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## APPROVAL PAGE

This Check list for PANS OPS Inspector has been prepared by Air Navigation Regulation Directorate to assist the effort of the Ethiopian Civil Aviation Authority to maintain the provision of effective Air Navigation Services with in Ethiopia airspace.

It is important to note that the Check list for PANS OPS Inspector improves the safety of Air Navigation Services in Ethiopia.

The Director General of Ethiopian Civil Aviation Authority has here by approved the Check list for PANS OPS Inspector on June, 2016 to be used as guidance to PANS OPS Inspector.



Company Name

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No.	QUESTIONS TO BE ANSWERED	REFERENCE DOCUMENT	STATUS OF IMPLEMENTATION	REMARK And reference documents
1	Does PANS-OPS service provider retain all procedures design documentation so as to allow any data anomalies or errors found during the production, maintenance or operational use of the procedure to be corrected?	Doc 8168 Vol. II Part I Section 2 Chapter 4,	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>	•
2	Has CAA establish criteria as a basis for procedure design in accordance with ICAO PANS-OPS provisions?	PANS Doc 8168 OPS /611 Vo. II	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>	
3	Are all the functions and responsibilities of the PANS -OPS staff adequately and technically defined?	GM Doc 9734 Part A	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>	
4	Has CAA established the minimum Qualification and experience for PANS-OPS technical staff?	GM Doc 9734 Part A 3.5	<ul><li>□ Satisfactory</li><li>□Not satisfactory</li><li>□ Not applicable</li></ul>	

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5	Does CAA employ a sufficient number of qualified PANS-OPS technical staff to carry out its flight instrument procedure design?	GM Doc 9734 Part A 3.4	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>	
6	Does CAA develop a periodic training program and plan detailing and prioritizing what Training will be provided with in the established time?	GM Doc. 9734 PART A 3.5	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>	
7	Is the training program appropriately Implemented for PANS-OPS technical staff?	GM Doc 9734 PART A 3.5	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>	
8	Has CAA established general criteria and developed adequate procedures for the establishment of aerodrome operating	PANS DOC 8168 OPS VOL II	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>	

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	minima? E.g. MDA/H,DA/H for instrumo approaches.	ent		
NO	QUESTIONS TO BE ANSWERED	EVIDENCE TO BE REVIEWED	STATUS OF IMPLEMENTATION	REMARK
9	Has CAA published obstacle clearance altitude/height (OCA/H)?	PANS DOC 8168 OPS VOL II	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>	
10	Does CAA carry out ground and flight validation of instrument flight procedures, including obstacle checks?	PANS DOC 8168 OPS VOL II	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>	
11	Does CAA develop flight procedures in accordance with PANS OPS criteria promulgated by the state?	PANS DOC 8168 OPS VOL II	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>	
12	Does CAA review PANS OPS published procedure periodically to ensure that they continue to comply with changing criteria and meet user requirements?	PANS DOC 8168 OPS VOL II	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>	

The May	<sup>Company Name</sup> የኢትዮጵያ ሲቪል አቪዬሽን ባለሥልጣን ETHIOPIAN CIVIL AVIATION AUTHORITY	Document No.	AA/ANR/W1/007/008
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13	Has CAA established minimum qualification requirements for procedure specialists who are responsible for Design of flight procedures?	A 3.7	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>
14	Check office facility (rules, calculator, protractor, compass, flexible corves, adjustable, table)	PANS Doc 8168 OPS /611 Vo. II	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>
15	Check Pre calculated template and tables of dimension for the procedures to be designed.	PANS Doc 8168 OPS /611 Vo. II	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>
16	Is there Necessary maps with scales appropriate to the procedure segment being designed	8168 OPS	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>

