

GUIDANCE: RETURNING BACK TO COMPLIANCE WITH FLIGHT AND DUTY TIME LIMITATIONS (FDTLs) IN COVID-19 CONDITIONS

1. OUTLINE OF CURRENT SITUATION

COVID-related constraints and concerns have resulted in many operators being unable and/or unwilling to schedule normal rest periods for crew down route. Operators have avoided onerous State restrictions to their operations and/or exposing their crew to increased risk of infection or having them subjected to invasive testing or quarantining. This has led to extensions well beyond established national flight a duty time limitations (FDTLs).

The world has now had time to adapt to the challenges that Covid-19 has presented. States are protecting their citizens with screening, quarantine and air traffic passenger reduction policies. Often these polices change at short notice, but this very changeability is now an expected situation. Airports and airport hotels are developing Covid-19 secure procedures and aviation activities are continuing, albeit at greatly reduced levels in many cases.

While the continuation of international operations remains essential, “normal” international operations are not urgent to a level that justifies the increased risk associated with significant extensions to FDTLs. Even the continued use of relatively minor extensions in the more-demanding context of COVID- operations (e.g. potential job loss, fear of infection, changed operational environment) can result in crew experiencing cumulative fatigue - with likely implications for their performance.

Airlines now need to return to managing fatigue within existing FTDLs (or using an approved FRMS) and take the time to prepare for an increase in operational activity in the medium term. Regulators need to ensure that the management of overall fatigue risk and the safety of operations is maintained, taking into account the basic fatigue-related scientific principles and recognizing the extra burdens associated with operating in COVID-19 conditions. This webpage provides guidance for regulators to support airlines in returning to “normal” scheduling limits and practices while managing the fatigue risks during the transition back to more “normal ops”.

While some airlines may use advanced approaches and have an approved fatigue risk management system, most will be scheduling within the prescribed flight and duty limits and managing their fatigue risks through their SMS processes (see Doc. 9966).

It is also recognized that rare situations may still present themselves that necessitate international flights flown by crew members under approved extensions to FDTLs. This is provided for in Annex 6, Part I SARPs. See section 4 below for guidance on approving variations to FDTLs.

2. USE OF SMS PROCESSES ALONG WITH BASIC SCIENTIFIC PRINCIPLES TO MANAGE FATIGUE RISKS WITHIN THE PRESCRIBED LIMITS

Prescriptive limitation regulations identify maximum work periods and minimum non-work periods for specific groups of aviation professionals. Within these limits, operators must manage their fatigue-related risks as part of their existing safety management processes. The prescriptive approach to fatigue management is summarised in Figure 1.

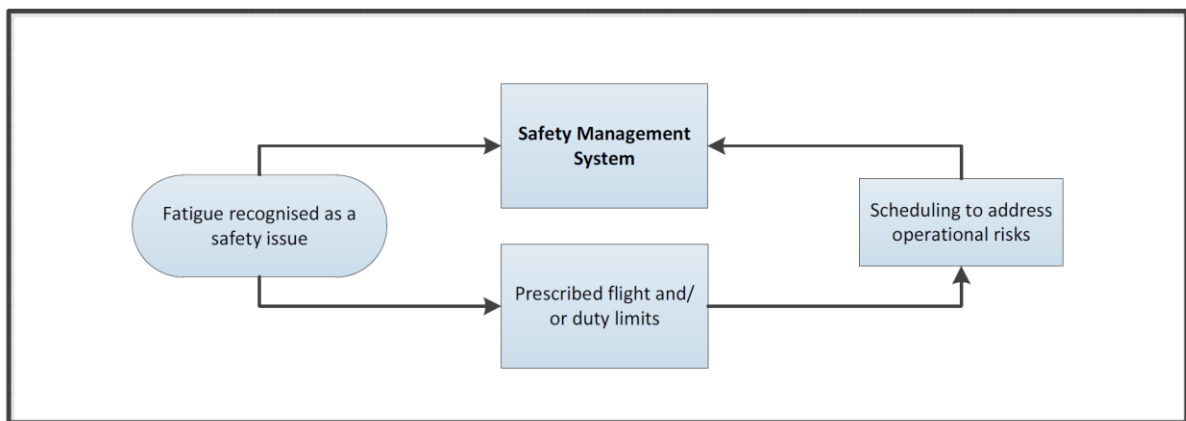


Figure 1. The prescriptive approach to fatigue management

In order to support operators' efforts to identify specific fatigue risks and select appropriate mitigations, airlines should first consider the impact of the four key scientific principles.

