



भारतीय विमानपत्तन प्राधिकरण
AIRPORTS AUTHORITY OF INDIA



Operations Hand Book

Air Traffic Flow Management

Central Command Center
Central - Air Traffic Flow Management
New Delhi



Approval Authority
Standard Operating Procedures
ATFM Operations Hand Book
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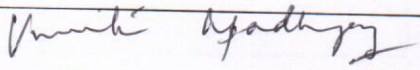

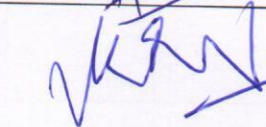
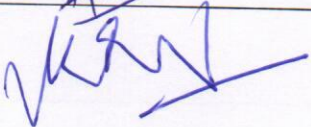
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1. INTRODUCTION

1.1. Purpose

The ATFM Operations Handbook has been prepared with the main object of providing comprehensive information and procedures on ATFM which are explained in three sections namely General and C-ATFM Systems, ATFM User's Manual & Flight Planning User's Manual.

1.2. Applicability

This manual provides guidance and procedures to all the professionals involved in the Indian C-ATFM system including Airport Operators, Aircraft Operators (AOs) and Flow Management Positions (FMPs), Air Traffic Services Reporting Offices (AROs), aerodrome and en-route ATS Units operating within the India ATFM Area of Operation.

1.3. Validity

The application of this manual is in line with the operational implementation of the C-ATFM software releases, with version numbering of the manual reflecting the relevant software release. Incremental numbering shall be used to indicate interim updates. This version corresponds to SKYFLOW Release Version 4.2.11 & includes ATFM phase I operation only, which is implemented with effect from 27th April 2017 as per AIP supplement 25/ 2017.

1.4. Amendments

This document is updated in line with major C-ATFM software releases and/or significant changes in the operational procedures.

1.5. Establishment of C-ATFM procedures

C-ATFM procedures, roles and responsibilities in this document have been established in accordance with:

- a) ICAO procedures as defined in the ICAO Doc. 4444,
- b) ICAO Doc 9971

2. GENERAL and C-ATFM SYSTEM

2.1 INDIA C-ATFM SYSTEM OVERVIEW

Keeping in view the current and future growth of traffic and to ensure safe and efficient flow of traffic through various airports and airspace, Airports Authority of India is implementing Central Air Traffic Flow Management (C-ATFM) system integrating various stakeholders as part of the system to program various operational constraints strategically and tactically in such a way that the demand and capacity are optimally balanced through Collaborative Decision making process, presently for domestic air traffic only. The proposed C-ATFM System will balance demand and capacity in Indian airspace and airports for most efficient operations that will eventually encompass both international and domestic air traffic.

A key part of the ATFM concept is Collaborative Decision Making (CDM) which helps ATC achieve its goal of managing the ATC system and the operators achieve their goal of managing their schedules. The result of CDM is a shared situational awareness and collaborative resolutions for “win-win” solutions for both ATC and stakeholders. Collaboration leads to enhanced options, resulting in improved decision making, stakeholder acceptance and support, and increase service performance.

2.1.1 Applicable Areas

The C-ATFM system provides ATFM services covering all the four Indian FIRs including the oceanic airspace areas of Bay of Bengal, Indian Ocean and Arabian Sea, designated to India for the provision of ATS Services. This is called Indian ATFM area.

The C-ATFM system through the central command center (CCC) at Delhi and the network of Flow Management Positions (FMPs) at various Indian airports across the country and Flow Management Units (FMU) of various stakeholders provides Air Traffic Flow Management service throughout the Indian ATFM Area.

2.1.1.1 The CCC Traffic Flow Manager, using the C-ATFM system, may apply ATFM Measures to flights which

- Depart and land within the Indian ATFM area.

2.1.1.2 ATFM measures are not applicable to flights which

- Depart from Indian ATFM area for destinations which are outside the Indian ATFM area.
- Arrive at airports within Indian ATFM area from airports which are outside Indian ATFM area.

2.1.2 Salient Features of Indian ATFM

- 2.1.2.1 The Indian ATFM application is consistent with the ICAO Regional Air Navigation Plan.
- 2.1.2.2 It will provide additional planning and management capabilities needed to handle traffic growth in India with efficiency and effectiveness.
- 2.1.2.3 System will facilitate collaborative flow and capacity management during all phases of ATFM operations, viz., Strategic, Pre tactical, Tactical and Post Analysis phases.
- 2.1.2.4 Integrated CDM with all relevant stakeholders for common situational awareness will be the key stone of C-ATFM
- 2.1.2.5 Three layer approach: CCC, ACC FMP and TWR/APP FMP.
- 2.1.2.6 Use of automated tools like GDP, GSP in Phase I and introduction of Airborne holding, MINIT, MIT etc. during Phase II implementation of ATFM
- 2.1.2.7 Distributed and shared responsibilities at local levels. Overall operational control with CCC
- 2.1.2.8 Post analysis capabilities to provide valuable data mining capabilities for improving efficiency and safety
- 2.1.2.9 Phase wise implementation strategy in tune with national strategic plan objectives in order to ensure maximum utilization of available capacity and permit all stakeholders to obtain sufficient experience.
- 2.1.2.10 Evolution of the ATFM system aimed with achieving synergy with implementation of allied / complementary systems of various stakeholders
- 2.1.2.11 has inbuilt flexibility for catering to changing environment for regional harmonization

2.1.3 Dependencies (Factors) considered:

- 2.1.3.1 With air traffic in India growing at double digit rate, demand is expected to exceed capacity in the near term and medium term time horizons.
- 2.1.3.2 Airport infrastructure improvement programs may not be able to keep pace with demand to address capacity issues adequately in the near term.
- 2.1.3.3 Airspace capacity improvement programs are proceeding as planned in the Air Navigation Plan. These include FUA, Upper Airspace Harmonization, Rationalization of route structures, RNAV/RNP routes, SIDs and STARs, Reduced Horizontal separation etc.
- 2.1.3.4 Mature and proven CNS technologies like ADS-B, Data Link, Mode-S, VDL-2 are being adapted to increase safety and efficiency of the national Airspace.
- 2.1.3.5 The domestic air traffic will continue to be dominated by traffic flows between major metros. The international traffic to and from Indian airports is expected to increase significantly.

- 2.1.3.6 The major airports and TMAs associated will continue to experience periods of excess demand over capacity. Sector overloads and excessive airborne delays will continue.
- 2.1.3.7 The developments of regional airports will significantly alter the distribution of peak traffic loads.
- 2.1.3.8 Airport Traffic Flow control Measures before implementation of C-ATFM India
- a) Include Strategic allotment of Airport Slots with an objective to ensure a balance between the demand of regular flights and airport capacity. The application of slots ensures the hourly distribution of flights in all airports along with enough capacity for non-scheduled operators.
 - b) As part of Tactical Flow control mechanism at major airports, a slot adherence monitoring and reallocation of slots mechanism is also in place to ensure dynamic Demand and Capacity Balancing (DCB). On Time Performance (OTP) data is collected as part of monitoring mechanism to improve flow control measures.
- 2.1.3.9 The ATFM system will enhance Airport-CDM capabilities and will introduce Airspace ATFM measures, thus, playing a major role in reducing the demand and capacity gaps.

2.2. Implementation phases of C-ATFM India

C-ATFM system is a combination of hardware & commercial-off-the-shelf (COTS) software. The system capabilities will be introduced phase wise with each phase providing additional functionality. C-ATFM project will be undertaken in three phases as under:

Phase-I: Establishment of Central Command & Control Centre [CCC] at Delhi and it will be networked with 6 ACC Flow Management Positions (FMPs) or Traffic Management Units (TMUs) at six major ACCs in metro airports i.e. Delhi, Mumbai, Kolkata, Chennai, Hyderabad & Bangalore. CCC will have access to Aircraft Operator's FPL schedule, RPL & FPL data from AAI ATC automation system. CCC will also be populated with regular Weather data, Airport infrastructure data, airspace data, ANS equipment monitoring data, AIP information and other environmental data.

Strategic & pre-tactical demand will be projected by the system to these six metro airports, thereby identifying Demand-Capacity imbalance area. C-ATFM will provide capabilities to model & implement Traffic Management Initiatives (TMIs) to smooth the demand to the available capacity via Ground Delay Program (GDP) and Ground Stop Program (GSP)

Phase-II: Nationwide implementation at all airports & Indian continental airspace. Gradually ATFM system will cover all airports of India by networking a total of 30 APP & TWR FMPs with respective ACC FMPs in 'CCC' i.e. in total 36 TMUs will be networked with CCC. Also enhanced DCB measures & functionalities complementing the basic ATFM system in Phase-I will be available in phase-II through Secured CDM portal with limited level of access to CDM partners. A web portal for general public with ATFM information & actual traffic situation will be made available.

Phase-III: Expansion of C-ATFM system to sub-region / regional ATFM system. Additional functionalities for interfacing ATFM data with other ATFM system in the sub-region for seamless flow of air traffic and gradually integrating with regional (APAC) ATFM system. Thus evolution of International ATFM integration.

2.3 C-ATFM SYSTEM ORGANIZATIONAL STRUCTURE

The C-ATFM system consists of a Command control Center (CCC) networked with 36 Flow Management Positions (FMPs) at major ACCs, APP units, Aerodrome Towers (TWR). The CCC is also accessible via WEB through secured access from selected Towers not directly connected to ATFM network. The C-ATFM is envisaged to function in a collaborative manner. Access to the ATFM system for selected CDM Partners is granted through secured CDM portal.

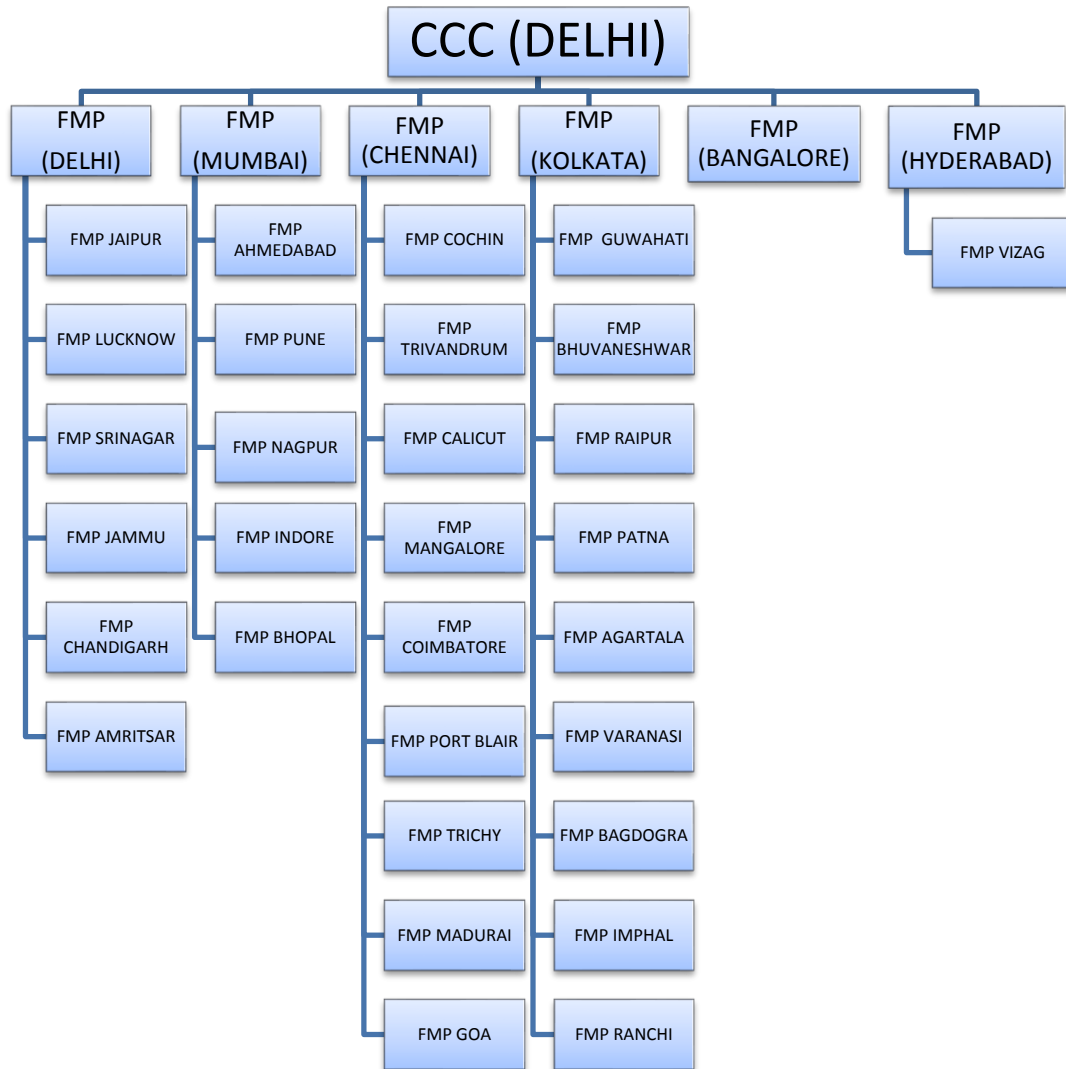
The CCC is located at Delhi along with a backup and training facility.

2.3.1 The C-ATFM organizational structure breaks into three layers.

2.3.1.1 The first layer is the AAI Central Command center (CCC).

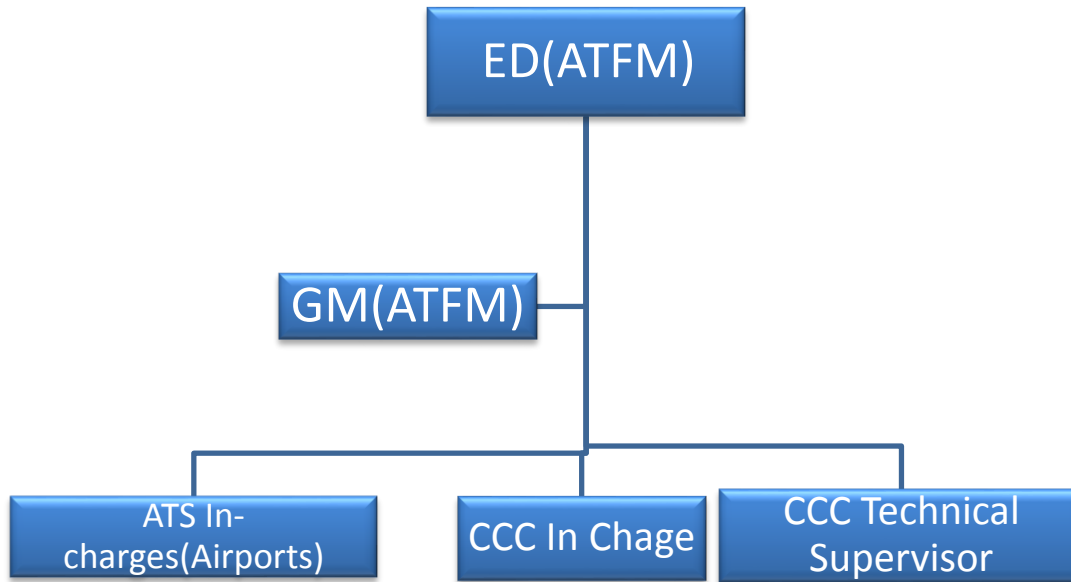
2.3.1.2 The second layer includes all the twelve Area Control Center (ACC) Flow Management positions (FMPs).

2.3.1.3 The third layer includes selected Approach Control facilities with Approach (APP FMPs) and selected Airport Traffic Control Tower (TWR) facilities with Airport ATC Tower Traffic Flow Management Positions (TWR FMPs).



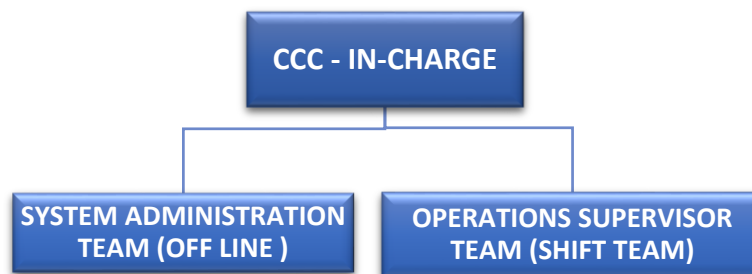
2.3.2 C-ATFM Administrative Infrastructure is shown as under:

C-ATFM STRUCTURE (CHQ)



2.3.4 ATFM specialist officers in CCC works in two streams, headed by CCC Incharge: -

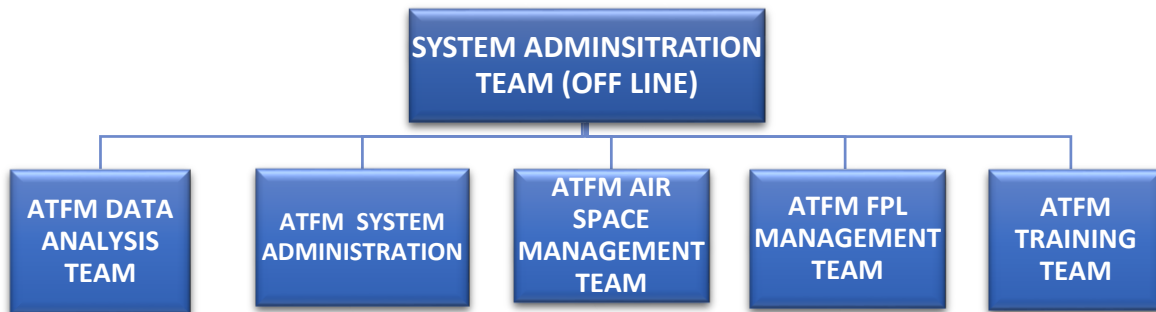
- System Administration (Off-line Team)
- Operations Supervisor (Shift -Team)



2.3.4.1 Operational Data base system Administrator (Off-line)

Operational Data base Administrator shall manage the data i.e. populating / updating data into ATFM system and analyzing available data for improving ATFM system efficiency. The hierarchy chart of Operational Data base Administrator is as under:

CCC STRUCTURE - OFFLINE:



2.3.4.2 Operation's Supervisor (Shift -Team)

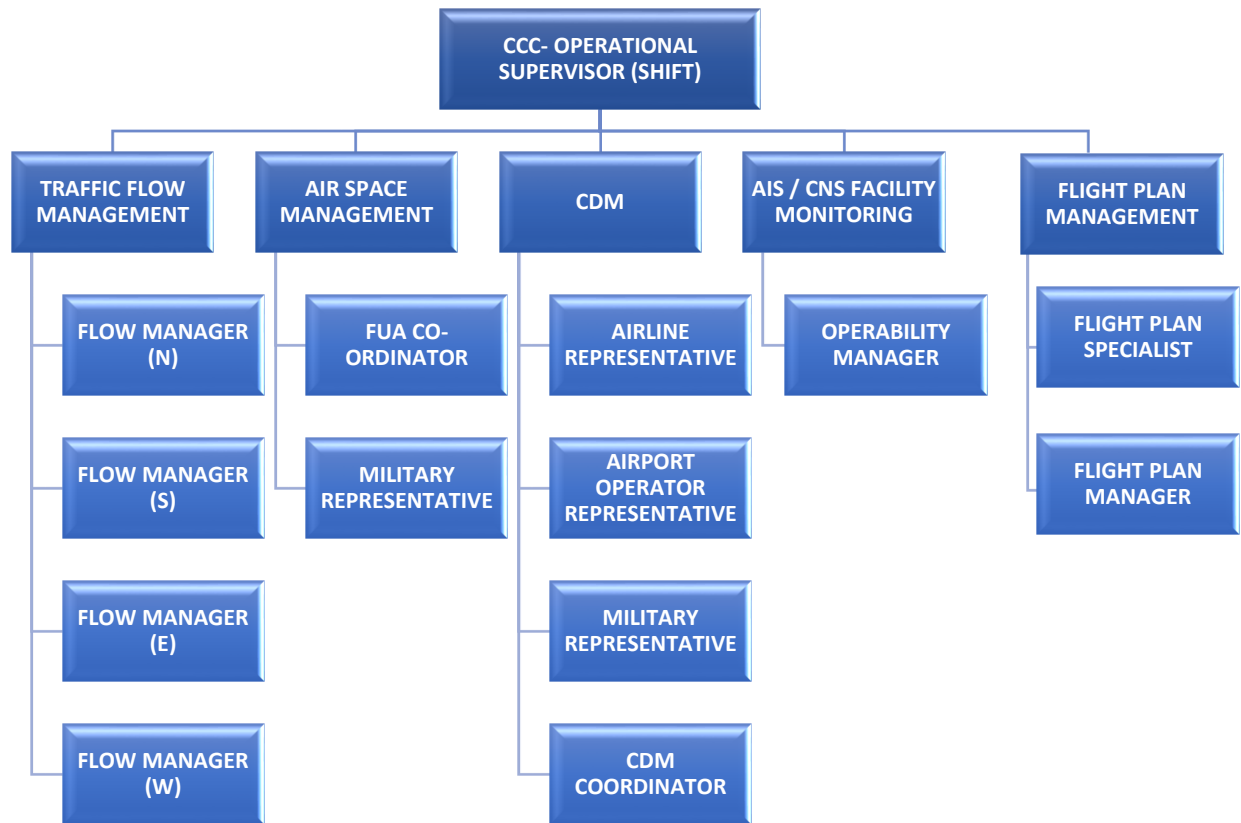
The CCC ATFM Operational Supervisor acts as the top principal of ATFM operation management system, manages nationwide daily ATFM operations, direct daily operations of nationwide ATC facilities, coordinate air traffic operation problems, make final decisions on air traffic flow management initiative (ATFM initiatives), and have liability for the operability, effectiveness, and safety of decision makings. The Operational supervisor works in shift for discharging above responsibilities and reports to the GM (ATFM).

Operation's Supervisor is assisted by a tactical team in ATFM operations. This team comprise of appropriately trained ATFM personnel in the following areas of specialization.

- Flow Management Planner
- CDM Specialist
- Operability manager
- Flight Plan specialist
- Flight Plan manger
- ASM & FUA Coordinating Manager
- Airline Representative
- Military Representative
- Airport Operator Representative

[The hierarchy structure of ATFM officers under Operation’s Supervisor (Shift) team is as under:

CCC STRUCTURE - SHIFT



2.4 Central Command Centre (CCC) - Duties and responsibilities

2.4.1 The CCC is responsible for the overall coordination, execution of strategic ATFM planning, analysis and application of tactical ATFM measures. The CCC has the primary ATFM responsibility for India. The CCC is established at Delhi with main and backup centers.

2.4.2 The duties of the CCC include:

2.4.2.1 CCC shall analyze the demand and strive to optimize the use of available airport and airspace capacity taking into account the restrictions and limitations required by airports and ACCs while ensuring good safety practices.

2.4.2.2 Participate actively in the preparation of flight schedule biannually with the stakeholders and regulatory bodies.

2.4.2.3 Provide access to ATFM system (SKYFLOW) to all stakeholders as per the procedures.

2.4.2.4 CCC shall populate the SKYFLOW system with flight schedule/RPL/FPL received from different sources.

2.4.2.5. CCC shall maintain airspace data updated in coordination with AIS directorate.

2.4.2.6. Monitor promulgation/withdrawal of NOTAMs and degradation or availability of capacity due to outage or sudden unplanned development of facilities e.g. meteorological phenomenon, major sporting events, elections etc. in coordination with FMP.

2.4.2.7. Monitor meteorological messages/satellite images/radar pictures and analyze its impact on capacity with the help of MET official posted in CCC.

2.4.2.8. CCC shall identify any Demand-Capacity imbalance for regulated airports, CCC shall prepare an ATFM daily Plan (ADP) for the next day proposing necessary ATFM measures and publish the same at 1330 UTC.

2.4.2.9. CCC shall inform Calculated take off time (CTOTs) to all the concerned in case of Demand-Capacity imbalance by a CDM procedure.

2.4.2.10. CCC shall conduct regular trainings for FMPs and all stakeholders.

2.4.2.11. CCC shall carry post operation analysis for future improvements in Airports and Airspace infrastructure and further fine tuning of ATFM procedures.

2.4.2.12. CCC shall publish post operational analysis reports once in a month and annually to apprise all stakeholders.

2.5 FMPs (Flow Management Positions) - Duties and responsibilities

2.5.1 The national C-ATFM network consists of a total of 36 (Thirty six) Flow Management Positions (FMPs) established at all major ACCs and airports. The FMPs will be manned by trained Traffic Flow Managers to provide ATFM service in the area of jurisdiction of the respective ATC unit, at which the FMP is established.

- 2.5.2 Traffic Flow Managers deployed at FMPs of Delhi, Mumbai, Chennai, Kolkata, Hyderabad and Bengaluru will be responsible for providing ATFM services to all airports within their jurisdiction in addition to their own airports. The jurisdiction of these FMPs is shown in the Annexure "A"
- 2.5.3 The Traffic Flow Managers deployed at FMPs at other satellite airports or the concerned ATC unit will coordinate with the FMPs under whose jurisdiction the airports are situated.
- 2.5.4. The Traffic Flow Managers deployed at FMPs at the six metro airports, in coordination with other FMPs/ATC units under their jurisdiction, will be responsible for collecting all relevant information, such as meteorological conditions, infrastructure outages, runway / airspace closures, automated system outages, procedural changes, events etc. that may lead to capacity constraints at airports within their jurisdiction and inform the impact on capacity to CCC.
- 2.5.5. In addition to above, the responsibilities of FMP shall include the following;
- 2.5.5.1 Analyze the traffic Scenario for the next day for their Airport and satellite airports within their jurisdiction. Check the strategic scenario to ensure that all flights of their airport are reflected in the demand. In case of any discrepancy, coordinate with CCC for correction/addition/ deletion.
- 2.5.5.2 In case of any Demand-Capacity imbalance, explore all possibilities to resolve the imbalance locally. If problem still persists, coordinate with CCC for resolving demand capacity imbalance through ATFM measures.
- 2.5.5.3 In case of a planned closure or a planned operation with reduced Runway Capacity for a prolonged period, ATS In-charges /FMPs shall coordinate with all stakeholder i.e. airlines, Airport operator, ATFM etc. for the revision of flight schedule during the period of disruption.
- 2.5.5.4 Monitor weather warning issued by MET at their respective airports and assess its impact on airport capacity in consultation with WSO/ATS-In charge. WSO/FMPs may request for ATFM measures during forecasted bad weather or post bad weather scenario by informing the revised/reduced capacity.
- 2.5.5.5. Any Tactical Flow measures applied by the station (ATC) should be intimated to CCC at the earliest. In order to avoid confusion and adherence by Airlines, no tactical measures should be applied by ATC in conjunction to CTOTs issued by CCC.
- 2.5.5.6 In case of exigency (bad weather, Accident/Incident, etc. CCC may issue instructions to STOP departures from various stations to constrained airport till the time CTOTs are issued. Under these circumstances, the constrained Airport should provide CCC with information on number of diversions, anticipated period of disruption, reduced Airport arrival rate etc. for

application of ATFM measures at the earliest.

2.5.5.7 ATS In-charges/WSOs/FMPs must sensitize airline staff to update flight intentions by originating appropriate CNL, DLA and CHG messages addressed to VIDPCTFM.

2.5.5.8 Last minute request for revised CTOT by FMPs (when the aircraft is already pushing back or taxiing) shall be discouraged. Airlines shall be sensitized to originate appropriate "DLA" message in case of change in EOBT of a flight by more than 15 minutes.

2.5.5.9 FMPs shall Check NOTAMs for unserviceability/non availability of facilities, for the next 24hrs, in respect of airports within their jurisdiction and coordinate with WSO/ATS In-charges for calculating any impact on capacity.

Incorporate the same in the 'In-operability' functionality of SKYFLOW system along with the applicable changed capacity and convey the same to CCC for acceptance preferably by 1130 UTC.

2.5.5.10 Ensure sharing of essential information impacting airport capacity e.g. inoperability, Active NOTAMs & VVIP movements for the next day with CCC.

2.5.5.11 Ensure that feedback reports are provided to CCC for compliance and adherence to ATFM measures.

2.5.5.12 In case of withdrawal of ATFM measures, FMP is responsible for informing each airport within its jurisdiction of the same.

2.6 Duties and responsibilities of ATS In charge

2.6.1 Ensure availability of functional SKYFLOW system with the necessary logistical Support.

2.6.2 Ensure origination and transmission of ATS messages like Change, Delay, Cancellation & Departure & Arrival messages in standard ICAO format from the ATS Automation systems

2.6.3 Ensure that adequate trained manpower is available for smooth ATFM operations

2.6.4 Conduct regular meetings with all stakeholders and coordinate for effective CDM Process

2.6.5 Ensure CTOT compliance

2.7 Role of other ATFM stakeholders

In addition, there are some units that directly affect the efficiency of ATFM. The ATFM facilities/units/positions of civil aviation should effectively collaborate with these units to achieve

orderly ATFM and optimize resource allocation.

This section discusses the roles of the units in civil aviation ATFM.

2.7.1 DGCA (Directorate General of Civil Aviation)

- Draft or develop national laws, regulations, rules, and standards of air traffic flow management;
- Help develop the standards of air traffic operation management;
- Help develop performance metrics for the ATFM network system;
- Supervise the implementation and compliance of relevant laws, regulations, rules, and standards by all ATFM Stakeholders and
- Further develop legislative requirements based on analysis of air traffic operations.

2.7.2 Airlines and Other Aviation Service Providers

Many airlines have Air Traffic Operations Coordination Positions inside their AOCs, to collaboratively coordinate air traffic issues with the ATS provider. As a contact point, these air traffic coordination positions should directly contact ATFM facilities as follows:

- Participate actively in the ATFM process as CDM Partners;
- They should master and respond to the ATFM information related to the company;
- They could file flight plans, provide latest updates on the active and planned flight plans; and
- Participate and comply with the ATFM tactical operation plan according to the advisory from air traffic flow management initiatives.

2.7.3 Airports

The Air Traffic Operations Coordination Position, or a similar function, of an airport is located inside the airport operations control center (AOCC). This position, or other positions designated by the airport operator, is a contact point for airport operation control units directly contacting ATFM facilities.

- They should master and respond to the ATFM information related to the airport and
- Participate in decision making for air traffic operation related to the airport, according to the airport's resource allocation.

2.7.4 Military

The C-ATFM concept envisages active Civil-Military coordination and cooperation in sharing of

data, resources thus enabling an optimal use of national airspace system.

- The Military representative is an active participant in the CDM process of ATFM.
- They communicate with civil aviation and provide feedback on information required by civil aviation and advise civil aviation of relevant flights of military aviation, and their airspace use.

2.8 Job Description of ATFM CCC Specialist

2.8.1 CCC Specialist (Offline)

2.8.1.1 CCC-in-charge:

- Manage overall functioning of CCC.
- Liaise with all the stakeholders for smooth functioning of CCC and continuous flow of various data required for ATFM system
- Ensure timely updation of various operational data into the ATFM SKYFLOW system.
- Ensure publication & dissemination of Monthly Post analysis report to all stakeholders
- Co-ordination with Airline, Airport and Military operators
- Arrange stakeholders meeting from time to time
- Publication of yearly Annual Report on ATFM operation in India
- Manage administrative issues in CCC
- Participate in ATFM related meeting, whenever required
- Conduct CCC internal meeting for resolution of operational & administrative issues, for better working environment in CCC
- Project Operational, administrative, HR & infrastructural requirement of CCC, to ATFM Dte. CHQ

2.8.1.2 Operational System data base Administrator

- Create/approve users' request of login request for SKYFLOW system,
- Manage all stakeholders registration / profile / profile group and other functionalities in 'Security' sub-system,
- Maintain and Update Variable Systems' Parameters of SKYFLOW,
- Coordinate with M/S ATECH for uploading of new software version in SSF (Software Support Facility) environment,
- Ensure proper testing of new software version, as per the release note, in the SSF environment,
- Coordinate with M/S ATECH for final updation (Uploading and activation) of new software version in the Main, Backup environment of ATFM system and
- Ensure proper entry, maintain, update and keep record of ATFM anomalies in the JIRA software.

2.8.1.3 ATFM APM team

- Co-ordinate with AIS section to track changes in airspace data in AIP India publications and effect those changes in the operational airspace.
- Upload / update Airspace data in the system,
- Ensure all relevant adaptation data is populated in the ATFM system,
- Incorporate new Air-routes, Aerodromes, Nav-aids, Fixes, SID & STAR, TMA, FIRs, CTR etc. in the SKYFLOW airspace
- Ensure currency of database on the basis of latest information like AIP SUP, G Series NOTAMs etc. in the ATFM system and
- Maintain close coordination with ATFM SKED Management Team to ensure updation of 'Operational airspace' as per requirement.
- Ensure the association of 'Operational airspace' with current Flight schedule & RPL edition
- Managing static data for post analysis purpose
- Raise system anomaly related to airspace through System Administrator.

2.8.1.4 ATFM Flight Plan Management team

- Enter, maintain and update Flight Schedule (every six month i.e. winter & summer schedule) in the ATFM System and amendments as & when received
- Create Open RPL edition for Airlines for uploading of RPLs,
- Enter, maintain and update Repetitive Flight Plans (RPL), fortnightly
- Upload / update / manage RPL edition in the system,
- Ensure the association of 'Operational airspace' with current Flight schedule & RPL edition,
- Maintain close coordination with ATFM Air Space Management Team to ensure correlation of 'RPL edition' with 'Operational airspace' as per requirement,
- Managing the 'Operational airspace' associated with the ATFM system,
- Managing static data for post analysis purpose and
- Co-ordination with Airlines, Airport and Military operators for the update of flight plan data.
- Make every effort to improve upon the static flight plan data available in SKYFLOW.
- Initiate action for the anomaly raised regarding flight plan data.
- Manage Route library and keep this updated as per latest operational airspace.

2.8.1.5 ATFM data analysis team

- Collection and collating data from various sources such as ATC automation, AOCC, A-CDM etc.
- Comparison of various data received with SKYFLOW system data to find out anomalies.
- Calculating the compliance measurement of CTOT for all the Airports and Airlines

- Calculating ATFM parameters, like ATFM Delay, maximum delay, average Air delay, Air delay etc. for the period when CDM measures were applied.
- Preparation of Post operations analysis report monthly, annually and based on any event to identify the best practices and shortcomings in the operational procedures.
- Sharing of the post operations analysis report with all stakeholders.
- Participate in the stand-up briefing conducted twice a day.

2.8.1.6 ATFM training team

- Planning and Management of training needs for CCC-ATFM officers, FMPs, Airport Operators, Airline Operators.
- Conducting refresher courses.
- Curriculum development for courses conducted by ATFM.
- Managing the course content for each training program.
- Training program for post system upgrade with new features.
- Certification of Participation for courses conducted by C-ATFM.
- Participate in the stand-up briefing conducted twice a day

2.8.2 CCC Specialist (Shift)

2.8.2.1 CCC operation Supervisor (Shift):

- Manage overall operations of the shift at CCC
- Ensuring ATFM is carried out Strategically, Pre-Tactically and Tactically in the region of responsibility
- Plan and coordinate with ATC supervisor capacity adjustment for next day's operation
- Plan and coordinate ATFM Daily Plan for the next day's operation
- In coordination with local ATC supervisor manage local and network resources to optimize capacity and minimize delays within their areas
- Supervise the proper execution of ATFM Measures on the day of operation based on ATFM Daily Plan
- Organize, chair and conduct all necessary CDM conferences. Resolve any problem arising during CDM process.
- Manage ATFM officers at all positions during published hours of operations.
- Ensure FMP is aware of all significant events
- Produce reports for carry out post event analysis by ATFM data analysis team.
- Ensure accurate log keeping and recording of all significant occurrence
- Manage disruption and contingency procedures at the time of emergency situation.
- Ensure integration among ATFMU, AMC and IMU

2.8.2.2 Flow Manager position- N (NORTH) / S (SOUTH)/ E (EAST)/ W (WEST)

1. Monitor Demand & Capacity Imbalance of major aerodromes.
2. Record Hourly Demand Data for all the major Aerodromes.
3. Monitor the Air Situation display (ASD) for any congestion or any unusual occurrence.
4. Inform operational Supervisor and CDM Planner regarding requirement of ATFM measures.
5. Coordinates with Airlines, Airport Operators (AOCC) and FMP's regarding accuracy of their flight intents (FPLs/RPLs).
6. Advise stakeholders to send appropriate ATS messages for depiction of correct Demand in SKYFLOW system.
7. Timely initiate and terminate the nationwide implementation of ATFM measure.
8. Organize and collaborate with relevant ATFM facilities and personnel to develop and revise ATFM initiatives.
9. Supervise ATC facilities during their implementation of ATFM initiatives.
10. Collect feedback, collect operational logs and analyze post information.
11. Participate in developing TMIs during any special events that may affect capacity of an aerodrome.
12. Plan and coordinate ATFM Daily Plan for the next day's operation.
13. Disseminate ATFM Daily Plan to all stakeholders.
14. Manage proper execution of ATFM Measures on day of operation based on ATFM Daily Plan.
15. Participate in the stand- up briefing twice a day.

2.8.2.3 CDM Planner/CDM Coordinator

1. Informs all stakeholder regarding implementation of ATFM measures.
2. Coordinate with constrained aerodrome for AAR and negotiate capacity using operational judgment and historicity.
3. Use CDM principle extensively and arrive at a consensus regarding ATFM measures.
4. Implement least restrictive nationwide TMI.
5. Prepares & Issue ATFM measure (CTOT's) as per AAR of aerodrome.
6. Issue Revised CTOT's.
7. Handles Exemptions as per published procedures.
8. Participate in Standup briefing twice a day.

2.8.2.4 Flight Plan Manager (Error-Queue Management)

1. Manage incorrect ATS messages not accepted by SKYFLOW system due semantics or syntax error and correct these messages so that same can be accepted by the system.

2. Identify FS/RPL which were inconsistent/incorrect with the received FPL through AFTN and report to the FPL team.
3. Identify errors related to new routes, missing/new waypoints and SID/STAR and report to APM Team, so that these changes can be incorporated for improvement of SKYFLOW system.
4. Assist CDM specialist and Flow Manager as and when required.
5. Participate in stand up briefing twice a day.

2.8.2.5 Operability Manager

1. Maintaining watch hours of all Airports region wise.
2. Maintaining a register of month wise NOTAM that may affect operation and degradation of capacity.
3. Check with 6 major FMP's in each shift where flow control measures are usually applied for any in-operability of resources.
4. Advice and assist FMP's to put in operability in SKYFLOW System.
5. Coordinate with FMP's for capacity reduction.
6. Approve/Discard in-operability such created by FMP's.
7. Assisting the CDM Planner for ATFM measures taking In-operability and watch hour restriction in consideration.
8. Update In-operability record in SKYFLOW after checking availability of resources from FMP's.
9. Update and create Instrument Approach Charts of Airports.
10. Create RAR and determine reduction in capacity if any.
11. Operability Manager monitors MET-Messages specially TAFs and Meteorological Images/Pictures and coordinate with MET OFFICES for any Aerodrome Warning that may affect Capacity.
12. Coordinate with FMPs and inform Operations Supervisor regarding requirement of ATFM measures due to bad weather.

2.9 CDM Procedures

A key benefit of the ATFM concept is an increase in collaboration that must take place in order to have an efficient and effective ATFM operation. Through the ATFM System, stakeholders will be given a broader view of system constraints that might affect their operation with enough lead time to create a plan of action. This increased situational awareness will facilitate stakeholder collaboration in deciding a course of action.

2.9.1 Collaborative Decision Making is a process which allows decisions to be taken by those best positioned to make them on the basis of the most comprehensive, up-to-date and accurate information. This in turn enables decisions about a particular flight to be made according to the latest information available at the time, thereby enabling the flight to be dynamically optimized to reflect near or real-time events. The presence of all Stakeholders representative (especially Aircraft operators) in CCC, is essential for an effective & efficient CDM process.

2.9.2 This CDM process is a key enabler of ATFM allowing the sharing of all relevant information between the parties involved in making decisions and supporting a permanent dialogue between the various partners throughout all phases of flight. This provides the various organizations with the opportunity to update each other continuously on events from the strategic level to the real-time. To be efficient and reach the required objectives, CDM must be:

- an inclusive process;
- a transparent process;
- a process that builds trust between the players involved

2.9.3 Aircraft Operators are given the flexibility to manage their allocated ATFM delays in order to best meet their business objectives. Aircraft Operators will have the capability to substitute slots between any two flights that they operate. This can be done to reduce the delay of a high priority flight or move a delayed flight (e.g., mechanical delay, crew delay, or delay from a prior flight segment) into a slot that it can meet. However, as SKYFLOW does not support the swapping of flight automatically, same is being done manually by the FLOW Manager at CCC in coordination with aircraft operators.

2.9.4 Training regarding the CDM procedures & SKYFLOW has been provided to the stakeholders. Training included the theory session as well as hands on practice. Authorized personnel from stakeholders have been given log in id to access SKYFLOW.

2.9.5 Meetings are being conducted with stakeholder before any scheduled closure of an Airport (severely affecting the capacity of airport) to plan implementation of ATFM measures & address any other requirement arising for the same.

Procedures have been devised to get updated flight intention from the AO. Flight intention received from AO is being used to update Flight plan data (RPL edition) in SKYFLOW fortnightly.

2.9.6 AOs are being sensitized & encouraged to update the flight intention on the day of operation through timely submission of appropriate AFTN messages.

2.10 C-ATFM OPERATION PROCESSES

This section gives a general overview of current C-ATFM processes in INDIA.

2.10.1 The Strategic Phase

2.10.1.1 The Strategic phase, which takes place seven days or more prior to the days of operation, consists of the evaluation of demand and capacity, up to six months in advance of the day of operation. It is a co-operative approach of ATFM Directorate involving several units and also all the partners involved in ATM (ATC, ASM, airports, airspace users, military). During this phase CCC maintains approved Summer & Winter schedule and fortnightly flight details (as RPL) submitted by airline operators, as per local arrangement in the ATFM SKYFLOW system. The data will provide, at any specific time, the best picture of the planned traffic situation, in which collaboratively agreed solutions will seek to balance demand and capacity requirements.

2.10.1.2 This service improves through a consolidation of the planning and monitoring activities and a stronger cooperation with airspace design, airspace management, aircraft operators, air traffic services and airport partners supported by an enhancement of the information exchange system.

2.10.1.3 In the Strategic phase the focus is made on analyzing major and significant events as well as anticipated capacity shortfalls for individual ACCs/airports. The result is a set of agreed ATFM measures/solutions to be considered for implementation (partly or totally) in the Pre-tactical and Tactical phases.

ATFM measures considered in Pre-tactical/Tactical phases could be extracted from pre-agreed Strategic ATFM measures or envisaged as ad-hoc measures to respond to a new situation triggered by a change either in traffic demand or ATC system capacity. They should follow the CDM process, i.e. being coordinated between the FMP and the CCC to reach an agreement (e.g. elections, religious conferences, major sporting events, etc.) is prepared through dedicated CDM conferences/meetings. The outcome includes a list of possible ATFM measures (e.g. scenarios) and the monitoring process to fine-tune the event management

2.10.2 The Pre-Tactical Phase

2.10.2.1 This working process which starts seven days before the day of operations, aims mainly at refining the details of the flight data in ATFM SKYFLOW system and thereby original forecast over time and at preparing and promulgating an optimized and detailed ATFM Daily Plan (ADP). This working process is supported by Collaborative Decision Making (CDM) activities involving all partners concerned (CCC, ANSPs, and AOs present in CCC.)

2.10.2.2 Frequent tactical briefings and conferences can be used to provide an overview of the current ATM situation, discuss any issues and provide an outlook on operations for the coming period. Participants should include involved ATFM and ATS units, Aircraft operator's representative, affected military authorities and airport authorities, as applicable and their availability at that time.

2.10.2.3 Output of these discussions should be the publication of an ATFM daily plan (ADP). The ADP should be a proposed set of tactical ATFM measures prepared by the ATFM unit and agreed upon by all partners concerned during the planning phase.

However at present, conferencing facility is not available at CCC. In case of any planned outages or reduced capacity at an airport, prior meetings is conducted with stakeholders to collaboratively work for effective implementation of ATFM measures.

2.10.2.4 ATFM Daily Plan

2.10.2.4.1 The ATFM Daily Plan (ADP) is a set of tactical ATFM measures for expected congestion period that will be in force in Indian airspace on the following day.

2.10.2.4.2 The CCC shall coordinate and define the daily plan and inform Aircraft Operators and ATC units about the ATFM measures.

2.10.2.4.3 Through the ATFM Daily Plan, CCC is trying to optimize available capacity to meet forecast demand and to manage demand in such a way that delay and cost is minimized.

2.10.2.4.4 CCC shall publish the agreed plan for the day of operation after a collaborative decision making process.

2.10.2.4.5 The ADP will be published at 1330 UTC daily and is applicable for the next day.

2.10.2.4.6 The ADP is distributed by means of an email. In future, it will also be available on the ATFM Web portal.

An ADP includes the following items of information: Aerodrome or Airspace Sector identification;

- Description of constraints;
- Time frame
- Proposed ATFM measures and/or expected congestion period; and
- Remarks/other relevant information. The following is a sample ADP;

2.10.3 The Tactical Phase

The Tactical phase, which takes place on the day of operation, consists of considering the real-time events and applying any refinements needed to the ATFM Daily Plan in order to restore the ATFM

stability. The need to deviate from the original plan may result from significant weather phenomena, unexpected ground or space infrastructure opportunities/limitations, more accurate FPL

ATFM DAILY PLAN (ADP) YYMMDD0000 to YYMMDD2359 (UTC)		
CAPACITY AND CONSTRAINTS:		
LOCATION	APPLICABLE PERIOD	CONSTRAINTS/ REMARKS
VIDP	0200 - 0700 UTC 0800 - 1100 UTC	Expect congestion
VABB	0400 - 0500 UTC 1300 - 1600 UTC	Expect congestion
VECC	-----	-----
VOMM	-----	-----
VOBL	0300 - 0500 UTC 1400 - 1700 UTC	Expect congestion
VOHS	0300 - 0400 UTC 1700 - 1800 UTC	Expect congestion
ATFM MEASURES:		
LOCATION	APPLICABLE PERIOD	MEASURES/ REMARKS
ATFM MEASURES WILL BE APPLIED TO ADDRESS DEMAND/CAPACITY IMBALANCE AT AERODROMES. STAKEHOLDERS WILL BE NOTIFIED 3 HOURS BEFORE THE ATFM MEASURES ARE IN EFFECT.		
DEVELOPING ISSUES:		
LOCATION	APPLICABLE PERIOD	MEASURES/ REMARKS
-----	-----	-----
ANY OTHER ISSUES:		
VOBL RWY CLOSURE DUE MAINTENANCE FROM 0700-0930 UTC (REF NOTAM: A1720/18)		

data, revised monitoring values, etc. The main purpose will be to minimize the impact of any disruptions and to take benefit of any opportunity (e.g. opening of a new sector, closure of military areas, etc.).

The management of the traffic will be made through capacity enhancements, configuration management, regulations, and application of ATFM measures.

Monitoring of the traffic load shall be the joint responsibility between the CCC and FMPs unless formally agreed otherwise.

2.10.3.1 CTOT Allocation

The (Calculated Take off Time -CTOT) allocation procedures detailed below are those applicable

to the SKYFLOW ATFM System. At present, arrivals to a constrained airport are only subjected to ATFM measures through following procedures

- After coordination with the FMP, the CCC decides to activate regulations at constrained Airport.
- In SKYFLOW, regulations include the start and the end times, the description of the location, the airport arrival rate and others parameters.
- In accordance with the principle of 'First Planned - First Served', the system captures all the flights entering the specified airspace/ airport and sequences them in the order they would have arrived at the airspace in the absence of any restriction.
- The system then back calculates, the Take-Off Time (TOT) for each flight based on its time of arrival over the constrained Airport. Applying a GSP and/or GDP the system calculates a Calculated Take-Off Time (CTOT) for all regulated flights based on the System algorithm. This information is then transmitted to all concerned FMPs and AO's.
- In addition to this fundamental process, a number of other mechanisms will act to compensate for factors such as late received flight plans and modifications in Flight plan intentions.

2.10.3.2 Action by AU/ATC in case of Departure to a constrained Airport during CDM measures:

- In case of a flight departing to a constrained Airport during the period when CDM measures are in force, ATC shall ensure that no flight departs without a CTOT. If a flight is not issued a CTOT, in all probability such a flight is missed in the CDM scenario because of late filing. ATC/AU will coordinate with CCC for a CTOT.
- An airline will have an allocated CTOT which it shall comply with, within the CTOT tolerance window of minus 5 to plus 10 minutes.

2.10.3.3 Action by AU/ATC in case of Departure requesting a revised CTOT to a constrained Airport during CDM measures:

- When AUs are unable to meet the departure slot window, they shall inform respective ATC unit with a revised EOBT. ATC or/and the local FMP will in turn inform CCC about the revised EOBT and when possible will receive a revised CTOT to be passed on to the aircraft.
- The AUs are responsible for originating an appropriate AFTN message addressed to VIDPCTFM in the above case.

2.10.4 Post-event Analysis

C-ATFM system provides post operational reports to help AAI and their stakeholders to evaluate system performance and lessons learnt.

Post operations analysis is carried out usually at the end of an event or end of the day i.e. D+1 day, to analyze the effectiveness of ATFM measures.

The post operations phase is managed by the post operations team which provides the following:

- Lessons learnt following foreseen and unforeseen events
- In depth analysis and reporting of constraints in the ATFM implementation plan.
- Monitoring and analysis of day to day actions and procedures to ensure best practices are compatible with performance targets.
- Providing an overview of all incident reporting and analysis, complaints and ad-hoc enquiries to identify trends

Data Source: Statistical Data from SKYFLOW system, ATC automation, Airport-CDM, FMP google sheet and Scheduled movement data from AOCC.

Data is analyzed to categorize following ATFM parameters.

ATFM Parameters

1. ATFM Program Impact

- *ATFM Scenario*

(An overview of traffic within the CDM scenarios for the month, representing ratio of International traffic & domestic traffic.)

- *Affected Flight statistics*

[An insight of participating traffic in the scenario i.e. ratio of the domestic arrivals to the constrained airport affected by ATFM measures (delayed by the Airport Delay Program) to the domestic arrivals not affected by ATFM measures (not assigned any delay) within the CDM scenario.]

2. ATFM Ground delay

(ATFM ground delay defined as CTOT-ETOT)

Calculated take off time - Estimated take off time

- *Total monthly ATFM delay*

(Value in minutes representing total ATFM delay in the month)

- *Total flights affected*

(Flight count in numerical value)

- *Average ATFM delay*

(Total monthly ATFM delay / total number of domestic arrivals)

- *Maximum ATFM delay*

(Maximum ATFM delay assigned in the month)

- *ATFM delay distribution in the band*
(No delay, 0-5, 6-10; 11-15; 16-20; >20 minutes)
(An overview of ground delay distribution in the different time bands)
3. ATFM Compliance Measurement
- *Overall compliance rate*
(Defined as monthly ATFM departure slot adherence rate of regulated flights. Flights having ATOT within the ATFM Slot Tolerance Window (STW) of minus 5 to plus 10 minutes of CTOTs, are considered as compliant flights)
 - *ATFM departure slot adherence distribution*
[An overview of regulated flight departures within an ATFM slot tolerance window (ASTW), before ASTW & after ASTW]
 - *CTOT Adherence rate of Airline operators*
(An overview of CTOT compliance rate of various Airline operators)
 - *CTOT Adherence rate of Regions*
(An overview of CTOT compliance rate of 4 FIRs)
 - *CTOT Adherence rate of Airports within different Regions*
(An overview of CTOT compliance rate of Airports within 4 FIRs)
4. Air delay statistics
- {Air delay defined as difference between EET & AET, where estimated elapsed time (EET) can be obtained from FPL/RPL or (CLDT-CTOT) and AET (actual elapsed time) can be obtained from (ALDT-ATOT)}
- *Distribution of (AET-EET) w.r.t. Compliant & non-Compliant flights*
(<=-30; -29 to -20; -19 to -10; -9 to -1; 0-10; 11-20; 21-30 & >31minutes)
(An overview of Air delay distribution in the different time bands)
 - *Cumulative distribution of difference (AET-EET)*

Along with the ATFM parameters, the operational and system constraints is also shared with all the stakeholders on Monthly basis.

Chapter 3

ATFM USER'S Manual

3.1 Web Access Procedures

A web access to the SKYFLOW system is provided via www.atfmai.aero which is compatible with all the browsers. The SKYFLOW system provides the stakeholders a common situational awareness of the current ATFM status and information about ATFM measures in India. (A hyperlink to the ATFM system is provided on www.aai.aero). AU/AOs will be able to view flight details and their own slots during an ATFM Measure. ATS Units and aerodrome operators will also be able to view all flights arriving and departing from their aerodrome.

For using SKYFLOW ATFM system user needs to Login in with a valid User ID and Password.



There are two ways of getting the User ID and Password. They are:

By Registration Request.

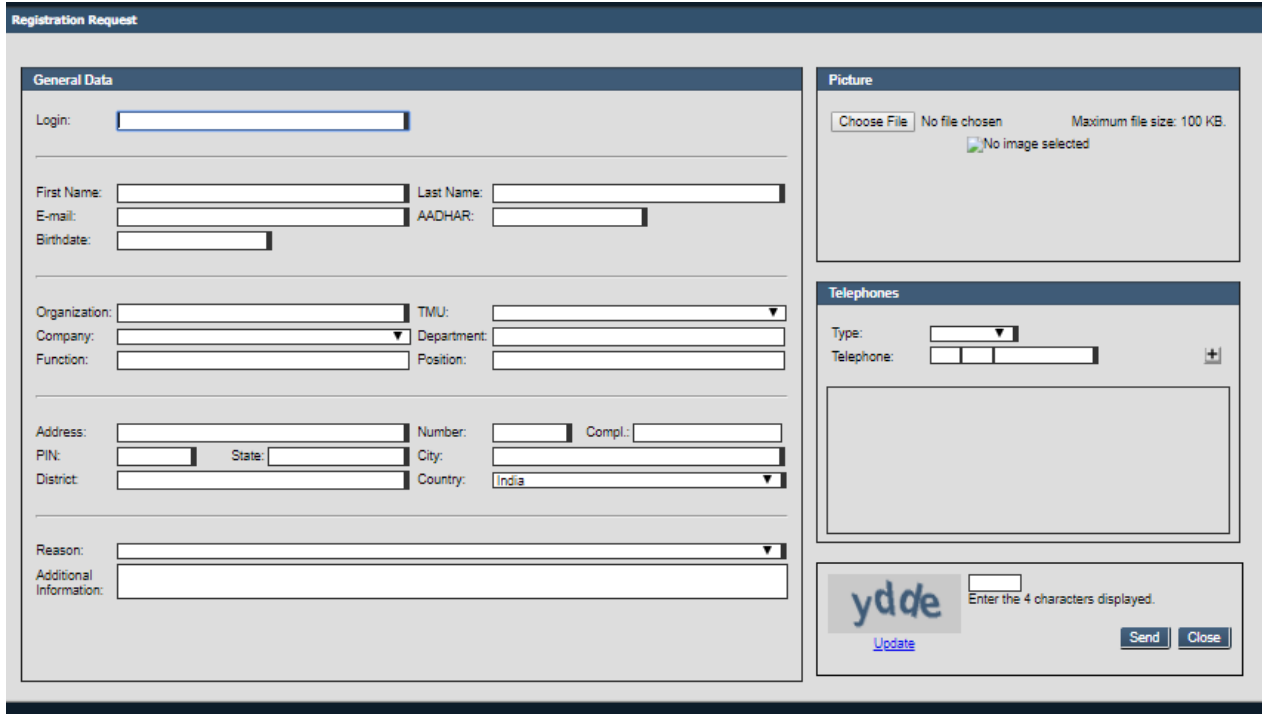
By contacting the administrator. Tel Phone No: 011-25652131 alternate number: 011-25652022

3.1.1 Registration Request



Allow users that have access to the application address to request system registration to be able to interact with the functionalities established according to the profile to be assigned.

When the user clicks on an item the SKYFLOW shows a form to fill out, according to the figure below:



The image shows a web-based registration form titled "Registration Request". It is divided into several sections:

- General Data:** Includes fields for Login, First Name, Last Name, E-mail, and Birthdate. Some of these fields are shaded grey, indicating they are mandatory. Below these are fields for Organization, Company, Function, TMU, Department, and Position.
- Address:** Includes fields for Address, PIN, State, City, District, Number, and Compl. The Country is set to "India".
- Reason:** A dropdown menu for selecting the reason for registration.
- Additional Information:** A large text area for providing extra details.
- Picture:** A section for uploading a profile picture, showing "No file chosen" and "Maximum file size: 100 KB".
- Telephones:** A section for adding phone numbers, with a dropdown for "Type" and a text field for "Telephone".
- Footer:** A small "ydde" logo and a security prompt: "Enter the 4 characters displayed." with "Update", "Send", and "Close" buttons.

