The Application of Ground Power to Live Aircraft

Introduction

For the purpose of attaching ground power (whether for an inoperative Auxiliary Power Unit (APU) or a standard arrival), it is recognised and accepted that at some airports, aircraft operators and ground service providers require a process during the arrival phase of the turnaround, whereby ground handling personnel need to approach the aircraft whilst the engines are still running and the anti-collision lights are still illuminated.

The UK Civil Aviation Authority, via the Ground Handling Operations Safety Team (GHOST), has developed detailed guidance and procedures in accordance with regulatory obligations and industry best practices. This information, which should form the basis of any related risk-based conversation and/ or assessment, can be found together with a Bowtie safety risk template and in CAP642.

Background

The Health and Safety Executive (HSE) set out their position on the subject matter in an open letter to industry in 2011, after an incident in 2010 at Edinburgh Airport. A prohibition notice was subsequently served on the ground handling organisation to "prevent persons approaching aircraft with engines running and anti-collision lights illuminated" which made it clear that health and safety management systems required additional mitigation to protect workers on the ground.

GHOST Review

A subgroup of GHOST comprising representative members from industry and regulators (CAA, IAA & HSE) reviewed this practice and identified a number of widespread concerns, namely:

- **Inadequate stakeholder engagement.**
- **Lack of industry standardisation.**
- **Familiarity with procedures.**
- **Inconsistent prior notification.**
- **Inadequate compliance monitoring.**

Inadequate Stakeholder Engagement

Generally, ground service providers were not consulted during the formation and agreement of airline risk assessments and were simply instructed to adopt the procedure in accordance with agreed handling contracts. Evidence suggested that some risk assessments were even being completed without involvement of the airport/aerodrome operator and with no consideration of human behaviours/performance or of other organisations that operate on the ramp.

Lack of Industry Standardisation

As with many activities in the aviation industry's ground handling community, different organisations have determined different ways of conducting the same process. The lack of standardisation can add ambiguity and lead to confusion to what is a safety critical task.

Familiarity with Procedures

Familiarity with any procedure, or the lack of, can result in very different outcomes:

- Familiarity with a routine procedure often dilutes the safety critical nature of the task and breeds complacency.
- The lack of familiarity with a procedure will result in a reduced level of safety for all involved in the process.
- Whereas, total awareness of an 'unusual' situation may provide all involved with a heightened level of awareness.

Inconsistent Prior Notification

In the case of an inoperative APU, there are currently various methods of communicating the need for ground power on arrival but it was recognised that none were particularly robust.

If an APU unexpectedly fails before aircraft arrival, prior notification may not be possible and therefore the receiving ramp team will not be able to properly plan and prepare. This scenario emphasises the importance of use of clear and robust standardised hand signals/communications between the flight deck and ground crews whenever ground power is required on arrival.

Inadequate Compliance Monitoring

Practical drift, as defined in ICAO doc 9859, occurs when the baseline performance of any system "drifts" away from its original design when the organisation's processes and procedures cannot anticipate all situations that may arise in daily operations.

Effective management and supervision of any safety critical activity is imperative, so the agreed process must be included within all of the stakeholder's compliance monitoring programmes. Whilst a desktop review of the risk assessment and procedures must be periodically conducted, it is essential to observe the actual process in all weathers and visibilities, day or night.

Procedural Principles

As a minimum, the following safety critical elements are expected to be incorporated within any related policies and procedures.

> ⚠️ **All persons not responsible for the following aircraft chocking and ground power actions, must not approach the aircraft until this process has been fully completed:**

1. All Ground Support Equipment (GSE) and personnel must be positioned clear of the aircraft path, outside the Equipment Restraint Area (ERA).
2. After the aircraft has come to a complete stop, receive confirmation from the flight crew that the parking brakes have been set.
3. Respond to the crew before positioning chocks at the nose landing gear wheels. Once the chocks have been positioned, notify the crew using the "chocks inserted" signal. This is the first action to take place around the aircraft, and shall be completed before any other activity.
4. Position and connect the ground power to enable the flight crew to shut down the engine(s).
5. Only when the engine(s) have spooled down and the anti-collision lights have been switched off, is it safe for ground service providers to approach the aircraft and commence servicing tasks.

Summary

In a factory environment, physical barriers can be placed in the form of safety nets or shields to deal with close proximities and/or abnormal situations but these do not exist when working in close proximity to live aircraft engines.

Due to the severity of the potential consequence, the robustness of mitigations and strict adherence to agreed procedures is vital.

Therefore, using Safety Management System principles and duty of care obligations, aerodrome operators, airline operators and ground handling service providers should ensure that the policies and procedures relating to this activity are widely promulgated and understood by flight crews, handling staff and all other personnel working or intending to work on or around the aircraft.

Actions

In consideration of the above, respective stakeholders should conduct a review of their operational policies and procedures to ensure that:

▪ All stakeholders are involved in the evaluation of the specific activity and work together to ensure that all associated risks are identified and managed to an acceptable level;

- Related procedures, documents and training plans are fully and regularly reviewed for detail and accuracy;
- All Flight and Ground Operations Manuals align;
- Related supervision and monitoring activities are in place that ensure that this topic is appropriately checked for performance and compliance;
- Personnel, working within a just culture, understand the importance of reporting related incidents and concerns, including near misses, and;
- Stakeholders work together during any related safety investigations, to understand why they occurred and build the lessons learned into procedural reviews and future training.

For any related comments, feedback or information please contact GHOST@caa.co.uk