**Ground Injury Prevention Program Newsletter**
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# Engine Danger Areas

Failure to observe proper safety precautions, such as good communication and awareness of the hazard areas in the vicinity of an operating jet and propeller engines, can result in serious injury or fatality. The risk of ingestion and jet blast can be prevented with appropriate training, supervision, briefings and adherence to the related safety procedures and hazard areas. An example are the tragic incidents at Montgomery Regional Airport, Montgomery, Alabama and Schiphol airport in Amsterdam, Netherlands when airport workers lost their lives in 2023 and 2024 after being sucked into jet engines.

It is extremely important for ground personnel working near aircraft with operating engines to stay at a safe distance from the engine danger areas to avoid the possibility of injury or fatality.

Safe procedures to work around running engines are defined in the IGOM in various sections, extract attached below for reference. In addition, operators and services providers shall comply with additional safety instructions implemented by the aerodrome operator or local authorities:

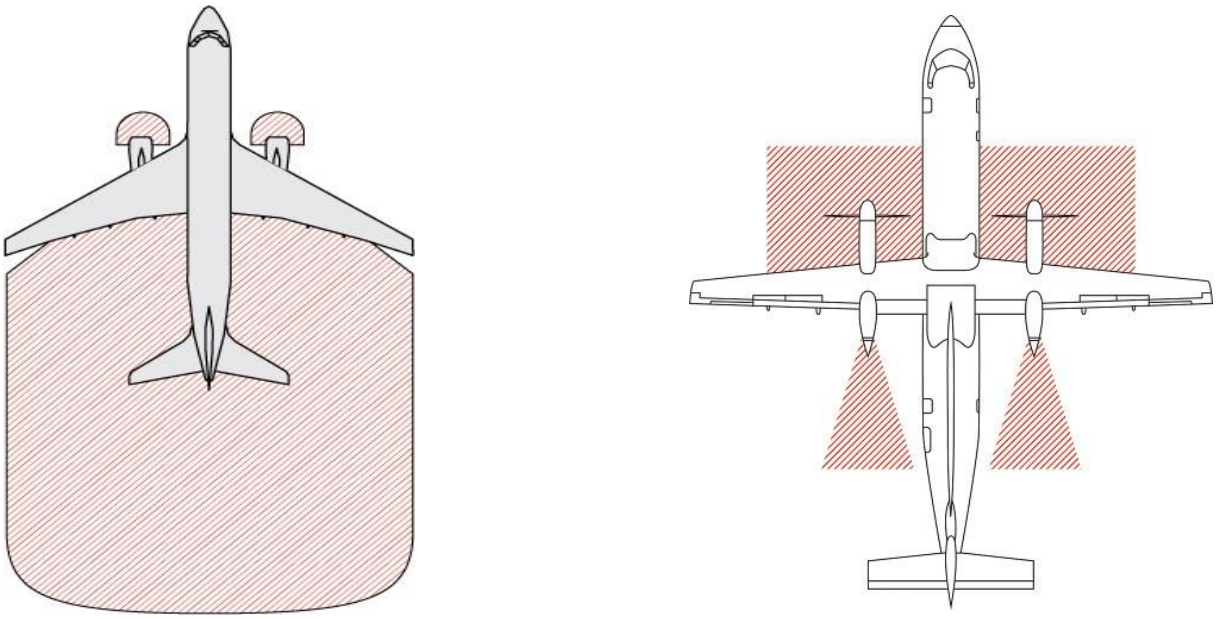
***IGOM 3.1.2.1 Engine Danger Areas***

*There is a particular risk of injury or damage in areas affected by aircraft engine intakes, exhausts and propellers. The risk further increased if, for any reason, an aircraft stops and then applies additional thrust required to break away and continue its maneuver.*

a. *Vehicles and personnel shall remain clear of aircraft danger areas when aircraft engines are running and/or the anti-collision lights are on.*
b. *To prevent incidents and accident caused by aircraft engines, personnel shall never position themselves or equipment in the following critical areas before/ during aircraft departure and arrival.*
    1. *Engine intake area*
    2. *Engine blast area*
    3. *Propeller rotation, where applicable*
c. *Ensure the engine intake/propeller rotation is clear at all times when engines are running or when the engine is about to start*
d. *It is forbidden to pass through the blast area while engines are running.*

