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Introduction

Information that indicates vehicles and their drivers have caused runway incursions at a number of aerodromes is available in a variety of studies of runway incursions from EUROCONTROL. It is the responsibility of the Aerodrome Operator to have in place, a formal training, assessment and authorisation programme for all drivers operating airside.

As a result of local hazard analysis the operation of vehicles on the aerodrome should have been highlighted as a potentially high risk activity which demands a number of formal control measures to be put in place to manage the risk. A vehicle driver training programme is one of these control measures and should form part of the overall Safety Management System of the Aerodrome Operator.

The Aerodrome Operator is responsible for developing an agreed standard for the vehicle driver training programme. There will be a requirement for co-operation and partnership with Air Traffic Control, Ground Handling Agents, Airlines and other Service Providers airside to ensure the continued operation of the programme.

Depending upon the scale and complexity of the aerodrome and the individual requirements of the driver, the programme should take into account the following main areas:

■ A generic airside vehicle driver training programme which covers operational safety and health and safety aspects of operating vehicles, plant and equipment in close proximity to aircraft on aprons, stands and airside roads;

■ Specific training on the vehicle, plant and equipment, e.g. car, tug, high loader, coach;

■ Where the specific job function requires the driver to operate on the manoeuvring area then additional training on the hazards associated with runways and taxiways should be covered;

■ An essential requirement of operating a vehicle on the manoeuvring area is the need to use VHF radio communications with Air Traffic Control that will require training in the correct use of RTF and standard phraseology;

■ Works In Progress.

The following programme frameworks describe what may be considered as 'good practice' guidance for Airside and Manoeuvring Area vehicle driver training, with special attention given to a separate framework for radio telephony training. The guidance is a compilation of material drawn from many sources including ICAO, IATA, ACI and a large number of aerodromes that already operate vehicle driver training programmes. It is vital that both theoretical classroom training and practical experience cover all the areas mentioned. The aim of this guidance is to ensure consistency and a high degree of standardisation in the manner in which a driver obtains an 'Airside Driving Permit', therefore it may be applied to the majority of aerodromes.

Training Delivery

The three programme frameworks are intended as generic guidance and each aerodrome will need to apply those areas of training that are applicable to their local geography, conditions and type of operation.

All of the three training programmes should consist of two main parts, the first being the classroom/theoretical part which should include the use of prepared presentations, maps, diagrams, video, booklets, checklists as appropriate. The second part should involve practical tuition and visual familiarisation on the aerodrome with a suitably trained person. This practical tuition will take a period of time depending upon the complexity of the aerodrome. Following initial training, a programme of refresher training should be organised after an agreed period of time.

Where delivery for vehicle driver training (apron and manoeuvring area) and RTF is delegated to a third party provider the aerodrome should institute a programme of audits, as part of its SMS, to ensure that agreed standards are being maintained.

Framework for an Airside Vehicle Driver Training Programme

The Airside Driving Permit (ADP)

■ The issuing authority (normally the aerodrome operator), its validity in terms of time, conditions of use, non transferability of ownership of the permit, control and audit of permit issue;
■ Local enforcement and driving offence procedures;
■ Relationship to State driver licensing system.

National Legislation and Regulation

■ Government/State regulations related to general vehicle driving licences;
■ State/Regional/Local government requirements;
■ Regulatory requirements/guidance for driving airside; and
■ Local Organisations.

Aerodrome Regulations and Requirements

■ Rules of Air Traffic Control, rights of way of aircraft;
■ Specific aerodrome regulations, requirements and local instructions;
■ Local methods used to disseminate general information and instruction to drivers;
■ Local methods used to disseminate information regarding works in progress.

Right Of Way On The Ground

■ Vehicles must always give priority to taxiing aircraft, aircraft on tow or being pushed back and aircraft with their anti-collision lights on.

Personal Responsibilities

■ Fitness to drive (medical/health standards) national or airport agreed requirements (alcohol/drugs);
■ Issue and use of personal protective equipment such as high visibility clothing and hearing protection;
■ General driving standards;
■ No smoking requirements airside;
■ Responsibilities with respect to FOD and fuel/oil spillage;

■ Responsibility for individuals to ensure vehicle is suitable for the task, and used correctly;
■ Concentration – no use of mobile phones/portable electronic devices for personal use.

