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Appendix G

Defining the Runway Surface Condition

The International Civil Aviation Organisation (ICAO)

ICAO Annex 14 Aerodrome Design and Operations, Volume 1, Chapter 2 Para 2.9.4, defines the runway surface condition as follows:

DAMP – The surface shows a change of colour due to moisture.

WET – The surface is soaked but there is no standing water.

WATER PATCHES – Significant patches of standing water are visible.

FLOODED – Extensive standing water is visible.

The European Joint Aviation Authority (JAA)

The JAA defines runway condition as follows:

Dry Runway:

A dry runway is “one that is neither wet nor contaminated. This “includes paved runways that have been specially prepared with grooved or porous pavement and maintained to retain an effectively dry braking action, even when moisture is present”.

Damp Runway:

A runway is considered damp “when the surface is not dry, but when moisture on the surface does not give a shiny appearance”.

Wet Runway:

A runway is considered to be wet “when the surface is covered with water, or equivalent, not exceeding 3 mm – or when there is sufficient moisture on the runway surface to cause it to appear reflective (shiny) – but without significant areas of standing water”.

Contaminated Runway:

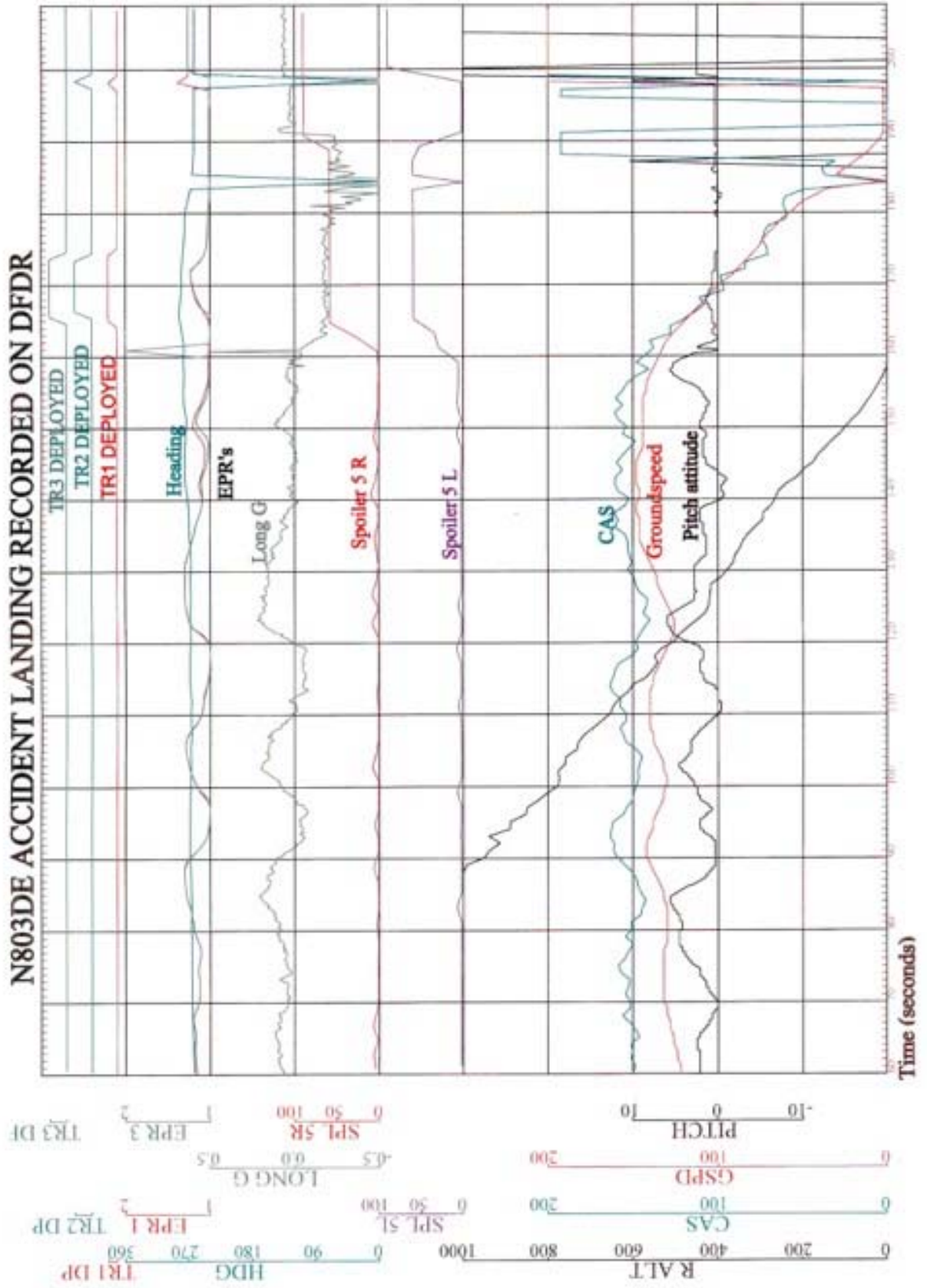
A runway is considered to be contaminated, “when more than 25% of the runway surface (whether in isolated areas or not) – within the required length and width being used – is covered by either:

