

**PROCEDURES FOR
MONITORING OF AIRCRAFT NAVIGATION ERRORS
IN THE BAY OF BENGAL, ARABIAN SEA AND INDIAN OCEAN
AIRSPACE**

1 OVERVIEW

1.1 Objectives

1.1.1 The objective of this ~~Agreement document~~ is to define agreed procedures for the monitoring, notification, investigation, analysis and reporting of aircraft navigation errors in respect of aircraft to which reduced horizontal separation minima is applied when operating on any RNAV routes over Bay of Bengal, Arabian Sea and Indian Ocean airspace.

1.2 Scope

1.2.1 The procedures contained ~~in this Agreement~~ herein implement the performance monitoring requirements associated with the introduction of the reduced horizontal separation standard, and for the reporting and monitoring of gross lateral and longitudinal navigational errors.

1.2.2 ~~For the purposes of this Agreement, t~~he term 'Service Providers' refers to organisations which are responsible for the provision of Air Traffic Services.

1.2.3 The term 'Regulatory Authority' refers to those organisations responsible for the investigation of navigational errors. In some cases, the Regulatory Authority may be the same as the Service Provider.

1.2.4 The term 'En-route Monitoring Agency' (EMA) refers to the organisation endorsed by the ICAO Asia Pacific Regional Airspace Safety Monitoring Advisory Group for providing airspace safety assessment and monitoring services to support the introduction and continued safe use of en-route horizontal-plane separation minima.

1.2.5 The designated EMA for the Bay of Bengal, Arabian Sea and Indian Ocean airspace is BOBASMA, India.

1.3 **Background**

- 1.3.1 The use of these horizontal separation standards is restricted to aircraft which meet the requirements detailed in the respective States' AIP Supplements. This includes a requirement for RNP 10 / RNP 4 Performance Based Navigation (PBN) approval and it is the responsibility of the operator to ensure that such requirements are satisfied when so declared.
- 1.3.2 PBN approval includes operators meeting certain requirements with regard to crew training and in-flight operating procedures. The responsibility for approval for such operations rests with the State of Registry of the Operator.
- 1.3.3 Monitoring navigation errors is a joint responsibility between the aircraft operators, the States of Registry, and the ATS providers. There are established requirements for the operators to monitor navigation performance under the terms of their PBN Approval. This document sets out the responsibilities and procedures to be followed by staff of the ~~signatory States /~~ organisations ~~to this Agreement~~ listed in Appendix A.

1.4 **Area of Applicability**

- 1.4.1 The procedures outlined ~~in this Agreement~~ shall be applied to all aircraft operating on any RNAV routes in the Bay of Bengal, Arabian Sea and Indian Ocean airspace.

2 **MONITORING PROCEDURES**

2.1 **Lateral Deviation**

- 2.1.1 Monitoring shall be based on surveillance observations. When the surveillance controller observes a lateral deviation of 15NM or more, the controller shall:
- Immediately advise the pilot in command; and
 - Provide the 'Duty Supervisor' with the necessary information to enable Part 1 of the Navigation Error Investigation Form (as shown in **Appendix A B**) to be completed.
- 2.1.2 Where an aircraft is off-track as the result of ATC approved diversion (e.g. due weather), no notification ~~under the terms of this Agreement~~ as specified in Para 3 need be submitted.

2.2 Longitudinal Deviations

2.2.1 Monitoring of longitudinal errors shall be accomplished by reporting occurrences where the observed longitudinal separation, following a check, is either less or more than the expected longitudinal separation as detailed in the table below.