These basic principles relate to: 1) the need for sleep; 2) sleep loss and recovery; 3) circadian effects on sleep and performance; and 4) the influence of workload, and can be summarized as:

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 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.

Using these basic scientific principles will assist airlines to identify their contextual fatigue risks both now, and as they increase their operations, in order to develop suitable mitigations.

3. OPERATING WITHIN THE PRESCRIBED FLIGHT AND DUTY TIME LIMITS (FDTLs)

In recognising fatigue as a safety issue, ICAO SARPS require States to establish prescriptive flight and/or duty limitations regulations for aircrew. They should be designed to maintain an acceptable level of safety performance in the majority of situations.

In a prescriptive approach to fatigue management, the operator is expected to schedule within the prescribed limits, according to their specific context and to the risks that generate fatigue within their operation. The effectiveness of their scheduling practices is then monitored as part of their SMS. Through their oversight practices, the State ensures that the operator is managing their fatigue risk to an acceptable level within the constraints of the prescriptive limitations and requirements using existing SMS processes.

COVID-19 requirements within the changing operational environment mean it is even more important that these risks are managed to an acceptable level of safety as airline operations develop into a “new normal” approach.

Operators are still required to:

- retain records of work and non-work periods, including planned and actual work and non-work periods, with significant deviations from prescribed limits and minima recorded;
- publish an individual’s work schedules sufficiently in advance to allow planning for work and rest periods;
- take steps to keep changes at short notice to a minimum and to minimize their impact;
- actively manage the assignment of unscheduled duties through operational processes and procedures. Focus should be on:
 - minimizing the extent of disruption to the timing of a planned duty;
 - providing protected sleep opportunities (prior to, during and after unscheduled duties);
 - identifying minimal notification periods for changes to planned duties; and
 - limiting the number of consecutive days that they may be subject to being assigned unscheduled duties.

3.1 FATIGUE-RELATED CHALLENGES IN COVID-19 CONDITIONS

COVID-19 conditions both within the State and globally mean that there may be additional fatigue-related challenges when returning to normal operations.

In current COVID-19 conditions, the following present further challenges for managing fatigue-related risks:

- The unknown effects of the continuation of other alleviations that the operators may be using (such as extended validity periods for proficiency and medical checks);
- Reduced roster publication timelines due to rapidly changing commercial schedules;
- Fatigue mitigation options for the pairings and the roster are limited due to lack of flexibility in the reduced aircraft flying programme;
- Reduced contingency options;
- Restrictions at layover locations affecting rest periods, including hotel issues, access to nutrition, etc.;
- Uneven workload distribution between crew members due to a limited pool of pilots for reasons such as recency and currency or due to reduced number of available bases;
- Increased workload placed on training captains as more pilots return to flying requiring training for recency or currency;
- Rostering to maximum or minimum flight and duty limits and the potential for further roster disruption when delays are encountered;
- Failure of pre-flight reporting times and post flight duty to take account of the additional time needed for extra airport and company procedures;
- Short notice changes and disruption to rostered duties because of rapidly changing State restrictions;
- Airport congestion due to COVID checks creating on time performance issues;
- Additional workload and fatigue related issues with regard to the wearing of PPE with Cabin Crew & additional passenger procedures whilst on board;
- Unexpected delays or extended turnaround times due to new COVID-19 procedures;
- Difficulties associated with ensuring availability and access to adequate meals for crew during the flight period;
- Altered and more time-consuming aerodrome security arrangements secondary to COVID-19 conditions.
- Changed pairing construction, different routes and to unfamiliar airports, and changes from passenger to cargo-only flights.
- Crew hesitancy to report fatigue-related hazards when there is an over-supply of pilots.

These conditions could mean the State's prescriptive regulations, including maximum flight and duty limits and minimum rest periods may not be sufficient to maintain an acceptable level of safety due to the unknown and rapidly-changing environment. It is imperative that operators look to managing their unique operational safety risks using their SMS.

