AD 1.2 RESCUE AND FIRE FIGHTING SERVICES AND SNOW PLAN

1 RESCUE AND FIRE FIGHTING SERVICES

1.1 The categories of fire and rescue equipment given at AD 2.6, their relevance to individual aircraft, and the minimum scales of equipment required to meet the respective categories are contained in Civil Aviation Publication - CAP 168 - 'Licensing of Aerodromes'. They approximate closely to those contained in the relevant ICAO publications.

1.2 For the convenience of aircraft operators the relationship of the rescue and fire fighting categories to individual aircraft is summarised as follows: A = Aerodrome, H = Heliport

Aerodrome Fire and Rescue Category	Aircraft Overall Length (m)	Fuselage Width (m)
‡Special	0 up to but not including 9	3
A1	0 up to but not including 9	3
A2	9 up to but not including 12	3
A3	12 up to but not including 18	3
A4	18 up to but not including 24	4
A5	24 up to but not including 28	4
A6	28 up to but not including 39	5
A7	39 up to but not including 49	5
A8	49 up to but not including 61	7
A9	61 up to but not including 76	7
A10	76 up to but not including 90	8

‡ Aerodromes which are generally licensed solely in order that flying instruction may take place.

1.3 For the convenience of helicopter operators the relationship of the Rescue and Fire Fighting categories to individual helicopters is summarised as follows:

Heliport Category	† Aircraft Overall Length (m)
‡Special	0 up to but not including 15
H1	0 up to but not including 15
H2	15 up to but not including 24
H3	24 up to but not including 35

† Helicopter length includes rotors and tail boom

‡ Aerodromes which are licensed solely in order that flying instruction may take place.

1.4 Two tables have been produced to assist with determination of adequacy when comparing military and civil RFF categories. Each table uses different criteria in forming a comparison and commanders should only use the table appropriate to their flight details.

1.5 The following table compares ICAO minimum standards with those likely to be available at Government military aerodromes. It is to be used by civil pilots wishing to use Government military facilities:

ICAO Category	Military Equivalent
1	1A
2	1A
3	2A
4	2A
5	3A
6	3A
7	4A
8	5A
9	No Equivalent
10	No Equivalent

1.6 The following table compares crash/fire requirements for Government MILITARY aircraft with those facilities likely to be available at Civil aerodromes. It is to be used by pilots of Government aircraft wishing to use civil facilities.

Military Category	ICAO Equivalent
–	1
1A	2
–	3
2A	4

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Military Category	ICAO Equivalent
–	5
3A	6
4A	7
5A	8
–	9
–	10

1.7 Although no direct comparison can be made between military and the other fire categories, the above table is an approximation of the relationship between the categories.

2 SNOW PLAN

2.1 Introduction

2.1.1 Agreement has been reached through the International Civil Aviation Organisation to apply standard procedures at international aerodromes within the European/Mediterranean Region, for the clearance of winter contaminants (frost, snow, ice, slush and associated water) from aerodrome surfaces and for the measuring and reporting of aerodrome surface conditions during the winter period.

2.1.2 The following paragraphs describe the procedures, equipment and techniques that are employed at specified aerodromes in the United Kingdom for the clearance of winter contaminants from pavements. The methods used for the measurement and reporting of aerodrome surface conditions in accordance with internationally agreed procedures are included. Other United Kingdom aerodromes complying with these procedures, in whole or in part, are also included in the Snow Plan.

2.2 Responsibility for Planning and Implementation

2.2.1 The clearance of winter contaminants and the measurement and reporting of surface conditions is the responsibility of the aerodrome authority, assisted as necessary by other agencies.

2.2.2 Prior to the onset of winter conditions, aerodrome authorities prepare a plan to effect efficient clearance and measurement procedures intended to ensure maximum availability of the aerodrome. The plan is formulated in co-operation with ATS and the aerodrome users. Arrangements are made to ensure that the plan can be implemented as soon as meteorological forecasts indicate the likelihood of surface contamination. The first priority is to clear operational runways and other essential parts of the movement area. Provision for measurement and reporting procedures are made. Subsequently, the surfaces cleared are maintained free of contaminant as far as is reasonably practicable.

2.3 Clearance Techniques

2.3.1 Whenever possible, the full length and width of runways is cleared completely. Various methods are employed and brief details of those available at individual aerodromes are given in the aerodrome entry of the AIP at AD2.7.

2.3.2 Mechanical snow clearing equipment; blowers, sweepers, ploughs and rotary brushes form the main part of the contaminant clearance equipment used at most large aerodromes. As far as practicable, clearance techniques employed prevent the build-up of snow banks. Where this is unavoidable, every effort is made to restrict snow banks to such a height and distance apart as to ensure safe manoeuvring of the most critical aircraft, in this context, normally using the particular aerodrome.