Category of Error	Criterion for Reporting
Aircraft-pair (Time-based separation applied)	Infringement of longitudinal separation standard based on routine position reports
Aircraft-pair (Time-based separation applied)	Expected time between two aircraft varies by 3 minutes or more based on routine position reports
Individual-aircraft (Time-based separation applied)	Pilot estimate varies by 3 minutes or more from that advised in a routine position report
Aircraft-pair (Distance-based separation applied)	Infringement of longitudinal separation standard, based on ADS, radar measurement or special request for RNAV position report
Aircraft-pair (Distance-based separation applied)	Expected distance between an aircraft pair varies by 10NM or more, even if separation standard is not infringed, based on ADS, radar measurement or special request for RNAV position report

| Notification, in accordance with **Appendix AB**, shall be submitted in all cases of error

3 NOTIFICATION PROCEDURES (ACTION BY ATS UNITS)

Action by ATS Unit

- 3.1 The duty supervisor, when advised of the deviation, shall be responsible for completion and submission of a Navigation Error Investigation Form (as provided in **Appendix AB**).
- 3.2 A copy of the aircraft's flight plan shall be attached to the Navigation Error Investigation Form, and forwarded to the Chief of ATS Unit.
- 3.3 The Chief of ATS Unit shall forward copies of the Navigation Error Investigation Form (Parts 1 to 4) to the aircraft operator and the State of Registry of the aircraft or the State of the Operator, as considered appropriate.
- 3.4 In addition, the copy for the aircraft operator shall be sent with a covering letter (as provided in **Appendix BC**) requiring the operator to complete the Navigation Error Investigation Form and to provide reasons for the error.

4 INVESTIGATION PROCEDURES

- 4.1 The investigation of errors notifiable ~~under this Agreement~~ is a joint responsibility of the operator, the Regulatory Authority of the airspace in which the error occurred, and the State of Registry or State of the Operator of the aircraft involved.
- 4.2 The initial investigation shall be undertaken by the aircraft operator, who is responsible for supplying all data and comments needed to complete the form at **Appendix AB**. The completed forms are to be returned by the operator to the originating Regulatory Authority. For aircraft registered in States not included in ~~this Agreement~~ **Appendix A**, these forms are also to be forwarded to the State of Registry of the aircraft or the State of the operator.
- 4.3 Further action by States other than ~~those listed in Appendix A~~ **signatories to this Agreement** is outside the scope of this ~~procedure~~ **Agreement**, and shall be at the discretion of that State.
- 4.4 On receipt of the completed forms from the aircraft operator, the relevant Regulatory Authority will first check that all information required has been supplied and, if necessary, the Regulatory Authority shall request for further information from either the operator, the State of the Operator, or the State of Registry of the aircraft.

- 4.5 If the completed form from the aircraft operator is not received within 14 days of the date of dispatch, the Regulatory Authority will contact the operator and request for the completed form.
- 4.6 Once the completed form has been received, the Regulatory Authority will complete Part 5 of the Navigation Error Investigation Form as detailed in Appendix A. The cause of the error is to be classified in accordance with the criteria specified in Part 5.
- 4.7 The decision as to whether any further investigation is warranted will be taken by the Regulatory Authority based on their assessment of the seriousness of the error.

5 ANALYSIS OF ERRORS & REPORTING

- 5.1 At the end of each month, Service Providers shall forward to BOBASMA, India the Summary of Navigation Error Reports (provided in **Appendix CD**) including 'NIL' returns together with a copy of all completed Navigation Error Investigation Forms Parts 1 to 5 (provided in **Appendix AB**) covering reported errors for that month and
- 5.2 For States with designated monitoring areas as stipulated in the Procedures for the Assessment of Aircraft Navigation Errors, **Appendix DE**, shall in addition to the above, also provide data on the number of movements on the routes being monitored as recorded by the relevant Flight Data Processing System, or other auditable means.
- 5.3 BOBASMA, India shall be responsible for calculation of the frequency of the errors, in accordance with Doc 7030.
- 5.4 BOBASMA, India should prepare an assessment schedule setting out the results of the monitoring for the preceding twelve-month period and forward a copy of this schedule to:
 - a. The Chairman of the APANPIRG ATM/AIS/SAR Sub-Group, through the ICAO Asia and Pacific Office.
 - b. The Chairman of RASMAG through the ICAO Asia and Pacific Office

6 PERMITTED ERROR RATE EXCEEDED

- 6.1 Where the summary statistics show a long term trend which could result in the Permitted Error Rate being exceeded, ATS Authorities of the States concerned, in conjunction with the ICAO Regional Office, will jointly consider the causes, to

determine if the problems can be eliminated, and to take appropriate remedial action.

