



Agenda Item 4: Report on GESEA activities and deliverables and Subgroups

**UPDATE ON SDR IMPLEMENTATION IN THE LIMA FIR
AND EXTENSION OF THE SOUTH PACIFIC SDR AIRSPACE**

(Prepared by Perú)

SUMMARY

This study note presents an update on the progress of the Peruvian State and proposals for the implementation of the Pacific SDR and the contribution of the Lima FIR

References:

- Global Air Navigation Plan – GANP
- Peruvian National Air Navigation Plan (PNNA).
- SAM/IG/30 – NI/2.2
- SAM/IG/31 – NI/3.2

1. Background

1.1 The creation of Strategic Direct Routing (SDR) airspaces, and the support of User Preferred Routes (UPR) requests where possible in non-SDR airspaces as part of the FRTO Action Plan, are part of the airspace optimization initiatives being worked on in SG1/GESEA.

1.2 Direct Routing is included in the Global Air Navigation Plan (GANP) and the Aviation System Block Upgrades (ASBU), forming the FRTO thread of improved operations through optimized en-route trajectories, with FRTO B0/1 and FRTO B1/1 blocks.

1.3 In 2020, the Peruvian State published the National Air Navigation Plan (PNNA), which includes the development of GANP initiatives aimed at implementing Free Route Airspace (FRA).

1.4 In June 2021, the Peruvian State published AIP Supplement 01/21, "Implementation of Strategic Direct Routing (SDR) in the oceanic upper airspace of the Lima FIR," which aimed to comply with regional initiatives related to the implementation of the ASBU element FRTO B0/1 – Direct Routing (DCT), contemplated in the Sixth Edition of the Global Air Navigation Plan.

1.5 On July 15, 2024, the Peruvian State published AIP Supplement 06/2024, Strategic Direct Routing (SDR) in the Oceanic Upper Airspace of the Lima FIR. This publication contains the first version within the Lima FIR of floating waypoints in the published SDR upper airspace, which mostly belongs to the oceanic area.

1.6 This publication used floating waypoints with IM encoding, numbered from 401 to 407. The following updates were also made:

- a) The new publication eliminates the requirement for LAT/LONG coordinates forty miles before the FIR boundary.
- b) The airline requirement of less than 500 miles between two waypoints is met.

2. Analysis

2.1 The monitoring accompanying these publications, as well as the support of the industry along with IATA and airlines, allowed us to learn in the different Sub-Group 1 GESEA meetings that modifying alphanumeric codes to 5LNC codes (ICARD System) is ideal. The new publication resolves the inconveniences reported by airlines regarding the entry of waypoints with alphanumeric nomenclature in the flight plans of their respective planning programs.

2.2 Considering this observation, the new publication, SUP AIP 08/2025, updates the nomenclature of the seven floating waypoints within our SDR airspace to facilitate aircraft navigation (complying with the minimum required distances between two points) and their position reports throughout the oceanic airspace.

2.3 To achieve optimal SDR airspace operability, it is always considered that any implementation within the airspace should not affect automated AIDC coordination.

2.4 To achieve what is indicated in item 2.4 and considering the operating method of the AIRCON 2100 version 2017 surveillance system by Indra, which the Peruvian State currently uses: A flight plan departing the FIR must have the common waypoint of the published FIR boundary airway and the subsequent waypoint entered in the proposed route. This subsequent external waypoint must be incorporated into the database of the adjacent FIR to avoid interrupting the analysis of surveillance systems. Due to this system requirement, the names and coordinates of the floating waypoints were shared with the Guayaquil, Antofagasta, and Santiago FIRs. The FIRs mentioned indicated that the waypoints are satisfactorily incorporated into their databases.

2.5 SUP AIP 08/2025, effective since April 17 this year (see attached), includes the improvements required by airspace users, and it is now up to the ANSP to:

- a) Implement data collection in the most automated way possible, capable of showing used floating waypoints, miles flown by aircraft, CO2 emitted, etc., to analyse this data within the KPI environment suggested by the latest GANP version.
- b) Extend the SDR airspace with lessons learned after analysing the collected data.

South Pacific SDR Extension

2.6 Meetings organized by ICAO, also attended by IATA and airlines, as part of Sub-Group 1 activities held monthly, tasked the Peruvian State through the ANSP as a coordinating party to facilitate progress in the South Pacific SDR Extension tests.

