BY LINDA WERFELMAN

STEPPING

Use of strategic lateral offset procedures on crowded routes across the North Atlantic has increased significantly in the past two years, according to data compiled by air navigation service providers that handle air traffic in the area.

For aircraft that reported their positions via automatic dependent surveillance–contract (ADS–C)[1], data showed that from October through December 2009, about 40 percent were using offset procedures, which allow pilots to fly parallel to an airway centerline and either 1 nm or 2 nm to its right (Figure 1). The procedures are available to pilots of aircraft in "oceanic and remote" airspace between Flight Level (FL) 290 (approximately 29,000 ft) and FL 410 — the airspace in which reduced vertical separation minimum (RVSM) procedures have cut the standard vertical separation of aircraft from 2,000 ft to 1,000 ft.

The 40 percent figure for use of offset procedures compares to 10 percent in 2007 and to 2 percent in 2005, said Gavin W. Dixon, local area supervisor and safety coordinator in the U.K. NATS[2] Prestwick Centre,

one of several air traffic control centers that handle North Atlantic traffic. Dixon said that NATS officials are "encouraged by the steady increase in usage," which has continued in early 2010.

Strategic lateral offset procedures were first developed by the International Civil Aviation Organization (ICAO) in an attempt to reduce collision risks after the initial implementation of RVSM in 1997. Later, the aviation community recognized that the offsets offered another benefit: reduced exposure to wake turbulence.

ICAO's *Procedures for Air Navigation — Air Traffic Management* document discusses the mitigating effects of offsets on both collision risks and wake turbulence and says that flight crews are responsible for deciding whether to apply a lateral offset, as long as offset procedures are authorized by the appropriate air traffic services authority and the aircraft is equipped with automatic offset tracking capability. Routes on which the offsets are used may be uni-directional or bi-directional, or parallel routes with airway centerlines that are at least 55.5 km (30 nm) apart.[3]

welcomed, but further expansion is still being encouraged."

Mark Seal, a United Airlines captain and regional vice president of the International Federation of Air Line Pilots' Associations (IFALPA) for the North Atlantic, said that, because of the increasing use of offset procedures, "the collision risk level is being reduced every day."

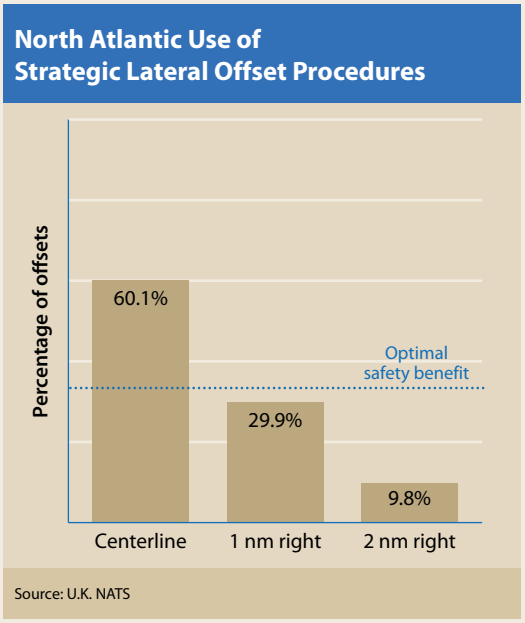

Figure 1

An increasing number of airlines have either incorporated the use of offset procedures into their oceanic and remote airspace operating procedures or have strongly encouraged their pilots to implement the procedures, Seal said, adding that pilots have become more informed about the safety benefits of using offset procedures.

He also said that the "randomization" introduced by pilot choices of either the centerline or a 1 nm or 2 nm offset to the right of centerline has increased.

Nevertheless, data compiled for North Atlantic flights for the last three months of 2009 showed that 30 percent of aircraft were being flown on a 1 nm right offset and 10 percent on a 2 nm right offset.

"The procedure provides maximum safety advantage when roughly a third of aircraft are

ASIDE

Surveys measure an increase in pilots' use of strategic lateral offset procedures.

A document produced by U.K. NATS researchers in late 2009 characterized the offset procedures as "priceless in terms of safety when applied correctly, significantly reducing the vertical collision risk."[4]

Expansion Encouraged

Larry Lachance, assistant vice president, operational support, at Nav Canada, agreed that, "given the safety benefits of decreasing lateral overlap probability and reducing the likelihood of wake vortex encounters for aircraft, the increased usage of strategic lateral offset procedures is

using each offset (i.e., 66 percent of aircraft away from the center line)," the NATS document said. "These … comparative figures of 40 percent current usage and a 66 percent target fail to highlight the importance of the *equal* distribution across the three options. For example, three aircraft at adjacent flight levels all opting for 2 nm right offsets is clearly not optimal use of the procedure, even though it may increase the overall … usage statistics."

Some airlines have instructed their pilots to always select the same offset option, although the concept emphasizes random choices of 1 nm or 2 nm offsets or remaining on the airway centerline, the document said, adding, "The safety benefit could actually be negated if all airlines were to take this approach."

Dixon said that some proposals have suggested that the offsets be assigned by air traffic controllers according to an aircraft's flight level, but authorities typically reject these ideas. He added, "The aim of these suggestions is really to get to the point where offsets are being used to optimal effect" — that is, about one-third of aircraft are using each offset option for tracks that are mainly same-direction.

'Equal distribution of the fleet across the centerline and two offsets remains the goal.'

To the Left

Data on use of offset procedures have revealed what Seal characterized as a "troubling trend" involving cases of the unauthorized use of offsets to the left of centerline.

"This, of course, is not permitted … and significantly increases collision risk," Seal said, adding that — if some aircraft not equipped with ADS also are using left offsets — "hundreds of flights could be flying this incorrect and dangerous offset.

"When [pilots were] queried as to why, responses ran the gamut from 'wake turbulence' to 'why can't I do that?'" he added.

Dixon said U.K. NATS has been working with airline representatives to understand the circumstances in which pilots chose the unauthorized left offsets. The proportion of flights involved is less than 0.2 percent, he said.

In some cases, he said, the pilots admitted that they "did not apply contingency or wake avoidance procedures correctly, which the operators have then been able to provide guidance on. … For the North Atlantic, which is mainly same-direction traffic, left offsets substantially increase the potential for collision, which is why we continue to engage proactively with relevant operators."

Nav Canada's Lachance said that although the "very small percent of flights" that have used an offset to the left have not had an adverse effect on safety, "it is an indication that all aspects of the [strategic lateral offset] procedure may not be properly understood. … Equal distribution of the fleet across the centerline and two offsets remains the goal."

Notes

1. Approximately 45 percent of total traffic in North Atlantic airspace is equipped with ADS–C. Data for evaluating the use of strategic lateral offset procedures are collected at 30 degrees west longitude, which is considered the North Atlantic midway point.
2. U.K. NATS was formerly known as National Air Traffic Services.
3. ICAO. *Procedures for Air Navigation Services — Air Traffic Management*, Document 4444, Chapter 16 "Miscellaneous Procedures," 16.5 "Strategic Lateral Offset Procedures (SLOP) in Oceanic and Remote Continental Airspace."
4. Bolton, Karen. "Don't Let SLOP Slip Your Mind." The document was written as a communication to U.K. operators and later contributed to Skybrary. <www.skybrary.aero/bookshelf/books/1067.pdf>.

Further Reading From FSF Publications

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