7 REVISION

7.1 This ~~Agreement~~procedure shall remain in force until it is cancelled or superseded.

7.2 For any reason, which might make it advisable to change this ~~Agreement~~procedure and its associated attachments, the interested State shall propose and circulate the pertinent revision to the States / organisations listed in Appendix A.

List of States and/or Organisation

	Afghanistan
Airports Authority of India	India
Directorate General of Civil Aviation	Indonesia
Department of Civil Aviation	Malaysia
Civil Aviation Department Ministry of Transport and Civil Aviation	Maldives
Department of Civil Aviation	Myanmar
Directorate General of Civil Aviation and Meteorology	Oman
Pakistan Civil Aviation Authority	Pakistan
The Seychelles Civil Aviation Authority	Seychelles
Civil Aviation Authority of Singapore	Singapore
The Civil Aviation Authority of Sri Lanka	Sri Lanka
Aeronautical Radio of Thailand Ltd	Thailand

NAVIGATION ERROR INVESTIGATION FORM

PART 1 - To be completed by responsible officer in the Service Provider (and aircraft owner/operator if need)		
ATS Unit Observing Error:		
Date/Time (UTC):		
Duration of Deviation:		
Type of Error: (tick one) <input type="checkbox"/> LATERAL <input type="checkbox"/> LONGITUDINAL		
Details of Aircraft		
	First Aircraft	Second Aircraft (when longitudinal deviation observed)
Aircraft Identification:		
Name of owner/Operator:		
Aircraft Type:		
Departure Point:		
Destination:		
Route Segment:		
Cleared Track:		
Position where error was observed: (BRG/DIST from fixed point or LAT/LONG)		
Extent of deviation – magnitude and direction: (NM for lateral, min/NM for longitudinal)		

Flight Level:		
Approximated Duration of Deviation (minutes)		
For All Errors		
Action taken by ATC:		
Crew Comments when notified of Deviation:		
Other Comments:		

**** (Please Attach ATS Flight Plan)**

NAVIGATION ERROR INVESTIGATION FORM

PART 2 - Details of Aircraft, and Navigation and Communications Equipment Fit (To be completed by aircraft owner/operator)
--

LRNS	Number of Systems (0, 1, 2 etc.)	Make	Model
INS			
IRS			
GNSS			
FMS			
Others (please Specify)			
COMS			
HF			
VHF			
SATCOM			
CPDLC			
Which navigation system was coupled to the autopilot at the time of observation of the error?			
Which Navigation Mode was selected at the time of observation of the error?			
Which Communication System was in use at the time of observation of the error?			
Aircraft registration			

Aircraft model/series	
Was the aircraft operating according to PBN requirements?	<input type="checkbox"/> Yes <input type="checkbox"/> No

NAVIGATION ERROR INVESTIGATION FORM

PART 3 Detailed description of incident (To be completed by owner/operator – use separate sheet if required)
Please give your assessment of the actual track flown by the aircraft, and the cause of the deviation:
Corrective action proposed:

PART 4 To be completed by owner/operator, only in the event of partial or total navigation equipment failure.			
Navigation System Type	INS	IRS/FMS	Others (Please specify)
Indicate the number of units of each type which failed			

Indicate position at which failure(s) occurred			
Give an estimate of the duration of the equipment failure(s)			
At what time were ATC advised of the failure(s)?			

