KUWAIT AIRWAYS

FLIGHT SAFETY

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KUWAIT AIRWAYS CORPORATION

FLIGHT SAFETY & QUALITY ASSURANCE

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Introduction

We hope you enjoyed reading our May issue. In this issue, we have a report on a serious incident on A320, a note on Stabilized approach, and an article on hazardous attitudes of the deck crew. We are sure you will enjoy reading these.

Your feedback is very important. We welcome your feedback, suggestions and contributions to this newsletter in the form of articles, anecdotes, pictures, etc. which can be sent to the address given below.

A320 Primary Displays Failure

Based on BFU incident investigation report no.5x002-0/98 January1999

On April 5, 1998, an airbus A320-200 on a scheduled flight from Lyon to Frankfurt was in a holding pattern near Frankfurt/main airport, the airspeed indications in both Primary Flight Displays (PFD) and for a short time in the standby indication system failed. In conjunction with this failure, Automatic Flight Control Systems switched off and the Electronic Centralized Aircraft Monitor (ECAM) showed several warnings and error messages.

The pilot-in-command immediately took over the controls from the candidate captain who up to the moment of the occurrence was the pilot flying. When he had stabilized the aeroplane manually at an altitude of 10000 ft on the basis of pitch angle and power plant output (PITCH and POWER), the airspeed indications reappeared on all three instruments. As a precaution, the PIC manually switched the pitot tube heating ON (PROBE/WINDOW HEAT on the overhead panel from AUTO to ON). At the moment of the incident, IMC with severe icing, rain showers and turbulence were prevailing. For the landing, the autopilot and auto-throttle were available again.

BFU (Federal Bureau of Aircraft Accidents Investigation, Germany) accomplished the investigation in cooperation with the operator and the maintenance organization. During the investigation, BFU was in contact with the aircraft manufacturer and the manufacturer of the Pitot tubes installed.

The FDR had recorded only the system 1 airspeed indication, and in the ECAM system (MAINTENANCE POST FLIGHT REPORT = MPFR) only the error messages of system 1 and the standby system had been stored. This does not directly confirm the reported course of the incident. According to the FDR data, the function of the autopilot had been interrupted for 59 seconds, whereas the system 1 airspeed signal had been interrupted only for 14 seconds.

During the enquiry of PIC, he expressly affirmed that the duration of the interruption of the airspeed indications on both PFDs was quite exactly identical with that of the interruption of the autopilot function. Concerning the weather, he stated that only light to medium icing and turbulence had been expected, however, the icing turned out to be relatively severe. Within a few seconds 2 - 3 cm of ice had accumulated on the ice accretion meter.

The operator had immediately arranged for a thorough inspection of the aeroplane and the evaluation of the FDR. This order was carried out by the contractual maintenance organization working for the operator in accordance with the Service Information Letter 34-047. When carrying out the a.m. instruction, the maintenance organization found out that the systems concerned functioned properly. Thus, the aeroplane was released to flight service. The maintenance organization informed the operator, the aeroplane manufacturer, the supervising authority and several internal departments of this inspection result.

In the Airplane Operating Manual it is stated that if the comparison between both ADR computer systems (ADR DISAGREE) is not possible and also the standby system is not available, **Crew should act at their own discretion on the basis of their experience**.

Unstable airspeed indications under certain meteorological conditions have been reported already by several A320 operators. The manufacturers Airbus in 1993 had issued technical information TFU no.34.10.00.011 dealing with this problem and informed all operators of A320, A321, A330 and A340 operators.

This investigation revealed that all airspeed indication systems had failed for a short

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time due to an occlusion of the pressure ports as a result of ice formation on the pitot tubes. The investigation confirmed that the design of the pitot tubes doesn't allow unrestricted flight operations with the aeroplane type in heavy rain and under severe icing conditions. As the AOM and other documents for A320 do not define restrictions for flight under severe icing conditions, this incident is due to a type of design problem.

Following the investigation, BFU made the following safety recommendations

1. The specifications of the pitot tubes should be changed to allow unrestricted flight operations in heavy rain and under severe icing conditions. The installation of the improved pitot tubes already designed should subsequently be prescribed for all types concerned by the SIL no. 34-0147 (A320, A 321, A 330, A 340).

2. In case of a synchronous failure or malfunction of systems of the same kind(i.e. loss of redundancy, total failure) the accomplishment of special actions prior to the release of aeroplane to service should be prescribed in the Air Operator's Licenses or in the instructions for maintenance and inspection of the aeroplane types.

