

 <p>SOUTH AFRICAN CIVIL AVIATION AUTHORITY</p>	<p>REPUBLIC OF SOUTH AFRICA</p> <p>CIVIL AVIATION AUTHORITY</p> <p>GENERAL NOTICE # AIR-2018/003</p>	<p>SACAA Private Bag X 73 Halfway House 1685</p>
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PURPOSE OF THIS NOTICE

This Notice is published to inform the industry of the proposed FRMS regulations which will be presented to the industry during the upcoming industry workshops planned for 2019

The below narrated draft will be discussed at length during the workshops planned by the SACAA, participants will be invited to attend and provide inputs to the proposals.

Note1: The regulation proposal was presented to CARcom and was thereafter referred to workgroups for further consultation. Comments are welcome and may be directed to the e-mail address at the end of this Notice

Note 2: This working paper is still in the draft format, it will be edited finally when all inputs are consolidated.

PROPOSAL TO INSERT CAR 145.01.12 IN THE REGULATIONS

PROPOSAL TO SUBSTITUTE CAR 145. TO BE ISSUED UNDER THE CIVIL AVIATION REGULATIONS, 2011

PROPOSER

SACAA

Private Bag X73
Halfway House
1684

PROPOSER'S INTEREST

The proposer has been established in terms of the Civil Aviation Act, 2009 (Act No.13 of 2009), to control and regulate Civil Aviation in South Africa and to oversee the functioning and development of the Civil Aviation industry, and, in particular, to control, regulate and promote Civil Aviation Safety and Security.

GENERAL EXPLANATORY NOTE

Words in **[bold and square brackets]** indicate deletions from the existing provisions.

Words underlined with a solid line indicate insertions in the existing provisions.

PROPOSAL TO INSERT CIVIL AVIATION REGULATIONS 145.01.12

CAR 145.01.12 Fatigue risk management for maintenance organizations

145.01.12(1) Fatigue risk management system.

- (a) No certificate holder of a Part 145 Approval may exercise the privileges of this Part without a Fatigue Risk Management System put in place in their organisation that provides at least an equivalent level of safety against fatigue-related accidents or incidents.
- (b) The Fatigue Risk Management established, implemented and maintained shall provide for continuous improvement to the overall performance of the FRM and shall include:
 - (1) A description of the philosophy and principles of the operator with regard to FRM, referred to as the FRM policy;
 - (2) Documentation of the FRM processes, including a process for making personnel aware of their responsibilities and the procedure for amending this documentation;
 - (3) A fatigue reporting system.
 - (4) A hazard identification and risk assessment process that allows managing the operational risk(s) of the organisation arising from technical personnel (as referenced on CAR 145.02.4 (1)(c)) fatigue on a continuous basis;
 - (5) A risk mitigation process that provides for remedial actions to be implemented promptly, which are necessary to effectively mitigate the organisation's risk(s) arising from technical personnel fatigue and for continuous monitoring and regular assessment of the mitigation of fatigue risks achieved by such actions;
 - (6) Scientific principles and knowledge;
 - (7) Fatigue Risk Management training programmes, training requirements and attendance records;

145.01.12 (2) Fatigue education and awareness training program.

- (a) Each certificate holder must develop and implement an education and awareness training program as prescribed in SA-CATS 145, the program shall be approved by the Director. This program must provide annual education and awareness training to all employees of the certificate holder responsible for administering the provisions of this regulation.
- (b) The fatigue education and awareness training program must be designed to increase awareness of:
 - (1) Fatigue;
 - (2) The effects of fatigue on aircraft maintenance engineers; and
 - (3) Fatigue countermeasures
- (c) Each certificate holder must update its fatigue education and awareness training program every two years and submit the update to the Director for review.

2. MOTIVATION

This proposal is developed in support of the developments in managing risks as a result of fatigue. This is essential for aviation safety such that there is an urgent need to improve monitoring of human related deficiencies within the aviation system, and aligned to the improvements for Air operators, it stands to reason that Organizations in support of the Operator should have similar safety awareness and intervention mechanisms.