2.7 As of March 2025, Direct Routing tests began with the SCEL and SEFG FIRs with a view to extending the South Pacific SDR. These tests aimed to verify the correct functioning of:

- a) Direct flights within the FIR (DCT);
- b) Use of coordinates within the SDR airspace;
- c) Use of UPR (User Preference Route); and
- d) Use of floating waypoints.

2.8 With the active commitment and support of colleagues from the Guayaquil and Santiago Oceanico FIRs, tests were conducted with adjacent FIRs, recreating:

- a) SPIM – SCEL;
- b) SPIM – SEFG;
- c) SCEL – SPIM – SEFG; and
- d) SPIM – SEFG.

2.9 The tests carried out were successful in the mentioned scenarios and allowed for the analysis of surveillance system performance in:

- a) Flight plan processing by surveillance systems;
- b) AIDC tool behaviour in automated transfers.

Progress and Next Phases of FRTO

2.10 As part of the development and implementation of the next phases of enhanced operations through optimized en-route trajectories, tests were conducted to verify the correct functioning of the AIDC application in an environment that had not been previously evaluated. This new environment involves the creation of flight plans that navigate from one FIR to another without needing to pass through the common waypoint between the two dependencies, meaning they do not use a published airway to navigate from one FIR to another.

2.11 Automated coordination in this new coordination scenario showed:

- a) New behaviours of the automated surveillance system;
- b) Use of new AIDC messages;
- c) New time considerations for these AIDC messages sent or received; and finally
- d) Different operational procedures by Air Traffic Controllers.

2.12 When a flight proposes to cross FIR boundaries without passing through a common published waypoint, the notification phase in the AIDC environment is carried out with an ABI (Advanced Boundary Information) notification message. The next phase in the process is the EST (Estimate) message, but in the new environment, tests showed that the message sent is a CPL.

2.13 The use of the CPL message must consider the following for its future employment, standardization, and proper functioning to avoid affecting automated AIDC coordination:

- a) The CPL message must be activated within the databases of the involved dependencies;
- b) The CPL message must also be correctly configured within the databases, and
- c) it is recommended that its configuration be harmonized among the involved dependencies; and Air traffic controllers must receive training for the use of this new message because, for example, in some realities, CPL messages are not considered for receiving transfer data.

2.14 Considering these new conditions, which will be part of new scenarios for more advanced FRTO phases in the future, it is important to continue implementing the development of AIDC message usage. While its use is not yet fully implemented in the region, strengthening and promoting its evolution by a wider set of messages will be one of the main pillars to support the development of new technologies.

3. **Suggested actions**

- a) The meeting is invited to take note of what has been implemented by the Peruvian State in the SDR implementation.
- b) The meeting can share experiences carried out for the implementation of its SDR airspace and/or similar initiatives.
- c) The meeting should be aware of the new environments for automated coordination and all associated challenges that must be met by States and the region to maintain these types of coordination in the subsequent FRTO implementation phases.

—END—

Attachment

**SUP AIP 08/25 IMPLEMENTATION OF STRATEGIC
DIRECT ROUTING (SDR) IN THE UPPER
OCEANIC AIRSPACE OF THE LIMA FIR**

AIP Supplement – PERÚ

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SUPLEMENTO AIP

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FIR LIMA (SPIM)

08/25 ENRUTAMIENTO DIRECTO ESTRATÉGICO (SDR) EN EL ESPACIO AÉREO SUPERIOR OCEÁNICO DE LA FIR LIMA

El presente Suplemento AIP reemplaza al SUP 06/24.

1 PROPÓSITO

1.1 El presente Suplemento AIP tiene como propósito informar a los usuarios del espacio aéreo superior de la FIR Lima sobre la implantación del elemento ASBU FRTO B0/1 – Direct Routing (DCT), comprendido dentro de la Sexta Edición del Plan Mundial de Navegación Aérea de la Organización de Aviación Civil Internacional (OACI), denominado Enrutamiento Directo Estratégico (SDR).

2 INTRODUCCIÓN

2.1 En los últimos 10 años, se ha llevado a cabo una reestructuración completa de la red de rutas ATS de la Región Sudamericana (SAM), que ha contemplado la realineación y/o eliminación de trayectorias ineficientes, así como la implementación de nuevas rutas, lo cual dio como resultado una estructura de rutas fijas más directa y optimizada.

2.2 La implantación del SDR constituye una evolución natural en la optimización del uso del espacio aéreo hacia un concepto de Espacio Aéreo con Rutas Libres (Free Route Airspace - FRA), tal como lo ha previsto el Plan Nacional de Navegación Aérea del Perú (PNNA) – Volumen III y el Plan Mundial de Navegación Aérea (GANP).