- *Standing water, more than 3 mm deep;*
- *Slush (i.e., water saturated with snow) or loose snow, equivalent to 3 mm – or more – of water;*
- *Snow which has been compressed into a solid mass which resists further compression and will hold together or break into lumps if packed up (i.e., compacted snow); or,*
- *Ice, including wet ice contaminant (runway friction coefficient 0.05 or below)”.*

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Appendix H



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Appendix I

Airport Authority Emergency Response Directive No 3 (Chapter 2, Extract)

The following specific extracts from this Directive are considered relevant to this Investigation:

Types of Emergencies

2.1. Emergencies involving Aircraft.

The aircraft Commander or ATS will decide which category applies.

AIRCRAFT IN DISTRESS

- *Where an accident has occurred, is about to occur or is considered to be unavoidable.*

AIRCRAFT EMERGENCY

- *When the operating efficiency of an aircraft is seriously impaired and the possibility of an accident is considered to exist.*

AIRCRAFT ALERT

- *Where the operating efficiency of an aircraft is impaired, but not to the extent that an accident is considered likely.*
- *Where the norms of safety and standards have been contravened but will not have serious consequence.*

Emergency Response (Chapter 3, Extract)

The response to an Emergency is dictated by:

- *Number of people involved*
- *Extent of casualties and injuries or potential casualties and injuries*
- *Damage or potential damage to property and/or infrastructure*

Discretion must be used at all times regarding the scale of the response and, if time allows all major decisions should be taken in consultation.

The response can be categorised as:

- *Full Scale Response*
- *Full Standby Response*
- *Alert Response*

3.1. Full Emergency Response

The following is a description of a full emergency response, which typically has three phases:

- *Immediate Response*
- *Support Response*
- *Crisis Management and Recovery*

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3.1.1. Immediate Response (Extract)

Phase 1, Para 3.1.1 deals mainly with the fire and rescue services response.

At Para 3.1.6, the Directive makes reference to an Emergency Operations Centre:

In situations involving aircraft accidents or emergencies, the Operations and Duty Offices will be used as the Emergency Operations Centre, to coordinate the Support Response and to handle communications to and from the Incident Control Unit (Mobile Unit at site). A senior representative of the airline/handling agent involved may go to the Emergency Operations Centre, from where transport to the Incident Control Unit will be arranged, if applicable.

3.2. Phase 2, Support Response (Extract)

The DAM will be responsible for coordinating the Support Response and, in the case of aircraft accidents, will liaise with the airline or handling agent who will put their own emergency response plan into action to deal with the crisis.

The following facilities will be put in place:

3.2.1. Survivor Reception (North Terminal)

This is where casualties, who have not been brought directly to hospital, and survivors are brought. Medical aid will be given and personal details will be noted. Staff from the cleaning Section will set up the area according to local procedures.

3.2.2. Meeters and Greeters

As soon as possible, a representative of the airline or handling agent will go to the Information Desk, in order to handle the Meeters and Greeters.