When the mandatory fields (shaded boxes) are completed and the data is sent, the system shows the

Registration successfully sent! Awaiting administrator's reply

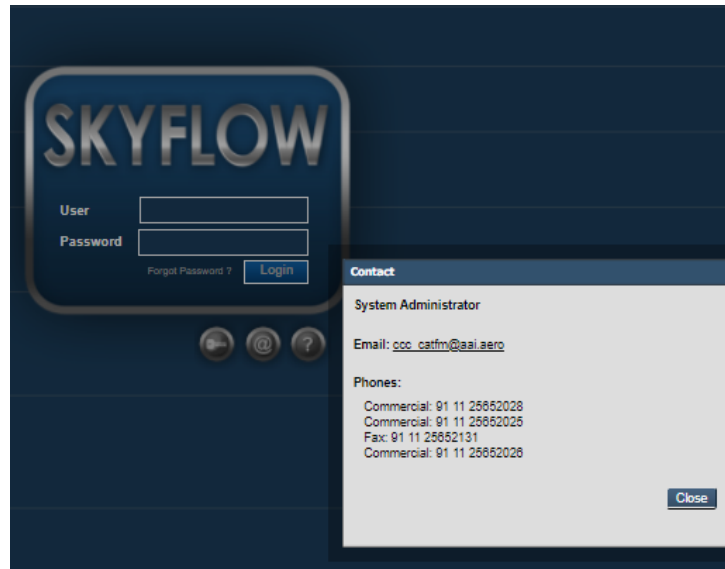
following message that informs the status of the request:

After sending the data successfully, the user must wait for an email from the Administrator.



3.1.2 Contact Administrator:

If the Registration request is not accepted by the system due to any difficulty in Login, users may send the e-mail to the System administrator by giving details of Login, by pressing the button



3.1.3 Help:



When the icon is pressed, the system shows the information on the User rules, respective system access password, and guide lines on the system registration procedure.



3.2 ATFM Tactical Flow Management Measures

In phase I, C-ATFM system is only dealing with Airport capacity & provide capabilities to model & implement ATFM measures to balance the demand according to the available capacity via Ground Delay Program (GDP) and Ground Stop Program (GSP).

Ground delay program (GDP). A pre-tactical, or tactical ATFM measure. A GDP is an air traffic management process where aircraft are held on the ground in order to manage capacity and demand in a specific volume of airspace or at a specific airport. In the process, departure times are assigned which correspond to available entry slots into the constrained airspace or arrival slots into the constrained airport or departure slots from the constrained airport. A GDP aims at, among others, minimizing airborne delays. It is a flexible program and its form may vary depending on the needs of the air traffic management system. GDPs are best developed in a collaborative manner even though they are typically administered and managed by a FMP or a national/international ATFM center. When a GDP is scheduled to last for several hours, the likelihood of slots having to be revised increases, as conditions could change. There should therefore be a system in place to advise AU and/or pilots of departure slots as well as of any changes to the GDP.

Ground stop (GS). A tactical ATFM measure taken in reaction to an unpredicted adverse situation. A Ground Stop (GS) is a procedure requiring aircraft that meet specific criteria to remain on the ground. The GS may be airport specific, related to a geographical area, or equipment related. Ground stops are considered to be the most restrictive of the TMIs. Ground stops are implemented when air traffic control is unable to safely accommodate additional aircraft in the system. They are most frequently used for: A Ground Stop (GS) is a procedure requiring aircraft that meet specific criteria to remain on the ground. The GS may be airport specific, related to a geographical area, or equipment related. Ground stops are considered to be the most restrictive of the TMIs.

Ground stops are implemented when air traffic control is unable to safely accommodate additional aircraft in the system. They are most frequently used for:

- Severely reduced capacity situations such as:
 - Weather below user arrival minima
 - Severe weather reducing usable routes
 - Major equipment outages
 - Catastrophic events
- Precluding extended periods of airborne holding
- Precluding sectors from reaching saturation levels
- Precluding airports from reaching gridlock

3.3 FMP/ATC & Aircraft Operator Manual

Self-contained user's manual for FMP & Aircraft Operator is available as Annexure "A" & Annexure

“B” of this document.

3.4 ATFM Compliance Requirement

Compliance is a critical component of the ATFM System and will be tracked and measured by the system. For Phase I, ATFM compliance is the CTOT compliance within tolerance window of -5 & + 10 minutes of CTOT.

It is a shared responsibility between Aircraft Operators (AO) and departure ATS unit to ensure a flight's adherence to CTOT.

3.4.1 AO should plan their flight to be ready for take-off at the CTOT (at the holding point). The CTOT adherence window is defined as -5 to +10 minutes, to cater for operational variance in aerodrome ground conditions and ATC capabilities.

3.4.2 ATC shall develop and implement local procedures to facilitate and ensure adherence to CTOT at an airport of departure. CTOT, if applicable, be included as part of the ATC pre-departure clearance/ startup clearance.

3.4.3 ATC units responsible for CTOT compliance monitoring shall be provided with the necessary information concerning the ATFM measures in force and CTOTs allocated.

3.4.4 ATC shall provide all possible assistance to AOs to meet CTOT or to coordinate for a revised CTOT.

3.4.5 ATC may deny start up clearance to a flight unable to meet its CTOT until coordination with the ATFM units concerned has been effected and a revised CTOT issued

3.4.6 Departure airports/ATC shall provide relevant information of non-compliance and the actions taken to ensure adherence to ATFM departure slots. Such information will be provided by local ATC/FMP to CCC periodically.

3.4.7 Concerned FMP/ATS unit shall keep record of the noncompliant flight & forward flight details with reason for non-compliance to CCC. The CCC shall carry out post analysis of the same which may be shared with the AU, ATS unit & FMP.

3.5 ATFM Contingency Procedures

In case of non-availability of ATFM services due to some contingency, the Central Command center will advise FMPs to cancel ATFM measures, if any. The traffic will be handled tactically by ATC in coordination with FMP. Log entry of the same shall be made by the shift supervisor.

Detailed ATFM contingency procedures will be developed in due course.

Chapter 4

Flight Planning User's Manual

4.1 Introduction

The flight plan (FPL or RPL) is one of the main entities processed by the system.

The FPLs are received through messages from the AFTN network. SKYFLOW's AFTN address in the AFTN network is VIDPCTFM.

The RPLs are received from the airlines that use the system itself to present their repetitive flight plans. Whenever a flight plan is received, it has its information validated and it is processed by the system which calculates at what time and with what speeds and levels the flight plan is expected to cross each significant point of its route.

Through this processing, the system is able to determine the time at which the flight will pass through each regulated element of the airspace, calculating the expected demand for the same.

In order to perform these calculations, the system takes into account the aircraft performance, the route, the cruising level, the speed, the departure aerodrome, the destination aerodrome and the EOBT that were informed in the flight plan, as well as the estimated taxi times for the aerodromes.

The SKYFLOW provides a set of functions to process the flight plans from Flight Schedule, RPL database and those receive from the AFTN.

The Flight Plans are the main resource to build Sessions and Scenarios. They provide the data to compute the movement on each regulated element on the Sessions and Scenarios. In the case of scenarios these flight plans will be modified, and allow exercise a solution and if approved to identify the needed changes to implement the Program.

4.2 FLIGHT PLAN MANAGEMENT in SKYFLOW

4.2.1 The purpose of the Flight Plan Management (FPM) is to process the flight plan and flight intention information to support the Air Traffic Flow Management (ATFM) activities. Therefore, the flight plans and intentions shall be directed to the C-ATFM in advance to process and analyze the impact in the national scenario, where it shall be initially treated regarding syntax and semantics, characterizing the centralized flight plan treatment process by the error queue management team.

To create, change, cancel flight plans, or search correlated information, the users are provided with operation terminals connected directly to the SKYFLOW, even for AIS room remote users. The flight plans or correlated messages displayed in these terminals are validated automatically regarding syntax and semantics, with the result of such treatment displayed to users on screen, indicating the errors found and pertinent warnings, or indicating that the treatment was conducted without problems and the

message can be accepted. In case of errors, the users can make the corrections required and submit the message for analysis again.

When the flight plans are received, the FPM subsystem performs the following actions:

- Validation of plans and associated messages;
- Plan extraction;
- Distribution of plans generated from ATS Reporting Office (ARO).

The SKYFLOW shall check the RPLs submitted based on the content and format criteria derived from the legislation, and then inform eventual differences to those responsible for submission.

The messages exchanged between the SKYFLOW and the operational agencies follow the formats and conventions established by ICAO.

4.2.2 Flight Schedule

Flight schedules are the source of planned flight plans. It provides flight descriptions based on origin (ADEP) and destination (ADES) and aircraft type (EQP), Air Company, schedule, etc. However, Flight Schedule has no route description. There's only one Flight Schedule database in the system. The maintenance is made using edition tools based on Flight Schedule validity, suppression of closed flight schedules and the process to import Flight Schedules from files with specific formats. The SKYFLOW provide filters on Flight Schedule that allows to filter a specific flight schedule, a section of flight schedules or the flight schedule state (Incomplete; to be Effective; Effective and closed).

The SKYFLOW provides a Route Library functionality where the user will define routes that can be associated to the flight schedules allowing the creation of flight plans automatically. When a Flight Plan is created from a Flight Schedule the SKYFLOW will match this flight schedule with:

- a. a route "Preferred" with same ADEP; ADES; EQP and frequency data;
- b. If there's no route: a route "Verified" with the same ADEP; ADES; EQP and Air Company
- c. If there's no route: a route "Verified" with the same ADEP; ADES and EQP
- d. As result from (c) it may have no route and in this case the User will create the route manually;
- e. As result from (c) it may have more than one route from different Air Companies. In this case the User will select which route it will be used.

The SKYFLOW uses the selected route to create the flight plan from this flight schedule. The change on the airspace description does not impact directly the Flight Schedule but the associated routes. It is very



important to verify if all routes are validated to insure that there will be the routes associate to all flight schedules.

4.2.3 RPL Database

The RPL database represents an important source of the traffic forecast. The SKYFLOW RPL database is composed of different RPL editions. Each edition in the RPL database may assume one of the following states:

- **Open:** State attributed to RPL editions that allow users and Airline Users to change, include, and delete RPLs.
- **Airline Closed:** state attributed to a RPL editions after the end of the Open state. The RPL edition may not be changed by Airline Users in this state.
- **Closed:** state attributed to RPL editions closed for changes.
- **Pre-Active:** state attributed to the next RPL edition to become active.
- **Active:** state attributed to the operational RPL edition.
- **Cloned:** state attributed to the RPL editions created by cloning the Active RPL Edition.
- **Historic:** state attributed to the RPL editions that were already on Active state and replaced for another edition.

Each RPL edition has an associated Airspace description that may be on “Pre-Operational” or on “Operational” state. This Airspace definition will be used to validate the flight plans in the RPL edition.

The SKYFLOW does not allow the transition of a RPL edition from Pre-Active to Active state if the Airspace description used to validate this RPL edition is not the current Operational Airspace description.

When a Flight Plan is created from a RPL the SKYFLOW will match this flight schedule with:

- I. a route associated to the Flight Schedule associated to this RPL (C/S) on the Route Library;
- II. If there's no route considering (1): SKYFLOW search among the “Preferred” route the routes with same ADEP; ADES; EQP and frequency data;

- III. If there's no "Preferred" route: SKYFLOW search a "Verified" route with the same ADEP; ADES; EQP and Air Company
- IV. If there's no Verified route, if there's no route: the route will be the one on the RPL.

The SKYFLOW uses the selected route to create the flight plan from this RPL.

4.3 Flight planning in the context of ATFM as per AIP, INDIA

4.3.1 Requirements

All Aircraft Operators should adhere to Flight Planning requirements as stated below:

4.3.1.1 Flight plans shall be submitted at least 3 hours before the EOBT;

4.3.1.2 The window for filing FPL is between 3 Hours and 120 Hours (Five days) before the EOBT. Earlier filing of FPL will give a realistic demand data to the CCC and hence the requirement of ATFM measures can be identified early for better planning. Late filing of a flight plan will lead to inaccuracies in predicting the demand and may lead to a delay;

4.3.1.3 All flights departing, arriving or overflying India subject to a change in an EOBT of more than 15 minutes shall notify the change to the C-ATFM system through AFTN message. All ATS messages such as FPL, CNL, DLA, CHG shall be addressed to VIDPCTFM also.

4.3.1.4 It is in the best interest of Aircraft Operators to initiate prompt revisions or cancellations, thus permitting the ATFM system to maximize use of available capacity and minimize delay. The later the revision is made the greater is the probability of a delay.

4.3.2 Flights Exempted From ATFM

The following flights are exempted from the ATFM Measures:

4.3.2.1 Flights experiencing an emergency, including aircraft subjected to unlawful interference;

4.3.2.2 Flights in search and rescue or fire-fighting missions;

4.3.2.3 Urgent medical evacuation flights specifically declared by medical authorities where flight delays would put the life of the patients at risk;

4.3.2.4 Flights with "Head of State" status; e. Military Aircraft; and

4.3.2.5 Other flights specifically identified by appropriate authorities.

Note: After medical flights have completed their mission, they shall be subject to ATFM measures. Scheduled passenger transfer flights are, by their nature, non-urgent and should not be given priority under normal operational situation.

4.3.2.6 Flights exempted from ATFM measures shall indicate the exemption in their flight plan (Field 18 - STS/HEAD, STS/MEDEVAC etc.).

4.3.3 Modification of EOBT

4.3.3.1 In order to comply with a CTOT, Aircraft Operators should plan its off-block time consistent with the CTOT, taking into account the taxi time;

4.3.3.2 Any change to the EOBT of more than 15 minutes (+ or -) for any IFR flight shall be communicated to ATC and ATFM, by appropriate ATS message;

4.3.3.3 If the original EOBT can no longer be met, then the AO shall communicate the new EOBT by use of a DLA or CHG message. When an AO submits an amendment message to ATC and ATFM, they must always give an EOBT which indicates the time the AO wants to be off-blocks;

4.3.3.4 The procedure to be followed to modify the EOBT is as follows:

- a) To amend the EOBT to a later time, a DLA or CHG message shall be sent to ATC and CATFM;
- b) To amend the EOBT to an earlier time, a CNL message must be sent to ATC and CATFM which cancels the earlier FPL. It shall be followed five minutes later by a new flight plan with new EOBT indicated.

4.3.3.5 Whenever the EOBT of a flight is changed sufficiently in advance, the SKYFLOW system may allocate a revised CTOT. In any case, the CTOT of the flight will always be later than the new EOBT plus the taxi-time. However, if the EOBT is revised closer to the actual time of operations, ATFM system will not be in a position to issue a revised CTOT. In this case the flight is treated on its merits and may be subjected to tactical ATC delay in coordination with FMP/CCC.

Definitions

- **Air Traffic Flow Management (ATFM):** A service established with the objective of contributing to a safe, orderly and expeditious flow of air traffic by ensuring that air traffic control capacity is utilized to the maximum extent possible, and that the traffic volume is compatible with the capacities declared by the appropriate air traffic services authority.
- **Air Traffic Flow and Capacity Management (ATFM):** ATFM extended to include the optimization of traffic patterns and capacity management. Through managing the balance of capacity and demand the aim of ATFM is to enable flight punctuality and efficiency, according to the available resources with the emphasis on optimizing the network capacity through the collaborative decision making process.

- **ATFM Daily Plan:** The set of tactical air traffic flow management measures prepared during the Pre-Tactical phase.
- **ATFM Slot Allocation Exemption:** The exemption of a flight from air traffic flow management slot allocation.
- **ATFM Incident:** A significant occurrence affecting an air traffic services unit, an aircraft operator or a central management unit resulting from the application of air traffic flow management measures or procedures.
- **ATFM Measures:** Actions taken to accomplish air traffic flow and capacity management.
- **Aircraft Operator/Aircraft User:** A person, organization or enterprise engaged in, or offering to engage in, an aircraft operation.
- **Capacity [for ATFM purposes]:** The operationally acceptable volume of air traffic.
- **Central Command Center (CCC):** A centralized unit providing air traffic flow management services within a specified area of responsibility.
- **Central Command Center (CCC) Contingency Plan:** Arrangements made to ensure the continued provision of the air traffic flow management service in the event of a failure of one or more of the central management unit components.
- **Collaborative Decision Making (CDM):** Process which allows decisions about events to be taken by those best positioned to make them on the basis of most comprehensive, up-to date and accurate information. This in turn will enable decisions about a particular flight to be made according to the latest information available at the time, thereby enabling the flight to be dynamically optimized to reflect near or real-time events.
- **Flow Management Position (FMP):** A working position established in appropriate air traffic control units to ensure the necessary interface between local ATFM partners (i.e. ATCs, AOs and Airports) and a central command center on matters concerning the provision of the air traffic flow and capacity management service.
- **Monitoring Value (MV):** An agreed number of flights entering a sector, aerodrome or point that triggers the initial traffic assessment during a rolling 1 hour period from which coordinated actions may be considered. The monitoring value should not be confused with the capacity, and the monitoring value shall never be greater than the capacity.
- **Over-Delivery:** An occurrence when the declared rate is exceeded by the actual number of aircraft that enter a regulated sector during a particular period.
- **Post Operations:** An ATFM phase that takes place after the day of operation for analysis of planning procedures and coordination, the results of which are fed back into the planning process for further consideration.
- **Pre-Tactical:** An ATFM phase which takes place during six days prior to the day of operation and consists of planning and coordination activities.
- **Rate:** A value, required as input to slot allocation.
- **Rerouting [for ATFM purposes]:** An ATFM measure which requires an aircraft operator to file an alternate route/flight level in order to resolve ATC capacity problems and minimize delays.
- **Slot [for ATFM purposes]:** CTOT issued by the CCC.

- **Slot Adherence:** Compliance with a CTOT by the aircraft operator and ATC, taking into account the slot tolerance.
- **Slot Allocation:** An ATFM measure implemented by means of a departure slot in order to balance traffic demand against available ATC capacity.
- **Slot Tolerance:** A window of time around a CTOT available to ATC for which the aircraft must not depart outside.
- **Strategic:** An ATFM phase which takes place seven days or more prior to the day of operation and includes research, planning and coordination activities.
- **Suspension [for ATFM purposes]:** An ATFM measure resulting in the suspension of a flight.
- **Tactical:** An ATFM phase, which takes place on the day of operation.
- **Volume of Air Traffic [for ATFM purposes]:** The number of aircraft within a defined airspace or aircraft movements at an aerodrome, within a specified period of time

Glossary

AAI	Airports Authority India
AAR	Aerodrome Arrival Rate or Airport Acceptance Rate
ACAS	Airborne Collision Avoidance System
ACC	Area Control Centre
ACP	Acceptance (AIDC)
AFTN	Aeronautical Fixed Telecommunications Network
AIM	Aeronautical Information Management
AIRAC	Aeronautical Information Regulation and Control
AIS	Aeronautical Information Service
AMAN	Arrival Manager
ANSP	Air Navigation Service Provider
APAC	Asia/Pacific
APANPIRG	Asia/Pacific Air Navigation Planning and Implementation Regional Group
APCH	Approach
ATC	Air Traffic Control
ATCC	Air Traffic Control Center
ATFM	Air Traffic Flow and Capacity Management
ATFM	Air Traffic Flow Management
ATM	Air Traffic Management
ATS	Air Traffic Services
CDM	Collaborative Decision Making
CONOPS	Concept of Operations
COTS	Commercial-Off-The-Shelf

CTOT	Calculated Take Off Time
CTR	Control Zone
DGCA	Conference of Directors General of Civil Aviation
DMAN	Departure Manager
FDPS	Flight Data Processing System
FIR	Flight Information Region
FL	Flight Level
FUA	Flexible Use Airspace
GDP	Ground delay Program
MET	Meteorological
METAR	Meteorological Aerodrome Report
OPMET	Operational Meteorological
PBN	Performance-based Navigation
SAR	Search and Rescue
SID	Standard Instrument Departure
SIGMET	Significant Meteorological Information
SPECI	Special Weather Report
STAR	Standard Terminal Arrival Route or Standard Instrument Arrival (Doc 4444)
STCA	Short Term Conflict Alert
STS	Special Handling Status
SUA	Special Use Airspace
SWIM	System-Wide Information Management
VMC	Visual Meteorological Systems

ATFM Terminology and Communications

ATFM Terminology - General

Acronym	Term	Definition
AAR	Airport Acceptance Rate	Arrival capacity of an airport normally expressed in movements per hour
ADR	Airport Departure Rate	Departure Capacity of an airport normally expressed in movements per hour
ASD	Aircraft Situation Display	ATC Aircraft/Traffic Situation Display
AFIX	Arrival Fix	A waypoint during the arrival phase of a flight. In the context of ATFM it could a waypoint where an ATFM Measure may be applied
CDM	Collaborative Decision-Making	Process which allows decisions to be taken by amalgamating all pertinent and accurate sources of information, ensuring that the data best reflects the situation as known, and ensuring that all concerned stakeholders are given the opportunity to influence the decision. This in turn enables decisions to best meet the operational requirements of all concerned.
CDR	Conditional Route	ATS route that is available for flight planning and use under specific conditions
DFIX	Departure Fix	The first published fix/waypoint used after departure of a flight.
Acronym	Term	Definition
DMAN	Departure Manager	A planning system to improve the departure flows at an airport by calculating the Target Take-Off Time (TTOT) and Target Startup Approval Time (TSAT) for each flight, taking multiple constraints and preferences into account
FCA	Flow Constrained Area	An sector of airspace where normal flows of traffic are constrained, which could be caused by weather, military exercise etc.

FMP	Flow Management Position	A position in any ATCC that monitors traffic flows and implements or requests ATFM
GDP	Ground Delay Program	ATFM process where aircraft are held on the ground in order to manage capacity and demand in a specific volume of airspace or at a specific airport. In the process departure times are assigned and correspond to available entry slots into the constrained airspace or arrival slots into the constrained airport
GS	Ground Stop	A tactical ATFM measure where some selected aircraft remain on the ground
MINIT	Minutes in Trail	A tactical ATFM measure expressed as the number of minutes required between successive aircraft. It is normally used in airspace without air
MINIT	Minutes in Trail	traffic surveillance or when transitioning from surveillance to non-surveillance airspace, or even when the spacing interval is such that it would be difficult for a sector controller to measure it in terms of miles
MIT	Miles in Trail	A tactical ATFM measure expressed as the number of miles required between aircraft (in addition to the minimum longitudinal requirements) to meet a specific criterion which may be separation, airport, fix, altitude, sector or route specific. MIT is used to organize traffic into manageable flows as well as to provide space to accommodate additional traffic (merging or departing) in the existing traffic flows. It will never be less than the separation minima.
RFIX	En-route Fix	A waypoint during the en-route phase of a flight. In the context of ATFM it could a waypoint where an ATFM Measure may be applied
SUB	Slot Swapping	The ability to swap departure slots gives AUs the possibility to change the order of flight departures that should fly in a constrained area
-	ATFM Measure	ATFM Measure which will balance demand against capacity or assist in the safe expeditious flow of traffic

ATFM Terminology – Phase of Flight

Acronym	Term	Definition
SOBT	Scheduled off Block Time	The time that an aircraft is scheduled to depart from the parking position
EOBT	Estimated Off Block Time	The estimated time that an aircraft will start movement associated with departure
TOBT	Target Off - Block Time	The time that an aircraft Operator or Ground handler estimates that an aircraft will be ready to startup/pushback immediately upon reception of clearance from the tower.
TSAT	Target Start Up Approval Time	The time provided by ATC taking into account TOBT, CTOT and/or the traffic situation that an aircraft can expect start up/push back approval
COBT	Calculated Off Block Time	A time calculated and issued by ATFM Unit, as a result of tactical slot allocation, at which a flight is expected to pushes back / vacates parking position so as to meet a CTOT taking into account start and taxi time.
AOBT	Actual Off Block Time	The time the aircraft pushes back / vacates parking position (Equivalent to Airline / Handlers ATD - Actual Time of Departure & ACARS=OUT)
STOT	Scheduled Take Off Time	The estimated take off time derived from an aircraft operators schedule, typically based on a standard taxi-out time
PTOT	Planned Take Off Time	Time aircraft is expected to take off derived from the flight plan.
TTOT	Target Take Off Time	The Target Take off Time taking into account the TOBT/TSAT plus Estimated Taxi-Out Time
CTOT	Calculated Take off Time	A time calculated and issued by ATFM Unit, as a result of tactical slot allocation, at which a flight is expected become airborne

ETOT	Estimated Take Off Time	The Estimated take off time taking into account EOBT plus Estimated Taxi-Out Time
ATOT	Actual Take Off time	The time that an aircraft takes off from the runway (Equivalent to ATC ATD-Actual Time of Departure, ACARS = OFF)
SEET	Scheduled Estimated En-route Time	The estimated elapsed time of a flight derived from the aircraft operators schedule
ETO	Estimated Time Over	Estimated time at which an aircraft would be over a fix, waypoint or particular location typically where air traffic congestion is expected
CTO	Calculated Time Over	Time calculated and issued by ATFM Unit, as a result of tactical slot allocation, at which flight is expected to be over a fix, waypoint or particular location typically where air traffic congestion is expected (referred to in FIXM 2.0 as "Airspace Entry Time - Controlled")
PLDT	Planned Landing Time	The expected landing time of a flight derived from the flight plan
SLDT	Scheduled Landing Time	Scheduled time aircraft is expected to land on a runway, typically based on Scheduled In-Block Time (SIBT) and a standard taxi-in time
TLDT	Target Landing Time	Targeted Time from the Arrival Management process at the Threshold, taking runway sequence and constraints into account; Progressively refined planning time used to coordinate between arrival and departure management processes
CLDT	Calculated Landing Time	A landing time calculated and issued by ATFM unit, as a result of tactical slot allocation at which a flight is expected to land on a runway
ELDT	Estimated Landing Time	The estimated time that an aircraft will touch-down on the runway (equivalent to ETA)

LDT	Actual Landing Time	Actual time an aircraft lands on a runway (Equivalent to ATC ATA -Actual Time of Arrival = landing, ACARS=ON)
SIBT	Scheduled In Block Time	The Time that an aircraft is scheduled to arrive at its first parking position.
CIBT	Calculated In Block Time	An in block time calculated and issued by ATFM unit, as a result of tactical slot allocation at which a flight is expected to be at its first parking position.
AIBT	Actual in block time	The time that an aircraft arrives in-blocks (Equivalent to Airline/Handler ATA -Actual Time of Arrival, ACARS = IN)

ATFM Terminology Map:

Phase of Flight	Scheduled	Flight Plan	Target (Airline)	Target (ANSP)	ATFM Measure	Estimated	Actual
Off-Block Time (OBT)	SOBT	EOBT	TOBT	TSAT	COBT		AOBT
Take-Off Time (TOT)	STOT			TTOT	CTOT	ETOT	ATOT
Time Over (TO)					CTO	ETO	ATO
Landing Time (LDT)	SLDT			TLDT	CLDT	ELDT	ALDT
In-Block Time (IBT)	SIBT				CIBT		AIBT

ATFM Phraseology

Note: The following phrases are suggested for use as an interim procedure, pending the development of globally standardized ATFM -related phraseology

<u>Circumstances</u>	<u>Phraseology</u>
Calculated take-off time (CTOT) delivery resulting from a slot allocation. The CTOT shall be communicated to the pilot at the first contact with ATC.	SLOT (<i>time</i>)
Change to CTOT resulting from a Slot Revision.	REVISED SLOT (<i>time</i>)
CTOT cancellation resulting from a Slot Cancellation	SLOT CANCELLED, REPORT READY
Flight suspension until further notice.	FLIGHT SUSPENDED UNTIL FURTHER NOTICE, DUE (<i>reason</i>)
Flight de-suspension.	SUSPENSION CANCELLED, REPORT READY
Start-up requested too late to comply with the given CTOT.	SLOT EXPIRED, REQUEST A NEW SLOT
Denial of Start-up when requested too late to comply with the given CTOT. (Where supported by State regulation or procedure)	UNABLE TO APPROVE START-UP CLEARANCE DUE SLOT EXPIRED, REQUEST A NEW SLOT
Start-up requested too early to comply with the given CTOT.	REQUEST A NEW SLOT
Start-up requested too late to comply with the given CTOT.	SLOT EXPIRED, REQUEST A NEW SLOT
Denial of Start-up when requested too early to comply with the given CTOT. (Where supported by State regulation or procedure)	UNABLE TO APPROVE START-UP CLEARANCE DUE SLOT (<i>time</i>), REQUEST START-UP AT (<i>time</i>)

References

ATFM Guidance Material may be derived from the following sources:

- a. ICAO Annex 11
- b. ICAO Doc 4444
- c. ICAO Doc 9426 -Air Traffic Service Planning Manual
- d. ICAO Doc 7030- Regional Supplementary Procedures
- e. ICAO Doc 9971- Manual on Collaborative ATFM
- f. A-tech Manuals
- g. E-AIP, AIP SUPPLEMENT, local SOP, ATMC-4 of 2017

Annexure "A"

FMP Manual

1. INTRODUCTION

1.1 Need for Central Air Traffic Flow Management in India

Air traffic in India continues to grow rapidly and this trend is likely to continue to expand into the future. Increased traffic is expected at many of the existing airports. This increase in demand requires a corresponding effort to utilize system capacity efficiently. This will require Air Traffic Flow Management (ATFM) capabilities for effective Demand and Capacity Balancing (DCB). The ATFM tools will enable improved management of demand and capacity, and will help system stakeholders to deal with the increased complexity of the nation's air routes.

Demand and capacity balancing will allow airspace users to optimize their participation in the ATM system while mitigating conflicting needs for airspace and aerodrome capacity through collaborative usage of decision-support tools thus ensuring most efficient use of airspace resources, equitable access for all airspace users, accommodate user preferences and ensuring that demand on an airspace resource will not exceed its capacity.

1.2 Objectives

The objective of this part of document is to enable the Flow Management Positions (FMPs) managers to learn to operate the sub systems of SKYFLOW, as part of Air Traffic Flow Management (ATFM) services & to give a brief description of certain features and functionalities of the SKYFLOW system, for the 'Flow Management Position (FMP) managers.

2. SKYFLOW LOGIN

SKYFLOW is the ATFM system of Airports Authority of India. The URL is: <https://www.atfmaai.aero/skyflow> which can be accessed by all the browsers.

For using SKYFLOW ATFM system we need to Login in with a valid User ID and Password.



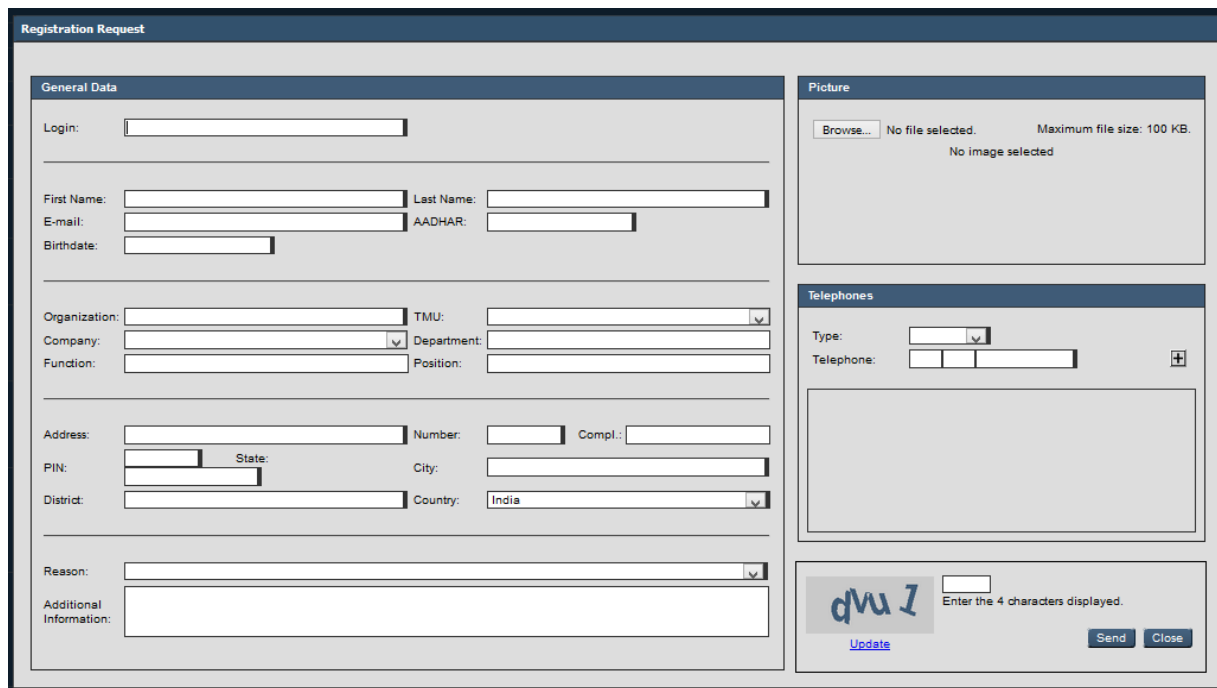
There are two ways of getting the User ID and Password. They are:

1. By Registration Request.
2. By contacting the administrator. Tel Phone No: 011-25652131 alternate number: 011-25652022

2.1 Registration Request:



When the icon registration request is pressed, the system shows a form to be completed, according to the figure below.



The image displays a 'Registration Request' form with the following sections:

- General Data:** Includes fields for Login, First Name, Last Name, E-mail, Birthdate, Organization, Company, Function, TMU, Department, Position, Address, PIN, District, Number, Compl., State, City, and Country (set to India).
- Picture:** A section for uploading a profile picture, showing 'No file selected' and 'Maximum file size: 100 KB'.
- Telephones:** A section for adding contact numbers, including a 'Type' dropdown and a 'Telephone' input field.
- Reason:** A dropdown menu for selecting the reason for the request.
- Additional Information:** A large text area for providing extra details.
- Verification:** A CAPTCHA area with the text 'dmu I' and a prompt to 'Enter the 4 characters displayed'.

Buttons for 'Update', 'Send', and 'Close' are located at the bottom right of the form.

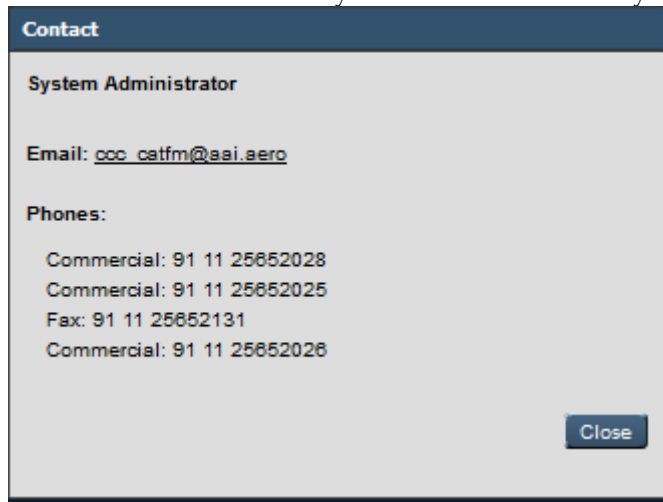
When the mandatory fields (shaded boxes) are completed and the data is sent, the system shows the following message that informs the status of the request:

Registration successfully sent! Awaiting administrator's reply

After sending the data successfully, the user must wait for an email from the Administrator.

2.2 Contact Administrator:

If the Registration request is not accepted by the system due to any difficulty in Login, users may send the e-mail to the System administrator by giving details of Login, by pressing the button



2.3 Help:

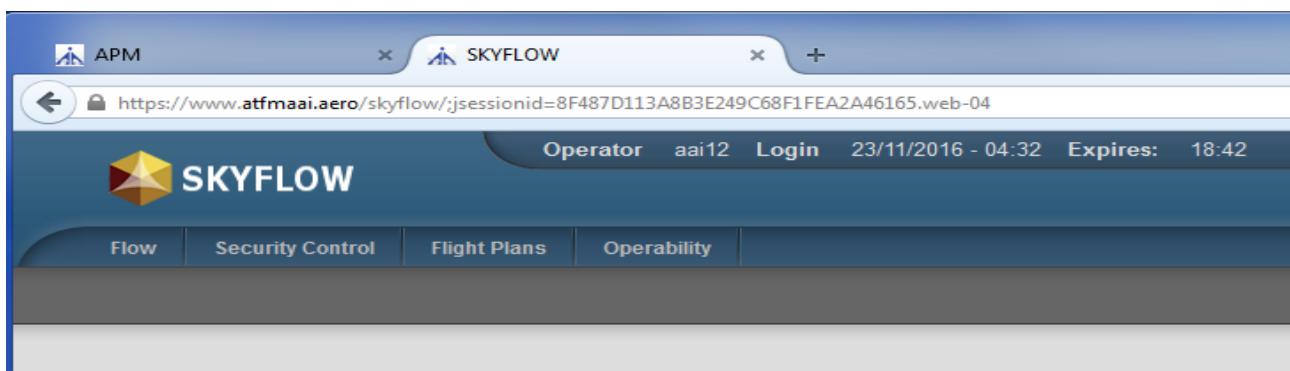
When the icon is pressed, the system shows the information on the User rules, respective system access password, and guide lines on the system registration procedure.

3. FUNCTIONALITIES:

3.1 Functionalities provided to FMP

The figure below shows the functionality provided to FMP managers. They are:

- Flow
- Security Control
- Flight Plans
- Operability

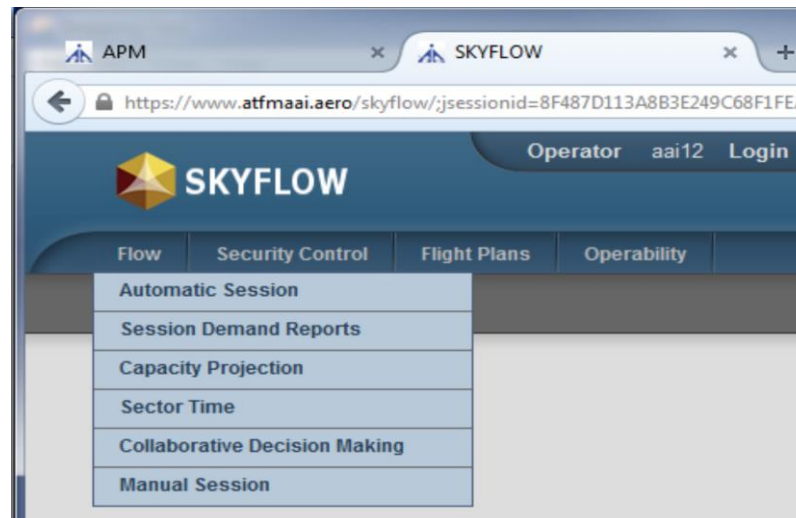


4. FLOW

This functionality of Skyflow provides the users various tools to analyze different traffic scenarios and simulate it before actual time of operation so that necessary steps can be taken in advance by applying different traffic flow management program to achieve a balance between capacity and demand.

The flow functionality consists of various subsystems. They are:

- Automatic Session.
- Session Demand Reports.
- Capacity Projection.
- Sector Time.
- Collaborative Decision Making.
- Manual Session.



4.1 Automatic Session:

Automatic Sessions are system generated sessions based on the flight plans in the data-base of the system and the regulated element of the system. Flow manager cannot make any changes in the session. Automatic session is basically for monitoring purpose and to see which of the regulated elements is saturated or congested based on the flight plans so that required flow program can be applied.

Automatic session are of three types, namely

- Strategical (Strategic)
- Tactical
- Historical

4.1.1 Strategical Session:

The SKYFLOW system automatically creates eight (08) strategic sessions, with one session for the **current day** and the other **seven (07)** corresponding to the weekdays counting from next day and

updated periodically.

When the sessions are created automatically, the regulated elements registered in the “Default Regulated Elements” component, the FLIGHT SCHEDULE/RPL/FPL existing in the data-base are considered.

Note: To simulate a situation for ATFM measure purposes, a manual session must be created in order to insert other factors such as possible flight plan changes.

4.1.2 Tactical Session:

This session corresponds to the **current date**, and establishes the measures that must be applied together with the ATC. The flight data is corrected according to the information available on the actual position of the aircrafts.

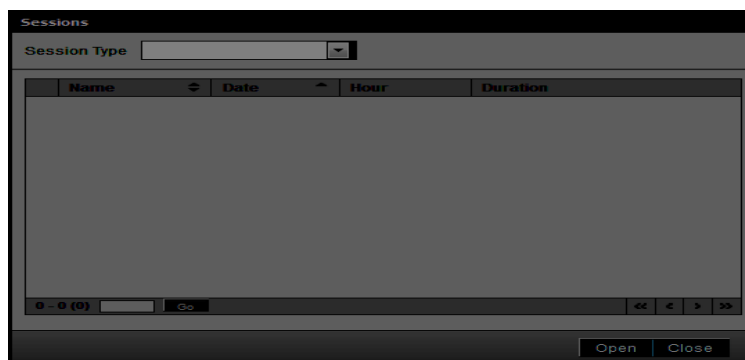
*There is only one tactical session in the system, indicating the demand forecasts for the next **six (06) hours** counting from the current time. The data is updated at regular intervals of fifteen (15) minutes) (0, 15, 30, and 45).*

4.1.3 Historical Session:

Historical sessions result from state changes in the strategic session of the day. This state change may occur automatically or by means of an action executed by the user. From the moment the session changes into the “Historic” state, the data is only available for reference. Historic sessions are available for 90 days.

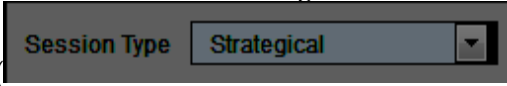
4.1.4 Selection of “Session Type”:

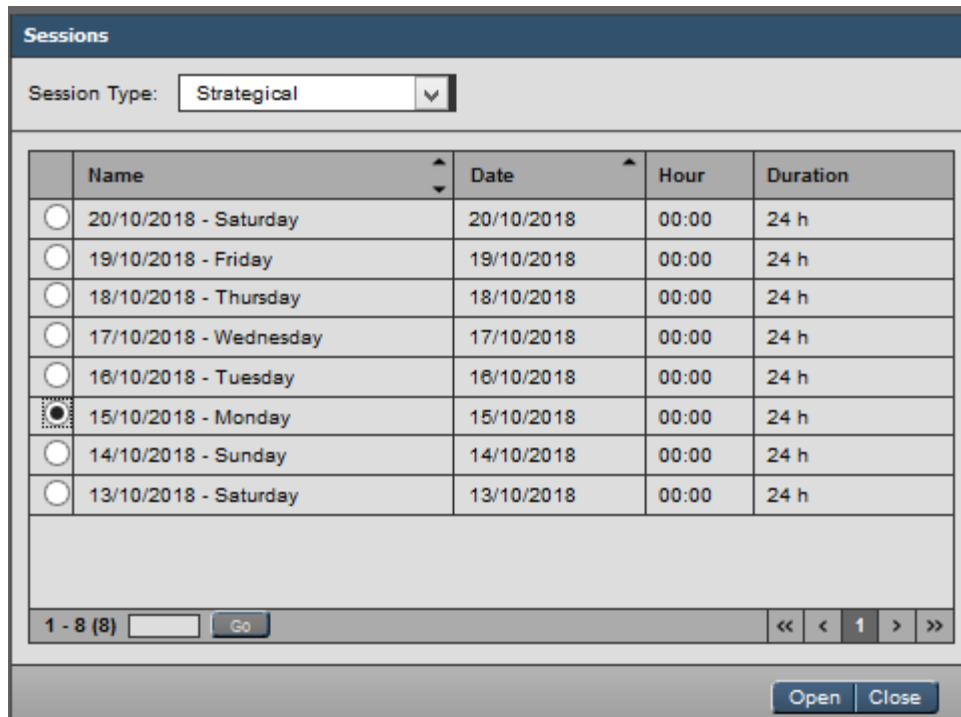
When this functionality is selected, the system displays a screen in which the user can assign the type of session of interest as follows:



4.1.4.1 STRATEGICAL SESSION

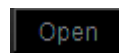
To access the data of a Strategic Session, the user must select the "Strategical" option in the option Combo-

Box (), and the system shows the list of sessions available in the system as follows.

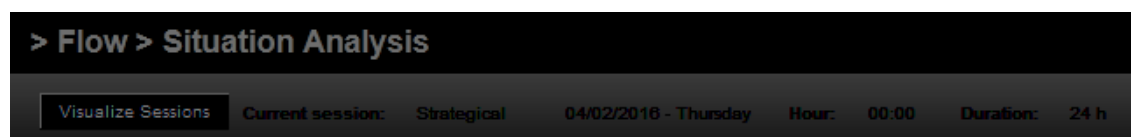


	Name	Date	Hour	Duration
<input type="radio"/>	20/10/2018 - Saturday	20/10/2018	00:00	24 h
<input type="radio"/>	19/10/2018 - Friday	19/10/2018	00:00	24 h
<input type="radio"/>	18/10/2018 - Thursday	18/10/2018	00:00	24 h
<input type="radio"/>	17/10/2018 - Wednesday	17/10/2018	00:00	24 h
<input type="radio"/>	16/10/2018 - Tuesday	16/10/2018	00:00	24 h
<input checked="" type="radio"/>	15/10/2018 - Monday	15/10/2018	00:00	24 h
<input type="radio"/>	14/10/2018 - Sunday	14/10/2018	00:00	24 h
<input type="radio"/>	13/10/2018 - Saturday	13/10/2018	00:00	24 h

To interact with the session data, the user must select the session of interest () and click on the button

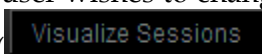


When the process is completed, the system fills in the identification data of the session selected as highlighted in the figure below.

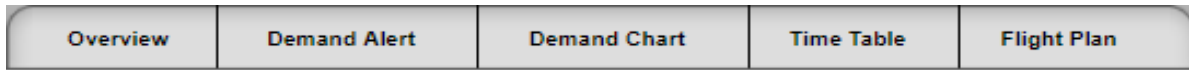


> Flow > Situation Analysis

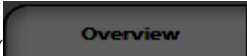
Visualize Sessions Current session: Strategical 04/02/2018 - Thursday Hour: 00:00 Duration: 24 h

Note: If the user wishes to change the session to be analyzed, the process can be resumed by accessing the Session () button.

At this moment, the user must select one of the following tabs:



Overview Tab:




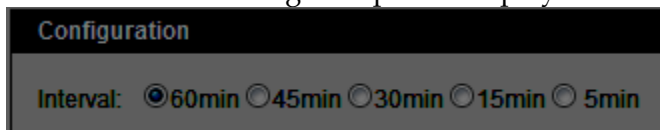
This option () provides the Flow operator with data related to the regulated Elements that are affected by the demand, displayed with the following distinctive colours:

- Yellow - identifies regulated elements that reached the limit to be considered as congested (above 80% of the maximum capacity value).
- Red - identifies regulated elements that reached the saturation parameter (above 100% of the capacity value).

Note: The absence of record in a given type of regulated element indicates that it is not affected by the flight intentions in the period of the session (green background).

Configuration						
Interval: <input checked="" type="radio"/> 60min <input type="radio"/> 45min <input type="radio"/> 30min <input type="radio"/> 15min <input type="radio"/> 5min						
Regulated Elements						
Aerodromes	Aerodrome Groups	Airway Segments	Airway Segment Groups	Controlled Auxiliary Points	SUAs	FIR Sectors
VABB					VIR153A	VOMF.SUML
VJJP						VOMF.SUMM
VOGO						VOMF.SUHS
VOBL						VABF.BFMB
VOVZ						VABF.UAHE
VAPO						VOMF.SUBL
VIDP						VECF.SUBN

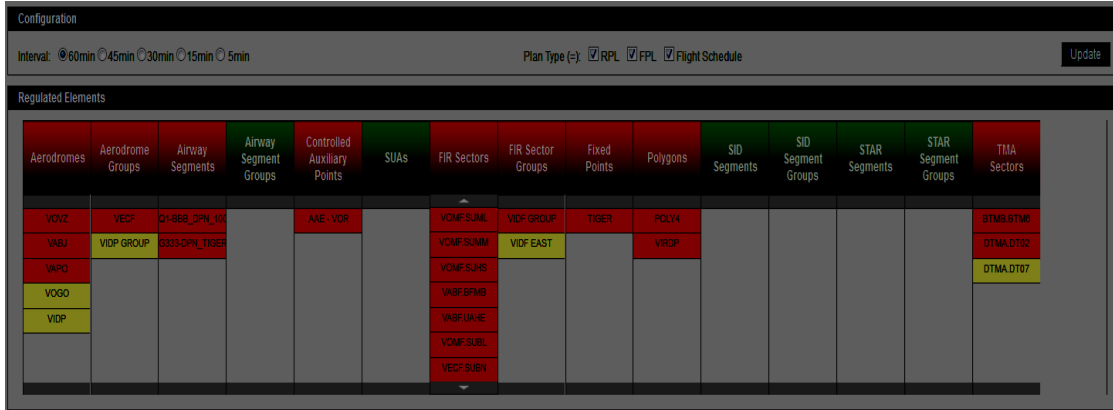
To configure the intervals of interest, to view the situation of the regulated Elements, the operator must select the value among the options displayed in the image below, and then press the button .



Note: If a configuration different than 60 min is defined, the information on the following elements is displayed in a different fashion:

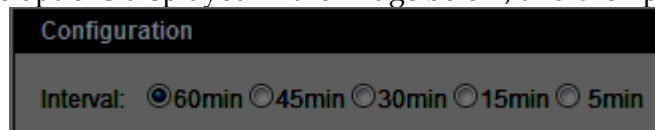
- Aerodromes and respective groups;
- Airway and respective groups;

- Controlled Auxiliary Points;
- SUAs;
- FIR Sector and respective groups;
- Fixed Points;
- Polygons;
- SID segments and respective groups;



- STAR segments and respective groups; and
- TMA sectors.

To configure the intervals of interest, to view the situation of the regulated Elements, the operator must select the value among the options displayed in the image below, and then press the button **Update**.



Note: If a configuration different than 60 min is defined, the information on the following elements is displayed in a different fashion:

- Aerodromes and respective groups;
- Airway and respective groups;
- Controlled Auxiliary Points;
- SUAs;
- FIR Sector and respective groups;
- Fixed Points;
- Polygons;
- SID segments and respective groups;
- STAR segments and respective groups; and

- TMA sectors.

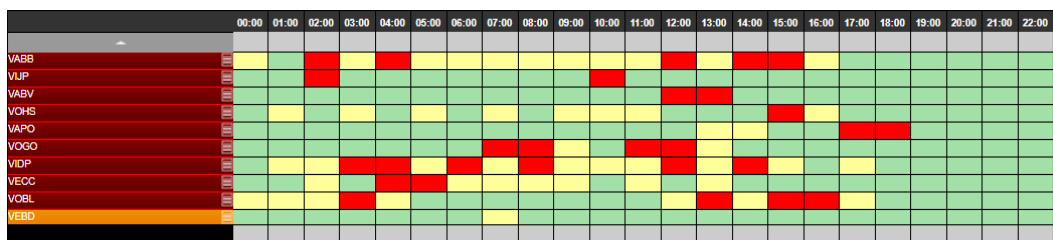
Note: If the number of elements affected is larger than the number that can be displayed on screen, the system provides the “scroll” option as indicated in the following example.



- To view the details of a specific regulated element with capacity affected, the Flow operator must click on the indicator of the element of interest as follows.

Configuration						
Interval: <input checked="" type="radio"/> 60min <input type="radio"/> 45min <input type="radio"/> 30min <input type="radio"/> 15min <input type="radio"/> 5min						
Regulated Elements						
Aerodromes	Aerodrome Groups	Airway Segments	Airway Segment Groups	Controlled Auxiliary Points	SUAs	FIR Sectors
VABB					VIR153A	VOMF.SUML
VIJP						VOMF.SUMM
VOGO						VOMF.SUHS
VOBL						VABF.BFMB
VOVZ						VABF.UAHE
VAPO						VOMF.SUBL
VIDP						VECF.SUBN

At this moment, the system shows the details of the data that affected the control element according to the time interval selected, as depicted in the figure below.




To view the Demand Graphic, the Flow operator can select the “View” () button of the referred element as indicated in the image below.

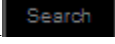


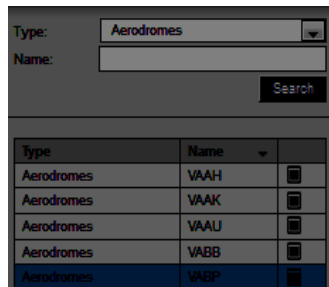
The list of warnings has columns with the following information:

- **Resource** – identifies the regulated element that is affected by imbalance.
- **Date** – date of the imbalance.
- **Hour** – starting time of the imbalance.
- **Type** – type of imbalance occurred with the regulated element
- Congested – Yellow
- Saturated – Red

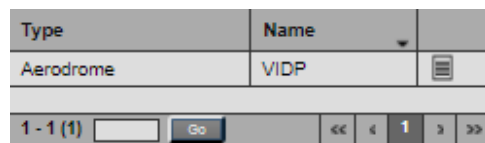
Demand Chart Tab:

This option () allows the Flow operator to analyze the data of the flight plan that is affecting the regulated elements. When this option is accessed, the system shows the types of regulated elements of interest to select as indicated in the figure below.

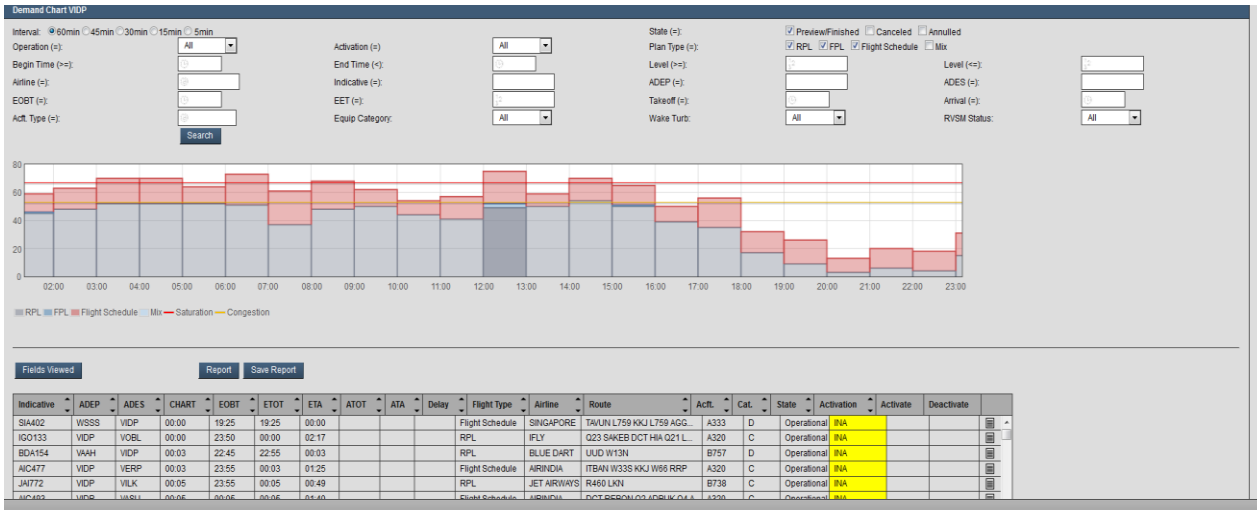
After selecting the regulated element of interest and pressing the button , the system lists the page on the left panel as follows.



To view the Demand Chart of the regulated element of interest the Flow Manager must select the view icon as follows. 



After selecting the element of interest, the system displays the following page containing the data for analysis.



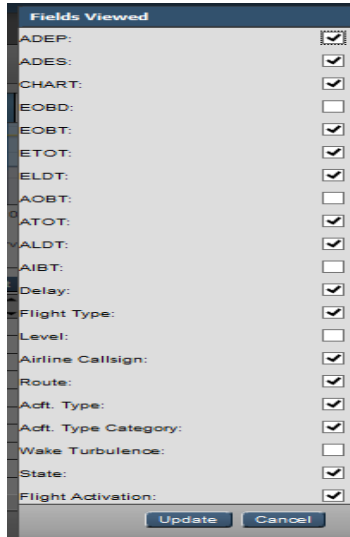
In this page, the Flow Manager can configure the demand ruler according to the operational interest. Therefore, the user must select the interval of interest and press the button **Search**, and the system adjusts the ruler according to the parameters specified.


The demand information is presented in a specific ruler in which the several types of flight intentions are displayed in respect to the time interval selected and the selection criteria defined. The graphic displayed includes the reference lines that indicate Saturation (red) and Congested (yellow) for the interval specified, as identified in the figure below.

The lower part of the page shows the flight intentions that are involved with the regulated elements selected. The data of each element is displayed as a line according to the image below.

Indicative	ADEP	ADES	CHART	EOBT	ETOT	ETA	ATOT	ATA	Delay	Flight Type	Level	Airline	Route	Act.	Cat.	Wake Turb.	State	Activation
AIC30	VABB	VAAH	00:00	00:00	00:00	00:40				Flight Schedule	F290	AIRINDIA	W13N	A319	C	M	Operational	INA
SEJ421	VABB	VOHS	00:00	23:50	00:00	00:59				RPL	F370	SPICEJET	W28	B738	C	M	Operational	INA
AIC083	VABB	VOGO	00:00	23:50	00:00	00:44				RPL	F290	AIRINDIA	W15S	A319	C	M	Operational	INA
JAI411	VAAH	VABB	00:03	23:00	23:10	00:03				RPL	F320	JET AIRWAYS	W13S	B738	C	M	Operational	INA

When the button **Fields Viewed** is pressed, the Flow Manager can select the fields he wishes to view among the following options.



