



# FOCA Certification Leaflet (CL)

## Extended Range Operations with Two-Engine Aeroplanes

**ETOPS**

**EMERGENCY AND CONTINGENCY PROCEDURES**  
PIL should advise ATC of the situation, reminding ATC of the type of ACFT and requesting expeditious handling

DEP	IA	IA/EA	PTO	PTO	EA/IA	DEST
≤ 120min	≤ 120min	60min (45min)	→ ≤ 180min (1230NM)	← ≤ 180min (1230NM)	60min (45min)	≤ 120min

PREFLIGHT	INFLIGHT BEFORE PTO	ETOPS	INFLIGHT AFTER PTO
<ul style="list-style-type: none"> <li>EA: - ETA ± 1h: acc. special criteria for ETOPS1/2</li> <li>- TEMPO, PROP30/40 and gusts have to be considered 1h: OI/ETOPS better</li> </ul>	<ul style="list-style-type: none"> <li>EA: - ETA ± 1h: OEI minima or better</li> <li>- TEMPO, PROP30/40 and x-wind-GUSTS have to be considered, otherwise, new plan and new planning necessary</li> <li>- if below minimum</li> </ul>	<ul style="list-style-type: none"> <li>EA: ETA ± 1h: appl. minimum</li> <li>- if below OEI minima: divert or continue, consider: - act. situation at EA / DIST to next SA</li> <li>- WX and FUEL</li> </ul>	<ul style="list-style-type: none"> <li>DA: - ETA ± 1h: all ENG minima or better</li> <li>- IA: - may drop below appl. minimum</li> </ul>
<p>A332 OEI CRZ GW FL</p> <p>WEATHER</p> <p>TAXI ADDE DA CO FR</p> <p>OIL QTY L is fully own power LOG entry</p>	<p>MAINT STS should be evaluated, if any identified, which present a safe AP appropriate action</p>	<p>proceed to EA or SA:</p> <ul style="list-style-type: none"> <li>ENG FAIL</li> <li>SMOKE or FIRE incident</li> <li>HYD SYS LO LVL+2 EDG FAIL α APU GEN FAULT+1 EDG FAIL</li> </ul> <p>ECAM: LAND ASAP FUEL LEAK single GEN ops</p>	<p>TIP [CP]</p> <p>DA FR</p>

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24.05.2012	01	02	Relocation from SBZU to SBOC
01.10.2013	02	00	Page layout changed. Legal basis amended to Commission Regulation.
14.04.2015	02	01	CL 1.2 Certification Process Checklist (4 phases) added

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## List of Abbreviations

The following abbreviations are within this Certification Leaflet:

<b>Abbreviation</b>	<b>Definition</b>	<b>Abbreviation</b>	<b>Definition</b>
AFM	Aircraft Flight Manual	OFFP	Operational Flight Plan
AOC	Air Operators Certificate	OPS SPECS	Operations Specifications
APU	Auxiliary Power Unit	RFFS	Rescue and Fire Fighting Services
ATC	Air Traffic Control	SFE	Synthetic Flight Examiner
ATL	Aircraft Technical Log	SFI	Synthetic Flight Instructor
CAME	Continuing Airworthiness Management Exposition	SOP	Standard Operating Procedures
CAT II/III	Precision Approach Category II / III	TC	Training Captain
CBT	Computer Based Training	Tech-Log	Technical Log System
CDL	Configuration Deviation List	TRE	Type Rating Examiner
CL	Certification Leaflet	TRI	Type Rating Instructor
EASA	European Aviation Safety Agency	VHF	Very High Frequency
EC	European Community		
ETA	Estimated Time of Arrival		
ETOPS	Extended Range Operations with Two-Engine Aeroplanes		
ETP	Equal Time Point		
EUR	Europe		
FMS	Flight Management System		
FOCA	Federal Office of Civil Aviation		
FSTD	Flight Simulation Training Device		
GI	Ground Instructor		
GNSS	Global Navigation Satellite System		
ICAO	International Civil Aviation Organization		
KIAS	Knots Indicated Air Speed		
KTAS	Knots True Air Speed		
LIFUS	Line Flying under Supervision		
MEL	Minimum Equipment List		
MMEL	Master Minimum Equipment List		
OEI	One Engine Inoperative		



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## **CL 0 Introduction**

All Certification Leaflets (CL) are intended to assist the organisation/operator in the implementation of relevant matters into the activities and the document system of the organisation/operator, as well as to ensure compliance with legal requirements. It is to be considered a tool for the organisation/operator in order to ease processes of obtaining required and defined acceptances, approvals and authorisations issued by the Federal Office of Civil Aviation (FOCA). Using the CL will facilitate establishing compliance with defined requirements and will lead through the respective certification or variation process. This is achieved by the presentation of key questions to be used by the organisation/operator to question completeness and compliance of the information contained in the respective document system by performing a self-assessment prior to submitting the documentation to FOCA.

It is important to understand that FOCA will use the identical CL when evaluating regulatory compliance to a specific requirement. The CL is also used as a checklist when performing the authorities' technical finding during the certification or variation process. The questions used by the organisation/operator during the self-assessment are identical to those used by the responsible inspector during the evaluation process.

### **0.1. Purpose of this CL**

Operators acquiring the operations specification ETOPS must be in compliance with the requirements concerning airworthiness, operational procedures and training of all involved personnel. The process of approval includes the adoption of all parts of the operations manual system in the respective chapters as well as the amendment of affected maintenance documentation, procedures and tasks.

This CL was developed in accordance with the legal requirements, intending to provide guidance for operators when applying for an extension of their Operations Specifications within the AOC by adopting their operations manuals and maintenance documents in order to get an operational approval for ETOPS operations. This CL covers airworthiness aspects, operational requirements and flight crew training subjects.

### **0.2. Scope**

The presented guidance material covers all aspects of ETOPS operations requirements and shall assist the applicant to be compliant with these requirements.

### 0.3. Terms and Conditions

When used throughout the Certification Leaflet the following terms shall have the meaning as defined below:

<b>Term</b>	<b>Meaning</b>	<b>Reference</b>
<i>shall, must, will</i>	These terms express an obligation, a positive command.	EC English Style Guide: Ch. 7.19
<i>may</i>	This term expresses a positive permission.	EC English Style Guide: Ch. 7.21
<i>shall not, will not</i>	These terms express an obligation, a negative command.	EC English Style Guide: Ch. 7.20
<i>may not, must not</i>	These terms express a prohibition.	EC English Style Guide: Ch. 7.20
<i>need not</i>	This term expresses a negative permission.	EC English Style Guide: Ch. 7.22
<i>should</i>	This term expresses an obligation when an acceptable means of compliance should be applied.	EASA Acceptable Means of Compliance publications FOCA policies and requirements
<i>could</i>	This term expresses a possibility.	<a href="http://oxforddictionaries.com/definition/english/could">http://oxforddictionaries.com/definition/english/could</a>
<i>ideally</i>	This term expresses a best possible means of compliance and/or best experienced industry practice.	FOCA recommendation

To highlight an information or editorial note, a specific note box is used.

- The use of the male gender should be understood to include male and female persons.

#### 0.4. Legal and Reference

This CL is based on the legal references listed below:

Legal Reference	Issue	Subject
Basic Regulation (EC) No 216/2008	20.02.2008	Common rules in the field of civil aviation and establishing an European Aviation Safety Agency
Commission Regulation (EU) No 965/2012	05.10.2012	Technical requirements and administrative procedures related to air operations Annex I: DEF; Annex II: Part-ARO; Annex III: Part-ORO; Annex IV: Part-CAT; Annex V: Part-SPA
Commission Regulation (EU) No 1178/2011	03.11.2011	Technical requirements and administrative procedures related to civil aviation aircrew Annex I: Part-FCL; Annex II: Conversion of existing national licences and ratings; Annex III: Acceptance of Licences of third countries; Annex IV: Part-MED
Commission Regulation (EU) No 290/2012 (amending regulation 1178/2011)	30.03.2012	Technical requirements and administrative procedures related to civil aviation aircrew Annex V: Part-CC; Annex VI: Part-ARA; Annex VII: Part-ORA
Directive 2003/42/EC	13.06.2003	Occurrence reporting in civil aviation
Regulation (EU) No 996/2010	20.10.2010	Investigation and prevention of accidents and incidents in civil aviation
ICAO Annex 6 PART 1	01.07.2010	Operation of aircraft
ICAO Doc 7030	01.01.2008	Regional Supplementary Procedures

#### 0.5. Organisation/Operator Responsibilities

The operator has to ensure that all parts of the operations manual system are revised in a manner as to be compliant with the requirements relevant for ETOPS operations. All airworthiness requirements must be fulfilled.