3.2 MANAGING THE ADDITIONAL COVID-19-RELATED FATIGUE-RELATED RISKS

In recognition of these additional challenges on a State's prescriptive FTDLs, consideration of the following areas on crew fatigue should also be demonstrated by the operator and reviewed during oversight activities. Operators should:

- develop planning buffers to prevent scheduling up to the limits of the prescriptive requirements;
- risk assess the impact of extended recency and proficiency checks, medicals and other alleviations on fatigue;
- closely monitor of any trends in the use of pilot discretion and take steps to minimise its use;
- monitor and seek to mitigate disruption to aircrew's planned duties, especially at short notice;
- share workload across available crew, particularly management pilots and aircrew trainers who may also be working in the simulator;
- have a process for monitoring the use of controlled rest in the flight deck (when legal under State regulations) to prevent it becoming seen as planning tool instead of an emergency procedure;
- include the importance of "crew health/fatigue checks" as part of pre-flight briefings;
- take account of increased times at airports (queuing and COVID testing) in pre and post FDP duties;
- assess layover conditions to protect crew's physical and mental health;
- assess the impact of organisational changes and restructuring, such as redundancies and the potential effect that this may have on crew and their ability to fully rested and fit for duty;
- actively encourage crew to report fatigue related occurrences and concerns they may have;
- assess the additional workload associated with the wearing of PPE and other additional passenger procedures on cabin crew.

Finally, all airlines are reminded that they need to track the performance of their fatigue management approaches through a set of assurance activities. Therefore, not only do they need to have enough flight and cabin crew, but they also need to have sufficient competent office-based personnel to carry out the necessary support activities for effective operational fatigue management.

4. APPROVING VARIATIONS TO EXISTING STATE FDTL REGULATIONS

ICAO SARPs allow for States to offer some limited flexibility to the service providers complying with the prescribed limits by way of variations. This means that in very limited circumstances and for limited periods of time, a State may allow *minor* variations to the prescribed limits. Such approval would permit an operator to schedule outside of the State's flight and duty limitations, without the need for the operator to develop a full FRMS. It is the State's responsibility to avoid the approval of variations to the FDTLs that meet operational imperatives in the absence of a risk assessment. The approval process of an operator's risk assessment in support of their request for varying from State FDTLs is discussed in detail in the Manual for the Oversight of Fatigue Management approaches (Doc 9966).

COVID-19 conditions already present additional challenges to crew, even when they are operating within prescribed FDTLs. Further, an operator may also be using alleviations, such as extensions to medicals, recency or training requirements, to enable operations in COVID-19 conditions, and the possibility of compounded risks with extended FDTLs should also be recognised and addressed. Therefore, where requests to operate outside of flight and duty limits are sought, the regulator will need to approve their use based on an operator providing a risk assessment that clearly identifies and addresses ALL associated risks, including those related to fatigue. When evaluating an operator's risk assessment and the proposed mitigations to determine whether approval will be granted, everything is proportionate to the level of safety risk posed by the variation being requested.

Given the extra challenges of operating in COVID-19 conditions, answers to the following questions are of particular relevance when a regulator is evaluating an Operator's risk assessment to support its temporary use of minor variations to national FDTLs:

- Does the operator identify a method to assess cumulative fatigue on the flights and duties associated with the variation and the full roster pattern?
- Where bio mathematical models are used by the operator to predict fatigue levels associated with the proposed flight and duty variation, does the operator clearly understand its limitations? Was operational experience also used to develop the safety case for these flights?
- Is there evidence of crew support and involvement in the development of the safety case?
For example:
 - Is there evidence that the operator has considered the impact on crew performance of factors such as confinement to room on layover, stress, etc. within the safety case?
 - Has the impact of State restrictions on entry/exit and quarantine of crew members been addressed?
 - Does accommodation and transport during layovers adequately protect crew from infection?
- Does the operator identify contingency plans for unexpected and changing circumstances?
- Has the operator identified how it will monitor the effectiveness of the proposed mitigations?

Some of the types of mitigations that a regulator could expect to see in an operator’s risk assessment to address these extra COVID-19 challenges are presented in the table below.