Vehicle Standards

■ Condition and maintenance standards agreed at aerodrome and/or national level;
■ The requirement to display obstruction lights and company insignia;
■ Requirements and content of daily vehicle inspections ;
■ Agreed standards of aerodrome and company vehicle fault reporting and rectification;
■ Local requirements for the issue and display of Airside Vehicle Permits (AVP's).

General Aerodrome Layout

■ The general geography of the local aerodrome;
■ Aviation terminology used such as runway, taxiway, apron, roads, crossings etc;
■ All standard aerodrome signs, markings and lights for both vehicles and aircraft;
■ Specific reference to those signs, makings and lights used to guard runways;
■ Specific reference to any controlled/uncontrolled taxiway crossing procedures.

Hazards of General Airside Driving

■ Speed limits, prohibited areas and no parking regulations;
■ The danger zones around aircraft;
■ Engine suction/ingestion and blast, propellers and helicopters;
■ Aircraft refuelling, fuelling zones, vehicle access/exit;
■ FOD and spillages;
■ Vehicle reversing, use of banksman;
■ Staff and passengers walking across aprons, rights of way;
■ Air-bridges and other services such as fixed electrical ground power;
■ The general aircraft turnaround process;
■ Aircraft emergency stop and fuel cut off procedures;
■ Hazardous cargo;
■ Local vehicle towing requirements;
■ Requirements for driving at night;
■ Requirements for driving in adverse weather conditions, particularly low visibility.

Local Organisations

- The role of the Aerodrome Operator in setting and maintaining standards;

- The Regulator and its responsibilities;

- The National and/or local Police and their involvement with airside driving other enforcement authorities dealing with vehicles, driving , health and safety.

Emergency Procedures

- Action to be taken in the event of a vehicle accident;
- Specific action to be taken in the event of a vehicle striking an aircraft;
- Action to be taken in the event of fire;
- Action to be taken in the event of aircraft accident/ incident;
- Action to be taken in the event of personal injury.

Communications

- Radio procedures to be used, if applicable;
- Light signals used by ATC, if applicable;
- Procedures to be used by vehicle drivers if lost or unsure of position;
- Local emergency telephone number;
- How to contact the local aerodrome safety unit;
- Pedestrian and traffic hand signals.

Practical Training (Visual Familiarisation)

- Airside service roads, taxiway crossings and any restrictions during low visibility, standard taxiways used;
- Aprons and stands;
- Surface paint markings for vehicles and aircraft;
- Surface paint markings that delineate the boundary between aprons and taxiways;
- Signs, markings and lights used on the taxiway and help indicate runways ahead;
- Parking areas and restrictions;
- Speed limits and regulations;
- Hazards during aircraft turnarounds and aircraft movements.

Framework for Manoeuvring Area Vehicle Driver Training Programme

It is anticipated that all drivers expected to operate on the manoeuvring area of an aerodrome will obtain an airside vehicle driver's permit which has covered the programme detailed above. It is also anticipated that any driver expected to drive on the manoeuvring area will have obtained an agreed period of experience of general airside driving before training to operate on the manoeuvring area.

The numbers of drivers permitted to drive on the manoeuvring area should be kept to the minimum necessary, and the functions they perform should normally be within the following areas of responsibility:

- Runway and taxiway inspections;

- Bird Control;

- Rescue and Fire Fighting;

- Essential Engineering;

- ATC;

- Snow clearing and De-icing;

- Airline/Handling agent for aircraft towing and runway crossings.

All drivers should be trained initially and be provided with refresher training at agreed intervals with particular additional emphasis on the following areas.

Aerodrome Regulations and Requirements

- Rules of Air Traffic Control, rights of way of aircraft;

- Definitions of movement area, manoeuvring area, aprons, stands;

- Methods used to disseminate information regarding works in progress.