To search the data of a plan included in the flight intention page, the operator must press the “Search” () button displayed in the flight intention as follows.

	Indicative	ADEP	ADES	Chart	EOBT	ETOT	ATOT	ELDT	ALDT	Delay	Flight Type	Airline Callsign	Route	Acft.	Cat.	State	Activation	Activate	Deactivate
1	THY6572	VIDP	LTEA	00:01	23:20	23:30	00:01	05:50		00:31	FPL	TURKISH	BUTOP5F BUTOP A589 ASAR...	A332	D	Finished	COR		
2	IGO6812	VIDP	VILK	00:03	00:05	00:15	00:03	01:03		-00:12	FPL	IFLY	R460	A320	C	Finished	DEF		
3	JAI772	VIDP	VILK	00:04	23:55	00:05	00:04	00:48		-00:01	FPL	JET AIRWAYS	ALI5C ALI R460 LKN DCT	B738	C	Finished	DEF		
4	IGO389	VOVZ	VIDP	00:06	20:45	20:55	21:13	23:55	00:05	00:18	FPL	IFLY	W43 BIA Q22 HIA DCT ALB...	A320	C	Finished	DEF		
5	IGO2719	VIDP	VOVZ	00:06	23:50	00:00	00:06	01:48	02:10	00:06	FPL	IFLY	W33S KKJ W138 RRP W66	A320	C	Finished	COR		
6	AIC485	VIDP	VOVZ	00:11	00:00	00:10	00:11	02:00	02:05	00:01	FPL	AIRINDIA	ITBAN W33S AGG DCT 2816...	A320	C	Finished	DEF		
7	ALK192	VIDP	VCBI	00:11	23:40	23:50	00:11	02:56		00:21	FPL	SRI LANKAN	AKRIB Q23 RINTO N0482F3...	A320	C	Finished	COR		
8	BDA154	VAAH	VIDP	00:13	22:45	22:55	23:04	00:03	00:13	00:09	FPL	BLUE DART	Q3 BUBNU Q1	B752	D	Finished	DEF		
9	JAI778	VIDP	VAID	00:14	23:55	00:05	00:14	01:41		00:09	RPL	JET AIRWAYS	A474 PRA W75 IID	AT72	B	Finished	COR		

After selecting the search, the system shows a specific screen with the plan detailed data as follows.

Flight Plan Detail

Flight Data

Indicative: IGO8612 ADEP: VIDP EOBD: 13/10/2018 EOBT: 00:05 ETOT: 00:15 Flight Type: E
 ATOD: 12/10/2018 AOBT: ATOT: 00:03
 Airline Callsign: IFLY

Aircraft **Additional Information**

Number: Aircraft type: A320 Wake Turbulence Category: L Nav/Com: SDE1FGHIRW\ Flight Rule: I

Frequency

Plan Type: FPL Frequency: 1234567

Additional Information **Results**

ADES: VILK EET: 00:46 SLDT: 01:01 Alternative Aerodrome: VIDP
 Flight Speed: N0405 Flight Level: F290 ELDT: 01:03
 ALDT: AIBT:

Route:
 R460

796 of 800 character(s) remaining.

Other informations
 PBN/A1B2B3B4C2D2O2 NAV/TCAS II EQUIPPED RNP2 CONTINENTAL DOF/181013 REG/VTIGU
 SEL/GMCQ CODE/8005DD RMK/RT DESIGNATOR IFLY

679 of 800 character(s) remaining.

Warnings:
 13/10/2018 00:03:33 DEP message received.
 EOBT: 0005
 ATOT: 0003
 13/10/2018 01:15:46 Flight finished.

Show Flight Plan Messages Details

Close

When the button **Details** present in the page is pressed, the system displays the route specified in the plan in detail as depicted below.

Route Detail

Sub-routes

Sub-route	Type
R460	
(1)	

Segments


	FIR/TMA	Sector	Speed Var.	Type	Airways	Distance	Point A	Point B
1	TMA: DTMA	DTC1	25	TAKEOFF	ALI5H	4.08	VIDP	2835N07702E
2	TMA: DTMA	DT01	25	TAKEOFF	ALI5H	4.83	2835N07702E	2836N07656E
3	FIR: VIDF	DF5A	12	TAKEOFF	ALI5H	2.53	2836N07656E	BIPAN
4	TMA: DTMA	DT02	26	TAKEOFF	ALI5H	5.98	BIPAN	DP411
5	TMA: DTMA	DT02	22	TAKEOFF	ALI5H	5.68	DP411	ALIJA
6	TMA: DTMA	DT02	15	TAKEOFF	ALI5H	4.18	ALIJA	2823N07655E
7	TMA: DTMA	DT02	11	CRUISE	ALI5H	3.04	2823N07655E	LAPOT
8	FIR: VIDF	DF5B	8	CRUISE	ALI5H	1.78	LAPOT	2821N07700E








Points

	Point	Coordinate	Target Level	Current Level	Target Speed	Current Speed	EET	ETO	ATO	Type
1	VIDP	2834N07706E	F290	F008	N0145	N0145	0000	0015	0003	Aerodrome
2	2835N07702E	2835N07702E	F290	F050	N0405	N0170	0002	0017	0005	Calculate
3	2836N07656E	2836N07656E	F290	F100	N0405	N0195	0003	0018	0006	Calculate
4	BIPAN	2836N07654E	F290	F128	N0405	N0207	0004	0019	0007	Fix
5	DP411	2831N07650E	F290	F188	N0405	N0233	0006	0021	0009	Fix
6	ALIJA	2825N07651E	F290	F247	N0405	N0256	0007	0022	0010	Fix
7	2823N07655E	2823N07655E	F290	F290	N0405	N0271	0008	0023	0011	Calculate
8	LAPOT	2822N07656E	F290	F290	N0405	N0282	0009	0024	0012	Fix

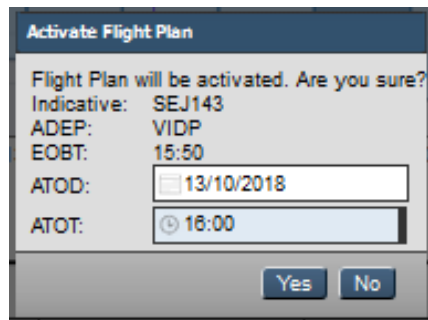
Show speed transitions Show level transitions Show zone transitions Enable filters

Close

To activate a flight intention, the Flow operator must select the option  included in the intention of interest as follows.

State	Activation		Activate
Operational	INA		
Operational	FAM		
Operational	INA		
Operational	INA		

To confirm the activation of the intention, the user must declare the UTC time that the system must then consider as Actual Take-off time (ATOT).



Activate Flight Plan

Flight Plan will be activated. Are you sure?

Indicative: SEJ143

ADEP: VIDP








EOBT: 15:50

ATOD: 13/10/2018

ATOT: 16:00

Yes No

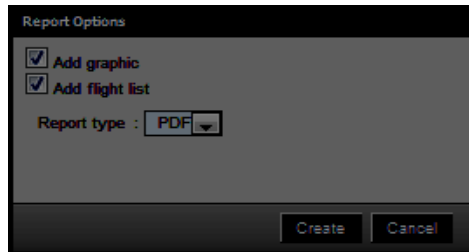
When the activation action is confirmed, the activation state of the referred intention changes to Active by Manager (FAM) and is then identified as follows.

State	Activation		Activate
Operational	INA		
Operational	FAM		
Operational	INA		
Operational	INA		

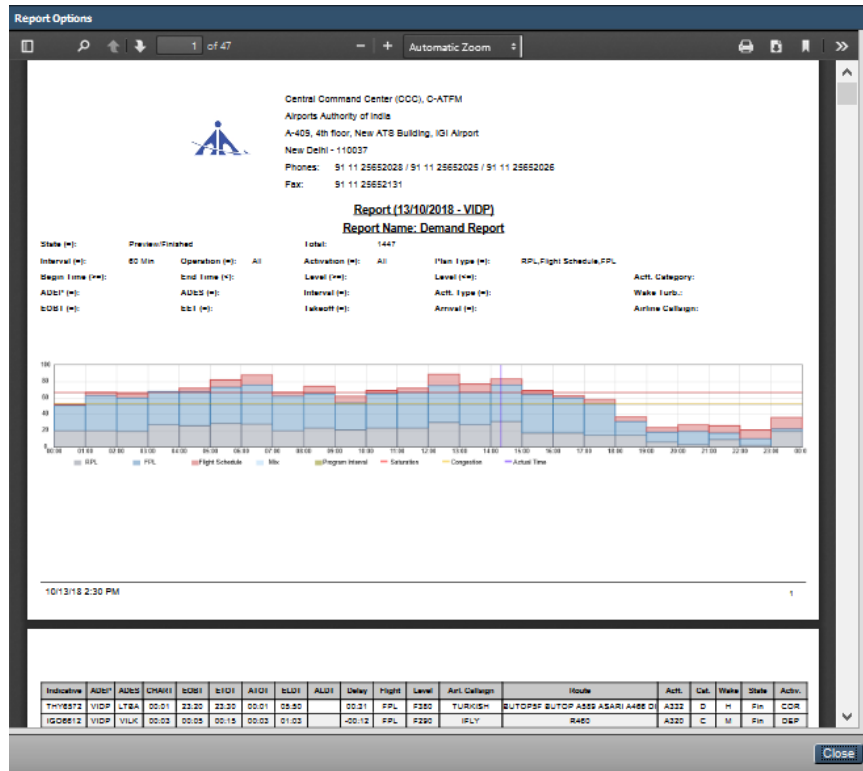
Besides the interaction options shown previously, the Flow operator can also access the functionalities to generate PDF and RTF reports as follows.

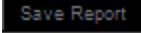
Report

This option allows generation PDF, XLS, or RTF reports by means of the following screen.



When the report presentation form is selected, the Flow Manager must select the “Create” option and the system displays the final report with the print or download options.



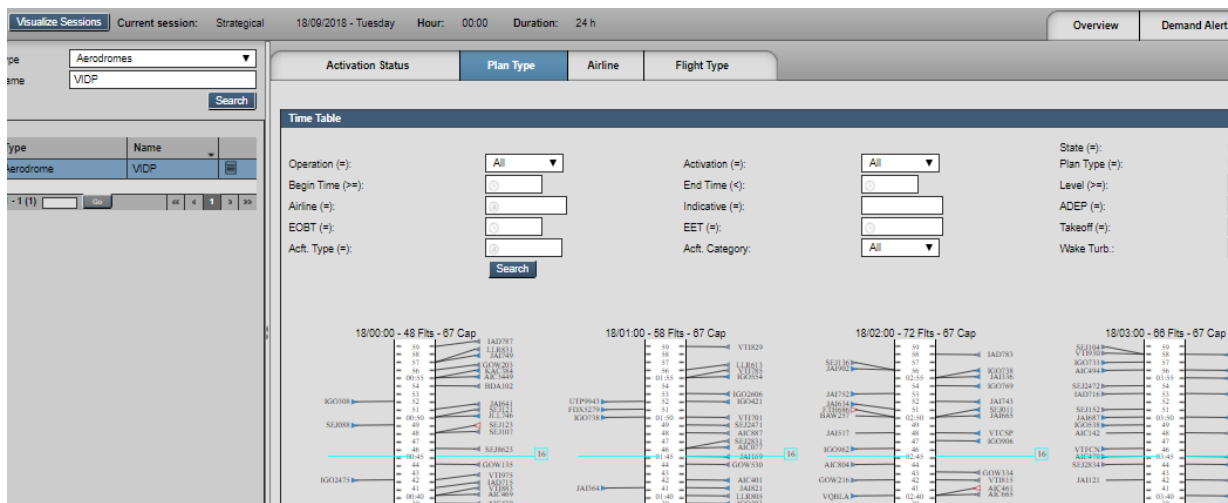
Besides the report generation functions, the system provides the option  to save the data for further analysis and shows the following message:



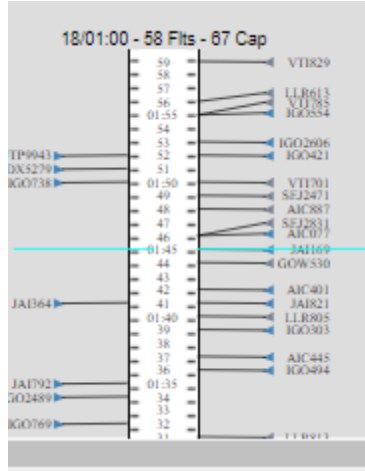
Note: The data saved in this option remains available in the login of the user who executed the function for as long as the user remains logged in the system.

Time Table Tab:

This allows the user to visualize how the flights are sequenced on a certain regulated element. This visualization is available for regulated elements of the following types: aerodrome, fix, FIR sector and TMA sector. The system may display a maximum of six timelines that represent a maximum of six hours each. At the top of each timeline, the date, time, the total amount of movements predicted for the time interval and the capacity of the element in the time interval are displayed. In the time table of the aerodromes, flights that take off are displayed on the right side of the timeline and flights that land are displayed on the left side. As with the demand charts, the user can view the flight intentions grouped by activation status, flight plan type, airline and type of flight. Each of these types of visualization differentiate the possible types of flight intentions using icons positioned alongside their call signs. In the regulated elements of fix, FIR sector and TMA sector types, all flight intentions are displayed on the left side of the timeline.



The time table also displays the capacity variations every quarter of an hour, indicated by a line of cyan color and by a capacity value located to the left side of it. In case the capacity of a given quarter of an hour is zero, the background color will be darker. When a program has been applied to the regulated element, the period in which the measure has been applied will be displayed in yellow. In red, next to the callsign, the system will display in how many minutes the flight intention was delayed due to the program. To see the details of a flight intention, simply put the mouse pointer over the callsign and a tooltip will be displayed containing more information.

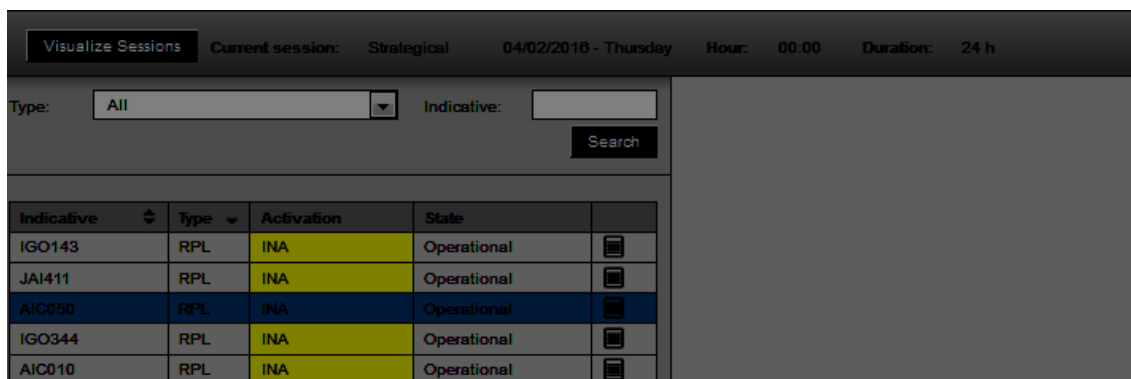


Flight Plan Tab:

This option () allows searching the plan base that composes a specific session. When this option is accessed, the Flow operator is provided with a list of types of plans to select, namely:

- **All** – shows all plans included in the Session selected.
- **FPL** – shows all FPLs included in the Session.
- **RPL** – shows all flight intentions included in the Repetitive Flight Plan base of the Session.
- **FLIGHT SCHEDULE** – shows all flight intentions based in FLIGHT SCHEDULE.

The image below shows the initial data of the plan list according to the search criterion established.

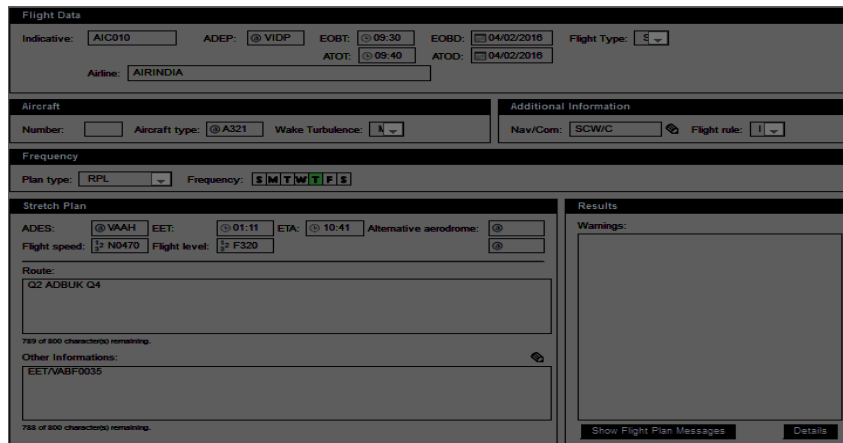


Indicative	Type	Activation	State
IGO143	RPL	INA	Operational
JAI411	RPL	INA	Operational
AIC050	RPL	INA	Operational
IGO344	RPL	INA	Operational
AIC010	RPL	INA	Operational

To search the data of a flight intention included in the session, the Flow operator must press the “Consult” () button as indicated in the figure below.

Indicative	Type	Activation	State
AIC011	RPL	INA	Operational
AIC012	RPL	INA	Operational

After selecting the search, the system shows a specific screen with the plan detailed data as follows.

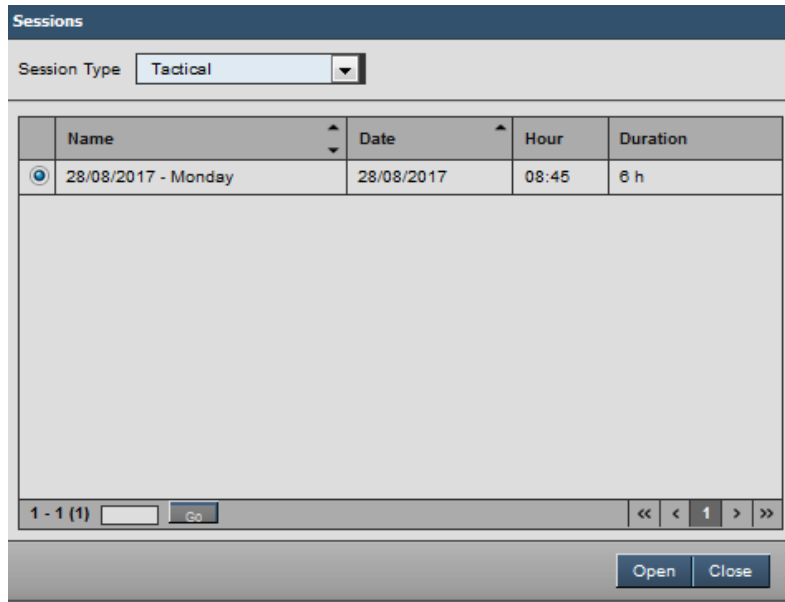


The screenshot shows a detailed flight plan form with the following sections:

- Flight Data:** Indicative: AIC010, ADEP: @ VIDP, EOGT: @ 09:30, EOBG: @ 04/02/2016, Flight Type: [dropdown], Airline: AIRINDIA, ATOT: @ 09:40, ATOD: @ 04/02/2016.
- Aircraft:** Number: [input], Aircraft type: @ A321, Wake Turbulence: [dropdown].
- Additional Information:** Nav/Com: SCW/C, Flight rule: [dropdown].
- Frequency:** Plan type: RPL, Frequency: [dropdown].
- Stretch Plan:** ADES: @ VAAH, EET: @ 01:11, ETA: @ 10:41, Alternative aerodrome: [dropdown], Flight speed: @ N0470, Flight level: @ F320, Route: Q2 ADBUK Q4.
- Results:** Warnings: [empty area].

4.1.4.2 TACTICAL SESSION


To access the data of a Tactical Session, the user must select the "Tactical" option in the option Combo-Box (), and the system shows the session available in the system (only one) as follows:



The screenshot shows a 'Sessions' form with a dropdown menu set to 'Tactical'. Below the dropdown is a table with the following data:

Name	Date	Hour	Duration
28/08/2017 - Monday	28/08/2017	08:45	6 h

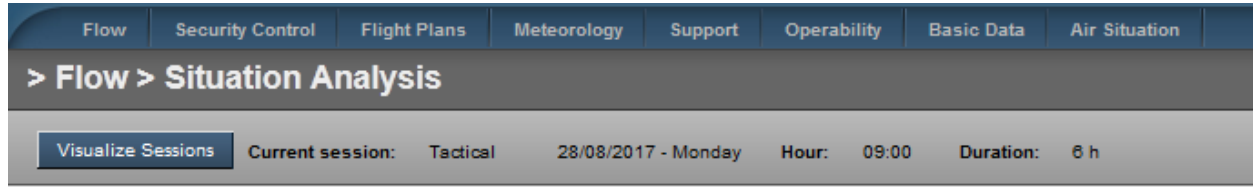
At the bottom of the table, there is a pagination control showing '1 - 1 (1)' and a 'Go' button. Below the table are 'Open' and 'Close' buttons.

To interact with the session data, the user must click on the button  as follows.



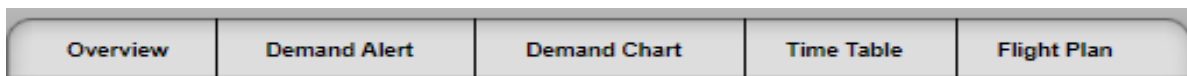
This close-up shows the pagination control '1 - 1 (1)' with a 'Go' button, and the 'Open' and 'Close' buttons below it.

When the process is completed, the system fills in the identification data of the session selected as highlighted in the figure below (left pane of the window).



Note: If the user wishes to change the type of session to be analyzed, the process can be resumed by accessing the Session () button.

At this moment, the user must select one of the following tabs (right panel of the window):



Note: All the above shown tabs, work exactly as discussed in Strategic Sessions.

4.1.4.3 HISTORICAL SESSION



To access the data of a Historical Session, the user must select the "Historical" option in the option Combo-Box (), and the system shows the list of sessions available in the system as follows.

Sessions

Session Type:

	Name	Date	Hour	Duration
<input checked="" type="radio"/>	12/10/2018 - Friday	12/10/2018	00:00	24 h
<input type="radio"/>	11/10/2018 - Thursday	11/10/2018	00:00	24 h
<input type="radio"/>	10/10/2018 - Wednesday	10/10/2018	00:00	24 h
<input type="radio"/>	09/10/2018 - Tuesday	09/10/2018	00:00	24 h
<input type="radio"/>	08/10/2018 - Monday	08/10/2018	00:00	24 h
<input type="radio"/>	07/10/2018 - Sunday	07/10/2018	00:00	24 h
<input type="radio"/>	06/10/2018 - Saturday	06/10/2018	00:00	24 h
<input type="radio"/>	05/10/2018 - Friday	05/10/2018	00:00	24 h
<input type="radio"/>	04/10/2018 - Thursday	04/10/2018	00:00	24 h
<input type="radio"/>	03/10/2018 - Wednesday	03/10/2018	00:00	24 h

1 - 10 (90) << < 1 2 3 4 5 > >>

To interact with the session data, the user must select the session of interest () and click on the button  as follows.

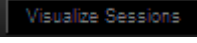
	Name	Date	Hour	Duration
<input type="radio"/>	12/10/2018 - Friday	12/10/2018	00:00	24 h
<input type="radio"/>	11/10/2018 - Thursday	11/10/2018	00:00	24 h
<input checked="" type="radio"/>	10/10/2018 - Wednesday	10/10/2018	00:00	24 h
<input type="radio"/>	09/10/2018 - Tuesday	09/10/2018	00:00	24 h

When the process is completed, the system fills in the identification data of the session selected as highlighted in the figure below (left panel of the window).

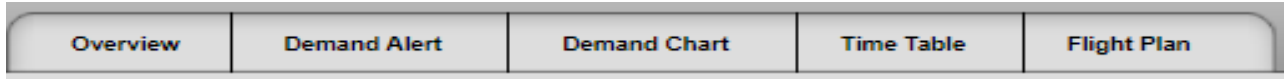
Flow Security Control Flight Plans Operability

> Flow > Situation Analysis

Current session: Historical 10/10/2018 - Wednesday Hour: 00:00 Duration: 24 h

Note: If the user wishes to change the session to be analyzed, the process can be resumed by accessing the Session () button.

At this moment, the user must select one of the following tabs (right pane of the window):

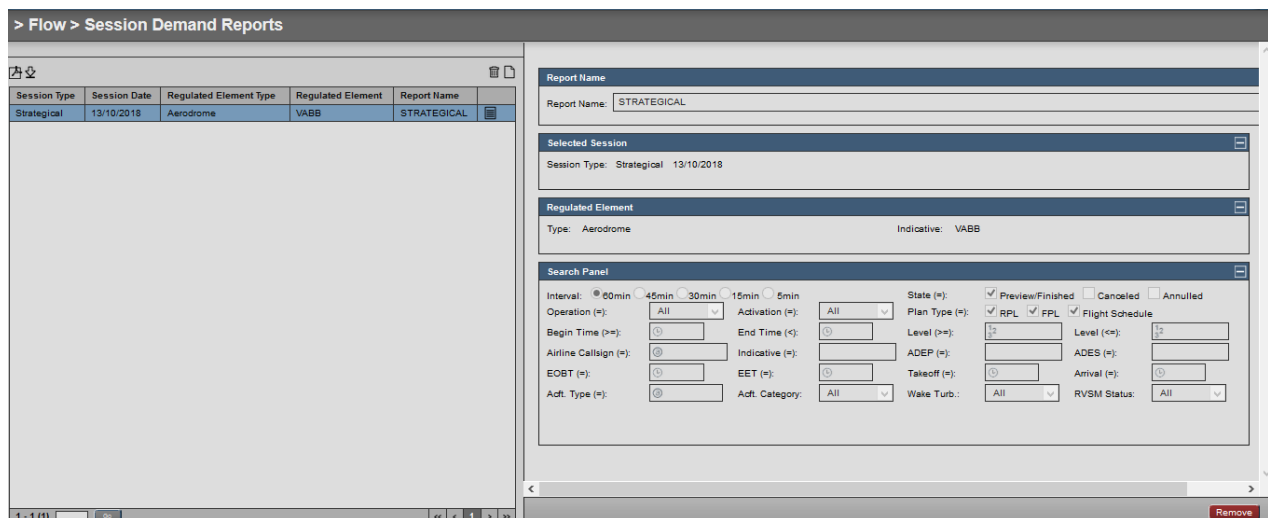


Note: All the above shown tabs, work exactly as discussed in Strategic Sessions.

4.2 Session Demand Report Functionality

The purpose of this functionality is to allow the user to access the data recorded in a session. Such information is available during the period in which the user remains logged in the system.


When this functionality is selected, the system displays the demand reports recorded during the period in which the user remained logged in the system.



The number of reports saved is listed in the left panel as shown above.

Note: When a logged user executes the “Exit” command, the system deletes all reports recorded.

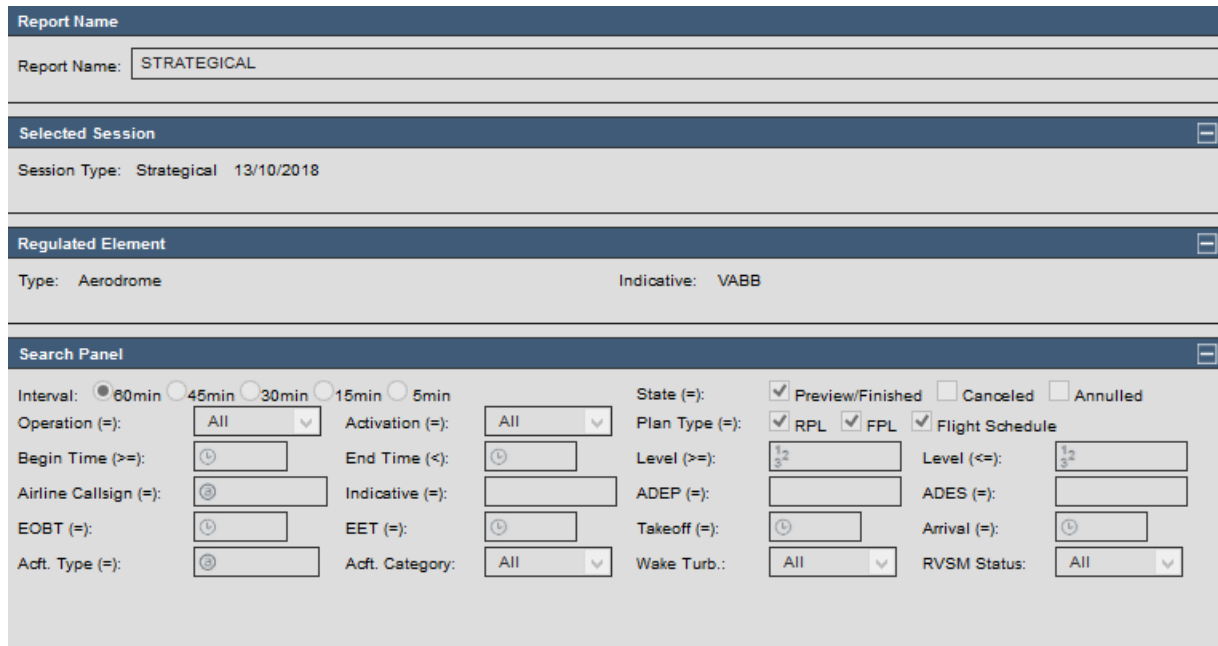
This functionality provides the following interaction options.

Session Type	Session Date	Regulated Element Type	Regulated Element	Report Name	
Strategical	13/10/2018	Aerodrome	VABB	STRATEGICAL	

After selecting the search option, the system displays a form in the right panel containing the report basic data as follows.

4.2.1 Search Basic Data

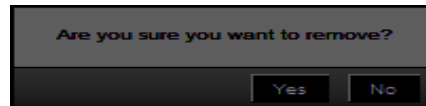
To search the basic data of a report available in the system, the user must press the "Consult" () icon provided in the report of interest as signaled below.



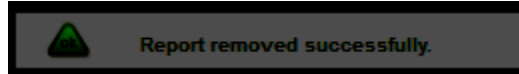
The screenshot shows a search form with the following sections:

- Report Name:** Report Name: STRATEGICAL
- Selected Session:** Session Type: Strategical 13/10/2018
- Regulated Element:** Type: Aerodrome Indicative: VABB
- Search Panel:**
 - Interval: 60min 45min 30min 15min 5min
 - Operation (=): Activation (=):
 - Begin Time (>=): End Time (<):
 - Airline Callsign (=): Indicative (=):
 - EOBT (=): EET (=):
 - Acft. Type (=): Acft. Category:
 - State (=): Preview/Finished Canceled Annulled
 - Plan Type (=): RPL FPL Flight Schedule
 - Level (>=): Level (<=):
 - ADEP (=): ADES (=):
 - Takeoff (=): Arrival (=):
 - Wake Turb.: RVSM Status:


To remove the referred report, the user must press the button  and the system requests confirmation to execute the action.




When the “Yes” option is selected, the system deletes the record from the list included in the left panel and shows the following message:





- **Viewing Reports in PDF format**

Session Type	Session Date	Regulated Element Type	Regulated Element	Report Name	
Strategical	13/10/2018	Aerodrome	VABB	STRATEGICAL	


To view the report in PDF format, the user must select the icon .


- **Viewing/downloading Reports in CSV format**

To view the report in CSV format, the user must select the () icon.

Session Type	Session Date	Regulated Element Type	Regulated Element	Report Name	
Strategical	13/10/2018	Aerodrome	VABB	STRATEGICAL	

- **General Report Deletion**

Session Type	Session Date	Regulated Element Type	Regulated Element	Report Name	
Strategical	13/10/2018	Aerodrome	VABB	STRATEGICAL	

To delete all reports simultaneously, the user must select the () icon. The system then deletes all reports included in the system and updates the left panel as follows.

Session Type	Session Date	Regulated Element Type	Regulated Element	Report Name	

- **Creation of New Report**

Session Type	Session Date	Regulated Element Type	Regulated Element	Report Name	

To create a new report, the user must select the (📄) icon and the system displays the form to define the basic data of the report on the right panel, which must be completed by the user as follows.

Report Name

Report Name:

Selected Session

Session Type:

Name	Date	Hour	Duration
<input type="radio"/> 21/10/2018 - Sunday	21/10/2018	00:00	24 h
<input type="radio"/> 20/10/2018 - Saturday	20/10/2018	00:00	24 h
<input type="radio"/> 19/10/2018 - Friday	19/10/2018	00:00	24 h
<input type="radio"/> 18/10/2018 - Thursday	18/10/2018	00:00	24 h
<input type="radio"/> 17/10/2018 - Wednesday	17/10/2018	00:00	24 h
<input type="radio"/> 16/10/2018 - Tuesday	16/10/2018	00:00	24 h
<input type="radio"/> 15/10/2018 - Monday	15/10/2018	00:00	24 h
<input type="radio"/> 14/10/2018 - Sunday	14/10/2018	00:00	24 h

1 - 8 (8) << < > >>

Regulated Element

Type: Indicative:

Regulated Element	Type

0 - 0 (0) << < > >>

Search Panel

Interval: 60min 45min 30min 15min 5min

Operation (=): Activation (=):

Begin Time (>=): End Time (<):

Airline Callsign (=): Indicative (=):

EOBT (=): EET (=):

Acft. Type (=): Acft. Category:

State (=): Preview/Finished Canceled Annulled


Plan Type (=): RPL FPL Flight Schedule

Level (>=): Level (<=):

ADEP (=): ADES (=):

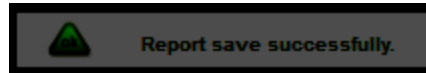
Takeoff (=): Arrival (=):

Wake Turb.: RVSM Status:

To complete the process, the user must press the “Save” () button and the system updates the left panel.

Session Type	Session Date	Regulated Element Type	Regulated Element	Report Name
Strategical	14/10/2018	Aerodrome	VABB	STRATEGICAL

Besides this action, the system shows a success message.



4.3 Capacity Projection

The purpose of this functionality is to enable the user to consult the capabilities of the regulated elements of interest by the selection of the type of regulated element and the definition of the period. This functionality provides a summary of the impacts suffered to the elements regulated in that period. In the interface will be presented data from the original capacity (nominal), the new value (degraded) and the percentage of degradation that was applied. The lists of impacting factors will also be presented (OPE and SUA)

Flow	Security Control	Flight
Automatic Session		
Session Demand Reports		
Capacity Projection		
Sector Time		
Collaborative Decision Making		
Manual Session		

To access this functionality click in Capacity Projection: the system offers several types of regulated elements that can be consulted, as shown in the following figures below:

> Flow > Capacity Projection

Type: Indicative: Interval: 60min 45min 30min 15min Begin Date: End Date:

- Aerodrome
- Airway Segment
- FIR Sector
- TMA Sector
- STAR Segment
- SID Segment
- Fixes
- Navaid

Type Aerodrome: after to fill the following fields: "Type", "indicative", "interval", "begin date and time" and "end date and time"

> Flow > Capacity Projection

Type: Aerodrome Indicative: VIDP Interval: 60min 45min 30min 15min Begin Date: 02/11/2016 02:00 End Date: 02/11/2016 06:00

VIDP - INDIRA GANDHI INTERNATIONAL

Capacities

Begin Date	End Date	Nominal	Degraded	Impact
02/11/2016 - 02:00	02/11/2016 - 02:45	16	16	
02/11/2016 - 02:45	02/11/2016 - 03:00	15	15	
02/11/2016 - 03:00	02/11/2016 - 03:45	16	16	
02/11/2016 - 03:45	02/11/2016 - 04:00	15	15	
02/11/2016 - 04:00	02/11/2016 - 04:45	16	16	
02/11/2016 - 04:45	02/11/2016 - 05:00	15	15	
02/11/2016 - 05:00	02/11/2016 - 05:45	16	16	
02/11/2016 - 05:45	02/11/2016 - 06:00	15	15	

OPE Impact

Type	Element	Resource	State	Start	End	Priority	Comment	Motive
(0)								

SUA Impact

Type	Identification	State	Name	Operational Condition	Start	End	Lowest Limit	Highest Limit	Activation Mode	Observation
RAR	TEST9	Inactive		Restricted	19/09/2016 - 09:38	20/09/2016 - 01:00	GND	F460		
SUA	VR155A	Inactive	HINDON I	Restricted	28/10/2015 - 11:41 22/09/2016 - 02:00	18/09/2016 - 23:59 23/09/2016 - 02:00	F000	F999		

Similarly we can consult the capabilities of the other regulated elements of interest.

The system show the selected aerodrome to consult capacities, OPE impact and SUA impact.

VAAH - SARDAR VALLABHBHAI PATEL INTERNATIONAL

Capacities

Begin Date	End Date	Nominal	Degraded	Impact
01/02/2015 - 08:00	14/02/2016 - 08:00	20	20	

OPE Impact

Type	Element	Resource	State	Start	End	Priority	Comment	Motive
(0)								

SUA Impact

Type	Identification	State	Name	Operational Condition	Start	End	Lowest Limit	Highest Limit	Activation Mode	Observation
(0)										

To generate consult in PDF click in  to generate consult in XLS click in 

4.4 Sector Time: (Not for use in this manual)

4.5 Collaborative Decision Making (CDM)

The Collaborative Decision Making (CDM) Module is the component that allows proposing a solution for strategic or tactical flow problems. The National Manager has tools to simulate the problem, correct it, and have a solution proposal to evaluate collaboratively with the Stake holders. Finally, the operational measures defined can be applied.

The CDM prepared by the user in “Being Analysed” window, will be in “Private” state initially. During this state, the data in the CDM scenario is available for corrections. When it is published. After it is published, it is available for the users for viewing under the same “Being Analysed” state. During this public state, the CDM is meant for corrections from the Stakeholders.

Next stage of the CDM scenario will be “Applied” When the same CDM is migrated to applied state by the user who created the scenario, corrections are possible for the CDM scenario, selected.

The FMP manager can view the CDM scenario and execution report in “being analyzed” and “applied” type drop down window. In the window shown below, an applied scenario is shown for illustration.

Being Analysed:



Name	Motive	Date	hour	Duration	State
CDM1_VIDP_280817	ATFM MEASURES F...	28/08/2017 - Monday	03:00	03:00	Public
TESTDELAY	test	24/08/2017 - Thursday	11:00	01:00	Private

Fig 1A

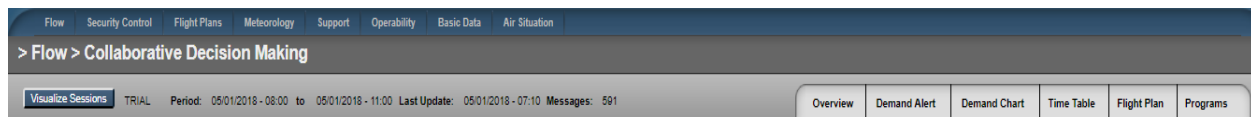


Name	Motive	Date	hour	Duration	State
CDM3_VIDP_270817	ATFM MEASURES F...	27/08/2017 - Sunday	12:00	03:00	Public
CDM2_VIDP_270817	ATFM MEASURES F...	27/08/2017 - Sunday	08:00	03:00	Public
CDM1_VIDP_270817	ATFM MEASURES F...	27/08/2017 - Sunday	03:00	03:00	Public

Fig 1B

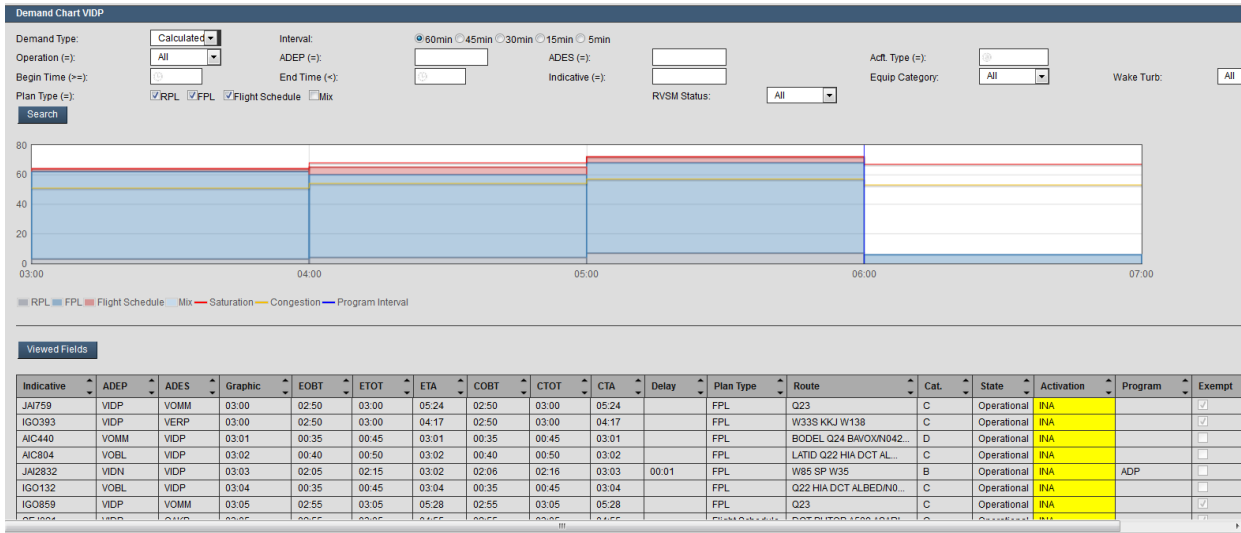
Note: The FMP manager cannot create a scenario in CDM. The scenario windows is for illustration purpose only for FMP manager. Only the National Manager is authorized to create.

When the FMP Manager selects the scenario, from the fig. 1, visualize session window is displayed, the user may select Tabs as appropriate:



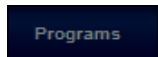
Overview and Demand Alert Tabs: (as described earlier in Automatic session)

Demand Chart Tab: Here, in addition to functions described in Automatic Session, in CDM the FMP Manager can see which type of ATFM measures are applied by National Manager.

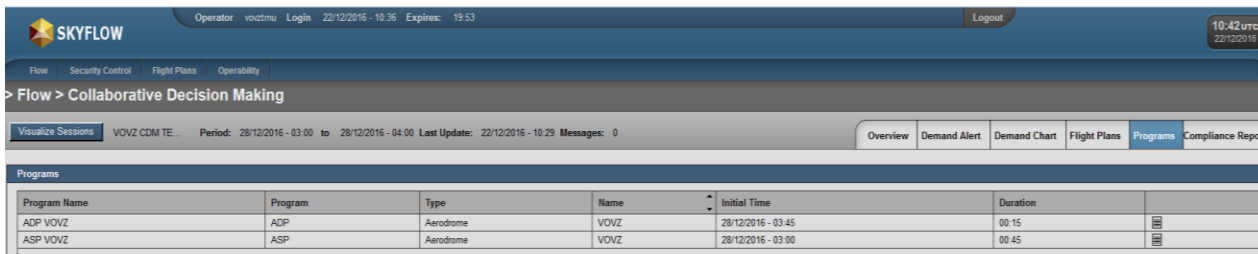


Flight plan tab: (as described earlier in Automatic session)

Programs Tab:



This option allows consult the programs applied in the scenario that is being consulted. When this option is accessed, the FMP Manager can view a window containing the following information on the programs applied in the scenario as shown below:



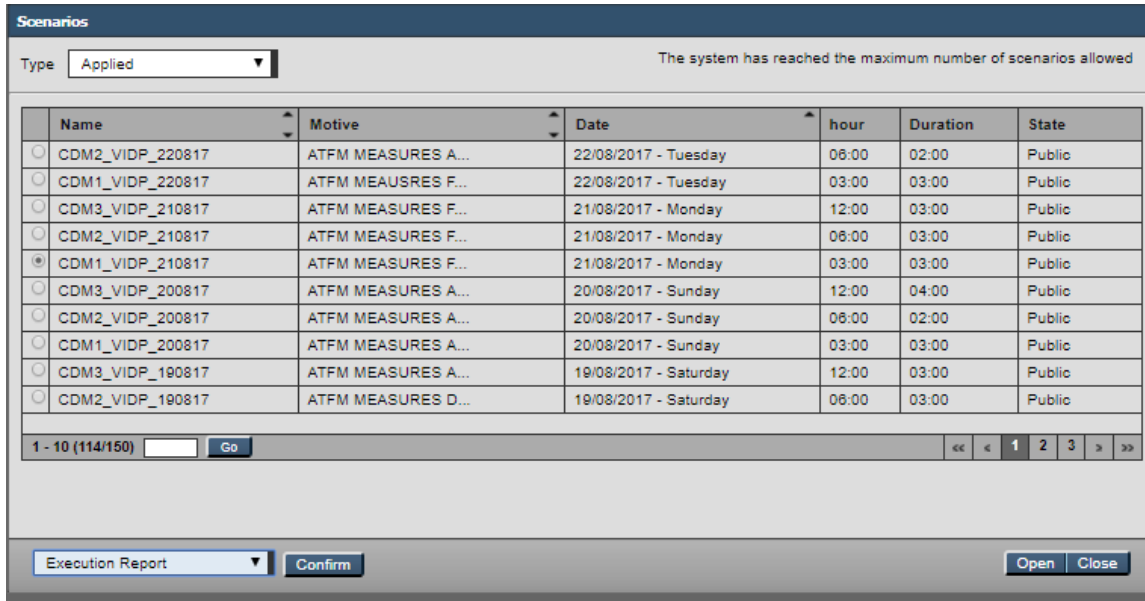
The screenshot shows the 'SKYFLOW' interface with the 'Programs' tab selected. The window title is 'Flow > Collaborative Decision Making'. Below the navigation tabs, there is a table of programs. The table has columns for Program Name, Program, Type, Name, Initial Time, and Duration.

Program Name	Program	Type	Name	Initial Time	Duration
ADP VOVZ	ADP	Aerodrome	VOVZ	28/12/2016 - 02:45	00:15
ASP VOVZ	ASP	Aerodrome	VOVZ	28/12/2016 - 03:00	00:45

- **Program Name** – this information is defined by the user when the program is created.
- **Program** – this information is defined by the system when the user selects the type of program to be created.
- **Type** – this information indicates the type of regulated element that was the focus of the program.
- **Name** – this information indicates the name of regulated element that was the focus of the program.
- **Initial Time** – this information shows the program starting time.
- **Duration** – this information shows the duration of the program.

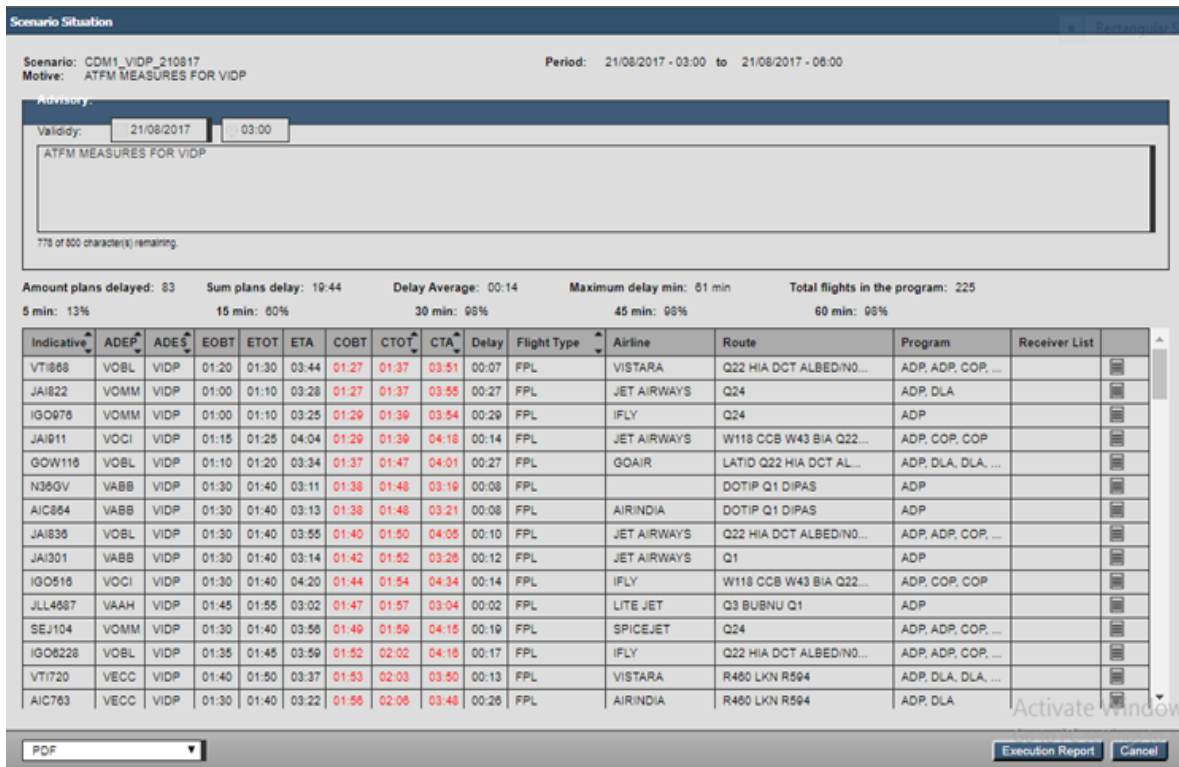
“Time Table” Tab: As described earlier in Strategic session.

“Applied” Window:



The screenshot shows a 'Scenarios' window with a 'Type' dropdown set to 'Applied'. A message at the top right states: 'The system has reached the maximum number of scenarios allowed'. Below this is a table with columns: Name, Motive, Date, hour, Duration, and State. The table lists various CDM scenarios for different dates from 19/08/2017 to 22/08/2017. At the bottom, there is a 'Go' button, a page indicator '1 - 10 (114/150)', and buttons for 'Execution Report', 'Confirm', 'Open', and 'Close'.


Execution report: The execution report of the applied CDM scenario can be taken in PDF or CSV format as shown in the window below.



The screenshot shows a 'Scenario Situation' window. It displays the scenario 'CDM1_VIDP_210817' with motive 'ATFM MEASURES FOR VIDP' for the period '21/08/2017 - 03:00 to 21/08/2017 - 06:00'. There is a text area for 'Remarks' containing 'ATFM MEASURES FOR VIDP'. Below this, summary statistics are shown: 'Amount plans delayed: 83', 'Sum plans delay: 19:44', 'Delay Average: 00:14', 'Maximum delay min: 01 min', and 'Total flights in the program: 225'. A table follows with columns for flight indicators, codes, times, delays, and flight details. At the bottom, there is a 'PDF' dropdown and buttons for 'Execution Report' and 'Cancel'.

Indicative	ADEP	ADES	EOBT	ETOT	ETA	COBT	CTOT	CTA	Delay	Flight Type	Airline	Route	Program	Receiver List
VT1868	VOBL	VIDP	01:20	01:30	03:44	01:27	01:37	03:51	00:07	FPL	VISTARA	Q22 HIA DCT ALBED/NO...	ADP, ADP, COP, ...	
JAI822	VOMM	VIDP	01:00	01:10	03:28	01:27	01:37	03:55	00:27	FPL	JET AIRWAYS	Q24	ADP, DLA	
IGO976	VOMM	VIDP	01:00	01:10	03:25	01:29	01:39	03:54	00:29	FPL	IFLY	Q24	ADP	
JAI911	VOCI	VIDP	01:15	01:25	04:04	01:29	01:39	04:18	00:14	FPL	JET AIRWAYS	W118 CCB W43 BIA Q22...	ADP, COP, COP	
GOW116	VOBL	VIDP	01:10	01:20	03:34	01:37	01:47	04:01	00:27	FPL	GOAIR	LATID Q22 HIA DCT AL...	ADP, DLA, DLA, ...	
N36GV	VABB	VIDP	01:30	01:40	03:11	01:38	01:48	03:19	00:08	FPL		DOTIP Q1 DIPAS	ADP	
AIC864	VABB	VIDP	01:30	01:40	03:13	01:38	01:48	03:21	00:08	FPL	AIRINDIA	DOTIP Q1 DIPAS	ADP	
JAI836	VOBL	VIDP	01:30	01:40	03:55	01:40	01:50	04:05	00:10	FPL	JET AIRWAYS	Q22 HIA DCT ALBED/NO...	ADP, ADP, COP, ...	
JAI301	VABB	VIDP	01:30	01:40	03:14	01:42	01:52	03:26	00:12	FPL	JET AIRWAYS	Q1	ADP	
IGO516	VOCI	VIDP	01:30	01:40	04:20	01:44	01:54	04:34	00:14	FPL	IFLY	W118 CCB W43 BIA Q22...	ADP, COP, COP	
JLL4987	VAAH	VIDP	01:45	01:55	03:02	01:47	01:57	03:04	00:02	FPL	LITE JET	Q3 BUBNU Q1	ADP	
SEJ104	VOMM	VIDP	01:30	01:40	03:56	01:49	01:59	04:15	00:19	FPL	SPICEJET	Q24	ADP, ADP, COP, ...	
IGO8228	VOBL	VIDP	01:35	01:45	03:59	01:52	02:02	04:16	00:17	FPL	IFLY	Q22 HIA DCT ALBED/NO...	ADP, ADP, COP, ...	
VT1720	VECC	VIDP	01:40	01:50	03:37	01:53	02:03	03:50	00:13	FPL	VISTARA	R480 LKN R594	ADP, DLA, DLA, ...	
AIC783	VECC	VIDP	01:30	01:40	03:22	01:56	02:06	03:48	00:26	FPL	AIRINDIA	R480 LKN R594	ADP, DLA	

Select Execution report from the above window and click the “Confirm” button. The report will be generated as shown in the following figure. It can be downloaded in PDF, XLS or CSV format.



AIRPORTS AUTHORITY OF INDIA
(A Public Sector Undertaking - Miniratna-Category-1)
Rajiv Gandhi Bhawan, Safdarjung Airport
New Delhi - 110003
FONE: 91-11-24632950
FAX.: 91-11-24632950

Scenario situation

Scenario: CDM1_VIDP_210817 Period: 21/08/2017 - 03:00 to 21/08/2017 - 06:00
 Motive: ATFM MEASURES FOR VIDP
 Advisory Validity: 21/08/2017 - 03:00

ATFM MEASURES FOR VIDP

Amount plans delayed: 83 Sum plans delay: 19:44 Delay Average: 00:14 Maximum delay min: 61 Total flights in the program: 225
 5 min: 13% 15 min: 60% 30 min: 96% 45 min: 98% 60 min: 98%

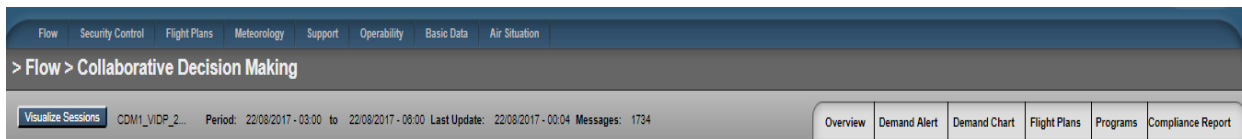
Total: 106

Indicative	ADEP	ADES	EOBT	ETOT	ETA	COBT	CTOT	CTA	Delay	Flight Type	Airline	Route	Program
VT1868	VOBL	VIDP	01:20	01:30	03:44	01:27	01:37	03:51	00:07	FPL	VISTARA	Q22 HIA DCT ALBEDIN0...	ADP, ADP, COP, DLA
JA1822	VOMM	VIDP	01:00	01:10	03:28	01:27	01:37	03:55	00:27	FPL	JET	Q24	ADP, DLA
IGO976	VOMM	VIDP	01:00	01:10	03:25	01:29	01:39	03:54	00:29	FPL	IFLY	Q24	ADP
JA1911	VOCI	VIDP	01:15	01:25	04:04	01:29	01:39	04:18	00:14	FPL	JET	W118 CCB W43 BIA Q22...	ADP, COP, COP
GOW116	VOBL	VIDP	01:10	01:20	03:34	01:37	01:47	04:01	00:27	FPL	GOAIR	LATID Q22 HIA DCT AL...	ADP, DLA, DLA, DLA
N38GV	VABB	VIDP	01:30	01:40	03:11	01:38	01:48	03:19	00:08	FPL		DOTIP Q1 DIPAS	ADP
AIC864	VABB	VIDP	01:30	01:40	03:13	01:38	01:48	03:21	00:08	FPL	AIRINDIA	DOTIP Q1 DIPAS	ADP
JA1836	VOBL	VIDP	01:30	01:40	03:55	01:40	01:50	04:05	00:10	FPL	JET	Q22 HIA DCT ALBEDIN0...	ADP, ADP, COP,
JA1301	VABB	VIDP	01:30	01:40	03:14	01:42	01:52	03:28	00:12	FPL	JET	Q1	ADP
IGO516	VOCI	VIDP	01:30	01:40	04:20	01:44	01:54	04:34	00:14	FPL	IFLY	W118 CCB W43 BIA Q22...	ADP, COP, COP
JLL4687	VAAH	VIDP	01:45	01:55	03:02	01:47	01:57	03:04	00:02	FPL	LITE JET	Q3 BUBNU Q1	ADP
SE1104	VOMM	VIDP	01:30	01:40	03:56	01:49	01:59	04:15	00:19	FPL	SPICEJET	Q24	ADP, ADP, COP,
IGO6228	VOBL	VIDP	01:35	01:45	03:59	01:52	02:02	04:16	00:17	FPL	IFLY	Q22 HIA DCT ALBEDIN0...	ADP, ADP, COP,
VT1720	VECC	VIDP	01:40	01:50	03:37	01:53	02:03	03:50	00:13	FPL	VISTARA	R460 LKN R594	ADP, DLA, DLA, DLA

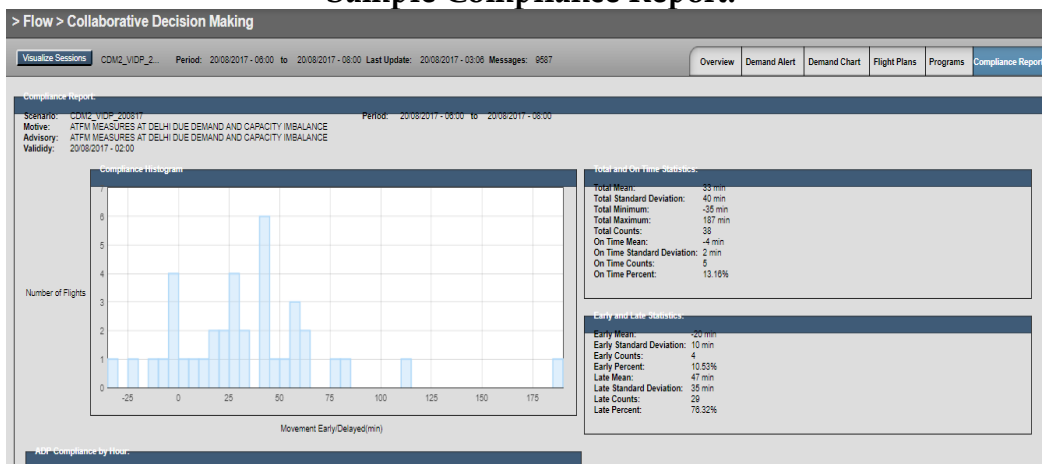
8/22/17 5:00 AM 1

Compliance report tab:

The Compliance Report is available for users after the scenario is in “Applied” State and can be viewed for the previous day.