The following subjects must be covered:

- **Evidence of the certification status** of the affected aircraft has to be provided to FOCA (AFM / Supplement).
- **Standard Operating Procedures (OM-B)** as well as the **Training Programmes (OM-D)** must be defined and implemented in the OM-System.
- **Regional specific operational procedures** and information must be implemented (OM-C).
- **Occurrence Reporting Procedures** have to be established and described accordingly (OM-A).

## 0.6. Format of the CL

The CL consists of a standardised modular reference box system. The following presentation provides details of the defined format:

①	<b>3.2. Minimum Equipment List (MEL)</b> <small>TOPIC</small>	<small>M/CC</small> <small>EVALUATION METHOD</small>	②
③	<small>RVSM</small> <small>CL TOPIC</small>  <small>3-B9-075</small> <small>CL Ch.-OM Ch.-Seq.-No.</small>	<small>ORO.MLR.105</small> <small>CAT.IDE.A.105</small> <small>LEGAL REFERENCE</small>	④
⑤		<small>OM B, Chapter 9, Minimum Equipment List (MEL)</small> <small>MANUAL REFERENCE</small>	⑤
⑥	<b>APP:</b> The MEL and any amendment thereto requires prior approval <small>IF APPLICABLE, BRIEF DESCRIPTION OF ELEMENT REQUIRING PRIOR APPROVAL</small>		
⑦	<input checked="" type="checkbox"/> Is the MEL amended in order to cover all system components that are relevant for the RVSM capability of the aeroplane? <small>QUESTION FOR COMPLIANCE VERIFICATION AND SELF ASSESSMENT</small>		
⑧	The MEL shall be amended in order to comply with the requirement for RVSM operations in respect to system capability and redundancy.		

①	Topic: subject description
②	FOCA evaluation method
③	FOCA / Topic Reference Number which may be used as identification in addition to interlink between this leaflet and the Document Evaluation Report (Finding Report). The Number consists of a combination of: <ul style="list-style-type: none"> <li>- a subject code related to the specific topic/ theme; and</li> <li>- sequence number in the respective chapter of the CL.</li> </ul> The above example 3-B9-075 indicates: ETOPS = CL regarding ETOPS Specific Approval, 3 = CL section; B9 = OM chapter under evaluation (here OM-B, Chapter 9.), followed by 075 = sequence number.
④	Associated legal reference and/ or reference to other relevant publications including information on formal Acceptance (ACC) or Approval (APP) where applicable.
⑤	Reference to the Part(s), Chapter(s) and/or Subchapters of the organisation's document systems or manual system as required by the applicable Part.
⑥	If the legal provision requires a formal approval, a short description of the content of this approval is provided.
⑦	Questions for self-assessment and compliance verification.
⑧	Provides instructions, provisions, regulatory requirements, guidelines, acceptable means of compliance and examples of current best practice.

## CL 1 Formal Application

1.1. Operational Documents		M/CC			
TOPIC		EVALUATION METHOD			
ETOPS CL TOPIC	ORO.MLR.100 LEGAL REFERENCE	ORO.MLR.101	SPA.ETOPS.105	ARO.GEN.310	ARO.GEN.330
1-G-005 CL Ch.-OM Ch.-Seq.-No.	Operations Manual System MANUAL REFERENCE				

IF APPLICABLE, BRIEF DESCRIPTION OF ELEMENT REQUIRING PRIOR APPROVAL

Has the application form 44.20 been submitted to FOCA together with all relevant documents?

QUESTION FOR COMPLIANCE VERIFICATION AND SELF ASSESSMENT

- The following relevant documents may form part of the formal application:
  - Revision of the relevant parts of the operations manual system including checklists and Minimum Equipment List (MEL).
  - Description of the relevant operating history of the operator together with the experience-level of flight crew members concerning ETOPS operations.
  - Plan for participation in Verification/Monitoring programmes.
- The revised parts of the operations manual system containing instruction and information on ETOPS operations, as a complete package, shall be submitted to: FOCA, Section Operations of Complex Airplanes, 3003 Berne.

<b>1.2. Certification Process ETOPS</b>		M/CC	
TOPIC		EVALUATION METHOD	
ETOPS CL TOPIC	SPA.ETOPS.105 LEGAL REFERENCE	ARO.GEN.310	ARO.GEN.330
1-G-010 Ch.-OM Ch.-Seq.-No.	<b>Operator Certification / Variation of an AOC</b> MANUAL REFERENCE		

**APP: ETOPS approval**

IF APPLICABLE, BRIEF DESCRIPTION OF ELEMENT REQUIRING PRIOR APPROVAL

Does the AOC-Holder state which ETOPS approval category he is applying for?

QUESTION FOR COMPLIANCE VERIFICATION AND SELF ASSESSMENT

Certification process depends on the Operators certification status, the corresponding airframe / engine combination involved and the operator`s particular experience to conduct Extended Range operations.

There are 4 approval categories:

- Approval for 90 minutes or less diversion time
- Approval for diversion time above 90 minutes up to 180 minutes
- Approval for diversion time above 180 minutes
- Approval for diversion times above 180 minutes of operators of two-engine aeroplanes with a maximum passenger seating configuration of 19 or less and a maximum take-off mass less than 45 360 kg

An operator seeking ETOPS approval in one of the above categories should comply with the requirements common to all categories and the specific requirements of the particular category for which approval is sought.

Common criteria, applicable for all categories listed above, are the following:

Continuing Airworthiness: considerations of AMC 20-6 Appendix 8

Equipment to be operational and carried MEL

Weather minima

Fuel considerations

Flight planning requirements

Crew training requirements

En-route alternate aerodromes

Communications equipment

**For specific requirements consult chapter III section 7.2.1 to 7.2.4 of AMC 20-6. Rev 2**

Basically there are 4 Phases to an ETOPS Certificate:

## **Checklist for ETOPS Approval**

### **1 Application Phase** (6 month before intended start of operation)

Application letter describing the intended OPS-SPECS with a detailed **approval plan** describing the following:

- Proposed routes, maximum diversion time, OEI-cruise speed
- Operations Manual Revision proposals
- Training-Programs for ETOPS
- Planning and Dispatch-Tools for ETOPS
- Resources allocated to each ETOPS Process to initiate and sustain ETOPS operation
- Management commitment for ETOPS continuing airworthiness and operational support
- Tracking-plan for orderly tracking and documentation of specific provisions including review gates during a one year period : (6 Month before Start until +6 month after start of operation)

Establish ETOPS process(es) that include the following elements:

- Airframe/Engine combination and engine is in compliance with ETOPS Type Design Build Standard (CMP)
- Compliance with continuing airworthiness requirements (App.8)
- Operations Manual amendment and revision
- Initial- and Recurrent Training-Programs (all personnel involved)
- Planning and Dispatch-Tools appropriate to ETOPS
- Aircraft - MEL appropriate for ETOPS
- Personnel shall be familiar with defined ETOPS-routes and ETOPS-enroute alternate aerodromes

Establish a Documentation describing the following elements:

- Technology new to the operator and significant differences in ETOPS significant systems aircraft systems
- A plan how to train the flight crew and continuing airworthiness personnel to the different ETOPS process elements
- A plan for the use of manufacturer validated training-, maintenance and Operations Manual procedures
- Any changes to proven procedures described above
- Details of any ETOPS support-program
- Control procedures for subcontracted service-providers

### **2 Validation Processes**

The operator shall provide the following:

- A description of the process (flow-chart).
- A definition of the roles and responsibilities of the personnel managing the process.
- The training requirements defined for all personnel involved.
- The Implementation of a feedback-loop for the surveillance of the process, based on in-service experience.
- A validation program addressing the following:
  - Safe execution of the program.
  - Policies and guidance on the procedures and exercises allowed during actual operations.
  - Maintenance- and operational support systems.
  - Monitoring and reporting of performance with respect to accomplishment of tasks associated with ETOPS process elements.



