Airlines must adopt culture-specific training if they are to capitalize on the strengths of crewmembers of all nationalities.

BY DAVID M. BJELLOS

Multicultural CRM

The 2005 crash of a Helios Airways Boeing 737-300 — with its pilots incapacitated by hypoxia after they failed to recognize a cabin pressurization system malfunction — is a prime example of what can happen when communication and crew resource management (CRM) break down in a modern, multicultural cockpit.[1]

All 121 people in the airplane were killed when the 737 depressurized and ran out of fuel, the engines flamed out and the airplane crashed in Grammatiko, Greece, during what was to have been a flight from Larnaca, Cyprus, to Prague, Czech Republic, with a stop in Athens.

In its final report on the accident, the Hellenic Air Accident Investigation and Aviation Safety Board said the crew had failed to recognize that the cabin pressurization mode selector was in the wrong position.

The Helios crew exhibited poor CRM before takeoff and during climb, and the difference in their nationalities and primary languages — the captain was German, and the first officer was Cypriot — contributed to poor communication during the confusing, high-stress event.

Stressors reduce the ability of humans to exchange information even when they are fluent in the same language. The added dimension of a dynamic environment and complex set of specialized tasks in the cockpit adds to the difficult undertaking of effective communication.

In the Helios accident, a blaring cabin altitude warning horn and the illumination of master caution lights

(due to lack of equipment-cooling airflow in the aircraft's unpressurized state) degraded the crew's cognitive abilities and processes; inter-cockpit communications were reduced, perhaps in part because English was a second (or possibly third) language for the crew.

New Phenomena

Prior to the 1980s, there were relatively few multicultural, multilingual cockpits. As the number increased, many developing countries did not appreciate the value of CRM. The Helios accident report indicated that CRM training was in place at the airline, but it was perfunctory. Like many early detractors of CRM training, Helios management may have felt that it was of little benefit to them due to the (then) lack of quantitative data on accident reductions directly attributed to applied CRM principles.[2]

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How, then, do we expect new entrants into global aviation to implement innovative solutions to bridge the gulfs that separate pilots in language, professional expectations and cultural interaction in many of today's cockpits so as to maintain an exceptional record of safety? The answer includes involvement at all levels, with renewed emphasis directly on pilot crewmembers.

A Different Approach?

It would be impossible to account for all the variables that exist among cultural norms and address each individually. Therefore, the CRM model of the future must return to the basic premises of advocacy, communication and inquiry. That means that commanders and subordinates will be required to "re-learn" the way they communicate during high-workload periods and emergencies. This does not mean that they must learn a new "language"; rather, it introduces new idiomatic principles.

To understand the new principles, it is vital to introduce some basic terms from psychology that help define how groups within a profession interact culturally:

- Power distance (PD) — One's perception of (and response to) hierarchy, seniority or rank.
- Individualism and collectivism (IND) — A reference to whether a person's goals are self-oriented (individualism) or team-oriented (collectivism).

- Uncertainty avoidance (UA) — The threat level perceived during high-stress events. High uncertainty avoidance involves a preference for standard operating procedures (SOPs), direct face-to-face communications and leaving as little as possible to chance. Low uncertainty avoidance involves acceptance of high stress and higher exposure to risk as part of the job, with more tolerance and flexibility.[3]

Once learned, these three basic premises must be applied at the individual pilot level through a three-step developmental mode:

- Awareness — Be mindful that you cannot accurately profile another crewmember simply because of assumptions about his or her national culture or language.
- Knowledge — Incorporate the skills learned from your company's formal CRM courses and recognize key phrases and terms that will better enable communication success and understanding of another's perceived strengths and weaknesses.
- Skill — Apply the lessons learned to your daily flying activities, and recognize what works (and, more importantly, what does not) with your colleagues.[4]

Returning to the basics of early CRM will require trainers to incorporate explicit phrases — the new idiom — for crewmembers of different primary languages and cultures to employ when a message is ambiguous.

