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DANGEROUS GOODS PANEL (DGP)

TWENTY-THIRD MEETING

Montréal, 11 to 21 October 2011

Agenda Item 2: Development of recommendations for amendments to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) for incorporation in the 2013-2014 Edition

WHEELCHAIRS AND OTHER MOBILITY AIDS POWERED BY BATTERIES

(Presented by G. A. Leach)

REVISED

SUMMARY

Further to DGP/23-WP/57, this paper provides information on work conducted by the United Kingdom Civil Aviation Authority aimed at ensuring the requirements of the ICAO Technical Instructions applicable to wheelchairs and other mobility aids powered by batteries are complied with when carried by passengers and crew.

1. INTRODUCTION

1.1 The United Kingdom Civil Aviation Authority Safety Plan 2011-13 includes an objective for the CAA, in partnership with industry, to increase awareness and education with regards to the correct loading of electric mobility aids. The CAA plans to publish a Safety Notice on this subject. In the meantime, the attached draft information has been circulated within industry stakeholders for the purposes of informal consultation and is provided to panel members within this paper for information.

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APPENDIX

WHEELCHAIRS AND OTHER MOBILITY AIDS POWERED BY BATTERIES

1.0 Background

1.1 Requirements for the carriage of electric mobility aids by passengers are detailed in the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Doc 9284 AN/905) and are reproduced within the IATA Dangerous Goods Regulations. Electric mobility aids (such as powered wheelchairs and scooters) must be protected from inadvertent operation, short circuit or damage caused by the movement of baggage or cargo.

1.2 On 7 September 2008 at Manchester Airport, ground staff unloading baggage from the forward hold of a Boeing 757 noticed blue sparks coming from an electric mobility aid. The device was removed from the aircraft and placed on a baggage belt vehicle, where it immediately burst into flames and was destroyed. From subsequent investigations, it appeared that the device's electrical circuit had not been protected from inadvertent operation prior to loading. It was probable that during flight, baggage moved the control joystick causing the motor to be engaged thus causing friction or an electrical load causing ignition. Since the 2008 incident, the CAA has received a further 48 reports concerning electric mobility aids where the requirements of the ICAO Technical Instructions had not been complied with.

1.3 References within this document to ‘aircraft operator’ and ‘airport operator’ are to be interpreted as ‘air carrier’ and ‘managing body of the airport’ respectively, as defined within Regulation (EC) No 1107/2006.

1.4 Regulation (EC) No 1107/2006 requires aircraft operators, their agents (travel/ticketing) and tour operators to establish measures necessary for the receipt of information from passengers about their assistance requirements and to pass this information onto airport operators (a process known as pre-notification). Aircraft operators are required to carry up to two pieces of mobility equipment per disabled person or Person of Reduced Mobility (PRM), subject to advance warning of 48 hours and to possible limitations of space on board the aircraft, and subject to the application of relevant legislation concerning dangerous goods.

1.5 The Regulation also places a duty upon the airport operator to provide assistance to a PRM. The airport operator is responsible for the ground handling of all necessary mobility equipment (including electric mobility aids) subject to notification at least 48 hours prior to a flight’s departure, possible limitations of space on board the aircraft and compliance with dangerous goods requirements. However, if no notification is made in advance of travel then the airport operator must make all reasonable efforts to provide assistance such that the PRM is able to take the flight for which they hold a reservation. In practise, both the airport operator and aircraft operator have important roles in ensuring the safe carriage of electric mobility aids so both must work in concert to ensure this objective is achieved.

1.6 The CAA is concerned that the lines of communication between PRM, travel agents, tour operators, aircraft operators and airport operators are not fully effective in ensuring that

information on how to make electric mobility aids safe for carriage is obtained and communicated to the personnel requiring this information.