NAVIGATION ERROR INVESTIGATION FORM

PART 5 To be completed by investigating agency		
Have all required data been supplied?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Is further investigation warranted?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Will this incident be the subject of a separate report?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Description of Error:		
Classification: (please tick) <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> F <input type="checkbox"/> G <input type="checkbox"/> H <input type="checkbox"/> I		
CLASSIFICATION OF NAVIGATION ERRORS		
Cause of Deviation		
Operational Errors		
A	Flight crew deviate without ATC Clearance;	
B	Flight crew incorrect operation or interpretation of airborne equipment (e.g. incorrect operation of fully functional FMS, incorrect transcription of ATC clearance or re-clearance, flight plan followed rather than ATC clearance, original clearance followed instead of re-clearance etc.);	
C	Flight crew waypoint insertion error, due to correct entry of incorrect position or incorrect entry of correct position;	
D	ATC system loop error (e.g. ATC issues incorrect clearance, Flight crew misunderstands clearance message etc);	
E	Coordination errors in the ATC-unit-to-ATC-unit transfer of control responsibility;	
Deviation due to navigational errors		

F	Navigation errors, including equipment failure of which notification was not received by ATC or notified too late for action;
Deviation due to Meteorological Condition	
G	Turbulence or other weather related causes (other than approved);
Others	
H	An aircraft without PBN approval;
I	Others (Please specify)

Template for Covering Letter to Aircraft Operator

Dear **[Aircraft Operator]**

Air Traffic Control service providers are monitoring traffic on RNAV routes in the Bay of Bengal, Arabian Sea and Indian Ocean Airspace, as part of the implementation of reduced separation minima on those routes.

These procedures require the reporting and investigation of:

Type of Error	Category of Error	Criterion for Reporting
Lateral deviation	Individual-aircraft error	15NM or greater magnitude
Longitudinal deviation	Aircraft-pair (Time-based separation applied)	Infringement of longitudinal separation standard based on routine position reports
Longitudinal deviation	Aircraft-pair (Time-based separation applied)	Expected time between two aircraft varies by 3 minutes or more based on routine position reports
Longitudinal deviation	Individual-aircraft (Time-based separation applied)	Pilot estimate varies by 3 minutes or more from that advised in a routine position report
Longitudinal deviation	Aircraft-pair (Distance-based separation applied)	Infringement of longitudinal separation standard, based on ADS, radar measurement or special request for RNAV position report
Longitudinal deviation	Aircraft-pair (Distance-based separation applied)	Expected distance between an aircraft pair varies by 10NM or more, even if separation standard is not infringed, based on ADS, radar measurement or special request for RNAV position report

A Navigation Error Investigation Form relating to one of your aircraft is enclosed.

An investigation of this occurrence is required. A detailed explanation should be provided within 10 days, using the attached Navigation Error Investigation Form. In your reply, you are also requested to indicate any corrective action taken to prevent future occurrences.

Yours faithfully,

[Regulatory Authority]

SUMMARY OF NAVIGATION ERROR REPORT

BOBASMA (INDIA)

Report of Large Lateral Deviation or Large Longitudinal Error

Report to **BOBASMA, India** of a large lateral deviation (LLD) or a large longitudinal error (LLE), as defined below:

*Note: Do not include ATC-approved deviation due to weather or other contingency events.

Type of Error	Category of Error	Criterion for Reporting
Lateral deviation	Individual-aircraft error	15NM or greater magnitude
Longitudinal deviation	Aircraft-pair (Time-based separation applied)	Infringement of longitudinal separation standard based on routine position reports
Longitudinal deviation	Aircraft-pair (Time-based separation applied)	Expected time between two aircraft varies by 3 minutes or more based on routine position reports
Longitudinal deviation	Individual-aircraft (Time-based separation applied)	Pilot estimate varies by 3 minutes or more from that advised in a routine position report
Longitudinal deviation	Aircraft-pair (Distance-based separation applied)	Infringement of longitudinal separation standard, based on ADS, radar measurement or special request for RNAV position report
Longitudinal deviation	Aircraft-pair (Distance-based separation applied)	Expected distance between an aircraft pair varies by 10NM or more, even if separation standard is not infringed, based on ADS, radar measurement or special request for RNAV position report

Name of ATC unit:

Please complete Section I or II as appropriate

SECTION I:

There were **no** reports of LLDs or LLEs for the month of **[MONTH]**

SECTION II:

There was/were **[number]** report(s) of LLD for the month of **[MONTH]**

There was/were **[number]** report(s) of LLE for the month of **[MONTH]**

Details of the LLDs and LLEs are attached.

