The importance of being go-around-prepared and being go-around-minded must be emphasized, because a go-around is not a frequent occurrence. This requires having a clear mental image of applicable briefings, standard calls, sequences of actions, task sharing and cross-checking, and being prepared to abandon the approach if requirements are not met in terms of:

- Weather minimums; or,
- Criteria for a stabilized approach (see recommendations).

The sequence of events leading to a go-around can begin at the beginning of descent, so the following recommendations begin with descent preparation.

“No-fault” (“no-blame”) go-around policies should be implemented by operators, supported by management and reinforced by training systems.

Statistical Data
The Flight Safety Foundation Approach-and-landing Accident Reduction (ALAR) Task Force found that failure to recognize the need for and to execute a missed approach when appropriate is a primary cause of approach-and-landing accidents (ALAs), including those involving controlled flight into terrain (CFIT).

The task force found that inadequate professional judgment/airmanship was a causal factor in 74 percent of 76 approach-and-landing accidents and serious incidents worldwide in 1984 through 1997.

Among the flight crew errors committed in these occurrences was failure to conduct a go-around when required by: an unstabilized approach; excessive glideslope/localizer deviations; absence of adequate visual references at the minimum descent altitude/height (MDA[H]) or decision altitude/height.
The task force found that only 17 percent of the accident/incident flight crews initiated go-arounds when conditions indicated that go-arounds should have been conducted.

**General**

Being go-around-prepared and go-around-minded implies the following:

- Knowledge of applicable briefings, standard calls, sequences of actions, task sharing and cross-checking;
- Being ready to abandon the approach if the weather minimums or the criteria for a stabilized approach are not met, or if doubt exists about the aircraft’s position or about aircraft guidance; and,
- After the go-around is initiated, the flight crew must fly the published missed approach procedure.

**Operational Recommendations**

**Task Sharing**

Adherence to the defined pilot flying-pilot not flying/pilot monitoring (PF-PNF/PM) task-sharing procedures for normal operations and abnormal operations is a major part of preparing for a go-around and of conducting a safe go-around.

**Descent Preparation**

Descent preparation and the approach briefing should be planned and should be conducted to prevent delaying the initiation of the descent and to prevent rushed management of the descent profile.

**Approach Briefing**

To be go-around-prepared, the approach briefing should include a discussion of the primary elements of the go-around maneuver and the published missed approach procedure. The discussion should include the following:

- Approach gate;
- Go-around call (e.g., a loud and clear “go around/flaps”);
- PF-PNF/PM task sharing (flow of respective actions, including desired guidance, mode selection, airspeed target, go-around altitude, deviations calls); and,
- Missed approach vertical navigation and lateral navigation (including airspeed and altitude restrictions).

**Achieving Flight Parameters**

The flight crew must “stay ahead of the aircraft” throughout the flight. This includes achieving desired flight parameters (e.g., aircraft configuration, aircraft position, energy condition, track, altitude, vertical speed, airspeed and attitude) during the descent, approach and landing. The industry recognizes that both the PF and the PNF/PM have a monitoring role; therefore, either crewmember should announce a deviation or impending deviation from a desired flight parameter. Any indication that a desired flight parameter will not be achieved should prompt immediate corrective action or the decision to go around.

**Descent Profile Monitoring**

The descent profile should be monitored, using all available instrument references (including flight management system [FMS] vertical navigation [VNAV]).

The descent profile also may be monitored or may be adjusted based on a typical 10 nautical mile per 3,000 feet descent gradient (corrected for the prevailing head wind component or tail wind component) while adhering to the required altitude/airspeed restrictions (deceleration management).

If the flight path is significantly above the desired descent profile (e.g., because of an air traffic control [ATC] restriction or greater-than-expected tail wind), the desired flight path can be recovered by:

- Reverting from FMS VNAV to a selected vertical mode, with an appropriate airspeed target or vertical-speed target;
- Maintaining a high airspeed and a high descent rate as long as practical;
- Using speed brakes;
- Extending the landing gear, if the use of speed brakes is not sufficient; or,
- As a last resort, conducting a 360-degree turn (as practical, and with ATC clearance).