Sample Compliance Report:



> Flow > Collaborative Decision Making

Visualize Sessions CDM2_VIDP_2... Period: 20/08/2017 - 06:00 to 20/08/2017 - 08:00 Last Update: 20/08/2017 - 03:09 Messages: 9587

Overview Demand Alert Demand Chart Flight Plans Programs Compliance Report

Total	38	4	5	29	33		
-------	----	---	---	----	----	--	--

Departure Compliance by Airport

ADEP	Total	Early	On Time	Late	Non-Compliant	% Non-Compliant	% Compliant
VABB	6	0	4	2	2	33.33	66.67
VOBL	5	0	3	2	2	40.00	60.00
VIDP	5	2	1	2	4	80.00	20.00
VISR	4	1	3	0	1	25.00	75.00
VOHS	2	0	1	1	1	50.00	50.00
VILK	2	1	0	1	2	100.00	0.00
VEPT	2	1	1	0	1	50.00	50.00
VAPO	1	0	1	0	0	0.00	100.00
VASU	1	0	0	1	1	100.00	0.00
VERP	1	0	1	0	0	0.00	100.00
VERC	1	0	1	0	0	0.00	100.00
ZZZZ	1	0	1	0	0	0.00	100.00
VIJP	1	0	0	1	1	100.00	0.00
VOHM	1	0	0	1	1	100.00	0.00
VEBN	1	0	1	0	0	0.00	100.00
VIDN	1	0	0	1	1	100.00	0.00
VIJU	1	0	1	0	0	0.00	100.00
VICG	1	1	0	0	1	100.00	0.00
VIPT	1	0	0	1	1	100.00	0.00
Total	38	6	19	13	19		

PDF Report

Activate Windows

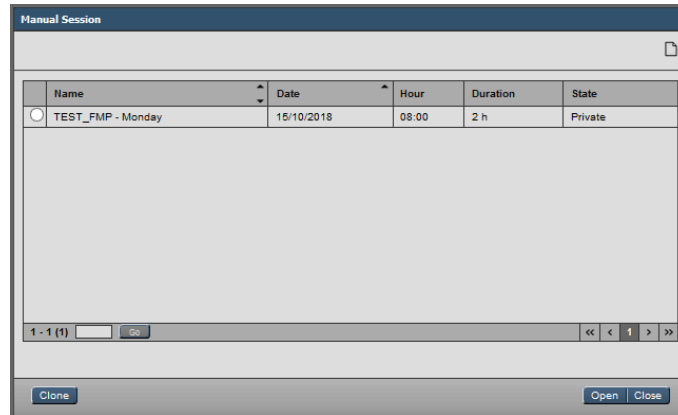
4.6 Manual Session Functionality

Manual session is created by the user to simulate traffic situation based on flight plan and regulated elements in the system. The basic difference between the automatic session and manual session is that in automatic session, we cannot change the data for e.g. flight intentions, regulated elements and session duration but in manual session we can manipulate according to the needs and it also provides additional functionality like route tab.

Flow	Security Control	Flight
Automatic Session		
Session Demand Reports		
Capacity Projection		
Sector Time		
Collaborative Decision Making		
Manual Session		

To access a Manual Session, the user must select the Manual Session option in the Flow Subsystem as follows.

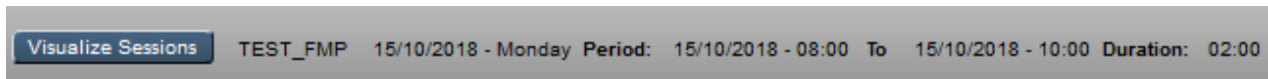
When this functionality is selected, the system displays the following window.



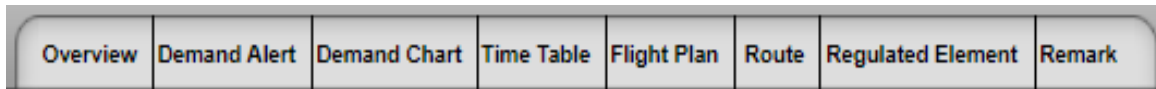
In this window we can see that a manual session TEST_FMP already exists. We can interact with this session by selecting it or we can create a new manual session with the help of add button.

When we select TEST_FMP, then the following window appears.

(LEFT PANEL)

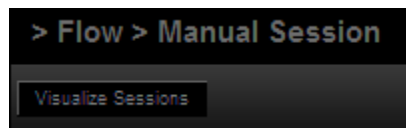


(RIGHT PANEL)



Type of Session Identification

This information is displayed on the left side of the screen and identifies the type of session that is being treated.



Session Content

The several ways to interact with Manual Sessions are shown in the right end of the session type identification line.

When the View Sessions (**Visualize Sessions**) option is selected, the System shows the list of Manual Sessions that the Flow Manager can interact with, which are displayed in the right pane depicted above.



We can create two types of Manual Session, which are:

Public Sessions: may be accessed by the Flow Manager registered.

Private Sessions: may be accessed only by the manager that originated the session, and are maintained for one hundred and twenty (120) hours after the reference date (date corresponding to the session period finishing time). After this period, they are suppressed automatically.

The information displayed identifies the Session with the following data:

 - Icon that allows checking a session of interest.

Name () - field that identifies the session name. State () - field that identifies the Private Sessions or

Public Sessions

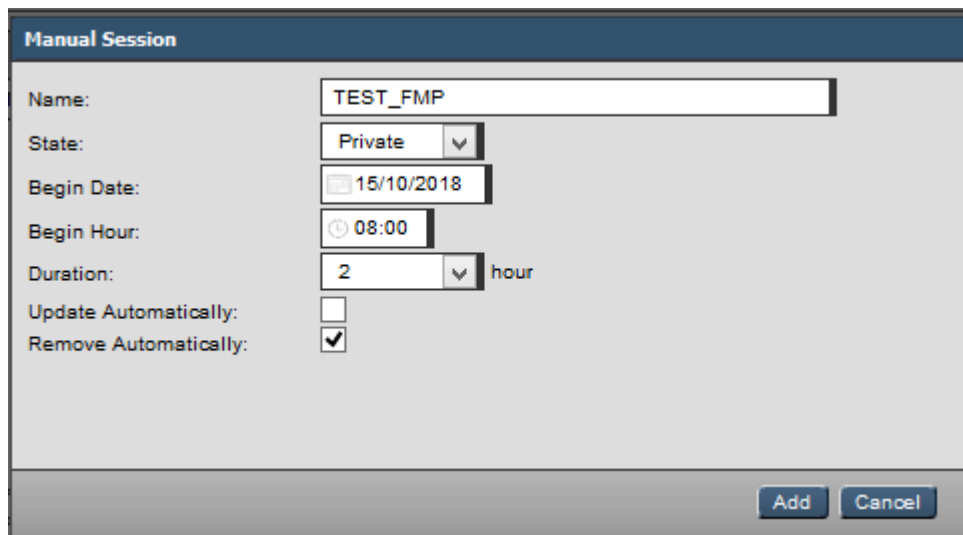
Begin Date () - identifies the session Begin date.

Begin Time () - identifies the UTC time the session starts.

Duration () - identifies the session duration.

Besides the information related to the manual sessions stored in the system, the interaction screen has the following options:

-  - allows the user to create a new manual session. When this icon is selected, the system shows the following window for completion.



The dialog box titled "Manual Session" contains the following fields and options:

- Name: TEST_FMP
- State: Private
- Begin Date: 15/10/2018
- Begin Hour: 08:00
- Duration: 2 hour
- Update Automatically:
- Remove Automatically:

Buttons: Add, Cancel

-  - allows cloning a session included in the list (Strategic, Tactical, or Historic).

Manual Session

Session Type: Strategical

Name	Date	Hour	Duration
<input type="radio"/> 22/10/2018 - Monday	22/10/2018	00:00	24 h
<input type="radio"/> 21/10/2018 - Sunday	21/10/2018	00:00	24 h
<input type="radio"/> 20/10/2018 - Saturday	20/10/2018	00:00	24 h
<input type="radio"/> 19/10/2018 - Friday	19/10/2018	00:00	24 h
<input type="radio"/> 18/10/2018 - Thursday	18/10/2018	00:00	24 h
<input type="radio"/> 17/10/2018 - Wednesday	17/10/2018	00:00	24 h
<input type="radio"/> 16/10/2018 - Tuesday	16/10/2018	00:00	24 h

1 - 7 (7) Go << < 1 > >>

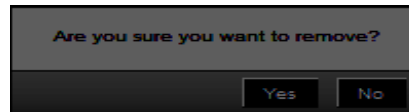
Name:

State: Private

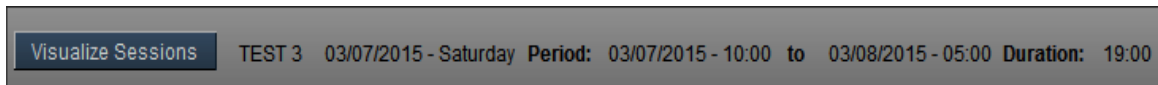
Update Automatically:

Remove Automatically:

Remove - This icon is provided whenever a session is selected to allow its removal against confirmation.

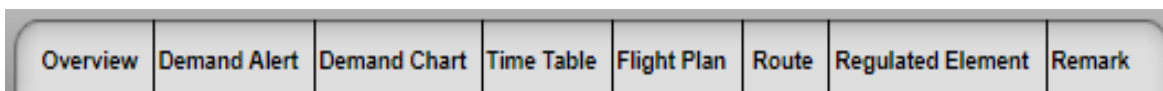


Open - allows selecting the session of interest, and after this step the system completes the identification data of the session selected as highlighted in the figure below.



Note: If the user wishes to change the type of session to be analyzed, the process can be resumed by accessing the Session (**Visualize Sessions**) button.

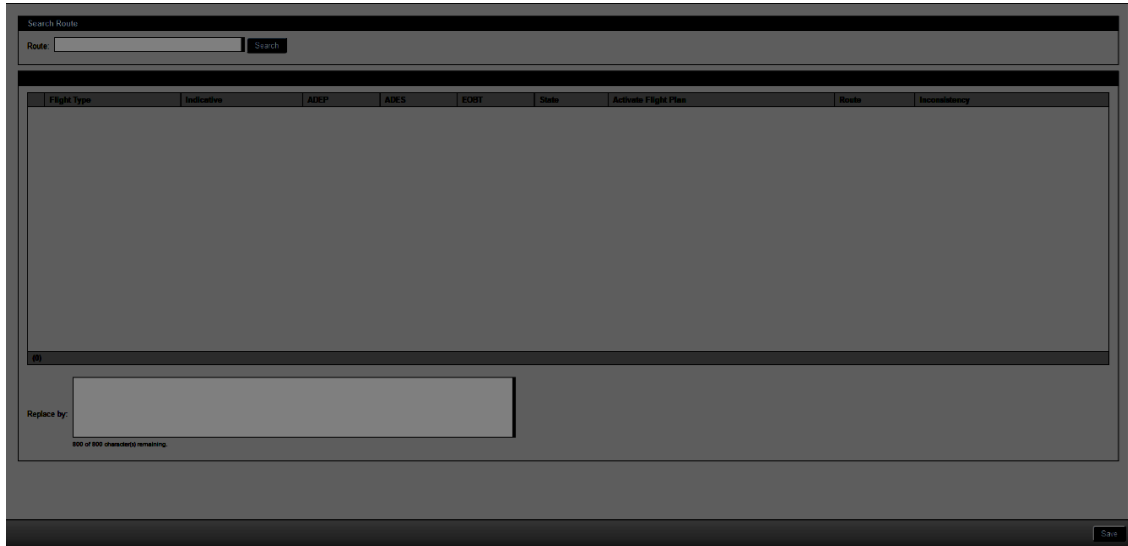
Note: Out of the following 6 tabs, the functionalities for the “Overview”, “Demand Alert”, “Demand Chart” and “Flight Plans” have already been discussed in Strategical-Automatic Sessions.



Note: The remaining 2 tabs are explained as follows.

4.6.1 Route Tab

This option allows the user to change flight routes in batch. For that is necessary search the flight plans that have a specific route, select the flight plans that will have the route changed and then write the new route at the “Replace by” field. After confirming the action, the system will extract the route from each flight plan, and in case of a successful extraction, it will change the route.



First, search the flight plans that have a specific route, as shown in the figure below.



After clicking in the “Search” button, the system shows all plans that contain the route specified as follows.

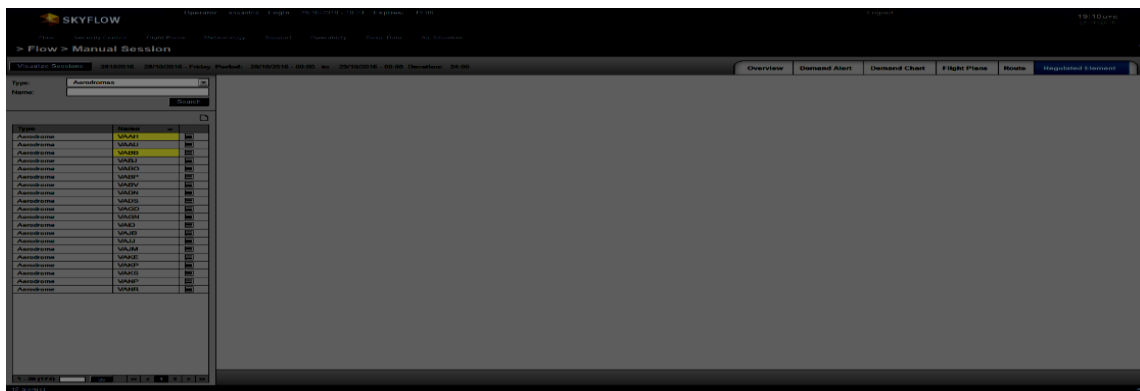
Flight Type	Indicative	ADEP	ADES	EOBT	State	Activate Flight Plan	Route	Inconsistency	
<input checked="" type="checkbox"/>	Flight Schedule	JAM16	VABB	VJVP	12:45	Operational	INA	Q1 BUBNU Q3	
<input checked="" type="checkbox"/>	RPL	IGO217	VABB	VJVP	13:45	Operational	INA	Q1 BUBNU Q3	
<input checked="" type="checkbox"/>	RPL	IGO696	VABB	VJVP	12:05	Operational	INA	Q1 BUBNU Q3	
<input checked="" type="checkbox"/>	Flight Schedule	JA2055	VABB	VJVP	00:25	Operational	INA	Q1 BUBNU Q3	
<input checked="" type="checkbox"/>	RPL	IGO416	VABB	VJVP	04:10	Annuled	INA	Q1 BUBNU Q3	
<input checked="" type="checkbox"/>	RPL	IGO117	VABO	VJVP	18:55	Operational	INA	DCT PUN W28 BBB Q1 LOLT0N0439F310 Q1 BUBNU Q3 JIP DCT	
<input checked="" type="checkbox"/>	Flight Schedule	AIC611	VABB	VJVP	06:00	Operational	INA	Q1 BUBNU Q3	
<input checked="" type="checkbox"/>	RPL	IGO207	VABB	VJVP	00:10	Annuled	INA	Q1 BUBNU Q3	
<input checked="" type="checkbox"/>	Flight Schedule	JA2053	VABB	VJVP	08:50	Operational	INA	Q1 BUBNU Q3	
<input checked="" type="checkbox"/>	Flight Schedule	GOW391	VABB	VJVP	09:55	Operational	INA	Q1 BUBNU Q3	
<input checked="" type="checkbox"/>	Flight Schedule	GOW390	VABB	VJVP	00:20	Operational	INA	Q1 BUBNU Q3	

To change the route, the user must select the plans of interest and assign a new route by completing the field “Replace by”, located just below of the list.

To complete the change, the user must click at the “Save” button.

4.6.2 Regulated Element Tab

This option (**Regulated Element**) allows the user to create a new Regulated Element, search and change its parameters with the purpose of evaluating the impact due to the changes in capacity values. It is important to highlight that after editing a Regulated Element, the system will not be able to automatically update it. When this option is selected, the system displays a screen just like the Regulated Element option in the Flow menu, as illustrated in the figure below.



4.6.3 Remark Tab

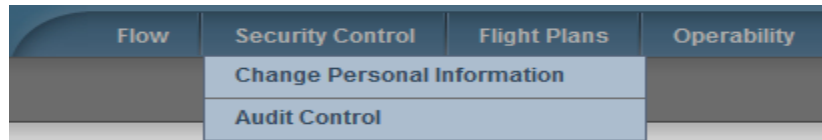
This option (**Remark**) allows user to add remarks to the manual session created for future references.



5. SECURITY

In security control tab, two functionalities are available for FMP users.

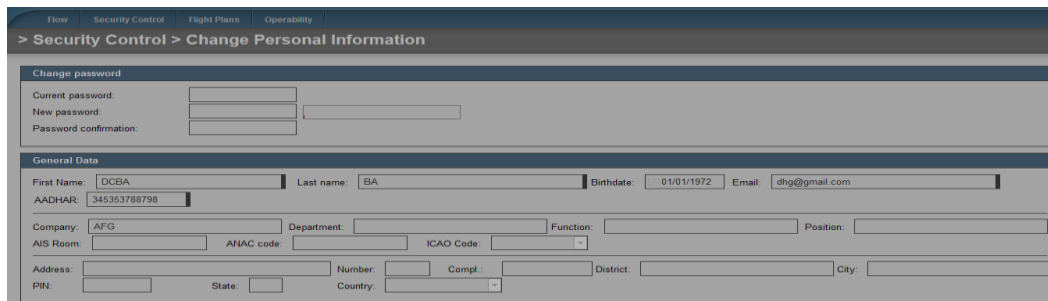
- Change personal information
- Audit Control



- **Change personal information**

The user can edit change password, general data and contact information (Phone). The FMP user after login with the old password can change password, the password is valid for 180 days.

The grey shaded boxes are not editable. The shadow boxes are mandatory fields created during initial registration. The user can save the edited information.



Change password

Current password:

New password:

Password confirmation:

General Data

First Name: Last name: Birthdate: Email:

AADHAR:

Company: Department: Function: Position:

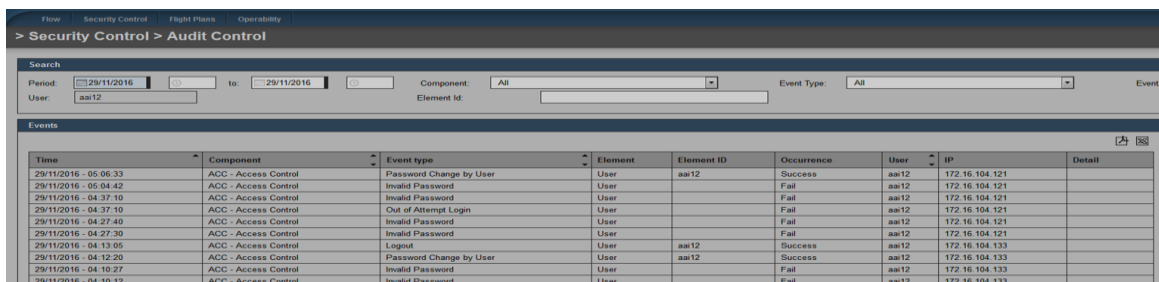
AIS Room: ANAC code: ICAO Code:

Address: State: Number: Compl.: District: City:

Pin: Country:

- **Audit Control**

In this functionality the user can see the details of login and options exercise. The details of activity performed can be saved as PDF or Excel sheets.



Search

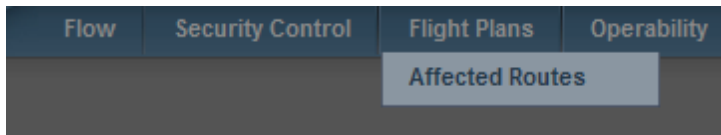
Period: to Component: Event Type: Event:

User: Element Id:

Time	Component	Event type	Element	Element ID	Occurrence	User	IP	Detail
29/11/2016 - 05:06:33	ACC - Access Control	Password Change by User	User	aa12	Success	aa12	172.16.104.121	
29/11/2016 - 05:04:42	ACC - Access Control	Invalid Password	User		Fail	aa12	172.16.104.121	
29/11/2016 - 04:37:10	ACC - Access Control	Invalid Password	User		Fail	aa12	172.16.104.121	
29/11/2016 - 04:37:10	ACC - Access Control	Out of Attempt Login	User		Fail	aa12	172.16.104.121	
29/11/2016 - 04:27:40	ACC - Access Control	Invalid Password	User		Fail	aa12	172.16.104.121	
29/11/2016 - 04:27:30	ACC - Access Control	Invalid Password	User		Fail	aa12	172.16.104.121	
29/11/2016 - 04:13:05	ACC - Access Control	Logout	User	aa12	Success	aa12	172.16.104.133	
29/11/2016 - 04:12:20	ACC - Access Control	Password Change by User	User	aa12	Success	aa12	172.16.104.133	
29/11/2016 - 04:10:27	ACC - Access Control	Invalid Password	User		Fail	aa12	172.16.104.133	
29/11/2016 - 04:10:12	ACC - Access Control	Invalid Password	User		Fail	aa12	172.16.104.133	

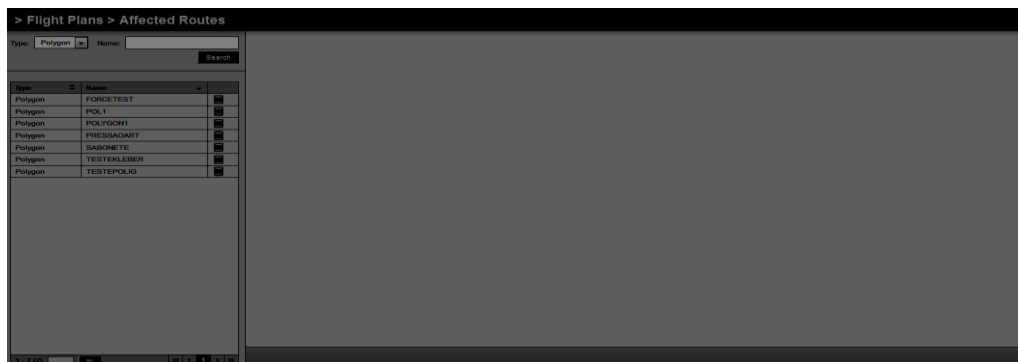
6. FLIGHT PLAN

This functionality provides affected routes sub functionality for FMP operator as shown in the figure below.

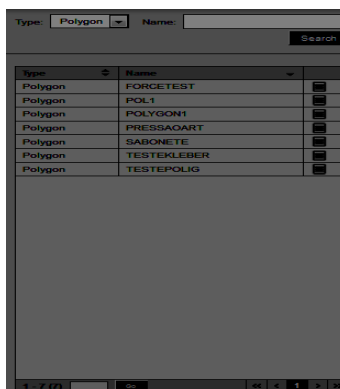


6.1 Affected Routes Functionality

This functionality is intended to present the routes registered in the system that being affected by the creation of a SUA or a Polygon. When identified this impact, the flow manager can get a sense of the amount of elements (routes) that are being affected. With this information and with an operational analysis will be possible to adopt alternative procedures if that impact is significant for the evolution of traffic.




On the left screen the system show the following figure:



The figure above show two fields that contains:

- Type: Polygon and SUA (Special Use Area)
- Name: Insert the name if known.

By Clicking in consult () the left screen the system show in the right screen the following figure:

In this screen can consult the following: Type, ADEP, ADES, Airline ICAO Code, Equipment(s), Route and Additional information.

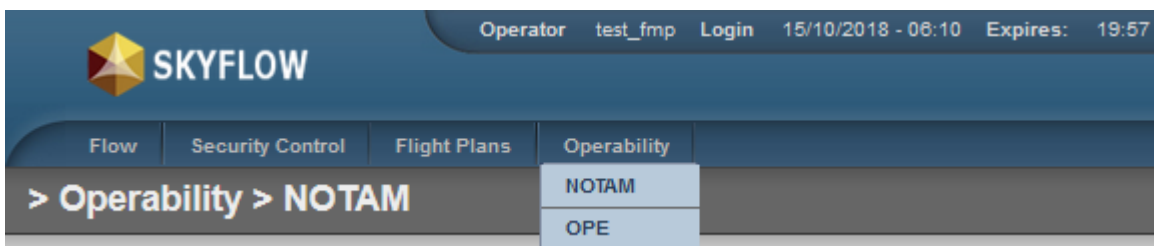
Type	ADEP	ADES	Airline ICAO Code	Auth. Type(s)	Route	Additional Information
Verified	VILK	VEPT	VTI	A109	DCT	
Verified	VEPT	VIDP	AIC	A319	W45 LKN R594	
Verified	VIDP	VEPT	AIC	A319, A321	DCT ALI R460 LKN W45 BODOG DCT	
Verified	VIDP	VEPT	AIC	A319, A321	DCT ALI R460 LKN W45 BODOG DCT	
Verified	VEPT	VILK	IGO	A320	W45	
Verified	VEPT	VIDP	IGO	A320	W45 LKN R594	
Verified	VEPT	VIDP	GOW	A320	W45 LKN R594	
Not Verified	VEPT	VIDP	AIC	A320	W45 LKN R594	
Verified	VEPT	VIDP	AIC	A320	A321 LKN R594	
Verified	VIDP	VEPT	GOW	A320	R460 LKN W45	
Verified	VIDP	VEBD	AIC	A320	R460 LKN W45 PPT/ND418F270 W105	
Verified	VIDP	VEGT	GOW	A320	R460 LKN W45 BODOG W45 PPT T2 LOTPU W105 BBD W137	
Verified	VIDP	VEBD	IGO	A320	R460 LKN W45 PPT/ND418F-270 W105	
Verified	VIDP	VEGT	IND	A320	R460 LKN Q18	
Verified	VIDP	VEBD	GOW	A320	R460 LKN W45 PPT/ND418F270 W105	
Verified	VIDP	VEGT	VTI	A320	R460 LKN W45 PPT W105 BBD W137	
Not Verified	VIDP	VEBD	GOW	A320	R460 LKN W45 PPT/ND418F270 W105	
Not Verified	VIDP	VEBD	AIC	A320	R460 LKN W45 PPT/ND418F-270 W105	
Verified	VIDP	VEMN	IGO	A320	R460 LKN W45 PPT T2 LOTPU W105 BBD W137 GGT W51	
Verified	VIDP	VEPT	IGO	A320	R460 LKN W45	
Verified	VIDP	VEGT	IGO	A320	R460 LKN W45 PPT T2 LOTPU W105 BBD W137	
Verified	VIDP	VEPT	AIC	A320	R460 LKN A201	
Verified	VILK	VEPT	IGO	A320	W45	
Verified	VEBD	VIDP	AIC	A320, A321	W105 PPT W45 LKN R594	
Verified	VEBD	VIDP	AIC	A320, A321	W105 PPT W45 LKN R594	
Verified	VIDP	VEGT	AIC	A320, A321	DCT ALI R460 LKN Q18 OPIMO DCT	
Verified	VIDP	VEGT	AIC	A320, A321	DCT ALI R460 LKN Q18 OPIMO DCT	

7. OPERABILITY

The purpose of the Operability Management Subsystem (OPM) is to manage the eventual capacity degradation of the airport elements. The capacity may be affected by NOTAMs, information obtained from inoperability records, or when Special Use Area (SUA) are activated. To meet the element operational condition management objectives, the C-ATFM Operator monitors the NOTAM bulletins to seek data that may interfere with the effective capacity of the airspace elements. Due to the non-structured format of the NOTAM bulletins, more manual intervention and interpretation is required from the operator, that is, the treatment automation level is lower. Yet, the SKYFLOW extracts the largest amount of data possible before storing in the local folder.

7.1 NOTAM" Functionality

The purpose of this functionality is to display the NOTAMs that are related to the inoperability records of the airspace elements registered in the SKYFLOW.



When this option is selected, the SKYFLOW presents an initial page related to the “NOTAM” functionality, as presented in the screen below.

> Operability > NOTAM

Series: [] Number: [] Year: [] Type: [All]
 Begin: [] End: [] Subject: [] State: []
 Locales: [] Date of Receipt: [] Active: [All] [Search]


Identity	Type	Begin	End	Subject	State	Active	Referenced NOTAM	NOTAM Reference
A-1060/2018	New	15/10/2018 - 08:30	15/10/2018 - 10:30	IC	XX	Yes		
A-1059/2018	Revised	15/10/2018 - 08:10	14/01/2019 - 23:59	CT	XX	Yes		
A-1058/2018	Revised	15/10/2018 - 08:10	14/01/2019 - 23:59	CS	XX	Yes		
A-2792/2018	Revised	15/10/2018 - 06:00	20/01/2019 - 14:30	WL	LW	Yes	A-1958/2018	
D-1037/2018	Revised	15/10/2018 - 13:30	22/10/2018 - 21:30	MR	LC	Yes	D-1031/2018	
D-1036/2018	Revised	15/10/2018 - 05:40	14/01/2019 - 23:59	CA	XX	Yes		
A-2791/2018	Cancel	15/10/2018 - 05:45		WL	XX	No	A-1875/2018	
A-1667/2018	Cancel	15/10/2018 - 03:00		FT	AK	No	A-1639/2018	
A-0599/2018	New	22/10/2018 - 03:30	22/10/2018 - 11:30	RD	CA	Yes		
A-0598/2018	New	22/10/2018 - 03:30	22/10/2018 - 08:30	RD	CA	Yes		
A-1057/2018	Cancel	15/10/2018 - 00:59		MX	XX	No		
A-3350/2018	New	15/10/2018 - 02:30	15/10/2018 - 10:00	PF	CA	Yes		
C-0885/2018	New	15/10/2018 - 00:00	15/10/2018 - 23:59	GA	XX	Yes		
B-0331/2018	Revised	14/10/2018 - 12:17	14/01/2019 - 23:59	FW	AS	Yes	B-0247/2018	
A-1378/2018	Revised	14/10/2018 - 12:13	14/01/2019 - 23:59	NB	AS	Yes		
A-1056/2018	New	15/10/2018 - 02:30	29/10/2018 - 10:30	MX	LC	Yes		
A-1055/2018	New	14/10/2018 - 14:15	15/10/2018 - 12:30	MX	XX	Yes		
A-2790/2018	New	14/10/2018 - 14:00	16/10/2018 - 12:00	FM	AU	Yes		
A-2789/2018	Cancel	14/10/2018 - 10:20		IS	XX	No		
D-1035/2018	New	14/10/2018 - 10:00	14/01/2019 - 10:00	FF	XX	Yes		

1 - 20 (22300) [] [Search] << < 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 > >>

The following information is displayed in the filter item selection area:

Series: [] Number: [] Year: [] Type: [All]
 Begin: [] End: [] Subject: [] State: []
 Locales: [] Date of Rec.: [] Active: [All] [Search]

- “Series” field – indicates the message dispatcher center.
- “Number” field – NOTAM number.
- “Year” field – indicates the year the message was issued.
- “Type” field – type of NOTAM, namely: All, New, Canceler or Replacer.
- “Begin” field – starting date of the search interval.
- “End” field – end date of the search interval.
- “Subject” field – subject of the NOTAM.
- “State” field – identifies the state, danger, or operation condition
- “Locales” field – indicates the locales affected.

- **“Date of Rec.” field** – date the message was received.
- **“Active” field** – allows selecting All NOTAMs, Active (Yes), or Inactive (No) NOTAMs.
- **“Search” button** () – after defining the filter parameters and pressing the “Search” button, the SKYFLOW displays the following information list.

> Operability > NOTAM

Series: Number: Year: Type:

Begin: End: Subject: State:

Locales: Date of Rec.: Active:

Identity	Type	Begin	End	Subject	State	Active	Referenced Notam	Notam Reference
A-0099/2015	New	01/20/2015 - 15:32		CT	AS	No		
A-0048/2015	New	01/25/2015 - 06:00	01/28/2015 - 08:00	RA	CA	No		
A-0082/2015	New	01/30/2015 - 05:30	01/30/2015 - 07:30	XX	XX	No		
A-1003/2015	New	01/30/2015 - 05:30	05/30/2015 - 07:30	XX	XX	Yes		

The following information is displayed in the area the NOTAMs are shown:


Identity	Type	Begin	End	Subject	State	Active	Referenced Notam	Notam Reference
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- **“Identify” field** – identifies the NOTAM by means of the Series, Number, and Year data composition.
- **“Type” field** – type of NOTAM, namely: All, New, Canceler or Replacer.
- **“Begin” field** – starting date and time of the NOTAM.
- **“End” field** – end date and time of the NOTAM.
- **“Subject” field** – subject of the NOTAM.
- **“State” field** – identifies the state, danger, or operation condition
- **“Active” field** – allows selecting All NOTAMs, Active (Yes), or Inactive (No) NOTAMs.
- **“Referenced Notam” field** – identifies the NOTAM that was replaced by the NOTAM of reference.

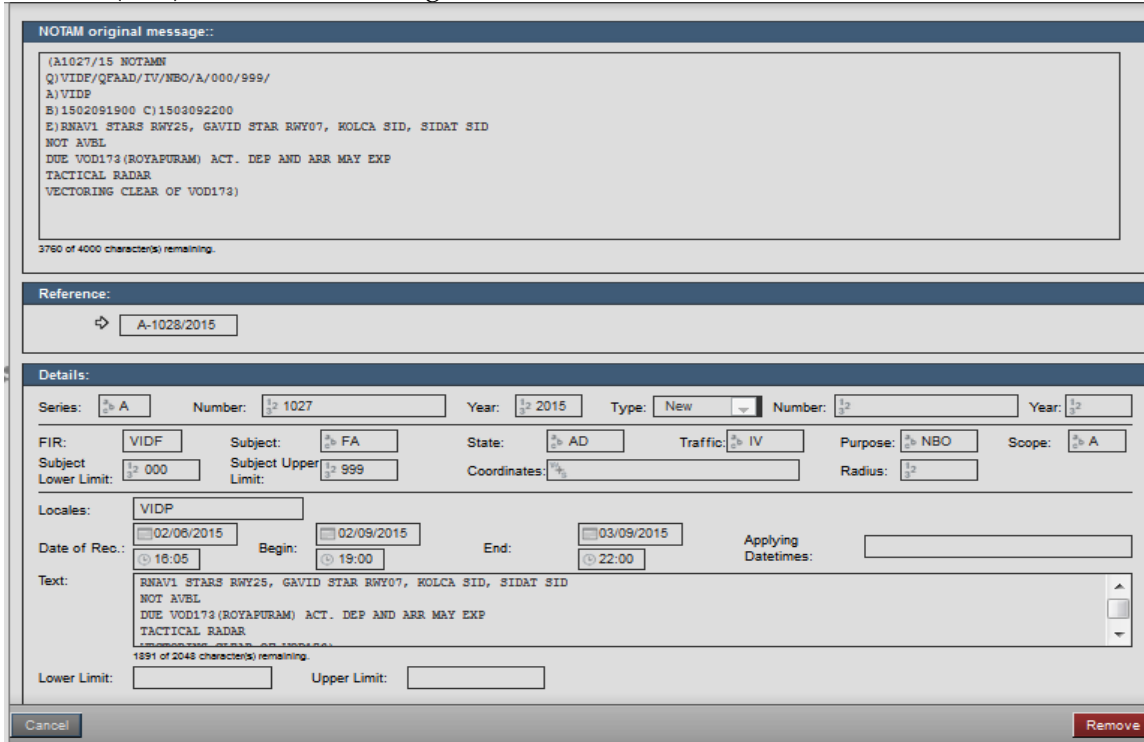
A-1028/2015	Canceler	01/29/2015 - 19:00	06/26/2015 - 14:00	FA	AD	Yes	A-1027/2015	
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- **“NOTAM reference” field** – identifies NOTAMs that were generated from an action

(replacement or cancellation) regarding the reference NOTAM.


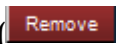
A-1027/2015	New	02/09/2015 - 19:00	03/09/2015 - 22:00	FA	AD	No	A-1028/2015	
-------------	-----	--------------------	--------------------	----	----	----	-----------------------------	---

"Consult" icon () - allows consulting the contents of the NOTAM as follows.

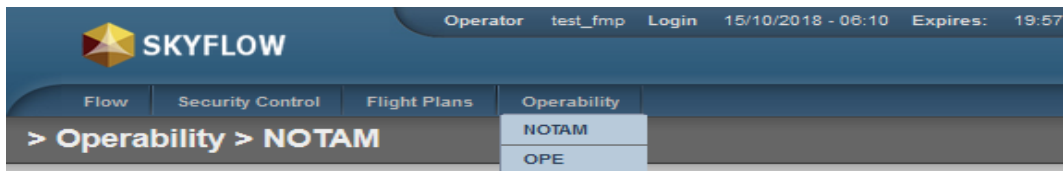


The screenshot shows a NOTAM consultation window with the following sections:

- NOTAM original message::** (A1027/15 NOTAMN Q)VIDP/QFAAD/IV/NBO/A/000/999/ A)VIDP B)1502091900 C)1502092200 E)RNAVI STARS RMY25, GAVID STAR RMY07, KOLCA SID, SIDAT SID NOT AVBL DUE VOD173 (ROYAPURAM) ACT. DEP AND ARR MAY EXP TACTICAL RADAR VECTORING CLEAR OF VOD173) 3760 of 4000 character(s) remaining.
- Reference:** A-1028/2015
- Details:**
 - Series: A Number: 1027 Year: 2015 Type: New Number: Year:
 - FIR: VIDP Subject: FA State: AD Traffic: IV Purpose: NBO Scope: A
 - Subject Lower Limit: 000 Subject Upper Limit: 999 Coordinates: Radius:
 - Locales: VIDP
 - Date of Rec.: 02/08/2015 Begin: 02/09/2015 18:05 End: 03/09/2015 19:00 Applying Datetimes: 22:00
 - Text: RNAVI STARS RMY25, GAVID STAR RMY07, KOLCA SID, SIDAT SID NOT AVBL DUE VOD173 (ROYAPURAM) ACT. DEP AND ARR MAY EXP TACTICAL RADAR 1891 of 2048 character(s) remaining.
 - Lower Limit: Upper Limit:

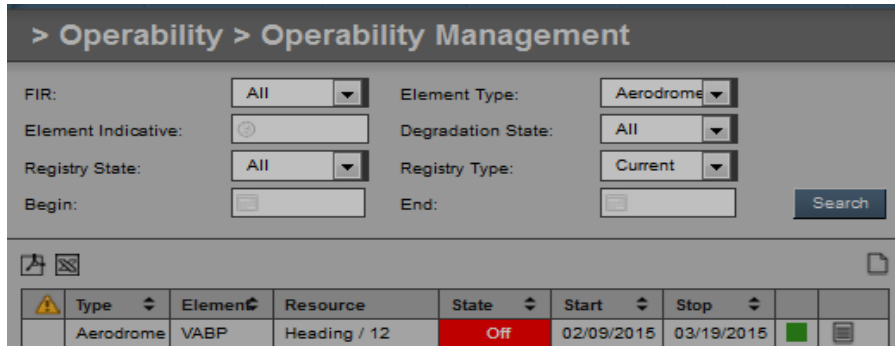
- ✓ **"Cancel" button** () - this button is only enabled for Users with Administrator profile. When activated, allows changing the NOTAM "status. When the User activates this option, the SKYFLOW changes the information included in the "Active" column of the respective NOTAM and places it in the "status": "No". In this "status" the NOTAM is not active.
- ✓ **"Remove" button** () - this button is only enabled for Users with Administrator profile. When activated, the NOTAM is deleted from the SKYFLOW valid NOTAM list.

7.2 "OPE" Functionality



The purpose of this functionality is to process the inoperability records of the airspace elements registered in the system.










When this option is selected, the SKYFLOW presents an initial page related to the “OPE” functionality, as presented in the screen below.



This page displays the following information:

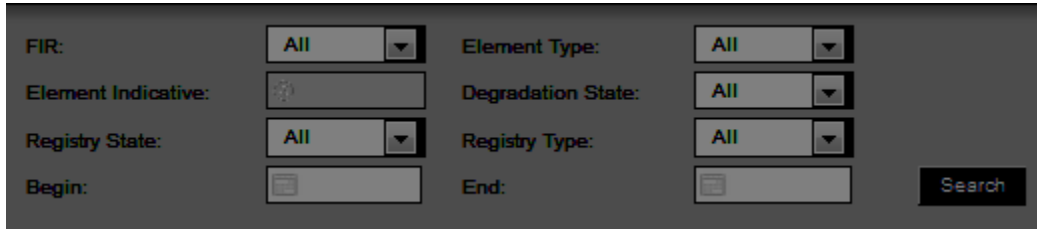
- **“FIR” field** – allows selecting the flight information region (FIR) of interest (Chennai, Mumbai, Kolkata or Delhi), or selecting all simultaneously (All).
- **“Element Type” field** – allows selecting the type of element registered in the SKYFLOW database, namely:
 - **All** – shows the records related to all elements registered in the system.
 - **Aerodrome** – shows the records related to the aerodromes registered in the system.
 - **VOR** – shows the records related to the VOR registered in the system.
 - **DME** – shows the records related to the DME registered in the system.
 - **NDB** – shows the records related to the NDB registered in the system.
 - **ILS** – shows the records related to the ILS registered in the system.
 - **COM** – shows the records related to the frequencies registered in the system.
 - **Radar** – shows the records related to the radar registered in the system.
 - **LOC** – shows the records related to the Localizer (LOC) registered in the system to be used when the threshold has only one Localizer.

- **“Element Indicative” field** – allows assigning specific elements. As a choice option, the SKYFLOW shows all elements registered according to the Type selected. This field is completed automatically.
- **“Degradation State” field** – allows selecting, by means of a Combo box, the element state according to the inoperability record to be displayed, namely:
 - **All** – shows the full list of inoperability records, regardless of the registration operation state.
 - **Off** – shows the inoperability records that have inoperative elements registered.
 - **Degraded** – shows the inoperability records that have elements with some degree of operational degradation.
 - **Invalid** – element not in the current Operational Airspace.
- **“Registry State” field** – allows selecting, by means of a Combo box, the status of the inoperability record of interest, namely:
 - **All** – allows selecting all inoperability records, regardless of the status.
 - **Pending** – allows selecting the inoperability records that require the User to perform an action.
 - **Valid** – allows selecting the inoperability records in the valid state.
- **“Type of Record” field** – allows selecting, by means of a Combo box, the type of the inoperability record of interest, namely:
 - **All** – allows selecting all inoperability records, regardless of the type.
 - **Current** – allows selecting the inoperability records that are active.
 - **Forecast** – allows selecting the inoperability records regarding forecasts.
 - **Out of Date** – allows selecting the inoperability records that are expired.
 - **History** – allows selecting the historic inoperability records.
- **“Begin” field** – allows selecting the records of interest from specific start dates.
- **“End” field** – allows selecting the records of interest up to a specific end date.

- **Icon**  – allows generating a PDF file with the list of inoperability records resulting from the filter.
- **Icon**  – allows generating a XLS file with the list of inoperability records resulting from the filter.
- **Icon**  – allows creating new inoperability records.
- **Legend Pending** ()
- Indicates that the record was manipulated by a FMP User and that the User must conduct an analysis to apply or reject the changes. These records are identified by means of the following pending issue descriptions:
 - C - Created
 - R - Removed
 - U - Update
- **Resource**
- Informative field that informs the element identification (ALS/ Threshold/ Others)
- **Record Type Legend**
- Identifies the record status, namely:
 -  – Inoperability record consisting of a forecast.
 -  – Inoperability record that describes the situation in course.
 -  – Historic inoperability record.
 -  – Expired inoperability record.
- **Icon**  – when this icon is activated, the SKYFLOW updates the list of operability records according to the filter configurations.
- When this functionality is accessed, the User is able to interact as follows.

Search Operability List

To search the operability list of interest, the User must configure the search filters as shown below.



The screenshot shows a search filter interface with the following fields:

- FIR: All (dropdown)
- Element Type: All (dropdown)
- Element Indicative: [icon]
- Degradation State: All (dropdown)
- Registry State: All (dropdown)
- Registry Type: All (dropdown)
- Begin: [calendar icon]
- End: [calendar icon]
- Search button

The inoperability record list searched is displayed according to the image below, and the information columns are completed with the records included in the database.

⚠	Type	Element	Resource	State	Start	Stop		
C	Aerodrome	VOCI	Runway / 27	Off	16/10/2018	16/10/2018	■	📄
C	Aerodrome	VOBL	Others / RWY...	Off	16/10/2018	16/10/2018	■	📄
	Aerodrome	VABB	Runway / 27	Degraded	11/10/2018	11/10/2018	🕒	📄
	Aerodrome	VOCI	Runway / 27	Off	09/10/2018	09/10/2018	🕒	📄
	Aerodrome	VOBL	Others / RUN...	Off	09/10/2018	09/10/2018	🕒	📄
	Aerodrome	VABB	Runway / 27	Degraded	08/10/2018	08/10/2018	🕒	📄
	Aerodrome	VOBL	Others / RWY...	Off	02/10/2018	02/10/2018	🕒	📄
	Aerodrome	VOCI	Runway / 27	Off	25/09/2018	25/09/2018	🕒	📄
	Aerodrome	VOCI	Runway / 27	Off	18/09/2018	18/09/2018	🕒	📄
	Aerodrome	VOCI	Runway / 27	Off	11/09/2018	11/09/2018	🕒	📄
	DME	MML		Degraded	06/01/2016	10/02/2016	■	📄
	DME	CAL		Degraded	05/07/2016	08/07/2016	■	📄

Regardless of the type of search, if the number of records listed is bigger than the number of lines available, the SKYFLOW shows a page indicator in the lower right corner of the panel as follows.



To present information on the number of elements registered according to the filters established, the SKYFLOW provides the following data: [1 - 30 (32)] [∞]

The first set ([1 - 30 (32)]) displays the number of inoperability records displayed in the page "1 - 30" and the total number of elements "(32)" displayed according to the filter applied.

The field [] [∞] allows the User to define the page number to be viewed.

Create Inoperability Record

This option allows the User to create inoperability records related to airspace elements. To access this option, the User must select the “Add” () icon as follows.



When the User selects “add” record option, the SKYFLOW displays the fields to define the element to be affected by the inoperability record.

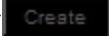


“New Inoperative Registry” Group

This set identifies the element affected by an operability event according to the following options:

- Aerodrome
- VOR
- DME
- NDB
- ILS
- COM
- Radar
- LOC

After selecting the type of element, the User must select the identification of the referred element as included in the database. Therefore, the SKYFLOW provides the auto-complete option.

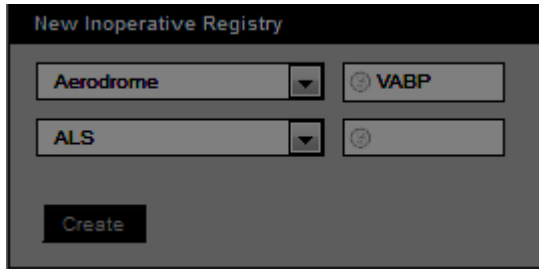
When the element is defined, the SKYFLOW enables the “Create” () option to proceed with the definition of the element inoperability record.

Note: For elements of the Aerodrome type, the User may optionally inform the identification of the element (threshold or auxiliary) influenced by the record; the User must select one of the options available, namely:

- ALS or Threshold- allows the User to select the runway affected by the record.
- ILS
- DME

- NDB
- VOR
- Others - allows the User to identify the auxiliary that is affecting the aerodrome.

To start the creation process, the User must complete the following fields:



The screenshot shows a form titled "New Inoperative Registry". It has two dropdown menus: "Aerodrome" and "ALS". To the right of each dropdown is a text input field containing "VABP" and an empty field respectively. There is a "Create" button at the bottom left.

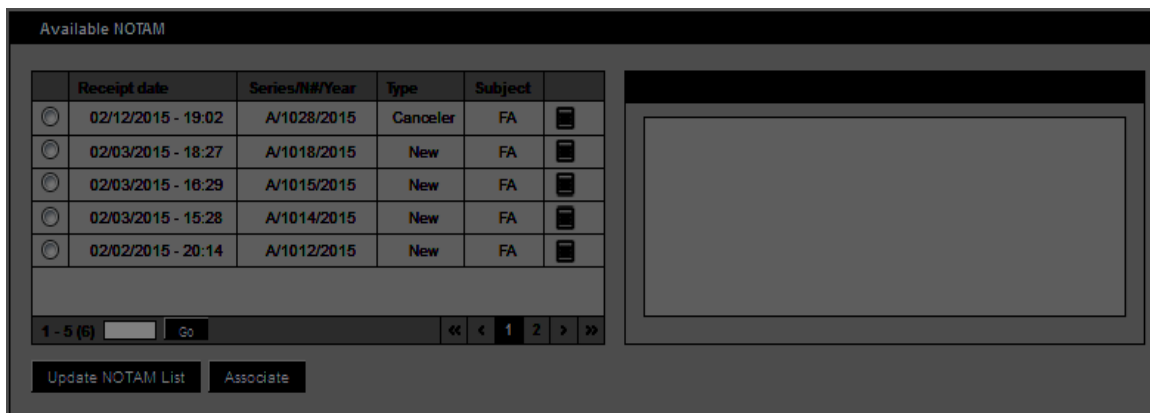


The screenshot shows a form titled "New Inoperative Registry". It has a dropdown menu with "VOR" selected. To its right is a text input field. There is a "Create" button at the bottom left.

After the element is identified, the SKYFLOW displays a page containing the following information groups to define the record characteristics:

“NOTAM available” Group


This groups shows the existing NOTAMs that are related to the type of element selected, as shown in the image below.



The screenshot shows a window titled "Available NOTAM". It contains a table with the following data:

	Receipt date	Series/№/Year	Type	Subject	
<input type="radio"/>	02/12/2015 - 19:02	A/1028/2015	Canceler	FA	
<input type="radio"/>	02/03/2015 - 18:27	A/1018/2015	New	FA	
<input type="radio"/>	02/03/2015 - 16:29	A/1015/2015	New	FA	
<input type="radio"/>	02/03/2015 - 15:28	A/1014/2015	New	FA	
<input type="radio"/>	02/02/2015 - 20:14	A/1012/2015	New	FA	

Below the table is a pagination control showing "1 - 5 (6)" and a "Go" button. At the bottom are "Update NOTAM List" and "Associate" buttons.

With this information group, the User can select the NOTAM related to the element to be affected by the inoperability event. To associate a NOTAM to the inoperability record, the User must select the option in the first column () and press the [**Associate**] button. After this action, the referred NOTAM is listed in the “associated NOTAM” window shows as follows.

NOTAM Associated				
Receipt date	Series/N#Year	Type	Subject	
02/03/2015 - 16:29	A/1015/2015	New	FA	
02/02/2015 - 19:29	A/1006/2015	New	FA	
(2)				

“Inoperability Record” Group

- This group shows a set of fields to be completed by the User, which define the characteristics of the inoperability record as follows.

Inoperance Registry

Type:	<input type="text" value="Aerodrome"/>	Origin:	<input type="text" value="CCC"/>																									
Element:	<input type="text" value="VAAU"/>	Restriction:	<input type="text" value="Technical"/>																									
Resource:	<input type="text" value="Threshold / 27"/>	Responsible:	<input type="text"/>																									
Begin date and hour:	<input type="text" value="01/10/2016"/> <input type="text" value="03:30"/>	Phone Number:	<input type="text"/>																									
Estimated Availability date and hour:	<input type="text" value="31/10/2016"/> <input type="text" value="12:30"/>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5">NOTAM Associated</th> </tr> <tr> <th>Receipt date</th> <th>Series/N#Year</th> <th>Type</th> <th>Subject</th> <th></th> </tr> </thead> <tbody> <tr> <td>06/10/2016 - 12:46</td> <td>A/1572/2016</td> <td>New</td> <td>MP</td> <td></td> </tr> <tr> <td colspan="5"> </td> </tr> <tr> <td colspan="5">(1)</td> </tr> </tbody> </table>		NOTAM Associated					Receipt date	Series/N#Year	Type	Subject		06/10/2016 - 12:46	A/1572/2016	New	MP							(1)				
NOTAM Associated																												
Receipt date	Series/N#Year			Type	Subject																							
06/10/2016 - 12:46	A/1572/2016	New	MP																									
(1)																												
Availability date and hour:	<input type="text"/> <input type="text"/>																											
Duration of Inoperance Registry:	<input type="text"/>																											
Information Resource:	<input type="text"/>	Degradation Status: <input type="text" value="Off"/>																										
Degradation Status:	<input type="text" value="Off"/>	Priority: <input type="text" value="Critical"/>																										

Comment: <input style="width: 95%;" type="text"/> <small>1000 of 1000 character(s) remaining.</small>	Reason: <input style="width: 95%;" type="text"/> <small>1000 of 1000 character(s) remaining.</small>
--	---

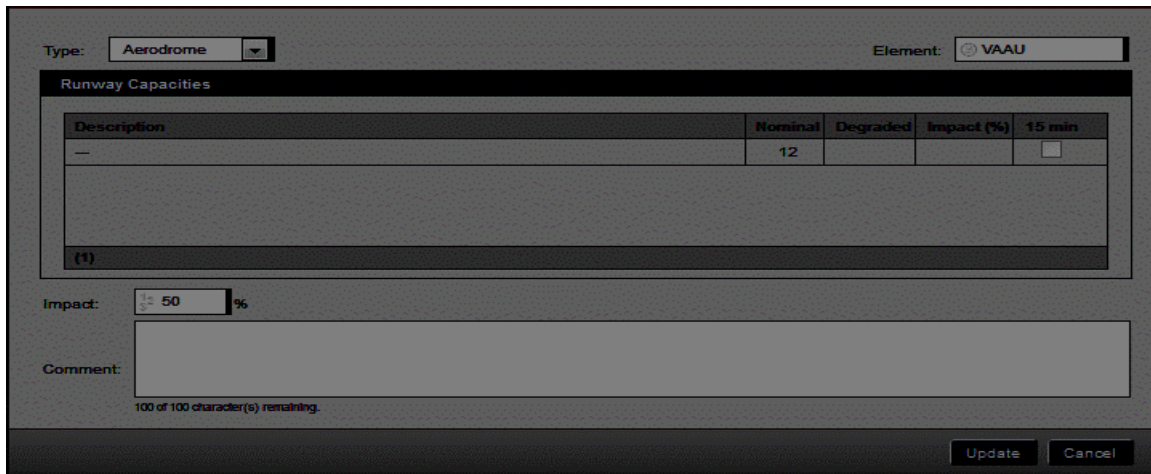
This information group requires completing the following fields:

- **“Type” field** - informative field completed automatically with the identification of the type of element.
- **“Element” field** - informative field completed automatically by the system that informs the element identification.