2.3 El Estado Peruano, como iniciativa de optimización del espacio aéreo, ha designado un volumen en el espacio aéreo superior oceánico de la FIR Lima (ver Anexo 1) para la aplicación del SDR.

2.4 La aplicación del SDR se ha establecido para ofrecer a los usuarios opciones adicionales en la selección de trayectorias / rutas más eficientes, y optimizar la planificación de los vuelos y el consumo de combustible, mediante la presentación de planes de vuelo (FPL) con rutas directas entre puntos de ingreso / salida de la FIR Lima.

2.5 Todo operador aéreo que presente un FPL con rutas directas debe tomar las provisiones para garantizar la seguridad operacional del vuelo, así como, atender el estricto cumplimiento de las regulaciones aeronáuticas nacionales aplicables a las áreas peligrosas, prohibidas y restringidas publicadas en la AIP PERÚ.

08/25 IMPLEMENTATION OF STRATEGIC DIRECT ROUTING (SDR) IN THE UPPER OCEANIC AIRSPACE OF THE LIMA FIR

This AIP SUP supersedes SUP 06/24.

1 PURPOSE

1.1 The purpose of this AIP Supplement is to inform users of the upper airspace of the Lima FIR about the implementation of the ASBU element FRTO B0 / 1 - Direct Routing (DCT), based on the Sixth Edition of the Global Air Navigation Plan of the International Civil Aviation Organization (ICAO), in accordance with the procedures described below, called Strategic Direct Routing (SDR).

2 INTRODUCTION

2.1 In the last 10 years, a complete restructuring of the ATS route network of the South American Region (SAM) has been carried out, which has contemplated the realignment and / or elimination of inefficient routes, as well as, the implementation of new routes, which resulted in a more direct and optimized fixed route structure.

2.2 The implementation of SDR constitutes a natural evolution in the optimization of the use of airspace towards a concept of Airspace with Free Routes (Free Route Airspace - FRA), as foreseen by the National Air Navigation Plan of Peru (PNNA) - Volume III and the Global Air Navigation Plan (GANP).

2.3 The Peruvian State, as an initiative to support the reactivation of air operations, has designated a volume in the upper oceanic airspace of the Lima FIR (see Annex 1) for the application of SDR.

2.4 SDR application has been established to offer users additional options in the selection of more efficient paths / routes, and optimize flight planning and fuel consumption, through the presentation of flight plans (FPL) with direct routes between entry / exit points of the Lima FIR.

2.5 Provisions must be made by each operator that submits a FPL with DCT routes to guarantee the operational safety of the flight, as well as with strict compliance with the Peruvian regulations applicable to dangerous, prohibited, and restricted areas published in the AIP PERÚ.

3 REFERENCIAS

La implantación del SDR se encuentra contemplada en los siguientes documentos:

- RAP 91 - Reglas de Vuelo y Operación General
- Doc 9750 - Plan Mundial de Navegación Aérea – Sexta Edición

4 PROCEDIMIENTOS OPERACIONALES

4.1 Área de aplicación

4.1.1 El SDR se aplica a partir del nivel de vuelo FL250 en el área comprendida entre los siguientes puntos de recorrido (Ver gráfica en Anexo 1):

1. OSAKI
2. AMERO
3. ANPAL
4. TAL VOR
5. ATATU
6. SCO VOR
7. ALDAX
8. IREMI, y
9. SORTA

- Aeronaves ingresando a la FIR Lima vía UM542 (ARNEL) mantener aerovía hasta TAL (VOR) para evitar ingresar zona prohibida SPP 78. Luego aplicar SDR.
- Aeronaves saliendo de la FIR Lima vía UM542 (ARNEL) aplicar DCT solo hasta TAL (VOR), luego establecer aerovía.

4.1.2 Toda aeronave debe salir / ingresar a la FIR Lima por los puntos limítrofes con la FIR Guayaquil o FIR Antofagasta.

4.1.3 La aplicación del SDR requiere que los sistemas de vigilancia ATS y las comunicaciones VHF en ambos sentidos se encuentren operativos.

4.1.4 El SDR no será aplicado en situaciones de contingencia ATS moderada o severa.

4.2 Planes de Vuelo

4.2.1 Nivel de vuelo: Se debe aplicar la Tabla de Niveles de Crucero establecida en el apéndice G de la RAP 91 (Apéndice 3 del Anexo 2 OACI).

