



Advisory Circular

TCAA-AC-OPS027B

February 2020

CREW FLIGHT AND DUTY TIME SCHEME

1.0 PURPOSE

This Advisory Circular (AC) provides guidance to an air operator on parameters which should be taken into account in the establishment of limits on flight times, flight duty periods and rest periods.

2.0 REFERENCES

Part IX (referring to fatigue of crew and protection of flight crew from cosmic radiation) of the Civil Aviation (Operation of Aircraft) Regulations.

3.0 LIMITS ON FLIGHT DUTY TIMES AND REST PERIODS

- 3.1. The Civil Aviation (Operation of Aircraft) Regulations require that the operator has a scheme, approved by the Authority, for the regulation of flight times of his crew. This scheme must be included in the Company Operations Manual or incorporated in a document, a copy of which has been made available to all crew members. Comprehensive guidance and instructions must be included in the manual for the benefit of both crew and those members of the operating staff who are concerned with rostering and scheduling. It may be necessary to issue one set of instructions for crew and a separate, more detailed set for other operating staff. The scheme may be more restrictive but not less restrictive when account is taken of the factors mentioned in this AC.
- 3.2. Factors to be taken into account in the developing of a scheme, providing instructions to crew on the scheme and the nature of the limitations to be specified, are indicated below. It is recognized, however, that certain operations may present special features warranting some adjustment of the parameters mentioned herein. The Authority is prepared to consider each individual case on its merit. Any concessions agreed upon in this way would be in relation to particular schedules and duty periods and it would not be permissible for them to be reflected in the operator's general instructions on flight, duty and rest periods. Requests for such concessions should be made to the Authority in writing, giving full details of all the relevant factors. Operators should note, however, that while concessions may be considered in the approval of a scheme, no concessions can be allowed which go outside the requirements of the regulations.
- 3.3. The extent to which a pilot in command is authorized in abnormal circumstances to exceed the operator's limitations on flight duty periods as described in his approved scheme, must be clearly defined in the Operations Manual. Instructions on this point should be clear and concise, so that a pilot in command can readily determine the extent of his discretionary powers.
- 3.4. Pilots in command should be instructed to file a report each time they exercise discretion. If the normal limitations are exceeded by more than 2 hours, the report should be forwarded by the operator to the Authority. In other cases, the report should be retained



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- by the operator for a period of six months. CAA Inspectors will examine such reports from time to time in their routine surveillance of the operator.
- 3.5 Operators are required to maintain and provide readily interpreted records for each crew member. It follows that there must be suitable arrangements for collecting the information necessary to compile the records. Accurate records are essential to persons responsible for the rostering of crew member.
- 3.6 Responsibility within an operator's organisation for issuing instructions and making decisions on questions of flight duty and rest periods and for processing discretion reports should be clearly defined and assigned to a member of the management personnel. The name of the person concerned, or the title of the office that he holds, must be included in the Operations Manual.
- 3.7 These requirements apply in relation to an aircraft operated or registered in (State) which is either -
- 3.7.1 Engaged on a flight for the purpose of commercial air transport; or
- 3.7.2 Operated by an air transport undertaking;
- 3.8 The requirements do not apply in relation to a flight made for the purpose of instruction in flying, given by or on behalf of a flying club or a flying school, or an organization which is not an air transport undertaking.
- 4.0 GENERAL FACTORS FOR THE DEVELOPMENT OF A FDT SCHEME FOR THE CONTROL OF FLIGHT DUTY TIME AND REST PERIOD**
- 4.1 The Civil Aviation (Operation of Aircraft) Regulations requires an operator of an aircraft to which this regulation applies to include in every operations manual to be provided under the Civil Aviation (Air Operator Certificate and Administration) Regulations for the use and guidance of the crew members of that aircraft, for the use and guidance of those members, full particulars of all limits and minimum rest periods established under the Regulations. The prime objective of any Flight Duty Times (FDT) scheme is to ensure that crew members are adequately rested at the beginning of each flight duty period. The operator, in developing his scheme for presentation to the Authority, is guided to take account of inter-related planning constraints on individual duty and rest periods and on the length of duty cycles and the associated periods of time off, giving due consideration to the cumulative effects of working long hours interspersed with minimum rest.
- 4.2 Duties must be scheduled within the limits of the operator's approved scheme. To allow for unforeseeable delays the aircraft pilot in command may within prescribed conditions, use his discretion to exceed the limits on the day. Nevertheless, flight schedules must be realistic, and the planning of duties must be designed to avoid, as far as possible, overruns of flight duty limits.