1.7 A review conducted by the CAA identified the following:

- Typically, UK airport operators have delegated the task of PRM handling to a third party PRM service provider or ground handling organisation. This task is usually delegated by means of a contract between the airport operator and the third party organisation, although the responsibility for ground handling of mobility equipment still rests with the airport operator. With few exceptions, personnel tasked with providing assistance to PRM have not been provided basic dangerous goods training commensurate with such responsibility.
- There are many different types of electric mobility aids and the means of isolating circuits (to prevent accidental operation) and protecting battery terminals from short circuit is not always apparent. Aircraft loading personnel are often presented with devices that have not been made safe for transport and are unable to obtain the information required to make devices safe from the PRM.
- Many aircraft loading staff and flight crew mistakenly believe that battery terminals must be disconnected prior to carriage. The Technical Instructions do not require disconnection of battery terminals; since this is often very difficult to do and if not done properly can increase the risk of a fire. Consequently, only if deactivation cannot be achieved should disconnection be considered. Mobility aids with spillable batteries are subject to further restrictions, which are detailed in Part 8 Chapter 1 of the Technical Instructions.
- There is concern that some operators are using a 'Domestic', 'European' or 'Intercontinental' EU-OPS notional baggage mass for electric mobility aids. The mass of most devices exceeds any mass used for standard checked baggage, indeed some devices are known to weigh hundreds of kilos. In order to ensure that the aircraft's mass and balance documentation reflects its loaded state, it is vital that accurate masses are used for electric mobility aids.

1.8 Regulation (EC) No 1107/2006 places obligations on travel agents, tour operators, aircraft operators and airport operators designed to enable a disabled person or a person of reduced mobility to travel by air with an electric mobility aid, subject to compliance with dangerous goods requirements. The ICAO Technical Instructions require that aircraft operators ensure that electric mobility aids are carried in such a manner so as to prevent inadvertent activation. This notice proposes a process aimed at:

- ensuring that the loading of an electric mobility aid on board an aircraft satisfies the requirements of both Regulation (EC) No 1107/2006 and the ICAO Technical Instructions, and
- identifying the respective obligations of the travel agent, tour operator, aircraft operator and the airport operator in ensuring such an outcome and how they should be addressed by their procedures.

2.0 Division of Responsibilities

2.1 The priority must be the safety of the aircraft and persons on board. Before loading an electric mobility aid an aircraft operator must satisfy itself that it has been made safe in accordance with the Technical Instructions. Where an aircraft operator is unable to be satisfied or where it in fact establishes that the electric mobility aid has not been made

safe, it must not carry it. In such circumstances the aircraft operator is not under an obligation to render it safe.

2.2 The airport operator may not know how to make safe every type of electric mobility aid it is presented with. Where by making reasonable efforts the airport operator is able to make an electric mobility aid safe for transport, and in any event where a PRM provides adequate information on how to achieve this, the airport operator must make the electric mobility aid safe for transport and arrange for confirmation to be communicated to the aircraft operator.

2.3 Where the PRM does not provide adequate information on how to make an electric mobility aid safe and it is not reasonably possible for the airport operator to identify how this should be achieved, it is not under any further obligation to make the aid safe for transport.

3.0 Availability of Information

3.1 With the aim of facilitating the transport of PRM, the British Healthcare Trades Association (BHTA) maintains a log of the information needed by airport operators and aircraft operators in order to make electric mobility aids safe for transport by air. The information listed includes:

- Manufacturer
- Model
- Number of batteries
- Type of battery (wet acid, non-spillable or lithium)
- Instructions for preventing accidental activation
- Instructions for preventing short-circuit. If disconnection of the battery is the only way that this can be achieved, details of how this is done.
- Instructions for selecting free-wheel configuration
- TARE (un-laden) weight.
- Dimensions.

Editorial Note: The BHTA will detail ranges (e.g. 100-150 kg) to include 'optional extras' fitted to electric mobility aids. CAA is considering whether notional weight bands should then be established.

3.2 The means of preventing accidental activation can be as simple, such as switching off a control key and handing this to the passenger for safe keeping. Other electric mobility aids require a dummy 'Neutrik' charging plug to be inserted or for an 'Anderson' cable connector to be separated.

3.3 With many electric mobility aids, the battery is protected from short circuit through being fully encased. On other models it may be necessary to insulated battery terminals, e.g. with electrical insulating tape.

3.4 Where possible, the log also details lifting and securing points; however, it should be noted that many mobility aids were not designed with lifting and securing in mind as they were not intended to be carried within vehicles (including aircraft).

