

Checklist Fatigue risk management (FRM)

Operator ⁽¹⁾	Date	Inspector (Name/signature) ⁽²⁾	Ref.
Purpose:			

⁽²⁾ By signing this checklist, I hereby confirm that, at the time of performing this activity, I did not have any conflict of interest to declare regarding the above-mentioned operator ⁽¹⁾.

OM amendment information			
Rev. No		Date	

No	Ref Non-compliance	Ref OM	Non-compliances

List of remarks	
Ref remarks	Remarks

Additional notes/comments:

NA = Not Applicable; C = Compliant; NC = Not Compliant; R = Remark; N/R = Not Reviewed

Reference	Requirement	Specific requirements/expectations	Eval. operator	Eval. CA	Description
General					
Eligibility					
ORO.FTL.120(a)	When FRM is required by this Subpart or an applicable certification specification, the operator shall establish, implement and maintain a FRM as an integral part of its management system.	- Check if the operator is required to implement an FRM and receive an approval from its CA: - o If the operator rosters reduced rest iaw CS FTL1.235(c), - o If the operator rosters long FDPs for crew members in an unacclimatised state iaw Table 4 of ORO.FTL.205 b). <u>Note:</u> If the above conditions are not present, the operator has established an FRM on a voluntary basis and no approval is required. - In such a case, check that the operator's FTSS clearly states that the 2 above provisions are not used.		☐ N/A ☐ C ☐ NC ☐ R ☐ N/R	
ORO.FTL.120(a)	<u>Maturity of the operator's management system</u>	- Check that the operator is in possession of a mature SMS: - o no major findings have been raised within the last oversight cycle - o review the outcome of the previous management system audit and in particular the PSOE evaluation of the elements of the management system. <u>Note:</u> The mature SMS is a leading indicator for the effectiveness of an FRM		☐ N/A ☐ C ☐ NC ☐ R ☐ N/R	
FRM commensurate to the nature and complexity of the activities					
ORO.FTL.120(c)	The FRM shall correspond to the flight time specification scheme, the size of the operator and the nature and complexity of its activities, taking into account the hazards and associated risks inherent in those activities and the applicable flight time specification scheme.	- Check that the operator's IFTSS clearly defines the scope of operations under FRM and associated risks, as well as the scope of operations not covered by FRM. <u>Note:</u> By definition, operations that use reduced rest and long FDP to unacclimatized flight crew are complex rotations. The size of the operator is irrelevant.		☐ N/A ☐ C ☐ NC ☐ R ☐ N/R	

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FRM integrated in the operator's management system					
ORO.FTL.120(a)	The operator shall establish, implement and maintain a FRM as an integral part of its management system.	- Check that the operator's FRM is an integral but distinct element of the operator's management system, backed up by an organisation structure with dedicated staff, independent from normal airline commercial processes.		☐ N/A ☐ C ☐ NC ☐ R ☐ N/R	
ORO.FTL.120(a)	<u>FRM manager</u>	- Check that the operator has identified an individual (e.g. FRM manager) to be responsible and focal point for the implementation and maintenance of an effective FRM. It is recommended that the FRM Manager has operational background but is not involved in commercially driven tasks.		☐ N/A ☐ C ☐ NC ☐ R ☐ N/R	
FSAG					
ORO.FTL.120(a)	<u>Establishment of a fatigue safety action group (FSAG)</u>	- Check that a Fatigue Safety Action Group (FSAG) is established within the operator to coordinate all fatigue management activities. <u>Note:</u> the establishment of an FSAG, although not specifically required by the regulation, is considered to be paramount for an effective FRM.		☐ N/A ☐ C ☐ NC ☐ R ☐ N/R	
ORO.FTL.120(a)	<u>Description of the FSAG</u>	- Check that the FSAG is described in the FRMM or any other document and that it includes the following: ○ <u>FSAG composition</u> ▪ It is expected that it includes representatives of all stakeholder groups (management, scheduling staff, and crew members and/or their representatives) and other individuals as needed to ensure that it has appropriate access to scientific and medical expertise ○ <u>FSAG functions</u>, which are typically: ▪ monitoring of fatigue information sources, ▪ collecting and analysing data,		☐ N/A ☐ C ☐ NC ☐ R ☐ N/R	

