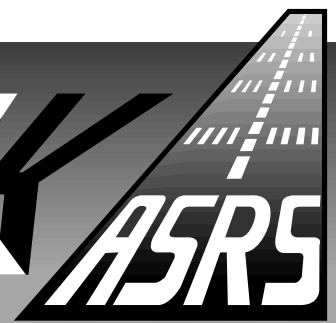


CALLBACK

From NASA's Aviation Safety Reporting System



Number 284

May 2003

The Case of the Unstable Approach

FAA Order 8400.10 defines a stabilized approach as “maintaining a stable speed, descent rate, vertical flight path, and configuration during the final stages of an approach.” Significant speed and configuration changes during an approach can complicate tasks associated with aircraft control and increase the difficulty of evaluating an approach as it progresses. The evidence presented in these recent ASRS reports demonstrates that instability is no defense when an approach goes bad.



The Hold Up

Air Traffic Controllers play an important role in the stabilized approach concept. Appropriate vectors and traffic sequencing help ensure that approach parameters can be met. But, as this B757 crew pointed out, Controllers also need to be aware of the unique flight characteristics of some aircraft.

■ Approach assigned us Runway 32L for landing and then held us up high and fast (210 kts/6000 feet). Finally, we received approach clearance for a visual with a turn inside the marker. We told Approach that we were unable to accept because we could not make it down and meet company requirements for a stabilized approach. We asked for an extended downwind but then were told (after a handoff) that we were now cleared for a visual to Runway 32R.... We were high and fast all the way and landed long on Runway 32R (but on speed).... It was uncomfortable being in a situation that didn't meet our company standards for a stabilized approach below 1,000 feet AGL....

Lessons learned: 1) We should have gone around and not accepted the set-up. 2) Approach facilities need to be educated about the capabilities of [various aircraft]. Some can't get down and slow up as quickly as others.... You have to plan ahead. 3) Recognize the importance of a stabilized approach. [Final approach] is not the time to be changing runways, working the FMC, configuring the aircraft, etc.

[We] called Approach Control after landing, voiced [our] concerns about how we were handled...and re-emphasized the importance of a stabilized approach. ▲

The Chase



Although this Captain did manage to catch up to the aircraft and land without incident, a clean getaway and fresh start might have been a wiser course of action.

■ [We] left the holding pattern with vectors for the ILS to Runway 9L. The assigned speed was 210 knots. After a change of controllers, the runway was changed to 9R, and then changed back again to 9L with a speed of 180 knots assigned to the marker. All the Air Traffic Control (ATC) changes with multiple radio transmissions led to a rushed environment. I got behind the airplane and situational awareness was compromised. We were fast at the marker and the autoflight system missed the glideslope capture. I attempted to hand fly the ILS with the flight director input, but the information presented was incorrect and I had to “look through” the flight director information and fly a raw data approach.... I caught up to the aircraft at approximately 500 feet with the runway in sight and the landing was made in the touchdown zone. The standard operating procedure for the stabilized approach concept was violated.... The consensus of the debrief was that we should have gone around, but no one called for it. Instead, there was a focus on, “We can make this approach work.” Additionally, there was a desire to accommodate the Controllers who were very busy.... ▲

The Capture

Without anticipating adjustments required for adverse conditions, a flight crew has little chance of establishing a stabilized approach. This CL-65 crew wisely departed the scene when the alarm went off and managed a more successful glideslope capture the second time around.

■ ATC gave us the clearance, “Fly heading 120 degrees; maintain 2500 feet until established; 170 knots until 4 DME; cleared for the ILS 10 approach.” At 2500 feet, winds were SSE at 60 knots. Due to the shallow vector intercept and the winds aloft at the time, we did not capture the localizer (LOC) course until inside INTXN. The glideslope was 1/2 scale below (we were still at 2500 feet). 1500 feet was selected on the altitude select, and a descent of 1000 fpm down was selected.... Within a few seconds, the autopilot pitched the aircraft down (over 12 degrees) to capture the glideslope. We received a “sink rate” Ground Proximity Warning System (GPWS) message. I disconnected the autopilot to arrest the descent rate. At this point, we were off glideslope and straying off the LOC. I executed a missed approach at 800 feet.... We were vectored back around for another approach. Contributing factors: 1) poor awareness of winds aloft by us and the controller giving the vectors, 2) reluctance on our part to perform a missed approach immediately and not try to salvage the botched approach.... ▲