3.5 The BHTA log includes electric mobility aids distributed by BHTA members since 2006 (estimated to cover around 70% of the devices used within the EU). The log is publicly available via [*internet address to be advised by the BHTA*] and is intended for use by PRM, tour operators, aircraft operators and airport operators to ensure that appropriate

information is shared by all involved in the carriage of electric mobility aids by air. Unfortunately, the CAA is not aware of any worldwide or Pan-EU organisation that could be approached with a view to the collation of data on a wider scale.

4.0 The Aircraft Operator's Policy

4.1 In accordance with Article 4(3) of Regulation (EC) No 1107/2006, aircraft operators must publish restrictions on the carriage of mobility equipment including electric mobility aids. The aircraft operator's policy towards the carriage of electric mobility aids should be included within its terms and conditions of carriage. Circumstances that may legitimately prevent the carriage of an electric mobility aid include:

(i) Not being satisfied that the requirements of the dangerous goods regulations are met in relation to the prevention of inadvertent operation and short circuit of the mobility aid;
(ii) mobility aid dimensions exceeding cargo door dimensions; and
(iii) TARE weight exceeding aircraft loading limitations.

Note: Items ii and iii (above) are specific to aircraft type and configuration.

It is suggested that aircraft operators' terms and conditions may legitimately specify that electric mobility aids can only be carried if:

(i) prior to or during the check-in process, the passenger declares to the aircraft operator, their intention to travel with the electric mobility aid and identifies the manufacturer and model;
(ii) the device complies with the aircraft operator's published restrictions;
(iii) the device is listed on the BHTA log (or on another website listing the same details in the public domain, should one exist) and the battery is of the same specification as that originally installed by the manufacturer, or the passenger provides the aircraft operator, in writing, the same level of data that is provided on the BHTA log; and
(iv) the passenger allows the airport operator sufficient time to prepare the mobility aid for air transport in advance of aircraft departure.

4.2 The aircraft operator's requirements should be clearly explained on its website and within information provided with the ticket (or e-ticket). In particular, passengers should be made aware a) of factors that would prevent the carriage of an electric mobility aid and b) that where an aircraft operator is unable to satisfy itself that the electric mobility aid has been made safe or where it in fact establishes that it has not been made safe, in the interests of safety it will not be carried. Carriers that operate sectors wholly outside of the EU should explain any additional requirements that apply to the carriage of electric mobility aids on flights that are not subject to the provisions of Regulation (EC) No 1107/2006.

4.3 With the aim of making the journey as simple as possible for the passenger, the aircraft operator should consider all available means of encouraging PRM to pre-notify their intention to travel with an electric mobility aid, for example by recording customers' requirements within loyalty programmes, online advertising, liaison with tour operators, articles within in-flight magazines, etc. It should be emphasised that pre-notification is in the passenger's best interest as it will vastly reduce the possibility of carriage being refused, assist with the provision of special assistance and may help prevent damage to their mobility aid.

4.4 The DfT Code of Practice entitled 'Access to Air Travel for Disabled Persons and Persons with Reduced Mobility' published in July 2008 notes that it is good practice for tour operators and aircraft operators to provide confirmation to consumers that their request for assistance has been received and to keep records to demonstrate that requests have been transmitted.

5.0 Outline Procedure for Ensuring the Safe Preparation of Electric Mobility Aids

5.1 When an aircraft operator receives notification of a PRM's intention to travel with an electric mobility aid and details of it are provided, the BHTA log should be checked to see if it provides information on the specific device(s) concerned. If not, appropriate details will need to be sought from the passenger.

5.2 It is understood that PRM who have not pre-notified typically announce their intention to travel with an electric mobility aid at the aircraft operator's check-in desk. If, however, a PRM should first announce this to the airport designated PRM point of departure (e.g. if they checked-in online and have no checked baggage), the airport operator should notify the aircraft operator (e.g. through its check-in staff). The aircraft operator must then make reasonable efforts to establish the information necessary for ensuring the safe carriage of the mobility aid. If the device is not listed on the BHTA log, suitable written information should be sought from the passenger or an accompanying carer if applicable.

5.3 Once details of the electric mobility aid have been received, the aircraft operator must verify that it complies with its published policies (i.e. it meets any aircraft-specific restrictions concerning dimensions and TARE weight and adequate instructions on the means of preventing accidental activation are available). If a journey involves different aircraft types or configurations (e.g. regional and long-haul sectors) all applicable limitations must be complied with. Aircraft operators that are party to interline or code-share agreements will need to ensure that the limitations of all carriers involved are met. Outbound and return travel must be considered.

