Fuel & Energy planning
Implementation within an AOC

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Project framework

- **Triggered** by Regulatory Monitoring Experts

- **Impact assessment**
  - Policies
  - Manuals
  - Training
  - Risk assessment
  - Approvals

- Decision: setup an implementation Project

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**Executive Summary**

This sub-Notice of Proposed Amendment (sub-NPA) follows a performance-based approach by updating the regulatory requirements for fuel planning, selection of aerodromes and in-flight fuel management.

Safety is the main driver: safety recommendation FRAN-2012-026 (BEA) is directly addressed by this sub-NPA, but there are also other numerous serious incidents that were considered, including the one that occurred in Valencia, Spain in 2012.

The aim of this NPA is to:

- provide a comprehensive and updated set of safety requirements for developing and overseeing operators’ fuel schemes, by addressing the identified gaps with regard to the in-flight fuel management policy;
- enable European operators to take advantage of the latest technologies and the effectiveness of their management system when developing and managing their fuel schemes, and
- increase operational efficiency, thereby having cost and environmental benefits.

Through this sub-NPA, the European Aviation Safety Agency (EASA) also ensures adherence to the International Civil Aviation Organization (ICAO) after the adoption of Amendment 36 and 38 to ICAO Annex 6, Part I, where ICAO recognised the need for amending and updating the fuel and alternate-aerodrome-selection requirements, many of which have remained unchanged since their adoption in the 1950s.

This sub-NPA is part of a set of three sub-NPAs as follows:

- **Sub-NPA 2016-06 (A):** Aeroplanes — Annex I (Definitions), Part-ARO & Part-CAT
- **Sub-NPA 2016-06 (B):** Helicopters — Annex I (Definitions), Part-CAT, Part-SFA, Part-NCC, Part-NCO & Part-SPO
- **Sub-NPA 2016-06 (C):** Aeroplanes/helicopters — Part-NCC, Part-SPO & Part-NCO
Stakeholder Analysis

- RMT.0573 does not cover a single topic but touches on many disciplines in flight operations (planning, OPS, monitoring/watch)

- Requires coordination for setup and implementation across several departments in the AOC

- Intensive stakeholder management is vital from the very beginning

- Set-up of steering and review board allows for constant adjustment of deliverables
Timeline

- **Implementation in FNP's LIDO/SABRE changes**
- **LAT prestudy**
- **Group training docs.**
- **Wintersleep**
- **GAP Analysis between AOC**
  - Publication including FOSI and OFP Workshops
- **GAP Analysis cont.**
- **EASA publication**
  - AMC's GMs review by Project team
- **EASA publication AWOP**
  - review by Project team
- **OM A Publication process Jul-Oct according AOC timelines**
- **Risk Assessments ORA**
- **EFB Implementation based on FNP's release**
- **LAT User documentation,**
  - **Group training docs.**
- **Set up of implementation team according AOC needs**
- **CAA discussions and ready for publication according AOC requirements**
- **OM A Publication process Jul-Oct according AOC timelines**
- **Training Dispatch and Pilots According AOC timelines**
- **Implementation in FNP's LIDO/SABRE changes**
Development steps

8.1.7.2.4 CONTINGENCY FUEL

Master Doc: Current: Delta:

Fuel required to compensate for unforeseen circumstances that could have an influence on the fuel consumption to the destination aerodrome in deviations from planned operating conditions, planned routings, cruising levels etc.

Contingency Fuel
Fuel to cover unexpected deviations from planned operating conditions (e.g. deviations from forecast meteorological conditions, planned routings, cruising levels; except as provided for in OM-A 8.1.6.2.1 Reduced Contingency Fuel (RCF) Procedure, the contingency fuel is calculated as the higher of (a) or (b) below:

8.1.6 Reserve Fuel

SCF Definition and Decision Tree

If SCF (Statistical Contingency Fuel) is available, the respective scenario (one per combination, one per fuel) shall be the higher of:

- an amount of fuel based on a statistical method that ensures an appropriate statistical coverage of the deviation from the planned to the actual trip fuel; or
- an amount to fly for 5 minutes at holding speed at 1500 ft above the destination aerodrome in standard conditions.

except as provided for in OM-A 8.1.6.2.1 Reduced Contingency Fuel (RCF) Procedure, if no SCF-data is available, contingency fuel shall be the higher of provision (a) or provision (b) below.

