The copilot told investigators that they knew that the approach was compromised as the airplane descended through FL 100, so he concentrated on the altimeter in order to call out the go-around at 500 ft.

"The copilot read back the 300 deg. to the left."

The captain retreighted the airbrakes, disengaged the autopilot and made a pitch-up to stop the airplane. The airplane was then at a radius-height of 428 ft. Two seconds later, the minimum height of 358 ft. was recorded. The controllerreset the clearance for a 360 deg. turn to the left.

"The thrust levers were placed in the TOGA position 13 sec. after selection of flaps 1. The crew carried out a left hand circuit at an altitude of 2,000 ft. then made a visual approach for Runway 19 with ILS support. They landed without further problems."

**Incident Investigation**

Of course, the incident generated an investigation. The crew was well experienced. The captain had accumulated about 8,000 hr. of flight time, including 2,600 hr. on the Airbus A320 family and, 1,700 of that as captain.

The copilot had five years experience as a copilot and four years as a captain on different aircraft types. He had accumulated 1,700 hr. with Air France on the A318 family.

The captain explained his strategy for the Tunis approach to investigators. He said he was aware very early on of being above the glidepath and that the approach was compromised. He then set himself two targets: FL 100 to reduce the speed to 250 kt; then aim for a stabilized descent of 500 ft. He did not inform the copilot of his plan of action.

Arriving at FL 100, he already had the runway in sight. The meteorological conditions were excellent; he decided to try and intercept the glidepath. He then set himself a new target: to reach 2,000 ft. in configurations 2, landing gear extended and at 190 kt. He did not share this information with the copilot.

The copilot told investigators that he was aware that the approach was compromised as the airplane descended through FL 500, so he concentrated on the altimeter in order to call out the go-around at 500 ft.

After FL 100, he attempted to intercept the glidepath at a high speed led to a work overload for the captain. He told investigators that he focused on this objective and that he had not seen that the required approach was no longer possible.

At 5,000 ft., he had not reached the desired configuration, the captain decided to make a runway circuit. He explained that he had not envisaged the published trajectory of a go-around as he was looking for an alternative enabling him to position himself again on the glidepath. He also explained that he did not explain his idea clearly to the copilot, who then requested a 360 deg. turn to the right. The controller then ordered the go-around.

The captain said the decision to not follow the published missed approach course taken too quickly and once again increased their workload.

The copilot told investigators that because of the work overload connected to this unusual situation as well as his focusing on the 508 ft. marker, he did not think of suggesting missing the approach before this. Nor did he have the presence of mind to position himself again on the glidepath rather than a 360 deg. turn. He estimated that performing the published go-around path would have been more comfortable. In addition this would not have concerned the air traffic and the controller.

The copilot stated that he only heard the GPPS "Sink rate" warning, but the copilot explained that he was so focused on the 508 ft. limit, he never heard the warning.

The Air France operations manual specifies that any GPPS or EGPWS warning requires an immediate reaction from the pilots. It states that in the event of a "Pull up" warning in day-time VMC, of the "Too low ..." and "Sink rate" type, a flight path correction must be undertaken to cancel the warning, while following the stabilization criteria.

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**Sterile Cockpit and CRM**

In reviewing the day with investigators, the captain said that the morning departures from CDG involved a particularly early wake-up. He added that he had been preoccupied during the flight with personal worries, a meeting concerning the airline's future and difficulties during boarding of a depearted passenger.

He stated that during cruise, discussions on the airline's situation with the captain and a last-minute cockpit visit just before the descent contributed to establishing a non-sterile cockpit, which was unfavorable to the correct planning of the descent. He said that during the descent, the cockpit was self-centered, that is to say that the captain was absorbed by his workload, had not informed the copilot of his plan of action and did not listen to the latter's comments.

The copilot explained that a discussion with the captain about the airline's situation in connection with the flight was reiterated. The cockpit visit was a little late. They began the descent before carrying out the briefing. During the descent, the copilot noticed...
that they were above the glidepath and called it out twice to the captain: once at the start of the descent then lowering their F/D to 100. Having been a captain himself, he did not linger, as he did not want to embarrass too much on his colleague’s decision. He then no longer informed the captain of the instrument display signal (VNAV) as they were not directly linked to the conduct of the flight (in particular). After the event, he considered that he had confirmed his personal respect for authority and CEM, which stopped him from fulfilling his role as PN.

Descent Management

The Air France operations documentation describes the normal operating procedures for managing descent and approach but does not give any criteria for missed ILS approaches before the stabilization floor.

In its Flight Operation Briefing Note (FOBN), Air France describes a general rule to ensure that the descent profile followed is adequate:

- Height of 5,000 ft in relation to the airport, 30 nm from touchdown point.
- Height of 3,000 ft in relation to the airport, 15 nm from touchdown point.

The FOBN also proposes solutions enabling glidepath interception to be performed if the glidepath is high. It specifically mentions warming ATC as soon as it has been identified that the glidepath will not be reached and, as a last resort, to perform a 360-degree turn on descent.

