

**PBN PRE-IMPLEMENTATION CHECKLISTS FOR PREPARATION OF PBN
PROCEDURE IMPLEMENTATION SAFETY ASSESSMENT**

1. RNP APCH

PBN Procedure Safety Assessment Initial Checklist – RNP APCH				
Assessor		<input type="checkbox"/> New	<input type="checkbox"/> Amended	
Procedure Name		Date		
S : Satisfactory, U : Unsatisfactory, N/A : Not Available				
No.	Check Items	S	U	N/A
1	Is the safety assessor independent of the flight procedure team and has s/he been involved with the process? ▪ Comments :			
2	Were proposed flight procedures/amendments designed by an qualified flight procedure designer and reviewed independently by another qualified flight procedure designer? ▪ Comments :			
3	Did procedure designers coordinate with stakeholders such as ATC, operators, etc., regarding new and/or amended flight procedures? ▪ Comments :			
4	Did relevant ATC facilities review the new and/or amended procedures based on the Letter of Agreement (LOA) between facilities? Is the amended LOA published and effective? ▪ Comments :			
5	Are the locations of waypoints and restrictions (speed, altitude, etc.) appropriate for the aircraft types expected to use these procedures? ▪ List aircraft categories considered: ▪ Comments :			
6	Are there any expected difficulties or possibilities of phonetic confusion in the names used for waypoints and procedure ? It is recommended that proximity check for like-sounding codes be done within 250NM for TMA waypoints using ICARD system. ▪ Comments :			
7	Are there any elements that may lead to misinterpretation or other difficulties while using the proposed procedures (e.g. textual description of the chart, local wind condition or temperature causing difficulties while climbing/descending, etc.)? ▪ Comments :			
8	In case of procedure amendment, was a review of safety incidents/accidents concerning the existing procedure conducted, with the view of mitigating them? Comments :			
9	Referring to ICAO Annex 4, 15 and Doc 8697, are there any errors on the chart(s)? (Items to focus on: Magnetic Bearings/True Headings, Distances, Climb/Descent Gradients, TAA/MSA, Magnetic Variation, Topography, Location of Obstacles, Coordinates, Restrictions, etc.) ▪ Comments :			

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10	<p>Were all obstacles evaluated when calculating OCA/H in the proposed procedures and properly documented?</p> <ul style="list-style-type: none"> ▪ Comments : 			
11	<p>Were RAIM/GNSS availability and prediction (as necessary) considered while implementing the proposed procedures?</p> <ul style="list-style-type: none"> ▪ Comments : 			
12	<p>If RAIM/GNSS availability/prediction information is provided by entities other than the ANSP, are there any agreements with those entities regarding the provision of this information?</p> <ul style="list-style-type: none"> ▪ Comments : 			
13	<p>Are the descent rates and descent angle, if not the same as the optimum value, of proposed approach procedure appropriate to enabling aircraft to complete its approach? If not, were operators consulted and consent obtained?</p> <ul style="list-style-type: none"> ▪ Comments : 			
14	<p>Do missed approach procedures enable aircraft to climb to the assigned altitude/s? Are climb gradients specified where the climb gradient exceeds the standard missed approach climb gradient of 2.5%? If so, have the operators been consulted?</p> <ul style="list-style-type: none"> ▪ Comments 			
15	<p>Do the proposed procedures take into account adequate separation between aircraft using these approaches and other aircraft using conventional approaches (ILS, VOR, NDB)? Was the standard operating procedure/operating manual updated?</p> <ul style="list-style-type: none"> ▪ Comments : 			
16	<p>Have any alternative procedures been instituted if an aircraft conducting the proposed procedure/s is unable to complete the assigned procedure due to temporary GNSS signal abnormality, airborne system failures, technical problems or other difficulties?</p> <ul style="list-style-type: none"> ▪ Comments : 			
17	<p>For LNAV/VNAV Procedures: Is the location of the altimeter setting source appropriate for the use of the Baro-VNAV approach procedure?</p> <ul style="list-style-type: none"> ▪ Comments : 			
18	<p>For LNAV/VNAV Procedure: Is the published minimum temperature reasonable for the application of the Baro-VNAV procedure?</p> <ul style="list-style-type: none"> ▪ Comments : 			
19	<p>Has implementation training been executed (or planned) for air traffic controllers on the use of the proposed procedures, including management of QNH in case of Baro-VNAV?</p> <ul style="list-style-type: none"> ▪ Comments : 			
20	<p>Are there any criteria applied for the RNP APCH design using the minimum or maximum value in ICAO PANS-OPS (Doc 8168)? If so, are they documented properly?</p> <ul style="list-style-type: none"> ▪ Comments : 			