The operator shall document the following:

- How each element of the ETOPS process was utilized.
- Any shortcomings with the process elements and measures in place.
- Any changes to the ETOPS processes, which were required during the validation phase.
- Process validation reports (periodically)

The operator's validation program information shall contain:

- Start- , duration, and proposed completion dates
- Aeroplane(s) to be used in the validation program (Registration, serial number, model airframe and engines)
- Areas of operation proposed for validation and actual operations
- ETOPS validation routes ensuring necessary process validation occurs
- How process validation reporting is provided

### **3 Validation of ETOPS Continuing Airworthiness and Operations Capability**

- Demonstrate competence to safely conduct and adequately support ETOPS operations.
- Demonstrate that ETOPS continuous airworthiness processes are properly conducted.
- ETOPS dispatch and release practices, policies and procedures are established for operations.
- Validation-flight to demonstrate dispatch and normal in-flight procedures.

### **4 Issue of ETOPS Certification Approval**

Modification of operations manuals to include ETOPS Approval

## CL 2 Operational Approval

2.1. Operations Specification ETOPS TOPIC					M/CC EVALUATION METHOD
ETOPS CL TOPIC 2-A0-005 Ch.-OM Ch.-Seq.-No.	ORO.MLR.100	ORO.MLR.101	SPA.GEN.100	SPA.GEN.105	SPA.ETOPS.105
	SPA.GEN.110	SPA.GEN.115	SPA.GEN.120	SPA.ETOPS.100	
	LEGAL REFERENCE OM – A, Chapter 0, Administration and Control of the Operations Manual, 0.1 Introduction MANUAL REFERENCE				

IF APPLICABLE, BRIEF DESCRIPTION OF ELEMENT REQUIRING PRIOR APPROVAL

- Is the Operations Specification ETOPS mentioned in the introduction paragraph of the Operations Manual Part-A?
- Is the area of operation defined, where ETOPS-Operations will be conducted?
- Are Specific Routes defined for ETOPS-Operations?

QUESTION FOR COMPLIANCE VERIFICATION AND SELF ASSESSMENT

The Operations Specification “**ETOPS**” must be listed together with all other operations specifications of the operator concerned.

- The area of operation for the conduct of ETOPS-Operations shall be defined.
- Specific routes, where ETOPS-Operation will be conducted, shall be mentioned together the Operations Specification “ETOPS” for an overview and/or shall be referenced into the respective part of the OM-C.

<b>2.2. Maximum distance from an adequate aerodrome</b>		M/CC	
TOPIC		EVALUATION METHOD	
ETOPS CL TOPIC	SPA.ETOPS.100    SPA.ETOPS.105    ORO.MLR.100    ORO.MLR.101		
2-A0-010 Ch.-OM Ch.-Seq.-No.	OM – A, Chapter 0, Administration and Control of the Operations Manual , 0.1, Introduction		
	LEGAL REFERENCE		
	MANUAL REFERENCE		

IF APPLICABLE, BRIEF DESCRIPTION OF ELEMENT REQUIRING PRIOR APPROVAL

- Is the applicable maximum distance from an adequate aerodrome for ETOPS-Operations declared?
- Is the approved maximum diversion time stated?
- Is the one-engine-inoperative-cruise-speed defined?

QUESTION FOR COMPLIANCE VERIFICATION AND SELF ASSESSMENT

The following statements shall be provided regarding ETOPS-Operations:

- The maximum distance from an adequate aerodrome applicable for (Operator) is ..... NM.
- The maximum diversion time applicable for ETOPS-Operation is ..... Minutes.
- The calculation is based on the OEI-Cruise Speed of ..... KTAS.

The one-engine-inoperative-cruise speed shall be defined by the operator considering certificated performance limitations of the aeroplane, drift-down altitude and obstacle clearance. Established procedures shall ensure that extended range operation is limited to flight plan routes or those areas within the operator’s area of operation, where the approved maximum diversion time to suitable aerodromes can be met under standard conditions in still air.

Note 1): A reference weight and reference flight level shall be defined and published together with the OEI-Cruise Speed.

Note 2): A summary of the relevant Performance Data used for the calculation process shall be delivered to the FOCA as a separate package or by clearly defined references into manufacturer provided manuals and documents!

Information shall be available indicating the maximum diversion time(s)/distance(s) allocated to the make model(s), as well as to serial number(s) and registration mark(s). This information (list) may be part of the list of aircrafts for which extended range operation within the operator’s fleet is applicable.

The approved maximum diversion time must be declared on the computerised flight plan.

## CL 3 Planning of ETOPS

3.1. Dispatch Criteria TOPIC	M/CC EVALUATION METHOD				
ETOPS CL TOPIC  3-A8.1-005 Ch.-OM Ch.-Seq.-No.	CAT.OP.MPA.135	CAT.OP.MPA.175	SPA.ETOPS.105	SPA.ETOPS.110	SPA.ETOPS.115
	ORO.MLR.100 LEGAL REFERENCE	ORO.MLR.101			
	OM – A, Section 8.1, Flight Preparation Instruction MANUAL REFERENCE				

IF APPLICABLE, BRIEF DESCRIPTION OF ELEMENT REQUIRING PRIOR APPROVAL

- Are there processes defined for the planning and dispatch of ETOPS-operations?
- Are the evaluation criteria for adequate en-route alternate aerodromes defined?
- Are the conditions named that have to be met by an adequate aerodrome in order to become a suitable en-route alternate aerodrome for ETOPS-Operation?

QUESTION FOR COMPLIANCE VERIFICATION AND SELF ASSESSMENT

Defined processes shall indicate who is doing what task, how and with which tools and when extended range operations shall be prepared, released and monitored.

These respective procedures shall define the required tasks and responsibilities, means of communication between involved personnel, as well as the working-methods and applicable checklists. Aeroplane Technical Status as well as Validity of Flight Crew Qualifications must be considered and included in the checklist.

Conditions that must be considered for the evaluation of adequate en-route alternate aerodromes shall be mentioned, as a minimum:

- Landing Distances available as declared by the aerodrome authorities, landing distance required specified for the elevation of the aerodrome, the runway expected to be used, expected wind conditions, runway surface conditions and handling characteristics of the aeroplane, to permit the aeroplane to be stopped within the landing distance available.
- Aerodrome Services (Rescue and Fire Fighting Services (RFFS)) and operational Facilities (according NOTAM) to permit an instrument approach procedure to the runway expected to be used while complying with the applicable aerodrome operating minima.

Conditions that must be considered for the evaluation of suitable alternate aerodromes out of the list of adequate aerodromes shall be mentioned, as a minimum:

- Weather forecast conditions for a period commencing at the earliest potential time of landing and ending one hour after the latest nominated time of use of the aerodrome must be equal or better than the authorized weather minima for en-route alternate aerodromes.
- Crosswind components plus any gusts shall be within operating limits and within the operators maximum crosswind limitations taking into account the runway condition (dry, wet, contaminated) plus any reduced visibility limits.

There must be a clear statement expressing that: Adequate alternate aerodromes for a particular route must additionally fulfil the condition for a “suitable” aerodrome, which is the pre-requisite for a valid en-route-alternate aerodrome for the purpose of flight-planning and dispatch of Extended Range Operations.

An aeroplane whether dispatched as an ETOPS flight or not, may not be re-routed post dispatch without meeting the applicable operational requirements, unless the operator has a system in place to facilitate such re-routings.

If the dispatch of a flight is delayed by more than one hour after the crew has left the briefing facility, operations personnel shall monitor weather forecasts and airport status at the nominated en-route alternate aerodromes to ensure that they stay within the specified planning minima until dispatch.

Otherwise, a complete re-planning shall take place before dispatch of the flight.

<b>3.2.</b>	<b>Weather Minima</b>	<b>M/CC</b>
	<small>TOPIC</small>	<small>EVALUATION METHOD</small>
ETOPS <small>CL TOPIC</small>  3-A8.1-010 <small>Ch.-OM Ch.-Seq.-No.</small>	SPA.ETOPS.115    ORO.MLR.100    ORO.MLR 101 <small>LEGAL REFERENCE</small>	
	OM – A, Section 8.1 Flight Preparation Instruction, or , Section 8.5, ETOPS <small>MANUAL REFERENCE</small>	

IF APPLICABLE, BRIEF DESCRIPTION OF ELEMENT REQUIRING PRIOR APPROVAL

Are Planning Minima and Operating Minima defined?