(Please use a separate form for each report of lateral deviation or longitudinal error).

SECTION III:

When complete, please return to the following email (preferably), fax or mailing address:

Email : ***bobasma@aai.aero***

Fax: ***+91 11 24610776***

Address of EMA

THE EXECUTIVE DIRECTOR (AIR TRAFFIC MANAGEMENT)

AIRPORTS AUTHORITY OF INDIA

RAJIV GANDHI BHAWAN,

NEW DELHI -110003

INDIA

Procedures for the Assessment of Aircraft Navigation Errors

1. Introduction

- 1.1 This document provides guidance on the methodology to be adopted in the assessment of navigation errors associated with the implementation of reduced horizontal separation minima in the Bay of Bengal, Arabian Sea and Indian Ocean Airspace.

2. Data Gathering Responsibility

- 2.1 The States responsible for the gathering and onwards forwarding of data to BOBASMA, India for the designated monitoring areas identified in paragraph 3, shall be

- a) Afghanistan
- b) Indonesia,
- c) Malaysia,
- d) Maldives,
- e) Myanmar,
- f) Oman,
- g) Pakistan,
- h) Seychelles,
- i) Sri Lanka, and
- j) Thailand.

- 2.2 Data gathering requirements are detailed in paragraph 4.

3. Designated Monitoring Areas

- 3.1 In order to validate the monitoring requirements supporting the reduction in horizontal separation minima, it is necessary to assess the track keeping ability of aircraft operating on the route structure, whilst they have been using on-board RNAV navigation systems only, for a maximum period of time, relative to the route being flown.
- 3.2 It is also essential that observation of the navigation of the aircraft, using surveillance sensors, occurs before the on-board navigation systems have been able to “up-date” using ground-based navigation aids, such as DME/DME, or VOR/VOR.

- 3.3 The appropriate areas at which the required monitoring may be undertaken based on the extensive ground-based navigation aid coverage in the Bay of Bengal, Arabian Sea and Indian Ocean Airspace are specified as follows;

***Phase 1 – Monitoring commences on 1 July 2010**

Route	Segment	FIRs Involved	ACCs involved [#]
N571	IDASO & VAMPI	CHENNAI, KUALALUMPUR	CHENNAI
	SUGID & PARAR	MUMBAI, MUSCAT	MUMBAI
P628	LARIK & VATLA	CHENNAI, KOLKATA	CHENNAI, KOLKATA
P762	ESPAP & BKK	COLOMBO, CHENNAI, YANGOON	CHENNAI
	DUGOS & LULDA	CHENNAI	CHENNAI
L510	GIVAL & DOGEM	KUALALUMPUR, KOLKATA	KOLKATA

***Phase 2 – Monitoring commence TBD**

Route	Segment	FIRs Involved	ACCs involved [#]
A466			
L301	AKTIV & RASKI	MUMBAI, MUSCAT	MUMBAI
	LARIK & BKK	KOLKATA, BANGKOK	KOLKATA
L507			
L509			
L750			
L759	TAVUN & LEMEX	BANGKOK, KOLKATA	KOLKATA

