding principle for such operations is the use of a safety risk management approach, as described in ICAO Doc 9974 and EASA Safety Information Bulletin (SIB) 2010-17R6
- In order to consider whether or not to operate into airspace forecast to be, or aerodromes known to be, contaminated with volcanic ash, the operator should have in place an identifiable safety risk assessment (SRA) within its Safety Management System (SMS).
- In order to decide whether or not to operate into airspace forecast to be, or aerodromes known to be, contaminated with volcanic ash, the operator's SRA must be accepted by its State regulatory authority.
- The safety control measures set out in ICAO Doc 9974 and EASA Safety Information Bulletin (SIB) 2010-17R6 are intended to be sufficiently robust that they facilitate acceptance, without further investigation, by a State whose airspace is forecast to be affected by volcanic ash. The State can - based on the implementation of internationally accepted Safety Management principles - be confident in the ability of operators from other States to undertake operations safely in its airspace.

10.2 Terminology

The following definitions of contamination are applicable in Ireland regarding operations of aircraft in airspace contaminated with volcanic ash.

- Area of Low Contamination: Airspace of defined dimensions where volcanic ash may be encountered at concentrations equal to or less than 2 x 10-3 g/m3. (Cyan)
- Area of Medium Contamination: Airspace of defined dimensions where volcanic ash may be encountered at concentrations greater than 2 x 10-3 g/m3, but less than 4 x 10-3 g/m3. (Grey)
- Area of High Contamination: Airspace of defined dimensions where volcanic ash may be encountered at concentrations equal to or greater than 4 x 10-3 g/m3, or areas of contaminated airspace where no ash concentration guidance is available. (Red)

  These definitions are consistent ICAO EUR/NAT Volcanic Ash Contingency Plan (VACP) (ICAO EUR Doc 019/NAT Doc 006 Part II) and EASA Safety Information Bulletin (SIB) 2010 - 17R6.

10.3 SRA application in Ireland

10.3.1 Areas of ash contamination In Ireland Aircraft Operators will be allowed to make decisions based on their SRA in the forecast areas of low, medium and high ash contamination. Therefore, Ireland will allow operators to make decisions based on their SRA, as accepted by their respective State regulatory authority, in forecast areas of low, medium and high ash contamination.

10.3.2 Common SRA recognition

As part of its overall decision making process regarding the operation of aircraft in airspace forecast to be, or aerodromes known to be, contaminated with volcanic ash, Ireland will allow aircraft operators registered in other States to base their decisions on their SRA, as accepted by their State regulatory authority, in accordance with the above mentioned approach (Ref. GEN 3.5.10.3.1) to decision making in Ireland