Persons meeting the flight will be assembled there and escorted to the Meeters and Greeters area where they will be given information on the situation and their details will be taken. Noel's Bistro will be set up for this purpose and may be supplemented by Meeters and Greeters and Reconciliation facilities at the (Name withheld) Hotel at Dublin Airport if the scale of the accident/incident demands and/or on the direction of the DAM, the Garda Síochána or the airline representative.

3.2.3. Reconciliation

As survivors are matched up with friends and family, they may be reconciled in either the Execair facility, adjacent to the North Terminal or in the (Name withheld) Hotel at Dublin Airport.

3.2.4. Temporary Morgue

If necessary the DAM will arrange for a temporary morgue (Hanger 1) or other facilities as required and/or dictated by the State Pathologist to be set up. The Airfield Operatives will assist in setting up this area, according to local procedures.

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Appendix J

The International Civil Aviation Organization (ICAO)

Annex 3, Meteorological Service for International Air Navigation, Chapter 4, Meteorological Observations and Reports - Extract

4.5 - Observing and Reporting Surface Wind

4.5.1 Recommendation. – *The mean direction and the mean speed of the surface wind should be measured, as well as significant variations of the wind direction and speed. Since, in practice, the surface wind cannot be measured directly on the runway, surface wind observations for take-off and landing should be the best practicable indication of the winds, which an aircraft will encounter during take-off and landing.*

4.5.5 Recommendation. – *The averaging period for wind observations should be:*

- a) *10 minutes for reports in METAR/SPECI code forms, except that when the 10-minute period includes a marked discontinuity in the wind direction and/or speed, only data occurring since the discontinuity should be used obtaining mean values, hence the time interval in these circumstances should be correspondingly reduced, and*
- b) *2 minutes for local routine and special reports and for wind indicators in air traffic services units*

Note. – *A marked discontinuity occurs when there is an abrupt and sustained change in wind direction of 30° or more, with a wind speed of 10 KT before or after the change, or a change in wind speed of 10 KT or more, lasting at least 2 minutes.*

4.5.6 Recommendation. – *In local routine and special reports, variations in the wind direction should be given if the local variation is 60° or more; such directional variations should be expressed as the two extreme directions between which the wind has varied during the past 10 minutes. Variations from the mean wind speed (gusts) during the past 10 minutes should be reported only when the variation from the mean speed is 10 KT or more; such speed variations (gusts) should be expressed as the maximum and minimum speeds attained.*

When the 10-minute period includes a marked discontinuity in the wind direction and/or speed, only variations in direction and speed occurring since the discontinuity should be reported. The variations in direction and speed should be derived:

- a) *for non-automated systems from the wind direction and speed indicators or from the anemograph recorder trace if available; and/or*
- b) *for automated systems from the actual measured values of wind direction and speed, and not from the 2-minute and 10-minute running averages required under 4.5.5.*

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Annex 14, Aerodromes, Volume 1, Aerodrome Design and Operation, Chapter 9, Emergency and Other Services - Extract

Aerodrome Emergency Planning (Section 9.1).

General

Introductory Note.- *Aerodrome emergency planning is the process of preparing an aerodrome to cope with an emergency occurring at the aerodrome or in its vicinity. The objective of aerodrome emergency planning is to minimize the effects of an emergency, particularly, in respect of saving lives and maintaining aircraft operations. The aerodrome emergency plan sets forth the procedures for coordinating the response of different aerodrome agencies (or services) and of those agencies in the surrounding community that could be of assistance in responding to the emergency. Guidance material to assist the appropriate authority in establishing aerodrome emergency planning is given in the Airport Services Manual, Part 7.*

9.1.1 *An aerodrome plan shall be established at an aerodrome, commensurate with the aircraft operations and other activities conducted at the aerodrome.*

9.1.2 *The aerodrome emergency plan shall provide for the coordination of the actions to be taken in an emergency occurring at an aerodrome or in its vicinity.*

Note:- Examples of emergencies are: aircraft emergencies, sabotage including bomb threats, unlawfully seized aircraft, dangerous goods occurrences, building fires and natural disasters.