| ASRS Recently Issued Alerts On... | | A Monthly Safety Bulletin from | | |
|--|--|--|--------------------------------|-------------|
| ERJ135 weight and balance incident | | The Office of the NASA Aviation Safety Reporting System, P.O. Box 189, Moffett Field, CA 94035-0189 http://asrs.arc.nasa.gov/ | Air Carrier / Air Taxi Pilots | 1945 |
| Unlit taxiway at a major Western airport | | | General Aviation Pilots | 765 |
| B737-800 loss of F/O flight instruments | | | Controllers | 51 |
| MD88 abnormal elevator control reponse | | | Cabin/Mechanics/Military/Other | 128 |
| Questionable baggage weight computation | | | TOTAL | 2889 |

The Lockup

A good approach usually leads to a good landing. The student pilot who submitted this report learned that the opposite is also true.

■ *During my final landing to pick up [my instructor], I cut the base leg short and did not get lined up with the runway until just over the threshold. I had too much speed and the aircraft bounced. When I touched down again, there was not much runway left. I locked up the brakes and skidded off the end into some sand. All systems were shut down and the fuel shut off. I departed the aircraft shaken but uninjured.*

From the instructor's report:

The student is being retrained on the importance of a proper approach, proper airspeed control, bounced landings, braking technique, and go-arounds. ▲

The Escape

This MD80 crew started out with a good approach but had to change their plans when they got hit with a low blow.

■ *We were cleared for a visual approach to Runway 24R. The First Officer was flying. ATC cleared a B747 to land on Runway 24L and issued a caution about wake turbulence. The First Officer was aware of the wake turbulence, flew slightly high to stay above it, and slowed the aircraft to gain added distance. Everything was great until 100 feet AGL where we encountered very rapid rolls to the right then abruptly left. We initiated a go around to escape the wake turbulence and used maximum power doing so. We both have a great awareness of the consequences of this unseen hazard. We did all we could to avoid it. The prevailing wind must have blown the B747 wake directly onto our landing runway....* ▲

From The Maintenance Desk

ASRS receives a number of reports related to aircraft that are damaged during ground maintenance procedures. Many of these incidents involve a failure to activate or deactivate systems in accordance with the sequence prescribed in the appropriate maintenance manual. The maintenance technician who submitted this report did what he was told to do, but someone should have checked that all related systems were set up in accordance with the maintenance manual.

■ *We were getting ready to push the aircraft out for an engine idle check. I was told to close the circuit breakers in the Electrical and Electronics (E&E) Bay.*

When I pushed the Standby Hydraulic circuit breaker in, the pump came on and the leading edge devices came down on the open outboard "C" Ducts (engine cowlings). There was nobody in the cockpit at the time. When someone went up to turn the pump off, they found the Standby Hydraulic switch in the "Armed" position, apparently from the B/C Check the night before. The leading edge lockout pin had already been removed from the valve in the main wheel well.

The engine cowlings and leading edge devices on both sides of a B737-700 were damaged in this incident. ▲

Tail End Tales

Although it might seem unlikely that anyone would confuse the MD80/90 tail cone jettison with the aft passenger door/stair operation, two incidents reported to ASRS confirm what Mr. Murphy said, "If it can be done wrong, it will be done wrong."

■ *Ramp personnel told us that there was no passenger stair available and that they could not fuel the aircraft with passengers on board unless an exit door was available. Someone on the ground asked about lowering the aft stairs.... We found the procedure for exterior aft stair operation in the aircraft manual. We gave the ramp personnel the page from the manual. They had no questions and indicated that they could do the procedure.... They pulled the emergency jettison handle and jettisoned the tail cone.*



■ *[We] taxied to the maintenance ramp for a one-hour ATC and weather delay. Six passengers deplaned via the aft stair because they did not wish to continue due to the delay. The First Officer thought that you could raise the stair from inside the cabin. I went aft and while I was looking at the panel, the Number Two Flight Attendant, trying to help, pulled the handle above the emergency exit door releasing the tail cone. The tail cone fell to the ground causing some damage....* ▲