



中国南方航空
CHINA SOUTHERN

Experience of CSN RNP AR Operational Approval

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Overview

- ❖ China Southern Airlines (CSN) always attaches great importance to PBN applications. As a kind of PBN technology, RNP AR can improve the safety and efficiency of the flight operation.
- ❖ Based on the CAAC Advisory Circular AC-91FS-05 《特殊航空器和机组（SAAAR）实施所需导航性能（RNP）程序的适航和运行批准准则》，nine CSN RNP AR Operations have been approved.





Overview

With the guidance of CAAC, CSN has obtained 9 RNP AR Operations Approval:

- ❖ Feb 2009, A319-132, Yanji Airport, RNP AR Demonstration flight.
- ❖ Mar 2009, A330-300, Lhasa Airport, RNP AR Operation be approved.
- ❖ Jan 2010, A319-115, Lhasa Airport, RNP AR Operation be approved.
- ❖ Sep 2010, A319-115, Lijing Airport, RNP AR Operation be approved.
- ❖ Mar 2010, A319-115, Jiuzai Airport, RNP AR Operation be approved.
- ❖ Jan 2014, A320-232, Zhangjiajie Airport, RNP AR Operation be approved.
- ❖ Sep 2014, B737-700, Kanas Airport, RNP AR Operation be approved.
- ❖ Apr 2014, B737-800, Zhangjiajie Airport, RNP AR Operation be approved.
- ❖ Mar 2015, A319-115, Linzhi Airport, RNP AR Operation be approved.





Management Method

- ❖ Set up Leading Group for CSN PBN implementation
- ❖ Project management mode
- ❖ Teamwork: Set up a project team for each RNP AR project





Leading Group for CSN PBN Implementation

- ❖ CSN set up leading group for CSN PBN implementation in 2007.
- ❖ Group Leader: EVP, Flight Operations ;
Group Member: Leadership of CSN relevant divisions.
- ❖ The Leading Group take charge of planning and implementation for CSN PBN, including RNP AR. This group unify leadership, organization, guidance, supervision and inspection.





Project Management Mode

- ❖ The project management mode is necessary and efficient.
- ❖ While a RNP AR project start, a project team is set up under the leadership of PBN Leading Group.
- ❖ Project team includes the experts from different project execution units. (such as Operation Standard Management Division, Flight Division , Maintenance & Engineering Division and Operation Control Center).
- ❖ The project team cooperate whole heartedly and promote the RNP AR approval process according to the requirements of CAAC AC-91FS-05.





Teamwork

- ❖ As the organizer, the CSN Operation Standard Management Division take charge of overall organization and Coordination.
- ❖ The Project Team discuss and assign the tasks at the face to face meeting.
- ❖ The Project Team members cooperate and communicate actively, drive the project forward as planned.





Workflow

- ❖ 1、Project Kickoff
- ❖ 2、Preliminary work
- ❖ 3、Sign contract with the flight procedure design company
- ❖ 4、Design the RNP AR flight procedure
- ❖ 5、Navigation Data Base (NDB)
- ❖ 6、Test the flight procedure and data base
- ❖ 7、Operation application and document review
- ❖ 8、Validation on the flight simulator
- ❖ 9、Demonstration flight
- ❖ 10、Trial operation
- ❖ 11、Formal approval





Project Kickoff

- ❖ Project Kickoff: Market、Operation requirement、Airport wish etc.
- ❖ Announce to launch a RNP AR project at the kickoff meeting.





Preliminary work

Preliminary work should be done if it is the first RNP AR project.

- ❖ 1、 Personnel training: Training by aircraft manufacturer; be familiar with CAAC standard and rules.
- ❖ 2、 Establish the RNP company policy, flight checklist, maintenance program, dispatch program etc.
- ❖ 3、 Check the fleet RNP AR airworthiness, make a modification plan as required.





Sign Contract

- ❖ The airline company should choose a flight procedure design company.
- ❖ Sign a contract with the flight procedure design company. Make sure the company will provide necessary application documents, and help airlines to obtain the approval of CAAC.





Design the RNP AR flight procedure

- ❖ Provide the flight procedure design company with project required documents (PRD) and performance engineering configuration documents (PECD).
- ❖ Flight procedure design company finish the RNP AR flight procedure and provide airline company with design report, engineering report including flight chart, FOSA etc.





Navigation Data Base

- ❖ Refer to the airplane configuration, choose the proper Navigation Date Base (NDB) supplier.
- ❖ Make Navigation Date Base
- ❖ Check the NDB





Test the flight procedure and data base

- ❖ The flight procedure and NDB should be tested on the flight simulator.
- ❖ Flight procedure and NDB should be adjusted if they are not satisfied.





Operation application and document review

- ❖ When all prepare work are done, airline could apply to CAAC for RNP AR approval.
- ❖ Cooperate with the CAAC officer to complete the document review.





Validation on the flight simulator

- ❖ A validation on the flight simulator is required by CAAC Advisory Circular, in order to check the Safety of the RNP AR procedure and the accuracy of NDB.
- ❖ Make a validation plan.
- ❖ Supervised by CAAC inspector.
- ❖ Submit the simulator validation report to CAAC.





Demonstration flight

- ❖ The purpose of the demonstration flight: check the airplane capability to perform RNP AR procedure, operation and dispatch procedures, maintenance procedures, emergence program etc.
- ❖ Make a demonstration flight plan.
- ❖ Supervised by CAAC inspector.
- ❖ Submit the demonstration flight validation report to CAAC.





Trial operation

- ❖ RNP AR trial operation will be approved after the success of demonstration flight.
- ❖ Collect the data during trial operation period. Submit the trial operation report to CAAC.





Formal approval

- ❖ Airline company should apply for RNP AR former operation approval after trial operation period.





Case: Linzhi Airport RNP AR Operational Approval

Linzhi Airport: high altitude airport, 100% RNP AR operation.

❖ Project kickoff: CSN start the Linzhi airport RNP AR project with the market need in Sep 2014.

❖ Prepare work: CSN has rich experience of RNP AR operation for several years. CSN establish special work procedure for Linzhi airport RNP AR operation.

❖ CSN apply for Linzhi airport RNP AR operation in Jan 2015.





Case: Linzhi Airport RNP AR Operational Approval

- ❖ Validation on flight simulator in Feb 2015.
- ❖ Demonstration flight in March 2015.
- ❖ Trial operation be approved after demonstration flight.
- ❖ CSN plan to obtain the formal approval in Jul 2015.





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Thank You



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