M300	ESPAP & BULVA	COLOMBO, JAKARTA	
	IGAMA & LOTAV	CHENNAI, MUSCAT	MANGALORE
M770	PADET & BUBKO	BANGKOK, KOLKATA	KOLKATA
N563	MEMAK & AKMIL	JAKARTA, CHENNAI	CHENNAI
	KAKIB & REXOD	CHENNAI, MUSCAT	MANGALORE
N636			
N644			
N877	ORARA & RIBRO	KOLKATA, MUMBAI	NAGPUR, KOLKATA
N895			
P570	MABIX & TEBIT	JAKARTA, COLOMBO	
	POMAN & KITAL	CHENNAI, MUSCAT	MANGALORE
P574	ANSAX & GIRNA	JAKARTA, CHENNAI	CHENNAI
	TOTOX & BISET	MUSCAT, MUMBAI	MUMBAI
P646			
UL333			

*Phase 3 – Monitoring commence TBD

Route	Segment	FIRs Involved	ACCs involved [#]
TBD	TBD		

* Phase 1, 2 & 3 are to be finalized by BOB RHS TF.

3.4 Monitoring of aircraft on these route segments should be undertaken as soon as possible after the aircraft enters surveillance coverage.

- 3.5 It should be noted that navigation error reports relating to areas other than those stated above, should also be processed and reported on, in order to support data gathering for future reductions in lateral and longitudinal separation. Details on the processing of these reports are given at paragraph 6.

4. Collection and Forwarding of Data

- 4.1 Those States identified in Paragraph 2 are required, at the end of each month, to collect the following data:
- a) Recorded navigation errors at the required monitoring areas, by way of the “Navigation Error Investigation Form”, as detailed in Appendix A of the Letter of Agreement for the Monitoring of Aircraft Navigation Errors in the Bay of Bengal, Arabian Sea and Indian Ocean airspace; and
 - b) Total monthly movement statistics relating to air traffic passing the designated monitoring areas within the designated monitoring height band.

Note: The recording of monthly traffic movement statistics in the monitoring areas should be auditable – in other words, some formal method of recording the movements – eg copies of flight progress strips or data from Flight Data Processing Systems – should be available for audit if required.

- 4.2 After collection, the required data should be forwarded to BOBASMA, India for assessment, to arrive not later than 15 days from the end of the month within which the data was collected. This will allow time for the Navigation Error Investigation Forms relating to occurrences near the end of a month, to be processed and returned as detailed in that form.
- 4.3 In respect of paragraph 4.1.a), if there have been no error report received, a “Nil Return” should be submitted to BOBASMA, India using the form in **Appendix C**.

5. Assessing of Navigation Errors

- 5.1 The monitoring requirements associated with the introduction of the reduced horizontal separation minima will be in accordance with the requirements for RNP10 / RNP4 PBN, i.e. aircraft navigation performance shall be such that

the standard deviation of lateral track errors shall be in accordance with the PBN requirement.

- 5.2 The requirements will be met, if the number of navigation errors by approved flights, measured in the monitoring area, divided by the total number of approved flights over those monitoring points, is less than the required parameters, over a period of time for the PBN requirement. (See **Attachment B**).
- 5.3 The assessments for each month should be recorded separately, and also cumulatively, on a month-to month basis. If the assessment in any particular month exceeds the required parameter, a check should be made to ensure that the cumulative assessment does not also exceed the required parameter.
- 5.4 If a trend is identified, which indicates that the required parameter is being exceeded regularly, or the cumulative assessment indicates a upwards trend, the BOBASMA, India should notify, through the ICAO Asia and Pacific Office, the APANPIRG ATM/AIS/SAR Sub-Group and RASMAG which should then investigate the need for a review of the applicable procedures.
- 5.5 An example of an assessment schedule is shown at **Attachment B**.

6. Processing of Navigation Error Reports Relating to Areas Other Than Required Monitoring Areas

- 6.1 All participating States to this Agreement shall notify all appropriate navigation errors to BOBASMA, India. This data should be collated and assessed in the following manner.
- 6.2 If the navigation error report relates to aircraft tracking on RNAV routes as specified in para 3.3 the error should be assessed and processed in accordance with paragraph 5 above.
- 6.3 If the report relates to aircraft tracking on other routes, the errors should be assessed, and recorded separately. This information should be assessed by the APANPIRG ATM/AIS/SAR Sub-Group meeting and RASMAG, for appropriate action.

