

GHOST

GROUND HANDLING OPERATIONS SAFETY TEAM

Anti-Collision Lights - A View From The Ground



You're on final approach into a Category B airfield in IMC after an uneventful eight hour flight. You have control of the aircraft, whilst your vastly experienced and capable First Officer handles the radio communications and monitors the approach. The winds are light. The cloud base is slightly lower than first advertised but the approach is nothing but routine, up until now. You request "Gear Down" followed by the "Landing Checklist", almost immediately after which you are alerted to both an unexpected audible and visual warning.

The Master Caution flashes red. It does exactly what it is supposed to do - draw your attention to something that requires immediate action, to prevent further possible consequence...

Now consider that scenario in a different but familiar environment.

You're in the final phase of dispatch after an uneventful turnaround of this narrow body twin-jet. As the designated Team Leader, you are joined by a vastly experienced and capable team you know well. Whilst the number of hold bags for the outbound flight was more than expected for this time of the year, it's been a well co-ordinated and routine turnaround, up until now. As you are conducting your final pre-departure under-wing duty, you are alerted to an unexpected visual warning. The anti-collision lights flash red. It does exactly what it is supposed to do - draw your attention to something that requires immediate action, to prevent further possible consequence...

In both scenarios, personnel have been trained to understand what these warnings mean and what to do.

Background

Have you ever switched on your anti-collision lights but have not been ready to initiate the pushback?

It is at this final phase where both your attention and the attention of the ground crew needs to be focussed on the specific items. Just as a master warning may cause you unwanted and unexpected distraction right at a time when maximum focus is needed the same extends outside the flight deck environment.

Have you ever thought about how your Ground Crew will, or are supposed to react? What are you trying to tell them? Are you expecting them to stop what they are doing and move away from the aircraft because something that may harm them is about to happen, or are you just expecting them to hurry up, so that you can meet your scheduled departure time?

The Ground Handling community frequently experiences occasions when Flight Crew switch on the lights whilst the aircraft is still in the hands of the turnaround team, even when lower cargo hold doors are still open, loading equipment is still in place or sometimes when there is no pushback vehicle at the front of the aircraft. The industry standard for ground operations can be found in the IATA Airport Handling Manual 617 (5.2.):

“With arriving aircraft, all personnel and vehicles should remain clear of the propellers, engine inlets and exhausts until the engines have spooled down as indicated by the nose cone spinner or propellers stop turning and the anti-collision lights have been turned off.

On departure, as soon as the anti-collision lights are turned on, all personnel and vehicles should remain clear of the propellers, engine inlets and exhausts. Personnel must never position themselves or equipment in the aircraft danger zones before or during aircraft arrival or departure.”



Ground personnel are also warned in the IATA Ground Operations Manual (3.1.2.1):

“Vehicles and personnel shall remain clear of aircraft danger areas when aircraft engines are running and/or the anti-collision lights are on.”

This consistent and simple message is replicated in many organisations’ policy/procedure manuals and related training courses.

Consequences

Switching on the lights, without prior communication, could encourage short cuts or even apply pressure to the point where a specific safety related task is not completed at all, in order to expedite your departure. This action contributes to the erosion of a well-established industry safe working

practice and has the potential to endanger your flight, as there are a number of related consequences to consider:

Pre-Departure Safety Checks

Anti-collision lights are often switched on whilst a member of the dispatch team is conducting a pre-departure safety walkround. It could be seen as a well-intended action as we all strive for on time performance as this is important to our industry however the outcome of unwanted distraction may lead to a process not being followed or a critical step being missed and that doesn't help flight (or ground) safety. Due to the continued challenge of unreported aircraft damage, the Ground Handling Agent is tasked with checking for significant damage which may have occurred during the mid or latter stages of the departure. It must be remembered that the flight deck and/or Ground Engineer walkrounds might be completed up to one hour before departure. That leaves a lot of time for aircraft/ground support equipment interaction and the potential for damage to occur.