9.1.3 *The plan shall coordinate the response or participation of all existing agencies, which, in the opinion of their appropriate authority, could be of assistance in responding to an emergency.*

Note:- Examples of agencies are:

- *On the aerodrome: air traffic control unit, rescue and fire fighting services, aerodrome administration, medical and ambulance services, aircraft operators, security services, and police;*
- *Off the aerodrome: fire departments, police, medical and ambulance services, hospitals, military, and harbour patrol or coast guard.*

9.1.4 **Recommendation.**- *The plan should provide for cooperation and coordination with the rescue coordination centre, as necessary.*

9.1.5 **Recommendation.**- *The aerodrome emergency plan document should include at least the following:*

- (a) *types of emergencies planned for;*

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- (b) agencies involved in the plan;*
- (c) responsibility and role of each agency, the emergency operations centre and the command post, for each type of emergency;*
- (d) information on names and telephone numbers of offices or people to be contacted in the case of a particular emergency; and*
- (e) a grid map of the aerodrome and its immediate vicinity.*

9.1.6 *The plan shall observe Human Factors principles to ensure optimum response by all existing agencies participating in emergency operations.*

Note:– Guidance material on Human Factors principles can be found in the Human Factors Training Manual.

Emergency Operations Centre and Command Post -Extract

9.1.7 Recommendation. – *A fixed emergency operations centre and mobile command post should be available for use during an emergency.*

9.1.8 Recommendation. – *The emergency operations centre should be a part of the aerodrome facilities and should be responsible for the overall coordination and general direction of the response to an emergency.*

9.1.9 Recommendation. – *A person should be assigned to assume control of the emergency operations centre and, when appropriate, another person in the command post.*

Response Time - Extract

9.2.21 (Standard). – *The operational objective of the rescue and fire fighting service shall be to achieve a response time not exceeding three minutes to any point of each operational runway, in optimum visibility and surface conditions.*

9.2.22 Recommendation. – *The operational objective of the rescue and fire fighting service shall be to achieve a response time not exceeding two minutes to any point of each operational runway, in optimum visibility and surface conditions.*

Communications and Alerting Systems - Extract

9.2.31 Recommendation. – *A discrete communications system should be provided linking a fire station with the control tower, any other fire station on the aerodrome and the rescue and fire fighting vehicles.*

Disabled Aircraft Removal -Extract

9.3.1 Recommendation. – *A plan for the removal of an aircraft disabled on, or adjacent to, the movement area should be established for an aerodrome, and a coordinator designated to implement the plan, when necessary.*

9.3.2 Recommendation. – *The disabled aircraft removal plan should be based on the characteristics of the aircraft that may normally be expected to operate at the aerodrome, and include among other things:*

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- a) *a list of equipment and personnel on, or in the vicinity of, the aerodrome which would be available for such purpose: and*
- b) *arrangements for the rapid receipt of aircraft recovery equipment kits available from other aerodromes.*

ICAO Airport Services Manual Part 7, Airport Emergency Planning

Care of Ambulatory Survivors, Chapter 10 - Extract

10.1 General

10.1.1 *The Airport Authority, aircraft operator (where involved), or other pre-designated agency selected for the purpose is responsible to:*

- (a) select the most suitable holding area for the particular emergency from those pre-designated in the airport emergency plan;*
- (b) provide for the transportation of the uninjured from the accident site to the designated holding area;*
- (c) arrange for doctor(s), nurse(s) or teams qualified in first aid to examine and treat the supposedly uninjured, especially for nervous traumatism (shock) and/or smoke inhalation, where pertinent;*
- (d) furnish a full passenger and crew manifest for accountability purposes;*
- (e) interview the uninjured and record their names, addresses, phone numbers, and where they can be reached for the next 72 hours;*
- (f) notify relatives or next of kin where deemed necessary;*
- (g) co-ordinate efforts with the designated international relief agency (Red Cross, etc); and*
- (h) prevent interference by unauthorized persons or those not officially connected with the operation in progress.*

10.1.2 *Pre-arrangement should be made for the immediate transportation by bus or other suitable transport of the “walking injured” ambulatory from the accident site to the designated holding area. This plan should be implemented automatically following notification of the emergency. A nurse or a person trained in first aid should accompany these people to the holding area.*