QUESTION FOR COMPLIANCE VERIFICATION AND SELF ASSESSMENT

**Dispatch Minima:**

It shall be mentioned that en-route weather information and forecasts along the intended route must be evaluated carefully in order to determine suitable en-route-Alternate Aerodromes applicable for the planning of ETOPS-Operations.

Applicable ETOPS-Planning Minima for en-route aerodromes shall be published as follows:

<b>Approach Type</b>	<b>Ceiling required</b>	<b>Visibility required</b>
Precision Approach	DA/H + 200 ft	RVR/VIS + 800m
Non-Precision Approach	MDA/H + 400 ft	RVR/VIS + 1500m
Circling Approach	MDA/H+ 400 ft	RVR/VIS + 1500m

The following statements shall be provided under this subject:

- The criteria for precision approaches are applicable for CAT I approaches.
- Forecast wind plus any gusts must be considered and shall be within operating limits, and within the operators maximum crosswind limitations taking into account the runway condition (dry, wet, contaminated) plus any reduced visibility limits.
- Conditional forecast elements need not to be considered, except that a PROB 40 or TEMPO condition below the applicable operating minima shall be taken into account.
- When dispatching under the provision of the MEL, those MEL limitations affecting instrument approach minima shall be considered in determining ETOPS en-route alternate minima.
- The criteria listed above shall be met at the planning stage of a flight, meaning, until the aircraft dispatches from the origin aerodrome.

The use of aerodromes with facilities providing CATII / CATIII operations must be approved by the competent authority (FOCA).

Approval will be based on the following criteria:

1. Aircraft is certified to execute CATII / CATIII operations under OEI-conditions
  2. Operator is approved for regular CATII / CATIII operations (OPS-Specs)
- It shall be shown to the FOCA that specific aeroplane type can maintain the capability to safely conduct and complete the CATII/III approach and landing, having encountered failure conditions in the airframe and/or propulsion system associated with an inoperative engine that would result in the need for a diversion to the en-route alternate aerodrome (AFM).
  - Systems to support OEI-CATII/III capability shall be serviceable at the planning stage of the flight, if desired by the operator to take advantage of CATII/III landing minima.

Operating Minima shall be provided as follows:

After the aeroplane has dispatched from the origin aerodrome, the weather conditions at the en-route alternate must be an equal to or better than the normal landing minima applicable for the available instrument approach procedure.

<b>3.3. Crew Composition</b>		M/CC
TOPIC		EVALUATION METHOD
ETOPS CL TOPIC  3-A4-015  Ch.-OM Ch.-Seq.-No.	ORO.MLR.100    ORO.MLR.101    ORO.FC.105    CAT.OP.MPA.135 <small>LEGAL REFERENCE</small>	
	OM – A, Chapter 4, Crew Composition <small>MANUAL REFERENCE</small>	

IF APPLICABLE, BRIEF DESCRIPTION OF ELEMENT REQUIRING PRIOR APPROVAL

Is the composition of flight crew members for ETOPS Operations mentioned in Manual Part A?

QUESTION FOR COMPLIANCE VERIFICATION AND SELF ASSESSMENT

The following statement shall be made for ETOPS-Operations:

- For Crew composition it must be emphasised that all Flight crew members are qualified for ETOPS-Operations, as outlined in the “Route Competence”.

3.4. <b>Route Competence ETOPS</b> TOPIC	<b>M/CC</b> EVALUATION METHOD			
ETOPS CL TOPIC 2-A5.2-020 Ch.-OM Ch.-Seq.-No.	ORO.MLR.100 LEGAL REFERENCE	ORO.MLR.101	ORO.FC.105	CAT.OP.MPA.135
	OM – A, Chapter 5, Qualification requirements 5.2 Description of required qualification/competence for flight crew members MANUAL REFERENCE			

IF APPLICABLE, BRIEF DESCRIPTION OF ELEMENT REQUIRING PRIOR APPROVAL

Is the Route Competence for ETOPS declared?

QUESTION FOR COMPLIANCE VERIFICATION AND SELF ASSESSMENT

- For flight crew members, the qualification “Route-Competence to operate under ETOPS” must be declared in OM-A, Chapter 5.

## CL 4 Operating Procedures

4.1. General Description		M/CC	
TOPIC		EVALUATION METHOD	
ETOPS CL TOPIC	SPA.ETOPS.105 LEGAL REFERENCE	ORO.MLR.100	ORO.MLR.101
4-A8.5-005 Ch.-OM Ch.-Seq.-No.	OM – A, Chapter 8.5, ETOPS MANUAL REFERENCE		

IF APPLICABLE, BRIEF DESCRIPTION OF ELEMENT REQUIRING PRIOR APPROVAL

- Is a comprehensive description regarding the Basic Concept for ETOPS-Operations provided?
- Is the relation between Maximum distance from an adequate aerodrome, OEI-Cruise Speed and maximum diversion time explained?
- Is a detailed description concerning the fuel planning provided, including Critical Fuel Scenario?
- Is the method for the determination of the amount of critical fuel reserves (Additional Fuel) required to cover ETOPS requirements described?

QUESTION FOR COMPLIANCE VERIFICATION AND SELF ASSESSMENT

A description of the **Basic-Concept** for ETOPS-Operations shall cover the following subjects:

- Regulations and definitions
- Approved Maximum distance from an adequate aerodrome, OEI-Cruise Speed, Operator`s approved diversion time.
- Critical Fuel Reserve: Calculation principles
- ETOPS-Area and -Routes, -en-route alternate aerodromes including facilities
- Computerized flight plan: explanation on content and respective interpretation
- Equal time point: calculation and respective operational considerations
- In-Flight monitoring Procedures: - Prior to entry-, as well as -within an ETOPS-Sector-
- Use of orientation charts including low level planning charts and flight progress charts (position plotting chart).

The Critical Fuel Reserve (Additional Fuel) shall be described and calculated considering the following aspects:

- Fly to the most critical point en-route under normal conditions and execute a diversion to a suitable en-route alternate aerodrome under the conditions outlined in the critical fuel scenario.
- Compare the determined amount of fuel to be on board at the critical point with the amount of fuel at the most critical point en-route calculated under normal applicable fuel calculation requirements.
- If the amount of fuel on board at the critical point en-route to cover the critical fuel scenario exceeds the amount of fuel on board at the most critical point calculated under normal fuel calculation requirements, then **Additional Fuel** shall be loaded to the extent necessary to safely complete the critical fuel scenario.

The Critical Fuel Scenario shall be described in detail, covering all applicable aspects during extended range operations.



The aeroplane is required to carry sufficient fuel to fly to the most critical point en-route, then executing a diversion to an en-route alternate aerodrome, considering forecasted winds and weather conditions.

Therefore, the highest amount of fuel required resulting out of the following scenarios (1)(2)(3), plus fuel to cover all the provisions listed below the scenarios, must be on board the aeroplane at the most critical point:

**Scenario:**

1. A rapid decompression at the most critical point followed by descent to 10000 ft or a higher altitude if sufficient oxygen is provided in accordance with the applicable operational requirements.

or

2. Flight at the approved OEI-Cruise Speed assuming a rapid decompression and a simultaneous engine failure at the most critical point followed by a descent to 10000 ft or a higher altitude if sufficient oxygen is provided in accordance with the applicable operational requirements.

or

3. Flight at the approved OEI-Cruise Speed assuming an engine failure at the most critical point followed by a descent to the OEI-cruise altitude.

and

- Upon arrival at the En-route Alternate Aerodrome, descend to 1500ft above the aerodrome to fly holding patterns for 15 minutes.
- Conduct of an instrument approach procedure and a landing

and

- 5% of the diversion fuel for wind forecast errors
- Increased fuel consumption for the use of the ice-protection system (engine anti-ice, wing anti-ice) during the entire time during which icing is forecasted.
- Increased fuel consumption for the accumulation of ice on unprotected surfaces (airframe), during 10% of the time where icing is forecasted.
- Any impact on fuel consumption when operating under provisions of the Configuration Deviation List (CDL).
- Any impact on fuel consumption when the Ram Air Turbine / Air driven Generator is extended during flight on the diversion leg.
- If APU is a required electrical power source, the fuel consumption of the APU shall be considered.