Historically, this check was purely a 'holds & hatches' check but due to the aforementioned reasons, it has developed into a far more thorough exercise. It will typically require the person responsible to walk around the silhouette of the aircraft, checking door areas, leading/trailing edges, engines, the undercarriage and of course for any FOD that may be in the vicinity of the pushback zone. The Agents are not qualified engineers but have been trained to be able to identify damage, or even question anything that doesn't look right. Over the last few years, the following examples will show just how important this often, last line of defence, is:

- The headset operative noted damage to the fan blades and cowling of number 2 engine. It was duly inspected and confirmed as being a bird strike. The aircraft was grounded. He was later advised that the engine would not have survived the stresses of take-off thrust.
- Damage was noticed to the inner wing (port side). The flight deck was informed and the aircraft was subsequently offloaded and taken offline for maintenance.
- XXX noticed that engine number 2 was leaking with what he thought was fuel. Subsequent ground runs revealed that it was leaking oil and there would have to be an aircraft change.
- A hatch was identified as not properly secured and required engineering assistance to rectify the fault. This would certainly have affected cabin pressurisation during flight.
- XXX noticed a piece of FOD was embedded in the tyre. The engineers were informed and checked the tyre, which had to be replaced before departure.
- A leak from the nose leg strut was brought to the Captain's attention. It transpired that the strut had failed and had actually collapsed.
- The team leader noticed a loose screw sticking out from underneath the number 4 engine. On closer inspection by the engineers, the lower engine cowling was almost detached and had the aircraft become airborne, would have likely separated.

In order to reiterate the importance of identifying similarly hazardous situations to those listed above, the majority of Ground Handling Agents have established schemes to officially recognise individuals who have done so. Whilst it could be argued that they are “just doing their job”, it serves a greater purpose of encouraging an open reporting culture.

In light of the above, would you want to distract your Agent whilst they are in the process of this check? There is a good chance that this person will be your headset person, so how will they react if halfway around this check, the lights are switched on... Are you changing their focus during a safety critical duty?

Ground Crews can also assist with this situation - As visibility of all ground activities from the flight deck is extremely limited, they should inform Flight Crews that they will be ‘offline’ whilst they conduct this safety check.

Communication is even more important if ground to aircraft systems are not available and hand signals are used. If the person responsible for oversight of the engine start/pushback also conducts the safety walkround, it is recommended that another member of the Ground Handling team remains in visual contact with the Flight Crew, in order to maintain continued communications and prevent any frustrations that may lead to the inappropriate use of the lights. On completion of the safety walkround, the person responsible should clearly indicate to the Flight Crew that this duty has been completed.

Loading Error

Does the pressure applied by the premature switching on of the lights, influence the way that the dispatch/loading personnel behave? It is very possible that the last of the cargo loading system floor locks, the bulk load restraint nets and/or the final supervisory check of either, may not be completed prior to pushback for the same reasons stated previously.



Aircraft Checklists

One UK operator, after experiencing an increase in related reported incidents, conducted an in-depth investigation into some of the causal factors and found that the pre-start checklists contributed to the problem. As the manufacturer’s checklist places “beacon” directly after “ATC clearance”, pilots were getting ahead of the game by completing the pre-start checklist as soon as they were ready to go, as they needed to get in the queue for ATC start clearance.