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	1:1,000,000 1:250,000 1:50,000 1:25,000 1:10,000			
В.	Manuals Check  Does the PANS OPS unit have applicable ICAO documents either in hard copy/soft copy: e.g. the following doc,		<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>	
17	1) Doc. 8168 OPS/611 procedure for air navigation services aircraft OPN(PANS-OPS)	PANS Doc 8168 OPS /611 Vo. II	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>	
18	2) Doc. 9368 Instrument flight procedures constriction manuals	PANS Doc 8168 OPS	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li></ul>	

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		/611 Vo. II	□ Not applicable
19	3) Doc. 9371 AN/912 template manual for holding, reversal and racetrack Procedures.	PANS Doc 8168 OPS /611 Vo. II	<ul> <li>□ Satisfactory</li> <li>□ Not satisfactory</li> <li>□ Not applicable</li> </ul>
20	4) Ethiopian Civil Aviation Instrument flight procedures constriction Manuals.	PANS Doc 8168 OPS /611 Vo. II	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>
21	5) Annex 14 6) Doc. 9274 AN/904 use of the CRM for ZLS OPN	PANS Doc 8168 OPS /611 Vo. II	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>
22	7) Doc. 4444 air traffic management (PANS-ATM)	PANS Doc 8168 OPS /611 Vo. II	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>
23	8) Doc. 7030 Regional supplementary procedures (Supps)	PANS Doc 8168 OPS /611 Vo. II	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>
24	9) Doc. 8400 ICAO abbreviations and	PANS Doc	□ Satisfactory

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	codes (PANS-ABC)	8168 OPS /611 Vo. II	<ul><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>	
С	Documentation on instrument procedure design  1) Aerodrome Data 2) Minimum Sector Altitude	PANS Doc 8168 OPS /611 Vo. II	<ul> <li>□ Satisfactory</li> <li>□ Not satisfactory</li> <li>□ Not applicable</li> </ul>	
25	3) Holding pattern 4)Non-precision Approach 5)ILS Approach 6)Instrument departure procedure 7)Instrument Arrival procedure 8)RNAV GNSS Approach procedure	PANS Doc 8168 OPS /611 Vo. II	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>	
<b>D.</b> 26	Evaluation Construction of procedure design processes  I. MSA  1 map scale used 2 Sectorization summery 3 Obstacle survey 4 MOC applied on high pick for each sector 5. Vegetation used	PANS Doc 8168 OPS /611 Vo. II	□ Satisfactory □ Not satisfactory □ Not applicable	

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	6. MSA			
27	II. Holding Pattern			
	1 Aerodrome altitude 2 Aircraft categories 3 IAS/TAS used 4 Outbound time 5 Radius of turn 6 Wind applied 7 Wind effect / Inbound magnetic track	PANS Doc 8168 OPS /611 Vo. II	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>	
	9 Magnetic variation 10 Maximum temperature 11 MOC applied 12 The design of holding compared with the above parameters 13 Minimum obstacle clearance altitude 14 Minimum holding altitude 15 Construction of over head facility		<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>	

	<sup>Company Name</sup> የኢትዮጵያ ሲቪል አቪዬሽን ባለሥልጣን ETHIOPIAN CIVIL AVIATION AUTHORITY	Document No.	AA/ANR/W1/007/008
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	tolerance			
	16 Construction of Omni directional			
	entry area			
	17 Construction of secondary area for			
	the holding airspace			
	18 Identity and analyze obstacles in			
	primary and secondary area to			
	determine the minimum holding altitude.			
	19 Construction of basic area			
	N. D		0.15.6	
28	Non-Precision Approach	DANG D	□ Satisfactory	
	(VOR/DME)	PANS Doc	□ Not satisfactory	
	1 Check maps scale used	8168 OPS	□ Not applicable	
	2 Holding fix	/611 Vo. II		
	3 IAS/TAS used			
	4 Outbound time (distance)			
	5 Wind Out bound magnetic track			
	6 Out bound magnetic track			
	8 Entry from holding patter			
	9MOC applied			
	10Obstacle survey (critical obstacle)			
	11All the calculation compared with			
	the above parameters			
	12. All the design compared with the			
	result of the calculation			