**Monitoring Programme:**

The operator has to establish a programme to monitor the aeroplane`s in-flight deterioration in cruise fuel-burn performance.

Sufficient fuel to compensate for any such deterioration shall be carried additionally.

If there are no data available from such a programme, the fuel calculation process shall consider an increase of 5% to account for deterioration in cruise fuel-burn performance of the respective airframe-engine combination or specific aircraft (tail-number).

4.2. Procedures TOPIC	M/CC EVALUATION METHOD			
ETOPS CL TOPIC	SPA.ETOPS.105 LEGAL REFERENCE	ORA.GEN.110	ORO.MLR.100	ORO.MLR.101
4-A8.3-010 Ch.-OM Ch.-Seq.-No.	OM – A, Section 8.3, Flight Procedures MANUAL REFERENCE			

IF APPLICABLE, BRIEF DESCRIPTION OF ELEMENT REQUIRING PRIOR APPROVAL

- Are the flight procedures regarding ETOPS-Operation briefly described?
- Are provisions described that have to be taken by the flight crew before a flight enters an ETOPS-Segment on the route?

QUESTION FOR COMPLIANCE VERIFICATION AND SELF ASSESSMENT

In-Flight Procedures to be conducted by the flight crew shall be described in detail, including all data-recording tasks, covering the following:

- Flight management, Navigation and Communication procedures
- Aeroplane system monitoring procedures
- Weather monitoring policy and procedures
- Use of Flight-progress chart (Plotting Chart)
- Update of the computerized operational flight plan (Fuel Scenario, Diversion Airport Analysis)
- Fuel management tasks including independent cross checking of fuel quantity available, fuel burn and actual fuel flow.

Flight Management and Navigation-data checking and verification philosophy to be observed by the flight crew shall be described to include, at least:

- The verification of en-route waypoints and respective coordinates
- FMS Flight plan verification policy
- Navigation back-up provisions.

Checking and verification procedures to be conducted by the flight crew before commencing an ETOPS-Sector shall include, at least:

- Weather at the en-route alternate aerodrome meets the applicable approach-minima
- Fuel on board to be sufficient to cover the provisions for the most critical fuel scenario
- Aeroplane technical and operational status.

Considerations for the in-flight monitoring shall be listed and explained, covering at least the following:

- Monitoring of all parameters of the Propulsion Systems including fuel flow and performance related behaviour
- Monitoring and evaluation of the weather situation at en-route alternate aerodromes from ETA minus 1 hour until ETA plus 1 hour.
- Verification and tracking of the actual aircraft position, time, altitude and mach-number (Plotting Chart).
- Fuel Monitoring- and Fuel Management procedures including independent checking of fuel quantity and respective recording tasks

4.3. Limitations TOPIC	M/CC EVALUATION METHOD		
ETOPS CL TOPIC	SPA.ETOPS.105 LEGAL REFERENCE	ORO.MLR.100	ORO.MLR.101
4-B1-015 Ch.-OM Ch.-Seq.-No.	OM – B, Section 1, Limitations MANUAL REFERENCE		

IF APPLICABLE, BRIEF DESCRIPTION OF ELEMENT REQUIRING PRIOR APPROVAL

- Is the Operation Specification “ETOPS “ listed as a type of operation?
- Are the limiting parameters listed as below?

QUESTION FOR COMPLIANCE VERIFICATION AND SELF ASSESSMENT

The following shall be stated, as a minimum:

- The Operation Specification “ **ETOPS** “ must be listed together with all other operations specifications applicable for the aeroplane (-group) concerned.
- The Maximum Distance from an adequate aerodrome for ETOPS-Operations must be provided in the chapter limitations. Ideally, this limitation shall be provided as a figure in Nautical Miles, not as a reference only.
- The One-Engine-Inoperative cruise speed for ETOPS-Operations must be provided in the chapter limitations. Ideally this limitation shall be provided as a figure in KIAS or Mach, not as a reference only.

4.4. Flight Preparation						M/CC
TOPIC						EVALUATION METHOD
ETOPS CL TOPIC 4-A8.1-020 Ch.-OM Ch.-Seq.-No.	SPA.ETOPS.105	ORO.GEN.110	CAT.OP.MPA.135	CAT.IDE.A.285	CAT.IDE.A.305	
	ORO.MLR.100 LEGAL REFERENCE	ORO.MLR.101				
	OM – A, Section 8.1 Flight Preparation Instruction, or , Section 8.5, ETOPS					
	MANUAL REFERENCE					

IF APPLICABLE, BRIEF DESCRIPTION OF ELEMENT REQUIRING PRIOR APPROVAL

- Does the Operator consider operational criteria related to ETOPS-Operations during his flight preparation procedure?
- Are there instructions available for the preparation of extended range operations?
- Is there an explanation available concerning the use and application of the MEL with respect to ETOPS-operations?
- Is there a procedure established including an adequate description or checklist, stating the required equipment for ETOPS-Operations and what has to be checked operational before commencing a flight containing an ETOPS-Sector ?

QUESTION FOR COMPLIANCE VERIFICATION AND SELF ASSESSMENT

Instruction to flight crews on ETOPS-pre-flight procedures must be provided to review and verify the following subjects, as a minimum:

- Aircraft technical status reflected in the Tech-log, to consult the aeroplanes Hold Item List (HIL), to verify the aeroplane dispatch status using the Minimum Equipment List (MEL) concerning ETOPS-operation.
- Applicable Maximum Distance from an adequate aerodrome (Distance and Time)
- En-route weather information and forecasts along the intended route must be evaluated carefully in order to determine adequate and suitable En-Route-Alternate Aerodromes applicable for the planning of ETOPS-Operation sectors. ETOPS-Planning Minima have to be applied.
- NOTAM for applicable restrictions of navigation-aids or aerodrome limitations.
- ADDITIONAL FUEL (Critical Fuel Reserve) covering the most critical fuel scenario on the planned route.

Communication system:

It must be mentioned clearly that the following communication-equipment must be checked to be fully operational prior commencing a flight containing an ETOPS-Sector:

- VHF / HF-Communication
- SATCOM
- Data Link System (if installed).

Survival-Equipment:

It must be mentioned clearly that the following equipment, in accordance with the Minimum Equipment List (MEL), must be checked “**operational**” prior commencement of a flight containing an ETOPS-Sector:

- Life-Rafts

- Emergency Locator Transmitters (ELT).

#### Minimum Equipment List:

- System redundancy levels appropriate to Extended Range Operations shall be reflected in the Minimum Equipment List (MEL) and Configuration Deviation List (CDL) of each aeroplane type concerned.

4.5. Normal Operating Procedures	M/CC
TOPIC	EVALUATION METHOD
ETOPS CL TOPIC	ORO.MLR.101    ORO.GEN.110    ORO.MLR.100    ORO.MLR.101
4-B2-025 Ch.-OM Ch.-Seq.-No.	OM – B, Section 2, Normal Procedures
	LEGAL REFERENCE
	MANUAL REFERENCE

IF APPLICABLE, BRIEF DESCRIPTION OF ELEMENT REQUIRING PRIOR APPROVAL

- Is the aircraft pre-flight procedure adopted for operational equipment required for ETOPS-Operations?
- Are the in-flight procedures adopted for ETOPS-Operations?
- Are the fuel management tasks defined?

QUESTION FOR COMPLIANCE VERIFICATION AND SELF ASSESSMENT

#### Aircraft Type specific Pre-Flight Procedures

The procedures shall be described, covering the following, as a minimum:

- Identification of ETOPS-Airplanes within the fleet of the operator
- The equipment relevant for ETOPS-Operations must be checked operational
- The Tech-log-System shall be reviewed concerning the operational status and ETOPS-capability of the aeroplane.
- Provisions according MEL /CDL shall be taken into account
- Aeroplane fuel system operation capability
- Aeroplane communication system functionality
- FMS-set-up.

#### Aircraft Type specific In-Flight Procedures

Flight Management and Navigation-data checking and verification procedures to be conducted by the flight crew in a coordinated manner shall be described in detail to include, at least:

- Procedure for the verification of en-route waypoint coordinates
- FMS Flight plan verification- and modification procedures
- Navigation back-up provisions and procedures.