***Danger:*** *Ground personnel and/or equipment shall stay clear of the engine intake and blast areas.*

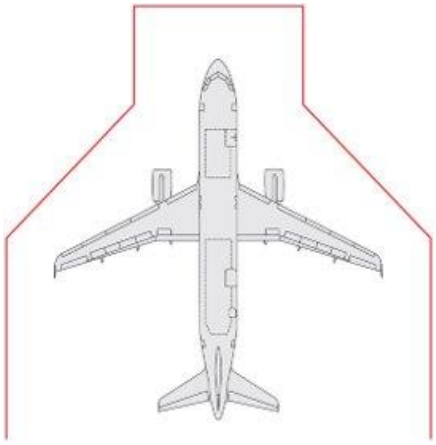
**Example of Engine danger area – Jet Aircraft and Propeller Aircraft**



***Note:*** *The extent of these areas varies for each aircraft type as well as whether the engines are at IDLE or BR EAKAWAY thrust. Refer to the manual for each aircraft type or operating airline's GOM for applicable distances.*

***IGOM 3.1.2.3 Equipment Restraint Area and Equipment Restraint Line***

*(a) The equipment restraint area (ERA) is defined as the area of the apron where an aircraft is parked during ground operations. It may be indicated by a painted line. If no markings exist, local procedures shall establish safe parking areas, etc. Figure 3.1 provides an example of the markings used at some locations.*
*(b) The ERA shall be free of personnel not involved in the aircraft arrival, obstructions, equipment (refer to exemption IGOM 4.1.4.1) and foreign object debris (FOD) before and during aircraft arrival and departure.*



. *Figure 3.1*

***IGOM 4.3.1 Safety Cone Placement and Removal***

*a) Upon aircraft stopping:*

1. *1. Position wheel chocks at the nose landing gear (NLG) wheels as per IGOM 4.2.1.*
2. *2. Position and connect the ground power unit (GPU) or fixed power unit (FPU), if required, before engine*
3. *shutdown in accordance with IGOM 4.1.4.1*

*(b) Approach the aircraft to position cones only when the following criteria are met:*

4. *Aircraft has come to complete stop*
5. *Engines have been shut down and are spooling down (or propellers completely stop)*
6. *Anti Collision lights are switched off*
7. *Aircraft has been chocked*

***AHM 1110*** *Ground operations training under "General Aviation and Safety, and RMP10- Aircraft Arrival, RMP11 – Aircraft Pushback, RMP 15 – Headset communication, RMP17-Aircraft Loading Supervision, RMP18-Turnaround Coordination", covers the requirements related to safe work practices for working around the aircraft.*

**In addition, the following best safe practices should be adopted and adhered to:**

1. Always visually check the ramp and taxiways behind a turbojet before and during a pushback for the presence of transient light aircraft that may be caught in the jet blast.
2. Give decisive hand signals and/or verbal warnings to the flight crew during a pushback if you see a hazardous situation developing.
3. Avoid driving baggage carts between turbojets on the ramp; it is often impossible to know whether aircraft engines are running, or whether power might be applied suddenly by the jet's crew.
4. All personnel must maintain clear and effective communication using standardized protocols and terminology.
5. GSE and vehicle not required for operation shall not be in the ERA.
6. Spool Down -The engine must be spooled down before entering the ingestion zone. This can take between 30-60 seconds, depending on engine type. Spooling down of an engine can be identified as follows: 1. reduced engine noise 2. visible fan speed reduction 3. lack of exhaust heat or thrust plume
7. For propeller aircraft, personnel should ensure propeller are fully stop before approaching aircraft.

*An airline and GHSP shall not deviate from industry standards as defined in IGOM/AHM, unless necessary due to regulatory or airport requirement or own operational limitation and only after a risk assessment has been carried out to ensure exceptions are unavoidable and equivalent safety measures are in place to mitigate risks.*

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