If the desired descent flight path cannot be established, ATC should be notified for timely coordination.

**Final Approach**

Because the approach briefing was conducted at the end of the cruise phase, the crew should review primary elements of the go-around maneuver and the missed approach procedure at an appropriate time during final approach.

To be prepared to take over manually when flying with the autopilot (AP) engaged, the following should be considered:

- Seat adjustment and armrest adjustment (this is of primary importance for effective aircraft handling in a dynamic phase of flight); and,
- Flying with one hand on the control column and one hand on the throttle levers.
Transitiqing Back to Instrument Flying

One of the most frequent reasons for conducting a go-around is weather.

When approaching the MDA[H] or the DA[H], one pilot attempts to acquire the required visual references. During this time, the pilot is in almost-visual flying conditions.

If a go-around is initiated, an immediate transition to instrument flying should occur.

It is, therefore, of primary importance that the other pilot maintain instrument references and be ready to make appropriate calls if any flight parameter (airspeed, pitch attitude, bank angle, thrust) deviates from the normal value.

To ease this transition back to instrument flying, all efforts should be made to initiate the go-around with wings level and with no roll rate.

The above discussion does not apply when captain/first officer task sharing is accomplished in accordance with an operating policy known as the shared approach, monitored approach or delegated handling approach. [See FSF ALAR Briefing Note 7.3 — Visual References.]

Summary

Because a go-around is not a frequent occurrence, the importance of being go-around-prepared and go-around-minded should be emphasized.

If the criteria for safe continuation of the approach are not met, the crew should initiate a go-around and fly the published missed approach.

The following FSF ALAR Briefing Notes provide information to supplement this discussion:

- 1.1 — Operating Philosophy;
- 1.3 — Golden Rules;
- 1.4 — Standard Calls;
- 1.6 — Approach Briefing;
- 4.1 — Descent-and-Approach Profile Management;
- 4.2 — Energy Management;
- 6.2 — Manual Go-around;
- 7.1 — Stabilized Approach; and,
- 7.3 — Visual References.

Notes


2. The Flight Safety Foundation Approach-and-landing Accident Reduction (ALAR) Task Force defines causal factor as "an event or item judged to be directly instrumental in the causal chain of events leading to the accident [or incident]." Each accident and incident in the study sample involved several causal factors.

3. The FSF ALAR Task Force defines approach gate as "a point in space (1,000 feet above airport elevation in instrument meteorological conditions or 500 feet above airport elevation in visual meteorological conditions) at which a go-around is required if the aircraft does not meet defined stabilized approach criteria."

Related Reading From FSF Publications


FSF Editorial Staff. "B-737 Crew’s Unstabilized Approach Results in Overrun of a Wet Runway." Accident Prevention Volume 60 (July 2003).

The Flight Safety Foundation (FSF) Approach-and-Landing Accident Reduction (ALAR) Task Force produced this briefing note to help prevent approach-and-landing accidents, including those involving controlled flight into terrain. The briefing note is based on the task force’s data-driven conclusions and recommendations, as well as data from the U.S. Commercial Aviation Safety Team’s Joint Safety Analysis Team and the European Joint Aviation Authorities Safety Strategy Initiative.

This briefing note is one of 33 briefing notes that comprise a fundamental part of the FSF ALAR Tool Kit, which includes a variety of other safety products that also have been developed to help prevent approach-and-landing accidents. The briefing notes have been prepared primarily for operators and pilots of turbine-powered airplanes with underwing-mounted engines, but they can be adapted for those who operate airplanes with fuselage-mounted turbine engines, turboprop power plants or piston engines. The briefing notes also address operations with the following: electronic flight instrument systems; integrated autopilots, flight directors and autothrottle systems; flight management systems; automatic ground spoilers; autobrakes; thrust reversers; manufacturers’/operators’ standard operating procedures; and, two-person flight crews.

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