- **“Resource” field** - informative field completed automatically by the system that informs the element resource.
- **“Begin date and hour” field** - mandatory field that informs the inoperability start date/time.
- **“Estimated Availability date and hour” field** - optional field that informs the estimated inoperability end date/time.
- **“Availability date and hour” field:** optional field that informs the inoperability end date/time.
- **“Duration of In-operance Registry” field** - Informs the duration of intolerance registry.
- **“Information Resource” field** - mandatory field that informs the source of the information.
- **“Degradation Status” field** - mandatory field that informs the element degradation state (Off or Degraded).
- **“Priority” field** - mandatory field that establishes the level of priority to be considered (Critical, Major, or minor).
- **“Origin” field** - informative field completed automatically according to the User that registered the record.
- **“Restriction” field** - field completed according to the restriction caused by the inoperability (Technical, Operational, or Technical/Operational).
- **Responsible** - field to be completed with the name of the person responsible for the information.
- **Phone Number** - field to be completed with the telephone number of the person responsible for the information.
- **Comment** - field completed with operational information related to the record.
- **Reason** - field completed with the reasons that contributed to the element restriction event.
- **“Impacted Elements” Group**
- **With this information group the User is able to add the airspace elements that will be affected by the inoperability record as follows.**

Note: All records that affect aerodromes are automatically included by the system in the affected element list.

- To add an element affected by the inoperative element, the User must press the “Add” button and the SKYFLOW displays the following fields for completion:



Description	Nominal	Degraded	Impact (%)	15 min
—	12			<input type="checkbox"/>

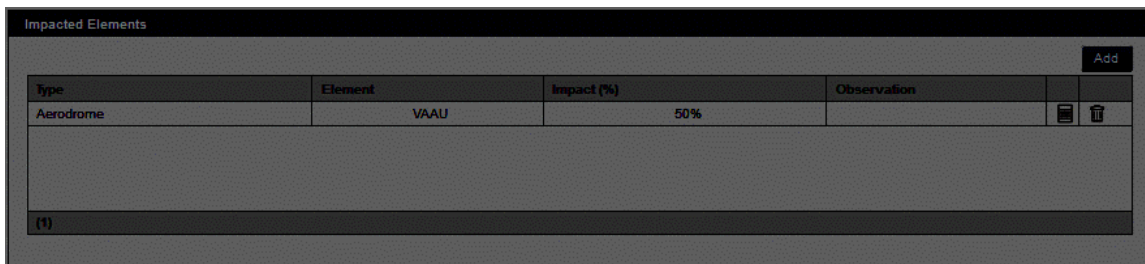
Impact: %

Comment:

100 of 100 character(s) remaining.

Update Cancel

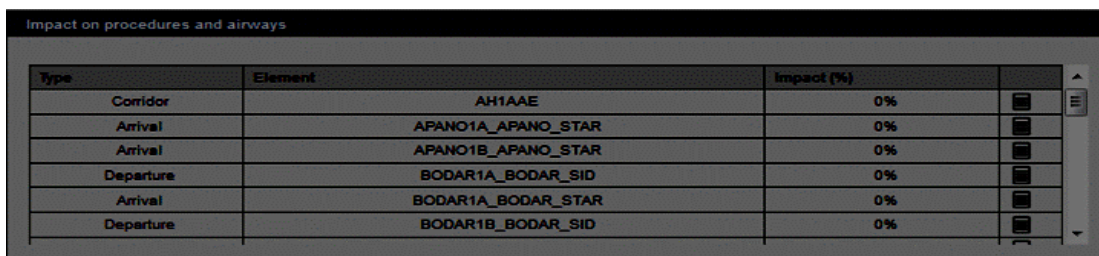
- To finish the registration, the User must press the “Update” button; the SKYFLOW then updates the records displayed in the “Elements Affected” table.



Type	Element	Impact (%)	Observation
Aerodrome	VAAU	50%	


“Impact on procedures and airways” Group

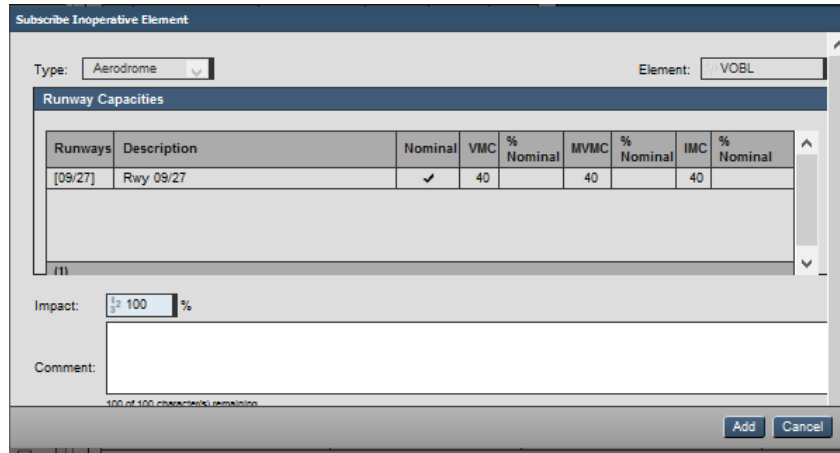
This data group allows the Users to define the record degradation percentage on the procedures and Air routes that are directly connected to the referred element, according to the image below.



Type	Element	Impact (%)
Corridor	AH1AAE	0%
Arrival	APANO1A_APANO_STAR	0%
Arrival	APANO1B_APANO_STAR	0%
Departure	BODAR1A_BODAR_SID	0%
Arrival	BODAR1A_BODAR_STAR	0%
Departure	BODAR1B_BODAR_SID	0%

Note: All records that affect procedures and Air routes are automatically included by the system in the affected element list.






To establish the percentage, the User must assign the element of interest by selecting the edit icon () and the SKYFLOW opens a window to define the parameters.



To complete the insertion, the User must click on (**Save**) and the SKYFLOW includes the record in the general list.

7.4 Consult Element Operability

This option allows the User to consult the information in inoperability records.

	Type	Element	Resource	State	Start	Stop		
	ILS	AGR	Localizer	Off	02/09/2015			
	Aerodrome	VABP	Heading / 12	Off	02/09/2015	03/19/2015		

When the “Consult” button displayed in the record of interest is pressed, the SKYFLOW displays the form containing the fields with the data of the inoperability record selected, as shown in the image below.



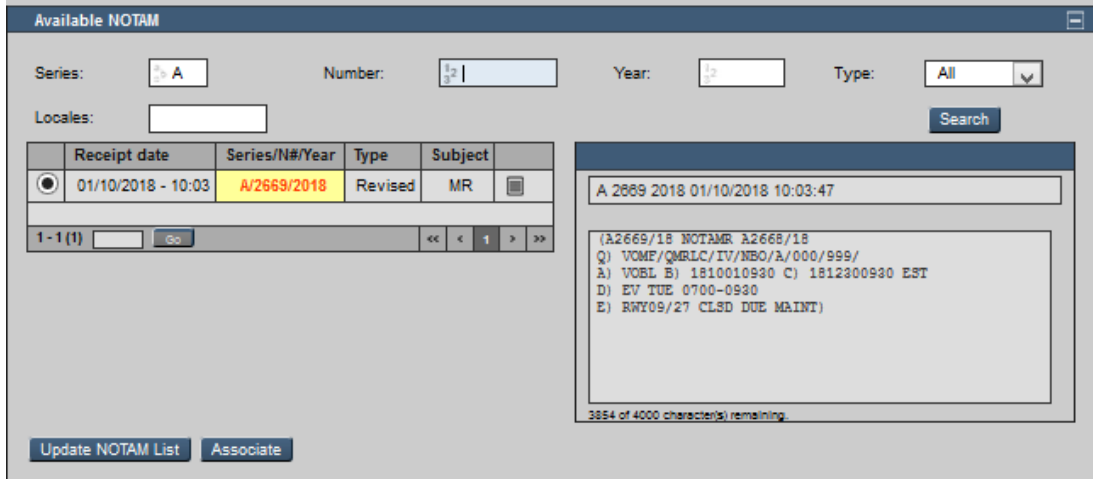
7.5 Consult NOTAM

Allows the User to consult the content of NOTAMs related to the element selected. To view the data, the User must activate the “Consult” button displayed in the NOTAM of interest.

	Receipt date	Series/N#/Year	Type	Subject	
<input checked="" type="radio"/>	01/10/2018 - 10:03	A/2669/2018	Revised	MR	<input type="button" value="Consult"/>

1 - 1 (1) << < 1 > >>

When the action is completed, the SKYFLOW shows the content of the NOTAM selected as follows.

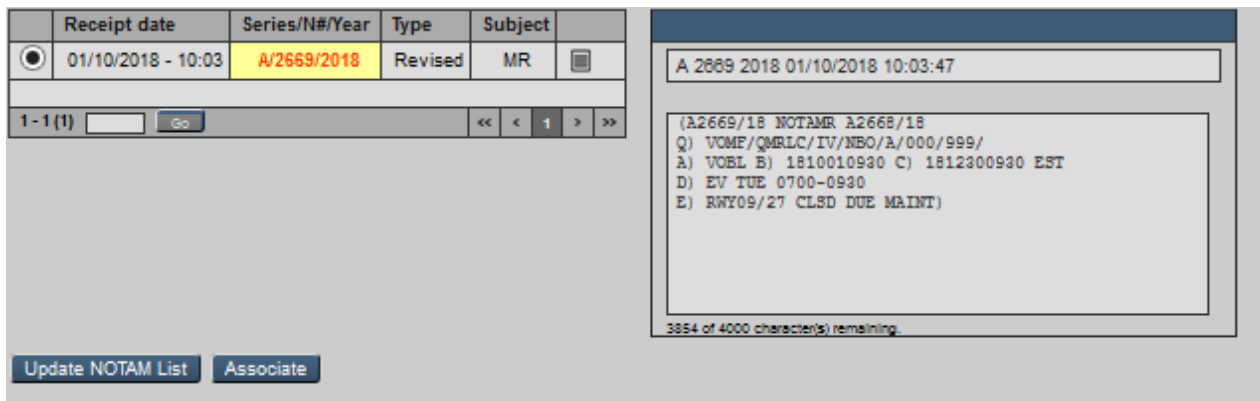



Associate NOTAM to Inoperability Records

Allows the User to associate NOTAMs to specific inoperability records. To execute this function, the User must select a NOTAM included in the “NOTAM Available” list.


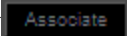
- “NOTAM” Group

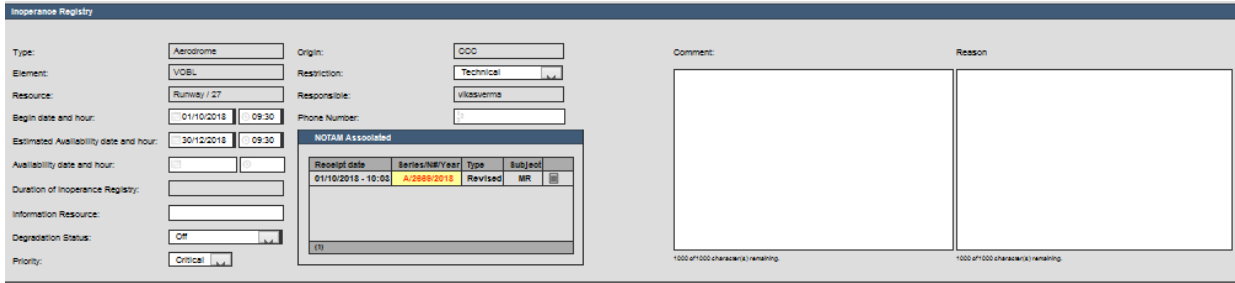
This group contains data related to the NOTAMs.





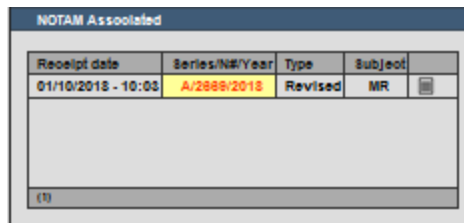
When the “Consult” () icon displayed in the NOTAM of interest is selected in this information group, it is shown in the “NOTAM Message” field.

Note: This group is available for elements of the aerodrome and Auxiliary type, except for RADAR.


To associate a NOTAM to the inoperability record, the User must select the option in the first column () and press the  button. After this action, the NOTAM field of the “Auxiliary Inoperability Record” information group displays the NOTAM selected as follows.

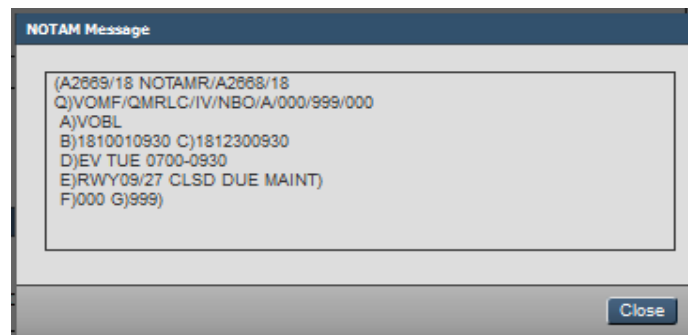


In the NOTAM field, the User is able to “Consult - ” or “Remove - ” the association between the NOTAM and the inoperability record according to the image below.



Receipt date	Series/No/Year	Type	Subject
01/10/2018 - 10:00	A/2688/2018	Revised	MR

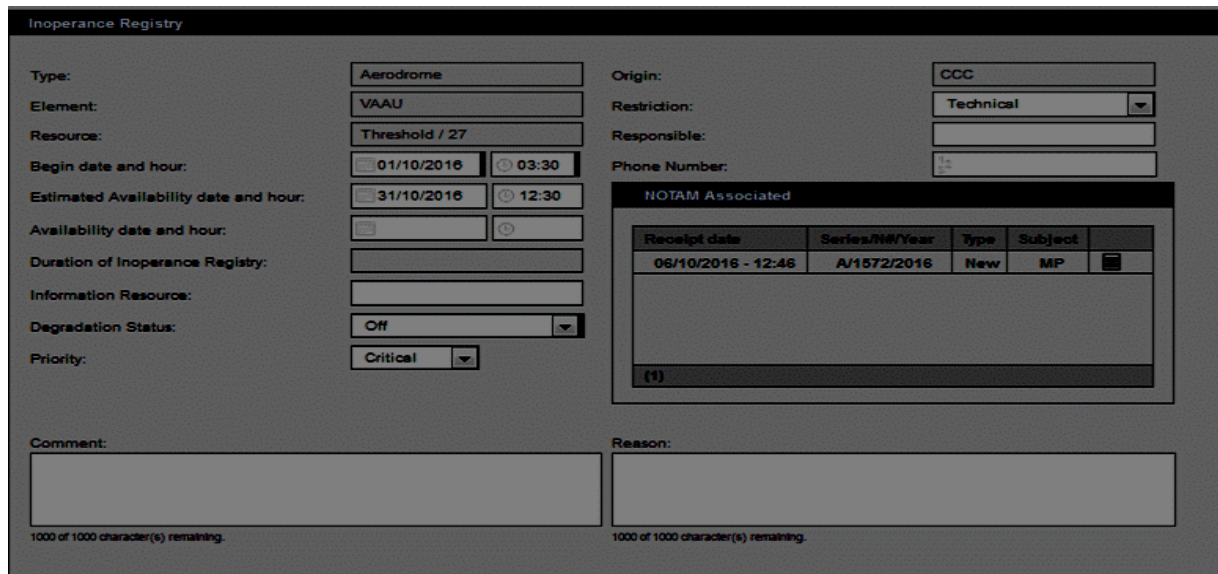
When the User presses the “Consult - ” button in the NOTAM of interest, the information is displayed as follows.



Change Inoperability Record Data

Allows the User to change the record data by interacting directly with the fields, according to the table below.

To complete the change the User must press the “Save” button (**Save**) and the SKYFLOW then updates the record data.



The screenshot shows a web form titled "Inoperance Registry". It contains several input fields and a table. The fields include: Type (Aerodrome), Element (VAAU), Resource (Threshold / 27), Begin date and hour (01/10/2016 03:30), Estimated Availability date and hour (31/10/2016 12:30), Availability date and hour, Duration of Inoperance Registry, Information Resource, Degradation Status (Off), and Priority (Critical). There is also a "Save" button highlighted in black. A "NOTAM Associated" table is visible, showing a table with columns: Receipt date, Series/NN/Year, Type, Subject, and an icon column. The table contains one row: 06/10/2016 - 12:46, A/1572/2016, New, MP, and an icon. Below the table is a count of {1}. At the bottom, there are two text areas for "Comment" and "Reason", each with a "1000 of 1000 character(s) remaining" indicator.

8. FLOW MANAGEMENT POSITION (FMP) - DUTIES AND RESPONSIBILITIES

The FMP’s role is, in partnership with CCC, to act in such a manner so as to provide the most effective ATFM service to ATC and AOs within the area of responsibility of the FMP.

8.1 To be able to take strategic and tactical decisions related to the application of ATFM, there is a requirement of ATC knowledge, and when the responsibility to take these decisions is delegated to an FMP it normally requires that the staff manning these positions have an ATC background.

The national C-ATFM network consists of a total of 36 (Thirty six) Flow Management Positions (FMPs) being established in a phased manner at all major ACCs and airports. The FMPs will be manned by trained Traffic Flow Managers to provide ATFM service in the area of jurisdiction of the respective ATC unit, at which the FMP is established.

Traffic Flow Managers deployed at FMPs of Delhi, Mumbai, Chennai, Kolkata, Hyderabad and Bengaluru will be responsible for providing ATFM services to all airports within their jurisdiction in addition to their own airports.

The Traffic Flow Managers deployed at FMPs at other satellite airports or the concerned ATC unit

will coordinate with the FMPs under whose jurisdiction the airports are situated.

The Traffic Flow Managers deployed at FMPs at the six metro airports, in coordination with other FMPs/ATC units under their jurisdiction, will be responsible for collecting all relevant information, such as meteorological conditions, infrastructure outages, runway / airspace closures, automated system outages, procedural changes, events etc. that may lead to capacity constraints at airports within their jurisdiction and inform the impact on capacity to CCC.

In addition to above, the responsibilities of FMP shall include the following;

- Analyze the traffic Scenario for the next day for their Airport and satellite airports within their jurisdiction. Check the strategic scenario to ensure that all flights of their airport are reflected in the demand. In case of any discrepancy, coordinate with CCC for correction/addition/ deletion.
- In case of any Demand-Capacity imbalance, explore all possibilities to resolve the imbalance locally. If problem still persists, coordinate with CCC for resolving demand capacity imbalance through ATFM measures.
- In case of a planned closure or a planned operation with reduced Runway Capacity for a prolonged period, ATS In-charges /FMPs shall coordinate with all stakeholder i.e. airlines, Airport operator, ATFM etc. for the revision of flight schedule during the period of disruption.
- Monitor weather warning issued by MET at their respective airports and assess its impact on airport capacity in consultation with WSO/ATS-In charge. WSO/FMPs may request for ATFM measures during forecasted bad weather or post bad weather scenario by informing the revised/reduced capacity.
- Any Tactical Flow measures applied by the station (ATC) should be intimated to CCC at the earliest. In order to avoid confusion and adherence by Airlines, no tactical measures should be applied by ATC in conjunction to CTOTs issued by CCC.
- CCC has developed an internal operating procedure for application of ATFM measures in tactical scenario during post bad weather scenario on a trial basis, for which collaboration among various stakeholder is important. In case of exigency, CCC may issue instructions to STOP departures from various stations to constrained airport till the time CTOTs are issued.
- Under these circumstances, the constrained Airport should provide CCC with information on number of diversions, anticipated period of disruption, reduced Airport arrival rate etc. for application of ATFM measures at the earliest.
- ATS In-charges/WSOs/FMPs must sensitize airline staff to update flight intentions by originating appropriate CNL, DLA and CHG messages addressed to VIDPCTFM.

- Last minute request for revised CTOT by FMPs (when the aircraft is already pushing back or taxing) shall be discouraged. Airlines shall be sensitized to originate appropriate “DLA” message in case of change in EOBT of a flight by more than 15 minutes.
- FMPs shall Check NOTAMs for unserviceability/non availability of facilities, for the next 24hrs, in respect of airports within their jurisdiction and coordinate with WSO/ATS In-charges for calculating any impact on capacity.
- Incorporate the same in the ‘In-operability’ functionality of SKYFLOW system along with the applicable changed capacity and convey the same to CCC for acceptance preferably by 1130 UTC.
- Ensure sharing of essential information impacting airport capacity e.g. inoperability, Active NOTAMs & VVIP movements for the next day with CCC.
- Ensure that feedback reports are provided to CCC for compliance and adherence to ATFM measures.
- In case of withdrawal of ATFM measures, FMP is responsible for informing each airport within its jurisdiction of the same.

8.2 ATFM Daily Plan

- The ATFM Daily Plan (ADP) is a set of tactical ATFM measures that will be in force in Indian airspace on the following day.
- The CCC shall coordinate and define the daily plan and inform Aircraft Operators and ATC units about the ATFM measures.
- Through the ATFM Daily Plan the CCC is trying to optimize available capacity to meet forecast demand and to manage demand to minimize delay and cost.
- The CCC shall publish the agreed plan for the day of operations after a collaborative decision making process.
- The ADP will be published at 1330 UTC daily and is applicable for the next day.
- The ADP is distributed by means of an email. In future, it will also be available on the ATFM Web portal.

An ADP include the following items of information:

- Aerodrome or Airspace Sector identification;
- Description of constraints;
- Time frame
- Proposed ATFM measures; and
- Remarks/other relevant information.

Annexure “B”

AIRCRAFT OPERATORS MANUAL

1. Need for Central Air Traffic Flow Management in India:

Air traffic in India continues to grow rapidly and this trend is likely to continue to expand into the future. Increased traffic is expected at many of the existing airports. This increase in demand requires a corresponding effort to utilize system capacity efficiently. This will require Air Traffic Flow Management (ATFM) capabilities for effective Demand and Capacity Balancing. The ATFM tools will enable improved management of demand and capacity, and will help system stakeholders to deal with the increased complexity of the nation’s air routes.

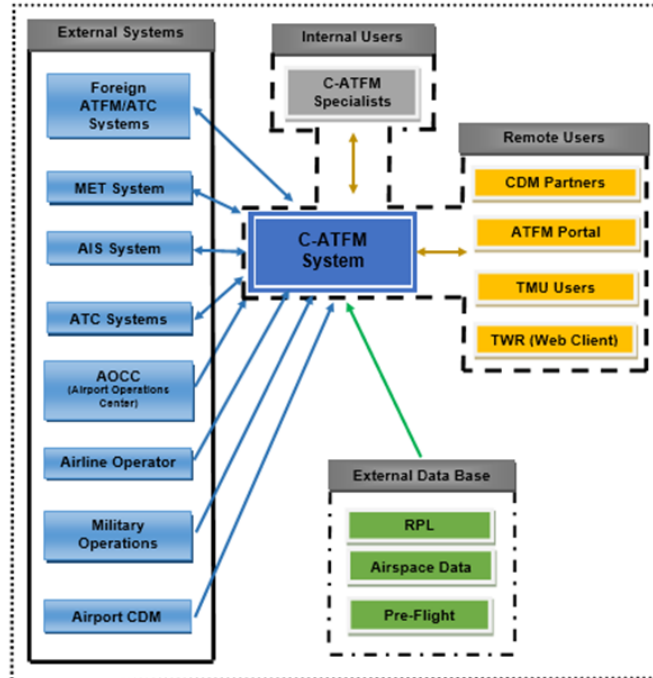
Demand and capacity balancing will allow airspace users to optimize their participation in the ATM system while mitigating conflicting needs for airspace and aerodrome capacity through collaborative usage of decision-support tools thus ensuring most efficient use of airspace resources, equitable access for all airspace users, accommodate user preferences and ensuring that demand on an airspace resource will not exceed its capacity.

2. OBJECTIVE:

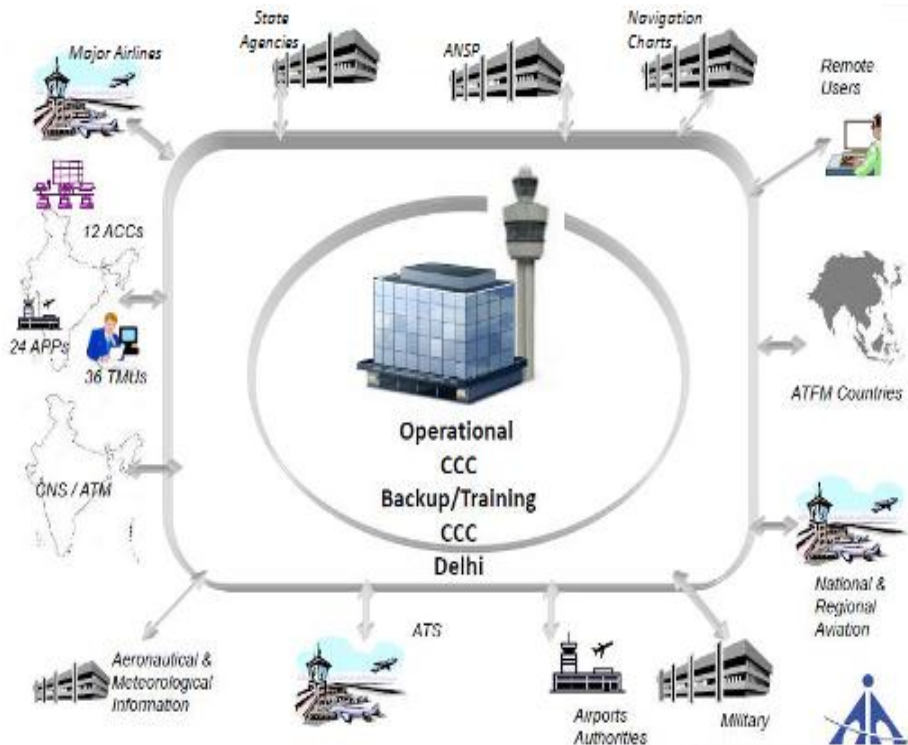
The objective of this part of document is to enable the Aircraft Operators (AOs) to learn to operate the sub systems of SKYFLOW, as part of Air Traffic Flow Management (ATFM) services & to give a brief description of certain features and functionalities of the SKYFLOW system, for the Aircraft Operators (AOs).

System Over view of C-ATFM:

ATFM DAILY PLAN (ADP) YYMMDD 0000 to YYMMDD 2359 (UTC)		
CAPACITY AND CONSTRAINTS:		
LOCATION	APPLICABLE PERIOD	CONSTRAINTS/ REMARKS
VIDP	0200 - 0700 UTC 0800 - 1100 UTC	Expect congestion
VABB	0400 - 0500 UTC 1300 - 1600 UTC	Expect congestion
VECC	-----	-----
VOMM	-----	-----
VOBL	0300 - 0500 UTC 1400 - 1700 UTC	Expect congestion
VOHS	0300 - 0400 UTC 1700 - 1800 UTC	Expect congestion
ATFM MEASURES:		
LOCATION	APPLICABLE PERIOD	MEASURES/ REMARKS
<p>ATFM MEASURES WILL BE APPLIED TO ADDRESS DEMAND/CAPACITY IMBALANCE AT AERODROMES. STAKEHOLDERS WILL BE NOTIFIED 3 HOURS BEFORE THE ATFM MEASURES ARE IN EFFECT.</p>		
DEVELOPING ISSUES:		
LOCATION	APPLICABLE PERIOD	MEASURES/ REMARKS
-----	-----	-----
ANY OTHER ISSUES:		
<p>VOBL RWY CLOSURE DUE MAINTENANCE FROM 0700-0930 UTC (REF NOTAM: A1720/18)</p>		



CCC Overview:





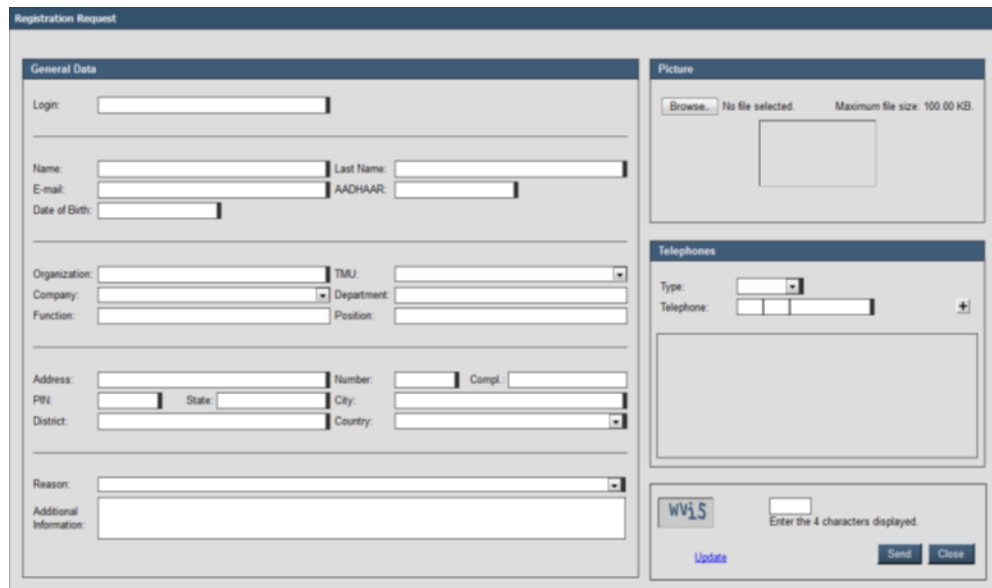
SKYFLOW is the generic name for logging in to the ATFM system of AAI.
The url is: <https://www.atfmaai.aero> and is compatible with all browsers.

To use the CATFM system the user requires a user id and password. There are two ways of obtaining it.

These are: **Registration Request:**



When the icon registration request is pressed, the system shows a form to be completed, according to the figure below.



The image shows a "Registration Request" form with the following sections:

- General Data:** Login, Name, Last Name, E-mail, AADHAAR, Date of Birth, Organization, TMU, Company, Department, Function, Position.
- Address:** Address, Number, Compl., PIN, State, City, District, Country.
- Reason:** Reason, Additional Information.
- Picture:** Browse... No file selected. Maximum file size: 100.00 KB.
- Telephones:** Type, Telephone.
- Security:** A CAPTCHA image showing "wv15" and a text input field with the prompt "Enter the 4 characters displayed".

Buttons: Update, Send, Close.

When the mandatory fields (shaded boxes) are completed and the data is sent, the following message shows up:

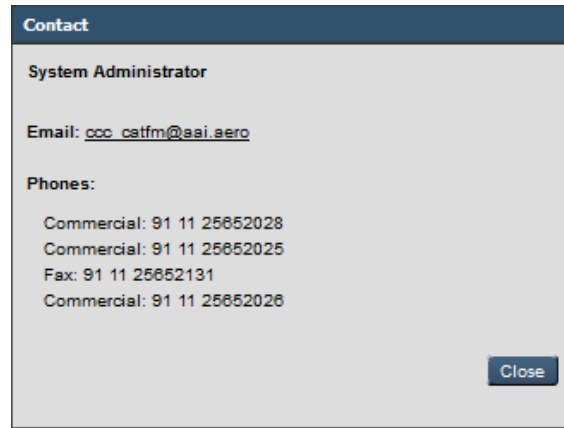
After sending the data successfully, the user must wait for an email from the Administrator.

Registration successfully sent! Awaiting administrator's reply

Contact Administrator:



2. If the Registration request is not accepted by the system due to any difficulty in Login, users may send the e-mail to the System administrator by giving details of Login, by pressing the button



Help:



When the icon is pressed, the system shows the information on the User rules, respective system access password, and guide lines on the registration procedure.

FLIGHT PLAN MANAGEMENT

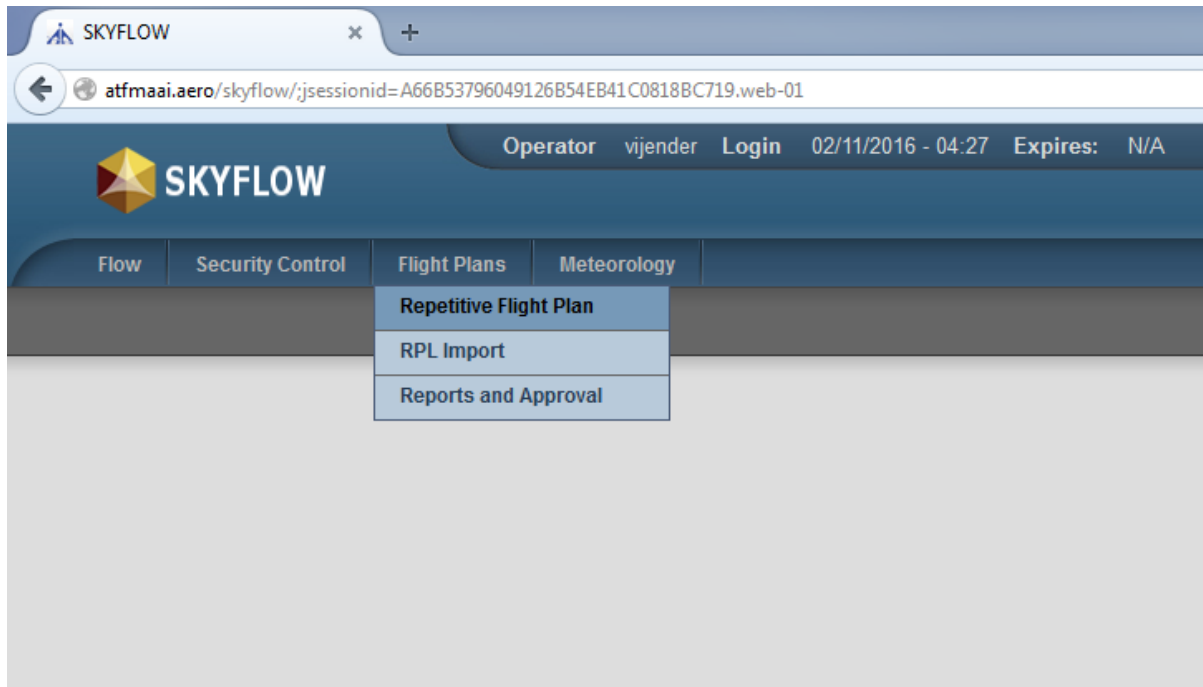
The main duties of Aircraft Operators will be to import RPLs into the CATFM system on periodic basis and to participate in the CDM (Collaborative Decision Making) sessions, as and when required.

To perform these functions the functionality of SKYFLOW provided to the Aircraft Operator is shown below.

Flight Plans

This component defines the interaction with the Repetitive Flight Plan records. The drop down menu has three functionalities.

- Repetitive Flight Plan
- RPL Import
- Reports and Approval



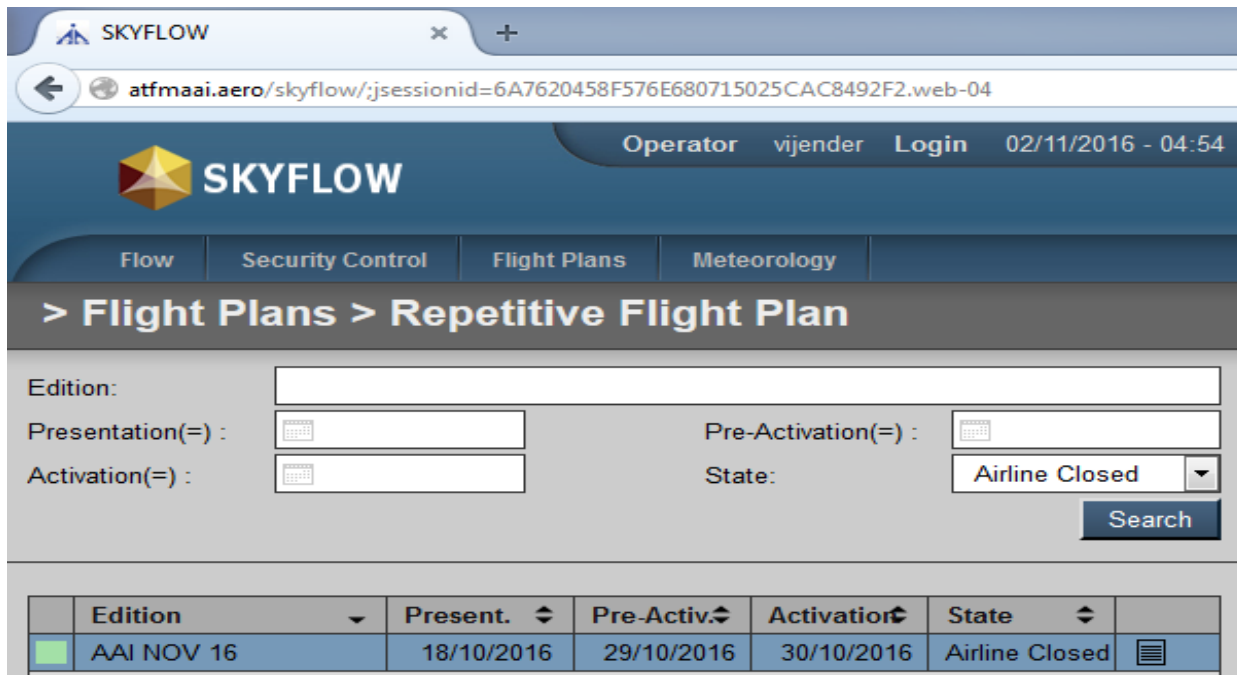
“Repetitive Flight Plan” Functionality

This functionality allows users registered as C-ATFM operator or Aircraft Operator to insert RPL flight plans for new editions.

The RPL editions included in the system database are considered in one of the following states:


- **Open:** state attributed to RPL editions that allow the Airline Users to change, include, and delete RPLs.
- **Airline Closed:** state attributed to completed RPL editions .Changes from Airline user are not accepted.


The window will appear like shown below:



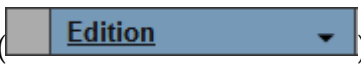

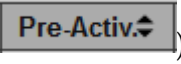
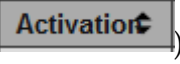



The following is the description of each field in the screen above:

- **Edition:** - search filter by identifying a specific Edition.
- **Presentation(=) :** - search filter by means of Open Edition starting date. This field is completed in calendar format (day/month/year), and it is used to indicate the start date of the Open Edition for the Airlines.
- **Pre-Activation(=) :** - search filter by means of the date the RPL edition will go to pre-active state. This field can be filled in by means of the calendar format (day/month/year).
- **Activation(=) :** - search filter that specifies the date the RPL edition will enter in the Active state. This field can be filled in by means of the calendar format (day/month/year).
- **State:** - search filter by means of edition state. The user selects one of the following edition states: Open & Airline Closed.

When the **Search** () button is used, the system presents a list of Editions, according to the selection criteria, as follows.

	Edition ▾	Present. ⇅	Pre-Activ.⇅	Activation⇅	State ⇅	
	AAI NOV 16	18/10/2016	29/10/2016	30/10/2016	Airline Closed	

The list columns present the following information, related to editions stored in the database:

- **“Edition” Column** () - the first column shows the Edition identification.
- **“Presentation” Column** () - identifies the data from which the new edition is opened so airlines and C-ATFM operators start inserting RPLs for the new edition.
- **Pre-Active” Column** () - date on which the edition state changes to Pre-Active.
- **“Activation” Column** () - date on which the edition state changes to Active.
- **“State” Column** () - shows the current state of the edition.
- **“Final” Column** - this column presents the option to check () edition details.
- **Column Order** () - when the user clicks on this icon, the system orders the information according to the criterion established.

“RPL Import” Functionality

This option allows C-ATFM personnel and Aircraft Operators to import RPLs stored in specific files to allow preparing the input data that shall compose the new editions in advance.

The RPL in the file are included in the **Open** edition. The basic information of the edition is presented in the **Edition Data** group.

If there is no edition in the **Open** state, the fields of the **Edition Data** group are displayed blank and the other fields are displayed disabled for the operation.


The procedure adopted for importing the RPLs is as follows:

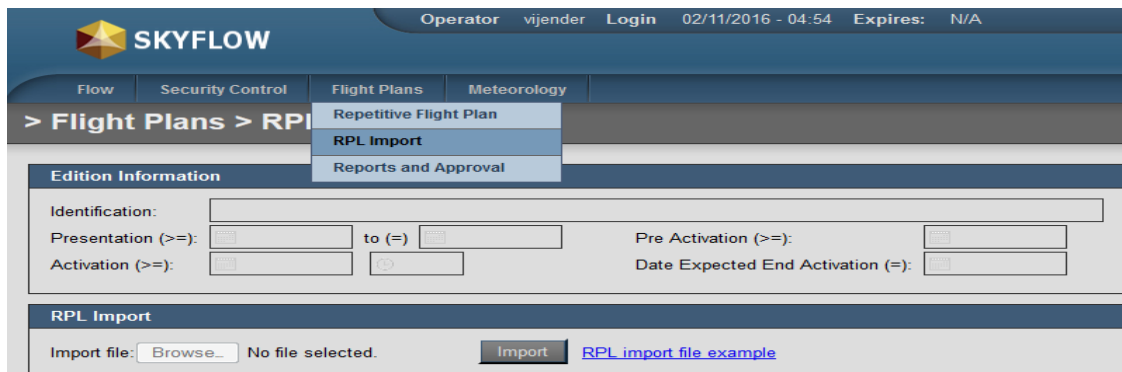
- The operator must select the file from the option list provided with the **Browse**

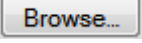

functionality () of the **RPL Import** information group.

1. The format to be uploaded is .csv
2. The RPL data has to be organized as follows-

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	
1	Add/Remove	Begin validity	end validity	Frequency						C/S	Type	wake	ADEP	EOBT	Speed	Level	Route	ADES	EET	Equipment		FIR	
2	+	250318	271018	1	2	3	4	5	6	7	XYZ118	A320	M	VOHS	1635	N0449	F360	W28	VAPO	0051	EQPT/DE1FGHIRWY PBN/A1B2B3B4C2D2O2.EET/ABF0023		VOMF
3																							

3. The data is to be uploaded without header. Header is for information only.
4. To modify existing RPL using import/export functionality following steps may be followed
5. **Flight Plans** → **Repetitive Flight Plan**
 -  Consult() the desired Edition
6. Click **Export RPLs**
7. Choose **Default** and click Export
8. Open **the CSV file** in open office.
9. **Replace** in required RPLs character "+" to "-" and save the file. This will remove the existing RPL when uploaded. Then add the new data to be uploaded with "+".
10. Import the file using **RPL Import** functionality:



11. Press the **Browse...** button ()
12. Select the file desired in the screen that opens next.
13. When the file to be imported is specified, the operator must press the **Import** () button so the system imports the file and fills in the data.

14. The files imported are stored by the system and shown in the **Imported Files** group, waiting for the automatic process that is executed at fifteen minutes (00, 15, 30, 45).

Date	Imported File	File Size
02/19/2015 - 20:35:25	RPL_VALID.bt	272.73 KB
02/19/2015 - 20:18:25	template_RPL_import.bt	272.73 KB

15. Once the file is processed, it is no longer shown in the **Imported Files** group, and is shown in the **Processed Files** group, according to the following screen.

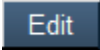
Date	Imported File	Total	Incorrect	Correct	Removed	Included	Prior to Activation	
02/20/2015 - 19:27:11	RPL_20150202_1834 (1).txt	1123	99	1024	1024	0	0	⬇
02/20/2015 - 19:22:57	template_RPL_import(3).txt	1	1	0	0	0	0	⬇

16. After processing, the system shows the file totaling data in the **Processed Files** group, and in case of invalid RPLs, the system shows the **Download** (⬇) icon to download the log file containing the invalid RPLs and respective error descriptions. Once the edition in question goes to the Closed state, the files imported are no longer shown in the **Processed File** group and the respective logs cannot be downloaded anymore.

If the RPL operator wants to import an RPL edition existing in the system, it should follow the procedure below:

Add RPL

This option allows the operator to insert new RPL in the edition. After selecting the option for edition (

) , the user must select the option to add RPL present right above the list of RPL.

Edition RPL's

Indicative: [] Equipment: [] ADEP: [] EOBT: []
 Airline: [] ADES: [] EET: [] ETA: []
 State: [All] Status: [All] Approval: [All] Frequency: [1234567]
 Route(=): [] FIR: []
 Obs.(=): []

[Search] [Clean]

[Fields viewed] [Export RPL's] [Param FIR]

	Begin date	End date	Frequency	Indicative (I)	Aircraft Type	ADEP	EOBT	ADES	EET	Status	
[+]	02/01/2015		UFN	1234567	AIC010	A321	VIDP	12:40	VAAH	01:09	Inconsistent
[+]	02/01/2015		UFN	1234567	AIC011	A321	VAAH	14:45	VIDP	01:04	Inconsistent
[+]	02/01/2015		UFN	1234567	AIC012	A321	VABB	20:15	VAAH	00:43	Inconsistent
[+]	02/01/2015		UFN	1234567	AIC016	A321	VIDP	18:45	VIAR	00:44	Inconsistent
[+]	02/01/2015		UFN	1234567	AIC018	A319	VAAH	02:40	VIDP	01:08	Inconsistent
[+]	02/01/2015		UFN	1234567	AIC019	A319	VIDP	00:30	VAAH	01:09	Inconsistent
[+]	02/01/2015		UFN	1234567	AIC021	A321	VECC	04:30	VIDP	01:54	Inconsistent
[+]	02/01/2015		UFN	1234567	AIC022	A321	VIDP	14:45	VECC	01:42	Inconsistent
[+]	02/01/2015		UFN	1234567	AIC023	A321	VECC	14:45	VIDP	01:54	Inconsistent
[+]	02/01/2015		UFN	1234567	AIC030	A321	VAAH	16:55	VIDP	01:08	Inconsistent

1 - 10 (20/30) [Go] [Order]

[Removed] [Previous Edition] [New]

The system then provides a form that allows the user to insert the RPL data, according to the screen below.

RPL

Flight Data

(H) [] (I) Initial [] (J) End [] (K) Operation Days [] (L) Aircraft Identification (Item 7) [] (M) Type and Category of Aircraft Wake Turbulence (Item 9) [] EQPT [S/C]

(N) ADEP and EOBT (Item 13) [] (O) Route (Item 15) [] (P) ADES and EET []

(O) Route [] [Search Routes] (Q) Observation []

800 of 800 characters remaining.

Additional Information

ETA: [] Airline: [] Flight Schedule: []
 Status: [Inconsistent] Approval: [Not approved] Validity: [Current]

Extraction Results

Warning: [] [Route Details]

FIR

1st FIR []
 2nd FIR []
 FIR's []
 VABF []
 VECF []
 VIDF []
 VOMF []
 LINDIA []

[Add] [Cancel]

First the operator must inform the flight plan indication, when the system provides the Flight Schedule or Flight Schedule proposal search option.

The screenshot shows the RPL (Route Planning) interface. At the top, a yellow warning banner displays "Flight Schedule not found". Below this, the "Flight Data" section contains various input fields: (H) Initial, (J) End, (K) Operation Days (1-7), (L) Aircraft Identification (AIC010), (M) Type and Category of Aircraft Wake Turbulence, and EQPT (S/C). There are also fields for (N) ADEP and EOBT, (O) Route (Item 15) with Cruise Speed and Level, and (P) ADES and EET. A "Search Routes" button is highlighted with a red arrow. Below the flight data are sections for "Additional Information" (ETA, Status: Inconsistent, Approval: Not approval, Flight Schedule, Validity: Current) and "Extraction Results" (Warning:). On the right, there is a "FIR" selection panel with options like VABF, VECF, VIDF, VOMF, and INMMA. "Add" and "Cancel" buttons are at the bottom right.

Perform the search by FLIGHT SCHEDULE by means of the “Search FLIGHT SCHEDULE” (🔍) icon or removing the focus from the Indication field. If no FLIGHT SCHEDULE is found for the respective indication, the fields are enabled blank for edition.

This screenshot is identical to the one above, showing the RPL interface with the "Flight Schedule not found" warning. A red arrow points to the warning banner. The rest of the interface, including the "Flight Data", "Additional Information", and "Extraction Results" sections, remains the same.

If the respective FLIGHT SCHEDULE proposal or FLIGHT SCHEDULE is found, the system shows a screen to select the plan included in it.

Begin date	End date	Frequency	Indicative (1)	Aircraft Type	ADEP	EOBT	ADES	EET	Status
02/19/2015	02/27/2015	1234567	AIC1152	B757	VAAH	08:00	VIDP	02:00	Inconsistent

Buttons: Remove, Save, Cancel

When the plan desired is selected, the system fills in the fields above automatically and keeps them in edit mode in case the operator wishes to change any field.

RPL

Flight Data

(H) +	(I) Initial: 28/08/2015	(J) End: 31/10/2015	(K) Operation Days: 1234567	(L) Aircraft Identification (Item 7): AIC1152	(M) Type and Category of Aircraft Wake Turbulence (Item 9): B757 M	EQPT: SCDFGTUW/C
(N) ADEP and SCD (Item 13): VAAH	(O) Route (Item 15): N0400	Cruise Speed: 08:00	Level: F370	(F) ADES and EET: VIDP	02:00	

(O) Route: DCT Search Routes (Q) Observation: RMK/ FOR FLIGHT SCHEDULE

797 of 800 character(s) remaining. 776 of 800 character(s) remaining.

Additional Information

Airline: AIR INDIA Flight Schedule: ETA: 10:00 Status: Inconsistent Approval: Not approved Validity: Current

Extraction Results

Warning: Route Details

Buttons: Confirm, Remove, Update, Cancel

FIR

1st FIR: VABF
2nd FIR: VECF, VIDF, VOMF, UNMA, UNMR

The form to add new RPLs in the edition presents the following groups of information:

- **“Flight Data” Group** - this data group allows defining the basics of the data that define the RPL, namely:
 - **(H) Field** - field completed automatically by the system that indicates the state of the RPL in the Edition.

- **“Initial Validity (I)” Field** – mandatory field that defines the day to be considered to start executing the RPL.
- **“End Validity (J)” Field** – mandatory field that defines the day to be considered to end the RPL. If there is no end date, the UFN check may be used.
- **“(K) Operation Days” Field** – mandatory field that defines the week days in which the RPL is executed (1 – Monday, 2 – Tuesday, 3 – Wednesday, 4 – Thursday, 5 – Friday, 6 – Saturday, and 7 – Sunday). “Green” background defines that the week day was selected for the flight.
- **“(L) Aircraft Indication (item 7)” Field** – mandatory field that defines the call code that the aircraft will use to establish contact with the air traffic control agencies.
- **“(M) Type and Category of Aircraft Wake Turbulence” (item 9) Field** – mandatory fields that allow specifying the type of aircraft and wake turbulence of the RPL. This field is filled automatically with the aircrafts registered in the database and their respective wake turbulence.
- **“EQPT” Field** – optional field to allow filling in the EQPT/ of field (Q) Notes.
- **“(N) ADEP and EOBT (item 13) Field** – mandatory field that defines the take-off aerodrome and estimated off-block time listed with the route being created. This field is filled automatically with the aerodromes registered in the database.
- **“(O) Route (item 15)” Field** – fields that define the course of the RPL.
 - **Cruise Speed**– mandatory field that defines the speed to be considered in the route. This field can be filled in as follows:
 - **Nautical Miles per hour** – letter N followed by 4 numerical characters. (E.g.: N0400)
 - **Kilometers per hour** – letter K followed by 4 numerical characters. (E.g.: K0600)
 - **Mach Number** – letter M followed by 3 numerical characters. (E.g.: M080)
 - **Level** – mandatory field that defines the flight altitude to be considered in the route, and that can be filled in as follows:
 - **Flight Level** – enter the letter F followed by 3 numerical characters (hundreds of feet). (E.g.: F330)
 - **Height** – enter the letter S followed by 4 numerical characters (tens of meters). (E.g.: S1250)

- **Altitude** - enter the letter A followed by 3 numerical characters (hundred feet). (E.g.: A325)
- **Meters** - enter the letter M followed by 4 numerical characters (tens of meters). (E.g.: M0500)
- **“(O) Route** - mandatory field to define the points that constitute the route of the RPL. To define the route, the system provides up to 800 characters.
- **“(P) ADES and EET” Field** - mandatory fields that define the destination aerodrome and the total flight time according to the route being created. The ADES is completed automatically with the aerodromes registered in the database, and the format of the EET is HHMM.
- **“(Q) Observation” Field** - optional field that allows registering important data related to the route. To define this field, the system provides up to 800 characters.
- **“Additional Information” Group** - this data group displays complementary information related to the RPL, namely:
 - **“Airline” Field** - non-editable field, filled in automatically by the system after defining the indicative field.
 - **“FLIGHT SCHEDULE” Field** - non-editable field, filled in automatically by the system to show the code of the FLIGHT SCHEDULE according to the indication informed.
 - **“ETA” Field** - field completed automatically by the system by calculating EOBT + EET.
 - **“Status” Field** - non-editable field, filled in automatically by the system to indicate the RPL status (Inconsistent, Valid, Invalid, or Inconsistent/Invalid).
 - **“Approval” Field** - non-editable field, filled in automatically by the system to indicate the RPL approval situation (Not Approved, Approved, or Rejected).
 - **“Validity” Field** - non-editable field, filled in automatically by the system to indicate if the RPL is valid or expired.
- **“FIR” Group** - this data group allows defining the FIR that will be involved in the flight path, namely:
 - **“1st FIR” Field** - mandatory field, filled in automatically by the system according to the departure aerodrome indicated in the plan.

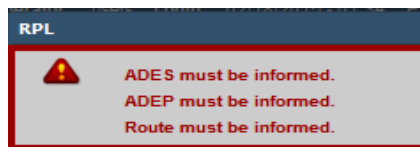
- **“2nd FIR” Field** – optional field that identifies the other FIR flown by the aircraft while executing the RPL.


Note: when the extraction identifies the transposition from the 1st FIR to the 2nd FIR with less than twenty (20) minutes, the system completes this field automatically.

- **“Extraction Results” Group** – this data group shows the results of the non-impeditive validations executed by the system, namely:
 - **“Warnings” Field** – field completed automatically by the system, showing warnings related to the route extraction and the inconsistencies related to the Flight Schedule proposal and Schedule.

When interacting with the fields, the user has the following options:





- **“Add” Button** – allows the user to add the RPL in the Edition, and in case of incorrect data the system presents a filling error warning according to the following example.




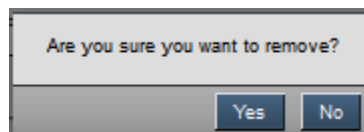
- **“Cancel” Button** () – allows the user to cancel the inclusion of the RPL. When this button is pressed, the system closes this screen and does not include the RPL in the database.

Remove RPL

This option allows the Airline User to remove one or more RPL in the “Open” edition. To execute this action, the user must select the RPL to be deleted from the database according to the figure below.

	Begin date	End date	Frequency	Indicative (1)	Aircraft Type	ADEP	EOBT	ADES	EET	Status	
<input checked="" type="checkbox"/>	02/01/2015	UFN	1234567	AIC010	A321	VIDP	12:40	VAAH	01:09	Inconsistent	
<input type="checkbox"/>	02/01/2015	UFN	1234567	AIC011	A321	VAAH	14:45	VIDP	01:04	Inconsistent	
<input type="checkbox"/>	02/01/2015	UFN	1234567	AIC012	A321	VABB	20:15	VAAH	00:43	Inconsistent	
<input checked="" type="checkbox"/>	02/01/2015	UFN	1234567	AIC016	A321	VIDP	18:45	VIAR	00:44	Inconsistent	

To execute this operation, the user must press the RPL removal icon () present right above the list of RPL and confirm the action according to the figure below.



When this action is confirmed, the system deletes the RPL from the list and updates the edition plans by signaling the RPL with the “-” signal and the red color, as follows:



	Begin date	End date	Frequency	Indicative (f)	Aircraft Type	ADEP	EOBT	ADES	EET	Status
<input type="checkbox"/>	02/01/2015	UFN	1234567	AIC010	A321	VIDP	12:40	VAAH	01:09	Inconsistent
<input type="checkbox"/>	02/01/2015	UFN	1234567	AIC011	A321	VAAH	14:45	VIDP	01:04	Inconsistent
<input type="checkbox"/>	02/01/2015	UFN	1234567	AIC012	A321	VABB	20:15	VAAH	00:43	Inconsistent
<input type="checkbox"/>	02/01/2015	UFN	1234567	AIC016	A321	VIDP	16:45	VIAR	00:44	Inconsistent

To complete the operation, the user must press the button **Save** so the system updates the RPL list included in the edition.

Note 1: If the RPL removed is from a previous edition, the system only signals with “-” and the red color, maintaining the RPL even after saving the edition.