5.4 If any of the circumstances listed at paragraph 4.1 exist the aircraft operator must refuse to carry an electric mobility aid.

5.5 When an aircraft operator is satisfied that an electric mobility aid may be carried safely, the aircraft operator must transmit details of how to make the aid safe for air transport to the airport operators of departure, transit and arrival. In the event that any airport of the outbound and return journey is outside of the EU (and where the airport operator has no duty to assist PRM), this information should be provided to the organisation intended to prepare the electric mobility aid for flight and/or return the mobility aid to an operable condition. It may be possible to include suitable information within industry standard Passenger Assistance List (PAL) and Change Assistance List (CAL) messages. The PAL is a list of PRMs scheduled to travel on a particular flight and boarding point produced by an airline's reservation system. The CAL is an updated list with any changes that have occurred in the reservations system since dispatch of a flight's PAL, or a previous CAL. From 2012, the IATA Airport Handling Manual (AHM) will detail three codes for identifying electric mobility aids based upon the type of batteries installed. These are:

- WCBD - non-spillable batteries
- WCBW - wet cell batteries
- WCLB – lithium ion batteries

5.6 The aircraft operator must also ensure that appropriate masses for each mobility aid are passed to the Load Planning Office (or Centralised Load Control if applicable) to ensure that the aircraft's mass and balance documentation reflects its loaded state. Notional masses (identified on the BHTA log) may be used for this purpose. It is understood that the necessary information may be transmitted using the Passenger Name Record (PNR). The PNR is a record of each passenger's travel requirements which should contain all the information necessary to enable reservations to be processed and controlled by the booking and participating airlines. The basic record may contain one or more passengers.

5.7 Where the airport operator, by making reasonable efforts is able to make the electric mobility aid safe for transport (in accordance with written instructions on the steps needed received from the aircraft operator), they should arrange for confirmation to be communicated to the aircraft operator. This confirmation should be made by completing an 'Electric Mobility Aid Tag' and attaching this to the device. An example tag is provided at Appendix A. The tag should be in duplicate (e.g. carbon copy), detail the means by which the mobility aid was made safe and provide information regarding how to reactivate the device at the airport of arrival, including any re-assembly required. When possible, the electric mobility aid should be returned to the PRM at the aircraft side or air bridge (as applicable). There is scope to have translations of the text provided on the reverse of the tag together with pictures of the Neutrik plug and Anderson Connector.

5.8 The aircraft operator must only load an electric mobility aid when confirmation that it has been made safe has been received from the airport operator. This should be verified by checking for the presence of a completed 'Electric Mobility Aid Tag'. In addition, the staff responsible for loading the aircraft should make a check that inadvertent operation of the device has been prevented (through testing the controls), and be alert to obvious signs that the mobility aid has not been prepared properly (e.g. battery terminals that have not been protected from short circuit). If it is evident that the device has not been made safe, it must not be loaded and it will be necessary to liaise with the airport operator in order to resolve the areas of concern.

5.9 Prior to loading, the duplicate copy of the completed tag should be removed from the mobility aid and be kept on file together with other flight documentation retained on the ground.

5.10 A flowchart of the above outline procedure is at Appendix B.

6.0 Loading and Securing Onboard Aircraft

6.1 Loads are transmitted through the cargo hold floor panels to the aircraft structure. The over stressing of the structure, resulting from poor load planning, can pose a threat to flight safety and cause permanent and/or vastly expensive damage to the aircraft. Therefore, there are a number of aircraft loading limitations that must be complied with:

- **Compartment Load;** Defined as the maximum amount of load that may be carried in an individual compartment, together with other traffic load, subject to the following rules:
- **Floor Contact Load;** Defined as the maximum amount of load that may be in direct contact with the hold floor
- **Running/ Linear Load;** Defined as the maximum amount of load acceptable on any given length of the fuselage

- **Cumulative Load;** Defined as the maximum amount of load placed forward or aft of the CG datum, without exceeding structural design limits

6.2 Cargo of any type which is resting on wheels or castors can exceed limitations by imposing highly concentrated loads through a small contact area on the floor. If it is determined that the weight of an electric mobility aid exceeds any of the above limitations, then it must be placed on load spreading material that is sufficient in length and width to distribute the weight over an area that is within the floor contact load and the running load limitations of the aircraft.