Checking and verification procedures to be conducted by the flight crew before commencing an ETOPS-Sector shall be described, containing at least:

- Weather at the en-route alternate aerodrome meets the applicable approach-minima

- Fuel on board to be sufficient to cover the provisions for the most critical fuel scenario.

Considerations for the in-flight monitoring shall be listed and explained, covering at least the following:

- Monitoring of all parameters of the Propulsion Systems including fuel flow and performance related behaviour.
- Monitoring and evaluation of the weather situation at en-route alternate aerodromes at ETA until ETA plus 1 hour.
- Verification and tracking of the actual aircraft position, time, altitude and mach-number (Plotting Chart).
- Fuel Monitoring- and Fuel Management procedures including independent checking of fuel quantity and respective recording tasks.
- Updating of the computerized operational flight plan (Fuel scenario, Diversion Airport Analysis).

Factors to be considered when deciding upon the appropriate course of action and suitability of an aerodrome for diversion may include, but are not limiting to :

- Aircraft configuration / -weight / -systems status
- Wind and weather conditions en-route at the diversion altitude
- Minimum altitudes en-route to the diversion aerodrome
- Fuel required for the diversion
- Aerodrome condition, terrain, weather and wind situation
- Runways available and runway surface condition
- Approach aids and lighting
- RFFS capability at the diversion aerodrome
- Facilities for aircraft occupants – disembarkation and shelter
- Medical facilities available
- Pilots familiarity with the aerodrome
- Information about the aerodrome available to the flight crew.

A statement shall be provided that any contingency procedure shall not be interpreted in any way that prejudices the final authority and responsibility of the pilot in command for the safe operation of the aeroplane.

For an ETOPS en-route alternate aerodrome, a published RFFS-category equivalent to ICAO category 4, available at 30 minutes notice, is acceptable.

4.6. Abnormal / Emergency Procedures		M/CC
TOPIC		EVALUATION METHOD
ETOPS CL TOPIC	SPA.ETOPS.105    ORO.GEN.110    AFM    ORO.MLR.100    ORO.MLR.101	
4-B3-030 Ch.-OM Ch.-Seq.-No.	OM – B, Section 3, Abnormal- and Emergency procedures	
	LEGAL REFERENCE	
	MANUAL REFERENCE	

IF APPLICABLE, BRIEF DESCRIPTION OF ELEMENT REQUIRING PRIOR APPROVAL

- Are consequences in case of actual system deficiencies or system degradation of ETOPS related systems or components mentioned or highlighted?
- Are contingency procedures established and described covering the case of any system-malfunctions affecting the ETOPS-capability of the aeroplane?

QUESTION FOR COMPLIANCE VERIFICATION AND SELF ASSESSMENT

Aeroplane Type specific operational consequences shall be mentioned briefly in order to provide a general understanding and awareness of critical scenarios that might be encountered.

When the aeroplane is exposed to any situation that implies a possible degradation of ETOPS-Capability, the aeroplane type specific procedure(s) to be applied by the flight crew shall be described, such as :

- Engine failure during cruise: OEI-Drift down procedures considering minimum drift down altitudes for specific mountainous regions.
- Failure of the Pressurisation system: Emergency descend procedures, including oxygen requirements considerations.
- Different strategies and procedures for a descend profile with appropriate speeds to be applied
- Inertial- or GNSS position sensor accuracy loss: Navigation System performance downgrading procedures.
- FMS-failures or degraded modes: Applicable backup procedures
- Fuel Management procedures with downgraded systems
- Communication Back-up procedures on VHF / HF / SATCOM / Data link system
- Operational restrictions associated with these system malfunctions including any applicable MEL considerations.

4.7. Performance Data TOPIC	M/CC EVALUATION METHOD				
ETOPS CL TOPIC 4-B4-035 Ch.-OM Ch.-Seq.-No.	SPA.ETOPS.105	ORO.GEN.110	CAT.POL.A.215	CAT.POL.A.225	CAT.POL.A.230
	CAT.POL.235	ORO.MLR.100	ORO.MLR.101		
	LEGAL REFERENCE				
	OM – B, Section 5, Flight Planning				
	MANUAL REFERENCE				

IF APPLICABLE, BRIEF DESCRIPTION OF ELEMENT REQUIRING PRIOR APPROVAL

Are aeroplane-type specific performance data provided regarding ETOPS-scenarios?

QUESTION FOR COMPLIANCE VERIFICATION AND SELF ASSESSMENT

The operator shall ensure that the Operations Manual contains sufficient data to support the calculation of the critical fuel reserve and area of operations.

The provided data shall be based on the AFM, Section Performance of the aeroplane type concerned.

Detailed **OEI- performance data** shall be provided including fuel flow for standard and non-standard atmospheric conditions, and,

as a function of weight, airspeed and power setting, where appropriate, the data shall cover the following:

- Drift down procedures
- Maximum Altitude capability (OEI)
- OEI-Cruise at maximum cruise altitude
- OEI-Cruise at 10000 ft
- Holding Pattern
- Missed approach procedures.

Detailed **All Engine Operating performance data** shall be provided including fuel flow for standard and non-standard atmospheric conditions, and,

as a function of weight, airspeed and power setting, where appropriate, the data shall cover the following:

- All engine cruise at normal cruise altitudes
- All engine cruise at 10000 ft
- Holding Pattern
- Missed approach procedures.

Any other condition which can cause significant deterioration of performance shall be taken into account and detailed information and data shall be provided.



<b>4.8. Minimum Equipment LIST (MEL)</b>		M/CC	
<small>TOPIC</small>		<small>EVALUATION METHOD</small>	
ETOPS <small>CL TOPIC</small>  4-B9-040 <small>Ch.-OM Ch.-Seq.-No.</small>	ORO.MRL.100 <small>LEGAL REFERENCE</small>	ORO.MRL.101	ORO.MLR.105
	OM – B, Section 9, Minimum Equipment List (MEL) <small>MANUAL REFERENCE</small>		

**APP:** MEL-approval is documented with its own dedicated PRA

IF APPLICABLE, BRIEF DESCRIPTION OF ELEMENT REQUIRING PRIOR APPROVAL

- Has the operator filed a separate PRA?
- Is the MEL amended in order to cover all system-components that are relevant for the ETOPS-capability of the aeroplane?

QUESTION FOR COMPLIANCE VERIFICATION AND SELF ASSESSMENT

The minimum equipment list (MEL) shall be amended in order to comply with the requirements for ETOPS-Operations in respect to system-capability and -redundancy.

System redundancy levels appropriate to extended range operations are reflected in the MMEL of the Aeroplane/Engine combination certified for ETOPS-Operations.

The operators MEL may be more restrictive than the MMEL considering the kind of extended range operation proposed, the equipment and service problems applicable to the operator. Therefore, a careful review of the MEL shall be conducted by the operator, concerning critical aeroplane systems with regard to ETOPS-Operations.

Aeroplane Systems, considered to have a fundamental impact on flight safety for ETOPS-Operation include, but are not limited to, the following:

- Engines and APU, including instruments
- Air-Conditioning and Pressurisation system
- Fuel system
- Electrical system including batteries and emergency generator
- Hydraulic- and Pneumatic systems
- Fire-Protection-, Cargo-Fire suppression system
- Navigation systems
- Communication system
- Emergency Equipment.

4.9. Reporting of Occurrences TOPIC	M/CC EVALUATION METHOD
ETOPS CL TOPIC 4-A11-045 Ch.-OM Ch.-Seq.-No.	Directive 2003/42/EC, Occurrence Reporting in Civil Aviation
	(EU) No 996/2012, Investigation and Prevention of Accidents and Incidents in civil Aviation
	ORO.GEN.160    CAT.GEN.MPA.100    CAT.GEN.MPA.100    SPA.ETOPS.105    ORO.MLR.100  ORO.MLR.101 LEGAL REFERENCE
	OM – A, Chapter 11, Handling, Notifying and Reporting Occurrences MANUAL REFERENCE

IF APPLICABLE, BRIEF DESCRIPTION OF ELEMENT REQUIRING PRIOR APPROVAL

- Are violations in regard to ETOPS operating rules addressed which need to be reported by the flight crew?

QUESTION FOR COMPLIANCE VERIFICATION AND SELF ASSESSMENT

For deficiencies encountered during ETOPS-Operations, at least the following shall be stated to be reported:

- In-flight engine shutdowns
- Diversions to en-route alternate aerodromes
- Turn-backs to origin airport
- Un-commanded power changes
- Engine surges occurred during flight
- Inability to control the engine or obtain desired power
- Failures or malfunctions of ETOPS significant systems.