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21	Are there any items requiring special authorization in the proposed procedures? If any, were sufficient reviews on criteria conducted and was the rationale for requiring such special authorization reasonable and necessary? ▪ Comments :			
22	Are there any other safety considerations regarding the procedure(s)? ▪ Comment :			

2. SID/STAR

PBN Procedure Safety Assessment Initial Checklist – SID/STAR				
Assessor		<input type="checkbox"/> New	<input type="checkbox"/> Amended	
Procedure Name		Date		
S : Satisfactory, U : Unsatisfactory, N/A : Not Available				
No.	Check Items	S	U	N/A
1	Is the safety assessor independent of the flight procedure team and has s/he been involved with the process? ▪ Comments :			
2	Were proposed flight procedures/amendments designed by an qualified flight procedure designer and reviewed independently by another qualified flight procedure designer? ▪ Comments :			
3	Did procedure designers coordinate with related entities such as ATC, Operators, etc., regarding new and/or amended flight procedures? ▪ Comments :			
4	Did related ATC facilities review and accept new and/or amended procedures based on the Letter of Agreement (LOA) between facilities? Is the amended LOA published and effective? ▪ Comments :			
5	Are the locations of waypoint and restrictions (speed, altitude, etc.) appropriate for the aircraft that is expected to use the procedures? ▪ Comments :			
6	Are there any expected difficulties or the possibility of confusion on the name of waypoints and procedures phonetically? It is recommended that proximity check for like-sounding codes should be done within 250NM for TMA waypoints using ICARD system. ▪ Comments :			
7	Are there any parts that may lead to mistakes or difficulties while using the proposed procedures (e.g. textual description of the chart, local wind condition or temperature causing difficulties while climbing/descending, etc.)? ▪ Comments :			
8	In case of procedure amendment, was a review of safety incidents/accidents concerning the existing procedure conducted, with the view of mitigating them? ▪ Comments :			
9	Referring to ICAO Annex 4, 15 and Doc 8697, are there any errors on the chart(s)? (check items : magnetic bearing/true heading, distance, climb/descent gradient, TAA/MSA, magnetic variation, topography, location of obstacle, coordinates, restrictions, etc.) ▪ Comments :			
10	Were all obstacles evaluated in the proposed procedures and properly documented? ▪ Comments :			

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11	<p>Were coverage and limitations of available avionics, ground navigational aids and GNSS considered while designing and validating the proposed procedures?</p> <ul style="list-style-type: none"> ▪ Comments : 			
12	<p>Were traffic flows in the terminal area considered while designing the proposed procedures?</p> <ul style="list-style-type: none"> ▪ Comments : 			
13	<p>Are climb/descent rates of the proposed procedures appropriate to enabling the climb/descent within the airspace?</p> <ul style="list-style-type: none"> ▪ Comments : 			
14	<p>Does separation applied between instrument flight procedures of neighbouring airport(s), airspaces including special use airspaces (SUAs) and the proposed procedures satisfy separation criteria specified in ICAO PANS-ATM (Doc 4444)?</p> <ul style="list-style-type: none"> ▪ Comments : 			
15	<p>Do the proposed procedures consider separation between aircraft using PBN procedures and aircraft using other procedures specified in ICAO PANS-ATM (Doc 4444)?</p> <ul style="list-style-type: none"> ▪ Comments : 			
16	<p>Did the proposed procedures consider current and expected future airspace capacity?</p> <ul style="list-style-type: none"> ▪ Comments : 			
17	<p>Are there any alternative methods when an aircraft conducting a proposed procedure is unable to conduct the procedure because of ground/satellite/airborne system failures, technical problems or other difficulties?</p> <ul style="list-style-type: none"> ▪ Comments : 			
18	<p>Is there any training plan for air traffic controllers on the proposed procedures? Has the training been conducted?</p> <ul style="list-style-type: none"> ▪ Comments : 			
19	<p>Are there any criteria applied for the SID/STAR design using the minimum or maximum value in ICAO PANS-OPS (Doc 8168)? If so, are they documented properly?</p> <p>Comments :</p>			
20	<p>Are there any items requiring special authorization in the proposed procedures? If any, were sufficient reviews on criteria conducted and was rationale for requiring special authorization reasonable?</p> <ul style="list-style-type: none"> ▪ Comments : 			
21	<p>Are there any other safety considerations regarding the procedure(s)?</p> <ul style="list-style-type: none"> ▪ Comment : 			