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		- monitoring of the operator's fatigue related SPI, - investigating fatigue related issues, - conducting internal audits of specific fatigue-related issues, - making recommendations on fatigue related issues, - providing feedback to crew members and management, - monitoring the quality of fatigue management training across the organisation, - monitoring roster development, modelling and roster changes.			
FRM Documentation					
Operations manual					
ORO.FTL.120(a)	The FRM shall be described in the operations manual.	- Check the operator has defined the content of the IFTSS and the FRM in its OM-A or in a separate manual (e.g FRM) with a reference in OM-A Chapter 7. <u>Note:</u> if the FRM is described in a separate manual (e.g. FRMM), this manual and all subsequent amendments to it shall be submitted to the CA.		☐ N/A ☐ C ☐ NC ☐ R ☐ N/R	
Description of FRM processes					
ORO.FTL.120(b)(2)	The FRM shall include documentation of the FRM processes, including a process for making personnel aware of their responsibilities and the procedure for amending this documentation;	- Check the following criteria: - An FRM policy and objectives have been documented in the OM or any other doc referred to in the OM (see FRM policy dedicated section for its content) - The FRM documentation is current and is tailored to the operation and the operation objectives - The FRM documentation describes the FRM processes and procedures and related responsibilities; check in particular that it is		☐ N/A ☐ C ☐ NC ☐ R ☐ N/R	

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		tailored to the operator's organisation. - The FRM documentation includes a procedure for making personnel aware of their responsibilities. - The FRM documentation includes FRM training programmes, training requirements and attendance records; - There are records of scheduled and actual flight times, duty periods and rest periods under the scope of the FRM; - There are records of fatigue data, analysis, actions, and decisions; - There is a fatigue hazard/risk register.			
FRM policy					
ORO.FTL.120(b)(1)	The FRM shall include a description of the philosophy and principles of the operator with regard to FRM, referred to as the FRM policy	- Check the following criteria: - The FRM policy identifies all the elements of FRM (documentation process, fatigue hazard, risk assessment, risk mitigation, assurance process, promotion process and application of scientific principles and knowledge; - The FRM policy defines to which operations FRM applies (depending of the scope of its operations, the FRM might not apply to all of its operations); - The FRM policy highlights the shared responsibility between the management and individual crew members; - The FRM policy states that the individual crew members are responsible at least for: - not performing duties when unfit due to fatigue or if suffering from fatigue; - making optimum use of the opportunities and facilities for rest provided and for planning and using their rest periods		☐ N/A ☐ C ☐ NC ☐ R ☐ N/R	

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		- properly; ▪ ensuring that they are not in breach of their IFTSS; ▪ not commuting from home to departure aerodrome for more than 90 minutes; ▪ reporting fatigue, fatigue hazards, and fatigue-related events ○ The FRM policy has been signed by the accountable manager; check that the AM has adequate knowledge and understanding of the FRM policy; ○ The FRM policy includes a commitment to observe applicable legal requirements, standards and best practices; ○ The FRM policy defines “Just Culture” or “Safety Culture” and actively encourages fatigue reporting; ○ The FRM policy includes the management commitment to maintaining an effective system for fatigue reporting and handling fatigue reports; ○ The FRM policy includes the management commitment to the provision of adequate resources for FRM; ○ The FRM policy includes the management commitment to continuous improvement of FRM; ○ The FRM policy includes the management commitment to providing fatigue risk management training to flight, cabin crew and other FRM support staff; ○ The FRM policy identifies the lines of accountability for management, flight and cabin crew, and all other involved personnel; ○ The FRM policy requires periodic reviews to ensure it remains relevant and appropriate; check when			