The need to improve monitoring with regards to Fatigue has been emphasized by an increased number of incidents that are caused by tiredness. This has been recorded as critical for Maintenance personnel, and there are extensive regulations and technical standards developed for insertion into CAR 121. In line with these provisions, the SACAA saw it wise to extend some of the elements to Aircraft Maintenance Organizations since this can easily affect Maintenance personnel, however the proposed regulation does not seek to have AMO's to develop comprehensive Fatigue Risk Management Programs similar to an Airline Operation that operates across time zones. The elements introduced seek to guide AMO's to develop a mild Fatigue Risk awareness, simplistic detection and possible intervention mechanisms

PROPOSAL TO INSERT SA-CATS 145.01.12 IN THE TECHNICAL STANDARDS

PROPOSAL TO SUBSTITUTE SA- CATS 145. TO BE ISSUED UNDER THE CIVIL AVIATION REGULATIONS, 2011

PROPOSER

SACAA

Private Bag X73
Halfway House
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PROPOSER'S INTEREST

The proposer has been established in terms of the Civil Aviation Act, 2009 (Act No.13 of 2009), to control and regulate Civil Aviation in South Africa and to oversee the functioning and development of the Civil Aviation industry, and, in particular, to control, regulate and promote Civil Aviation Safety and Security.

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PROPOSAL TO INSERT SA- CATS 145.01.12

SA-CATS-AMO 145.01.12

1. Aircraft Maintenance Organizations

1.1 An AMO approval holder engaged in aircraft maintenance must comply with the limits and requirements for aircraft maintenance personnel mentioned in one or more of the following paragraphs, in accordance with CAR 145.01.12:

(a) The limits and requirements specified in Appendix 1;

(b) if the AMO approval holder is engaged in shift duty operations — the limits and requirements specified in Appendix 2;

1.2 Each AME of an AMO approval holder mentioned in paragraph 1.1 must comply with the limits and requirements mentioned in the paragraph or paragraphs which the AMO approval holder has chosen to comply with under subpart 1.1

2 Operations under multiple appendices

2.1 If, under subsection 1, two or more Appendices apply to a single duty period of an AME, the following rules apply for an operation undertaken at any particular time in the maintenance duty period:

(a) the maximum duty that an AMO approval holder and an AME must comply with is the duty limit contained in the Appendix under which the operation is being conducted at that particular time;

(b) the maximum overtime that an AMO approval holder and an AME must comply with is the overtime limit contained in the Appendix under which the operation is being conducted at that particular time.

2.2 In determining the maximum duty and overtime under paragraph 2.1, the limit determined from each Appendix must be based on the time of commencement of the maintenance duty period, and not on the time of commencement of operations under each Appendix.

2.3 At any particular time in a maintenance duty period, the AMO approval holder and AME must each ensure that the AME remains within the cumulative duty and cumulative overtime limits for the Appendix under which the operation is being conducted at that particular time.

2.4 Where operations under two or more Appendices are undertaken in a single maintenance duty period, the minimum off-duty period that the AMO approval holder and AME must comply with following the duty period is that contained in the Appendix with the highest off-duty period as if the entire maintenance duty was performed under that Appendix.

2.5 An AMO approval holder and an AME must comply with the off-duty period requirements of the Appendix determined under paragraph 2.4 before the AME commences another maintenance duty period.

3 AMO approval holder obligations

Fitness for duty

3.1 The approval holder must not require an AME to perform work on an aircraft if, considering the circumstances of the task to be undertaken, the holder has reason to believe that the AME is suffering from, or is likely to suffer from,

fatigue which may so impair the AME's performance that the safety and quality of work may be affected.

Limits

3.2 An AMO approval holder must determine for each AME the limits and requirements that apply to the AME in accordance with the maximum continuous duty time allowed.

Manual of Procedure

3.3 The AMO approval holder must include in the MOP:

- (a) the limits arising from compliance with each applicable standards of the FRMS that the holder has chosen to apply to an AME, showing:
 - (i) each maximum continuous duty limit which must not be exceeded; and
 - (ii) each minimum off-duty limit which must not be reduced; and
- (b) for AMEs conducting a particular maintenance task — each limit mentioned in subparagraph (a) as modified by the AMO approval holder for the AMEs and the operation, but not so as to exceed a maximum limit, or reduce a minimum limit, and
- (c) where the need to take account of possible hazards arises — for AMEs conducting a particular maintenance task, each limit mentioned in subparagraph (b) as modified by taking the possible hazard into account.