6.3 If the electric mobility aid has loose fitting parts such as armrests, footrests, cushions etc, they should be placed in a plastic stowage sack or similar, prior to loading in the hold, to prevent any loose parts getting lost or broken. Many passengers prefer to carry this type of equipment on-board the aircraft to prevent loss or damage.

6.4 All dangerous goods, including electric mobility aids must be secured to prevent movement. Industry guidance recommends that items weighing 150 kg or more are to be individually restrained, except when the compartment or Unit Load Device (ULD) is volumetrically full (between 75% and 80% volume). However, using other baggage or cargo to secure electric mobility aids is not consistent with the requirement to prevent damage to such items. In the load planning stage, operational practicality must be applied. If baggage or cargo has also been planned for the hold intended for the electric mobility aid, and it is expected to be near capacity for that zone, it is recommended to plan to load the electric mobility aid elsewhere on the aircraft if possible. This will reduce the risk of it being damaged and assist loading teams as they should have better access to a greater number of anchor points for restraint purposes. Similarly, for containerised operations as stowage within a ULD is recommended, an additional ULD may be needed above the standard number for the route concerned. If it is absolutely necessary to stow baggage or cargo in the same compartment or ULD, the electric mobility aid should be individually secured and must be protected from damage by the baggage or cargo, e.g. by also tying and lashing the baggage and cargo.

6.5 Electric Mobility Aids must be properly secured whether intended to be containerised or bulk- loaded. Restraint methods shall comply with the following general rules:

- By way of seat track or anchor points, restraint must be achieved in the following directions: forward, aft, upwards and sideways to the required load factors
- Tie-down must be performed using approved equipment of a consistent type
- The calculation of the tie-down arrangements strength must be reduced to its weakest link
- Tie-down arrangements must be symmetrical, i.e. performed using an equal number of tie-down attachment points (fittings or equivalent) on any two opposite sides of the item, and the same number of lashings, acting in the same direction(s) of restraint, onto any two symmetrically located attachment points.

The aircraft specific frame spacing requirement must also be adhered to. This is the minimum distance that shall be maintained between any two tie-down attachment points (fittings) bearing lashings, giving restraint in the same direction.

6.6 All persons responsible for loading electric mobility aids must be familiar with the correct handling instructions detailed in the aircraft operator's specific Ground Operations/Handling Manual.

7.0 Further Actions

7.1 Airport operators must:

- implement procedures for the preparation of electric mobility aids for carriage by air;
- ensure that basic dangerous goods training is provided to those personnel tasked with the preparation of electric mobility aids for carriage by air;
- ensure that Safety Management Systems adequately address the provision of services to PRM (including the preparation of electric mobility aids for carriage by air); and
- ensure that services provided by third parties are appropriately monitored.

Aircraft operators must:

- ensure that adequate measures are in place for the receipt of information from passengers about their assistance requirements and for passing such information onto airport operators;
- publish restrictions on the carriage of mobility equipment including electric mobility aids;
- verify that procedures ensure electric mobility aids are only carried in accordance with the ICAO Technical Instructions (and any aircraft loading limitations);
- ensure that adequate instruction is provided during initial and recurrent basic dangerous goods training for passenger reservations, special assistance, load planning and aircraft loading staff on the requirements pertaining to the carriage of electric mobility aids;
- ensure that quality assurance and quality control monitoring includes activities associated with the carriage of electric mobility aids performed by airline passenger reservations and special assistance; check-in staff; load planning/control and aircraft loading staff.

