



INTERNATIONAL CIVIL AVIATION ORGANIZATION

A United Nations Specialized Agency

WKSP/ASBU/NAIROBI/2013-PPT/13

ASBUs

Environmental impact

AIR NAVIGATION BUREAU

Key Performance Area Environment



ATM Operational Concept :

The air navigation system should contribute to the protection of the environment by considering noise and **emissions** in the implementation and operation of the global air navigation system.

Assembly resolution



- *A37-19 Resolves:*
- to achieve a global annual average fuel efficiency improvement of 2 per cent until 2020.
- and an aspirational global fuel efficiency improvement rate of 2 per cent per annum from 2021 to 2050.
- Requests ICAO to develop the necessary tools to assess the benefits associated with ATM improvements

Operational Improvements



- Following operational improvements results in reduced fuel burn consequently mitigating impact on environment
 - PBN
 - CDO
 - CCO
 - RVSM
 - FUA

A tool to estimate environmental benefits

IFSET



- **ICAO Fuel Savings Estimation Tool**
 - Simple to use and scientific defensible
 - States will report on fuel savings from operational improvements
 - Allows those States without modelling and/or measurement capabilities to estimate fuel savings from operational improvements.
 - Consistent with CAEP-endorsed GHG models.
 - Consistent with Global Air Navigation Plan.
 - Minimal data requirements.

IFSET – What it does



- The tool can estimate:
 - Effects of shortening / eliminating level segments on departure and arrival.
 - Effects of shorter routes (either in time or distance).
 - Effects of cruising at different altitudes.
 - Effects of reduced taxi times.
- The tool does not replace detailed modelling or measurement of fuel consumption already available in a State

IFSET – How it works



- Pre-compute aircraft performance
 - Level, climb and descent fuel consumption
 - By group of aircraft type
 - In 1000 foot intervals

IFSET – User input

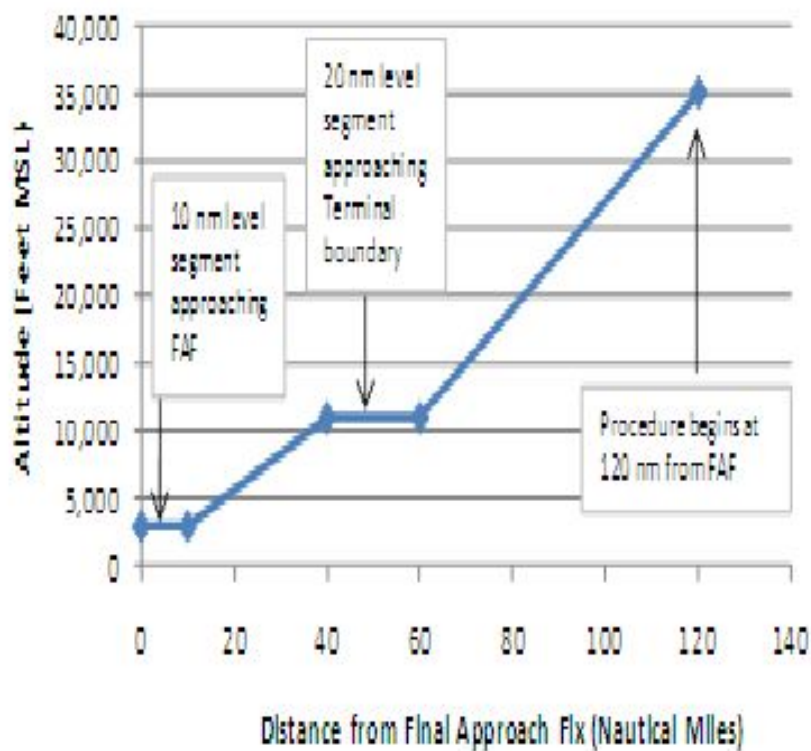


- Fleet mix defined for baseline and post-implementation scenario
 - Aircraft type group
 - “Remaining flight distance”(as a surrogate for weight)
- User selects “elements” to define the baseline and “new” procedure
- Tool estimates the change in total fuel consumption between the 2 scenarios

