



**The Twenty-First Meeting of the Informal South Pacific ATS Coordinating Group  
(ISPACG/21)**

Auckland, NZ, 6 March – 8 March, 2007

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Agenda Item 4: Review progress on open action items.

**Application of Strategic Lateral Offset Procedures (SLOP)**

(Presented by the Federal Aviation Administration)

SUMMARY

This paper provides information on the application of Strategic Lateral Offset Procedures (SLOP) in US-controlled oceanic airspace and requests feedback and discussion concerning harmonized implementation of this procedure.

**1 Introduction**

- 1.1 The introduction of very accurate aircraft navigation systems, along with sophisticated flight management systems, has drastically reduced the number of risk bearing lateral navigation errors. Paradoxically, the capability of aircraft to navigate to such a high level of accuracy has led to a situation where aircraft on the same track but at different levels, are increasingly likely to be in lateral overlap. This results in an increased risk of collision if an aircraft departs from its cleared level for any reason. Thus, the strategic lateral offset procedure (SLOP) was developed to mitigate collision risk and wake turbulence encounters. SLOP recommends that pilots conducting oceanic flight with automatic offset programming capability fly centerline, a lateral offset of either 1 NM right of centerline, or a lateral offset of 2 NM right of centerline.
- 1.2 Initial implementation of SLOP had been included in ICAO Doc 7030, Regional Supplements (SUPPs), as well as State documentation. In an effort to harmonize global procedures, SLOP was incorporated into ICAO Doc 4444, Procedures for Air Navigation Services– Air Traffic Management (PANS-ATM), paragraph 15.2.4, (see attachment A) . Procedures outlined in ICAO Doc 4444 call for SLOP implementation on a regional basis after coordination between all States involved and promulgation in State Aeronautical Information Publications (AIPs).
- 1.3 With a common regional implementation date for those global procedures, SLOP was removed from ICAO Regional Supplements.
- 1.4 While Air Navigation Service Providers had been advised to harmonize implementation of the global procedures so that they could be removed from Regional Supplements, we presumed that harmonization would involve a common implementation date rather than any modifications to the published global procedures.

- 1.5 During the North Atlantic Air Traffic Management (NAT ATMG) meeting held in during September 2006, States were asked to publish SLOP in their respective AIPs since the procedures had been removed from ICAO Doc 7030, NAT Supplement.
- 1.6 In preparing to publish US procedures, FAA discovered that procedures published in the FAA's International Notices to Airmen for US-controlled Atlantic, Pacific and Gulf of Mexico oceanic airspace differ slightly in requirements to inform ATC when using SLOP (see attachment B).

## 2 Discussion

- 2.1 Current feedback on the US publication and implementation of SLOP indicates potential misunderstandings and/or concerns about application of the procedure.
- 2.2 FAA is currently in the process of correlating published SLOP information to ensure harmonized application throughout US-controlled oceanic/international airspace and is interested in other States' application of SLOP—particularly in relation to oceanic over flight of radar-covered airspace.
- 2.3 In the process of SLOP review, we would like to generate discussion about potential changes to published information:
  - 2.3.1 Some pilots may not understand that SLOP is not necessarily a contingency procedure, but instead is appropriate for routine use in oceanic and remote airspace. The inclusion of SLOP information in the oceanic contingency section of ICAO Doc 4444 in Chapter 15 may add to this misunderstanding. To emphasize that these procedures should be routine, perhaps SLOP information should be relocated to Chapter 4, where general provisions for ATS are addressed.
  - 2.3.2 Furthermore, procedures included in Annex 2, paragraph 3.6.2.1.1 about adherence to centerline (See Appendix C) should be reviewed to determine if amplifying information about SLOP may be appropriate.
  - 2.3.3 Review of paragraph 15.2.4c in Doc 4444 should also be considered to determine if there is a need to cite other circumstances for restrictions on the use of SLOP.
  - 2.3.4 Review of para 15.2.4 Note 3 indicating pilots are not required to inform ATC that SLOP is being applied should be reviewed., Should there be a requirement for pilots operating in oceanic/remote airspace to notify or not notify ATC of SLOP status when transiting areas where there is radar coverage (perhaps upon radar contact).

## 3 Recommendation

- 3.1 The meeting is invited to:
- 3.2 Note and discuss the information presented in this paper, with particular attention to procedures described in ICAO Doc 4444, Chapter 15; Procedures Related to Emergencies, Communications Failure and Contingencies and in Annex 2, Chapter 3.
- 3.3 Discuss whether or not there is a need to suggest an amendment to Annex 2, para 3.6.2.1.1..
- 3.4 Provide feedback concerning a strategy for harmonized implementation of SLOP.