The FOBN concerning power management during approach indicates that power reduction possibilities on a 5-deg glidepath are:

- Deceleration normally impossible in smooth configuration:
  - 10 kt per mile, per minute if feasible
  - 10 to 20 kt, per minute with flaps in landing position and the landing gear extended.

Accidents in Brief

Compiled by Jessica A. Salerno
Selected Accidents and Incidents in March 2014. The following ASTI information is preliminary.

- March 28 – About 0740 PDT, a Cessna 172P (N9805F) registered to and operated by the University of British Columbia, Canada. The commercial pilot and one passenger were critically injured and one person, located in a stationary vehicle, was seriously injured. It was VRP and no flight plan was filed for the local repositioning flight that was originating at the time of the accident. The pilot’s intended destination was the Renton Municipal Airport (KNZ), Renton, Wash. Multiple witnesses stated that the accident site located on the left side of the runway and began a counter-clockwise rotation. The witnesses stated that the helicopter pitched down, continued the counter-clockwise rotation, and descended into an occupied vehicle and terrain near the intersection of 4th Ave. and Broad St. Post-impact fire ensued. Partial review of three security camera recordings, provided by the Seattle Police Department, revealed that the helicopter initially landed at WN3, then the video depicted the helicopter stationary on the runway for about 15 min. prior to takeoff. Further review revealed during the takeoff sequence, the helicopter began rotating counter-clockwise and ascending slightly in a near level attitude. The helicopter continued rotating counter-clockwise for about 30 deg of rotation before it pitched forward in a nose low attitude. The counter-clockwise rotation continued, nose low attitude until it departed from the camera’s field of view.

- March 8 – About 1400 EST, a Cessna 172P (N725SU) operated by Gnome Broke, LLC, was destroyed during a landing attempt and post-impact fire ensued. The airplane impacted a small pond and an embankment at WN3, Seattle, Wash. The pilot sustained minor injuries. The flight was operated under Visual Flight Rules with a flight plan. After landing, the pilot was met by 2 people who had witnessed the incident, a military helicopter was on the scene. The pilot was in control of the helicopter when it descended into the pond and was unable to control the helicopter. The helicopter was destroyed in the water and the pilot sustained minor injuries. The accident was caused by the pilot not following the established procedures for landing at WN3.

- March 9 – About 1556 CST, a Cessna 172P (N9412J) was experiencing engine failure and was unable to reach the runway for landing. The pilot elected to descend and use the runway for a safe landing. The accident was caused by the pilot not following the established procedures for landing at WN3.

- March 29 – About 1835 CST, a Cessna 172P (N9017G) was experiencing engine failure and was unable to reach the runway for landing. The pilot elected to descend and use the runway for a safe landing. The accident was caused by the pilot not following the established procedures for landing at WN3.

Sterile Cockpit

The BEA states that all the existing references agree on:

- A description of a non-sterile cockpit being the whole of the external disturbances to the crew or discussions between flight crew members not directly linked to the conduct of the flight;
- A cockpit, the line below which the sterile cockpit principle must be followed.

This incident shows that personal preoccupations may also be considered as a disruption that could affect crew alertness and therefore, flight safety. In the same way, non-sterile cockpit above FL 100 may lead to errors in managing the start of descent and disrupt the continuation of the descent as well as the approach.

Missed Approach Decision Criteria

A missed approach is often associated with a maneuver at a high altitude. This incident showed that an approach could be compromised at a high altitude. During this event, however, the crew’s decision to undertake a direct approach after the change of situation was not compatible with the height to be lost. It led to a high workload and to performing an unstabilized approach. Too high a workload in this kind of situation can mask:

- The need to change the approach strategy should the instruments display significant deviations in comparison with the operational flight plan;
- The danger of taking the stabilization floor of 500 ft as theoptic criterion;
- The danger of continuing the approach even though the airplane is not configured and vertical and horizontal speed remains reduced.

- The perception of aural warnings.

At the time of the event, the documentation supplied to crews did not contain any information regarding the method to determine whether an approach was possible from above the stabilization floor, nor did it propose any associated procedure.

Conclusion

The BEA concluded that the unstabilized approach was due to:

- The crew’s decision to undertake and continue an approach that required a glidepath interception from above in conditions that did not offer a high chance of success;
- The crew’s decision to operate the approach landing system (APLS) after a change of runway that made it impossible for the crew to define and apply a strategy that would make it possible to adapt the flight path in an appropriate manner and share sufficiently early the decision criteria for a missed approach.

The Air France documentation does not define operational limits for intercepting the glidepath from above. Such limits would make it possible for crews to have sufficient criteria to decide on whether to continue the approach or not.

The BEA has long been concerned with procedures for capturing the glidepath from above. This is why, in its report on a serious accident in March 2012, involving an Airbus A340, the BEA recommended that the European Aviation Safety Agency’s national authorities ensure that all airlines define explicit operational limits in their documentation to assist pilots in their decision making before interception.

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PFS’s Actions and PNF’s Participation

The PFS focused on his objective of stabilization at 500 ft, which prevented him from sharing his approach strategy with the PNF. The PNF quickly noticed the deviations in relation to the glidepath, informed the PFS several times but then gave up trying to propose any alternative to him. His respect for the captain’s position took priority over his monitoring and support role.