7. Reporting Procedures

- 7.1 BOBASMA, India should prepare an assessment schedule (refer to **Attachment B**), and forward a copy of this schedule, at least every 12 months, to:

- a) The Chairman of the APANPIRG ATM/AIS/SAR Sub-Group, through the ICAO Asia and Pacific Office, and
- b) The Chairman of RASMAG through the ICAO Asia and Pacific Office

7.2 In addition, a report should be prepared on those errors reported in accordance with paragraph 6.3 above.

8. Attachments to Appendix D

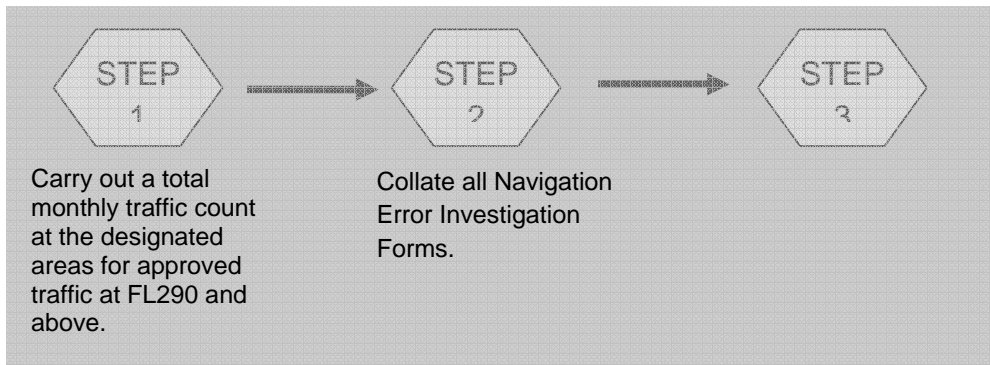
Attachment A – Assessment Schedule Process

