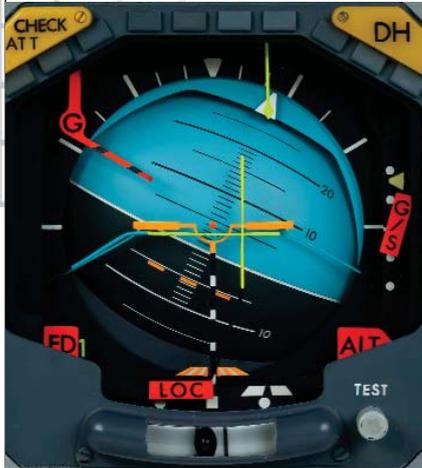


ALCOHOL MAKES IT NOT SIMPLE



Despite being a rarity, pilots' alcohol consumption is an issue that has received extra attention after a series of high profile incidents. Here is one analyzed by Michael R. Grüninger and Capt. Carl C. Norgren

Moscow, Sheremetyevo Airport, 14th of September 2008: Simple meteorological conditions prevail. According to Russian regulations, meteorological conditions not worse than 2000 m visibility and 200 m ceiling are considered to be simple ones.

As before every flight, the pilots of flight Aeroflot-Nord Line AFL 821 presented themselves to a doctor for medical check. The doctor was satisfied and released the crew for flight duty. The pilots then proceeded with their briefing and checked the flight planning documentation. The commander decided that the flight to Bolshoye Savino Airport in Perm could take place. Thereafter, the crew positioned to the aircraft and prepared the flight. Everything seemed as simple as the weather in Moscow.

During the flight preparation, the crew made a mistake while initializing the Inertial Reference System (IRS).

When the commander welcomed the passengers on board, a passenger on the flight sent an SMS back home stating that the voice of the commander sounded 'like he is totally drunk'. According to the message, the passengers were worried, but the flight attendants said everything was all right. A simple solution for a tricky issue.

The power setting during take-off roll and initial climb out was not performed in accordance with the SOPs.



The flight then proceeded without particular problems.

It was 5 o'clock in the morning. That September night was dark and cloudy as the B737 aircraft descended towards their destination in Perm at the end of the two-hour night flight from Moscow.

ATC had not yet cleared the flight for the approach and the pilots were yet unclear about which runway will be used.

The co-pilot was the pilot flying. He had 236 hours of experience on that type. During the approach, the co-pilot struggled with the auto-pilot modes. In addition, he struggled with the power setting as there was a big split between the thrust levers at

intermediate power settings to achieve the same thrust on both engines. At night and in IMC, he disconnected the autopilot and manually flew the intercept of the ILS for runway 21. He established the aircraft on the localizer, but failed to establish the aircraft on the glideslope.

ATC ordered AFL 821 to discontinue the approach. The commander disagreed with ATC's decision and kept on pressing ATC to clear him to attempt a landing from a non-normal position. Trying to get a simple way out?

During the vectoring for a second approach, the co-pilot struggled to manually fly the aircraft and abruptly handed control to the commander. The commander continued flying manually following vectors for another ILS for runway 21. After the base turn, the commander made a number of abrupt roll inputs and rolled the air-

craft 360 degrees until it impacted the ground. All 82 passengers and 6 crew members perished.

The accident investigation revealed that the commander 'had ethyl alcohol in his body before death'. The accident report concludes that the commander lost spatial orientation.

Problematic Use of Psychoactive Substances

Compared to the population at large, aircrew are very unlikely to be under the influence of psychoactive substance when reporting for duty. A FAA study suggests that the likelihood of problematic use of psychoactive substances among pilots is 0.6 percent.

WRONGLY

The pilot rolled the plane 360 degrees until the impact.



Psychoactive substances include alcohol, opioids, cannabinoids, sedatives and hypnotics, cocaine, other psychostimulants, hallucinogens and volatile solvents. They can produce mood changes or distorted perceptions in humans. Coffee and tobacco are excluded.

Whenever psychoactive substances adversely affect reaction times and judgment, their use is incompatible with flight safety. Alcohol is a 'stressor' which affects a person's decision-making skills. Cognitive processes are degraded to the extent that the safety of flight is impaired.

The investigation of flight AFL 821 uncovered multiple symptoms of impaired performance of the commander. The accident investigation analyzed the main tone frequency of the crew's speech. During the last 30 minutes of the flight, the commander displayed a high level of stress. Such a state inevitably affects the airman's performance in a destructive way.

The high stress level observed in the commander was probably due to a lack of knowledge of the aircraft systems. The type transition from a Russian Tu-134 with a flight deck crew of four to the B737 with a flight deck crew of two as well as a recent upgrading to commander had been a challenge. With all aircraft manuals written in English, his limited language proficiency had proven a barrier to understanding.

Lack of Aircraft System Knowledge

The flight crew's handling of aircraft systems during the flight showed a lack of understanding of the systems as well as a disregard of standard



operating procedures. The initialization of the IRSs was mishandled and an automatic position update at the start of the take-off run was prevented by premature application of take-off thrust.

The work-split between pilot flying and pilot monitoring was not adhered to on several occasions. The commander on numerous occasions intervened in the control of the aircraft by selecting autopilot modes.

Poor Adherence to Standard Operating Practices

The distribution of duties between pilot flying and pilot monitoring was repeatedly violated and at times seemed unclear. The programming of the FMC for the approach was not performed properly. Standard Operating Practices (SOP) and not properly checked. Checklists were not performed at all. The crew did not complete the Descent Preparation and skipped the Landing Briefing and the Before Descent Checklist. The Approach Checklist was also not performed. Cross-checks were omitted and Crew Resource Management was poor.

Multiple Layers of Defense Breached

In the case of flight AFL 821, many layers of defense were breached. When the flight crew reported for duty at Moscow airport they were required to visit a medical professional to clear them for flight duty. 'All the crew members passed medical check at the medical office of the airline on the evening before the flight and got permissions to fly.' How could the condition be overlooked by a medical professional?

At destination, the weather was not simple and the operational chal-

lenges for the crew were definitely not simple. The operating crew did not object to go flying with a captain who showed symptoms of impairment from psychoactive substances. Even one of the passengers noticed and included this information in an SMS to a friend. The tolerance of such behavior cost the crew and passengers of flight AFL 821 dearly.

Flying is no simple business; it needs a clear head at all times. ✈

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CALAMITY
Investigation revealed the presence of alcohol in the pilot's body before death.