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	13. Minimum race track/reversal altitude			
	14. Procedure altitude]			
	15. The descent gradient			
	16. Protection areas			
	17. Construction of basic area to a base			
	turn			
	18. Construction of entry area			
	19. Construction of secondary area for			
	the base turn			
	20. Identify and analyze obstacles in			
	primary and secondary area to			
	determine the Identify and analyze			
	obstacles in			
	primary and secondary area to			
	determine the minimum reversal			
	altitude.			
29	IV. Intermediate Approach		□ Satisfactory	
23	Segment Approach	PANS Doc	□ Not satisfactory	
	1. Segment orientation	8168 OPS	□ Not applicable	
	2 Track	/611 Vo. II		
	3 Beginning of the segment			
	4 End of segment			
	5 MOC applied			

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ANNE ANNE	የኢትዮጵያ ሲቪል አቪዬሽን ባለሥልጣን ETHIOPIAN CIVIL AVIATION AUTHORITY	ECA	AA/ANR/W1/007/008
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	6 Nominal length of the segment			
	7 Vegetation			
	8 Obstacle survey (critical obstacles)			
	9 slop intermediate			
30	V.			
	Final Approach Segment			
	1Map Scale			
	2 protection areas			
	Critical obstacle			
	MOC			
	Vegetation			
	Descent gradient			
31	VI. Missed Approach Segment			
		PANS Doc	□ Satisfactory	
	1 Map scale used	8168 OPS	□ Not satisfactory	
	2 Start of missed approach point	/611 Vo. II	□ Not applicable	
	3 Missed approach turn			
	4 Aerodrome evaluation			
	5 K			
	6 IAS/TAS			
	7 Temperature			
	8 Check calculation of pilot reaction			
	Bank angle			

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The same of the sa	የኢትዮጵያ ሲቪል አቪዬሽን ባለሥልጣን ETHIOPIAN CIVIL AVIATION AUTHORITY	ECAA/ANR/W1/007/008	
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32	<ul> <li>10. Check calculation of (3s+3s) C and transition tolerance</li> <li>11 Check calculation of radius of turn</li> <li>12 Check calculation of wind effect</li> <li>13 Check obstacles around</li> <li>14Check outbound heading</li> <li>15Check expecting altitude at different point</li> <li>16. Check required altitude at different point</li> <li>17. Check text associated to missed approach profile</li> <li>18. Check OCA/H</li> <li>VII. Visual Circling</li> </ul>	PANS Doc	□ Satisfactory	
	1 Map scale used	8168 OPS	□ Not satisfactory	
	2 Category of air craft included 3 Check computation of radius	/611 Vo. II	□ Not applicable	
	4 Obstacle survey (critical obstacle)			
	5. MOC applied for each			
	category of aircraft 6. Visual circling OCA/H for			
	each category of aircraft			
	7. Map scale used			
33	VIII. ILS Approach Procedure			

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1 Map scale used	PANS Doc	□ Satisfactory	
2 Aerodrome elevation	8168 OPS	□ Not satisfactory	
3 RWY magnetic bearing	/611 Vo. II	□ Not applicable	
4 Magnetic variation			
		□ Satisfactory	
5 Aircraft category			
6 ILS reference datum height		□ Not satisfactory	
(RDH)		□ Not applicable	
GP angle			
7 Distance THR-LLZ			
8 Existing facilities			
9 Basic ILS surface			
10 Parameters for construction			
-Obstacle surrounding			
-Surface elevation			
-Vegetation			
-Basic ILS surface obstacle			
-survey calculation			
-Check the design units the			
.11 Obstacle assessment surface (OAS)			
<ul> <li>Parameters for construction</li> </ul>			
<ul> <li>OAS template coordinates</li> </ul>			
<ul> <li>Obstacle survey</li> </ul>			
<ul> <li>OAS surface equation</li> </ul>			