Provision (a), lowest of:

Provision (b), lowest of:

Statistical Contingency Fuel (SCF) ADC specific

Note: SCF not applied by ADC XXX.
Way forward

➢ Editing of background information for flight crews/dispatch
➢ Update of flight planning system (Incremental Implementation, Testing)
➢ Approval process with CAAs

Challenges

- Accommodation of training time during demanding ramp up phase
- Overlapping of Implementation of Fuel & Energy planning and AWO
- Implementation without transition period is additional hardship on providers and users
Thank you for your attention.
Basic fuel scheme

Basic fuel schemes with variations

- fuel consumption monitoring system will be required for 3% ERA
- and other contingency fuel variations

Individual fuel scheme

- intended for operators demonstrating certain capabilities
- collect data for a period of at least 2 years of continuous operation
- Individual aeroplane data acquisition and processing procedures resulting in a detailed analysis of each aeroplane’s individual fuel burn (fuel bias)
- The operator should provide a comparative analysis of actual fuel consumption vs. planned fuel consumption.
Implementation of fuel scheme concept

- Fuel planning & In-flight replanning policy
- In-flight fuel management policy
- Selection of aerodromes policy

will require prior approval

Required level of safety

Fuel Scheme

a + b + c =
Pinpointing regulatory challenges: Fuel ERA concept

**Mitigation methods**

1. ADD CFS Fuel to cater for elevate most critical point to FUEL ERA (WX)
   or
2. Insert additional ERA to allow

• ERA (adequate aerodrome) with circles 60’ OEI speed

• ETP’s (CFS): diversion to ERA OEI or decompression + 15’ hold fuel

Distance to FUEL ERA CFS unrestricted
### Impact in Fuel planning policy within AOCs

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxi fuel</td>
<td>- Amount of taxi fuel based on precise planning, taking into account local conditions, including anticipated delays</td>
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<tr>
<td></td>
<td>- Possibility to implement statistical taxi fuel in the future</td>
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<tr>
<td>Trip fuel</td>
<td>- MEL/CDL deviations in trip fuel only</td>
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<tr>
<td>Contingency fuel</td>
<td>- Evaluation of statistical contingency fuel</td>
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<tr>
<td>Destination Alternate fuel</td>
<td>- Standardization/ clarification of routing to destination alternate</td>
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<tr>
<td></td>
<td>- Implementation of No Destination Alternate planning possibility for all AOCs (Consider 15min fuel allowance as alternate fuel instead of additional fuel)</td>
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<tr>
<td>Final Reserve fuel</td>
<td>- Clarification/Implementation of additional fuel in regard to the `most critical point´ concept</td>
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<tr>
<td></td>
<td>- Removal of PDP planning</td>
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<tr>
<td>Additional fuel</td>
<td>- Implementation of commander´s discretionary fuel</td>
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<td>- Clear distinction between extra fuel and commander´s discretionary fuel</td>
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</tbody>
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- **Major change**
- **Minor change**
- **No change**
Diversion time operations concept (TB: Diese slide würde ich streichen)

Requires operational approval

Basic diversion time = Threshold time

Fixed value 60 min

Operators approved diversion time

State approved e.g. 180 min

System limitation

Maximum diversion time

Extended diversion time operations (ETOPS)

Derived from ICAO Annex 6 “EDTO” (adoption by EASA announced)

Correlating different requirements using a systematic approach results in a more transparent flight planning

Basic diversion time

Fixed value 90 min

System limitation

Operations beyond basic diversion time

ICAO recommendation

Two engine aircraft

Fixed value 60 min

Operators approved diversion time

State approved e.g. 180 min

System limitation

Maximum diversion time

Basic diversion time

Operations beyond basic diversion time

ETOPS

Two engine aircraft

Basic diversion time

ETOPS

More than two engine aircraft

Basic diversion time

ETOPS

Lufthansa

SWISS

Austrian

Lufthansa Group