4.2.2 La ruta consignada en la Casilla 15 del formulario de plan de vuelo (FPL) debe estar definida mediante puntos

3 REFERENCES

The implementation of the SDR is contemplated in the following documents:

- *RAP 91 - Flight Rules and General Operation*
- *Doc 9750 - Global Air Navigation Plan - Sixth Edition*

4 OPERATIONAL PROCEDURES

4.1 Application area

4.1.1 SDR is applied from flight level 250 in the area between the following waypoints (See Annex 1):

1. OSAKI
2. AMERO
3. ANPAL
4. TAL VOR
5. ATATU
6. SCO VOR
7. ALDAX
8. IREMI, and
9. SORTA

- *Aircraft entering the Lima FIR via UM542 (ARNEL) will maintain airway until VOR TAL to avoid entering the prohibited zone SPP 78. Then apply SDR.*
- *Aircraft leaving the Lima FIR via UM542 (ARNEL) apply DCT only up to VOR TAL, then establish the airway.*

4.1.2 All aircraft must leave / enter the Lima FIR through the points bordering the Guayaquil FIR or Antofagasta FIR.

4.1.3 Its is required that ATS surveillance systems and VHF communications in both directions are operational for the application of SDR.

4.1.4 SDR will not be applied in case of partial or total ATS contingency.

4.2 Flight plans

4.2.1 Flight level: The Table of Cruising Levels established in Appendix G of RAP 91 (Appendix 3 of Annex 2 ICAO) must be applied.

4.2.2 The route entered in Item 15 of the flight plan form (FPL) must be defined by published waypoints or

de recorrido publicados o coordenadas (LAT/LONG). La distancia máxima recomendada entre puntos de recorrido directos no deberían de exceder las 400 millas náuticas. Si se emplean coordenadas se empleará el formato de grados y minutos, por ejemplo: 1036S08044W.

4.2.3 Para facilitar la planificación de los vuelos entre puntos de recorrido con distancias mayores a 400 millas náuticas, se proporcionan los siguientes puntos de recorrido intermedio:

coordinates (LAT / LONG). The maximum recommended distance between direct waypoints should not exceed 400 nautical miles. If coordinates are used, the format of degrees and minutes will be used, for example: 1036S08044W.

4.2.3 To facilitate the planning of flights between waypoints with distance greater than 400 nautical miles, the following intermediate waypoints are provided:

Tabla 1 Puntos de recorrido intermedio
Table 1 Intermediate waypoints

PUNTO	LAT	LOG
SOVKO	090900S	0813400W
NITBO	090900S	0803000W
UGUGO	090900S	0793800W
GEBOP	090900S	0792200W
ASGEP	152700S	0780100W
NIGNA	151800S	0770800W
SEKRA	151500S	0764600W

4.2.4 Los planes de vuelos con origen SPJC y que utilicen las salidas normalizadas por instrumentos - SID:

- RWY 16R/16L RNAV ITAVU 3F TRANSICIÓN: PISCO – ILMAR,
- RWY 34R/34L RNAV ITAVU 3G TRANSICIÓN: PISCO – ILMAR,
- RWY 16R/16L RNAV TELEB 2F TRANSICIÓN: ISREN – ATATU, o
- RWY 34R/34L RNAV TELEB 1G TRANSICIÓN: ISREN - ATATU

4.2.4 Departing flight plans from Jorge Chavez International Airport (SPJC) using Standard Instrument Departure (SID):

- *RWY 16R/16L RNAV ITAVU 3F PISCO – ILMAR TRANSITION.*
- *RWY 34R/34L RNAV ITAVU 3G PISCO – ILMAR TRANSITION.*
- *RWY 16R/16L RNAV TELEB 2F ISREN – ATATU TRANSITION; or*
- *RWY 34R/34L RNAV TELEB 1G ISREN – ATATU TRANSITION.*

Deben mantener la SID asignada hasta los puntos de recorrido **BUSVU** o **TELEB**, respectivamente, luego aplicar DCT. Ver Figura N° 1.

*They must maintain the assigned SID until **BUSVU** or **TELEB** waypoints, then apply DCT. See Figure N° 1.*

5 INFORMACIÓN ADICIONAL

5.1. Información adicional puede ser obtenida a través de los siguientes contactos:

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ANEXO 1

ESPACIO AÉREO SDR EN LA FIR LIMA