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		was the last review and its outcome.			
Scientific knowledge and principles					
ORO.FTL.120(b)(3)	The FRM shall include scientific principles and knowledge	- Check the following criteria: ○ The OM/FRMM contains information about the sources of fatigue in air operations and the science of sleep. ○ Operator's rostering rules account for the scientific principles and fatigue mitigation strategies. ○ The OM/FRMM contains procedures for the use of external/internal sources of validated information to support the FRM. <u>Note:</u> Check if the operator has already identified a possible external source for the validation of information supporting the FRM. ○ The operator uses data from validated scientific research studies to feed their proactive hazard identification and risk assessment process. Validation is provided by an independent scientific organisation. <u>Note:</u> The basic scientific principles for the purpose of managing fatigue are: 1. Periods of wake need to be limited. Getting enough sleep (both quantity and quality) on a regular basis is essential for restoring the brain and body. 2. Reducing the amount or the quality of sleep, even for a single night, decreases the ability to function and increases sleepiness the next day. 3. The circadian body clock affects the timing and		☐ N/A ☐ C ☐ NC ☐ R ☐ N/R	

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		quality of sleep and produces daily highs and lows in performance on various tasks. 4. Workload can contribute to an individual's level of fatigue. Low workload may unmask physiological sleepiness while high workload may exceed the capacity of a fatigued individual.			
Hazard identification and risk assessment process					
General					
ORO.FTL.120(b)(4)	The FRM shall include a hazard identification and risk assessment process that allows managing the operational risk(s) of the operator arising from crew member fatigue on a continuous basis.	- Check that the operator has defined 3 processes for fatigue hazard identification (see below sections related to the 3 different processes) and relative methods of examination. - Check that the operator: - has a register of the hazards that is maintained and reviewed to ensure it remains up to date; - has documented hazards in an easy-to-understand format.		☐ N/A ☐ C ☐ NC ☐ R ☐ N/R	
Predictive process					
ORO.FTL.120(b)(4)	The operator should develop and maintain a documented predictive processes for fatigue hazard identification.	- Check that the operator identifies fatigue hazards by examining crew scheduling and takes into account factors known to affect sleep and fatigue for use in roster construction. - Check that the predictive hazard identification process uses examination methods like e.g: - operator or industry operational experience and data collected on similar types of operations; - evidence-based scheduling practices (scientific basis for the scheduling rules should be recorded by the operator); and - bio-mathematical models to predict the levels of fatigue. - Check that, when evidence-based scheduling practices are being used, the operator has recorded the scientific basis for		☐ N/A ☐ C ☐ NC ☐ R ☐ N/R	

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		the scheduling rules. - If a Bio mathematical model is used, check the following: - the operator has set levels in the fatigue modelling software to determine acceptable/ unacceptable levels of fatigue/alertness; - the operator demonstrates knowledge of biomathematical models limitations; - the hypothetical fatigue/alertness levels are reflective of the actual fatigue/alertness levels of operating crew members; - the operator has a process to identify if the limits are too high/low.			
Proactive process					
ORO.FTL.120(b)(4)	The operator should develop and maintain a documented proactive processes for fatigue hazard identification.	- Check that the proactive hazard identification process uses methods like e.g: - self-reporting of fatigue risks; - crew fatigue surveys; - relevant flight and cabin crew performance data; - available safety databases and scientific studies; and - analysis of planned versus actual time worked.		☐ N/A ☐ C ☐ NC ☐ R ☐ N/R	
Reactive process					
ORO.FTL.120(b)(4)	The operator should develop and maintain a documented reactive processes for fatigue hazard identification.	- Check that the reactive hazard identification process is at least triggered by any of the following: - fatigue reports; - confidential reports; - audit reports; - incidents; or - flight data monitoring (FDM) events.		☐ N/A ☐ C ☐ NC ☐ R ☐ N/R	
Risk assessment process					
ORO.FTL.120(b)(4)	The operator should develop and implement risk assessment procedures that determine the probability and potential severity of fatigue-related events and identify when the associated risks require mitigation.	- Check that the risk assessment procedures allow the review identified hazards and link them to: - operational processes; - their probability; - possible consequences; and		☐ N/A ☐ C ☐ NC	

