



GOVERNMENT OF INDIA
CIVIL AVIATION DEPARTMENT
DIRECTOR GENERAL OF CIVIL AVIATION

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OPERATIONS CIRCULAR

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Subject: Operational Authorization Process for Pacific Operations

1. INTRODUCTION

The North Pacific is characterized by large geographic volumes of airspace managed by Canada, Japan, Russia and the United States. The Pacific region is also characterized by vast oceanic areas with sparse land areas and consequently few enroute alternate aerodromes for flight planned across this.

2. APPLICABILITY

This OC is applicable to commercial air transport and general aviation operations.

3. SCOPE OF OPERATIONS

Pacific regions operations cover a vast area spanning from the north to central and south pacific. The OC is limited in scope to the North Pacific area where there are fixed tracks NOPAC (North Pacific) and flexible tracking PACOTS (Pacific Organized Track System) along with UPR (User Preferred Routes) in defined areas.

3.1 PACOTS Routes

The PACOTS is similar to the North Atlantic organized track system (NAT OTS) in that it develops tracks daily to account for wind and weather patterns. These routes can be as far south as 40° north latitude and as far north as R220, just south of Russian FIR. Oakland Air Route Traffic Control Center (ARTCC) build the westbound tracks (C, D, E, F and G) and Tokyo Area Control Centers (ACC) builds the eastbound tracks (1,2,3,4). Track Charlie is the most common westbound route between the Pacific Northwest and Japan. Track 1 is the most common eastbound track to the United States. These routes can transit Oakland, Anchorage and Tokyo

CTAs. The Track Definition Message (TDM) is included with the flight papers and defines the daily tracks. The eastbound TDM uses the term “flex routes”.

The Pacific Organized Track System (PACOTS) was developed utilizing ATC system user and provider input. This system was designed to improve airspace utilization while providing the most efficient routes. Improvements in the accuracy of forecast winds aloft and the necessity to allow more aircraft to operate closer to their minimum time routing, resulted in the evolution of the Pacific Organized Track System. Routes between the city pairs involved change daily in response to changing wind pattern, military activity, severe weather or any other necessities.

From the perspective of the pilot, operation of the PACOTS is virtually transparent. In some cases, the rules may permit a Dispatcher to plan a flight to join or depart a PACOTS route part way along its length. Aside from those occasions, the Dispatcher must file a route that either participates in or avoids the PACOTS. Once a flight plan is accepted by ATC, a detailed clearance is issued to the flight. It specifies the names or latitude and longitude of the waypoints defining the route. The clearance will not include the PACOTS designator letter or number even when a PACOTS route is utilized.

Oakland and Tokyo co-ordinate the development of the tracks, and they are generally given numbers on east to west routes and letters west to east routes. It is important to note that, unlike the NAT tracks, these routes are not reflected in a “track message,” but rather as NOTAMS issues by Oakland ARTCC.

3.2 NOPAC Routes.

All routes lie within the Anchorage and Tokyo CTAs. Waypoints along these airways begin with the letters N, O, P, A and C. The PACOTS routes will often use a portion of the NOPAC airways. The NOPAC route system is comprised of five Air Traffic Service (ATS) routes that transit the North Pacific between Alaska and Japan.

3.3 User Preferred Routes.

UPRs are available in the Oakland airspace. UPR will enable the Operator to fly their desired profile and enable aircraft to obtain maximum possible efficiencies. The UPR is similar to the random routing over the NAT MNPS (HLA).

4. GENERAL REQUIREMENTS

No person or operator shall operate Indian registered aircraft in pacific airspace on NOPAC and PACOTS routes unless:

- (a) The operator is authorized by DGCA to perform such operations.
- (b) The aircraft has approved navigation performance capability to maintain within the requirements laid down for NOPAC and PACOTS routes.

- (c) The crew have been trained for NOPAC, PACOTS, EDTO and RVSM operations.

5. COMMUNICATION, NAVIGATION AND SURVEILLANCE REQUIREMENTS

5.1 Communication

Use standard International Civil Aviation Organization (ICAO) terminology throughout the Pacific and Far East regions. In the Pacific, monitor an air-to-air frequency of 123.45 along with very high frequency (VHF) 121.5. Areas where VHF communication with ATC is not available, whether or not CPDLC is in use, require HF radios. Before entering an area using CPDLC, obtain the primary and secondary HF frequencies and a Selective Call (SELCAL) check from the general purpose (GP) radio facility serving the area. Advise the radio operator that the flight is CPDLC equipped. A communication link must exist between a flight and airline dispatch at all times in every part of the world. Reliable SATCOM Voice communication capability exists in all areas of the Pacific and Far East operations.

5.2 Navigation

Aircraft conducting flights within the Pacific airspace shall have a navigation performance capability as specified for the routes (RNP 10, RNP 4 etc.). Position plotting and navigation procedures are required on plotting/navigation charts appropriate for the area flown.

5.3 Surveillance

ADS is an Air Traffic Service (ATS) application established by contract or broadcast which involves the use of ADS-C or ADS-B technology, in which aircraft automatically transmit, via data link, data derived from onboard navigation systems.