The reporting procedure that is applicable after any violation in regard to ETOPS-Operating rules, shall be described in detail, containing the following:

- Who has to file the report, (Commander)
- Who is receiving the report, (Postholder Flight Operations / Flight Safety Officer, ....)
- That the report has to be filed within 72 hours after the occurrence, containing an initial analysis of causal factors and measurement taken.
- Where the corresponding form can be found within the organisation.

The report shall contain at least the following:

- Aircraft identification (Registration Mark)
- Engine identification (make and serial number)
- APU identification (make and serial number)
- Total time, cycles and time since last shop visit (overhaul)
- Affected systems with time since overhaul or last inspection of defective unit
- Phase of flight during the occurrence.

## CL 5 Regional Procedures

5.1. Specific Regional Operational Procedures		M/CC
TOPIC		EVALUATION METHOD
ETOPS CL TOPIC	ORO.MLR.100 LEGAL REFERENCE	ORO.MLR.101 SPA.ETOPS.105
5-C-005 Ch.-OM Ch.-Seq.-No.	Operations Manual Part C MANUAL REFERENCE	

IF APPLICABLE, BRIEF DESCRIPTION OF ELEMENT REQUIRING PRIOR APPROVAL

- Are ETOPS-routes or areas where ETOPS-Operations are conducted within the operators area of operation defined?
- Are aerodromes listed that have been evaluated to be adequate aerodromes for the aeroplane-type(s) concerned to be used as en-route alternate aerodromes for ETOPS-Operations?
- Are information on meteorological facilities and information for in-flight monitoring provided?
- Are regional procedures including low-altitude-cruise information with the applicable minimum diversion altitudes provided?

QUESTION FOR COMPLIANCE VERIFICATION AND SELF ASSESSMENT

### Areas of ETOPS-Operations:

The Area(s) of operation where ETOPS-Operations are conducted shall clearly be defined .These areas might be the followings:

Europe (EUR), North Atlantic (NAT) , Western Atlantic Route System (WATRS), Northern Canadian Airspace (NAM), Pacific Region (ASIA /PAC), Middle East (MID), Siberian Area.

### ETOPS-Routes:

The operator`s ETOPS-routes shall be defined, named and described.

### ETOPS En-route Alternate Aerodromes:

A list shall be provided, showing all evaluated aerodromes to be adequate along the route or within the area where ETOPS-Operations are to be conducted for all the aeroplane-types involved in ETOPS-Operations.

Aerodrome facility information and other appropriate planning data concerning these aerodromes shall be provided to flight crews for use when executing a diversion.

Regional procedures covering normal-and abnormal/contingency procedures including low altitude cruise information and available meteorological facilities must be integrated in the Operations Manual Part C, covering the operator`s whole area of operation as specified on the Air Operators Certificate (AOC).

Aircraft Performance considerations must be taken into account and shall be included in the list for all adequate aerodromes.

All information shall be provided in a readable and user-friendly format. The FOCA therefore recommends a table form.

## CL 6 Training and Checking

6.1. ETOPS Training and Checking Concept					M/CC
TOPIC					EVALUATION METHOD
ETOPS CL TOPIC 6-D2-005 Ch.-OM Ch.-Seq.-No.	ORO.FC.105	ORO.FC.115	ORO.FC.120	ORO.FC.145	ORO.FC.205
	ORO.FC.215	ORO.FC.220	ORO.FC.230	SPA.ETOPS:105	ORO.MLR.100
	LEGAL REFERENCE				
OM-D, Chapter 2 , Training Syllabi and Checking Programme					
MANUAL REFERENCE					

**APP:** Operator Conversion Training Syllabus, Line Check and Proficiency Training and Checking

**ACC:** Command Course

IF APPLICABLE, BRIEF DESCRIPTION OF ELEMENT REQUIRING PRIOR APPROVAL

- Is the ETOPS-Training correctly integrated into both the conversion- and recurrent training and checking programme?
- Are two sectors included in the line flying under supervision module, where ETOPS-Operation can be applied?

QUESTION FOR COMPLIANCE VERIFICATION AND SELF ASSESSMENT

The ETOPS-Training and Checking Module shall be implemented within “Key Courses” as listed below:

“Key Courses”			Training required	Checking required	
Phase	Ground and FSTD / Airplane Training	<b>Conversion Training and Checking</b> covering:	Yes	Yes	
		<ul style="list-style-type: none"> <li>• Conversion Course changing operator</li> <li>• Conversion Course changing ACFT type</li> <li>• Conversion Course changing operator and ACFT type</li> </ul>			
	FSTD / Airplane Training	<b>Command Course</b>		No	Yes
		<b>Recurrent Training and Checking</b>	• LPC	N/A	No
			• OPC		NO
			• Line Check		Yes
			• Recurrent training		Yes
		<b>Difference and Familiarisation Training</b>		No	N/A
<b>In Flight Relief of Flight Crew Members Training</b>		N/A			
<b>Recent Experience</b>					

6.2. ETOPS Training Module TOPIC	M/CC EVALUATION METHOD				
ETOPS CL TOPIC 6-D2-010 Ch.-OM Ch.-Seq.-No.	ORO.FC.105	ORO.FC.115	ORO.FC.120	ORO.FC.145	ORO.FC.200
	ORO.FC.205	ORO.FC.215	ORO.FC.220	ORO.FC.230	SPA.ETOPS.105
	LEGAL REFERENCE				
OM-D, Chapter 2, Training Syllabi and Checking Programme MANUAL REFERENCE					

IF APPLICABLE, BRIEF DESCRIPTION OF ELEMENT REQUIRING PRIOR APPROVAL

- Is an ETOPS training and checking module integrated within the OM-D?
- Are the topics listed below implemented within the ETOPS training and checking module?

QUESTION FOR COMPLIANCE VERIFICATION AND SELF ASSESSMENT

ETOPS- Training and Checking Module	<b>General</b>
	The ETOPS-Training Module must contain comprehensive instruction of basic knowledge and operational procedures to get familiar with all aspects of ETOPS-operations.
	<b>Standard of performance</b>
	The following <u>Standards of Performance</u> shall be defined as minimum requirements to be obtained after having completed the ETOPS training module:
	<ul style="list-style-type: none"> <li>• The student has obtained a thorough knowledge of the ETOPS Operational Procedures and Contingency Procedures used in each region.</li> <li>• The crew member has conducted at least two sectors during the line flying under supervision phase, where ETOPS Operation was applied.</li> </ul>
	<b>Prerequisites</b>
	The candidate shall fulfil the following <u>pre-requisites</u> , before starting ETOPS-Training:
	<ul style="list-style-type: none"> <li>• All the minimum requirements according OM-A, Chapter 5 “Qualification Requirements“ for his function as flight crew member concerned must be fulfilled. Personnel other than flight crew (i.e. dispatcher) shall have been assessed to be competent for the assigned function.</li> <li>• Aeroplane system / Mass &amp; Balance / Performance Training shall be completed.</li> <li>• Vital parts of the Operators Manual System should have been taught to the candidate beforehand, to allow for an adequate overview.</li> </ul>
	<b>Training</b>
	For <u>flight crew members</u> , ETOPS-Training is to be integrated in the given “Key Courses” :
<ul style="list-style-type: none"> <li>• Conversion Training changing Operator</li> <li>• Conversion Training changing Aeroplane Type</li> <li>• Conversion Training changing Operator and aeroplane Type</li> <li>• Command Course</li> <li>• Recurrent Training and Checking Programme</li> </ul>	
For <u>personnel other than flight crew</u> , (i.e. dispatchers) shall receive the part “ <u>theoretical instruction</u> ” of the ETOPS-Training outlined below in detail.	

Additionally, practical training under supervision of a competent and experienced person qualified for the respective function shall be provided during an operator defined on-the-job-training phase.

ETOPS-Training shall consist of:

- **Theoretical instruction** for initial training: Classroom instruction and/ or CBT
- **Practical Training:** Procedure-Training, covering at least the application of the MEL in a Line Oriented Environment or a Simulator (FSTD).
- **Aircraft Training:** Practical application in the aircraft during LIFUS-Phase.

