The stabilized approach has long been promoted by the FAA, safety organizations, and most airlines as the standard of flight performance that must be maintained throughout an approach in order to continue to minimums. Key elements of a stabilized approach are described in the FAA Airplane Flying Handbook. The airplane should be in the landing configuration early in the approach with the landing gear down, planned landing flaps selected, trim set, and fuel balanced. The aircraft should be on profile before descending below 1,000 feet AGL, and an optimum glidepath of 2.5 to 3.0 degrees established and maintained. Indicated airspeed should be within 10 knots of target airspeed, and descent rate 500 to 700 FPM, not to exceed 1,000 FPM. Engine RPM should allow the best response if a rapid power increase is needed.

If any of these tolerances are exceeded during an approach, the approach is unstabilized, unsafe, and must be abandoned. Approaches become unstabilized for many reasons. Causes include adverse weather, ATC instructions, runway changes, schedule pressure, and human factors. Regardless of the cause, if an unstabilized approach is continued, aircraft damage, destruction, personal injury, or death could result.

This month CALLBACK shares reports of unstabilized approaches and unintended consequences that were sparked and allowed to develop primarily due to human factors.

CRM Over and Over
An air carrier First Officer misidentified a ground reference during a charted visual approach. No comment or suggestion was offered by the Pilot Monitoring (PM), and the result was an unstabilized approach.

I was the Pilot Flying (PF) for the flight into PWM. Approaching the airport, we were assigned the Harbor Visual to Runway 29. We crossed the coast eastbound at...3,000 feet and made a left, north-bound turn toward the islands. We had previously briefed the approach.... The Captain and I were trying to identify the lighthouses and islands that we were supposed to turn between. I called out two islands that I believed to be the two to turn between. The Captain concurred. I selected pattern altitude of 1,500 feet and began a manual descent with the Flight Director (FD) on. Slowing the aircraft early to prevent coming in too fast on this visual, we were flying...180 knots in the descent. We overflew an island, and the Captain announced, “You need to turn hard, now.” Apparently, the islands that I had identified were not the same that he understood.

I began a...left turn to join the harbor. In this confusion, I did a poor job monitoring my altitude. Both of us forgot to continue configuring the aircraft. At 1,000 feet AGL, we received a chime denoting that the gear is not down. The Captain instructed. “Level off.” While still in the left turn, I pitched the nose up and added a slight power increase. We configured the aircraft in the next few seconds and continued our descent at Vref+5. The aircraft landed successfully.

The poor communication between the Captain and myself led to this event. We had experienced similar poor communication [during] this pairing. It is my belief that the Captain knew when to turn, but failed to correct my island identification, due to his comment of flying this...approach “many times”. The [failure] to confirm the turn inbound led to a distraction, which led to an unstabilized approach.

The approach should have ended as soon as we realized that we were off course and behind the aircraft.... My hesitation with calling the go-around comes from being a low-time First Officer flying this approach for the first time and having an extremely experienced Captain in the left seat. His reassurance that these deviations were OK to land led me to not go around.

Anticipating MEL Consequences
Unanticipated consequences of an MEL item magnified the effect of a late descent clearance for this ERJ-145 Captain. The approach was unstabilized and the situation worsened.

This was our first flight of the day in this airplane. The airplane had an MEL on the engine anti-ice valve, which required the anti-ice to be on for the duration of the flight. I was the Pilot Monitoring (PM).... We found out very quickly on the arrival into IAD that the airplane was going to create challenges making crossing restrictions. With the anti-ice on, the thrust would not drop below 55% N1, which is normal when anti-ice is on, but makes it very difficult to descend and slow... We applied speed brakes to assist in slowing, but it still didn’t help enough. A late descent clearance for the ILS...complicated things, and we were too fast and not configured by the Final Approach Fix (FAF) in IMC with weather lower than visual minimums. I called for the missed...
we were not properly configured from flaps 15 to flaps 30
During final approach as PM, I failed to recognize that

From the First Officer’s report:

FLAPS” is not a caution, but a warning. I was in violation of
I landed, and realized on landing rollout that “TOO LOW
think to go around. Being rushed was the third risk factor.

During debrief, the PF was unaware that he had
disconnected the autopilot. It was this inadvertent disconnect
that led to the aircraft rolling right off course. The autopilot
should have been used for the missed [approach]. Turning
the autopilot off greatly increased the workload, causing the
momentary loss of situational awareness. The MEL applied to
the airplane created an increased workload on every leg we
flew this airplane…[that] day.