Employee responsibilities

3.4 An AMO holder must set out in the MOP its employees' responsibilities for operational fatigue management, and fatigue risk management.

Meals

3.5 Where an AME's continuous duty time is to exceed 5 hours, the AMO approval holder must provide the opportunity for the AME to have access to adequate sustenance (a meal) during the first 5 hours and periodically after that meal, so that not more than 5 hours elapse between each meal.

Records and reports

3.6 An AMO approval holder must maintain records, (including relevant reports and documents) of the following:

- (a) AME rosters;
- (b) normal duty periods and overtimes;
- (c) actual shift-work rest periods, standby periods and off-duty periods;
- (d) the AMEs and over time limits specified in the MOP that were extended due to operational requirements.

3.7 Each record mentioned in paragraph 3.6, including copies of reports and documents, must be securely retained for at least 5 years from the date the record and copy were made.

3.8 Each record concerning an extension of duty time or a shift work limit mentioned in subparagraph 3.6 (d) must be:

- (a) studied and used by the AMO approval holder to provide for continuous improvement of the holder's fatigue management, and fatigue risk management policies; and
- (b) sent to SACAA within 14 days of the extension occurring.

Home base

3.9 An AMO approval holder engaged in aircraft maintenance services must:

- (a) determine the home base for each AME, and inform each AME of his or her home base; and
- (b) set out in its MOP details of these home base determinations along with procedures to ensure that any change in an AME's home base will not adversely affect aviation safety.

Rosters

3.10 An AMO approval holder must publish each roster so far in advance of the duty times and standby periods listed in it as to provide the AME to whom it applies with a reasonable opportunity to plan adequate rest before his or her duty.

Hazards

3.11 The AMO approval holder must set out the following in the MOP:

- (a) procedures for identifying any reasonably foreseeable hazard that may compromise an AME's alertness during duty times;
- (b) procedures for determining the limits and requirements mentioned in subparagraph 3.3 (c) which take into account the identified hazards;
- (c) procedures for the continuous monitoring and evaluation of the AMO approval holder's policies, limits, practices and relevant organisational experiences, taking into account the hazards identified by the procedures mentioned in subparagraph (a), with a view to continuous improvement of fatigue management, and fatigue risk management;
- (d) where the AMO approval holder undertakes operations involving shift work — procedures to ensure that transitions between the different limits:
 - (i) are undertaken in accordance with subsection 2; and
 - (ii) do not affect aviation safety;
- (e) a description of the training resources required.

Training

3.12 The AMO approval holder must, as a minimum:

- (a) make available a training programme, and require each AME to undertake, initial and recurrent fatigue-related risk training relevant to the AME's duties in operations under the AMO; and
- (b) at the end of the initial training, and at the end each occasion of recurrent training — assess the AME's knowledge and learning from the training.

3.13 Initial training under paragraph 3.14:

- (a) for an AME who becomes an AMO approval holder's employee after this requirement takes effect for the holder — must occur within 6 months of the person commencing the employment; and
- (b) for an AME who was the AMO approval holder's employee on the date this requirement takes effect for the holder — must occur within 6 months of the requirement taking effect.

3.14 Initial training must:

- (a) be in accordance with a syllabus; and
- (b) deliver a thorough knowledge and understanding of the following:
 - (i) fatigue causes;
 - (ii) fatigue-related impairment;
 - (iii) the management of risks associated with fatigue;
 - (iv) the AMO holder's fatigue risk management obligations and procedures under the operations manual and this requirement; and

(c) equip each AME with the ability to comply with his or her obligations under this requirement in operations for the AMO approval holder.

3.15 Recurrent training must occur at appropriate intervals and:

- (a) be in accordance with a syllabus; and
- (b) revise, build on, and increase the knowledge and understanding acquired under paragraph 3.14.

3.16 An AME must:

- (a) attend the initial and each recurrent training mentioned in paragraph 3.12; and
- (b) at the end of each training, successfully complete an assessment of learning from the training; and
- (c) satisfy the AMO approval holder that he or she has sufficient knowledge of, and competence in managing, the fatigue-related risks relevant to his or her duties as an AME.

3.17 The AMO approval holder must maintain for each AME records of training and assessment completed under this subsection.