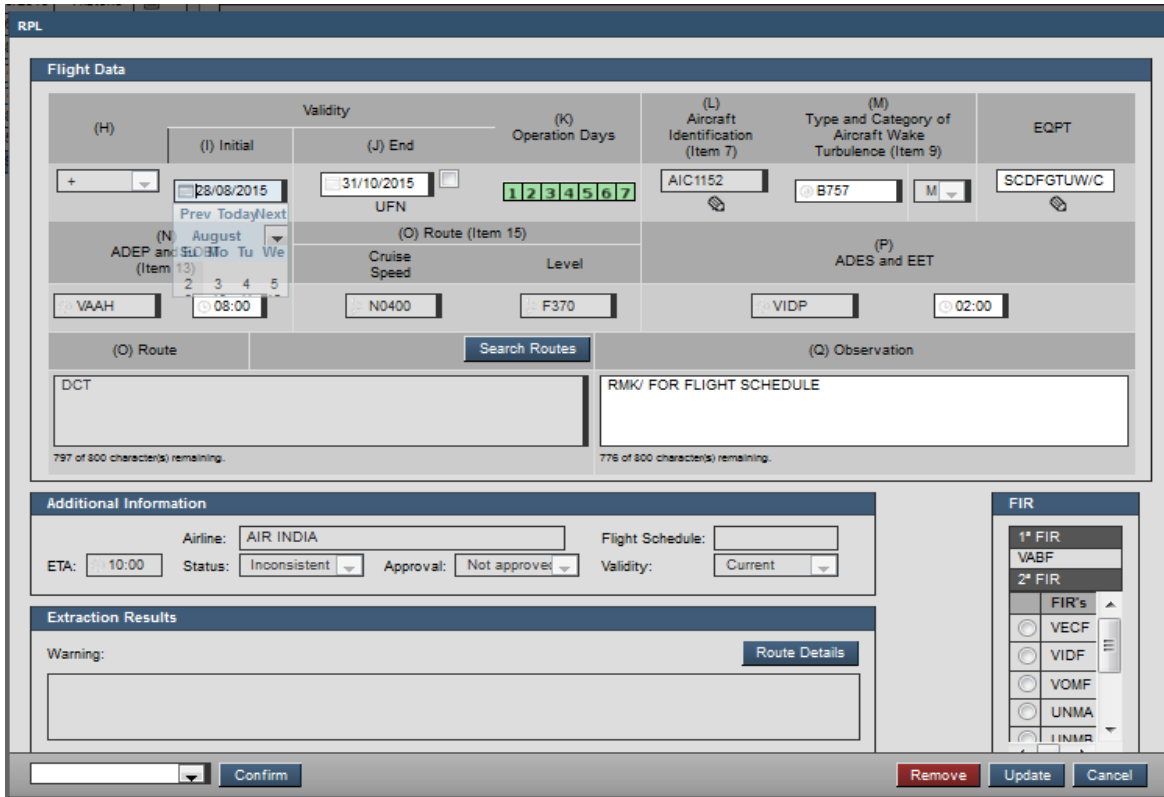
Note 2: Even though the RPL removed continue in the list, they are not considered by the other components of the system for analysis effects.

Change RPL

This option allows the operator to change RPL in the edition. To execute this action, the user must search an edition with the “Check” () icon on the left panel. After viewing the edition in the right panel, press the “Edit” (**Edit**) button and then select the “Check” () icon of the RPL to be changed.

	Begin date	End date	Frequency	Indicative (f)	Aircraft Type	ADEP	EOBT	ADES	EET	Status
<input type="checkbox"/>	02/01/2015	UFN	1234567	AIC010	A321	VIDP	12:40	VAAH	01:09	Inconsistent
<input type="checkbox"/>	02/01/2015	UFN	1234567	AIC011	A321	VAAH	14:45	VIDP	01:04	Inconsistent
<input type="checkbox"/>	02/01/2015	UFN	1234567	AIC012	A321	VABB	20:15	VAAH	00:43	Inconsistent
<input type="checkbox"/>	02/01/2015	UFN	1234567	AIC016	A321	VIDP	16:45	VIAR	00:44	Inconsistent

When this last command is executed, the system provides a form containing the RPL data with the fields enabled for changing, according to the following screen.




When the changes are made in a plan copied from a previous edition and the “Update” (**Update**) button is pressed, the system closes the previous screen, signals that the original RPL was deleted, and simultaneously includes the new version of the RPL in the plan list, according to the following figure:

	Begin date	End date	Frequency	Indicative (1)	Aircraft Type	ADEP	EOBT	ADES	EET	Status
<input type="checkbox"/>	02/12/2015	UFN	1234567	AIC019	A319	VIDP	00:30	VAAH	01:09	Inconsistent
<input checked="" type="checkbox"/>	02/01/2015	UFN	1234567	AIC010	A321	VIDP	12:40	VAAH	01:09	Inconsistent
<input type="checkbox"/>	02/01/2015	UFN	1234567	AIC011	A321	VAAH	14:45	VIDP	01:04	Inconsistent

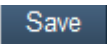
This procedure is executed by the system in order to maintain a change history of flight plans copied from the previous edition. When an RPL is updated in the New state, the system updates the same record.

In order for all actions to be put in effect, the “Save” (**Save**) button must be pressed. The system then updates the list of RPL in the edition as follows.

Fields viewed		Export RPL's		Param FIR									
	Begin date	End date	Frequency	Indicative (1)	Aircraft Type	ADEP	EOBT	ADES	EET	Status			
<input type="checkbox"/>	02/01/2015	UFN	1234567	AIC010	A321	VIDP	12:40	VAAH	01:09	Inconsistent	<input type="checkbox"/>		
<input type="checkbox"/>	02/01/2015	UFN	1234567	AIC011	A321	VAAH	14:45	VIDP	01:04	Inconsistent	<input type="checkbox"/>		
<input type="checkbox"/>	02/01/2015	UFN	1234567	AIC012	A321	VABB	20:15	VAAH	00:43	Inconsistent	<input type="checkbox"/>		
<input type="checkbox"/>	02/01/2015	UFN	1234567	AIC018	A321	VIDP	16:45	VIAR	00:44	Inconsistent	<input type="checkbox"/>		
<input type="checkbox"/>	02/01/2015	UFN	1234567	AIC018	A319	VAAH	02:40	VIDP	01:08	Inconsistent	<input type="checkbox"/>		
<input type="checkbox"/>	02/12/2015	UFN	1234567	AIC019	A319	VIDP	00:30	VAAH	01:09	Inconsistent	<input type="checkbox"/>		

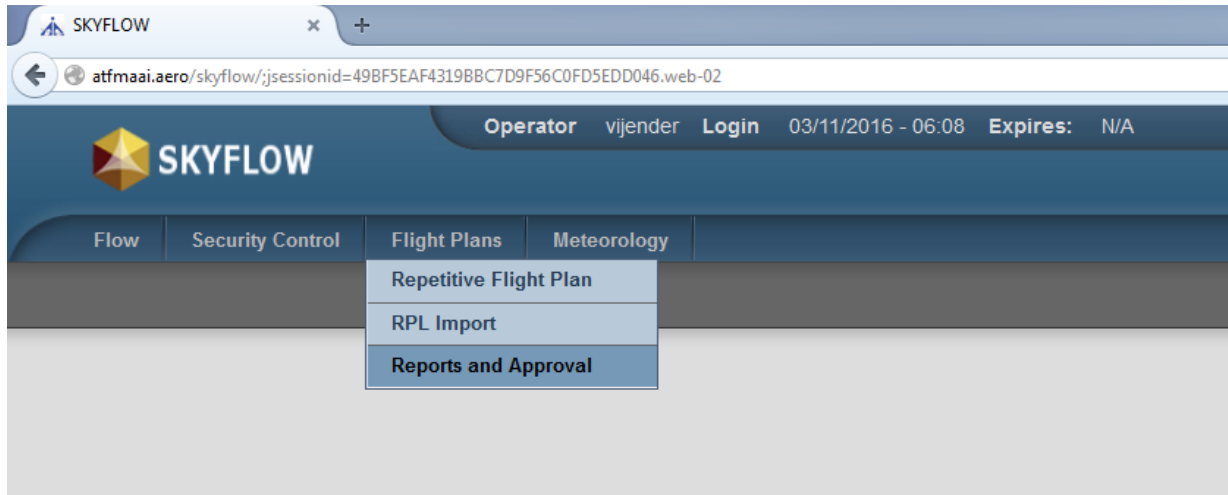
If the “Cancel” () button is pressed, the system keeps the edition in the original state without saving the changes in the database. When this button is pressed, the system presents the data of the edition in question in search mode.

Fields viewed		Export RPL's		Param FIR									
	Begin date	End date	Frequency	Indicative (1)	Aircraft type	ADEP	EOBT	ADES	EET	Status	Approval		
<input type="checkbox"/>	02/01/2015	UFN	1234567	AIC010	A321	VIDP	12:40	VAAH	01:09	Inconsistent	Disapproved	<input type="checkbox"/>	
<input type="checkbox"/>	02/01/2015	UFN	1234567	AIC011	A321	VAAH	14:45	VIDP	01:04	Inconsistent	Approved	<input type="checkbox"/>	
<input type="checkbox"/>	02/01/2015	UFN	1234567	AIC012	A321	VABB	20:15	VAAH	00:43	Inconsistent	Approved	<input type="checkbox"/>	
<input type="checkbox"/>	02/01/2015	UFN	1234567	AIC016	A321	VIDP	16:45	VIAR	00:44	Inconsistent	Approved	<input type="checkbox"/>	
<input type="checkbox"/>	02/01/2015	02/19/2015	1234567	AIC018	A319	VAAH	02:40	VIDP	01:08	Inconsistent	Approved	<input type="checkbox"/>	
<input type="checkbox"/>	02/19/2015	UFN	1234567	AIC018	A319	VAAH	02:40	VIDP	01:08	Inconsistent	Approved	<input type="checkbox"/>	
<input type="checkbox"/>	02/01/2015	UFN	1234567	AIC019	A319	VIDP	00:30	VAAH	01:09	Inconsistent	Approved	<input type="checkbox"/>	
<input type="checkbox"/>	02/01/2015	UFN	1234567	AIC021	A321	VECC	04:30	VIDP	01:54	Inconsistent	Approved	<input type="checkbox"/>	
<input type="checkbox"/>	02/01/2015	UFN	1234567	AIC022	A321	VIDP	14:45	VECC	01:42	Inconsistent	Approved	<input type="checkbox"/>	
<input type="checkbox"/>	02/01/2015	UFN	1234567	AIC023	A321	VECC	14:45	VIDP	01:54	Inconsistent	Approved	<input type="checkbox"/>	

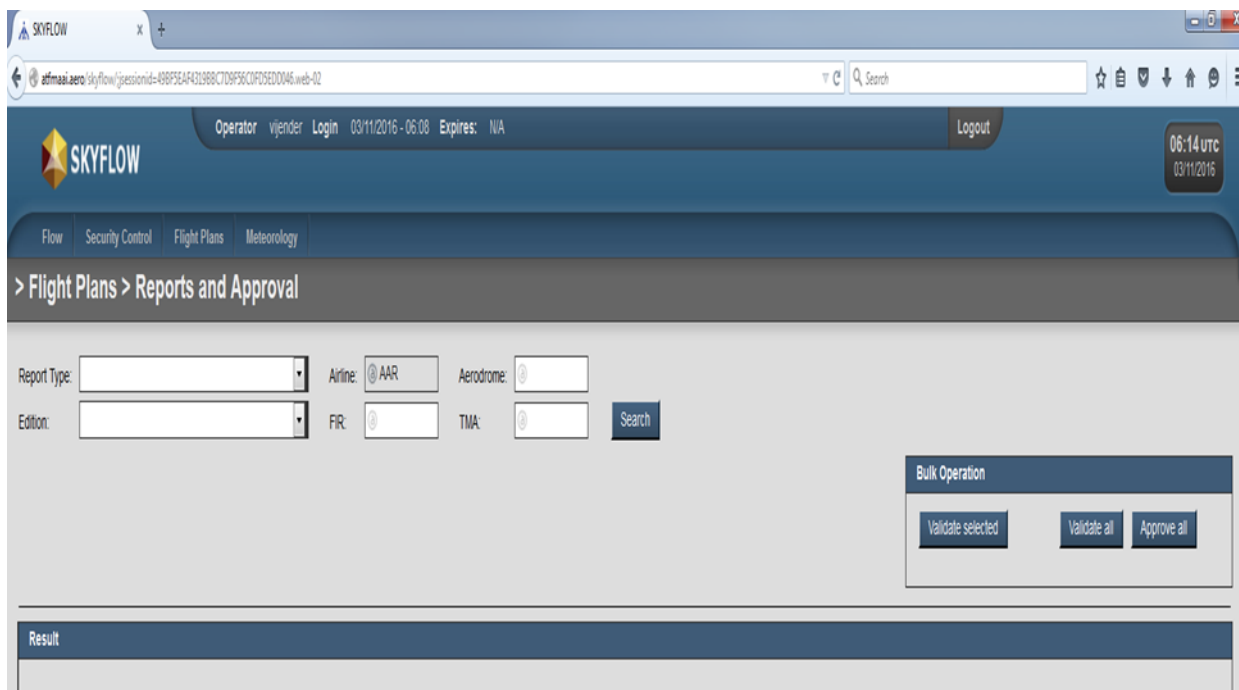
In order for all actions to be put in effect, the “Save” () button must be pressed. The system then updates the list of RPLs in the edition in the database.

“Reports & Approval” Functionality

This functionality establishes the procedures so C-ATFM Operators can generate validation reports for RPL plans sent by air companies, according to the FLIGHT SCHEDULE information stored in the system.




When the “Reports” functionality is accessed, the following screen is displayed.



To access the RPLs that have inconsistencies with the FLIGHT SCHEDULE the operator must complete the following fields:

- **Report Type** – this field allows identifying the following types of reports:
 - RPL and FLIGHT SCHEDULE with Different EOBT – lists all RPLs and respective FLIGHT SCHEDULE that have different values in the EOBT field.
 - RPL and FLIGHT SCHEDULE with Different Routes – lists all RPLs and respective FLIGHT SCHEDULE that have different values in the Route field.
 - FLIGHT SCHEDULE without RPL – lists all FLIGHT SCHEDULE without code associated to an RPL.
 - RPL and FLIGHT SCHEDULE with Different Aerodromes – lists all RPLs and respective FLIGHT SCHEDULE that have different aerodromes.
 - RPL and FLIGHT SCHEDULE with Different Frequencies – lists all RPLs and respective FLIGHT SCHEDULE that have different values in the Frequency field.
 - RPL without FLIGHT SCHEDULE – lists all RPLs, except the following cases:
 - 1 – The RPL is already listed in the RPL without FLIGHT SCHEDULE report (General); or
 - 2 – There is a FLIGHT SCHEDULE with Indication, ADEP, ADES, EOBT, and Type of Aircraft fields identical to the RPL; or
 - 3 – There is a FLIGHT SCHEDULE with Indication, EOBT, Type of Aircraft, Frequency, and ADEP or ADES (not necessarily both) fields identical to the RPL; or |
 - 4 – There is a FLIGHT SCHEDULE with Indication, ADEP, ADES, EOBT, Type of Aircraft, and Frequency fields identical to the RPL.
 - RPL and FLIGHT SCHEDULE with Different EET – lists all RPLs and respective FLIGHT SCHEDULE that have different values in the EET field.
 - RPL and FLIGHT SCHEDULE with Different Aircrafts – lists all RPLs and respective FLIGHT SCHEDULE that have different values in the Aircraft field.
- **Edition** – this field allows selecting the edition of interest.

The other fields (**FIR, Airline company, TMA, and Aerodrome**) are optional and allow establishing filters more oriented to the purpose of the report to be generated.

After completing the fields, the operator must press the “Search” () button.

From this moment, the system searches the database and displays the information according to the filters established and as shown below.

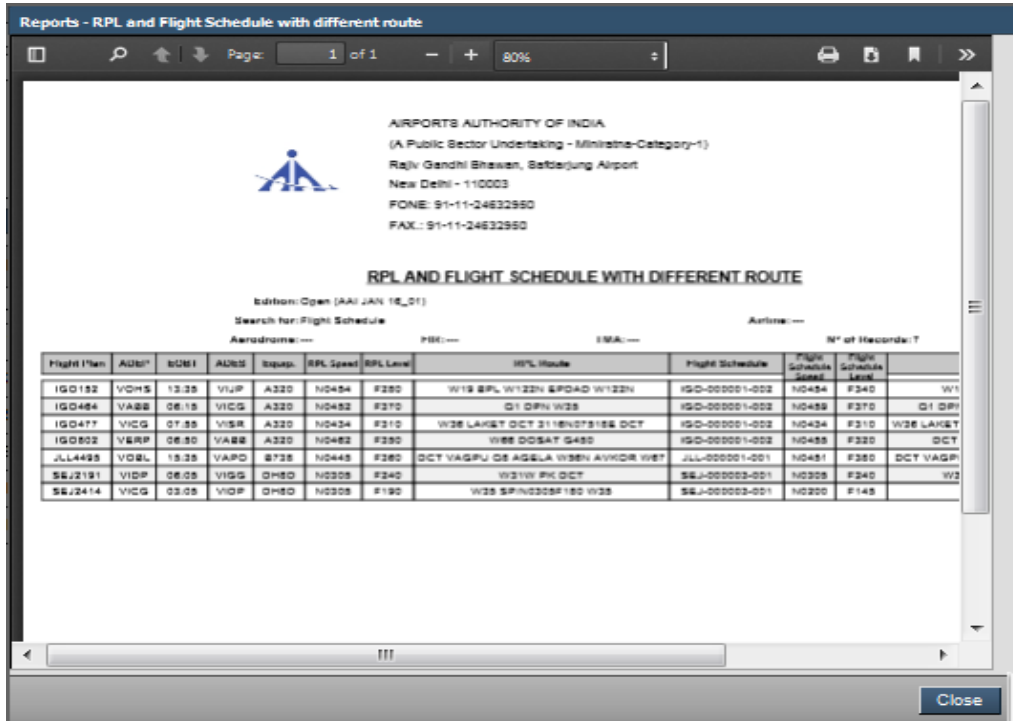
Report Type: **RPL and Flight Schedule with different route** Airline: Aerodrome:
 Edition: **Open (AAI JAN 16_01)** FIR: TMA: **Search**

Bulk Operation

Indicative	ADEP	EOBT	ADES	AofT	Speed RPL	Level RPL	Route RPL	Flight Schedule	Speed FS	Level FS	Route FS	Approve
IGO152	VOHS	13:35	VIJP	A320	N0454	F280	W19 BPL W122N EPDAD W122N	IGO-000001-002	N0454	F340	W19 BPL DCT VELNU DCT EPDAD/N0427F270 W122N	<input checked="" type="checkbox"/>
IGO464	VABB	06:15	VICG	A320	N0452	F370	Q1 DPN W35	IGO-000001-002	N0459	F370	Q1 DPN W35 CHG/N0200F145 VFR	<input checked="" type="checkbox"/>
IGO477	VICG	07:55	VISR	A320	N0434	F310	W36 LAKET DCT 3118N07519E DCT BOKAD W30W PK W31W	IGO-000001-002	N0434	F310	W36 LAKET DCT 3118N07519E DCT BOKAD W31W	<input checked="" type="checkbox"/>
IGO802	VERP	06:50	VABB	A320	N0482	F350	W66 DOSAT G450	IGO-000001-002	N0455	F320	DCT RUXAL DCT OMLEG Q20	<input checked="" type="checkbox"/>
JLL4495	VOBL	15:35	VAPO	B738	N0445	F360	DCT VAGPU Q8 AGELA W56N AVKOR W87	JLL-000001-001	N0451	F380	DCT VAGPU Q8 AGELA W56N AVKOR W87 PUN DCT	<input checked="" type="checkbox"/>
SEJ2191	VIDP	08:05	VIGG	DH8D	N0305	F240	W31W PK DCT	SEJ-000003-001	N0305	F240	W31W PK/N0250F145 VFR	<input checked="" type="checkbox"/>
SEJ2414	VICG	03:05	VIDP	DH8D	N0305	F190	W35 SP/N0305F180 W35	SEJ-000003-001	N0200	F145	W35	<input checked="" type="checkbox"/>

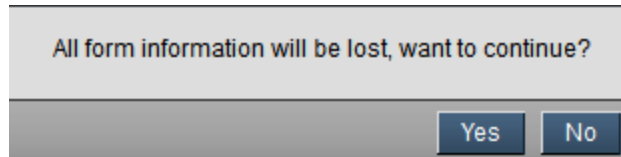
The operator can approve or reject the RPLs displayed by selecting the referred plans by means of the "Selection" () option in the "Approve" column. If the option is checked, the plan is the Approved state; However, is the option in unchecked, the plan is in the Rejected state and a warning is forwarded to the Airline.

The operator may also generate a report of the list obtained. To do this, the operator must press the "Report" () button. When this option is selected, the system shows the following screen with the report generated.



By selecting the “Close” () button, the screen is closed and the system returns to the search screen.

In the main screen, press the “Clean” () button to display a confirmation screen.

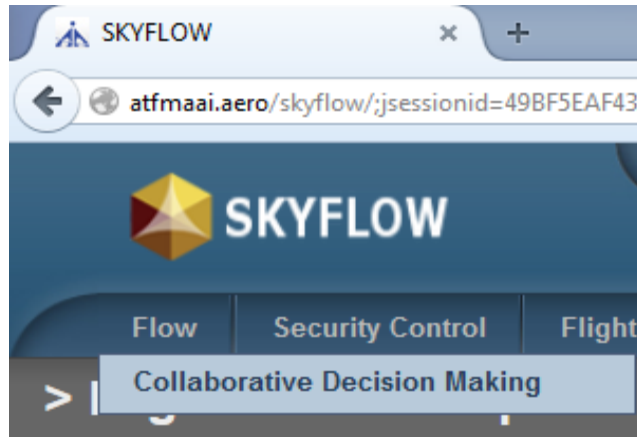


Select the “No” () button to close this confirmation screen and maintain the search conducted displayed in the screen.

Select the “Yes” () button to close the confirmation screen, erase the search conducted, and display the fields blank again for a new search.

Collaborative Decision Making” Functionality

This functionality allows creating scenarios that simulate possible solutions to Tactical and Strategic session capacity/demand imbalance issues by means of programs: Ground Delay Program (GDP), Ground Stop Program (GSP), Blanket Delay Program (BDP) Sector Balance Program (SBP) and Rerouting etc. and consequently support the collaborative decision making process.



When this functionality is accessed, the system displays the Collaborative Decision Making (CDM) scenario records existing in the system database as follows.

The operator can view the CDM scenario and execution report in “being analyzed” and “applied” type drop down window.

Scenarios						
Type: Being Analysed						
Name	Motive	Date	hour	Duration	State	
CDM1_VIDP_280817	ATFM MEASURES F..	28/08/2017 - Monday	03:00	03:00	Public	
TESTDELAY	test	24/08/2017 - Thursday	11:00	01:00	Private	

Scenarios						
Type: Applied The system has reached the maximum number of scenarios allowed						
Name	Motive	Date	hour	Duration	State	
CDM3_VIDP_270817	ATFM MEASURES F..	27/08/2017 - Sunday	12:00	03:00	Public	
CDM2_VIDP_270817	ATFM MEASURES F..	27/08/2017 - Sunday	06:00	03:00	Public	
CDM1_VIDP_270817	ATFM MEASURES F..	27/08/2017 - Sunday	03:00	03:00	Public	

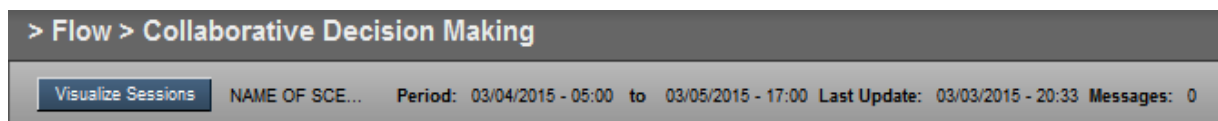
Consult scenario

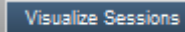
This option allows consult “Being analyzed” and “Applied” scenarios existing in the system database.

Any user with consult profile can **view** the data of public scenarios; however, two restrictions apply:

- Users that belong to an Airline company will not be able to view the details of flight plans from other companies.
- Only users with National Manager profile must be able to Consult all scenarios. The other users must be able to consult only scenarios published or scenarios created by them.

When the process is completed, the system fills in the identification data of the scenario selected as indicated in the figure below.

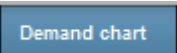


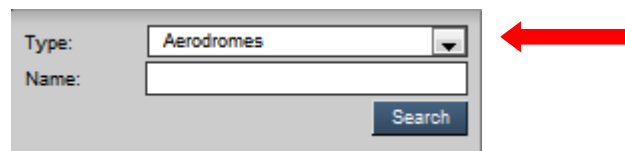
Note: If the user wishes to change the scenario to be analyzed, the process can be resumed by accessing the Session () button.


The user must select one of the following tabs:

- “Demand Chart”,
- “Flight Plan”,
- “Programs”.



Demand Chart Tab

This option () allows the Flow operator to analyze the data of the flight plan that is affecting the regulated elements. When this option is accessed, the system shows the types of regulated elements of interest to select as indicated in the figure below.



Type: 
Name:

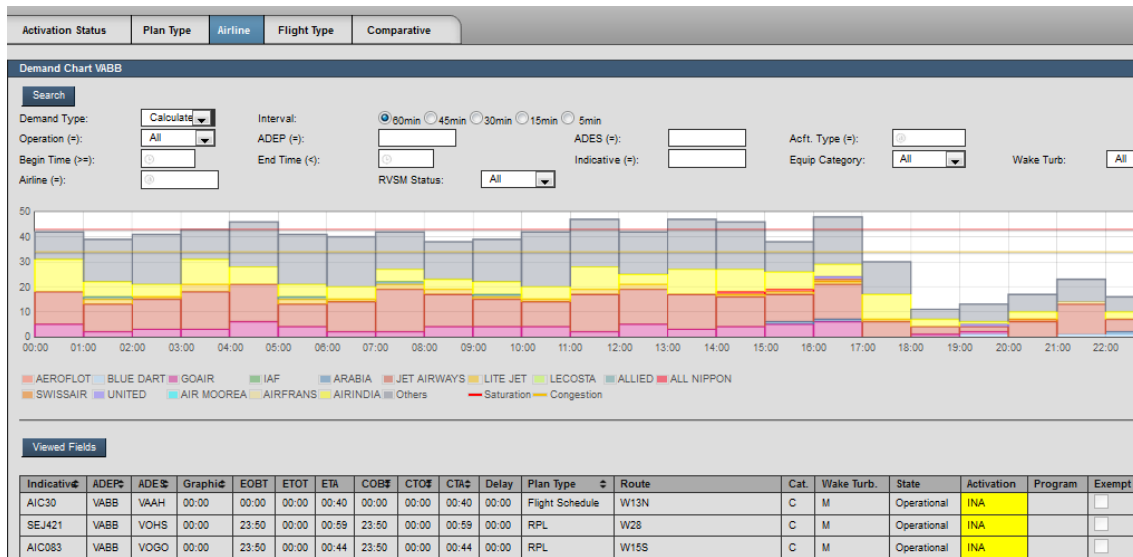
To view the Demand Chart of the regulated element of interest the Flow operator must select the view icon () as follows.

Type	Name	
Aerodromes	VABB	

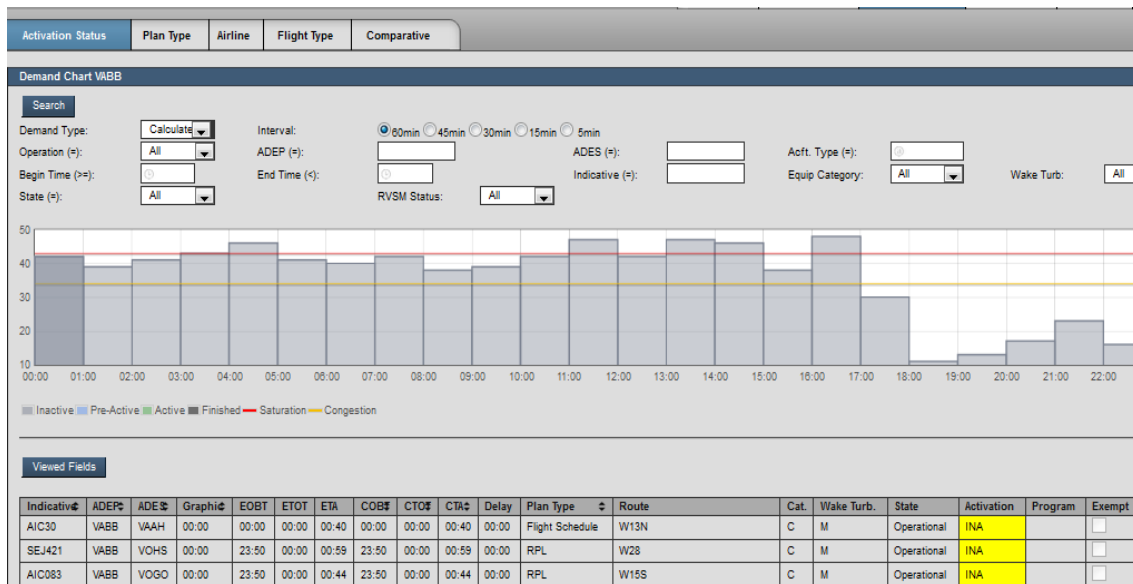
After selecting the element of interest, the system displays the following page containing the data for analysis.

Plan Type Tab: When the regulated element desired is selected, the system displays the “Type of Plan” tab that shows the flight plans according to the type: RPL, FPL and FLIGHT SCHEDULE, As shown in the figure below.

Airline Tab: When the user consult a regulated element by means of the airline company tab, the system identifies the number of flight plans of a given airline company within the time interval shown in the graphic. As shown in the figure below.

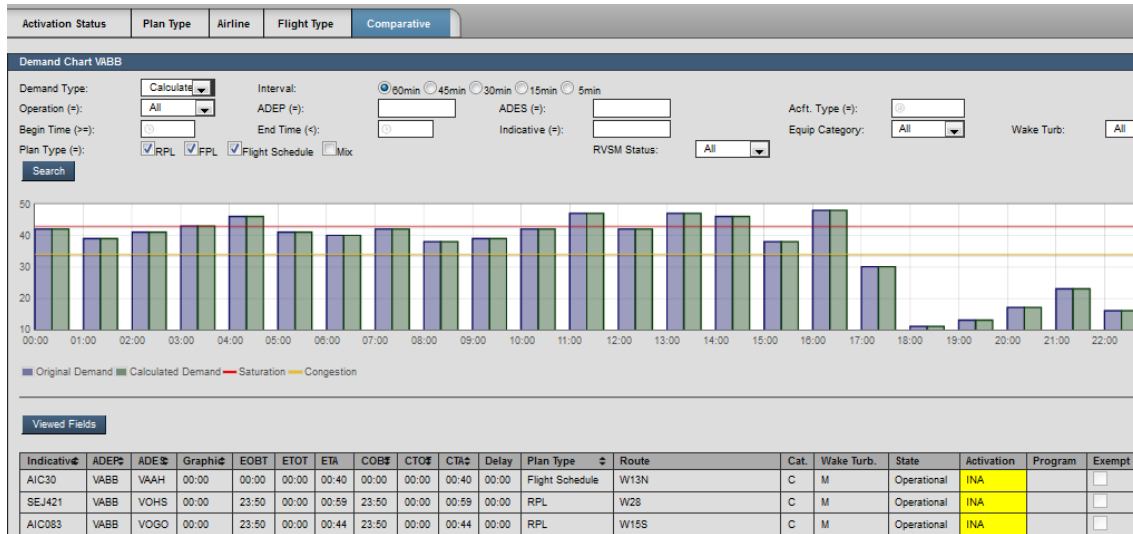


Activation Status Tab: When the user consult a regulated element by means of the Activation Status tab, the system identifies the flight plans in the INACTIVE, PRE-ACTIVE, ACTIVE, and TERMINATED states. As shown in the figure below.



Flight Type Tab: As described earlier in Automatic session

Comparative Tab: When the user searches a regulated element by means of the Comparative tab, the system displays the situation of the element before and after applying programs . As shown in the figure below.



Flight Plan Tab


















This option (**Flight plan**) allows consult the plan database that composes a specific scenario. When this option is accessed, the Flow operator is provided with a list of types of plans to select, namely:


- **All** – shows all plans included in the scenario selected.
- **RPL** – shows all flight intentions included in the Repetitive Flight Plan base of the scenario.
- **FPL** – shows all FPLs included in the scenario.
- **FLIGHT SCHEDULE** – shows all flight intentions based in FLIGHT SCHEDULES.




The image below shows the initial data of the plan list according to the search criterion established.

Type: Indicative:

Search

Indicative	Type	Activation	State	
AIC011	RPL	INA	Operational	
AIC016	RPL	INA	Operational	
AIC022	RPL	INA	Operational	
AIC023	RPL	INA	Operational	
AIC031	RPL	INA	Operational	
AIC042	RPL	INA	Operational	
AIC047	RPL	INA	Operational	
AIC048	RPL	INA	Operational	
AIC048	RPL	INA	Operational	
AIC050	RPL	INA	Operational	
AIC051	RPL	INA	Operational	
AIC055	RPL	INA	Operational	
AIC342	RPL	INA	Operational	
AIC403	RPL	INA	Operational	
AIC404	RPL	INA	Operational	
AIC415	RPL	INA	Operational	
AIC416	RPL	INA	Operational	

To consult the data of a flight intention included in the scenario, the Flow operator must press the “Consult” () button as indicated in the figure below.

Indicative	Type	Activation	State	
AIC011	RPL	INA	Operational	 
AIC016	RPL	INA	Operational	

After selecting the consult, the system shows a specific screen with the plan detailed data as follows.

Flight Data					
Indicative: IGO554	ADEP: @ VISR	EOBT: 05:15	EOBD: 19/02/2016	Flight Type: S	
		ATOT: 05:25	ATOD: 19/02/2016		
Airline: IFLY					
Aircraft			Additional Information		
Number:	Aircraft type: A320	Wake Turbulence: N	Nav/Com: SCW/C	Flight rule: I	
Frequency					
Plan type: RPL	Frequency: S M T W T F S				
Stretch Plan				Results	
ADES: @ VIDP	EET: 01:08	ETA: 06:23	Alternative aerodrome: @	Warnings:	
Flight speed: N0449	Flight level: F310				
Route: W31E					
796 of 800 character(s) remaining.					
Other Informations: NULLEET/VIDF0021					
734 of 800 character(s) remaining.					
				<input type="button" value="Show Flight Plan Messages"/> <input type="button" value="Details"/>	

When the button is pressed, the system displays flight plan messages, as shown below:

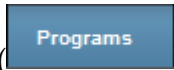
Flight Plan Message				
Message Source	Originator Address	Message	Rectified Message	Recipients
(0)				
				<input type="button" value="Close"/>

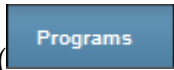
When the button present in the page is pressed, the system displays the route specified in the plan in detail as depicted below.


Route Detail										
Sub-routes										
Sub-route	Type									
W31E										
[1]										
Segments										
	FIR/TMA	Sector	Speed Var.	Type	Airways	Distance	Point A	Point B		
1	TMA: DTUD	DCSN	7	TAKEOFF	SR1SNG	1.32	VISR	SNG		
2	TMA: DTUD	DCSN	48	TAKEOFF	W31E	9.59	SNG	3352N07452E		
3	TMA: DTUD	DTUN	51	TAKEOFF	W31E	13.22	3352N07452E	3342N07502E		
4	TMA: DTUD	DTUN	50	CRUISE	W31E	16.82	3342N07502E	MESAR		
5	TMA: DTUD	DTUN	58	CRUISE	W31E	20.53	MESAR	3310N07520E		
6	TMA: DTUD	DTUS	69	CRUISE	W31E	29.67	3310N07520E	3241N07529E		
7	TMA: DTUD	DTUS	0	CRUISE	W31E	27.87	3241N07529E	PK		
Points										
	Point	Coordinate	Desired Level	Current Level	Desired Speed	Current Speed	EET	ETO	ATO	Type
1	VISR	3359N07448E	F310	F054	N0170	N0170	0000	0525	0525	Aerodrome
2	SNG	3400N07445E	F310	F068	N0449	N0177	0000	0525	0525	Aux
3	3352N07452E	3352N07452E	F310	F170	N0449	N0223	0003	0528	0528	Calculate
4	3342N07502E	3342N07502E	F310	F310	N0449	N0274	0007	0532	0532	Calculate
5	MESAR	3329N07513E	F310	F310	N0449	N0324	0010	0535	0535	Fix
6	3310N07520E	3310N07520E	F310	F310	N0449	N0380	0013	0538	0538	Calculate
7	3241N07529E	3241N07529E	F310	F310	N0449	N0449	0017	0542	0542	Calculate

Show speed transitions
 Show level transitions
 Show zone transitions
 Enable filters
 Close

Programs Tab



This option () allows consult the programs applied in the scenario that is being consulted. When this option is accessed, the Flow operator can view a list containing the following information on the programs applied in the scenario:

- **Program Name** - this information is defined by the user when the program is created.
- **Program** - this information is defined by the system when the user selects the type of program to be created.
- **Type** - this information indicates the type of regulated element that was programmed.
- **Name** - this information indicates the name of regulated element that was programmed.
- **Initial Time** - this information shows the program starting time.
- **Duration** - this information shows the duration of the program.
-  - this icon allows consult the program parameters.

The figure below shows the information mentioned above.

> Flow > Collaborative Decision Making

Visualize Sessions SUA REROUTI... Period: 02/09/2015 - 13:00 to 02/09/2015 - 17:00 Last Update: 02/07/2015 - 12:18 Messages: 0

General View Demand Alert Demand chart Flight plan **Programs**

Program name	Program	Type	Name	Initial Time	Duration
P1	RRP	SUA	SBD999	02/09/2015 - 13:15	03:45

Execution Report

The flow manager is able to generate reports on scenarios that suffered any change regarding the flight plans, be it manually or by means of a program. The system provides two forms of report: PDF & CSV.

Scenarios

Type: Being Analysed

Name	Motive	Date	hour	Duration	State
<input type="radio"/> TEST INDIA	testing the del...	26/06/2015 - Friday	08:00	16:00	Privative
<input checked="" type="radio"/> TEST 2	testing	25/06/2015 - Thursday	18:00	10:00	Privative
<input type="radio"/> TEST AUDITORIA	teste auditoria	03/06/2015 - Wednesday	13:00	00:30	Public
<input type="radio"/> KLEBAO2	bla	07/05/2015 - Thursday	00:00	24:00	Privative

1 - 4 (4) [Page Navigation]

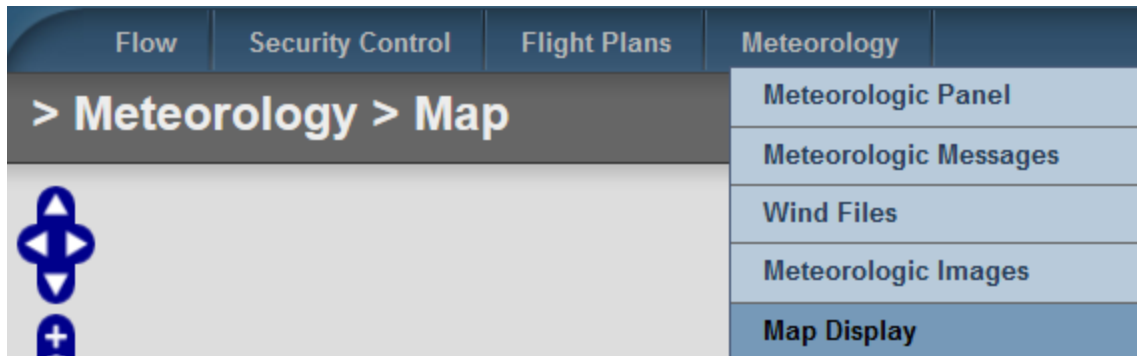
Execution Report [Confirm] [Remove] [Open] [Close]

Flight plan changes after application of ATFM measures will be presented in the report as follows:

- Delay - COBT, CTOT and CTA data are presented in red
- Reroute - route is presented in red
- Canceled - the abbreviation CNL is shown in red

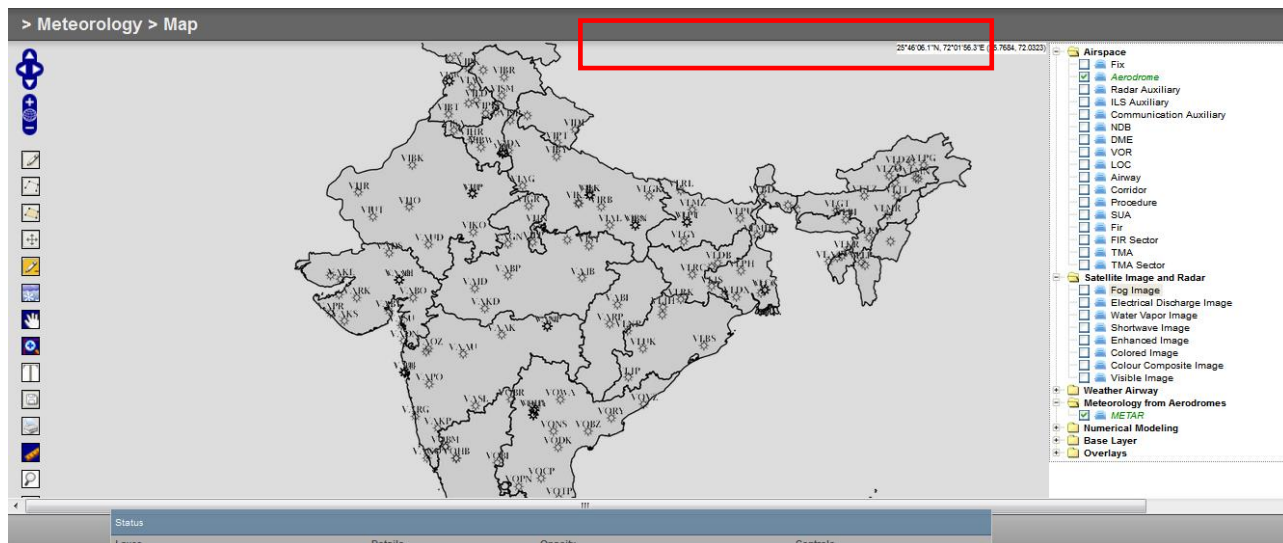
“Map Display” Functionality

This functionality allows the user to interact with the information that composes the interface used to access the content of meteorological maps of operational interest.



In the above drop down menu Meteorological Panel, Meteorological Messages, Wind Files, Meteorological Images, Map Display are shown, however as Aircraft Operator only Map display is significant.

















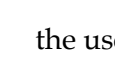
When this functionality is selected, the system shows a screen containing the following navigation options.




The interface of this functionality has the following information sets.

Interaction Resources

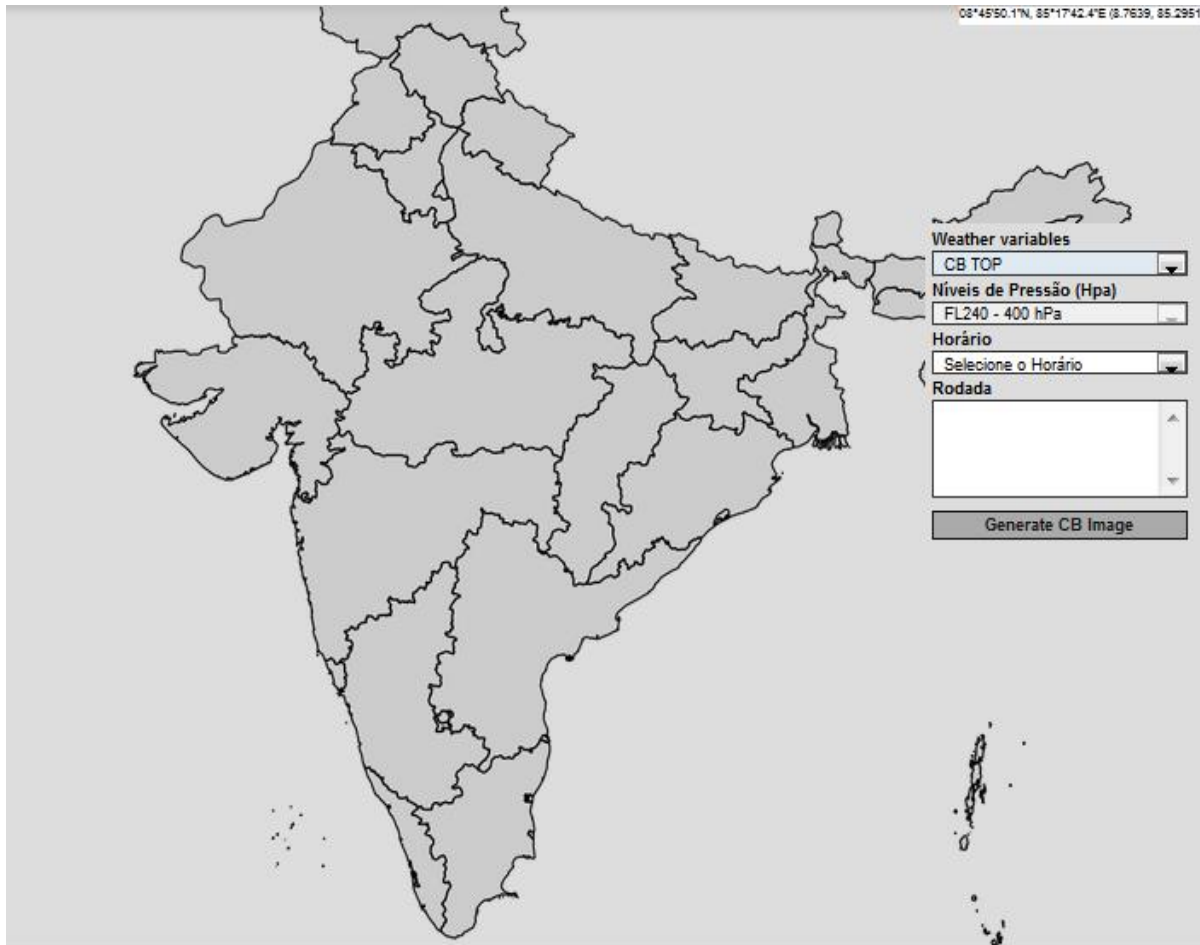
Set of resources that allow the user to interact with the data present in the interface, namely:

-  - resource to displace the data viewing area on the screen.
-  - resource to expand the image.
-  - resource to add a point in the layer selected.
-  - resource to add a line in the layer selected.
-  - resource to add a polygon in the layer selected.
-  - resource to edit Point, Line, Polygon, and Text.
-  - resource to delete Point, Line, Polygon, and Text.
-  - resource to add meteorological symbol
-  - Resource to Drag/ Zoom assigned points.
-  - Resource that allows selecting a region to apply the zoom.
-  - Resource to edit text.
-  - Resource to export from the map.
-  - Resource to print from the map.
-  - Resource to add measurement vector.
-  - Resource to expand the map scale.
-  - Resource to display the layer details.
-  - map scale information.

Note: to complete the functionality interaction process, the user must double click; to exit the process, the user must select the  icon.

Viewing Area

To view the information of interest, the system provides an area to display the information in layers as follows.



Cursor Coordinates

Field to display the cursor positioning coordinates (39.0934 , 113.2558); the data is displayed in the upper right corner of the viewing area. The coordinate values are represented as follows:




- **Latitude** : set of characters with the following definitions:
 1. Degree (39) – identifies the latitude degree of the cursor positioning.
 2. Degree fraction (0934) – identifies the value in hundredth thousand degrees.
- **Longitude** : set of characters with the following definitions:
 1. Degree (113) – identifies the longitude degree of the cursor positioning.
 2. Degree fraction (2558) – identifies the value in hundredth thousand degrees.

Viewing Layers

On the right side of the interface, the system shows the layer composition options to be selected by the user, according to the operational needs, as shown in the image below.

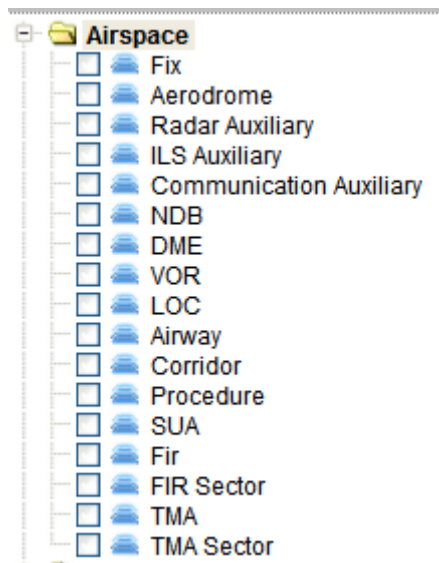


The representation of the type of element to compose the layer is described as follows:

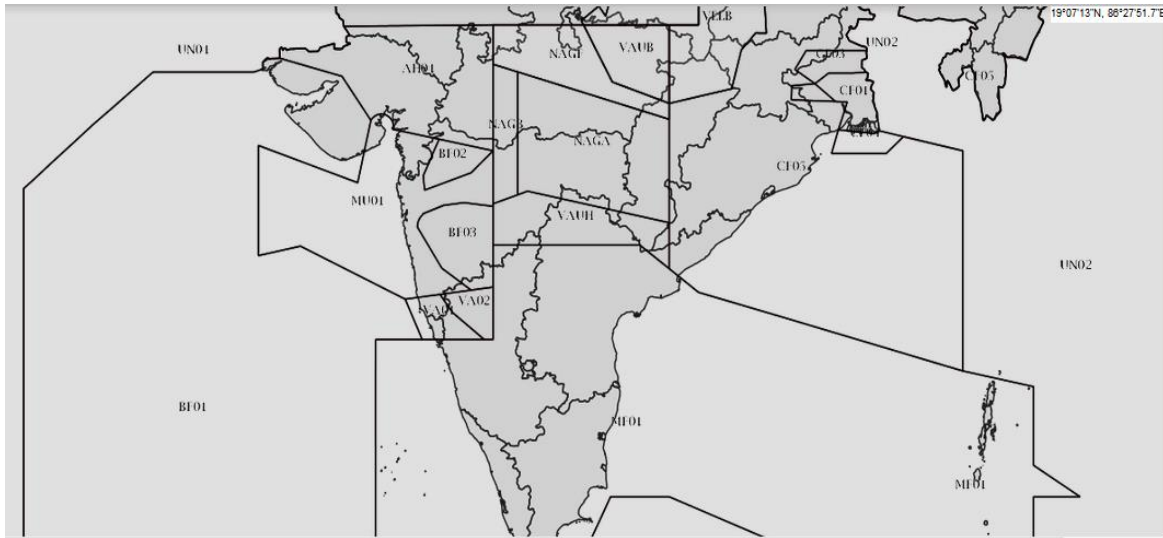
- **Icon** :  :- window to enable viewing the element.
- **Icon** :  - icon that indicates the file is available to be used.
- **Icon** :  :- element name.

“Airspace” Layer

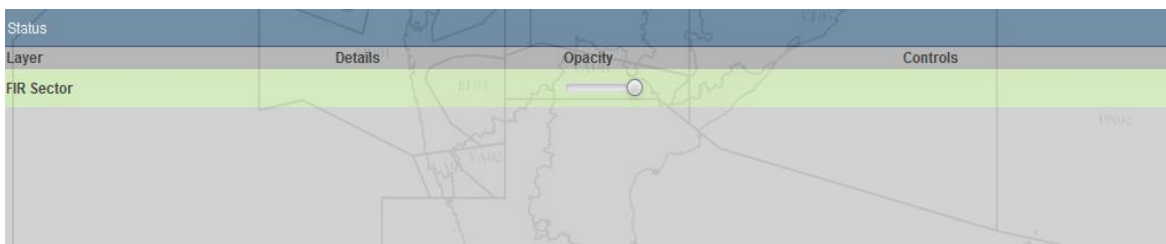
Allows the user to define which type of airspace element shall compose the layer, among the following options.



For the information to be displayed on the map, the user must enable viewing directly in the airspace element of interest, according to the FIR selection example depicted below.



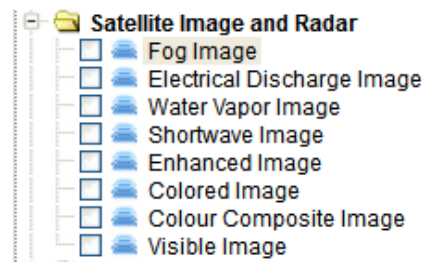
Whenever a new airspace element is selected to compose the reference base, the system displays a window with the list of elements selected and their characteristics as follows.



To adjust the viewing intensity of the airspace element selected, the user can displace the brightness button displayed on the screen.

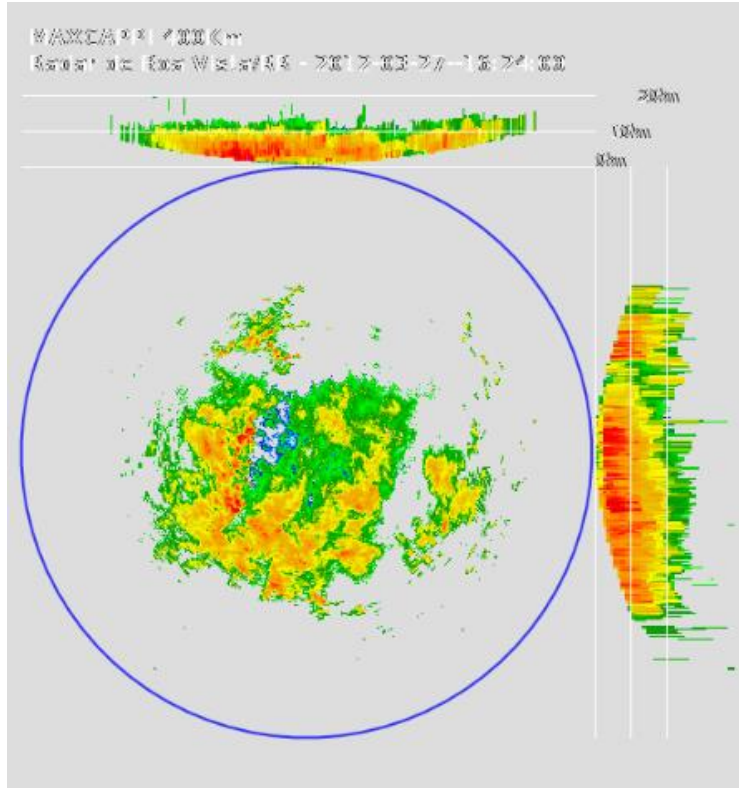
“Satellite and Radar Images” Layer

Allows the user to select the meteorological information that originated the satellite or radar image to compose the viewing layer with the options presented below.



For the satellite image to be represented on the map, the user must enable viewing directly on the image of interest.

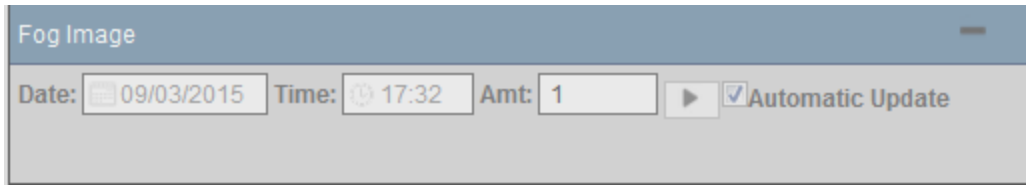
For the radar image to be represented on the map, the user must enable viewing directly on the image of interest, according to Radar image example shown below.



Whenever a new image is selected to compose the reference base, the system displays a window (Status) with the list of elements and their display and animation characteristics as follows.



- To adjust the viewing intensity of the airspace element selected, the user can displace the brightness button displayed on the screen.
- Together with the image Status table, the system displays a specific window for each image that shows the date and time data, as well as the number of images defined to compose the animation, as follows.

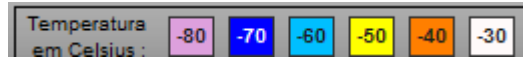


To control the animation, the user has the resources displayed in the figure below.



According to the layer selected, the system displays the following types of tables that represent the intensity, namely:

- **Temperature** - allows associating the temperature values represented in the Highlight images according to the scale below.



- **Intensity** - allows associating the meteorological formation intensity values represented in the radar images according to the scale below.



“Weather Airway” Layer

Allows the user to select the available altitude meteorological information to compose the viewing layers among the following options.



For the information to be represented on the map, the user must enable viewing directly in the image of interest.

To select these layers, the user must define the respective display criteria and select the “Generate Image” option as follows.