Therefore, 'ATC clearance' was the trigger to switch on the lights, whether or not ground crews were actually ready. As a preventative measure, the operator split it into 'before' and 'at' Start Clearance and added a requirement to obtain ground clearance before switching the lights on. Verification of ground clearance is now the trigger for the lights:

BEFORE START CLEARANCE

Applicable to: ALL

SEATS, SEAT BELTS, HARNESSSES, RUDDER PEDALS, ARMRESTS.....ADJUST
MCDU.....IN TAKEOFF CONFIGURATION
EXT PWR.....CHECK OFF
BEFORE START CHECKLIST DOWN TO THE LINE.....COMPLETE

AT START CLEARANCE

Applicable to: ALL

PUSHBACK/START UP CLEARANCE.....OBTAIN
GROUND CREW CLEARANCE.....OBTAIN
BEACON.....ON
SIGNS.....SET

Personnel Safety

Many Ground Handling organisations are experiencing concerning incidents of ground personnel not staying clear of aircraft whilst engines are running and/or lights are switched on, despite it being one of the first rules covered in training for personnel working in the ramp environment - so why does it happen? Personnel are also trained to leave the under-wing area of the aircraft when the lights have been switched on - so why don't they?

Clearly there are a number of reasons for these behaviours, one of which could be the inappropriate use of the lights. The practice of using them as 'attention getters' could be devaluing their purpose to the point where, in the eyes of the Ground Handler, they just become another flashing light rather than an indication of potential danger. Safe systems of work can easily become eroded if custom and practice tolerates contradictory behaviour.

If the aircraft is parked on a stand that has roadway behind it, all passing traffic should stop when the lights are switched on. If it becomes common practice for the lights to go on and yet the pushback doesn't start for a prolonged period of time, people may start to ignore them and continue to drive vehicles behind the aircraft. This behavioural drift has the potential to result in a very serious incident.

Other Causal Factors

Another reason as to why behavioural drift is apparent may be due to the actions of other influential personnel that regularly work in and around the aircraft. For example, a Ground Engineer's confident manner can sometimes deviate into a disregard for procedure. On occasion, the post arrival

walkround of the aircraft (predominantly long-haul) has been seen to be initiated before the aircraft has even parked. In the past, this practice has unfortunately led to serious injury.

It is also understood that some airlines' procedures require Ground Engineers to establish contact with the Flight Deck on arrival, to be able to communicate any potential brake serviceability issues. This procedure has been adopted for operational purposes, must be recognised as such and should not be open to any interpretation by other operational personnel.

Whilst the anti-collision lights are almost always associated with the moments before pushback, they also have another purpose - They also warn of other possible risks to those in the vicinity of the aircraft. For example, an engine ground run, a slat and/or flap extension or even a regeneration test of a repaired hydraulic system, etc. Whilst any Ground Engineers in attendance would no doubt do their utmost to warn those in the immediate vicinity, the lights will also warn those who may not have received any initial cautionary brief.

If the anti-collision warning lights are to be tested as part of a routine daily engineering type inspection, for the reasons stated above, it is recommended that the Ground Handling Agent is made aware.

Summary

Please reflect for a moment on how your attention focus changes when the Master Caution Warning light illuminates in the flight deck and give a thought to how someone on the outside of your aircraft will have their attention focus changed by the "Master Caution Warning Light" they recognise - the anti-collision lights.

Hopefully this article will provoke a few thoughts, provide a few explanatory considerations and most importantly remind all that safety is the number one priority. Therefore, in the interest of best practice, GHOST and the UKFSC recommend that stakeholders consider the following actions:

Aircraft Operators

- Through training and monitoring, ensure that flight crews do not use these lights as a 'ready message' to ground personnel whilst they are conducting final pre-departure preparations.
- Encourage, or even introduce procedures that require Flight Crews to establish communication with the Ground Crews, before switching on the lights.
- Conduct a review of the pre-start checklist, to see if the aforementioned issue exists, with a view to revision.
- Engage with Engineering organisations and/or departments to reiterate related procedures/behaviours.

Ground Handling Agents

- Through training and monitoring, ensure that ground crews stay/walk away from aircraft that have engines running and/or anti-collision lights illuminated.
- Inform the Flight Deck that you intend to conduct the pre-departure safety walk-round.
- Use enhanced communications for this procedure if hand signals are to be used.
- Report any related incidents of inappropriate use.

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