10.1.3 *Each and every passenger and crewmember should be examined for nervous traumatism (shock) and smoke inhalation. Cold or inclement weather may require additional provisions for their protection and comfort.*

10.1.4 *Occupants departing an aircraft using evacuation slides may be barefoot or without proper wearing apparel. Where the aircraft accident occurred in water or a marshy area, these people may be wet and uncomfortable.*

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10.1.5 These problems should be anticipated by having supplies of clothing, footwear, and blankets readily available. It may be necessary to establish a special holding area, which can supply warmth and clothing to prevent hypothermia, and be used for examination purposes, before these persons are transported to the designated ambulatory holding area.

Care of Fatalities, Chapter 11 - Extract

11.1.8 Accidents, which result in a large number of fatalities, will overload normal morgue facilities. In areas where delay or temperature may contribute to the deterioration of tissue, refrigerated storage should be made available. This may be provided either by a permanently located cooler or refrigerated semi-trailers. The area for post-mortem examination should be located near the refrigerated storage and be arranged to provide a high level of security. This should be suitable working area with electricity and running water, large enough for initial body sorting

11.1.9 The morgue should be isolated and in an area remote from places where relatives or the general public have access.

Airport Emergency Exercises, Chapter 13 - Extract

13.1.1 The purpose of an airport emergency exercise is to ensure the adequacy of the following:

- 31. response of all personnel involved;*
- 32. emergency plans and procedures; and*
- 33. emergency equipment and communications*

13.1.2 It is therefore important for the plan to contain procedures requiring that the airport emergency plan be tested. This test should correct as many deficiencies as possible and familiarize all personnel and agencies concerned with the airport environment, the other agencies and their role in the emergency plan.

13.2.1 There are three methods of testing the airport emergency plan:

- (a) Full-scale exercises;*
- (b) Partial exercises; and*
- (c) Tabletop exercises.*

13.2.2 These tests shall be conducted on the following schedule:

Full-scale: At least once every two years;

Partial: At least once each year that a full-scale exercise is not held or as required to maintain proficiency;

Tabletop: At least once each six months, except during that six-month period when a full-scale exercise is held.

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Airport Medical Care Facilities (Medical Clinic and/or First-aid Room) Appendix 3 - Extract

28. *General factors influencing need. There are many general factors, which influence the need for an airport first-aid room or an airport medical clinic. Factors to be taken into consideration include:*
 - a) *the number of passengers served annually and the number of employees based on the airport;*
 - b) *the industrial activity on the airport property and in the surrounding community;*
 - c) *the distance from adequate medical facilities; and*
 - d) *mutual aid medical services agreements.*
29. *Generally, it may be recommended that an airport medical clinic be available when the airport employee's number 1000 or more and that a first-aid room be available at every airport. The airport medical care or first-aid room personnel and facilities should be integrated with the airport emergency plan.*
30. *The airport medical clinic, in addition to providing emergency medical care to the airport population, may extend emergency care to communities surrounding the airport, if these communities have no emergency facilities of their own.*
31. *The airport medical clinic may be included in the community emergency services organization and planning. In the event of a large-scale non-airport local emergency, the airport medical clinic may function as the co-ordination site for direction of incoming medical assistance.*
32. *Location of airport medical care facilities. The facilities should be readily accessible to the airport terminal building, to the general public and to emergency transportation equipment (i.e. ambulances, helicopters, etc.) Site selection should avoid the problem of having to move injured persons through congested areas of the airport terminal building, while providing access to the facility by emergency vehicles by a route that as far as is feasible can bypass normal public access roadways to and from the airport. This suggests that the medical care facility be located so that access can be gained from the Airside of the airport terminal building as this provides control over unauthorized vehicles interfering with emergency equipment*
33. *Airport medical care facility personnel. The number of trained personnel and degree of expertise needed by each individual, will depend on the particular airport's requirements. The staff of the airport medical clinic should form the nucleus for the medical services planning for the airport emergency plan (and be responsible for implementation of the medical portion of the plan). It is recommended that the airport first-aid room be staffed with at least highly qualified first-aid personnel.*

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