Stabilized Approach

Adopted from Flight Safety Foundation ALAR (Approach and Landing Accident Reduction) briefing note- Flight Safety Digest Aug-Nov2000

A statistical study by Boeing indicated that during 1995-2004, 51% of the fatal accidents were in the final approach and landing phase. The Flight Safety Foundation task force for Approach and Landing Accident Reduction (ALAR) found that two thirds of the approach and landing accidents and serious incidents worldwide during 1984-1997 were due to approaches conducted either too low/slow and high/fast. The FSF task force found that although low-energy approaches (low/slow) resulted in loss of aircraft control, most involved CFIT due to inadequate vertical-position awareness. It found that the high-energy approaches (high/fast) resulted in loss of aircraft control, runway overruns and runway excursions. In some CFIT accidents it contributed to inadequate situational awareness.

The task force also found that the crew's inability to control the aircraft to the desired flight parameters i.e. airspeed, altitude and rate of descent was a causal factor in nearly 50 % of the approach and landing accidents and serious incidents. The crew's inability to control occurred in situations like rushed approach, attempting to comply with demanding ATC clearances, adverse wind conditions and improper use of automation.

An approach is stabilized only if all the criteria in company SOP are met before or when the applicable minimum stabilization height is reached.

Elements of a Stabilized approach

All flights must be stabilized by 1000 ft above airport elevation in Instrument Meteorological conditions (IMC) and by 500 ft above airport elevation in Visual Meteorological conditions (VMC).

1. The aircraft is on the correct flight path;
2. Only small changes in heading/pitch are required to maintain correct flight path;
3. The aircraft speed is not more than Vref + 20 knots IAS and not less than Vref;
4. The aircraft is in the correct landing configuration;
5. Sink rate is not greater than 1000 ft per minute; if an approach requires a sink rate greater than 1000 ft per minute, a special briefing should be conducted;
6. Power setting is appropriate for the aircraft configuration and is not below the minimum power for approach as defined by the aircraft operating manual;
7. All briefings and checklists have been conducted;
8. Specific types of approaches are stabilized if they also fulfill the following: instrument landing system (ILS) approaches must be flown within one dot of the glideslope and localizer; a category II or category III ILS approach must be flown within the expanded localizer band; during a circling approach, wings should be level on final when the aircraft reaches 300 ft. above airport elevation; and
9. Unique approach procedures or abnormal conditions requiring a deviation from the above elements of a stabilized approach requires a special briefing.

An approach is stabilized when all the following criteria are met:

An approach that becomes unstabilised below 1000 ft above airport elevation in IMC or below 500 ft above airport elevation in VMC requires an immediate go-around.

Benefits of a Stabilized Approach

Conducting a stabilized approach increases the flight crew's overall situational awareness, including:

- Horizontal awareness, by closely monitoring the horizontal flight path;
- Vertical awareness, by monitoring the vertical flight path and the rate of descent;
- Airspeed awareness, by monitoring airspeed trends; and
- Energy condition awareness, by maintaining the engine thrust at the level required to fly a three-degree approach path at the target final approach speed (or at the minimum ground speed, as applicable). This also enhances go-around capability.

In addition, a stabilized approach provides:

- More time and attention for monitoring ATC communications, weather conditions and system operation;
- More time for monitoring and backup by the PM;
- Defined flight-parameter-deviation limits and minimum stabilization heights to support the decision to land or go-around; and
- Landing performance consistent with published performance.

Factors in unstabilised approaches

Unstabilized approaches are attributed to

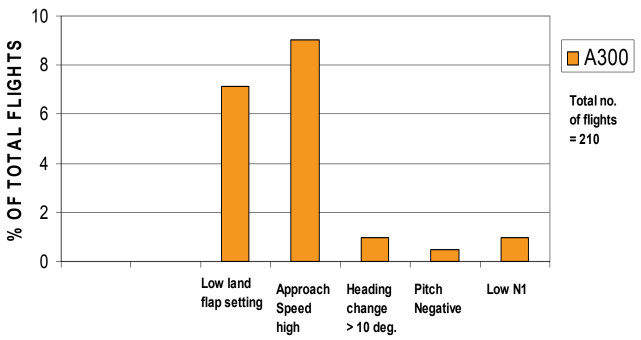
- Fatigue;
- Pressure of flight schedule(making up for delays);
- Any crew induced or ATC induced circumstances resulting in insufficient time to plan, prepare and conduct a safe approach. This includes accepting requests from ATC or fly higher/faster or to fly shorter routings than desired;
- ATC instructions that result in flying too high/too fast during the initial approach;
- Excessive altitude or excessive airspeed(inadequate energy management) early in the approach;
- Late runway change(Lack of ATC awareness of the time required by the flight crew to reconfigure the aircraft for a new approach);
- Excessive head-down work (e.g., Flight Management System (FMS) programming);
- Short outbound leg or short downwind leg (e.g., due to traffic in the area);
- Late takeover from automation (e.g. because the autopilot fails to capture the glideslope)
- Premature descent or late descent caused by failure to positively identify the final approach fix (FAF)
- Inadequate awareness of wind conditions including:
- Tail wind component
- Low-altitude wind shear;
- Local wind gradient and turbulence(due to terrain or buildings); or
- Recent weather along the final approach path (e.g. wind shift or downdrafts caused by a descending cold air mass following a rain shower);
- Incorrect anticipation of aircraft deceleration characteristics in level flight
- Failure to recognize deviations or failure to adhere to the excessive-parameter-deviation limits;
- Belief that the aircraft will be stabilized at the minimum stabilization height or shortly thereafter;
- Excessive confidence by the PM that the PF will achieve a timely stabilization;
- PF-PM too reliant on each other to call excessive deviations or to call for a go-around; and
- Visual illusions