Appendix A

ELECTRIC MOBILITY AID

RETURN TO PAX AT AIRCRAFT SIDE / AIRBRIDGE

Reservation no.: PAX Name:

Flight Number: Travel date:

I confirm that this mobility aid has been protected from short-circuit by the following method:

☐ The battery is fully encased with no exposed terminals

☐ Other (describe):_____

I confirm that this mobility aid has been deactivated and protected from accidental activation by the following method:

☐ Switched off using key. Key removed and given to PAX

☐ Dummy Neutric plug inserted

☐ Anderson connector disconnected. Location: _____

_____

☐ Other (describe):_____

_____

For wet acid batteries that cannot be loaded and stowed in an upright position only:

☐ Battery disconnected, its terminals insulated and passed to Loaders

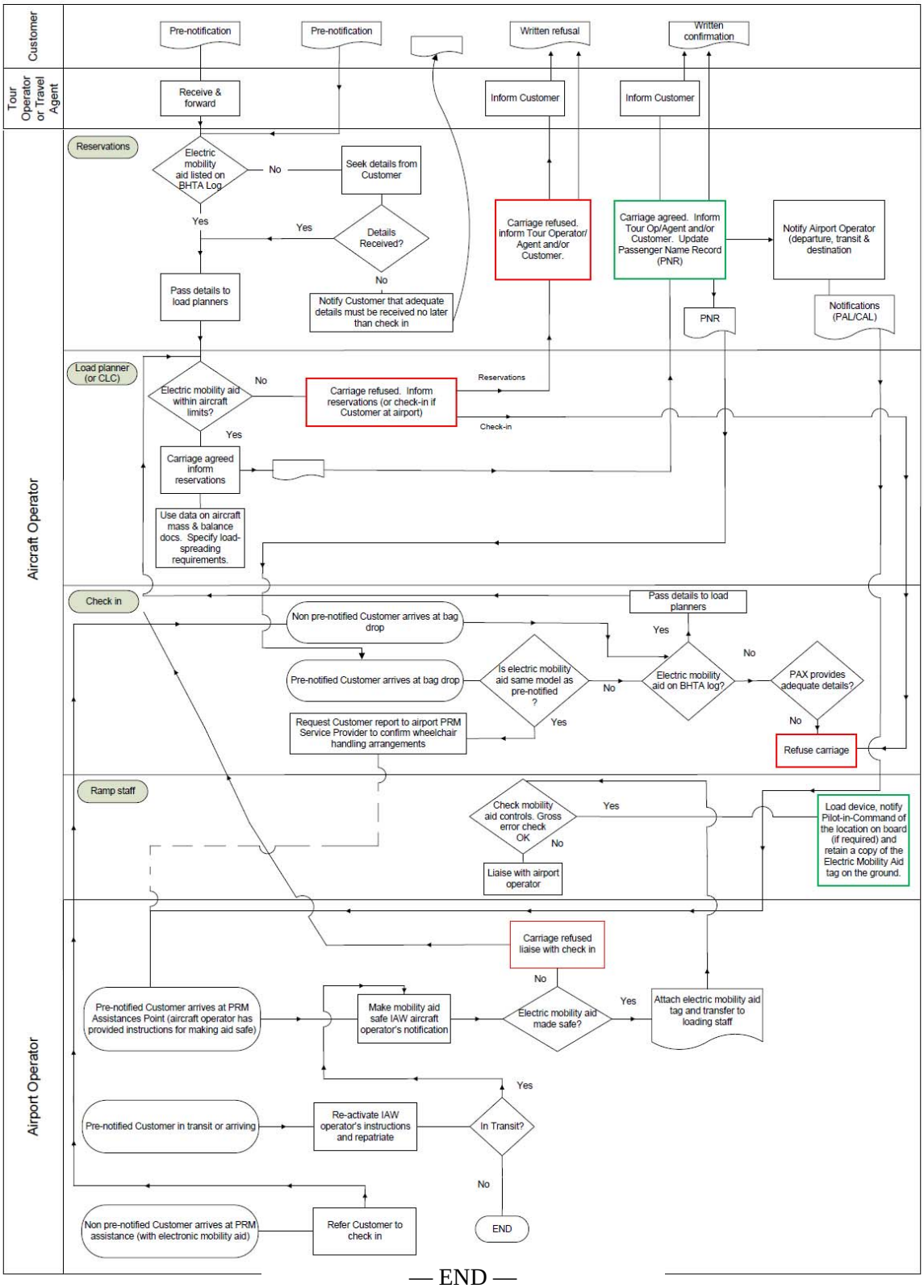
Name (print): _____ Sign: _____

LOADING SUPERVISOR: I confirm that I have checked the mobility aid and it does not operate.

Name (print): _____ Sign: _____

Appendix B

CARRIAGE OF ELECTRIC MOBILITY AIDS



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