Areas for consideration	Possible mitigations
Route planning	<ul style="list-style-type: none"> • The report times and flight departure times should reflect a window(s) for optimal crew alertness. • For multiple sector augmented flights, the sector length must allow for adequate inflight sleep. If the sectors are too short, there might not be adequate opportunity for sleep. If the flight duty period has a long sector followed by short sectors, it can drive greater time awake. • Revised dispatch criteria are identified to avoid COVID-related issues that might cause undue workload or fatigue. • Suitable and COVID-safe airports for diversions are identified for either operational or fatigue related issues during the operation.
Scheduling	<ul style="list-style-type: none"> • Flight and cabin crews are appropriately augmented as required by the safety risk assessment for each rotation. • Pre- and post-flight rest periods enable the crew to be fully rested prior to operation and allow for a full recovery after the operation. Additional pre-trip rest to ensure fitness for duty, and post-flight rest after the specific operation to reduce cumulative fatigue on subsequent duties. • Rosters have been adjusted to avoid critical phases of flight during the window of circadian low (WOCL). • The use of the same crews for consecutive variation operations is avoided as fatigue can accumulate across a roster pattern, not just in relation to a single trip. • Scheduling adjustments are made to accommodate operating the varied FDTLs within the weekly / monthly limits for duty, rest and flight time. • On time performance is monitored and changes schedules or pairings are made where there is evidence that the plan is not working as intended. • Rest periods and facilities are suitable to enable the crew to be well rested and fit for their rostered duties when operating under the variation. • Crew feedback is sought to ensure the mitigations are and remain suitable for the operations using the variation. Where necessary changes to the mitigations or the variation is made as a result of this feedback.
Crew preparation and support	<ul style="list-style-type: none"> • Processes are identified for pre-notifying crew for extended duty operations and for ensuring reserve/standby crew are aware of potential for being called in to operate the variation.

	<ul style="list-style-type: none"> • Fatigue awareness and management briefings, specific to the variation, are developed and provided to crew sufficiently ahead of commencement of operations. • Public health corridors from aircraft to airport hotel facilities are provided to limit transit time and challenges generated by the Covid-19 situation.
In-flight fatigue management	<ul style="list-style-type: none"> • Methods to maximise in-flight rest time allocation for all crew in support of optimising crew alertness are identified. Emphasis should be placed on having the most rested crew members in control seats (and at crew stations / assigned exits for cabin crew) during the critical phases of flight. • Where crew are expected to obtain in-flight sleep, in-flight facilities must be in line with the fatigue-related science and adequate to facilitate sleep. Provision of appropriate facilities for on-board sleep and protected cabin spaces (away from passengers, cargo) to support rest. • Arrangements have been made to ensure nutritional requirements are suitable and are readily available for the duration of the duty. • Crew are provided with the flexibility to allocate rest and operational duties on the day to manage actual sleep / alertness needs of the crew. • There is a method to monitor the use of controlled rest and ensure it is used in accordance with Fatigue Management Implementation Guide for Airline Operators (see further guidance below).

The regulator's responsibilities with regards to variations to extend FTDLs should not stop at approving an operator's safety risk assessment. Rather, the regulator should monitor the effectiveness of the controls and mitigations put in place by an operator to manage the associated risks. This will assist in evaluating any future applications for minor extensions to FTDLs for limited periods of time.

5. FURTHER GUIDANCE

- **Manual for the Oversight of Fatigue Management Approaches (Doc 9966)**, Second Edition, Version 2 – with particular reference to Section 4.2.3 at:
<https://www.unitingaviation.com/publications/9966-EN/>
- **IATA/ICAO/IFALPA Fatigue Management Guide for Airline Operators** at :
<https://www.unitingaviation.com/publications/FM-Guide-Airline-Operators/>
- ICAO’s Fatigue Management website at:
<https://www.icao.int/safety/fatiguemanagement/Pages/default.aspx>
- **Webinars:**
 - [Extending Flight and Duty Limits for COVID-19 “Special Ops”](#).
This webcast discusses the risk and possible mitigating strategies of flight duty extensions, providing advice to airlines applying for variations to FDTLs and to regulators who approve these applications.
 - [Managing Fatigue in COVID-19 “Normal Operations”](#).
This webcast provides insight into managing fatigue risks introduced by the operational changes during COVID-19 conducted within national FDTLs, and how data-driven decisions are a key component of overall flight safety.