6. AIRCRAFT SYSTEM/EQUIPMENT REQUIREMENTS

In order to consider each aircraft for DGCA approval for unrestricted operation in the Pacific region, an aircraft shall be equipped with at least two fully serviceable types of Long Range Navigation System (LRNS). A LRNS may be one of the following:

- (a) One Inertial Navigation System (INS), or
- (b) One Global Positioning System (GPS), or
- (c) One navigation system using the inputs from one or more Inertial Reference Systems (IRS) or any sensor system complying with RNP 10 performance,
- (d) Each LRNS must be capable of providing a continuous indication to the flight crew of the aircraft position relative to track.

- (e) It is essential that the navigation system employed for the provision of steering guidance is capable of being coupled to the auto-pilot.

Note 1: If the two GPS installations are both GPS, they must comply with the current version of FAA Advisory Circular AC-20-138A Appendix 1. AC-20-138A requires that GPS systems used in Oceanic airspace must have a FDE function.

Note 2: Some aircraft may carry two independent LRNS but only one FMCS. Such an arrangement may meet track keeping parameters but does not provide the required redundancy (in terms of continuous indication of position relative to track or of automatic steering guidance) should the FMCS fail; therefore in order to obtain RNP 10 certification, dual FMCS is required to be carried. For example: a single INS is considered to be one LRNS; and an FMCS with inputs from one or more IRS/INS is also considered to be a single LRNS. .

- (f) Pacific Airspace is designated as RVSM airspace at all levels (i.e. FL 290-410 inclusive) specific State RVSM Approval is also required to operate within Pacific Airspace. RVSM approvals prescribe both airworthiness requirements to ensure aircraft height-keeping performance in accordance with the RVSM Minimum Aircraft System Performance Specification (MASPS), and also crew operating procedures.
- (g) Aircraft operating in RVSM Airspace are required to be compliant with the altimetry MASPS and hold an issued approval. RVSM operations are required to be conducted in Pacific airspace and the following additional equipment shall also be installed.
- i) Two fully serviceable independent primary altitude measurement systems;
 - ii) One automatic altitude-control system;
 - iii) One altitude-alerting device; and
 - iv) A functioning Mode-C SSR Transponder.
- (h) Carriage of standby navigation equipment shall be governed by ICAO Annex 6 Part I and Part II – Chapter 7
- (i) Any other equipment, which meets RNP 10 accuracy criteria and is acceptable to DGCA may be installed.

7. OPERATIONAL REQUIREMENTS

7.1 Each operator shall develop Pacific operational procedures in accordance with documents issued by JCAB (Japan AIP), Anchorage ARTCC and Oakland ARTCC.

7.2 Each operator shall have a system of evaluation and recording Inertial Navigation System radial errors and ensure that such defects when reported are duly rectified.

8. TRAINING REQUIREMENTS

8.1 Introduction

The operating crew shall be adequately trained and kept proficient for operation of aircraft in Pacific airspace and shall be fully aware of the procedures to be followed. During operations in Pacific airspace if there is any failure, the pilot shall inform the concerned ATC immediately and comply with their instructions. Operators shall ensure that appropriate training is provided to all flight dispatchers.

All Pacific operations training courses must be approved by the FSD, DGCA prior to use and the syllabus incorporated in the Operators Manual. Recurrent training is required on an annual basis. The following items detailed below should be standardized and incorporated into training programmes and operating practices and procedures.

7.2 Flight Crew Training

The following items should be included in flight crew training (initial and recurrent) programmes:

- (a) Knowledge, understanding and compliance of standard ATC phraseology and track messages used in each area of operations;
- (b) Pacific operations procedures for PACOTS, NOPAC (and other areas when applicable)
- (c) Changes to charting and documents to reflect Pacific operations.
- (d) Navigation equipment required to be operational for flight in designated PACOTS, NOPAC routes, limitations associated with the RNAV equipment;
- (e) Flight planning requirements;
- (f) Entry, in-flight and exit requirements and procedures
- (g) Contingency procedures for system failures or navigation inaccuracies
- (h) Position error log and notification requirements;

(i) Operations Manual information and procedures

8. MAINTENANCE REQUIREMENTS:

8.1 All equipment/systems pertaining to PACOTS, NOPAC shall be maintained in accordance with the manufacturers approved maintenance program.

8.2 Aircraft Maintenance Engineers(AME) shall scrutinize the Flight Reports for pilot reported Inertial Navigation System radial errors or failures and ensure that such defects are promptly rectified.

9. MINIMUM EQUIPMENT LIST (MEL)

Each operator shall reflect requirements of minimum navigation systems for NOPAC, PACOTS in their MEL.

10. VALIDATION FLIGHT(S)

The contents of the Pacific operations application and programmes may be sufficient to validate the aircraft. However, the final step of the approval process may require a validation flight through Pacific airspace by a DGCA Flight Operations Inspector to verify that all relevant procedures are applied effectively. If the performance is satisfactory, operational approval for Pacific airspace may be granted.

11. APPROVAL

Approval to operate in Pacific airspace for commercial operators will be granted as by inclusion in the AOC/AOP issued by the DGCA. Each aircraft for which the operator is granted authority will be listed. For general aviation operators, a letter of authorization (LOA) will be issued.

Sd/-
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For Director General of Civil Aviation