2.3.3 Slush and associated standing water is cleared whilst it is forming. Clearance may have to be repeated at intervals and some interruption of operations may be inevitable.

2.3.4 Salt is only used if it is found to be essential and is restricted to areas around edge drains to prevent slush build-up and to ensure continuous drainage. Liquid or other chemicals used for clearing ice are non-toxic and should have no detrimental effects on aircraft, aerodrome surfaces or the friction value of aerodrome pavements.

2.4 Operational Priorities for the Clearance of Movement Areas

2.4.1 The order in which the various parts of the movement area of an aerodrome are cleared will depend on many factors and is the subject of local consultation between the aerodrome authority and users. However, as a general policy, clearance is carried out in accordance with the standard order of priority given below:

(a) One main runway, including rapid exits, appropriate to the weather conditions prevailing at the time;

(b) appropriate run-up areas where needed;

(c) aprons;

(d) essential associated taxiways, priority being given to those presenting gradient difficulties;

(e) airport roads

2.4.2 Other runways and taxiways are cleared as conditions allow.

2.5 Assessment and Notification of Runway Surface and Allied Conditions

2.5.1 General

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2.5.1.1 At participating United Kingdom aerodromes, ATS or the aerodrome authority according to local organisation, assess and report runway surface conditions. Information on runway conditions will be notified by SNOWTAM, OPMET RUNWAY STATE MESSAGE (where applicable) or by RTF on request.

2.5.1.2 Until a satisfactory method has been found to determine accurately and quickly the density of a contaminant on a runway, the nature of the surface covering is described using the following categories based on subjective assessment by the personnel making the inspection:

Ice - water in its solid state, it takes many forms including sheet ice, hoar frost and rime.

Dry snow - a condition where snow can be blown loose, or if compacted by hand, will fall apart again upon release.

Compacted snow - snow which has been compressed into a solid mass that resists further compression and will hold together or break up into chunks if picked up;

Wet snow - a composition which, if compacted by hand, will stick together and tend to, or does form a snowball.

Slush - a water saturated snow which, with a heel and toe slap down action with the foot against the ground, will be displaced with a splatter.

Associated standing water - standing water produced as a result of melting contaminant in which there are no visible traces of slush or ice crystals.

2.5.2 Depth of Snow or Slush

2.5.2.1 A standard depth gauge is used to measure the depth of snow or slush on runways. Readings are taken at approximately 300 metre intervals between 5 and 10 metres on each side of the centre-line and clear of the effects of rutting. By international agreement depth information is given in millimetres representing the mean of readings obtained for each third of the total runway length.

2.5.3 Snow Banks

2.5.3.1 The height and distance apart of snow banks is reported as soon as these are likely to affect safe manoeuvring by the most critical aircraft, in this context, normally using the aerodrome.

2.5.4 Runways Affected by Snow and Ice

2.5.4.1 On runways affected by compacted snow or ice the braking action assessment is made by use of either of the following methods:

(a) Continuous Friction Measuring Equipment

This method employs a trailer towed by a vehicle at 40 mph. The equipment provides a continuous register of the mean of friction values either on paper trace or by means of a digital read-out that is used in conjunction with a hand computer. The principle employed is one of the following methods:

(i) the measurement of the side-force generated between the surface and a pair of pneumatic tyres set at a fixed toe-out angle;

(ii) the measurement of the load and drag on a single wheel chain driven from the axle of a double wheel and made to slip at approximately 14.5% of the forward speed.

(b) Brake Testing Decelerometer

An assessment is made of the coefficient of friction using a brake testing decelerometer fitted in a car, van or light truck, the brakes being applied at 25 - 30 mph ensuring that the vehicle wheels are momentarily locked. A standard procedure is followed to ensure uniformity in technique. The principle employed is the assessment of the friction between skidding pneumatic tyres and selected points on the surface being tested. Vehicles fitted with anti-lock braking systems (ABS) may be used for this procedure, provided the decelerometer includes provision for measurements to be taken at a faster rate than the operation of the ABS.

2.5.4.2 The methods described in paragraph 5.4.1 are limited to use on ice (gritted or un-gritted) and dry or compacted snow. They are likely to produce misleading high readings in slush or uncompacted, wet snow or water and it will not detect, for example, that the possibility of ‘slushplaning’ exists.

2.5.4.3 Braking action tests, where appropriate, are made over the usable length of the runway at approximately 3 m each side of the centre-line and in such a manner as to produce mean values for each third of the length available. Assessment of Stopway braking action where applicable should also be available on request.

2.5.4.4 The results of braking action testing on compacted snow or ice are interpreted by reference to the Snow and Ice Table below.