3. ATS Route

PBN Safety Assessment Initial Checklist – ATS Route				
Assessor		<input type="checkbox"/> New	<input type="checkbox"/> Amended	
Route Designator		Date		
S : Satisfactory, U : Unsatisfactory, N/A : Not Available				
No.	Check Items	S	U	N/A
1	Is the safety assessor independent of the flight procedure team and has s/he been involved with the process? Comments :			
2	Has proposed ATS route been reviewed independently by a qualified route designer? Comments :			
3	Did procedure designers coordinate with related entities such as ATC, Operators, etc., regarding the new and/or amended ATS route? ▪ Comments :			
4	Did related ATC facilities review new and/or amended procedures based on the Letter of Agreement (LOA) between facilities? Is the amended LOA published and effective? ▪ Comments :			
5	Are the locations of waypoint and restrictions (e.g. speed, altitude, etc.) appropriate for the aircraft that is expected to use the ATS route? ▪ Comments :			
6	Are there any expected difficulties or the possibility of confusion on the name of waypoints phonetically? It is recommended that proximity check for like-sounding codes should be done within 500NM for en-route waypoints using ICARD system. ▪ Comments :			
7	Is the designator of ATS route appropriate for its application, i.e. domestic or international? Is the duplicity of the name confirmed with neighbouring States? ▪ Comments :			
8	Are there any parts that may lead to mistakes or difficulties while using the proposed ATS routes (e.g. separation from other ATS routes and/or airspace including military controlled airspace, coordination with other facilities including military, identification of navigation specification, difference of turn performance, introduction of FRT, etc.)? ▪ Comments :			
9	In case of procedure amendment, was a review of safety incidents/accidents concerning the existing procedure conducted, with the view of mitigating them? ▪ Comments :			
10	Referring to ICAO Annex 4, 15 and Doc 8697, are there any errors on the AIP publication? (check items : magnetic bearing/true heading, distance, coordinates, restrictions, directions, etc.) ▪ Comments :			

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11	Were all obstacles evaluated in the proposed ATS route and properly documented? ▪ Comments :			
12	Were coverage and limitations of available avionics, ground navigational aids and GNSS considered while designing and validating the proposed procedures? ▪ Comments :			
13	Does separation applied between instrument flight procedures of neighbouring airport(s), airspaces including special use airspaces (SUAs), neighbouring ATS routes and the proposed ATS route satisfy separation criteria specified in ICAO PANS-ATM (Doc 4444) and PANS-OPS (Doc 8168)? ▪ Comments :			
14	Do the proposed ATS route consider separation between aircraft using PBN procedures and aircraft using other procedures specified in ICAO PANS-ATM (Doc 4444)? ▪ Comments :			
15	Did the proposed ATS route consider current and expected future airspace capacity? ▪ Comments :			
16	Are there any alternative methods when an aircraft flying the proposed ATS route is unable to maintain the requirement of the route because of ground/satellite/airborne system failures, technical problems or other difficulties? ▪ Comments :			
17	Is there any training plan for air traffic controllers on the proposed ATS route? Has the training been conducted? ▪ Comments :			
18	Are there any items requiring special authorization on the use of the proposed ATS route, e.g. reduction of lateral separation between ATS routes? If any, were sufficient reviews on criteria conducted and was rationale for requiring special authorization reasonable? ▪ Comments :			
19	Are there any other safety considerations regarding the proposed route(s)? ▪ Comments :			