3.18 Each record mentioned in paragraph 3.17 must be securely retained for at least 5 years from the date the record was made.

4. Aircraft Maintenance Engineer obligations

4.1 It shall be a condition on each AME licence that the licence holder must not begin maintenance of an aircraft or aircraft component if, considering the circumstances of the task to be undertaken, he or she has reason to believe that he or she is suffering from, or is likely to suffer from, fatigue which may so impair performance that the safety of the operation may be affected.

Note: An AME employed by an AMO approval holder should utilise off-duty periods and adaptation periods to obtain an amount of sleep sufficient to support the appropriate and safe discharge of duties during his or her next rostered normal/shift duty or standby.

4.2 An AME employed by an AMO approval holder must, before any maintenance duty, disclose to the AMO approval holder anything affecting the AME or connected with the task, which he or she has reason to believe may affect his or her ability to meet the AMO approval holder's fatigue risk management policies or the limits and requirements of the Appendix or Appendices that the holder has chosen to apply to the AME.

Note: Without limiting the scope of paragraph 4.2, examples of "anything affecting the AME or connected with the task include any secondary employment engaged in by the AME, being unable to obtain sufficient sleep during sleep opportunities, living a long distance from base, travelling a long distance to report for duty. These and other things must be disclosed to the AMO approval holder if the AME has reason to believe that, because of their nature, duration, effects or for any other reason, such things may affect his or her ability to meet the AMO approval holder's fatigue risk management policies and obligations.

4.3 Paragraph 4.2 does not require the repetition of anything which the AME has previously disclosed to the AMO approval holder as a continuing state of affairs.

5 Fatigue Risk Management Policy

(a) The organisation's FRM policy should identify all the elements of FRM.

(b) The FRM policy should define to which operations FRM applies.

(c) The FRM policy should:

- (1) reflect the shared responsibility of management, flight and cabin crew , and other involved personnel;
- (2) state the safety objectives of FRM;
- (3) be signed by the accountable manager;
- (4) be communicated, with visible endorsement, to all the relevant areas and levels of the organisation;
- (5) declare management commitment to effective safety reporting;
- (6) declare management commitment to the provision of adequate resources for FRM;
- (7) declare management commitment to continuous improvement of FRM;
- (8) require that clear lines of accountability for management, flight and cabin crew , and all other involved personnel are identified; and
- (9) require periodic reviews to ensure it remains relevant and appropriate.

6 FRM DOCUMENTATION

The operator should develop and keep current FRM documentation that describes and records:

- (a) FRM policy and objectives;
- (b) FRM processes and procedures;
- (c) accountabilities, responsibilities and authorities for these processes and procedures;
- (d) mechanisms for on-going involvement of management, flight and cabin crew members, and all other involved personnel;
- (e) FRM training programmes, training requirements and attendance records;
- (f) scheduled and actual flight times, duty periods and rest periods with deviations and reasons for deviations; and
- (g) FRM outputs including findings from collected data, recommendations, and actions taken.

7 IDENTIFICATION OF HAZARDS

The operator should develop and maintain three documented processes for fatigue hazard identification:

(a) Predictive

The predictive process should identify fatigue hazards by examining personnel scheduling and taking into account factors known to affect sleep and fatigue and their effects on performance. Methods of examination may include, but are not limited to:

- (1) organisation or industry operational experience and data collected on similar types of operations;
- (2) evidence-based scheduling practices; and
- (3) bio-mathematical models.

(b) Proactive

The proactive process should identify fatigue hazards within current maintenance operations. Methods of examination may include, but are not limited to:

- (1) self-reporting of fatigue risks;
- (2) crew fatigue surveys;
- (3) relevant personnel performance data;
- (4) available safety databases and scientific studies; and
- (5) analysis of planned versus actual time worked.

(c) Reactive

The reactive process should identify the contribution of fatigue hazards to reports and events associated with potential negative safety consequences in order to determine how the impact of fatigue could have been minimized. At a minimum, the process may be triggered by any of the following:

- (1) fatigue reports;
- (2) confidential reports;
- (3) audit reports;
- (4) incidents.