Air Traffic Control

All access to a runway (even if inactive) should take place only after receiving a positive ATC clearance and providing a correct readback, and after the stop bar (where provided) has been switched off; Entering a runway without a valid ATC clearance will create a runway incursion, irrespective of the status of aeronautical ground lighting.

- Function of aerodrome control and its area of responsibility;
- Function of ground movement control and its area of responsibility;
- Normal and emergency procedures used by ATC relating to aircraft;
- ATC frequencies used and normal hand over/transfer points for vehicles;
- ATC call signs, vehicle call signs, phonetic alphabet, standard phraseology;
- Demarcation of responsibilities between ATC and Apron Control if applicable;
- Familiarisation with low visibility procedures and the changes they bring to manoeuvring area vehicle operations.

Personal Responsibilities

- Fitness to drive with particular emphasis on eyesight and colour perception;
- Correct use of personal protective equipment;
- Responsibilities with respect to FOD;
- Responsibilities with respect to escorting other vehicles / aircraft on the manoeuvring area;
- Awareness briefing at the start of a shift.

Briefing

Manoeuvring area drivers should be briefed at the start of shift so they are aware of the airfield status. This should include:

- The runways in use;
- If airfield low visibility procedures are in force;
- Any significant works areas in place, or being established or removed that day;
- Stop bars that are inoperable making the taxiway unusable for runway entry or crossing.

Manoeuvring area drivers should also ensure they carry an up to date airfield map in the vehicle and ensure that situational awareness is maintained.

Vehicle Standards

- Responsibility to ensure vehicle used is fit for purpose and task e.g. vehicles airside should have fitted and drivers should use flashing yellow lights (ideally all of airside, but at a minimum those driven on the manoeuvring area);
- Requirements for daily inspection prior to operating on the manoeuvring area;
- Particular attention to the display of obstruction and general lights;
- Serviceability of all essential communications systems with ATC and base operations.

Aerodrome Layout

- Particular emphasis on standard ICAO signs, markings and lights used on the manoeuvring area;
- Special emphasis on those signs, markings and lights used to protect the runway;
- Description of equipment essential to air navigation such as ILS;
- Description of protected zones related to ILS antenna;
- Description of ILS protected areas and their relation to runway holding points;
- Description of runway instrument/visual strip, cleared and graded area;
- Description of lights used on the manoeuvring area with particular emphasis on those related to low visibility operations e.g. particular care should be taken if a contingency procedure to be used in Low Visibility Operations or at night turns off the green taxiway centreline lights linked to and inoperable stop bar.

Hazards of Manoeuvring Area Driving

- Engine suction/ingestion and blast, vortex, propellers and helicopter operations;
- Requirements for driving at night;
- Requirements for operations in low visibility and other adverse weather conditions;
- Procedures for vehicle and or radio becoming unserviceable whilst on manoeuvring area;
- Rights of way for aircraft, towed aircraft and Rescue and Fire Fighting Service vehicles in emergency.

Emergency Procedures

- Actions to be taken in event of vehicle accident/incident;
- Actions to be taken in event of aircraft accident/incident;
- Actions to be taken if FOD or other debris is found on runways and taxiways;
- Procedures to be used by vehicles if lost or unsure of position;
- Local emergency telephone number.

Aircraft Familiarisation

- Knowledge of aircraft types and ability to identify all types normally operating at the aerodrome;

- Knowledge of Airline call signs;

- Knowledge of aircraft terminology relating to engines, fuselage, control surfaces, undercarriage, lights, vents etc.

Practical Training (Visual Familiarisation)

- All runways (including access and exit routes), holding areas, taxiways and aprons;

- All signs, surface markings and lights associated with runways, holding positions, CAT 1/2/3 operations;

- All signs, surface markings and lights associated with taxiways;

- Specific markings that demarcate the boundary between aprons and manoeuvring area;

- Navigation aids such as ILS, protected area, antenna, RVR equipment and other meteorological equipment;

- Hazards of operating around aircraft landing, taking off or taxiing;

- Any locally used naming convention for particular areas or routes;

- Knowledge of standard taxi routes, primarily intended for aircraft.