Weather variables
CB Base

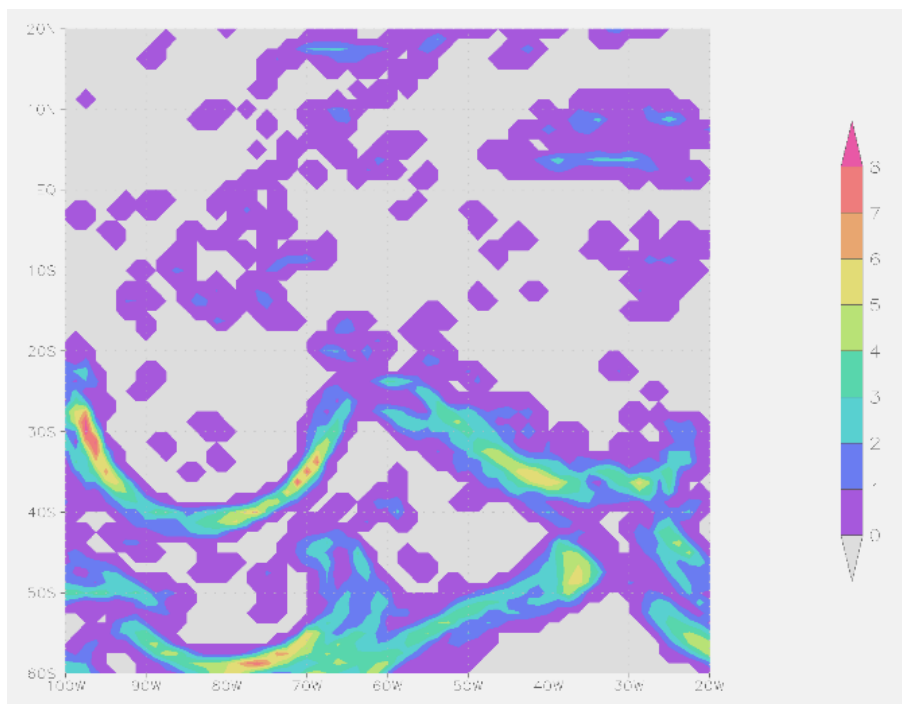
Níveis de Pressão (Hpa)
FL240 - 400 hPa

Horário
Selecione o Horário

Rodada

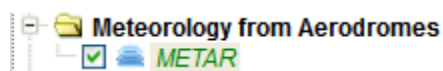
Generate CB Image

For the information to be represented on the map, the user must enable viewing according to the clear-air turbulence example below.

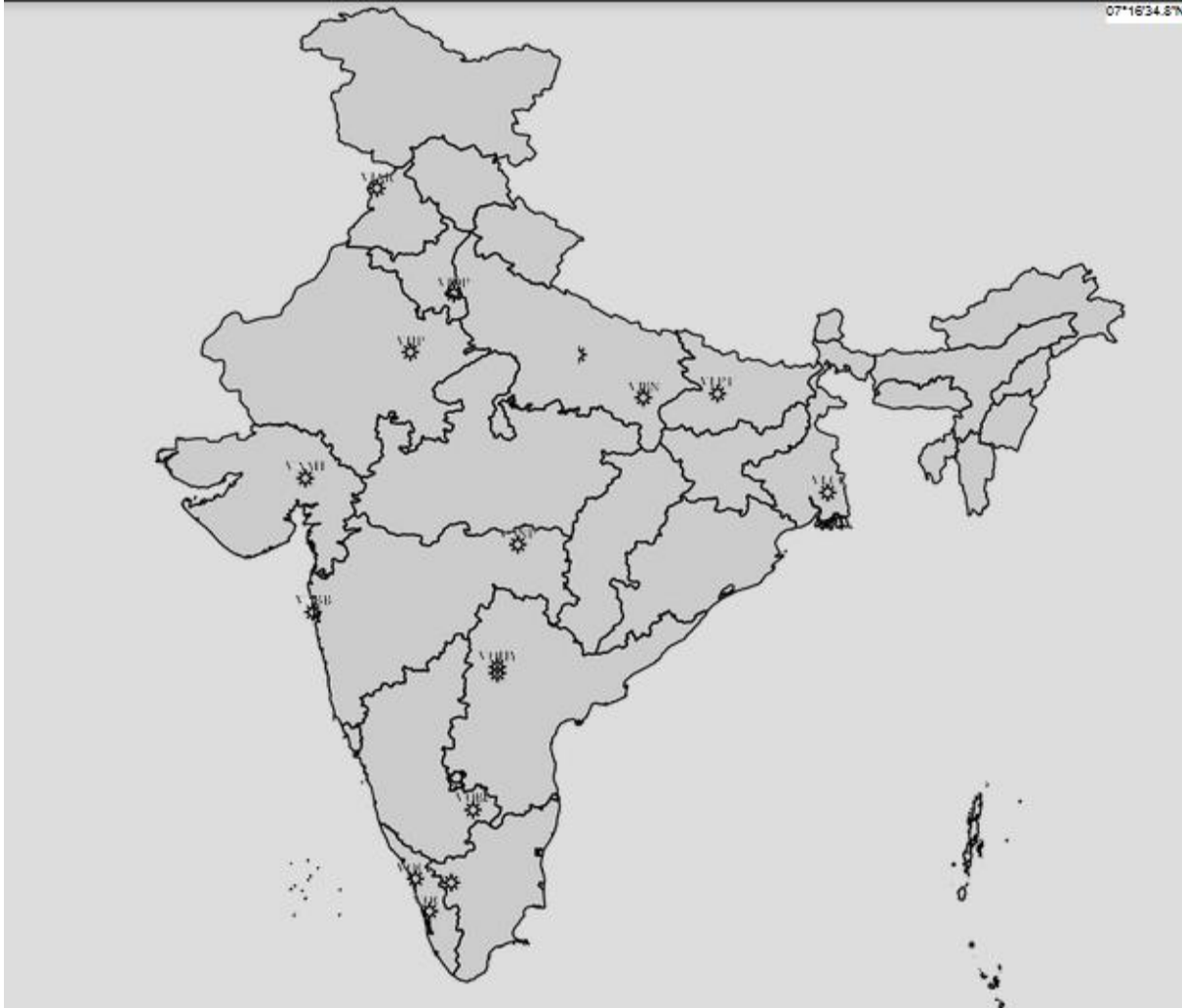


“Meteorology from Aerodrome” Layer

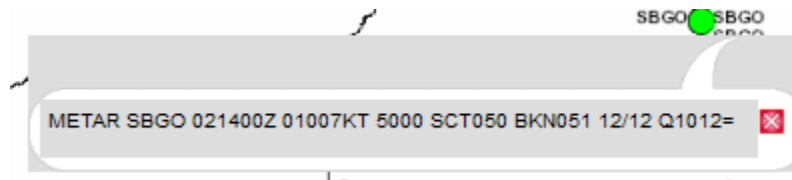
Allows enabling the layer that displays the aerodrome operational states, by selecting the option below.



After the selection, the system displays the operations status of the aerodromes registered in the meteorological reference database as follows.

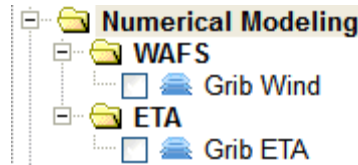


When the user puts the cursor on the aerodrome of interest, the system displays the METAR details as follows.



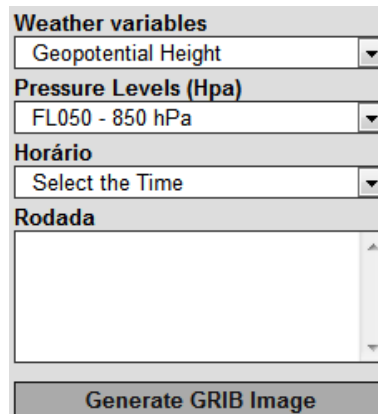
“Numerical Modeling” Layer

Allows displaying the meteorological information defined by numeric models, according to the center that provided the information and the following options.



WAFS (World Area Forecast System) Model

Wind Grib data model according to the WAFS format provided by NOAA. To select this layer, the user must define the respective display criterion and select the “Generate Image” option as follows.



Base Layer

Allows viewing the geographical map present in the interface; the user must select the respective base to enable this feature.



Overlays

Allows viewing the Edit polygons and Meteorological symbols present in the interface; the user must select the respective icon to enable this feature.



Annexure “C”

Airport Operators/AOCC managers Manual

1. INTRODUCTION

Demand and capacity balancing will allow airspace users to optimize their participation in the ATM system while mitigating conflicting needs for airspace and aerodrome capacity through collaborative usage of decision-support tools thus ensuring most efficient use of airspace resources, equitable access for all airspace users, accommodate user preferences and ensuring that demand on an airspace resource will not exceed its capacity.

1.1 Objectives

The purpose of this document is to enable the AOCC managers to learn to operate the sub systems of SKYFLOW, as part of Air Traffic Flow Management (ATFM) services. The purpose of this document is to give a brief description of certain features and functionalities of the SKYFLOW system, for the ‘AOCC Flow managers’.

2. SKYFLOW LOGIN

SKYFLOW is the ATFM system of Airports Authority of India. The URL is: <https://www.atfmaai.aero> , which can be accessed by all the browsers.

For using SKYFLOW ATFM system we need to Login in to it (the window shown below) with a valid User ID and Password.



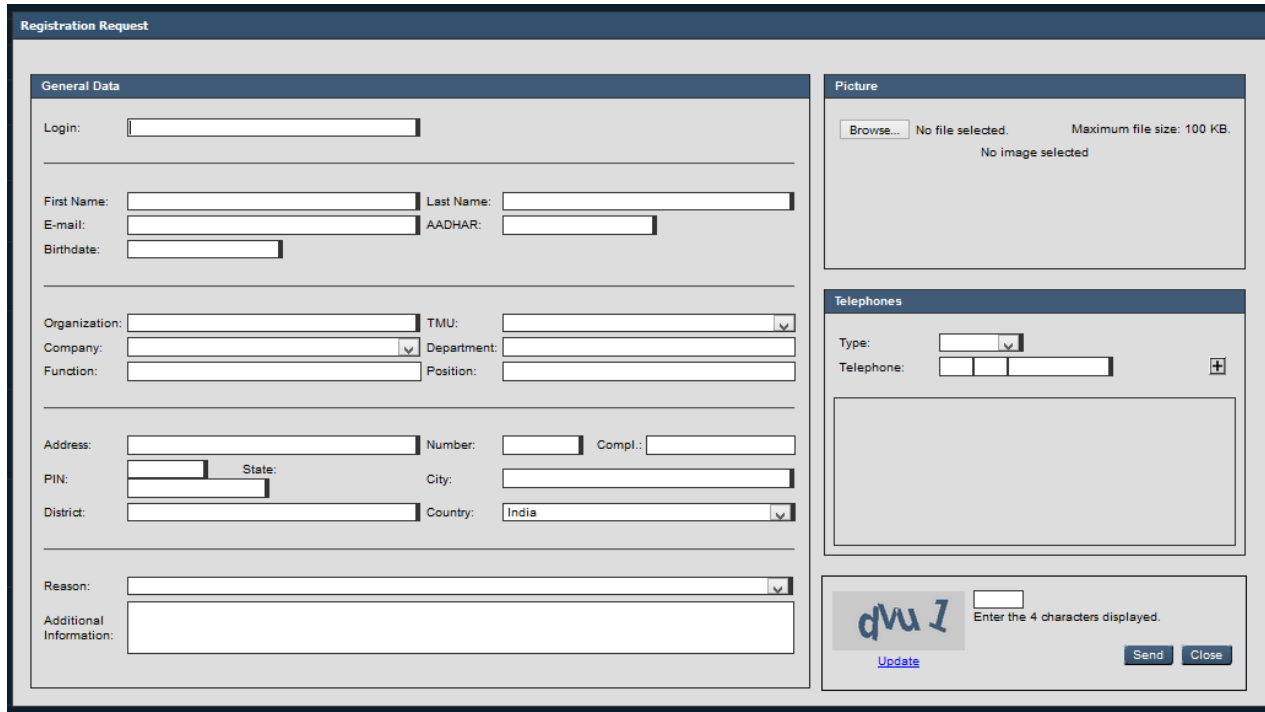
There are two ways of getting the User ID and Password. They are:

1. By Registration Request.

2. By contacting the administrator.

2.1 Registration Request:

When the icon registration request is pressed, the system shows a form to be completed, according to the figure below.



The screenshot shows a web form titled "Registration Request". It is divided into several sections:

- General Data:** Includes fields for Login, First Name, Last Name, E-mail, Birthdate, Organization, TMU, Company, Department, Function, and Position. Some fields are shaded to indicate they are mandatory.
- Picture:** A section for uploading a profile picture, with a "Browse..." button and a note that the maximum file size is 100 KB.
- Telephones:** A section for adding contact numbers, with a "Type" dropdown and a "Telephone" input field.
- Address:** Fields for Address, Number, Compl., PIN, State, City, District, and Country.
- Reason:** A dropdown menu to select the reason for the request.
- Additional Information:** A large text area for providing extra details.

At the bottom right, there is a CAPTCHA image showing the number "4717" and a prompt to "Enter the 4 characters displayed". Below the CAPTCHA are "Update", "Send", and "Close" buttons.

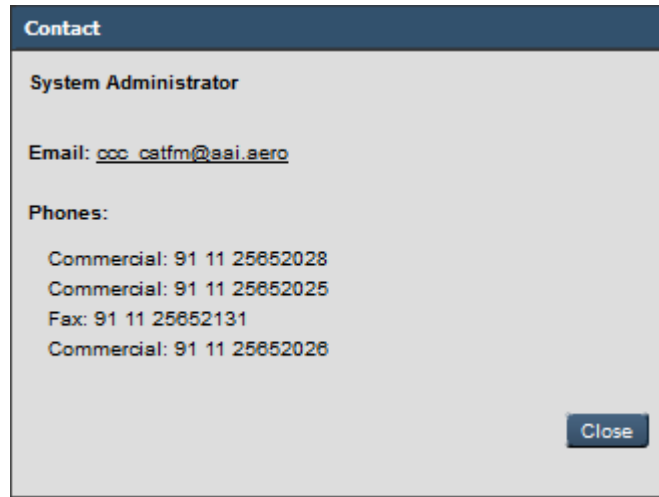
When the mandatory fields (shaded boxes) are completed and the data is sent, the system shows the following message that informs the status of the request:

Registration successfully sent! Awaiting administrator's reply

After sending the data successfully, the user must wait for an email from the Administrator.

2.2 Contact Administrator:

If the Registration request is not accepted by the system due to any difficulty in Login, users may send the e-mail to the System administrator by giving details of Login.



2.3 Help:

When the icon is pressed, the system shows the information on the User rules, respective system access password, and guide lines on the system registration procedure.

3. FUNCTIONALITIES

3.1 Functionalities provided to AOCC managers using SKYFLOW system

The figure below shows the functionalities provided to AOCC users. They are:

- Flow
 - Automatic Session
 - Session Demand Reports
 - Capacity Projection
 - Sector Time
 - Collaborative Decision Making
 - Operational Panel
- Security Control
 - Change Personal Information
 - Audit control

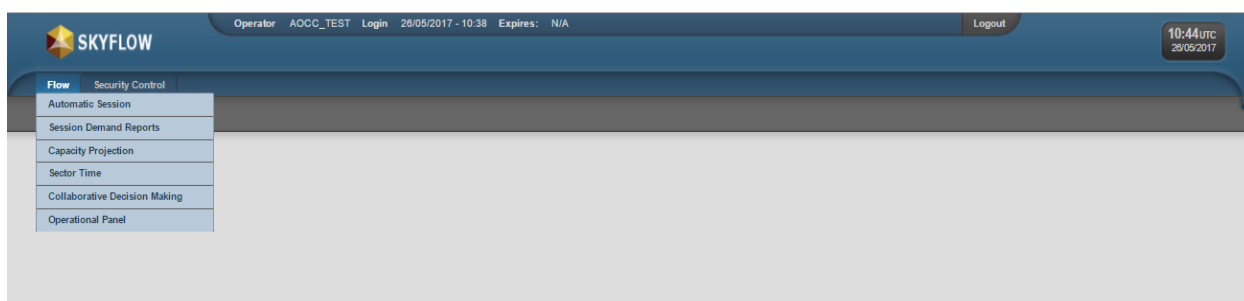
4. FLOW

This functionality of SKYFLOW provides the CCC users, various tools to analyze different traffic scenarios and simulate it before actual time of operation so that necessary steps can be taken in advance by applying different traffic flow management program to achieve a balance between capacity and demand.

The AOCC manager may use this functionality to view /analyze traffic at relevant airport & the ATFM measures applied by CCC to cater demand capacity imbalance.

The flow functionality consists of various subsystems. They are:

- Automatic Session.
- Session Demand Reports.
- Capacity Projection.
- Sector Time.
- Collaborative Decision Making.
- Operational Panel



4.1 Automatic Session:

Automatic Sessions are system generated sessions based on the flight plans in the data-base of the system and the regulated element of the system. Flow manager cannot make any changes in the session. Automatic session is basically for monitoring purpose and to see which of the regulated elements is saturated or congested based on the flight plans so that required flow program can be applied.

Automatic session are of three types, namely

1. Strategical
2. Tactical
3. Historical

4.1.1 Strategic

Session:

The SKYFLOW system automatically creates eight (08) strategic sessions, with one session for the **current day** and the other **seven (07)** corresponding to the weekdays counting from next day and updated periodically.

When the sessions are created automatically, the regulated elements registered in the “Default Regulated Elements” component, the FLIGHT SCHEDULE/RPL/FPL existing in the data-base are considered.

4.1.2 Tactical Session:

This session corresponds to the **current date**, and establishes the measures that must be applied together with the ATC. The flight data is corrected according to the information available on the actual position of the aircrafts.

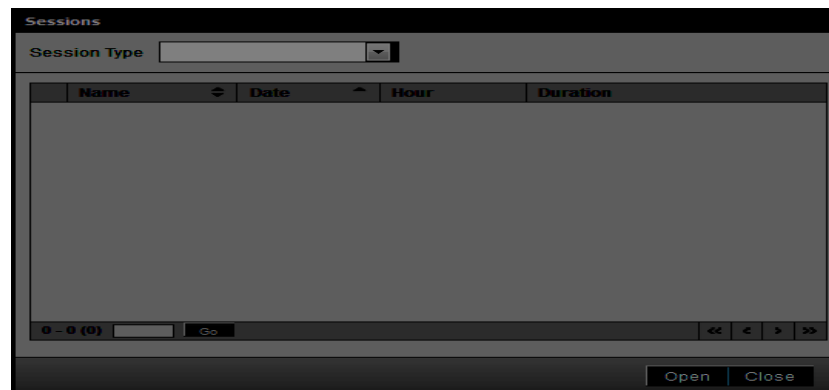
*There is only one tactical session in the system, indicating the demand forecasts for the next **six (06) hours** counting from the current time. The data is updated at regular intervals of fifteen (15) minutes) (0, 15, 30, and 45).*

4.1.3 Historical Session:

Historical sessions result from state changes in the strategic session of the day. This state change may occur automatically or by means of an action executed by the user. From the moment the session changes into the “Historic” state, the data is only available for reference. Historic sessions are available for 90 days.

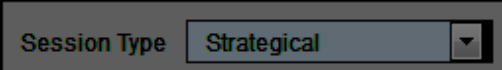
4.1.4 Selection of “Session Type”:

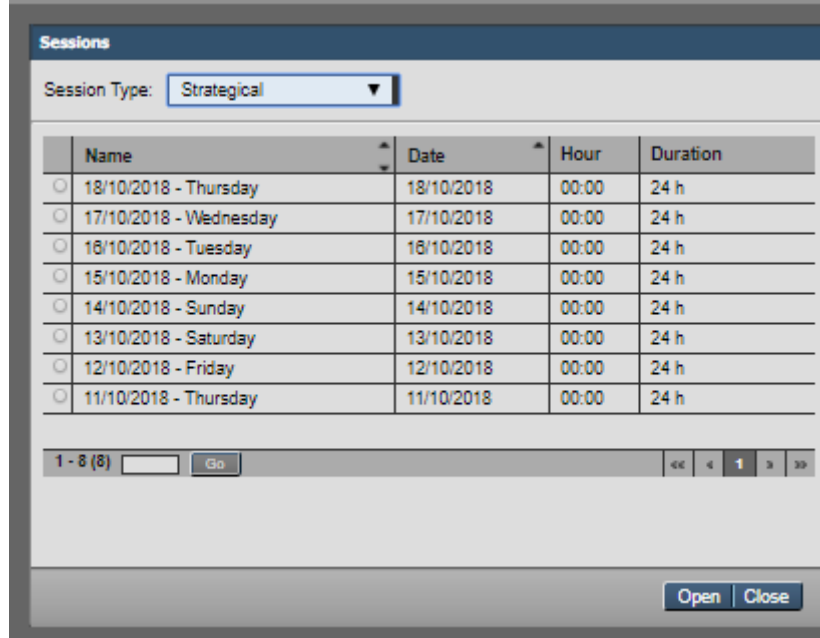
When this functionality is selected, the system displays a screen in which the user can assign the type of session of interest as follows:




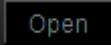
4.1.7.1 STRATEGICAL SESSION

To access the data of a Strategic Session, the user must select the "Strategical" option in

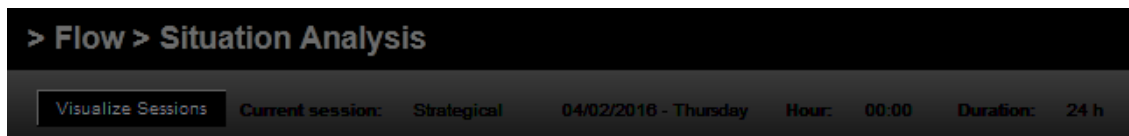
the option Combo-Box (), and the system shows the list of sessions available in the system as follows.

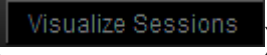


	Name	Date	Hour	Duration
<input type="radio"/>	18/10/2018 - Thursday	18/10/2018	00:00	24 h
<input type="radio"/>	17/10/2018 - Wednesday	17/10/2018	00:00	24 h
<input type="radio"/>	16/10/2018 - Tuesday	16/10/2018	00:00	24 h
<input type="radio"/>	15/10/2018 - Monday	15/10/2018	00:00	24 h
<input type="radio"/>	14/10/2018 - Sunday	14/10/2018	00:00	24 h
<input type="radio"/>	13/10/2018 - Saturday	13/10/2018	00:00	24 h
<input type="radio"/>	12/10/2018 - Friday	12/10/2018	00:00	24 h
<input type="radio"/>	11/10/2018 - Thursday	11/10/2018	00:00	24 h

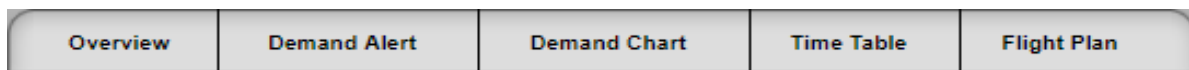
To interact with the session data, the user must select the session of interest () and click on the button 

When the process is completed, the system fills in the identification data of the session selected as highlighted in the figure below.



Note: If the user wishes to change the session to be analyzed, the process can be resumed by accessing the Session () button.

The user must select one of the following tabs:



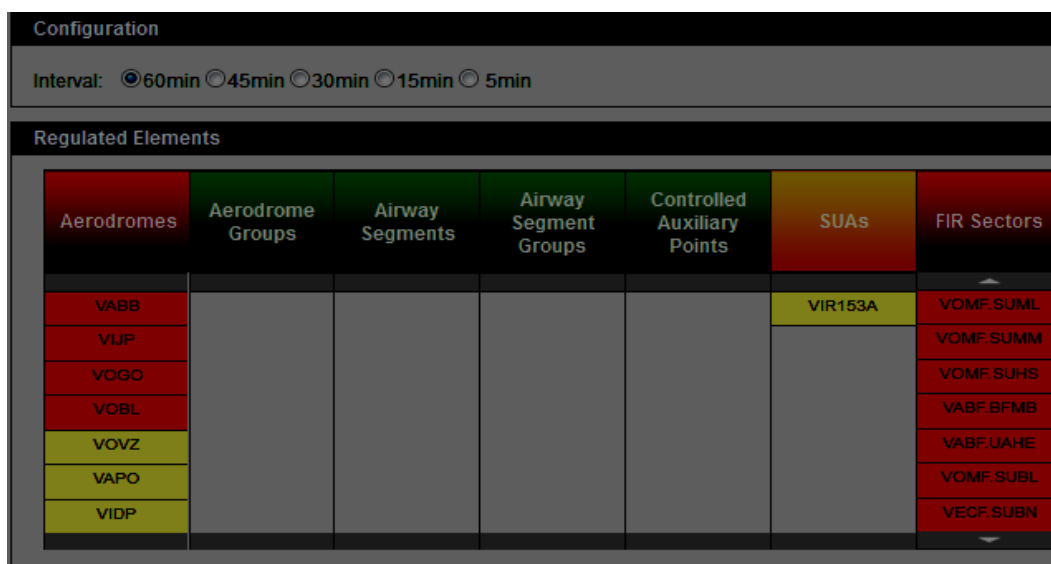
Overview

Tab:

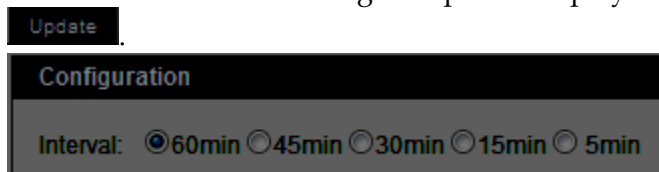
This option () provides the Flow operator with data related to the regulated Elements that are affected by the demand, displayed with the following distinctive colours:

- *Yellow* - identifies regulated elements that reached the limit to be considered as congested (above 80% of the maximum capacity value).
- *Red* - identifies regulated elements that reached the saturation parameter (above 100% of the capacity value).

Note: The absence of record in a given type of regulated element indicates that it is not affected by the flight intentions in the period of the session (green background).



To configure the intervals of interest, to view the situation of the regulated Elements, the operator must select the value among the options displayed in the image below, and then press the button



Note: If a configuration different than 60 min is defined, the information on the following elements is displayed in a different fashion:

Configuration														
Interval: <input checked="" type="radio"/> 60min <input type="radio"/> 45min <input type="radio"/> 30min <input type="radio"/> 15min <input type="radio"/> 5min														
Plan Type (-): <input checked="" type="checkbox"/> RPL <input checked="" type="checkbox"/> FPL <input checked="" type="checkbox"/> Flight Schedule Update														
Regulated Elements														
Aerodromes	Aerodrome Groups	Airway Segments	Airway Segment Groups	Controlled Auxiliary Points	SUAs	FIR Sectors	FIR Sector Groups	Fixed Points	Polygons	SID Segments	SID Segment Groups	STAR Segments	STAR Segment Groups	TMA Sectors
VOVZ	VECF	D1488_DPHL_100		AAE-VOR		VOMF.SUML	VIDF.GROUP	TIGER	POLY4					BTMB.BTMB
VABJ	VIDP.GROUP	3333.DPHL.TIGER				VOMF.SUMM	VIDF.EAST		VIRCP					DTMA.DT02
VAPQ						VOMF.SUHS								DTMA.DT07
VOGO						VABF.BFMB								
VIDP						VABF.UAHE								
						VOMF.SUBL								
						VECF.SUBN								

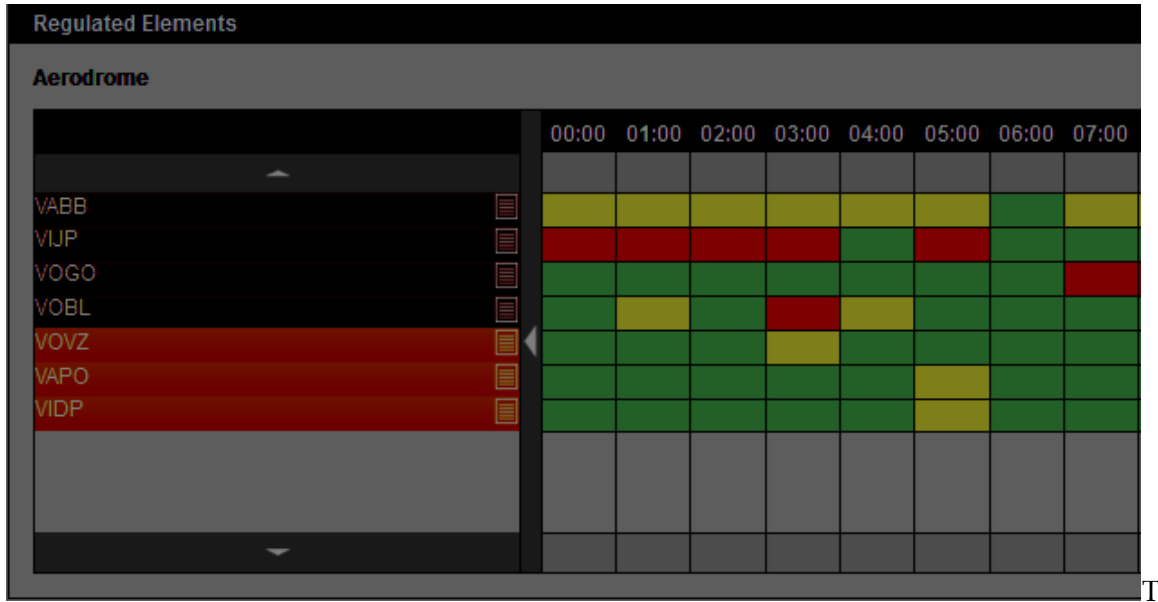
- **Note:** If the number of elements affected is larger than the number that can be displayed on screen, the system provides the “scroll” option as indicated in the following example.

VABF.NAGB
VABF.NAGD
VABF.MU01
VOMF.MF01
VABF.NAGF
VABF.AH01
VABF.BF03

- To view the details of a specific regulated element with capacity affected, the Flow operator must click on the indicator of the element of interest as follows.

Configuration						
Interval: <input checked="" type="radio"/> 60min <input type="radio"/> 45min <input type="radio"/> 30min <input type="radio"/> 15min <input type="radio"/> 5min						
Regulated Elements						
Aerodromes	Aerodrome Groups	Airway Segments	Airway Segment Groups	Controlled Auxiliary Points	SUAs	FIR Sectors
VABB					VIR153A	VOMF.SUML
VIJP						VOMF.SUMM
VOGO						VOMF.SUHS
VOBL						VABF.BFMB
VOVZ						VABF.UAHE
VAPQ						VOMF.SUBL
VIDP						VECF.SUBN

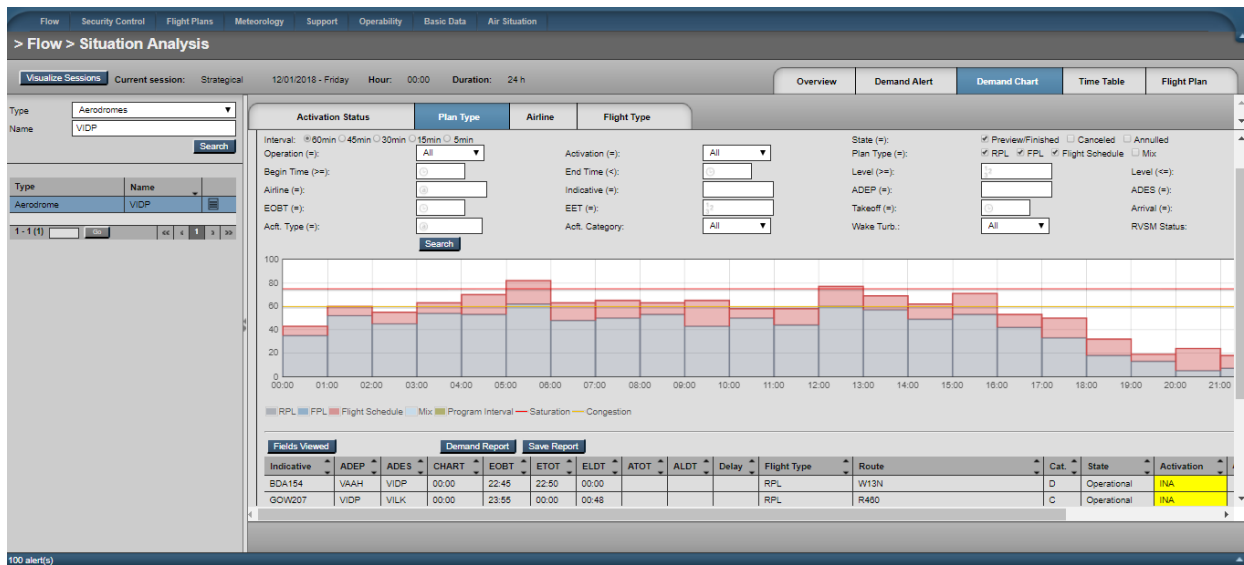
At this moment, the system shows the details of the data that affected the control element according to the time interval selected, as depicted in the figure below.



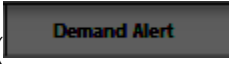
To view the Demand Graphic, the Flow operator can select the "View" (📄) button of the referred element as indicated in the image below.



After executing the action, the system displays the bar graph with the demand data of the referred element affected, according to the image below, with the content described in the "Demand Graphic" option.



Demand Alert Tab:

This option () allows the Flow operator to indicate the time in which the regulated element became imbalanced. The alerts are shown in groups per element selected, according to the following example.


Demand Alert			
Type:	Aerodromes		
Resource	Date	Hour	Type
VECC	29/08/2017	11:00	Congestioned
VECC	29/08/2017	13:00	Congestioned
VICG	29/08/2017	08:00	Congestioned
VIDP	29/08/2017	01:00	Congestioned
VIDP	29/08/2017	02:00	Congestioned
VIDP	29/08/2017	03:00	Saturated
VIDP	29/08/2017	04:00	Saturated
VIDP	29/08/2017	05:00	Congestioned
VIDP	29/08/2017	06:00	Saturated
VIDP	29/08/2017	07:00	Congestioned

31 - 40 (83)

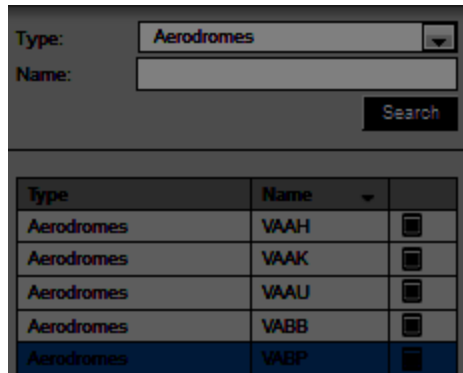
The list of warnings has columns with the following information:

- **Resource** – identifies the regulated element that is affected by imbalance.
- **Date** – date of the imbalance.
- **Hour** – starting time of the imbalance.
- **Type** – type of imbalance occurred with the regulated element
- Congested – Yellow
- Saturated – Red

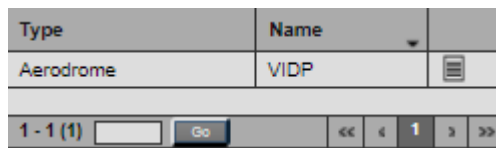
Demand Chart Tab:

This option () allows the Flow operator to analyze the data of the flight plan that is affecting the regulated elements. When this option is accessed, the system shows the types of regulated elements of interest to select as indicated in the figure below.

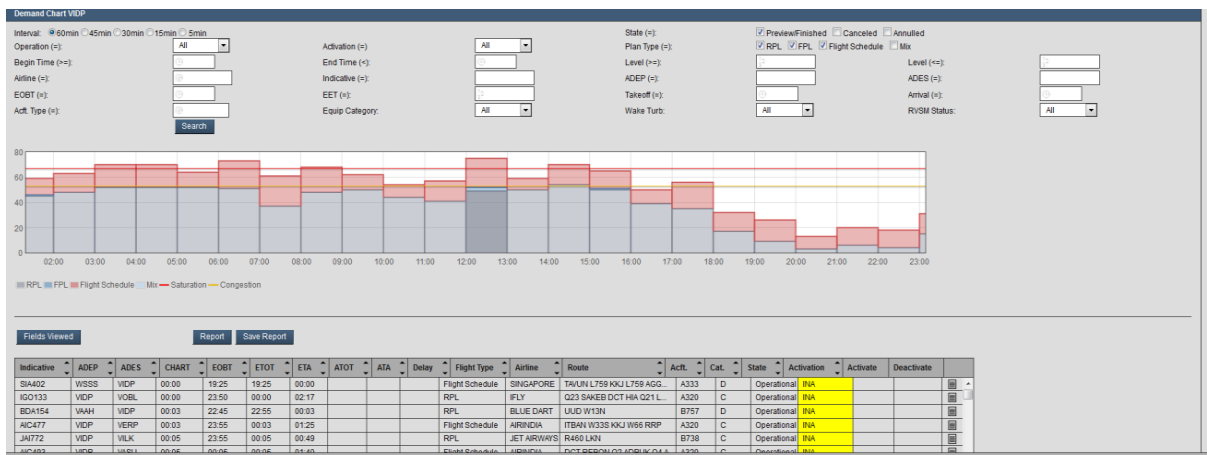
After selecting the regulated element of interest and pressing the button **Search**, the system lists the page on the left panel as follows.



To view the Demand Chart of the regulated element of interest the Flow operator must select the view icon () as follows.



After selecting the element of interest, the system displays the following page containing the data for analysis.



In this page, the Flow operator can configure the demand ruler according to the operational interest. Therefore, the user must select the interval of interest and press the button **Search**, and the system adjusts the ruler according to the parameters specified.

The demand information is presented in a specific ruler in which the several types of flight intentions are displayed in respect to the time interval selected and the selection criteria defined.

The graphic displayed includes the reference lines that indicate Saturation (red) and Congested (yellow) for the interval specified.

The lower part of the page shows the flight intentions that are involved with the regulated elements selected. The data of each element is displayed as a line according to the image below.

Fields Viewed															Report		Save Report	
Indicative	ADEP	ADES	Chart	EOBT	ETOT	ETA	ATOT	AA	Delay	Flight Type	Level	Airline	Route	Actf.	Cat.	Wake Turb.	State	Activation
AIC30	VABB	VAAH	00:00	00:00	00:00	00:40				Flight Schedule	F290	AIRINDIA	W13N	A319	C	M	Operational	INA
SEJ421	VABB	VOHS	00:00	23:50	00:00	00:59				RPL	F370	SPICEJET	W28	B738	C	M	Operational	INA
AIC083	VABB	VOGO	00:00	23:50	00:00	00:44				RPL	F290	AIRINDIA	W15S	A319	C	M	Operational	INA
JAI411	VAAH	VABB	00:03	23:00	23:10	00:03				RPL	F320	JET AIRWAYS	W13S	B738	C	M	Operational	INA

When the button **Fields Viewed** is pressed, the Flow operator can select the fields he/she wishes to view among the following options.

Fields Viewed

ADEP:	<input checked="" type="checkbox"/>
ADES:	<input checked="" type="checkbox"/>
CHART:	<input checked="" type="checkbox"/>
EOBD:	<input type="checkbox"/>
EOBT:	<input checked="" type="checkbox"/>
ETOT:	<input checked="" type="checkbox"/>
ELDT:	<input checked="" type="checkbox"/>
AOBT:	<input type="checkbox"/>
ATOT:	<input checked="" type="checkbox"/>
ALDT:	<input checked="" type="checkbox"/>
AIBT:	<input type="checkbox"/>
Delay:	<input checked="" type="checkbox"/>
Flight Type:	<input checked="" type="checkbox"/>
Level:	<input type="checkbox"/>
Airline Callsign:	<input checked="" type="checkbox"/>
Route:	<input checked="" type="checkbox"/>
Actf. Type:	<input checked="" type="checkbox"/>
Actf. Type Category:	<input checked="" type="checkbox"/>
Wake Turbulence:	<input type="checkbox"/>
State:	<input checked="" type="checkbox"/>
Flight Activation:	<input checked="" type="checkbox"/>

To search the data of a plan included in the flight intention page, the operator must press the “Search” (🔍) button displayed in the flight intention as follows.

	Indicative	ADEP	ADES	Chart	EOBT	ETOT	ATOT	ELDT	ALDT	Delay	Flight Type	Airline Callsign	Route	Actf.	Cat.	State	Activation	Activate	Deactivate
1	THY6572	VIDP	LTRA	00:01	23:20	23:30	00:01	05:50		00:31	FPL	TURKISH	BUTOP5F BUTOP A589 ASAR...	A332	D	Finished	COR		
2	IGO6612	VIDP	VILK	00:03	00:05	00:15	00:03	01:03		-00:12	FPL	IFLY	R460	A320	C	Finished	DEP		
3	JAI772	VIDP	VILK	00:04	23:55	00:05	00:04	00:48		-00:01	FPL	JET AIRWAYS	ALISC ALI R460 LKN DCT	B738	C	Finished	DEP		
4	IGO369	VOTV	VIDP	00:06	20:45	20:55	21:13	23:55	00:08	00:18	FPL	IFLY	W43 BIA Q22 HIA DCT ALB...	A320	C	Finished	DEP		
5	IGO2719	VIDP	VOVZ	00:06	23:50	00:00	00:06	01:48	02:10	00:06	FPL	IFLY	W33S KKJ W138 RRP W66	A320	C	Finished	COR		
6	AIC485	VIDP	VOVZ	00:11	00:00	00:10	00:11	02:00	02:05	00:01	FPL	AIRINDIA	ITBAN W33S AGG DCT 2016...	A320	C	Finished	DEP		
7	ALK192	VIDP	VCBI	00:11	23:40	23:50	00:11	02:56		00:21	FPL	SRI LANKAN	AKRIB Q23 RINTO/N0462F3...	A320	C	Finished	COR		
8	BDA154	VAAH	VIDP	00:13	22:45	22:55	23:04	00:03	00:13	00:09	FPL	BLUE DART	Q3 BUBNU Q1	B752	D	Finished	DEP		
9	JAI778	VIDP	VAID	00:14	23:55	00:05	00:14	01:41		00:09	RPL	JET AIRWAYS	A474 PRA W75 IID	AT72	B	Finished	COR		

After selecting the search, the system shows a specific screen with the plan detailed data as follows.

Flight Plan Detail

Flight Data

Indicative: ADEP: EOBD: EOBT: ETOT: Flight Type:

ATOD: AOBT: ATOT:

Airline Callsign:

Aircraft

Number: Aircraft type: Wake Turbulence Category:

Additional Information

Nav/Com: Flight Rule:

Frequency

Plan Type: Frequency:

Additional Information

ADES: EET: SLDT: Alternative Aerodrome:

Flight Speed: Flight Level: ELDT:

ALDT: AIBT:

Route:

796 of 800 character(s) remaining.

Other informations

679 of 800 character(s) remaining.

Results

Warnings:
13/10/2018 00:03:33 DEP message received.
EOBT: 0005
ATOT: 0003
13/10/2018 01:15:46 Flight finished.

When the button **Details** present in the page is pressed, the system displays the route specified in the plan in detail as depicted below.

Route Detail

Sub-routes

Sub-route	Type
R400	
(1)	

Segments

	FIR/TMA	Sector	Speed Var.	Type	Airways	Distance	Point A	Point B
1	TMA: DTMA	DTC1	25	TAKEOFF	ALISH	4.08	VIDP	2835N07702E
2	TMA: DTMA	DT01	25	TAKEOFF	ALISH	4.83	2835N07702E	2836N07656E
3	FIR: VIDF	DF5A	12	TAKEOFF	ALISH	2.53	2836N07656E	BIPAN
4	TMA: DTMA	DT02	26	TAKEOFF	ALISH	5.98	BIPAN	DP411
5	TMA: DTMA	DT02	22	TAKEOFF	ALISH	5.68	DP411	ALIJA
6	TMA: DTMA	DT02	15	TAKEOFF	ALISH	4.18	ALIJA	2823N07655E
7	TMA: DTMA	DT02	11	CRUISE	ALISH	3.04	2823N07655E	LAPOT
8	FIR: VIDF	DF5B	6	CRUISE	ALISH	1.78	LAPOT	2821N07700E

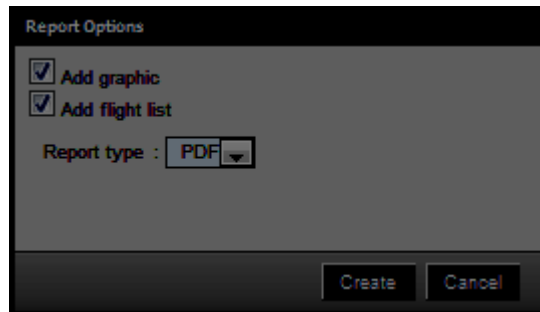
Points

	Point	Coordinate	Target Level	Current Level	Target Speed	Current Speed	EET	ETO	ATO	Type
1	VIDP	2834N07700E	F290	F008	N0145	N0145	0000	0015	0003	Aerodrome
2	2835N07702E	2835N07702E	F290	F050	N0405	N0170	0002	0017	0006	Calculate
3	2836N07656E	2836N07656E	F290	F100	N0405	N0195	0003	0018	0006	Calculate
4	BIPAN	2836N07654E	F290	F128	N0405	N0207	0004	0019	0007	Fix
5	DP411	2831N07650E	F290	F188	N0405	N0233	0006	0021	0009	Fix
6	ALIJA	2825N07651E	F290	F247	N0405	N0256	0007	0022	0010	Fix
7	2823N07655E	2823N07655E	F290	F290	N0405	N0271	0008	0023	0011	Calculate
8	LAPOT	2822N07656E	F290	F290	N0405	N0282	0009	0024	0012	Fix

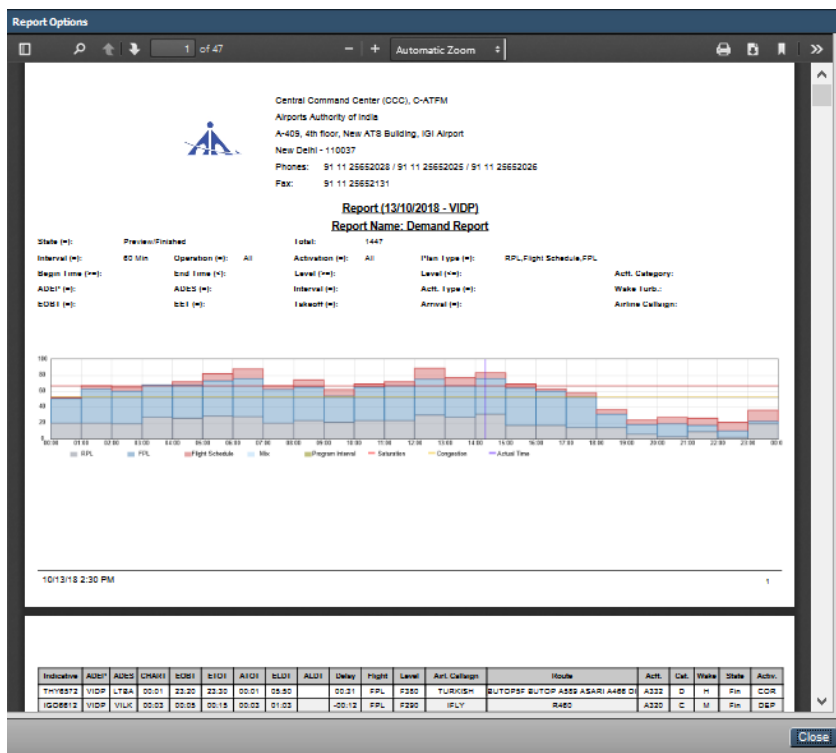
Show speed transitions
 Show level transitions
 Show zone transitions

Report

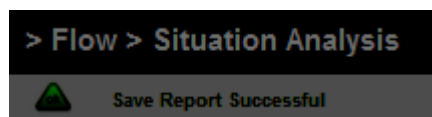
This option allows generation of PDF or CSV reports by means of the following screen.



When the report presentation form is selected, the Flow Manager must select the “Create” option and the system displays the final report with the print or download options.



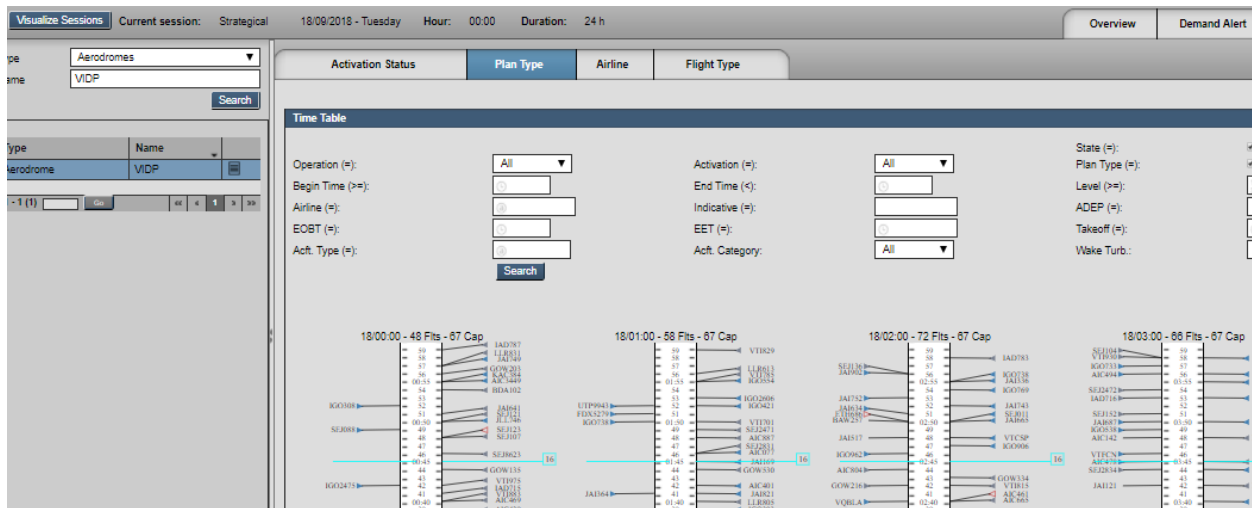
Besides the report generation functions, the system provides the option **Save Report** to save the data for further analysis and shows the following message:



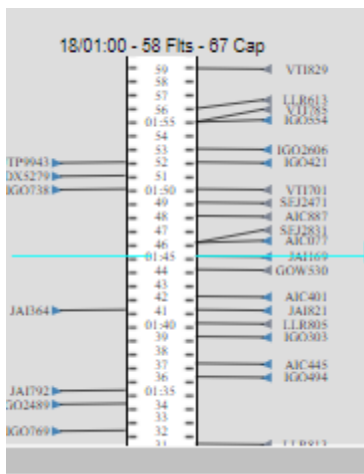
Note: The data saved in this option remains available in the login of the user who executed the function for as long as the user remains logged in the system.

Time Table Tab:

This allows the user to visualize how the flights are sequenced on a certain regulated element. This visualization is available for regulated elements of the following types: aerodrome, fix, FIR sector and TMA sector. The system may display a maximum of six timelines that represent a maximum of six hours each. At the top of each timeline, the date, time, the total amount of movements predicted for the time interval and the capacity of the element in the time interval are displayed. In the time table of the aerodromes, flights that take off are displayed on the right side of the timeline and flights that land are displayed on the left side. As with the demand charts, the user can view the flight intentions grouped by activation status, flight plan type, airline and type of flight. Each of these types of visualization differentiate the possible types of flight intentions using icons positioned alongside their call signs. In the regulated elements of fix, FIR sector and TMA sector types, all flight intentions are displayed on the left side of the timeline.



The time table also displays the capacity variations every quarter of an hour, indicated by a line of cyan color and by a capacity value located to the left side of it. In case the capacity of a given quarter of an hour is zero, the background color will be darker. When a program has been applied to the regulated element, the period in which the measure has been applied will be displayed in yellow. Next to the callsign (in red), the system will display in how many minutes the flight intention was delayed due to the program. To see the details of a flight intention, simply put the mouse pointer over the callsign and a tooltip will be displayed containing more information.



Flight Plan Tab:

This option () allows searching the plan base that composes a specific session. When this option is accessed, the Flow operator is provided with a list of types of plans to select, namely:

- **All** - shows all plans included in the Session selected.
- **FPL** - shows all FPLs included in the Session.
- **RPL** - shows all flight intentions included in the Repetitive Flight Plan base of the Session.
- **FLIGHT SCHEDULE** - shows all flight intentions based in FLIGHT SCHEDULE.

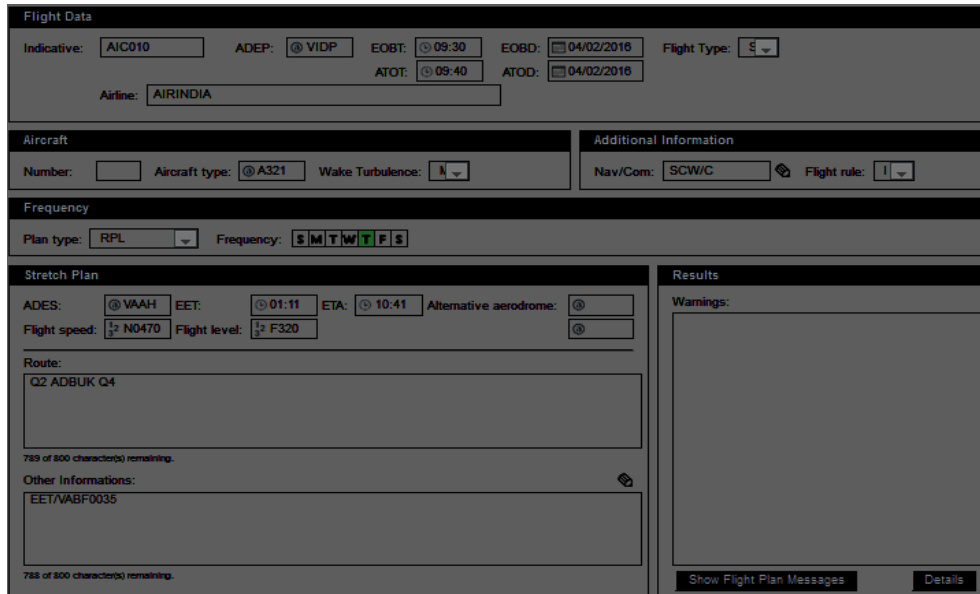
The image below shows the initial data of the plan list according to the search criterion established.

Visualize Sessions					
Current session:		Strategical	04/02/2016 - Thursday	Hour: 00:00	Duration: 24 h
Type:	All	Indicative:		Search	
Indicative	Type	Activation	State		
IGO143	RPL	INA	Operational		
JAI411	RPL	INA	Operational		
AIC050	RPL	INA	Operational		
IGO344	RPL	INA	Operational		
AIC010	RPL	INA	Operational		

To search the data of a flight intention included in the session, the Flow operator must press the “Consult” () button as indicated in the figure below.

Indicative	Type	Activation	State	
AIC011	RPL	INA	Operational	
AIC012	RPL	INA	Operational	

After selecting the search, the system shows a specific screen with the plan detailed data as follows.

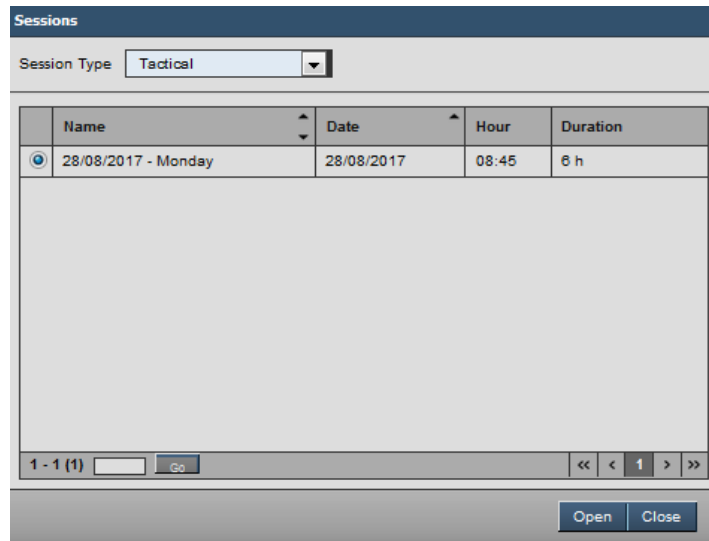


The screenshot shows a 'Flight Data' form with the following fields:

- Flight Data:** Indicative: AIC010, ADEP: VIDP, EOB: 09:30, EOB: 04/02/2016, Flight Type: [dropdown], Airline: AIRINDIA, ATOT: 09:40, ATOD: 04/02/2016.
- Aircraft:** Number: [input], Aircraft type: A321, Wake Turbulence: [dropdown].
- Additional Information:** Nav/Com: SCW/C, Flight rule: [dropdown].
- Frequency:** Plan type: RPL, Frequency: [SMTWTFSS].
- Stretch Plan:** ADES: VAAH, EET: 01:11, ETA: 10:41, Alternative aerodrome: [input], Flight speed: N0470, Flight level: F320.
- Route:** Q2 ADBUK Q4.
- Other Informations:** EET/VABF0035.
- Results:** Warnings: [empty area].

4.1.7.2 TACTICAL SESSION

To access the data of a Tactical Session, the user must select the "Tactical" option in the option Combo-Box (), and the system shows the session available in the system (only one) as follows:

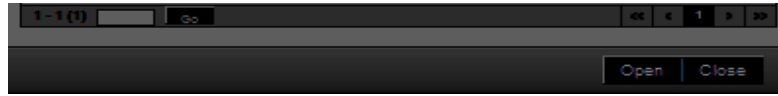


The screenshot shows a 'Sessions' window with a 'Session Type' dropdown set to 'Tactical'. Below is a table with one entry:

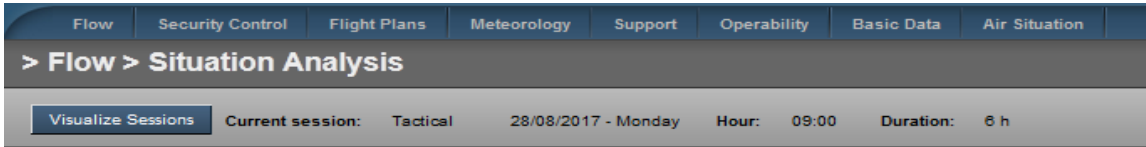
Name	Date	Hour	Duration
28/08/2017 - Monday	28/08/2017	08:45	6 h

At the bottom, there is a pagination control showing '1 - 1 (1)' and 'Go' button, and 'Open' and 'Close' buttons.

