

In an incident described as typical of the risks of not speaking the same language, the crew of a Lot Polish Airlines Boeing 737-500 struggled to communicate with British air traffic controllers after their electronic flight displays went blank in instrument meteorological conditions (IMC) following departure from London Heathrow Airport.

No one was injured and the airplane was not damaged in the late morning incident on June 4, 2007, which involved a circuitous 27-minute return flight to Heathrow, where the airplane was landed safely, a report by the U.K. Air Accidents Investigation Branch (AAIB) said (Figure 1, p. 42). While the commander worked to resolve the problem, the copilot flew the airplane by reference

to the standby instruments; the auto-pilots were not available, although the autothrottle system was used.

At one point in the flight, as the airplane was flown north instead of north-northeast as directed, it came into conflict with another aircraft, whose crew was issued revised instructions to maintain separation, said the report.

After a simple error wiped out much of their navigation information, the Polish pilots of a 737 were unable to adequately communicate their problem to British controllers.



BY LINDA WERFELMAN

Language Barrier

During the flight, there were “a number of exchanges between [the pilots] and the controller in which it was apparent that the commander, who was making the radio calls, was not able to understand some of the instructions,” the report said.

At one point, the controller observed, “Lot 282 you appear to be tracking to the west now,” and the commander responded, “Turning r-er right on er west Lot er turning left on west.”

Later, after another controller issued a clearance to land on Runway 09L, the air traffic control (ATC) ground supervisor became concerned that the airplane’s flight path indicated that the crew might be planning to land on Runway 09R and asked that all traffic be cleared from the runway; the airplane subsequently was landed on 09L and taxied to a parking stand.

The report said that the commander, who had been flying the aircraft type for Lot 15 years, and the copilot, who had been flying the type for six years, “appeared confused by what had occurred” with the airplane’s instruments. In events such as this one, “ATC may not be able to rely upon pilots for information about the aircraft’s status and their ability to fly the aircraft accurately, with degraded instrumentation,” the report said.

Because pilots of aircraft with electronic flight instrument systems do not usually fly their aircraft using only basic instruments, when they are suddenly faced with such a situation, “pilots will need time to adapt their instrument scan and a higher level of crew coordination to enable them to conduct a safe instrument approach,” the report said.

The commander’s workload was heavy, and he was under stress in this situation, contributing to his difficulties understanding ATC; the crew was “not able to communicate adequately the nature and extent of their problem,” the report said.

“Although much of the difficulty in R/T [radiotelephony] communication may be explained by the added workload and stress on the pilots, this incident shows the problems that can arise when there is a lack of understanding between controllers and flight crews. The introduction of language proficiency standards should ensure that all operational personnel are qualified to a minimum and competent standard required for the task being undertaken.”

Proficiency standards developed by the International Civil Aviation Organization (ICAO) call for pilots on international routes, air traffic controllers and aeronautical station operators to speak and understand English at an “operational” level and give them until March 2011 to achieve that goal (ASW, 11/07, p. 25). The initial deadline for demonstrating operational proficiency in English was March 2008, but, after many ICAO member states had difficulty with that timetable, the ICAO Assembly modified its requirements, generally extending the deadline until 2011.

‘Plain Language’ Proficiency

Elizabeth Mathews, a specialist in applied linguistics and the leader of the international group that developed the ICAO requirements, said that the Heathrow incident “highlights a number of important aspects of the ICAO language proficiency requirements,” including the need for aviation personnel to be fluent in not only “aviation



Figure 1

operational-related” English but also “plain language.”

“The need for plain language proficiency can arise quickly,” whenever an unusual situation develops, she said.

This incident also is a prime example of why ICAO decided to develop language proficiency requirements, said Rick Valdes, a captain for United Airlines who represented the International Federation of Air Line Pilots’ Associations on the ICAO group that developed the requirements.

The pilots of the incident airplane “had their hands full” flying the airplane in IMC with only standby instruments; communicating in English with ATC was an added burden, Valdes said.

“All the holes in the Swiss cheese were beginning to line up,” he said, referring to psychologist James Reason’s “unsafe acts model,” in which Reason likens the accumulation of difficulties preceding an incident or accident to the line-up of holes in several slices of Swiss cheese.

Valdes said that similar incidents, in which pilots and controllers struggle to communicate in non-routine situations, probably are occurring every day somewhere in the world. This incident drew more attention than most because it occurred at Heathrow, with its heavy volume of traffic, he said.

Mathews agreed that incidents like this one — in which language is not a cause of the incident but a factor in its safe resolution — are likely to draw more attention in the future, as the public and the news media become more aware of ICAO’s language proficiency standards.

She said that the incident also reinforces her belief that “you can’t hide inadequate English language proficiency.

“It doesn’t matter what test is used, or how easy or how difficult it seems to

be to pass. At the end of the day, pilots have to communicate in international settings with controllers. Perhaps a good command of phraseology will suffice most of the time. But when phraseology isn’t adequate to manage the communicative needs of a given situation, inadequate plain language proficiency shouldn’t prevent otherwise competent and professional pilots and controllers from resolving the issue safely.”

As a result of its internal investigation of the incident, the air traffic service provider incorporated the circumstances of the incident into its training programs. The operator was considering two actions: issuing a reminder to its pilots to exercise extra caution when manually entering into the flight management system (FMS) the longitude coordinates for locations near the prime meridian, and revising its pilot training with an emphasis on the benefits of declaring an emergency in situations like this one.

‘Simple Error’

The investigation relied primarily on recorded data and reports from the two pilots, and the report said that, in some respects, information from the two sources was inconsistent. The investigation found “no technical cause for the loss of the navigational data,” the report said.

Nevertheless, the report added, the Heathrow incident occurred because of a “fairly simple error” during preflight preparations, as the pilots performed a “fast realignment” of their two inertial reference systems (IRSs); the procedure required the entry of their ground location. Using the FMS, the copilot entered the wrong longitudinal coordinates for the airplane’s ground location. The mistake involved

“the use of ‘E’ instead of ‘W,’” the report said.

“The airports around London, because of their proximity to the prime meridian, can lead flight crews to make ... coordinate-entry errors of this nature. ... The operator’s route network is such that there are few destinations to the west of the prime meridian and hence the majority of longitude coordinates that need to be entered would be ‘eastings.’ Because the geographic error was less than 1 degree, the only alert apparent to the crew would have been a ‘VERIFY POSITION’ scratchpad message.”

The copilot did not recall seeing such a message, and the report said that, if the message appeared, it might have been “dismissed as an automated response, without consideration of the reason for the message.”

Because the IRSs — which provide attitude, heading, acceleration, vertical speed, groundspeed, track, present position and wind data to the aircraft systems and were the sole source of attitude and heading information on the incident airplane, except for the standby instruments — were not initialized with the correct ground location information, they could not function in the navigation mode, the report said.

“Better cross-checking procedures, either when initially entering data or by conducting a check of the entered route against that displayed on the map, would have prevented the situation from developing,” the report said. “This incident demonstrates how reliant pilots may become upon the FMS and how essential it is to ensure that the system is provided with accurate data.”

This article is based on U.K. AAIB incident report EW/C2007/0602, published in the AAIB Bulletin: 6/2008.