Appendix A: extracts about SLOP from ICAO Doc 4444

Appendix B: information about SLOP from various US NOTAMs

Appendix C: extracts from ICAO Annex 2

## Appendix A: Extracts from ICAO Doc 4444

### Procedures For Strategic Lateral Offsets in Oceanic And Remote Continental Airspace

*Note 1.— Annex 2, 3.6.2.1.1 requires authorization for the application of strategic lateral offsets from the appropriate ATS authority responsible for the airspace concerned.*

*Note 2.— The following incorporates lateral offset procedures for both the mitigation of the increasing lateral overlap probability due to increased navigation accuracy, and wake turbulence encounters.*

*Note 3.— The use of highly accurate navigation systems (such as the global navigation satellite system (GNSS)) by an increasing proportion of the aircraft population has had the effect of reducing the magnitude of lateral deviations from the route centre line and, consequently, increasing the probability of a collision, should a loss of vertical separation between aircraft on the same route occur.*

15.2.4.1 The following shall be taken into account by the appropriate ATS authority when authorizing the use of strategic lateral offsets in a particular airspace:

- a) strategic lateral offsets shall only be authorized in en route oceanic or remote continental airspace. Where part of the airspace in question is within radar coverage, transiting aircraft should normally be allowed to initiate or continue offset tracking;
- b) strategic lateral offsets may be authorized for the following types of routes (including where routes or route systems intersect):
  - 1) uni-directional and bi-directional routes; and
  - 2) parallel route systems where the spacing between route centre lines is not less than 55.5 km (30 NM);
- c) in some instances it may be necessary to impose restrictions on the use of strategic lateral offsets, e.g. where their application may be inappropriate for reasons related to obstacle clearance;
- d) strategic lateral offset procedures should be implemented on a regional basis after coordination between all States involved;
- e) the routes or airspace where application of strategic lateral offsets is authorized, and the procedures to be followed by pilots, shall be promulgated in aeronautical information publications (AIPs); and
- f) air traffic controllers shall be made aware of the airspace within which strategic lateral offsets are authorized.

15.2.4.1.1 The decision to apply a strategic lateral offset shall be the responsibility of the flight crew. The flight crew shall only apply strategic lateral offsets in airspace where such offsets have been authorized by the appropriate ATS authority and when the aircraft is equipped with automatic offset tracking capability.

15.2.4.1.2 The strategic lateral offset shall be established at a distance of 1.85 km (1 NM) or 3.7 km (2 NM) to the right of the centre line relative to the direction of flight.

*Note 1.— Pilots may contact other aircraft on the inter-pilot air-to-air frequency 123.45 MHz to coordinate offsets.*

*Note 2.— The strategic lateral offset procedure has been designed to include offsets to mitigate the effects of wake turbulence of preceding aircraft. If wake turbulence needs to be avoided, one of the three available options (centre line, 1.85 km (1 NM) or 3.7 km (2 NM) right offset) may be used.*

*Note 3.— Pilots are not required to inform ATC that a strategic lateral offset is being applied.*

**Appendix B: US Strategic Lateral Offset Procedures (SLOP)****SLOP IN GULF OF MEXICO OCEANIC AIRSPACE**

(a) Pilots should apply an offset outbound once ATC terminates radar service or reports that radar contact is lost. Pilots must return to centerline or request ATC clearance to remain offset once radar contact is re-established.

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- (a) Aircraft without automatic offset programming capability must fly the centerline;
  - (b) Aircraft capable of being programmed with automatic offsets may fly the centerline or offset one or 2 NM right of centerline to obtain lateral spacing from nearby aircraft;
  - (c) Pilots should use whatever means are available (e.g. TCAS, communications, visual acquisition, GPWS) to determine the best flight path to fly;
  - (d) Any aircraft overtaking another aircraft is to offset within the confines of this procedure, if capable, so as to create the least amount of wake turbulence for the aircraft being overtaken;
  - (e) For wake turbulence purposes, pilots are also to fly one of the three positions at 2b above and never offset to the left of centerline nor offset more than 2 NM right of centerline;
- NOTE. It is recognized that the pilot will use his/her judgment to determine the action most appropriate to any given situation and has the final authority and responsibility for the safe operation of the aeroplane. The use of air-to-air channel, 123.45, may be used to co-ordinate the best wake turbulence offset option.*
- (f) Pilots may apply an offset outbound at the oceanic entry point but must return to centerline at the oceanic exit point. This provision applies to aircraft entering airspace in the San Juan FIR where direct controller-pilot VHF or UHF voice communication is available.
  - (g) Bermuda. Aircraft transiting radar-controlled airspace in the vicinity of Bermuda may remain on their established offset positions;**
  - (h) There is no ATC clearance required for this procedure and it is not necessary that ATC be advised; and,**
  - (i) Voice position reports are to be based on the current ATC clearance and not the exact coordinates of the offset position.

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**g) Aircraft transiting radar-controlled airspace (e.g. Guam or Vancouver Center) may remain on their established offset positions but must advise the radar controller on initial contact of their offset status;**

## **Appendix C: Extracts from ICAO Annex 2, Rules of the Air**

### 3.6.2 Adherence to flight plan

3.6.2.1 Except as provided for in 3.6.2.2 and 3.6.2.4, an aircraft shall adhere to the current flight plan or the applicable portion of a current flight plan submitted for a controlled flight unless a request for a change has been made and clearance obtained from the appropriate air traffic control unit, or unless an emergency situation arises which necessitates immediate action by the aircraft, in which event as soon as circumstances permit, after such emergency authority is exercised, the appropriate air traffic services unit shall be notified of the action taken and that this action has been taken under emergency authority.

3.6.2.1.1 Unless otherwise authorized by the appropriate ATS authority, or directed by the appropriate air traffic control unit, controlled flights shall, in so far as practicable:

- a) when on an established ATS route, operate along the defined centre line of that route; or
- b) when on any other route, operate directly between the navigation facilities and/or points defining that route.