rejected landing (also called an aborted landing) is a go-around maneuver initiated after touchdown of the main landing gear. A rejected landing is a challenging maneuver and typically is recommended only when an aircraft bounces more than approximately five feet (1.5 meters) off the runway after touchdown.

No global statistical data are available on rejected-landing incidents or accidents. Nevertheless, the following are possible consequences of an incorrect decision to conduct a rejected landing:

- Tail strike following a go-around initiated because of directional control difficulties after thrust reverser selection;
- Aircraft performance limitation following the inappropriate selection of reverse thrust during a touch-and-go landing and failure of one reverser to stow; and,
- Loss of control following a go-around initiated after thrust reverser selection and failure of one reverser to stow.

**Touch-and-Go Training**

*A touch-and-go landing is a training exercise.* Nevertheless, the conditions required for the safe conduct of this maneuver provide a valuable introduction to the discussion of bounce recovery/rejected landing.

**Preconditions**

Four preconditions (usually referred to as the “four-no rule”) must be observed before initiating a touch-and-go:

- No ground spoilers:
  - Ground spoilers must not be armed or manually selected after touchdown;
- No autobrake system:
  - Autobrakes must not be armed;
- No reverse:
  - Thrust reversers must not be selected upon touchdown; and,
- No pedal braking:
  - Pedal braking must not be used after touchdown.

The above preconditions show that conducting a rejected landing during a nontraining flight (i.e., with ground spoilers and autobrakes armed, and being ready to select reverse thrust upon touchdown) involves an added challenge.

**Aircraft Reconfiguration**

After touchdown during a planned touch-and-go, the aircraft must be reconfigured for the takeoff configuration:

- Flaps reset;
- Pitch trim reset;
- Rudder trim reset; and,
- Throttle-lever “stand-up” (i.e., initial movement of the throttle levers to a straight-up position) for symmetric engine acceleration.

**Task Sharing**

Conducting a touch-and-go also is dynamic and demanding in terms of task sharing:

- The pilot flying (PF) is responsible for:
  - Tracking the runway centerline; and,
  - Advancing initially the throttle levers slightly above idle;
- The pilot not flying/pilot monitoring (PNF/PM) is responsible for:
  - Reconfiguring the aircraft for takeoff;
  - Resetting systems, as required;
– Monitoring engine parameters and flight-mode
annunciations;
– Conducting the takeoff calls;
– Deciding to reject the takeoff, if required; and,
– Ensuring backup of the PF during rotation and initial climb.

Conducting a rejected landing further amplifies the importance
of adherence to defined task sharing by the PF and the PNF/PM.

Bouncing and Bounce Recovery
Bouncing during a landing usually is the result of one or more of
the following factors:
• Loss of visual references;
• Excessive sink rate;
• Late flare initiation;
• Incorrect flare technique;
• Excessive airspeed; and/or,
• Power-on touchdown (preventing the automatic extension of
ground spoilers, as applicable).

The bounce-recovery technique varies with each aircraft type
and with the height reached during the bounce.

Recovery From a Light Bounce (Five Feet or Less)
When a light bounce occurs, a typical recovery technique can be
applied:
• Maintain or regain a normal landing pitch attitude (do not in-
crease pitch attitude, because this could lead to a tail strike);
• Continue the landing;
• Use power as required to soften the second touchdown; and,
• Be aware of the increased landing distance.

Recovery From a High Bounce (More Than Five Feet)
When a more severe bounce occurs, do not attempt to land,
because the remaining runway may be insufficient for a safe
landing.

The following go-around technique can be applied:
• Maintain or establish a normal landing pitch attitude;
• Initiate a go-around by activating the go-around levers/
switches and advancing the throttle levers to the go-around
thrust position;
• Maintain the landing flaps configuration or set a different
flaps configuration, as required by the aircraft operating
manual (AOM)/quick reference handbook (QRH);
• Be prepared for a second touchdown;
• Be alert to apply forward pressure on the control column and
reset the pitch trim as the engines spool up (particularly with
underwing-mounted engines);
• When safely established in the go-around and when no risk
remains of touchdown (steady positive rate of climb), follow
normal go-around procedures; and,
• Re-engage automation, as desired, to reduce workload.

Commitment to a Full-Stop Landing
Landing incidents and accidents have demonstrated that after
the thrust reversers have been deployed (even at reverse idle), the
landing must be completed to a full stop because a successful go-
around may not be possible.

The following occurrences have resulted in a significantly
reduced rate of climb or in departure from controlled flight:
• Thrust asymmetry resulting from asymmetric engine spool-
up (i.e., asymmetric engine acceleration characteristics as
thrust increases from a ground-idle level);
• Thrust asymmetry resulting from asymmetric stowing of
thrust reversers (i.e., one reverser going to the stowed posi-
tion faster than the other); and,
• Severe thrust asymmetry resulting from one thrust reverser
failing to stow.

Commitment to Go Around
If a go-around is elected, the flight crew must be committed to
conduct the go-around. The crew must not change the go-around
decision and must not retard the throttle levers in an attempt to
complete the landing.

Such a change of decision usually is observed when the deci-
sion to reject the landing and the go-around are initiated by the
first officer (as PF) but are overridden by the captain.

Runway overruns, collisions with obstructions and major
aircraft damage (or postimpact fire) often are the consequences
of landing after a go-around is initiated.

Summary
The flight crew should adhere to decision criteria for:
• Committing to a full-stop landing; or,
• Committing to a rejected landing and a go-around.

These criteria (adapted for each individual aircraft type) should
be incorporated in the standard operating procedures (SOPs)/
supplementary techniques of each AOM/QRH.

The following FSF ALAR Briefing Notes provide information
to supplement this discussion:
• 6.1 — Being Prepared to Go Around;
• 7.1 — Stabilized Approach; and,
• 8.1 — Runway Excursions.

Related Reading From FSF Publications


Notice
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.

This information is not intended to supersede operators’ or manufacturers’ policies, practices or requirements, and is not intended to supersede government regulations.

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