Universal Risks
This flight crew experienced several common risk factors.
Failure to mitigate the threats resulted in an unstabilized
approach rife with wisdom for all aviators.

From the Captain’s report:

I was flying my second Captain trip, and I was practicing
[an] HGS CAT III Approach. Inexperience is definitely a
risk factor…. The weather was calm and clear. Somewhere
around the FAF, I became distracted and forgot to call for
final flaps 30 and the landing checklist. I allowed myself
to become completely engrossed by the procedures and
callouts. Distraction was the second risk factor. Somewhere
below the 500 foot callout, I heard, “TOO LOW FLAPS”. I
looked at the flap indicator and saw that the flaps were still
at 15. I immediately called for flaps 30 [and the landing]
checklist. The First Officer complied, and by the time we had
completed the checklist, the radio altimeter was making the
[altitude] callouts. Things happened so fast that I did not
think to go around. Being rushed was the third risk factor.
I landed, and realized on landing rollout that “TOO LOW
FLAPS” is not a caution, but a warning. I was in violation of
go-around/missed approach requirements.

From the First Officer’s report:

During final approach as PM, I failed to recognize that
we were not properly configured from flaps 15 to flaps 30
for landing…. During the final approach segment I became
internally distracted trying to simulate as best as possible
the CAT III conditions, as it has been some time since I have
conducted those procedures. I [incorrectly] made the…mode
callout at the FAF. Additionally, I was trying to remember…
thrust lever [procedures]. This distraction caused a lack of
situation awareness and a lack of proper configuration.

Routine Changes That Aren’t
An Airbus Captain was dismayed at the mistake that led to
this unstabilized approach. Unrecognized fatigue, always
insidious, was identified as a contributing factor.

At the end of a long duty day. I felt capable…. I had 9
hours of sleep the night before and felt rested. We took off
25 minutes before our out-of-duty time due to maintenance
issues…. At no time did I feel fatigued during this flight, but
looking back, fatigue played a part in this problem.
The point that I normally would configure is when we were
offered the runway change. I then directed the First Officer
to disregard attempting to load the runway change into
the Flight Management Guidance Computer (FMGC) and
told him I would fly the approach visually. I knew that the
center runway touchdown zone was closer to me than the left
runway touchdown zone, and I began to descend at a more
rapid rate to make the Precision Approach Path Indicator
(PAPI) look correct. My attention was channelized on the
acquisition of the proper glide path of the new runway. I
really felt I was doing a great job at this until the Master
Caution and associated warning bells began to ring around
600 feet. I immediately knew what I had done wrong and
began the go-around. The airplane configuration at the
point of the Master Caution was only Flaps 2 with gear up.
I can honestly say that if not for this gear warning system,
tonight I would have landed gear up. I was so concentrated
on making this runway change and landing that I forgot to
properly configure the aircraft. The go-around was expertly
assisted by the First Officer. I needed the help to ensure
proper aircraft operation because I was stuck back at the
point of the error in disbelief that I could do something that
stupid. The go-around was eventually executed properly, and
the following landing was normal and uneventful. Fatigue
was unrecognized tonight but played a factor, since I would
have been able to direct the proper configuration had this
been the first flight of the day.

<table>
<thead>
<tr>
<th>ASRS Alerts Issued in May 2019</th>
<th>No. of Alerts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aircraft or Aircraft Equipment</td>
<td>6</td>
</tr>
<tr>
<td>Airport Facility or Procedure</td>
<td>2</td>
</tr>
<tr>
<td>ATC Equipment or Procedure</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>13</td>
</tr>
</tbody>
</table>

474
A Monthly Safety Newsletter from
The NASA Aviation Safety Reporting System
P.O. Box 189
Moffett Field, CA 94035-0189
https://asrs.arc.nasa.gov

May 2019 Report Intake

<table>
<thead>
<tr>
<th>Subject of Alert</th>
<th>No. of Alerts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Carrier/Air Taxi Pilots</td>
<td>5,727</td>
</tr>
<tr>
<td>General Aviation Pilots</td>
<td>1,404</td>
</tr>
<tr>
<td>Flight Attendants</td>
<td>875</td>
</tr>
<tr>
<td>Controllers</td>
<td>542</td>
</tr>
<tr>
<td>Military/Other</td>
<td>354</td>
</tr>
<tr>
<td>Mechanics</td>
<td>289</td>
</tr>
<tr>
<td>Dispatchers</td>
<td>191</td>
</tr>
<tr>
<td>TOTAL</td>
<td>9,382</td>
</tr>
</tbody>
</table>