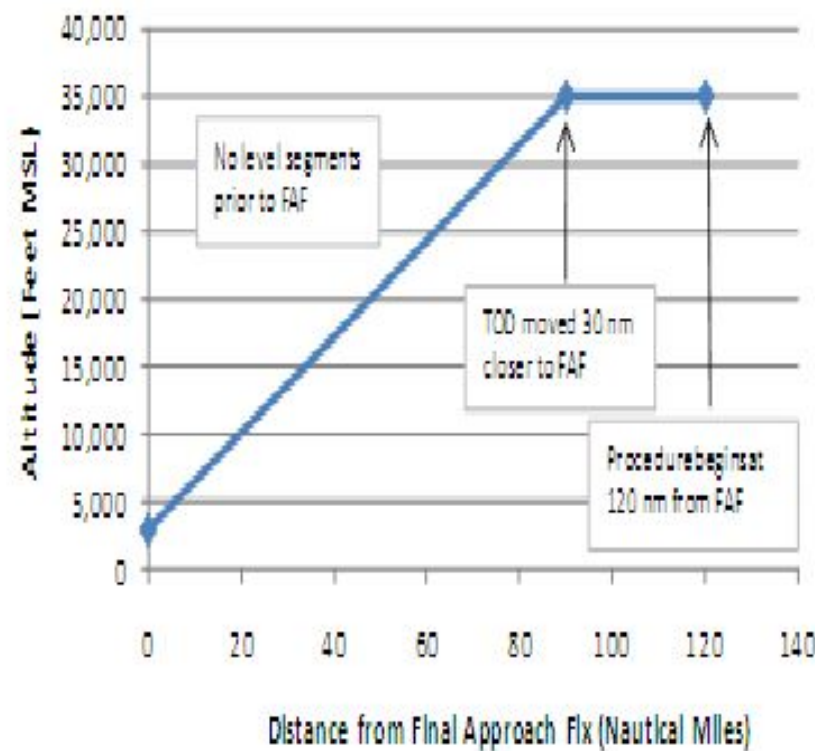
IFSET – example



Notional Baseline



Notional CDO (Post-Implementation)



Download IFSET



- Go to : <http://www.icao.int/environmental-protection/Pages/Tools.aspx>
- Scroll to the bottom and download the IFSET



ICAO Fuel Savings Estimation Tool

Operational measures are one of the instruments available to States to improve fuel efficiency and reduce CO₂ emissions. The ICAO Fuel Savings Estimation Tool (IFSET) has been developed by the Secretariat with support from States and international organizations to assist the States to estimate fuel savings in a manner consistent with the models approved by CAEP and aligned with the Global Air Navigation Plan.

The ICAO Fuel Savings Estimation Tool (IFSET) is not intended to replace the use of detailed measurement or modelling of fuel savings, where those capabilities exist. Rather, it is provided to assist those States without such facilities to estimate the benefits from operational improvements in a harmonized way.

Access the files here: [IFSET](#) (requires Microsoft Windows XP or newer) and the [IFSET User Guide](#).

Demonstration of IFSET



Operations 1-CCO

- Airport AAAA (ADEL 1000FT) is known by the restrictions to departures due to conflicting routes that impose restrictions to a continuous climb operation.
- At this airport, B737-800 is the dominant aircraft type with 400 **operations** daily, but E-195 also operates at a rate of 50 daily operations. CL60 operates at 30 movements daily and C560 at a rate of 20 movements a day. The other operations of small aircraft are not representative. All aircraft will benefit of the new departure procedure.
- The only SID in use is described as: From 1000FT, climb to 7000FT and maintain this altitude for 5NM. After that climb to 14000FT and maintain this altitude for 5 more miles, when the climb is unrestricted to the cruising flight level.
- The new envisaged procedure will allow the aircraft to climb from 1000FT to the cruising flight level without restrictions.



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Western and
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(WACAF) Office
Dakar

European and
North Atlantic
(EUR/NAT) Office
Paris

Middle East
(MID) Office
Cairo

Eastern and
Southern African
(ESAF) Office
Nairobi

Asia and Pacific
(APAC) Office
Bangkok

Thank You

A world map is shown in a light blue color. Eight colored dots are placed on the map, each connected by a thin line to a text label describing an ICAO office. The dots are: a blue dot in North America (Mexico City), a blue dot in South America (Lima), an orange dot in North America (Montreal), a blue dot in West Africa (Dakar), a blue dot in Europe (Paris), a blue dot in the Middle East (Cairo), a blue dot in East Africa (Nairobi), and a blue dot in Southeast Asia (Bangkok). The 'Thank You' text is centered in a white rounded rectangle with a grey gradient background, overlaid on the map.