Attachment B – Sample Assessment Schedule

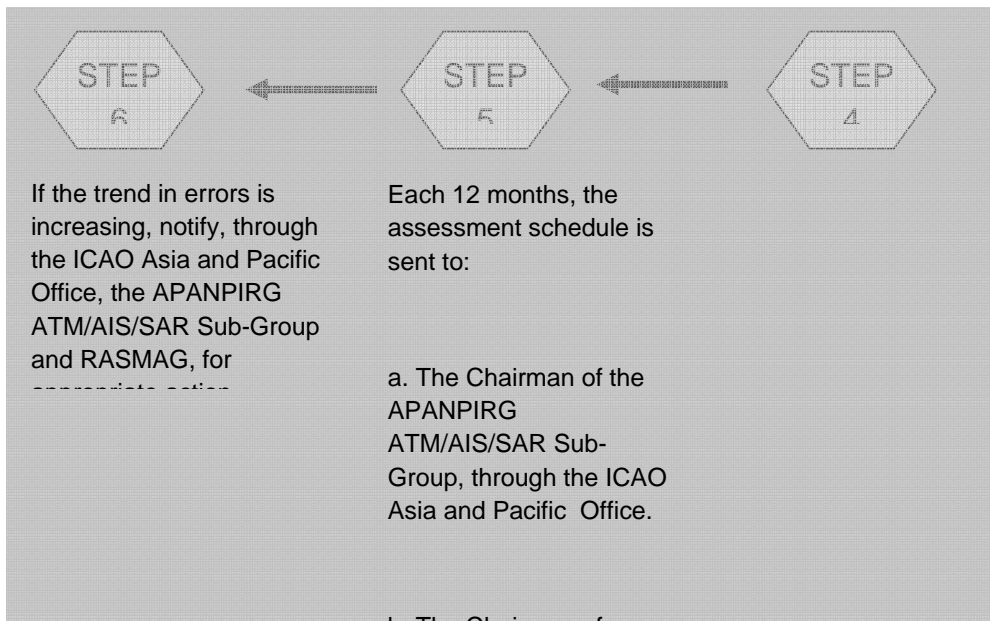
Attachment A

Assessment Schedule Process for Designated Monitoring Areas

ACTIONS BY: AFGHANISTAN
INDONESIA
MALAYSIA
MALDIVES
MYANMAR
OMAN
PAKISTAN
SEYCHELLES
SRI LANKA
THAILAND



ACTIONS BY: BOBASMA, INDIA



Attachment B

Example of Navigation Error Assessment Schedule

For Designated Monitoring Areas

a. Example of Monthly Total – Single RNP 10 route

Month/ 2009	Total traffic at (Relevant waypoint) (Ex. IDASO)	Errors Category 1 (LLD)	Errors Category 2 (LLD)	Errors Category 3 (LLE) [#]	Errors Category 4 (LLE) [*]
April	3105	1	0		
May	3042	2	0		
June	2810	0	0		
July	2995	1	1		

Category 1 = >15NM Category 3 = Estimate varies by 3 mins or more

Category 2 = 25 – 35NM Category 4 = Distance varies by 10 Nm or more

[#] - Category 3 to be recorded for the entry and exit waypoints of RNP 10 routes over Oceanic airspace applicable to the ACCs in the respective States.

^{*} - Category 4 to be recorded if the 80 Nm RNAV distance based separation is in force.

b. Example of Cumulative Monthly Total – Single RNP 10 route

Month/ 2009	Total traffic at (Relevant waypoint) (Ex. IDASO)	Errors Category 1 (LLD)	Errors Category 2 (LLD)	Errors Category 3 (LLE) [#]	Errors Category 4 (LLE) [*]
April	3105	1	0		
May	6147	3	0		
June	8957	3	0		
July	11952	4	1		

Category 1 = >15NM Category 3 = Estimate varies by 3 mins or more

Category 2 = 25 – 35NM Category 4 = Distance varies by 10 Nm or more

[#] - Category 3 to be recorded for the entry and exit waypoints of RNP 10 routes over Oceanic airspace applicable to the ACCs in the respective States.

* - Category 4 to be recorded if the 80 Nm RNAV distance based separation is in force.

c. Example of Monthly Total – All RNP 10 routes within ACC

Month/ 2009	Total traffic at (Relevant ACCs) Ex. Chennai ACC	Errors Category 1 (LLD)	Errors Category 2 (LLD)	Errors Category 3 (LLE)#	Errors Category 4 (LLE)*
April	7852	2	0		
May	8311	2	0		
June	8263	1	0		
July	7678	1	1		

Category 1 = >15NM Category 3 = Estimate varies by 3 mins or more

Category 2 = 25 – 35NM Category 4 = Distance varies by 10 Nm or more

- Category 3 to be recorded for the entry and exit waypoints of RNP 10 routes over Oceanic airspace applicable to the ACCs in the respective States.

* - Category 4 to be recorded if the 80 Nm RNAV distance based separation is in force.

d. Example of Cumulative Monthly Total – All RNP 10 routes within ACC

Month/ 2009	Total traffic at (Relevant ACCs) Ex. Chennai ACC	Errors Category 1 (LLD)	Errors Category 2 (LLD)	Errors Category 3 (LLE)#	Errors Category 4 (LLE)*
April	7852	2	0		
May	16163	4	0		
June	24426	5	0		
July	32104	6	1		

Category 1 = >15NM Category 3 = Estimate varies by 3 mins or more

Category 2 = 25 – 35NM Category 4 = Distance varies by 10 Nm or more

- Category 3 to be recorded for the entry and exit waypoints of RNP 10 routes over Oceanic airspace applicable to the ACCs in the respective States.

* - Category 4 to be recorded if the 80 Nm RNAV distance based separation is in force.