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	<ul> <li>OAS obstacle survey calculation</li> <li>OCA/H for each category of aircraft</li> </ul>			
34	IX. RNAV(GNSS) Approach			
	Y-bar or U-bar concept used     Maximum course change used	PANS Doc 8168 OPS /611 Vo. II	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>	
35	X. Terminal Arrival Altitudes			
	1.Map scale used 2. Calculation of 25 NM 15 NM buffer zone 3.MOC used 4.Vegetation 5.Obstacle survey 6.TAA area orientation 7.Terminal arrival altitude	PANS Doc 8168 OPS /611 Vo. II	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>	
36	XI Initial Approach Segment (for each TAA area)			

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	1 Map scale	PANS Doc	□ Satisfactory	ANASM-11
	2 Obstacle survey (highest obstacle)	8168 OPS	□ Not satisfactory	ANASM-04
	3 MOC	/611 Vo. II	□ Not applicable	
	4 Vegetation			
	5 Minimum obstacle clearance			
	altitude			
	6 Parameters			
	A.IAF name			
	B. Geo Coordinate			
	C.IAS			
	D. Magnetic track			
	E.TAA			
	F. Procedure altitude			
	G. Descent required			
	(altitude)			
	H. Minimum length			
	required			
	I. Segment length			
	J.TRD			
	K. Descent gradient			
37	XII. Intermediate Approach			
	Segment			

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38	XIII. Final Approach Segment			
	4. Minimum obstacle clearance altitude			
	3. Vegetation			
	2.MOC applied			
	1. Obstacle survey (highest obstacle)			
	k. Descent gradient			
	j. TRD			
	i. Minimum length required			
	• ` ` ` '			
	h. Descent required (altitude)			
	g. Altitude at FAF			
	f. Procedure altitude			
	e. Magnetic track			
	d. IAS			
	c. Geo coordinate			
	b. IF name	/611 Vo. II	□ Not applicable	
	a. Map scale used	8168 OPS	□ Not satisfactory	
	1. Parameters	PANS Doc	□ Satisfactory	

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1. Map scale used	PANS Doc	□ Satisfactory
2. Parameters	8168 OPS	□ Not satisfactory
a. FAF name	/611 Vo. II	□ Not applicable
b Geo coordinate		
c IAS		
d Magnetic track		
e Procedure altitude		
f Minimum required length		
h Segment length		
I TRD		
J Descent gradient		
3 MOC applied		
4 Vegetation		
5 OCA/H		

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NO	QUESTIONS TO BE ANSWERED	REFERENCE DOCUMENT	STATUS OF IMPLEMENTATION	REMARK
1	Does CAA develop job description for its cartographic technical staff?	GM DOC 9734 PART A 3.4&3.7	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>	
2	Does CAA develop a formal training program for cartographic technical staff?	GM Doc 9734 Part A	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>	
3	Does CAA maintain training records for cartographic technical staff?	GM DOC 9734 PART A	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>	
4	Does CAA made readily available aeronautical charts to users?	STD A4 1.3.2	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>	
5	Has the State established a mechanism to ensure that aeronautical data quality	STD A4 2.17 & App. 6, Tables 1 to	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li></ul>	



	requirements related to the data integrity and charting resolution are in accordance with the provisions of Tables 1 to 6 in Appendix 6 of Annex 4?		□ Not applicable	
6	Has CAA made available the aeronautical charts in comprehensive, accurate, readable and that they are maintained up to date in accordance with ICAO formats?	STD A4 1.3.3	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>	
7	Has CAA made available to users all charts which are applicable in the State?	STD & RPA4 1.3.2.2,16.2.2,3.2,6.2,7.2 8.2,9.2,10.2,11.2,12.2,13.2, 14.2,15.2,16.2,17.2,18.2 19.2&21.2	<ul><li>□ Satisfactory</li><li>□ Not satisfactory</li><li>□ Not applicable</li></ul>	