Framework for a Radiotelephony (RTF) Training Programme

The movement of vehicles on the manoeuvring area is subject to authorisation by Air Traffic Control. Depending upon the complexity of the aerodrome, ATC may operate a number of frequencies. Typically the aerodrome (tower) controller will be responsible for all vehicles operating on the runway, and the ground controller will be responsible for all vehicles operating on the taxiways. It is essential to fit all vehicles that operate on the runway with the appropriate radio communication frequencies.

All drivers of vehicles operating on the manoeuvring area should be expected to display a high degree of competence with respect to use of RTF phraseology and aviation English.

Hierarchy of Message Priority

- Message priorities, understanding of distress, alerting, control, information messages;
- When on the manoeuvring area, messages from ATC take priority.

Use of the Phonetic Alphabet

- Correct pronunciation of both letters, words and numbers.

Use of Standard Phraseology

- Emphasis on drivers using standard phraseology similar to pilots;
- Caution should be noted with certain phrases such as 'cleared', and 'go ahead'.

Use of Call Signs for Aircraft, ATC and Vehicles

- Understanding of terminology and acronyms used by ATC and pilots;
- Knowledge of the airline call signs used at the aerodrome;
- Vehicle call signs should be appropriate to function e.g. 'Operations', 'Fire', 'Engineer', where there is more than one vehicle the use of numbers e.g. 'Fire 2'.

Use of Read back Procedures

- Vehicle drivers should use standard read back in the same manner as pilots for instructions such as 'enter/cross the runway'.

Readability Scale

- Understanding and use of the readability scale from 1 - 5.

Aerodrome information

- Expect that ATC will provide real time significant aerodrome information which may affect operations on or near the runway when NOTAMS and ATIS (which are normally used to advise pilots of significant information regarding runway operations) are not available.

Lost or Uncertain of Position

- Understanding of local procedures for vehicles lost or uncertain of position on the manoeuvring area.

Vehicle Breakdown

- Local procedure for vehicle breakdown on runways and taxiways;

- Procedure for indicating to ATC of vehicle failure.

Radio Fail Procedure

- Understanding of the local procedure if radio failure occurs whilst on the runway or taxiway;
- Understanding of the light signals that may be used by ATC to pass instructions to vehicles.

Correct Transmitting Technique and RTF Use

- Understand the reasons for listening out prior to transmitting;
- Use of standard phraseology, aviation English;
- Words and sounds to be avoided;
- Correct positioning of microphones to avoid voice distortion;
- Avoidance of 'clipped' transmissions;
- Be aware of regional accents and variations of speech;
- Speed of delivery of RTF phraseology.

Use of Portable Radios

- Correct use of radios;
- Effective range and battery life;
- Screening/shielding effects on the aerodrome;
- Use of correct call signs, either related to vehicle or an individual person.

Safety whilst using Radios

- Local instructions regarding use of portable radios and hand held microphones whilst driving a vehicle;
- Local instructions on the use of mobile telephones (cell phone) whilst operating airside.

For more information about communication practices on the manoeuvring area, refer to Appendix A Communication.

Summary

The above frameworks are intended only as guidance and are based on current 'good practice'. It is incumbent on aerodromes to regularly review their vehicle driver training programmes against programmes and documentation available across the industry.

References

1. Airports Council International ACI (World) Airside Safety Handbook;
2. ACI (World) Apron Signs and Markings Handbook;
3. IATA Airport Handling Manual (AHM) current edition;
4. UK Civil Aviation Authority CAP 642 - Airside Safety Management;
5. UK Airport Operators Association - Airside Driver Training Scheme;
6. ICAO Annex 14, ch. 8, Aerodrome Vehicle Operations, and attachment A, para. 17 - Operators of vehicles;
7. ICAO Air Traffic Management (PANS ATM) ch. 7 Procedures for Aerodrome Control;
8. Airside Vehicle Drivers Guide Air Services Australia.

Useful Web sites

www.eurocontrol.int
www.airports.org
www.aci-europe.org
www.iata.org
www.caa.co.uk