Theoretical instruction:

Transfer of general knowledge covering all relevant aspects concerning ETOPS-Operations, such as:

- Brief overview of the history of ETOPS-Operations
- Basic-Concept of ETOPS-Operations
- Regulations and definitions
- ETOPS-Type design approval
- Approved OEI-Cruise Speed
- Maximum distance from an adequate aerodrome
- Operator`s approved diversion time
- Routes and aerodromes intended to be used for ETOPS-Operations
- ETOPS Operations approval
- ETOPS-Area and -Routes
- ETOPS-en-route alternate aerodromes including facilities
- Navigation system accuracy, limitations and operating procedures
- Meteorological facilities and availability of information
- In-Flight monitoring Procedures: -Prior to entry- and -within an ETOPS-Sector-
- Computerised flight plan (OFP)
- Use of orientation charts including low level planning charts and flight progress charts (position plotting chart).
- Equal time point: Calculation and respective operational considerations
- Critical fuel scenario.

Normal Operations

ETOPS Flight-planning and dispatch shall cover the following subjects:

- ETOPS Fuel requirements
- En-route alternate Aerodrome selection – weather minima
- Minimum Equipment List – ETOPS specific.

Pre-Flight Procedures shall be described to cover:

- ETOPS Service check and Tech log entries
- MEL/CDL/HIL considerations

- Pre-flight FMS-set-up.

Flight progress monitoring procedures shall be described, to cover the following topics:

- Flight management, navigation and communication systems
- Aeroplane system monitoring
- Weather monitoring
- In-Flight fuel management, including independent cross checking of fuel quantity.

Post-Flight Procedures must be mentioned, giving guidance on:

- Entries in Technical Log System.

#### Abnormal and Contingency Procedures

Diversion Decision making and Diversion Procedures shall be described, providing information and guidance on the following:

- Basic Concepts for ETOPS-Contingencies, including medical-, passenger- and other non-technical related situations.
- Navigation- and Communication system malfunctions including Flight Management Devices in degraded modes.
- Fuel Management with degraded systems
- Operation with standby electrical power source and standby instruments.

#### Practical Training:

Practical application and training of procedures and tasks related to flight crews regarding ETOPS-Operations shall be conducted such as:

Pre-Flight Procedure training shall cover the following:

- Review of the Tech-log-System concerning the operational status and ETOPS-capability of the aeroplane.
- Provisions according MEL /CDL shall be taken into account and explained
- Review of the operation of the fuel system and its capability
- Review of the functionality of the communication system and system-checks (SELCAL)
- Instruction on FMS-set-up tasks and data input procedures including checking of relevant sensitive data.

In-Flight Procedures training shall be described to provide guidance on:

- Flight management, Navigation and Communication procedures
- Aeroplane system monitoring procedures
- Fuel Management procedures.

Abnormal / Emergency Procedures training shall cover the following subjects :

- Engine failure during cruise: OEI-Drift down procedures considering minimum drift down altitudes for specific mountainous regions.

- Failure of the Pressurisation system: Emergency descend procedures, including oxygen requirements.
- Different strategies and procedures for a descend profile with appropriate speeds
- Inertial- or GNSS position sensor accuracy loss: Navigation System performance downgrading.
- FMS-failures or degraded modes: applicable backup procedures
- Fuel Management procedures with downgraded systems
- Communication Problems on VHF / HF / SATCOM / Data link system: Back-up procedures.
- Operational restrictions associated with these system malfunctions including any applicable MEL considerations

**Aircraft-Training / Line Flying under Supervision (LIFUS) for flight crews / on-the-job-training for personnel other than crew members (dispatchers)**

ETOPS Flight-planning and dispatch training shall cover the following:

- En-route alternate Aerodrome selection – weather minima applicable for ETOPS-planning.
- Computerised flight plan (Fuel Scenario, Diversion Airport Analysis)
- ETOPS Fuel calculation principles.

Pre-Flight Procedures training shall include:

- Identification of ETOPS Aircraft (Placards)
- ETOPS Service check and Tech log information
- Pre-flight FMS-set-up tasks and data input procedures including checking of relevant sensitive data.

Flight progress monitoring training for flight crews shall include:

- Flight management, navigation and communication systems and procedures
- Aeroplane system monitoring procedures
- Weather monitoring, policy and procedures
- Use of Flight-Progress Chart (Plotting Chart)
- Update and use of the computerised operational flight plan
- Fuel management tasks including independent cross checking of fuel quantity.

Post-Flight Procedures training shall provide guidance on:

- Tech log entries
- Document storage procedures.

Checking / Examination including pass mark for written tests

Means of Checking (flight crews)



- Checking after initial Training (Conversion Course / Command Course):  
Theoretical knowledge shall be checked by means of a written test or by any other suitable method where the quality of the transferred knowledge can be traced and recorded. The Questionnaire shall comprise questions distributed appropriately across the main subjects of the syllabus. Candidates have to pass the knowledge assessment before being entitled to undergo further practical training and checking in the FSTD or in the aeroplane.
- Flight Crews have to demonstrate their competence and knowledge in conducting regular ETOPS-Operations. Therefore proficiency and knowledge shall be assessed during the annual line check.

#### Training and Checking personnel required / involved

All Training and Checking personnel involved in Training and Checking of ETOPS-Operation elements as listed below have to be incorporated in the operators OM-D chapter 1.3 Training and Checking Personnel before being entitled to execute the privileges.

- Ground-Training is to be given by a Ground Instructor (GI), Training Captain (TC) or a Type Rating Instructor (TRI).
- FSTD-Training is to be given by a SFI/TRI during Conversion training when changing aircraft type or when changing operator.
- Training on the Aircraft shall be conducted by a TC or TRI during LIFUS-Phase
- Checking of theoretical knowledge shall be conducted by a GI, TC, TRI or TRE
- Checking of practical competence on FSTD-Training shall be performed by a SFE / TRE.
- Checking of practical competence on the Aeroplane shall be performed by a TC or TRE.

#### Subcontracted Training Organisations

Reference to subcontracted training organisations, listed in OM D, Chapter 1.2 shall be made, if applicable.

#### Reference to syllabi and lesson plans

The operator shall state all references where a specific ETOPS-Training-Syllabus and associated Lesson Plans can be found within the operators OM-D.

## CL 7 Demonstration

7.1. Evidence for ETOPS Parameters		M/CC
TOPIC		EVALUATION METHOD
ETOPS CL TOPIC	SPA.ETOPS.100 LEGAL REFERENCE	
7-Demo-005 Ch.-OM Ch.-Seq.-No.	Demonstration in a Full Flight Simulator of the respective Aircraft-Type with corresponding Airframe / Engine combination MANUAL REFERENCE	

IF APPLICABLE, BRIEF DESCRIPTION OF ELEMENT REQUIRING PRIOR APPROVAL

- Is there evidence for the amount of fuel-burn measured with the aeroplanes reference weight at the reference flight-level in OEI-Condition, to be appropriate and corresponding to the value used for the calculation of the critical fuel scenario?
- Has the one-engine-inoperative-cruise-speed, that is mentioned in the Operations Manual System, been demonstrated to be in accordance with the AFM?

QUESTION FOR COMPLIANCE VERIFICATION AND SELF ASSESSMENT

Evidence for the following parameter shall be provided regarding ETOPS-Operations (ISA-Condition, Still Air):

- Fuel-burn at Max. flight level OEI with OEI-Cruise Speed:  
Drift-down from cruise flight level to max. flight level in OEI-Condition to evaluate fuel-flow on operating engine in order to get evidence that fuel-burn at defined reference flight level in OEI-Conditions is higher (limiting) compared to fuel-burn at max. flight level in OEI-Conditions.
- OEI-Cruise-Speed at reference flight level:  
Descent from max. flight level OEI down to reference flight level for OEI-Cruise to get evidence for OEI-Cruise speed capability.
- Fuel-burn at reference level with OEI-Cruise-Speed:  
Emergency Descent from cruise level to the reference flight level with reference weight followed by OEI-cruise.

Resulting in the verification of:

- Maximum Distance from an adequate aerodrome applicable in Nautical Miles.
- The maximum Diversion Time applicable for ETOPS-Operation in Minutes.

A reference weight and reference flight level shall be defined by the operator and published together with the OEI-Cruise Speed.