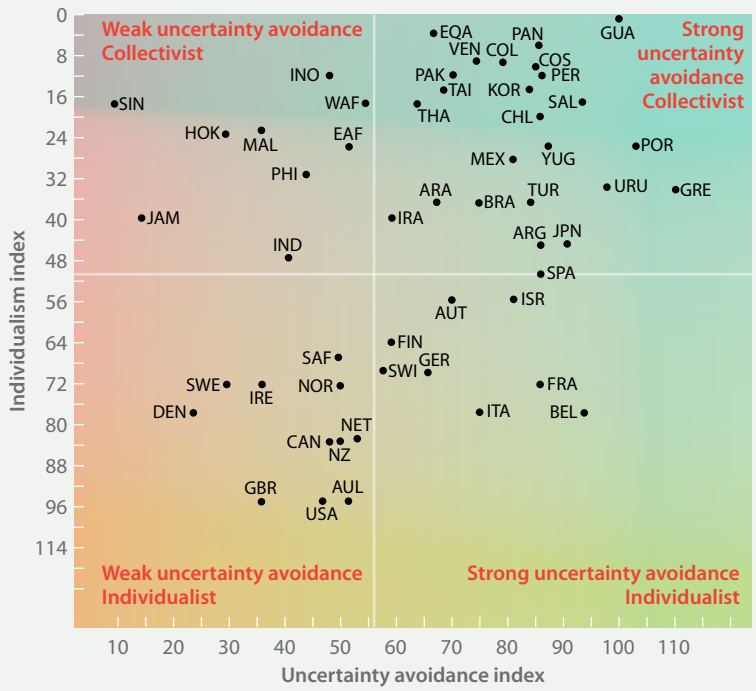
"Please confirm you would like me to perform the following procedure …" and "Your instructions are not clear — please clarify …" are examples of procedural, word-specific SOPs planned for the latest iteration of CRM.

Error Management CRM

Well into its third decade, CRM has evolved through several generations — with advances in the cockpit, in airspace and, increasingly, in many other facets of aviation, such as air traffic control (ATC), dispatch and maintenance. Of significance to aviators was the fourth generation — developed by CRM pioneer Robert Helmreich, who died in July (see p. 12) — which incorporated CRM procedures into the implementation of the U.S. Federal Aviation Administration's advanced qualification programs (AQP).

As described by Helmreich, "The AQP gave airlines the ability to develop innovative training reflecting the needs and cultures of their organizations. Two of the requirements of AQP have been the integration of CRM into technical training and the provision of full mission, nonjeopardy simulation (line oriented flight training, or LOFT). As part of this integration of CRM with technical training, some airlines began to 'proceduralize' CRM by adding specific behaviors to their checklists and to require formal evaluation of crews in full mission simulation (line operational evaluation or LOE)."[5]

Individualism and Uncertainty Avoidance



Relearning is required to ensure proper communication when dealing with people of multiple cultures. This figure compares various countries according to their extent of individualism and uncertainty avoidance, defined on this page and on p. 20.

Source: David M. Bjellos; Hofstede, Geert. *Culture's Consequences: Company Values, Behaviors, Institutions and Organizations Across Nations*, 2nd Edition. Thousand Oaks, California, U.S.: Sage Publications, 2001.

Figure 1

The true value-added benefit of AQP-type training is the ability of trainers to tailor innovative programs that combine competency (accuracy of airmanship skills) with crews using scenario-based simulation where the outcome is not certain until completion. Training and checking then become continuous and contiguous, and simulator instructors are able to evaluate the decision-making processes (broadly defined as aeronautical decision making, or ADM) and not just the outcome of a particular maneuver. Examples of good scenario-based training profiles might include the Nov. 4, 2010, uncontained engine failure on a Qantas A380 en route from Singapore to Sydney, New South Wales, Australia (p. 54),[6] or the June 1, 2009, loss of control and crash into the Atlantic Ocean of an Air France A330 (p. 14).

Accumulated LOFT and LOE data have shown that better ADM is a direct result of better CRM.

The current model of CRM — the "sixth generation" — added the "error management" CRM (EM-CRM) approach, which was more broadly accepted among diverse national cultures than earlier versions. This model broadens its scope by "trapping" errors before they become consequential and by mitigating the consequences of errors that have eluded earlier defenses.[7]

Aviator's Mindset

Certain high-risk/high-stress professions such as aviation and medicine attract individuals with specific psychological characteristics, particularly communicative processes. These processes are called behavioral markers.[8]

One of the negative behavioral markers of aviation professionals is denial of vulnerability to stressors like fatigue and danger. EM-CRM's central task is to convince pilots that error is unavoidable; as pilots capitalize on the strengths of their aviation culture, such as pride and motivation to succeed, they also need to understand their weaknesses. Although an organization's training procedures emphasize error-managing techniques, culture-specific CRM for flight crews of all languages and cultures most likely will help crewmembers interact better, personally and professionally, and their cultural differences will be viewed as strengths, not shortcomings, by top management.[9]

Another negative behavioral marker is a pilot's prejudicial attitude toward mistakes by fellow aviators. As trainers and universities expand their non-punitive policies on error, they report tremendous resistance from aviators to accept other people's errors, while willingly admitting their own. This ironic intolerance must be understood and acknowledged by all airmen before CRM can be effectively applied in real life.