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- 4.3 The Authority will also be looking for work patterns which will avoid as far as possible undesirable rostering practices such as alternating day/night duties; the positioning of crew in a manner likely to result in a serious disruption of established sleep/work patterns; the need, particularly where flights are carried out on a scheduled basis, to allow a reasonable period for the pre-flight notification of duty to crew; and the need to plan time off.
- 4.4 Responsibility for the proper control of flight and duty time rests with the operator as well as all crew members, who must make optimum use of the opportunities and facilities provided for rest, and plan and use their rest periods properly so as to minimize the risk of fatigue. The flight crew member should also be keeping track of all his flight and duty records, and when he becomes aware that a flight assignment will exceed flight time or flight duty time limitations, he will notify the operator and shall not accept such an assignment.
- 4.5 The Authority will conduct periodic and spot checks of operators' records and aircraft pilots in command's reports to assess whether the operator's planning of flight schedules and duty in general is producing results in practice which are compatible with the limitations provided for in the operator's scheme.
- 4.6 The Authority, in reviewing the operator's scheme for approval and in its surveillance role will be seeking assurances that in the planning of duties and rest and in day-to-day operations, operators have given consideration to:
- 4.6.1 The need to ensure that crew are afforded the opportunity to obtain at least 8 consecutive hours of sleep in 24 hours in order to maintain alertness and performance and reduce the onset of fatigue and subsequent awake performance. It is emphasized that the minimum rest period scheduled prior to a period of duty must take account of travel time to and from the rest facility, hotel check in/out time, and time for personal hygiene and meals, allowing 8 consecutive hours of sleep opportunity in suitable accommodation. Typically, this translates into a minimum scheduled rest period of 10 hours. However, to allow recovery from the fatigue associated with an extended flight duty period, the minimum rest period following a period of extended flight duty shall be at least as long as the preceding duty period;
- 4.6.2 The need to allow time for recovery after prolonged performance or extended hours of continuous wakefulness. Recovery is important to reduce cumulative effects and to return an individual to usual levels of performance and alertness. In this respect, weekly recovery periods are more effective than monthly recovery periods. Studies have shown that two nights of an individual's usual sleep requirement would typically restore acceptable levels of alertness and performance;
- 4.6.3 The need to limit duty time to minimize the accumulation of fatigue across duty periods. The flight duty limitation of 14 consecutive hours in 24 consecutive hours should not be used as a licence to schedule or cause crew to operate consecutive long duty periods. Scheduling successive lengthy duty periods would cause accumulation of fatigue unless relieved by the allowance of recovery time. Shorter consecutive periods of duty or a mix



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of long and short periods are less likely to result in the same degree of accumulation of fatigue. To reduce vulnerability to fatigue from extended hours of continuous wakefulness and prolonged periods of continuous performance requirements, operators should limit cumulative flight duty periods per 24 hours;

- 4.6.4 The need to take due account of the circadian pattern of expected wakefulness during the day and sleep at night, when scheduling periods of duty and rest. Disruption of the circadian system can lead to acute sleep deficits and cumulative sleep loss resulting in decrease in performance and alertness. Flight duty periods occurring during the night will have a higher potential for reduced performance and alertness than those occurring during daytime. The window of circadian low is estimated to occur between 0200 and 0600 for individuals adapted to a usual day-wake/night-sleep pattern. For flight duty periods that cross 4 or more time zones, the window of circadian low continues to be referenced to 0200 to 0600 home-base time for the first 48 hours. If the crew member remains more than 48 hours away from home base, the window of circadian low is estimated to become 0200 to 0600 local time at the point of departure. Thus, the longer a crew member is away from home-base time zone over 4 hours, the more recovery time is needed for re-adjustment back to home-base time;
- 4.6.5 In the case of helicopters and light aircraft, the number of landings and take-offs, weather, landing sites, let-down aids, air traffic control are factors which particularly affect workload concentration resulting in increased fatigue and degradation in performance levels. Operators should therefore give due consideration to these factors in scheduling of crew and in the conduct of day-to-day operations by either limiting the duty period or the number takeoffs and landings within the duty period to ensure that crew maintain optimum performance levels;
- 4.6.6 The monitoring of actual flight time to reduce excessive accumulation of fatigue over longer periods of time. For example, if a flight crew member has flown 40 hours in the first week of a scheduled month, in successive weeks he should not be rostered to the week's limit flight hours unless he is given sufficient time off for recovery;
- 4.6.7 Exceptions due to unforeseen circumstances beyond the control of the operator cannot be scheduled events and are not intended for use as a regular practice. When used, the required off duty period must be increased by the time by which the flight duty period has been increased;
- 4.6.8 Within each 24-hour period, a crew member on reserve must be given the required 8 hours sleep opportunity prior to the flight for which he is called. This period of sleep opportunity should be protected from interruption.

5.0 RESPONSIBILITIES OF CREW MEMBERS

- 5.1 Responsibility for the proper control of flight and duty time cannot rest on the operator alone. Rest periods are a shared responsibility between the operator and the crew member. Providing adequate rest periods are the responsibility of the operator. It is the responsibility of all crew members to make optimum use of the opportunities and



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facilities for rest provided by the operator, and to plan and use their rest periods properly so as to minimize the risk of fatigue.

- 5.2 When a flight crew member has been away from base and has travelled a long distance to return to base for duty, he should arrive at the base with sufficient time to obtain adequate rest prior to reporting for flight duty.

6.0 APPROVAL OF AN OPERATOR'S SCHEME

The considerations outlined above are designed to guide operators in the development of their FDT schemes for submission to the Authority for approval. The Authority will assess each scheme against the Regulations, industry standards and guidance material and will also take account of environmental factors which are likely to affect crew performance. After reviewing the scheme the Authority will meet with the operator's representative to discuss the scheme and any changes that may be required prior to its approval.

A handwritten signature in black ink, appearing to read 'K. Bruneau', is positioned above a horizontal line.

Director of Safety Regulation