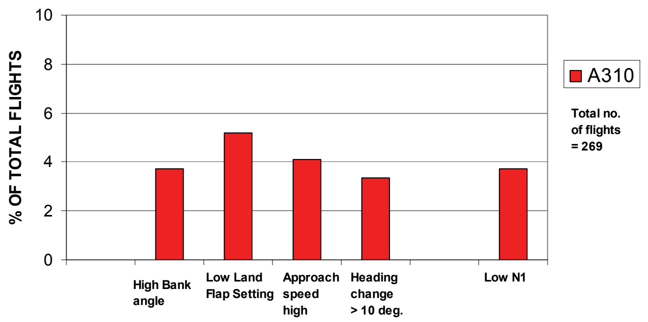
One or more of the following deviations often are involved in unstabilised approaches:

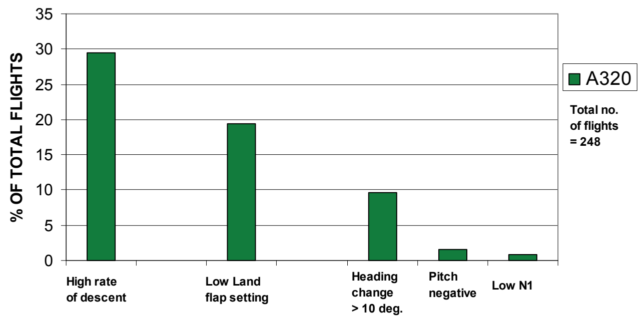
- Entire approach flown at idle thrust down to touchdown, because of excessive airspeed and/or excessive altitude from early in the approach
- Steep approach(above desired flight path with excessive vertical speed). Steep approaches are conducted typically twice as often as shallow approaches
- Shallow approach(below desired glide path)
- Low airspeed maneuvering(energy deficit)
- Excessive bank angle while capturing the final approach course
- Activation of GPWS or TAWS
- Excessive flight parameter deviation when crossing minimum stabilization height: excessive airspeed/bank angle/vertical speed
- Excessive bank angle, excessive sink rate or excessive maneuvering while conducting side-step maneuver
- Speed brakes remain extended on short-final approach
- Excessive flight parameter deviation down to runway threshold
- High at runway threshold crossing (more than 50 ft. above)
- Extended flare and extended touchdown

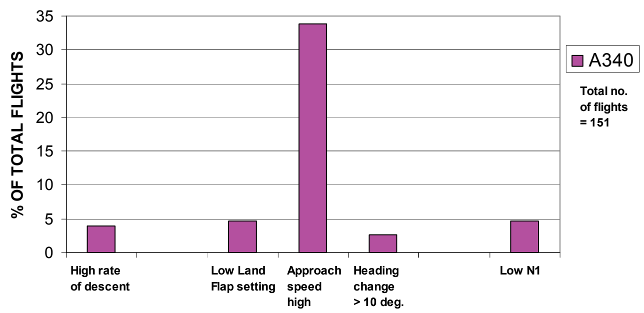
Preventing unstabilised approaches can be achieved by developing recommendations for early detection and correction of factors contributing to Unstabilized approaches. The strategy is to anticipate, detect, correct and decide. The factors likely to result in Unstabilized approach can be anticipated. Excessive parameter deviations and minimum stabilization heights give a common reference to PF and PM for effective monitoring and backup. Positive corrective actions should be taken before deviations develop into challenging or a hazardous situation. If the approach is not stabilized before reaching the minimum stabilization height, a go-around must be conducted immediately.