Establishing Expectations

The foundational components of effective EM-CRM are full and interactive briefings and strict adherence to SOPs. Knowing that many flight crews meet for the first time at the pre-flight briefing, it might appear difficult to quickly establish team spirit and encourage open dialogue. The airlines' training programs must encourage trust and reinforce their non-punitive policy on error as part of that SOP. With organizational emphasis on the commitment to further reduce error-inducing conditions, captains can then more effectively brief all crewmembers on expectations and obligations to diminish hesitation and uncertainty, either of which constitutes a serious safety threat.[10]

Training the Trainers

Early CRM programs exported from the United States were not always well received in other countries. Having junior first officers question the authority of senior commanders was met with incredulity in high PD cultures.[11] Therefore, each airline must tailor the EM-CRM to meet the specific needs of its pilots. Even within regions with common languages or other characteristics — such as some countries of the Middle East, Latin America and Asia — EM-CRM is not transferable from one airline to another.[12]

Trainers should encourage flight crewmembers to communicate clearly with each other. Just as pilots have no problem asking ATC to "say again" or "please clarify" instructions, they should be unwilling to accept an instruction from an aircraft captain or a reply from a first officer that is imprecise or unclear.

With practice, this becomes a repeatable and consistent tool for pilots to use to overcome misunderstandings during all flight scenarios, and especially during high-stress events.

The Cost of Failure

Many successful airlines outside the Western hemisphere — such as Emirates, EVA Air and Singapore Airlines — operate with robust multicultural CRM/ADM training, and their focus on safety has paid significant results. But what of the emerging-market nations, including China, India, Indonesia, growing Middle Eastern countries and Vietnam, which are rapidly filling their ranks with skilled, Western-trained (and, increasingly, Eastern-trained) expatriate pilots and staff?

Many air carriers in these countries are purchasing advanced equipment. However, some lack the *ab*

initio training and multi-crew pilot licensing that are used by most Western European carriers with superlative safety records. It is vitally important that new entrants create proactive, sixth-generation CRM-based training, as have their Western counterparts. Recurring regional instances of safety lapses using advanced equipment suggest that neglecting or overlooking human factors issues — including effective CRM training — will continue to adversely affect commercial aviation accident rates.

Conclusions

Helios Airlines employed 33 percent of its workforce seasonally, in spring and summer only, to move people quickly, and this transience of staff contributed to individualism over collectivism in the airline's approach to safety. The first officer had a history of not following checklist SOPs, and the captain was considered brusque and distant by both pilots and cabin crewmembers, the accident report said. The barriers of personality conflict, language, cultural traits and the captain's weak advocacy of good teamwork were all exacerbated by the airline's lackluster CRM program, and the results were disastrous.

If airlines globally expect to reach safety parity, they must fully commit to airline- and culture-specific EM-CRM training as a primary tool in overcoming cultural resistance at both national and company levels. For aviators and trainers, an opportunity exists to learn from the new idiom and a new ethos, and to integrate fresh thinking into problem solving. This CRM approach will capitalize on the strengths of each participant. As with all highly technical pursuits, that most complex of components — the human — remains both our problem and our solution.

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Each airline must tailor the EM-CRM to meet the specific needs of its pilots.

Notes

1. Hellenic Air Accident Investigation and Aviation Safety Board. Aircraft Accident Report 11/2006, Helios Airways Flight HCY522, Boeing 737-31S, at Grammatiko, Hellas, on 14 August 2005.
2. Helmreich, Robert L.; Merritt, Ashleigh, C. Safety and Error Management: The Role of Crew Resource Management. University of Texas Aerospace Crew Research Project, Department of Psychology, The University of Texas at Austin. 2000.
3. Li, C.; Harris, D.; Yu, C. "Routes to Failure: Analysis of 41 Civil Aviation Accidents From the Republic of China Using the Human Factors Analysis and Classification System." Accident Analysis and Prevention. 2008.
4. Pedersen, Paul. A Handbook for Developing Multicultural Awareness (2000, 3rd edition). American Counseling Association.
5. Helmreich, Robert. "Red Alert." Flight Safety Australia Volume 10 (September–October 2006). <casa.gov.au/fsa/2006/oct/24-31.pdf>.
6. The A380's crew shut down the damaged engine and returned to Singapore for landing. None of the 469 people in the airplane was injured. The Australian Transport Safety Bureau is continuing its investigation of the occurrence.
7. Helmreich and Merritt.
8. Helmreich, R.L.; Wilhelm, J.A.; Klinect, J.R.; Merritt, A.C. (2001). "Culture, Error and Crew Resource Management." In E. Salas, C.A. Bowers, and E. Edens (editors), *Applying Resource Management in Organizations: A Guide for Training Professionals* (pp. 305–331). Princeton, N.J., U.S.: Erlbaum.
9. Helmreich and Merritt.
10. Ibid.
11. Ibid.
12. Ibid.

Further Reading From FSF Publications

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Frisinger, Shari. "Emotionally Enabled." *AeroSafety World* Volume 5 (August 2010): 19–23.

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