FRICTION NUMBER	ESTIMATED BRAKING ACTION	OPMET SNOWTAM CODE
.40 and above	Good	95
.39 - .36	Medium/Good	94
.35 - .30	Medium	93
.29 - .26	Medium/Poor	92
.25 and below	Poor	91
If, for any reason, the reading is considered unreliable		99

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2.5.4.5 It is important to remember that the braking action assessment obtained from the Snow and Ice Table is only a rough indication of the relative slipperiness of a contaminated runway in conditions of compact snow and ice only. The description 'Good' is used in comparative sense - good for an icy surface - and is intended to indicate that aircraft generally, but not specifically, should not be subject to undue directional control or braking difficulties, but clearly a surface affected by ice and/or snow is not as good as a clean dry or even a wet runway. The description 'Good' should not be used for braking action on untreated ice but may be used, where appropriate, when ice has been gritted. 'Poor' will almost invariably mean that conditions are extremely slippery, and probably acceptable only, if at all, to aircraft needing little or no braking or steering. Where 'Poor' braking assessment exists, landings should only be attempted if the Landing Distance Available exceeds the Landing Distance Required on a 'very slippery' or icy runway as given in the aircraft Flight Manual. The intermediate values of 'Medium/Good', and 'Medium,/Poor' have been included only to amplify the description when conditions are found to be Medium. The procedure is insufficiently refined to be able to discriminate accurately in the narrow numerical bands as set out in the table.

2.5.4.6 In exceptional circumstances, grit may have to be used to increase the friction value of manoeuvring areas affected by ice or snow but it will be left on the surface only for so long as the ice or snow persists. The specification of the grit used has been agreed internationally and is selected as providing the best compromise between improving the coefficient of friction and presenting the least hazard to aircraft. However, the risk of ingestion into jet engines or of damage to the control surfaces of propeller driven aircraft, particularly where reverse thrust is used, cannot be entirely discounted. Caution in using reverse thrust is therefore advised, particularly when a sudden thaw has resulted in the grit lying on an otherwise bare surface.

2.5.5 Runways Affected by Slush

2.5.5.1 Aircraft operations on runways affected by slush can be particularly hazardous and every effort is made to clear the surface, as far as is reasonably practicable, of all slush contaminant prior to aircraft movement. However, the practical difficulties of ensuring that a runway is totally slush free are significant and success depends heavily on the prevailing meteorological conditions, the resources and time available. In such conditions, up to date runway condition reports are provided. However, because of the effects of drag , friction measuring machines can produce misleading readings when operated in slush. In addition, because of the infinitely variable characteristics of the contaminant, no satisfactory method of assessing braking action in slush exists. For these reasons reports will not contain estimates of braking action derived from readings in these conditions and pilots will be informed on the RTF only of the extent and depth of the contamination.

2.5.5.2 Hydroplaning conditions should be assumed to exist whenever depths of water or slush exceeding approximately 3 mm effect a significant portion of the available runway.

2.5.6 **Availability of Information**

2.5.6.1 Information on the current state of progress of snow clearance and on the conditions of the movement areas is available from a designated authority at the aerodrome concerned. Information on pavement conditions is also be available by RTF from the aerodrome concerned

2.5.6.2 Information on current surface conditions at United Kingdom and other European aerodromes generally is also available from the following sources:

(a) Flight Briefing Units at aerodromes;

(b) SNOWTAM;

(c) Locations served by the OPMET system (see GEN 3.5.9).

2.5.6.3 The SNOWTAM provides a standard report which includes an assessment of each third of the runway. Whilst appropriate conditions prevail, participating authorities issue SNOWTAM as follows:

(a) A new (not revised) SNOWTAM whenever there is a significant change in conditions;

(b) The maximum validity of a SNOWTAM will in no case exceed 24 hours.

2.5.6.4 Risks and factors associated with operations on runways affected by snow, slush, or water are detailed within an Aeronautical Information Circular.

2.5.6.5 Runway surface conditions are reported in the runway state group as an eight digit code at the end of the METAR every half hour for as long as conditions warrant. The runway state group contains information on the runway designator; type; extent and depth of deposit and where appropriate, braking action. See GEN 3.5.10.

2.5.6.6 RTF reports to pilots provide an assessment in plain language of the available runway length, including a description of the prevailing conditions ie. ice, snow or slush, and where appropriate braking action, together with the time of the measurement.

2.5.6.7 Aerodromes currently participating in the Snowplan are listed in the current Snowplan AIC - details of clearance methods employed, priorities and braking action assessment may be given in the individual aerodrome entry at item 2.7.

2.5.6.8 Information on the distribution of SNOWTAM and the division of the aerodromes into distribution lists is published annually as an Aeronautical Information Circular before the onset of winter.