UNSTABILIZED APPROACHES - KUWAIT AIRWAYS (February 2006)









Hazardous Attitudes

Adapted from an article of the same title in FLIGHT SAFETY INFORMATION, FIRST/SECOND QUARTER 2005

The Captain and the First Officer, their interaction, the authority of the captain is all too familiar in the airline environment. The attitude of the flight crew towards one another is important for the flight safety. When the attitudes are of hazardous nature, the combined effect of attitudes will not be a recipe for success but a combination for disaster. There are five noted hazardous attitudes which are often displayed in the aviation world.

Antiauthority	This is the attitude of someone saying “don’t tell me what to do; I already know how to do it”.
Impulsivity	This is where the person does not think his/her actions through thoroughly before acting upon them.
Invulnerability	I am not worried because nothing is going to happen to me. I am as safe as can be.
Macho	I can do this; I have done it a million times
Resignation	What is the use? He/She is never going to listen to me anyway. I might as well just give up.

Why these attitudes are displayed?

There are many different cultures, backgrounds, feelings, and personalities in the aviation world. The most common attitude among pilots seems to be the “Macho” attitude. May be it has to do with the responsibility they harbor. In each flight, they are responsible for the hundreds of passengers’ lives and the expensive machine they are handling. May be they have to appear confident; so that the passengers are not afraid, or it’s just to seem better than them.

Consider the case of resignation attitude. How many young pilots stand up to a Senior Captain on the first day of the job even though they went through training and are 100% confident that they are correct. December 1978 crash of United Airlines flight 173, a DC-8-61at Portland, Oregon is a good example for this case. This flight was from JFK, New York to Portland, Oregon via Denver. The first leg of the flight was uneventful, but during the last leg, the crew encountered a problem while putting the landing gear down. The gear light was not illuminated properly. They discussed the measures to resolve the problem. During this period, they were circling around Portland not paying attention to the fuel available. First Officer did question the Flight Engineer of the fuel situation and received response but when he once again questioned the Captain of the fuel concerns, he was answered with a single number that did not make sense. This seemed to confuse the first officer. Tragically, the aircraft crashed not due to the gear problem but due to running out of fuel.

What is important is the anti-dotes for these attitudes which the pilots should be aware of. Here are the anti-dotes for the above five hazardous attitudes.

Antiauthority	Simply follow the rules. In most cases, this will turn out to be the best course of action. Remember, we are never around long enough to make all of our own mistake.
Impulsivity	Always think first and think through your actions before acting on them. It is better to take a moment & make the best choice than to hurry through & make a bad choice that could have been avoided.
Invulnerability	Things can happen & they will. This is why it is so critical to understand that things happen unexpectedly.
Macho	Just because you may have done a task a million times does not mean that something will not go wrong. Remember that taking chances is not good idea
Resignation	You are not helpless. Remember that you can make a difference. Perhaps reminding someone that there is a problem can actually prevent any further damage from being done.

It is imperative to always remember to stop and think about any decisions that you are making and what the outcome would be. IT IS ALWAYS BETTER TO THINK TWICE THAN NOT TO THINK AT ALL. Human Life including yours is at stake!

Aviation Humour

- Taxiing down the tarmac, a DC-10 abruptly stopped, turned around and returned to the gate. After an hour-long wait, it finally took off. A concerned passenger asked the flight attendant, "What, exactly, was the problem?" "The pilot was bothered by a noise he heard in the engine," explained the flight attendant. "It took us a while to find a new pilot."
- A student became lost during a solo cross-country flight. While attempting to locate the aircraft on radar, ATC asked, "What was your last known position?" Student: "When I was number one for takeoff."
- Tower: "Delta 351, you have traffic at 10 o'clock, 6 miles!" Delta 351: "Give us another hint! We have digital watches!"

Web watch

www.airbus.com/about/safetylibrary.asp - Airbus site where you find all the flight operations briefing notes - a must for the DECK CREW

The Confidential Aviation Hazard Reporting System (CAHRS) provides a means of reporting hazards and risks in the aviation system before there is loss of life, injury or damage. It is open to anyone who wishes to submit a hazard report or safety deficiencies confidentially and non-punitively. Reports help to identify deficiencies and provide safety enhancement in areas of aviation. CAHRS forms can be collected at different location of KAC (i.e. Flight Dispatch) Premises. Completed forms can be dropped in FS&QA allocated box at Flight Dispatch or e-mailed to kwioe@kuwaitairways.com or faxed to 00965-4749823 or mail to Flight Safety and Quality Assurance office, Operations Department, P.O. Box 394, Safat 13004, Kuwait Airways –Kuwait.