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		- the effectiveness of existing safety barriers and controls. - Check the following: - The operator risk assessment methodology/tools include guidance on fatigue related hazards that may trigger a SRA process. - Multiple fatigue hazards are being identified and assessed (e.g. high workload during WOCL, roster changes, cumulative night duties/late finish duties, long commuting, long rotations, multi sector duties, disruptive schedules,...) - The operator risk assessment methodology and tools include a determination of the probability and severity of fatigue-related hazards, determination of risk levels and evaluation of risk acceptability: - severity and likelihood criteria are clearly defined and fit the operator's actual circumstances and link them to operational processes; - risk analysis and assessments are carried out in a consistent manner; - the risk matrix and acceptability criteria are clearly defined and usable. - Responsibilities and timelines for accepting the risk are clearly defined; - The defined risk acceptability is being applied; - Risk analysis and assessment processes are reviewed for consistency and to identify improvements; - Completed risk assessments are regularly reviewed to ensure they remain current. - Risk acceptability criteria are used routinely and applied in management decision making processes and are regularly reviewed; - The operator's methodology ensures that commercial decisions about flight schedules do not introduce fatigue risk into the roster		☐ R ☐ N/R	

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		construction and operations ○ Appropriate risk controls are being applied to reduce the risk to an acceptable level, including timelines and allocation of responsibilities: ▪ Check how fatigue risk on 'day of operations' is being managed by the FRM ○ The operator risk assessment methodology and tools include an assessment of the effectiveness of the safety barriers and controls. ○ The operator's fatigue risk assessment methodology account for human, organisational and operational factors that impact on sleep debt, wakefulness, circadian factors and workload. ○ The fatigue risk register summarizes the output of operator's processes for identifying fatigue hazards, their causes, associated risks, risk ratings, and risk controls. <u>Note:</u> There is no formal definition of fatigue risk set by ICAO or IATA. A proven useful definition when planning crew members is: the risk of crew performing a lapse, slip, mistake or violation, negatively impacting flight safety, as an effect of low levels of alertness.			
Risk mitigation process					
ORO.FTL.120(b)(5)	The FRM shall include a risk mitigation process that provides for remedial actions to be implemented promptly, which are necessary to effectively mitigate the operator's risk(s) arising from crew member fatigue and for continuous monitoring and regular assessment of the mitigation of fatigue risks achieved by such actions.	- Check that the operator's risk mitigation procedures address the following: ○ Selection of the appropriate mitigation strategies; ○ Implementation of the mitigation strategies, including: ○ Monitoring of the strategies' implementation and effectiveness: - Check in particular the following: ○ Human Factors are considered as part of the development of fatigue risk mitigation strategies. ○ Fatigue risk mitigation strategies are practical and sustainable and applied in a timely manner and do not create additional risks. ○ The operator has included recommendations for		☐ N/A ☐ C ☐ NC ☐ R ☐ N/R	

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		personal fatigue risk mitigation strategies in the OM/FRMM. - The operator has guidance on how to implement fatigue principles and mitigation strategies into roster construction: - Check how it is ensured that the fatigue risk mitigations put in place during roster build are not impacted by weather, u/s aircraft, delays etc; - Mitigation measures are monitored through regular reporting of SPIs to measure effectiveness and reviewed periodically to ensure they remain valid. - Fatigue risk mitigations are logged in the company FRM/SMS and also reflected in the appropriate rostering rules. - Check if the operator's log contains decisions and actions from which an overall view with accountabilities and responsibilities with regard to actions taken can be seen.			
FRM safety assurance processes					
Continuous FRM performance monitoring					
ORO.FTL.120(b)(6)	The operator should develop and maintain FRM safety assurance processes to provide for continuous FRM performance monitoring, analysis of trends, and measurement to validate the effectiveness of the fatigue safety risk controls.	- Check that the process includes the review of SPIs, monitored via the following sources (non-exhaustive list): - hazard reporting and investigations; - FRM processes; - audits and surveys; and - reviews and fatigue studies; - Check the following: - Targets are set for SPIs and are continuously monitored. - SPIs are reviewed and regularly updated to ensure they remain relevant. - The operator has a process to audit the FRM, including appropriate auditor's checklists covering the duties/rest periods under FRM and associated		☐ N/A ☐ C ☐ NC ☐ R ☐ N/R	