To interact with the session data, the user must click on the button **Open** as follows.

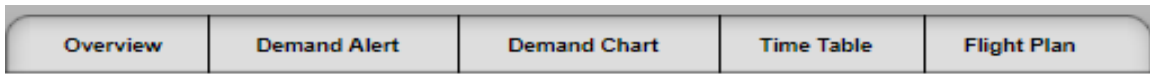


When the process is completed, the system fills in the identification data of the session selected as highlighted in the figure below (left pane of the window).



Note: If the user wishes to change the type of session to be analyzed, the process can be resumed by accessing the Session (**Visualize Sessions**) button.

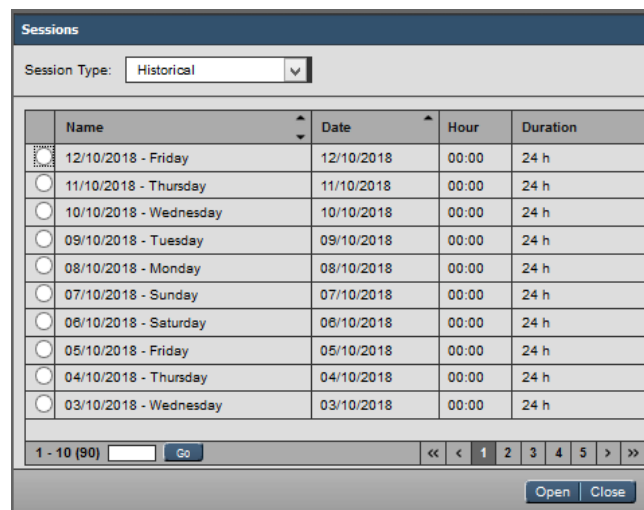
At this moment, the user must select one of the following tabs (right pane of the window):





Note: All the above shown tabs, work exactly as discussed in Strategical Sessions.

4.1.7.3 HISTORICAL SESSION

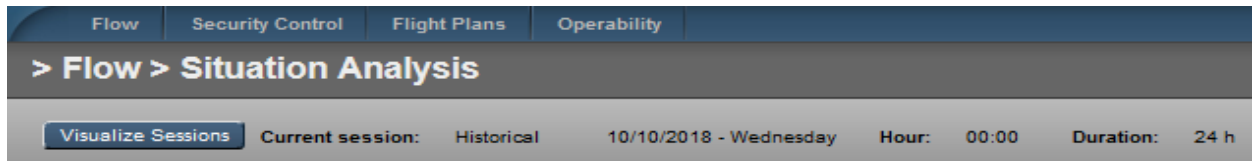
To access the data of a Historical Session, the user must select the "Historical" option in the option Combo-Box (), and the system shows the list of sessions available in the system as follows.

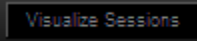


To interact with the session data, the user must select the session of interest () and click on the button  as follows.

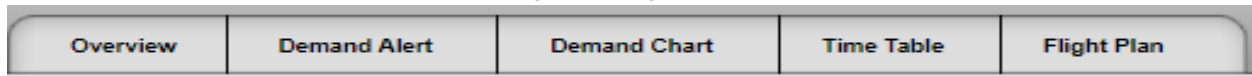
	Name	Date	Hour	Duration
<input type="radio"/>	12/10/2018 - Friday	12/10/2018	00:00	24 h
<input type="radio"/>	11/10/2018 - Thursday	11/10/2018	00:00	24 h
<input checked="" type="radio"/>	10/10/2018 - Wednesday	10/10/2018	00:00	24 h
<input type="radio"/>	09/10/2018 - Tuesday	09/10/2018	00:00	24 h

When the process is completed, the system fills in the identification data of the session selected as highlighted in the figure below (left pane of the window).



Note: If the user wishes to change the session to be analyzed, the process can be resumed by accessing the Session () button.

The user must select one of the following tabs (right pane of the window):



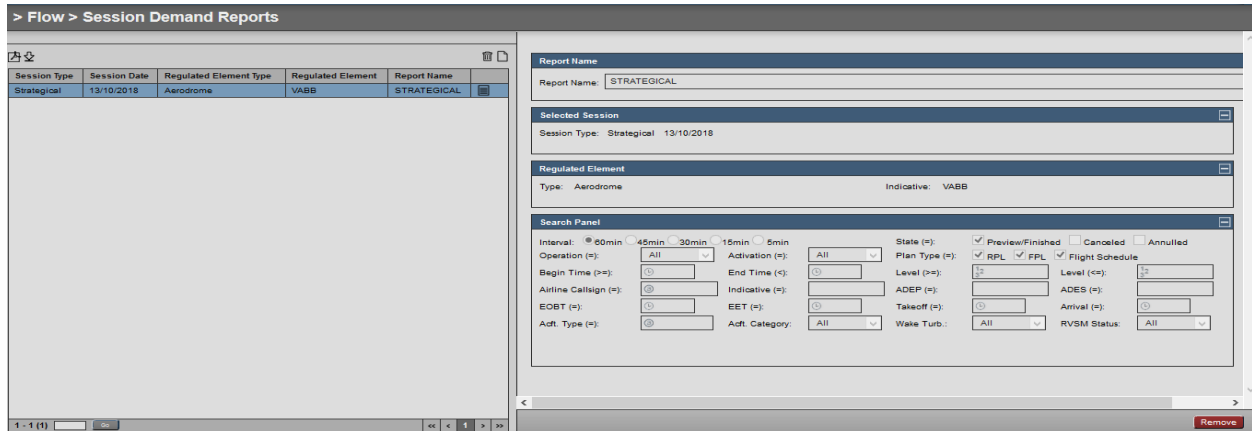
Note: All the above shown tabs, work exactly as discussed in Strategic Sessions.

4.2 Session Demand Report Functionality

The purpose of this functionality is to allow the user to access the data recorded in a session. Such information is available during the period in which the user remains logged in the system.




When this functionality is selected, the system displays the demand reports recorded during the period in which the user remained logged in the system.



The number of reports saved is listed in the left panel as shown above.

Note: When a logged user executes the "Exit" command, the system deletes all reports recorded.

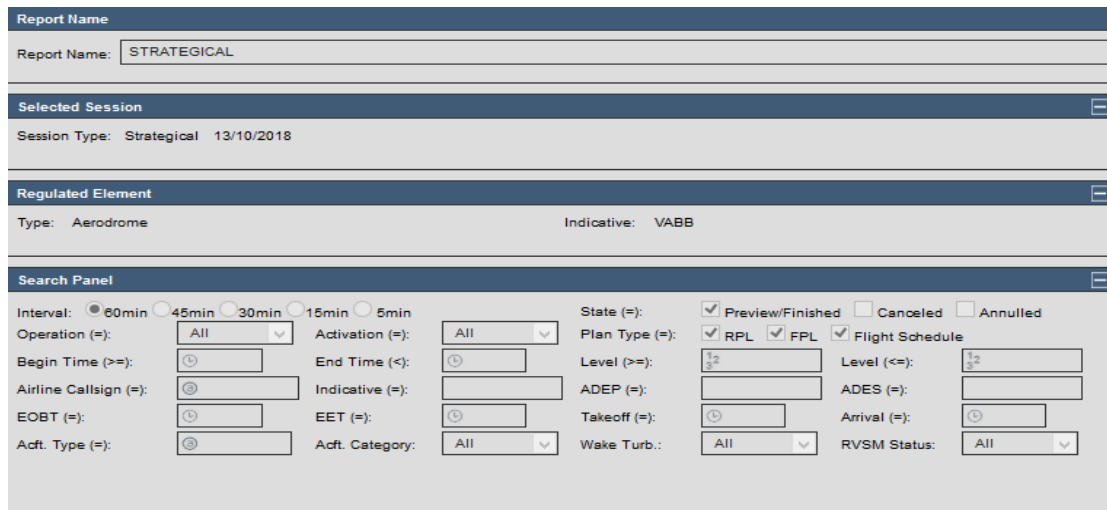
This functionality provides the following interaction options.

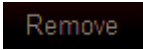
Session Type	Session Date	Regulated Element Type	Regulated Element	Report Name	
Strategical	13/10/2018	Aerodrome	VABB	STRATEGICAL	

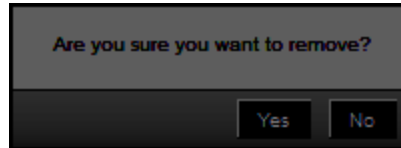
After selecting the search option, the system displays a form in the right panel containing the report basic data as follows.

4.2.1 Search Basic Data

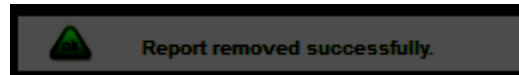
To search the basic data of a report available in the system, the user must press the "Consult" () icon provided in the report of interest as signaled below.




To remove the referred report, the user must press the button  and the system requests confirmation to execute the action.




When the “Yes” option is selected, the system deletes the record from the list included in the left panel and shows the following message:





- **Viewing Reports in PDF format**

Session Type	Session Date	Regulated Element Type	Regulated Element	Report Name	
Strategical	13/10/2018	Aerodrome	VABB	STRATEGICAL	


To view the report in PDF format, the user must select the icon .


- **Viewing/downloading Reports in CSV format**

To view the report in CSV format, the user must select the () icon.

Session Type	Session Date	Regulated Element Type	Regulated Element	Report Name	
Strategical	13/10/2018	Aerodrome	VABB	STRATEGICAL	

- **General Report Deletion**


Session Type	Session Date	Regulated Element Type	Regulated Element	Report Name	
Strategical	13/10/2018	Aerodrome	VABB	STRATEGICAL	

To delete all reports simultaneously, the user must select the () icon. The system then deletes all reports included in the system and updates the left panel as follows.

Session Type	Session Date	Regulated Element Type	Regulated Element	Report Name

- **Creation of New Report**

Session Type	Session Date	Regulated Element Type	Regulated Element	Report Name

To create a new report, the user must select the () icon and the system displays the form to define the basic data of the report on the right panel, which must be completed by the user as follows.

Report Name

Report Name:

Selected Session

Session Type:

Name	Date	Hour	Duration
<input type="radio"/> 21/10/2018 - Sunday	21/10/2018	00:00	24 h
<input type="radio"/> 20/10/2018 - Saturday	20/10/2018	00:00	24 h
<input type="radio"/> 19/10/2018 - Friday	19/10/2018	00:00	24 h
<input type="radio"/> 18/10/2018 - Thursday	18/10/2018	00:00	24 h
<input type="radio"/> 17/10/2018 - Wednesday	17/10/2018	00:00	24 h
<input type="radio"/> 16/10/2018 - Tuesday	16/10/2018	00:00	24 h
<input type="radio"/> 15/10/2018 - Monday	15/10/2018	00:00	24 h
<input type="radio"/> 14/10/2018 - Sunday	14/10/2018	00:00	24 h

Regulated Element

Type: Indicative:

Regulated Element	Type

Search Panel

Interval: 60min 45min 30min 15min 5min

Operation (=): Activation (=): State (=): Preview/Finished Canceled Annulled

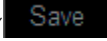
Plan Type (=): RPL FPL Flight Schedule

Begin Time (=>): End Time (<=): Level (=>): Level (<=):

Airline Callsign (=): Indicative (=): ADEP (=): ADES (=):

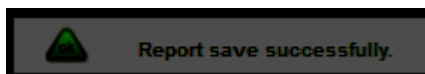
EOBT (=): EET (=): Takeoff (=): Arrival (=):

Acft. Type (=): Acft. Category: Wake Turb.: RVSM Status:

To complete the process, the user must press the "Save" () button and the system updates the left panel.

Session Type	Session Date	Regulated Element Type	Regulated Element	Report Name
Strategical	14/10/2018	Aerodrome	VABB	STRATEGICAL

Besides this action, the system shows a success message.

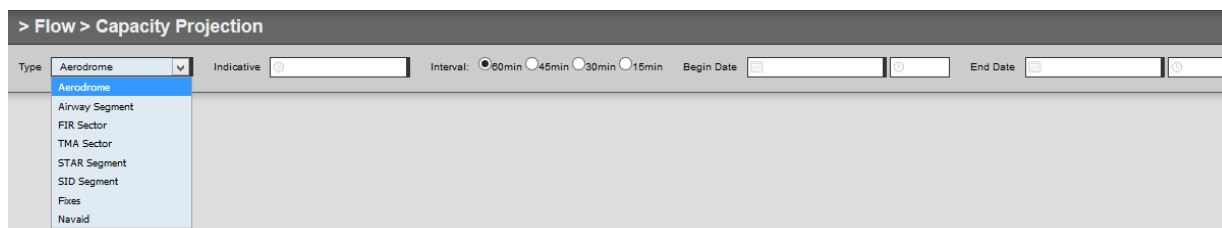


4.2 Capacity Projection

The purpose of this functionality is to enable the user to consult the capabilities of the regulated elements of interest by the selection of the type of regulated element and the definition of the period. This functionality provides a summary of the impacts suffered to the elements regulated in that period. In the interface will be presented data from the original capacity (nominal), the new value (degraded) and the percentage of degradation that was applied. The lists of impacting factors will also be presented (OPE and SUA)

To access this functionality click in Capacity Projection, as shown below:

The system offers several types of regulated elements that can be consulted, as shown in the following figures below:



> Flow > Capacity Projection

Type: Aerodrome (dropdown menu open showing: Aerodrome, Airway Segment, FIR Sector, TMA Sector, STAR Segment, SID Segment, Fixes, Navaid)

Indicative: [input field]

Interval: 60min 45min 30min 15min

Begin Date: [input field]

End Date: [input field]

Type Aerodrome to fill the following fields: "Type", "indicative", "interval", "begin date and time" and "end date and time"

> Flow > Capacity Projection

Type: **Aerodrome** Indicative: **VIDP** Interval: 60min 45min 30min 15min Begin Date: **02/11/2016** **02:00** End Date: **02/11/2016** **06:00**

VIDP - INDIRA GANDHI INTERNATIONAL

Capacities

Begin Date	End Date	Nominal	Degraded	Impact
02/11/2016 - 02:00	02/11/2016 - 02:45	16	16	
02/11/2016 - 02:45	02/11/2016 - 03:00	15	15	
02/11/2016 - 03:00	02/11/2016 - 03:45	16	16	
02/11/2016 - 03:45	02/11/2016 - 04:00	15	15	
02/11/2016 - 04:00	02/11/2016 - 04:45	16	16	
02/11/2016 - 04:45	02/11/2016 - 05:00	15	15	
02/11/2016 - 05:00	02/11/2016 - 05:45	16	16	
02/11/2016 - 05:45	02/11/2016 - 06:00	15	15	

OPE Impact

Type	Element	Resource	State	Start	End	Priority	Comment	Motive
(0)								

SUA Impact

Type	Identification	State	Name	Operational Condition	Start	End	Lowest Limit	Highest Limit	Activation Mode	Observation
RAR	TEST9	Inactive		Restricted	19/09/2016 - 09:38	20/09/2016 - 01:00	GND	F460		
SUA	VR155A	Inactive	HINDON I	Restricted	28/10/2015 - 11:41 22/09/2016 - 02:00	18/09/2016 - 23:59 23/09/2016 - 02:00	F000	F999		

Similarly we can consult the capabilities of the other regulated elements of interest.

The system show the selected aerodrome to consult capacities, OPE impact and SUA impact.

VAAH - SARDAR VALLABHBHAI PATEL INTERNATIONAL

Capacities

Begin Date	End Date	Nominal	Degraded	Impact
01/02/2015 - 08:00	14/02/2016 - 08:00	20	20	

OPE Impact

Type	Element	Resource	State	Start	End	Priority	Comment	Motive
(0)								

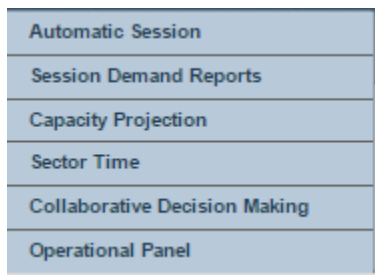
SUA Impact

Type	Identification	State	Name	Operational Condition	Start	End	Lowest Limit	Highest Limit	Activation Mode	Observation
(0)										

To generate consult in PDF click in  to generate consult in XLS click in 

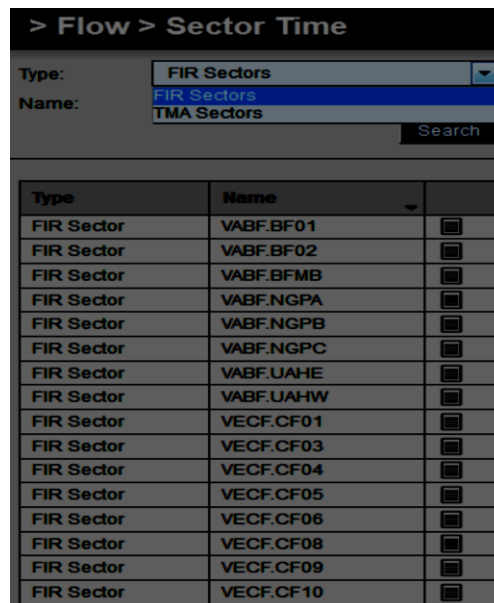
4.4 Sector Time

The purpose of this functionality is to show on a consolidated data relating to aircraft that evolved in the control sectors registered in the system (FIR and TMA). The information obtained refer amounts of the aircraft and the average flight times within their sectors. The system provides options for selecting the days of interest. Such information enables the CATFM user evaluate the historical demand of occupation of the control sectors. With this information, the user can re-evaluate the parameters established for the definition of the capacity of control sectors. To access this functionality click in flow, as shown below:



After the system offers “FIR Sector type” and “TMA Sector type” of regulated elements that can be consulted, as shown in the following figure below:

Type FIR Sectors: When FIR Sectors is selected, all the types FIR Sectors registered in database are display, as shown below:



> Flow > Sector Time		
Type:	FIR Sectors	▼
Name:	FIR Sectors	
	TMA Sectors	Search
Type	Name	
FIR Sector	VABF.BF01	🔍
FIR Sector	VABF.BF02	🔍
FIR Sector	VABF.BFMB	🔍
FIR Sector	VABF.NGPA	🔍
FIR Sector	VABF.NGPB	🔍
FIR Sector	VABF.NGPC	🔍
FIR Sector	VABF.UAHE	🔍
FIR Sector	VABF.UAHW	🔍
FIR Sector	VECF.CF01	🔍
FIR Sector	VECF.CF03	🔍
FIR Sector	VECF.CF04	🔍
FIR Sector	VECF.CF05	🔍
FIR Sector	VECF.CF06	🔍
FIR Sector	VECF.CF08	🔍
FIR Sector	VECF.CF09	🔍
FIR Sector	VECF.CF10	🔍

After selecting the FIR Sectors concerned, click on consult button, the following figure is displayed:

Calculated SPT						
Aircraft average calculated: 8		SPT average calculated: 3.7 min		Element SPT Average: 3.7 min		Calculate
SPT Historic						
<input checked="" type="checkbox"/> Sunday	<input type="checkbox"/> Monday	<input type="checkbox"/> Tuesday	<input type="checkbox"/> Wednesday	<input type="checkbox"/> Thursday	<input type="checkbox"/> Friday	<input type="checkbox"/> Saturday
<input checked="" type="checkbox"/> 24/01/2016 [8 - 3.8]	<input type="checkbox"/> 25/01/2016 [8 - 3.8]	<input type="checkbox"/> 26/01/2016 [8 - 3.8]	<input type="checkbox"/> 27/01/2016 [9 - 3.9]	<input type="checkbox"/> 28/01/2016 [8 - 3.6]	<input type="checkbox"/> 29/01/2016 [8 - 3.6]	<input type="checkbox"/> 30/01/2016 [8 - 3.6]
<input checked="" type="checkbox"/> 31/01/2016 [8 - 3.6]	<input type="checkbox"/> 01/02/2016 [8 - 3.7]	<input type="checkbox"/> 02/02/2016 [8 - 3.6]	<input type="checkbox"/> 03/02/2016 [8 - 3.6]	<input type="checkbox"/> 04/02/2016 [8 - 3.6]	<input type="checkbox"/> 05/02/2016 [8 - 3.6]	<input type="checkbox"/> 06/02/2016 [8 - 3.6]
<input checked="" type="checkbox"/> 07/02/2016 [8 - 3.6]	<input type="checkbox"/> 08/02/2016 [8 - 3.7]	<input type="checkbox"/> 09/02/2016 [8 - 3.6]	<input type="checkbox"/> 10/02/2016 [8 - 3.6]	<input type="checkbox"/> 11/02/2016 [8 - 3.6]	<input type="checkbox"/> 12/02/2016 [8 - 3.6]	<input type="checkbox"/> 13/02/2016 [8 - 3.6]
<input checked="" type="checkbox"/> 14/02/2016 [8 - 3.6]	<input type="checkbox"/> 15/02/2016 [8 - 3.7]					

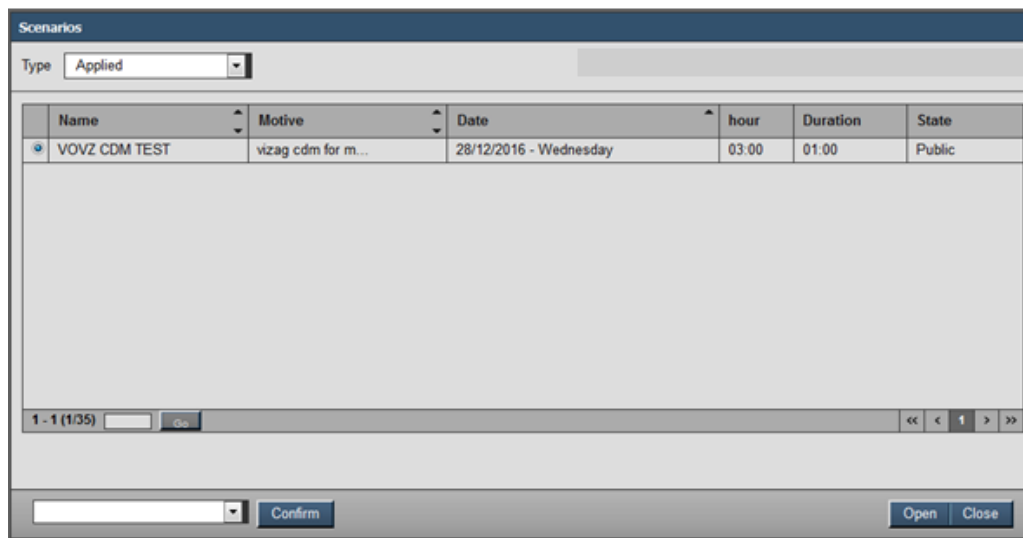
The following window will display information regarding amount of the aircraft and the average flight times within their sectors. Similarly we can calculate for TMA Sectors, the amount of aircraft and the average flight time within their sectors.

NOTE: For time being we are not using this functionality because FIR and TMA sector capacities have not been defined till date.

4.5 Collaborative Decision Making (CDM)

The Collaborative Decision Making (CDM) Module is the component that allows proposing a solution for strategic or tactical flow problems. The National Manager has tools to simulate the problem, correct it, and have a solution proposal to evaluate collaboratively with the Stake holders. Finally, the operational measures defined can be applied.

The AOCC manager can view the CDM scenario and execution report in “being analyzed” and “applied “type drop down window. In the window shown below, an applied scenario “VOVZ CDM TEST” is shown for illustration.

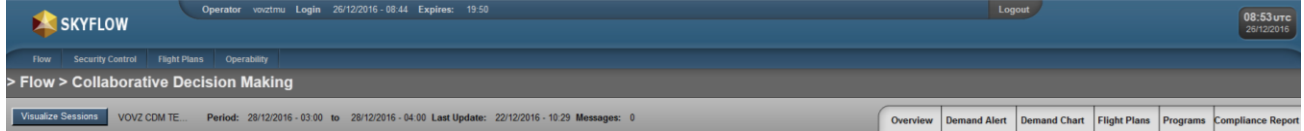


Scenarios						
Type: Applied						
Name	Motive	Date	hour	Duration	State	
VOVZ CDM TEST	vizag cdm for m...	28/12/2016 - Wednesday	03:00	01:00	Public	

Fig 1

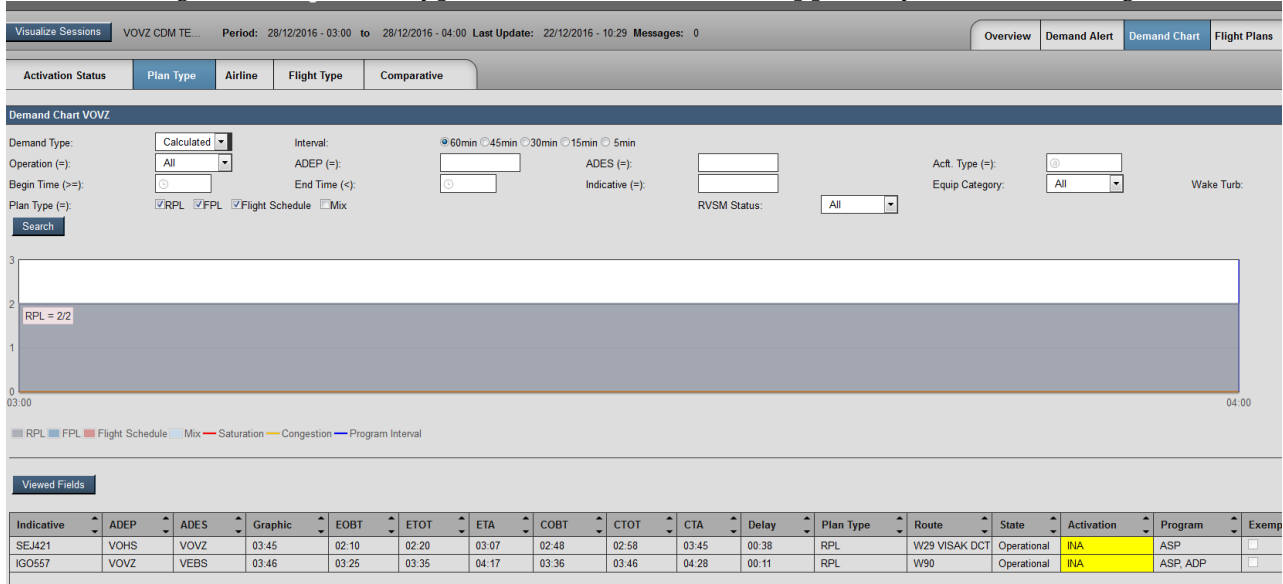
Note: The AOCC manager cannot create a scenario in CDM. The scenario window is for illustration purpose only for AOCC manager. Only the National Manager is authorized to create.

When the AOCC Manager selects the scenario, from the fig. 1, visualize session window is displayed, the user may select Tabs as appropriate:



Overview and Demand Alert Tabs: (as described earlier in Automatic session)

Demand Chart Tab: Here, in addition to functions described in Automatic Session, in CDM the AOCC Manager can see which type of ATFM measures are applied by National Manager.

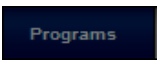


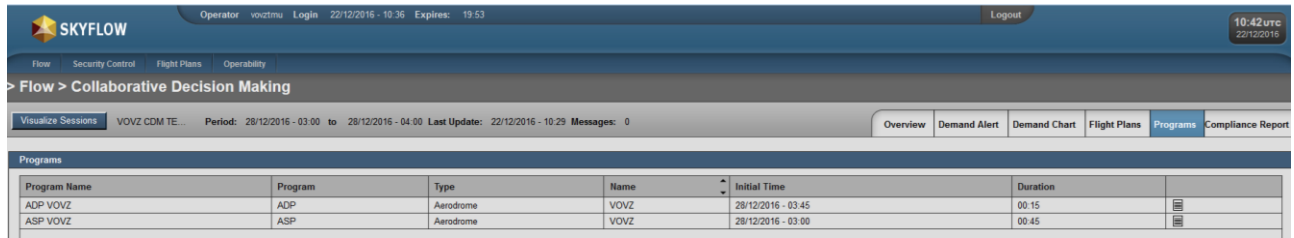
In the above demand chart window, we can see that SEJ421 is subjected to Airport Stop Program (ASP) and IGO557 is subjected to Airport Stop Program (ASP) and Airport Delay Program (ADP).

Flight plan tab: (As described earlier in Automatic session)

Time Table Tab: (As described earlier in Strategic session)

Programs Tab:

This option  () allows consult the programs applied in the scenario that is being consulted. When this option is accessed, the AOCC Manager can view a window containing the following information on the programs applied in the scenario as shown below:



Operator: vovzmu Login: 22/12/2016 - 10:36 Expires: 19:53 Logout 10:42am 22/12/2016

Flow Security Control Flight Plans Operability

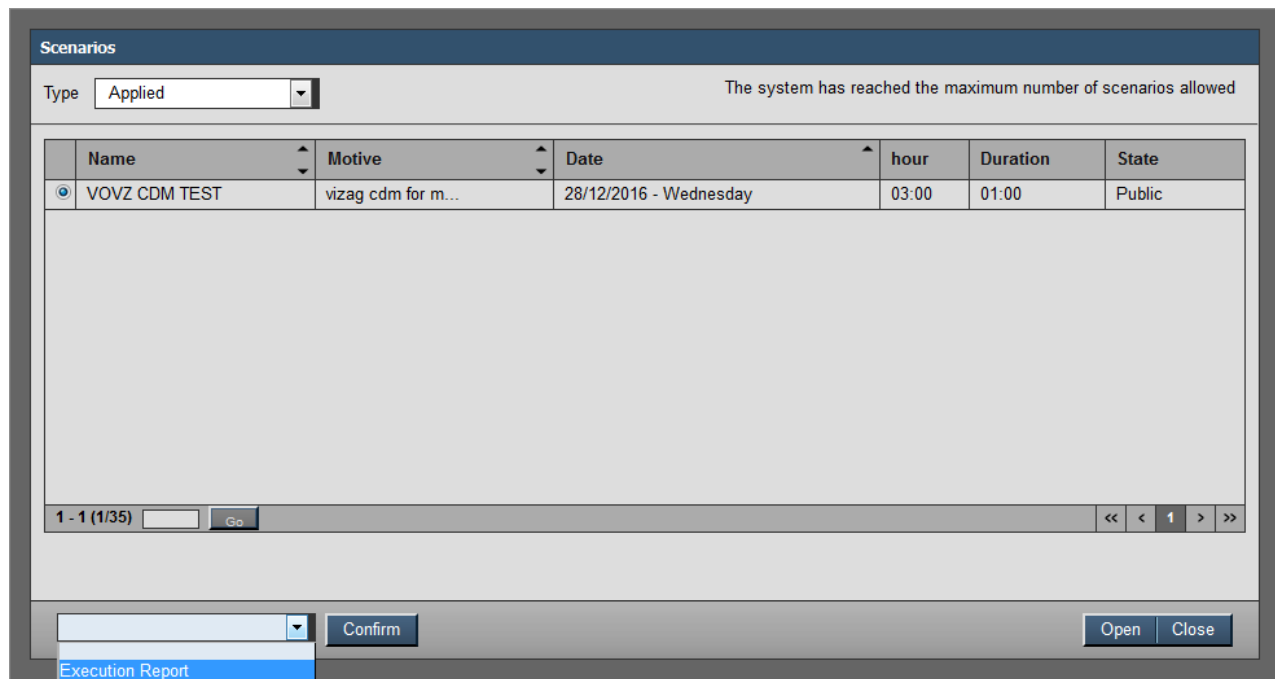
> Flow > Collaborative Decision Making

Visualize Sessions VOVZ CDM TE... Period: 28/12/2016 - 03:00 to 28/12/2016 - 04:00 Last Update: 22/12/2016 - 10:29 Messages: 0 Overview Demand Alert Demand Chart Flight Plans Programs Compliance Report

Program Name	Program	Type	Name	Initial Time	Duration
ADP VOVZ	ADP	Aerodrome	VOVZ	28/12/2016 - 03:45	00:15
ASP VOVZ	ASP	Aerodrome	VOVZ	28/12/2016 - 03:00	00:45

- **Program Name** – this information is defined by the user when the program is created.
- **Program** – this information is defined by the system when the user selects the type of program to be created.
- **Type** – this information indicates the type of regulated element that was the focus of the program.
- **Name** – this information indicates the name of regulated element that was the focus of the program.
- **Initial Time** – this information shows the program starting time.
- **Duration** – this information shows the duration of the program.

Execution report: The execution report of the applied CDM scenario can be taken in PDF or CSV format as shown in the window below.



Scenarios

Type Applied The system has reached the maximum number of scenarios allowed

Name	Motive	Date	hour	Duration	State
VOVZ CDM TEST	vizag cdm for m...	28/12/2016 - Wednesday	03:00	01:00	Public

1 - 1 (1/35) Go << < 1 > >>


Confirm Open Close

Execution Report

We have to select Execution report from the above window and click the “Confirm” button.

The report will be generated as shown in the following figure. It can be downloaded in PDF or CSV format.

Execution Report


 AIRPORTS AUTHORITY OF INDIA
 (A Public Sector Undertaking - Miniratna-Category-1)
 Rajiv Gandhi Bhawan, Safdarjung Airport
 New Delhi - 110003
 FONE: 91-11-24632950
 FAX.: 91-11-24632950

Scenario situation

Scenario: VOVZ CDM TEST **Period:** 28/12/2016 - 03:00 to 28/12/2016 - 04:00
Motive: vizag cdm for module document creation
Advisory Validity: 28/12/2016 - 05:00
 no delay observed

Amount plans delayed: 2 **Sum plans delay:** 00:49 **Delay Average:** 00:24 **Maximum delay min:** 38 **Total flights in the program:** 2
 5 min: 0% 15 min: 50% 30 min: 50% 45 min: 100% 60 min: 100% **Total:** 2

Indicative	ADEP	ADES	EOBT	ETOT	ETA	COBT	CTOT	CTA	Delay	Flight Type	Airline	Route	Program
SEJ421	VOHS	VOVZ	02:10	02:20	03:07	02:48	02:58	03:45	00:38	RPL	SPICEJET	W29 VISAK DCT	ASP
IGO557	VOVZ	VEBS	03:25	03:35	04:17	03:36	03:46	04:28	00:11	RPL	IFLY	W90	ASP, ADP

12/26/16 9:19 AM 1

Operational Panel - Functionality

This functionality allows the user to view the operational and meteorological status of the aerodromes of interest.

Operator: AOCCTEST Login: 28/05/2017 - 09:13 Expires: N/A Logout 09:27 utc 28/05/2017

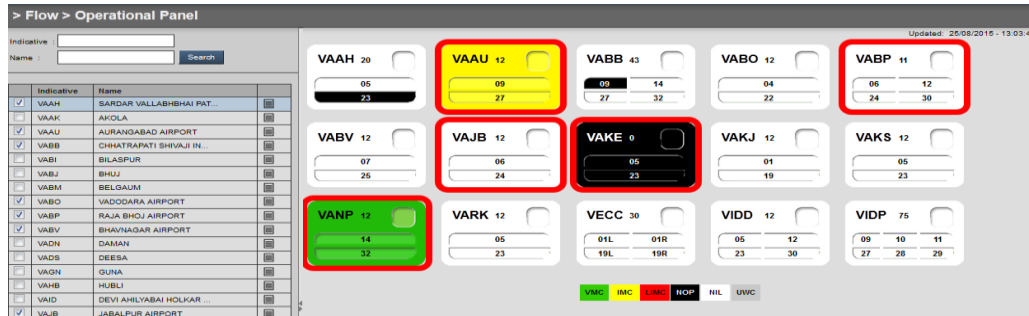
Flow Security Control Meteorology

> Flow > Operational Panel

Indicative: Updated: 28/05/2017 - 14:57:17
 Name: VMC IMC LMC NOP NIL UWC

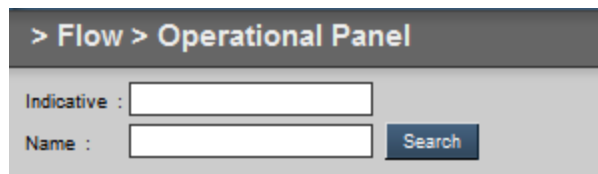
Indicative	Name
VAAH	SARDAR VALLABHBHAI PAT...
VAAK	AKOLA
VAAU	AURANGABAD
VABB	CHHATRAPATI SHIVAJI IN...
VABI	BILASPUR
VABJ	BHUJ
VABO	VADODARA
VABP	RAJA BHOJ INTERNATIONA...
VABV	BHAVNAGAR
VADN	DAMAN
VADU	DIU AIRPORT
VADX	DEESA
VAGD	GONDIA

After selecting the functionality, the system displays the list of aerodromes registered in the system in the left panel, and the identification of the aerodromes selected by the user to compose the operational panel in the right panel as follows.



Note: The data displayed is shared with all users who have accessed this functionality, and the information is updated automatically by the system in 1-minute intervals (system parameter) or every time an aerodrome is included or removed from the panel.

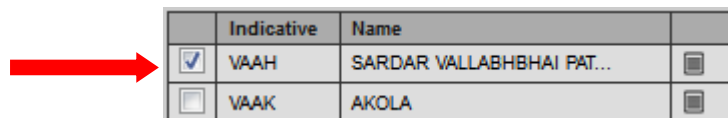
The left panel displays the user option to assign an aerodrome for query by completing the 'Indicative or "Name" field and pressing the "Search" button according to the image below.



The image below shows the indication of the several pages that contain the list of registered aerodromes.



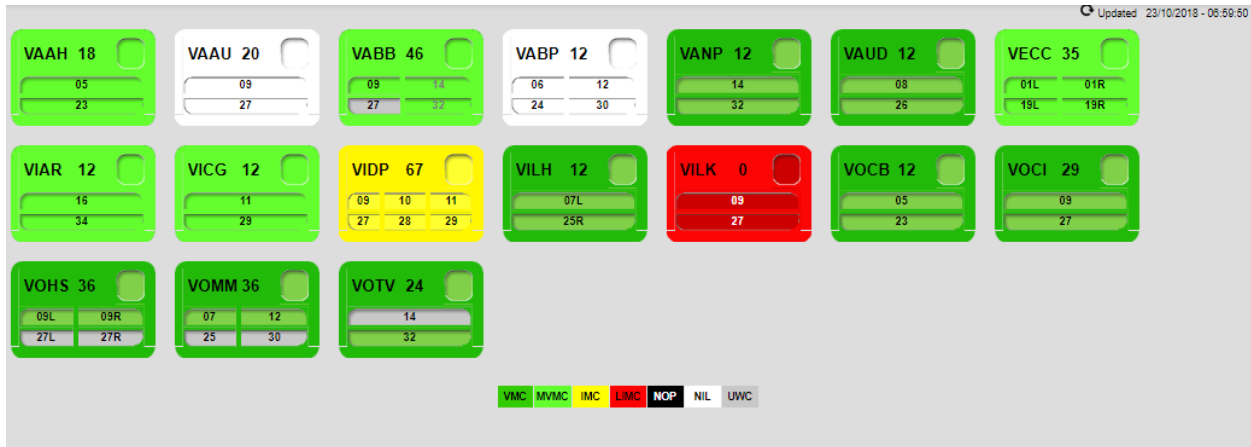
To include an aerodrome in the set to be viewed in the right panel, the user must select the respective aerodrome as indicated below.



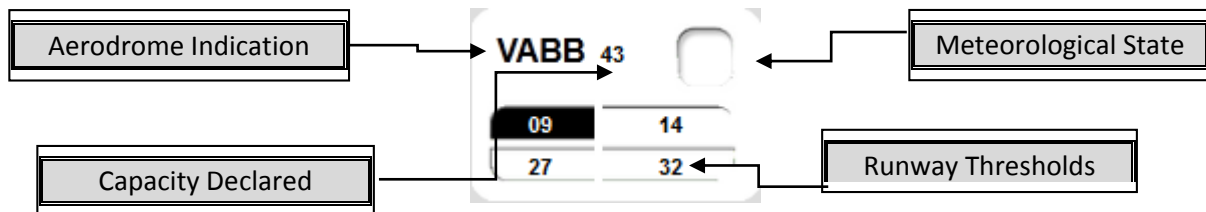
With the purpose of making the monitor screen display only the aerodromes of interest, the system allows retracting the left panel. Therefore, the user must position the cursor and press the mouse button on the point assigned in the image below.



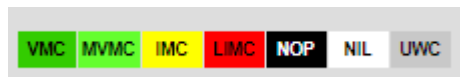
When the left panel retract command is executed, the system shows the data of the aerodrome operational panel as follows.



The specific data of an aerodrome is displayed as a whole in a specific window that has the following fields.



The different meteorological states of an aerodrome are identified according to the colors presented as follows.



- **VMC** - VMC (*Visual Meteorological Conditions*):

Meteorological conditions equal to or better than the minimum established to fly according to the Visual Flight Rules (VFR). The minimum landing and take-off meteorological conditions of VFR flights is:

- Ceiling equal to or higher than 1,500 feet (450 meters); and
- Ground visibility equal to or higher than 5,000 meters.

An aerodrome is in VMC state when at least one of the thresholds is in VMC state.

- MVMC - **“Marginal VMC” (Marginal Visual Meteorological Conditions):**
 Meteorological conditions below the minima established for VMC and the meteorological conditions observed are equal to or higher the minima established for MVMC:
 - Ceiling equal to or higher than 1,000 feet (300 meters); and
 - Ground visibility equal to or higher than 3,000 meters.

An aerodrome is in IMC state when none of the thresholds is in VMC state and at least one of the thresholds is in IMC state.

- IMC - **IMC (Instrument Meteorological Conditions):**
 Meteorological conditions below the minimum values established to fly according to the Visual Flight Rules. The minimum landing and take-off meteorological conditions of IFR flights is:
 - Ceiling lower than 1,500 feet (450 meters); **and/or**
 - Ground visibility lower than 5,000 meters.

An aerodrome is in IMC state when none of the thresholds is in VMC state and at least one of the thresholds is in IMC state.

- LIMC - **“Low IMC” (Low Instrument Meteorological Conditions):**
 When the minimum ceiling and visibility values supported by the aids associated to the threshold are lower than the ceiling and visibility values in the respective threshold.
 An aerodrome is in LIMC state when none of the thresholds is in VMC or IMC state and at least one of the thresholds is in LIMC state.

- NOP - **No Operations:**
 An aerodrome is in NOP state when all the thresholds are in NOP state.

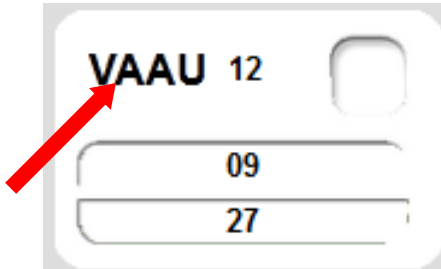
- NIL - **No Information:**
 An aerodrome is in NIL state when the METAR/SPECI information is expired.

- UWC - **Unfavorable Wind Conditions:**
 A threshold is in this state when the wind parameters (direction/intensity) are unfavorable for operation.

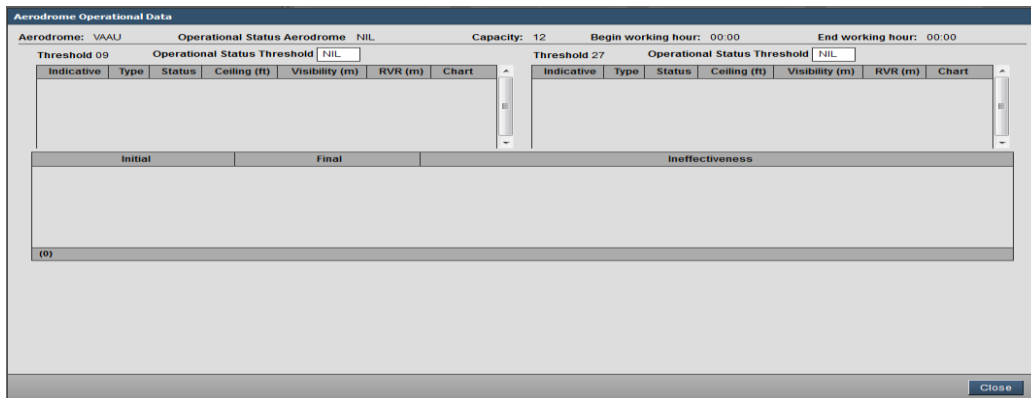
Besides the information present in the operational panel, the user has the following option to search the detailed data of an aerodrome:

Search Aerodrome Operational Data

To search the operational data of an aerodrome, the user must place the cursor and press the mouse button on the indication of the aerodrome of interest in the operational panel (represented by the VAAU indication) as specified in the figure below.



After executing the operation, the system displays the operational data inserted in the form fields as follows:



- **“Aerodrome” Field** – shows the ICAO indication of the aerodrome selected.
- **“Operational Status Aerodrome” Field** – shows the operational state of the aerodrome according to the current operational conditions.
- **“Capacity” Field** – shows the number of operations declared (take-off/landing) for the aerodrome in a period of sixty (60) minutes.
- **“Begin working hour” Field** – shows the air operation starting UTC time of the aerodrome.
- **“End working hour” Field** – shows the air operation closing UTC time of the aerodrome.
- **“Operational Status Threshold” data**

The system displays the list with the following data for each threshold declared in the aerodrome:

Aerodrome: VAAU		Operational Status Aerodrome: NIL		Capacity: 12	Begin working hour: 00:00	End working hour: 00:00	
Threshold 09		Operational Status Threshold: <input type="text" value="NIL"/>		Threshold 27			Operational Status Threshold: <input type="text" value="NIL"/>
Indicative	Type	Status	Ceiling (ft)	Visibility (m)	RVR (m)	Chart	

- ✓ “Threshold” Field – identifies the threshold of reference for the table data.
- ✓ “Threshold Operational State” Field – identifies the threshold operational state.
- ✓ “Indicative” Column – identifies the indication of the navigation aid to execute the landing approach procedure.
- ✓ “Type” Column – identifies the type of navigation aid specified.
- ✓ “Status” Column – identifies the operational state of auxiliary navigation.
- ✓ “Ceiling” Column – identifies the minimum ceiling altitude (in feet) so the navigation support is considered appropriate for landing approach.
- ✓ “Visibility” Column – identifies the minimum visibility (in meters) so the navigation support is considered appropriate for landing approach.
- ✓ “RVR” Column – identifies the minimum runway visual range (in meters) so the navigation support is considered appropriate for landing approach.
- ✓ “Chart” Field – identifies the reference approach chart for the data specified.

Note: if the referred chart has been **suspended** the background of this field is gray.

- **Aerodrome Inoperability Data**

The system provides the table with the following data to register aerodrome navigation support equipment inoperability

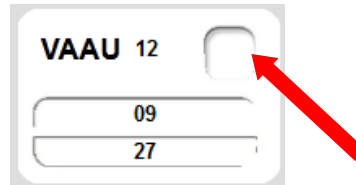
Initial	Final	Ineffectiveness
(0)		

- ✓ “Initial” Column – identifies the inoperability starting date.
- ✓ “Final” Column – identifies the estimated inoperability finishing date.
- ✓ “Ineffectiveness” Column – identifies the inoperative navigation support.

To finish the search and return the Operational Panel, the user must press the button  on the lower right corner of the form.

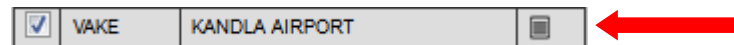
Search Aerodrome Meteorological Data

When the user places the mouse cursor on the Meteorological State field the system displays a window containing METAR and SPECI meteorological data as follows.

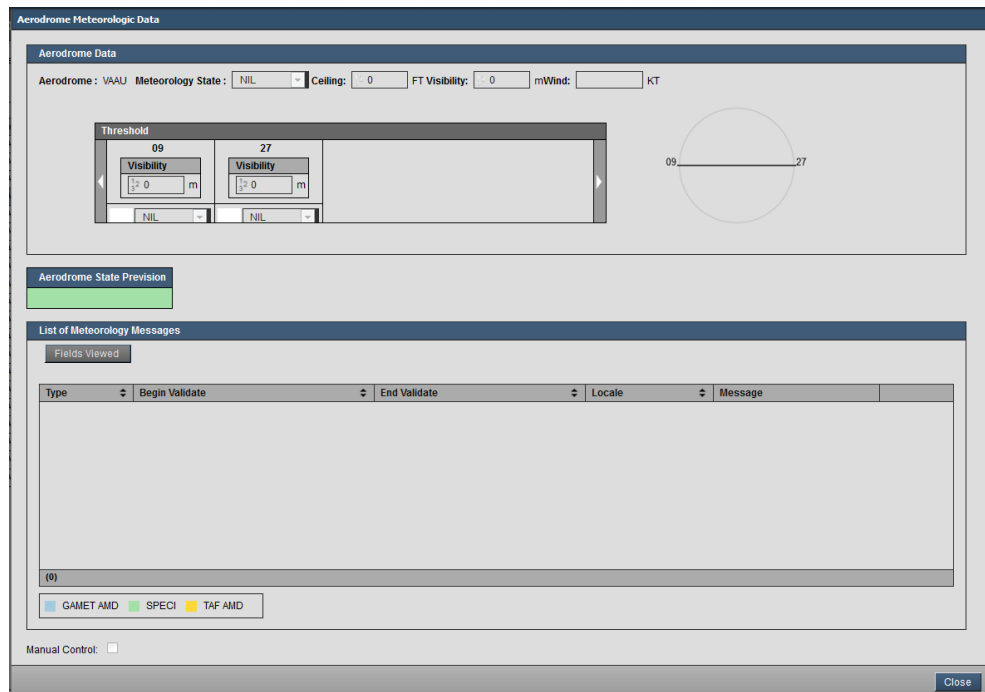


If TAF of the aerodrome exists, that displays the information with the following minimum IFR operation meteorological conditions, the system displays a red triangle located between the aerodrome indication and the Meteorological State field. When the user places the mouse on the referred triangle, the system displays a window containing the referred data.

Besides this option, the user can select the “Consult” (☰) icon displayed in the aerodrome of interest listed in the left panel.

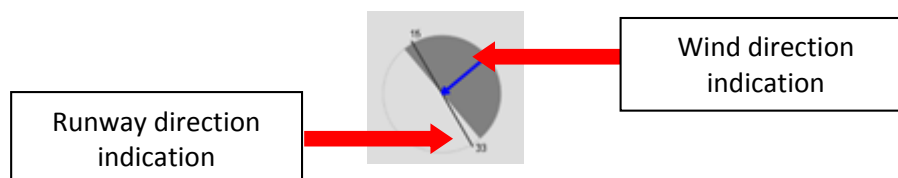


After executing the operation, the system displays the meteorological data inserted in the form fields as follows:



- **Aerodrome Data** – this data set displays the current meteorological conditions of the aerodrome, obtained by means of the meteorological messages received by the system. The fields are completed with the following data:

- ✓ “Aerodrome” Field – shows the ICAO indication of the aerodrome selected.
- ✓ “Meteorological State” Field – identifies the aerodrome meteorological state.
- ✓ “Ceiling” Field – shows the ceiling value (in feet) in the aerodrome area.
- ✓ “Visibility” Field – shows the visibility value (in meters) in the aerodrome area.
- ✓ “Wind” Field – shows the surface wind direction and intensity values of the aerodrome area.
- ✓ “Threshold” Field – shows the visibility values and the meteorological condition in the respective thresholds.
- ✓ Schematic representation of the wind direction – the system displays the wind action direction in respect to the aerodrome runway thresholds as specified in the figure below.



- **Aerodrome Status forecast** – Represents significant meteorological conditions in the aerodrome area, with data presented by means of MSG TAF. The indication of the referred phenomena is presented as follows.

Aerodrome Status Forecast					
07:00 08:00 09:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00 00:00 01:00 02:00 03:00 04:00 05:00 06:00 07:00 08:00 09:00 10:00 11:00					
List of Meteorologic Messages					
Viewed Fields					
Type	Begin Validate	End Validate	Location	Message	
METAR	23/10/2018 07:00	23/10/2018 09:00	VAAH	METAR VAAH 230700Z 33005KT 5000 FU NSC 38/12 Q1013 NOSIG=	
TAF	23/10/2018 08:00	24/10/2018 12:00	VAAH	TAF VAAH 230600Z 2308/2412 32003KT 4000 FU NSC BECMG 2308/2308 6000 BECMG 2...	

Green - identifies forecast existing from meteorological conditions will be above the minimum VFR operation.

Yellow - identifies forecast existing from meteorological conditions will be below the minimum VFR operation.

Red - identifies forecast existing from meteorological conditions will be below the minimum IFR operation.

- **List of Meteorology Messages** – shows the list of meteorological messages that affect the Aerodrome Meteorology State, according to the table below, with the following data.

Type	Begin Validate	End Validate	Locale	Message

- ✓ “Type” Column - shows the type of meteorological message received by the system that affected the meteorological conditions of the aerodrome.
- ✓ “Begin Validate” Column - identifies the beginning of the validity term of the message.
- ✓ “End Validate” Column - identifies the end of the validity term of the message.
- ✓ “Locate” Column - identifies the ICAO code of the aerodrome.
- ✓ “Message “Column - describes the message text.

To finish the search and return the Operational Panel, the user must press the button  on the lower right corner of the form.

5. SECURITY

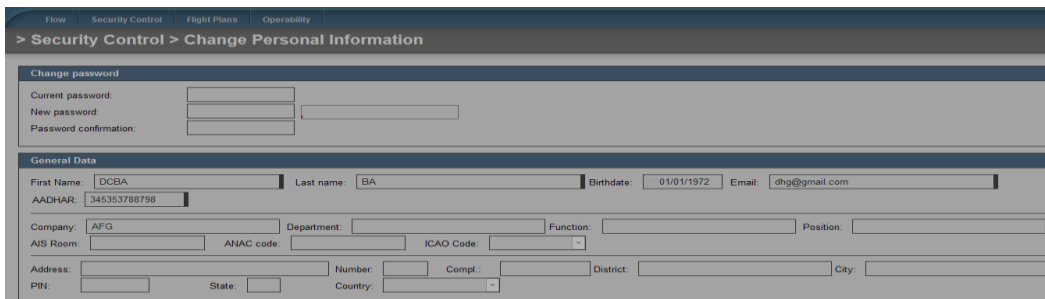
In security control tab, two functionalities are available for AOCC users.

- Change personal information
- Audit Control

Change personal information

The user can edit change password, general data and contact information (Phone). The AOCC user after login with the old password can change password, the password is valid for 180 days.

The grey shaded boxes are not editable. The shadow boxes are mandatory fields created during initial registration. The user can save the edited information.



- **Audit Control**

In this functionality the user can see the details of login and options exercise. The details of activity performed can be saved as PDF or Excel sheets.

Time	Component	Event type	Element	Element ID	Occurrence	User	IP	Detail
29/11/2016 - 05:05:33	ACC - Access Control	Password Change by User	User	aa12	Success	aa12	172.16.104.121	
29/11/2016 - 05:04:42	ACC - Access Control	Invalid Password	User		Fail	aa12	172.16.104.121	
29/11/2016 - 04:37:10	ACC - Access Control	Invalid Password	User		Fail	aa12	172.16.104.121	
29/11/2016 - 04:37:10	ACC - Access Control	Out of Attempt Login	User		Fail	aa12	172.16.104.121	
29/11/2016 - 04:27:40	ACC - Access Control	Invalid Password	User		Fail	aa12	172.16.104.121	
29/11/2016 - 04:27:30	ACC - Access Control	Invalid Password	User		Fail	aa12	172.16.104.121	
29/11/2016 - 04:13:05	ACC - Access Control	Logout	User	aa12	Success	aa12	172.16.104.133	
29/11/2016 - 04:12:20	ACC - Access Control	Password Change by User	User	aa12	Success	aa12	172.16.104.133	
29/11/2016 - 04:10:27	ACC - Access Control	Invalid Password	User		Fail	aa12	172.16.104.133	
29/11/2016 - 04:10:12	ACC - Access Control	Invalid Password	User		Fail	aa12	172.16.104.133	

6. ATFM Daily Plan

- The ATFM Daily Plan (ADP) is a set of tactical ATFM measures that will be in force in Indian airspace on the following day.
- The CCC shall coordinate and define the daily plan and inform Aircraft Operators and ATC units about the ATFM measures.
- Through the ATFM Daily Plan the CCC is trying to optimize available capacity to meet forecast demand and to manage demand to minimize delay and cost.
- The CCC shall publish the agreed plan for the day of operations after a collaborative decision making process.
- The ADP will be published at 1330 UTC daily and is applicable for the next day.
- The ADP is distributed by means of an email. In future, it will also be available on the ATFM Web portal.

An ADP include the following items of information:

- Aerodrome or Airspace Sector identification;
- Description of constraints;
- Time frame
- Proposed ATFM measures; and
- Remarks/other relevant information.