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		criteria to be verified, a process to report the outcome of the audit and take action. ○ The operator monitors and assesses the corrective actions and preventive measures to ensure they are effective in preventing a recurrence of the finding. ○ The operator has a process to periodically review the effectiveness of FRM ▪ ongoing dynamic review of the FRM risk profile, fatigue related events and FRM metrics and SPIs and ▪ their assessment against operational context to ascertain if they represent a credible reflection of the fatigue risk contained within the operation under FRM. ○ Duties related to the FRM assurance program are fulfilled by persons who are not responsible for carrying out the task or activity being evaluated.			
ORO.FTL.120(d)	The operator shall take mitigating actions when the FRM safety assurance process shows that the required safety performance is not maintained.	- Check that the operator has a periodic audit process or an ongoing dynamic review of the FRM risk profile, fatigue related events and FRM metrics and SPIs (These are assessed against operational context to ascertain if they represent a credible reflection of the fatigue risk contained within the operation under FRM). <u>Note:</u> Periodic audits provide a static and limited operational snapshot. In an ongoing dynamic review allow - Check that when the SPIs indicate a risk control not being effective, appropriate action is taken. - In particular, check the following: ○ The operator applies mitigating actions when violation of the FTL scheme under FRM have		☐ N/A ☐ C ☐ NC ☐ R ☐ N/R	

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		been found. The operator investigates and applies appropriate mitigating actions when the crew has complained about the quality of their roster.			
Process for the management of change					
ORO.FTL.120(b)(6)	The operator should develop and maintain FRM safety assurance processes to provide a formal process for the management of change	- Check the following: - The operator applies a management of change process for the identification of changes in operational environment and within the operator that may affect FRM. - The management of change process includes hazard identification and risk assessments with appropriate risk controls being put in place before the decision to make the change is taken. - Responsibilities and timelines are defined. - The management of change process also considers business related changes (organisational restructuring, downsizing, IT projects etc.) with possible fatigue impact - The operator uses tools to maintain or improve FRM performance prior to implementing changes		☐ N/A ☐ C ☐ NC ☐ R ☐ N/R	
Continuous improvement of FRM					
ORO.FTL.120(b)(6)	The operator should develop and maintain FRM safety assurance processes to provide for the continuous improvement of FRM	- Check that the process includes at least the following: - the elimination and/or modification of risk controls that have had unintended consequences or that are no longer needed due to changes in the operational or organisational environment; - the routine evaluations of facilities, equipment, documentation and procedures (i.e. hotels, rest facilities, BAM Crew Alert for crews etc.); and - the determination of the need to introduce new processes and procedures to mitigate emerging fatigue-related risks. (use of multiple sources of information).		☐ N/A ☐ C ☐ NC ☐ R ☐ N/R	

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		<u>Note:</u> The assurance process is an important indicator for the proper functioning of FRM. The operator should be aware that this is likely to extend the duration of the FRM evaluation. The inspector should therefore discuss this with the operator beforehand.			
FRM promotion processes					
ORO.FTL.120(b)(7)	The FRM shall include FRM promotion processes.	- Check that the operator has established and implemented the following elements as part of its FRM: ○ <u>training programmes</u> to ensure competency commensurate with the roles and responsibilities of management, flight and cabin crew, and all other involved personnel under the planned FRM. Criteria to be assessed: ▪ It includes regular competency-based training on the components and functioning of the FRM, employee responsibilities and actions, and fatigue-related science ▪ Training covers as a minimum all of the topics specified in AMC1.ORO.FTL.250; ▪ It includes regular competency-based training on the components and functioning of the FRM, employee responsibilities and actions, and fatigue-related science; ▪ The training program identifies who needs to be trained and what training and competencies they needed to perform their roles effectively in the FRM, specifies training methods and learning objectives that correspond to the competencies; ▪ There is a training schedule and timeframe for completion ▪ There are records of FRM training programmes, training requirements and attendance; ▪ Initial and refresher training modules contain a knowledge check at the end of each to ensure an adequate level of understanding is achieved; ▪ Training packages are reviewed and updated		☐ N/A ☐ C ☐ NC ☐ R ☐ N/R	

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		periodically (e.g. annually) to incorporate the most recent information and scientific understanding. ▪ All training materials are in the scope of the audit programme for the FRM. ○ an <u>effective FRM communication plan</u> that: ▪ explains FRM policies, procedures and responsibilities to its employees; ▪ describes communication channels used to gather and disseminate FRM-related information (Intranet Site; workplace; newsletters focussing on FRM; periodic updates on developments regarding FRM; video updates; training programmes).			