APPENDIX 1 — BASIC LIMITS

1 Sleep opportunity before commencement of continuous AME's duty

- 1.1 An AME must not be assigned or commence a maintenance duty commencing away from home base unless, within the 10 hours immediately before commencing the duty, he or she has at least 8 consecutive hours' sleep opportunity.
- 1.2 An AME must not be assigned or commence duty commencing at home base unless, within the 12 hours immediately before commencing the duty, he or she has at least 8 consecutive hours' sleep opportunity.

2 Maintenance duty and overtime limits

- 2.1 An AME may only be assigned duties with a total duration no longer than 12 hours in any 1 day (the Maintenance duty limit).
- 2.2 An AME's total overtime on any 1 day must not exceed 4 hours (the Overtime limit).
- 2.3 An AME must not exceed Maintenance duty limit or overtime limit in this clause, except where an extension provision in clause 3 permits.

3 Extensions

- 3.1 Despite sub clause 2.2, the Maintenance duty limit mentioned in subclause 2.2 may be extended by up to 1 hour if:
 - (a) the duty has commenced; and
 - (b) unforeseen operational circumstances arise; and
 - (c) an extension of the maintenance duty is operationally necessary to complete the task; and
 - (d) the AME considers himself or herself fit for the extension.
- 3.2 Despite sub clause 2.3, the overtime limit mentioned in subclause 2.3 may be extended by up to 30 minutes if:
 - (a) the duty has commenced; and
 - (b) unforeseen operational circumstances arise; and
 - (c) an extension of the overtime limit is operationally necessary to complete the task; and
 - (d) the AME considers himself or herself fit for the extension.

4 Off-duty period limit

- 4.1 An AME must have a minimum off-duty period of at least 12 consecutive hours during any consecutive 24 hour period.
- 4.2 An AME must have a minimum of 2 days off-duty during any consecutive 7 day period.

5 Limit on cumulative overtime

- 5.1 The cumulative overtime accrued by an AME during any consecutive 28 day period must not exceed 80 hours.
- 5.2 The cumulative overtime accrued by an AME during any consecutive 365 day period must not exceed 800 hours.

APPENDIX 2 – SHIFT DUTY OPERATIONS

1 Sleep opportunity before shift duty or standby

- 1.1 An AME must not be assigned or commence an shift duty or standby commencing away from home base unless he or she has at least 8 consecutive hours' sleep opportunity within the 10 hours immediately before:
 - (a) if the commencement of the duty has not been delayed — commencing the shift or standby; or
 - (b) if the commencement of the duty has been delayed, but by less than 10 hours — the original reporting time for the shift duty or standby; or
 - (c) if the commencement of the duty has been delayed by 10 hours or more — commencing the shift or standby following the delay.
- 1.2 An FCM must not be assigned or commence an shift duty or standby commencing at home base unless he or she has at least 8 consecutive hours' sleep opportunity within the 12 hours immediately before:
 - (a) if the commencement of the duty has not been delayed — commencing the shift duty or standby; or
 - (b) if the commencement of the duty has been delayed, but by less than 10 hours — the original reporting time for the shift duty or standby; or
 - (c) if the commencement of the duty has been delayed by 10 hours or more — commencing the shift duty or standby following the delay.

2. MOTIVATION

This proposal is developed in support of the developments in managing risks as a result of fatigue. This is essential for aviation safety such that there is an urgent need to improve monitoring of human related deficiencies within the aviation system, and aligned to the improvements for Air operators, it stands to reason that Organizations in support of the Operator should have similar safety awareness and intervention mechanisms.

The need to improve monitoring with regards to Fatigue has been emphasized by an increased number of incidents that are caused by tiredness. This has been recorded as critical for Maintenance personnel, and there are extensive regulations and technical standards developed for insertion into CAR 121. In line with these provisions, the SACAA saw it wise to extend some of the elements to Aircraft Maintenance Organizations since this can easily affect Maintenance personnel, however the proposed regulation does not seek to have AMO's to develop comprehensive Fatigue Risk Management Programs similar to an Airline Operation that operates across time zones. The elements introduced seek to guide AMO's to develop a mild Fatigue Risk awareness, simplistic detection and possible intervention mechanisms

****The end****

Any queries or requests for further guidance as a result of this communication should be sent to:
The Manager, Airworthiness Department; e-mail address: amo@caa.co.za (Tel: 011 545 1286).

Issued by the SACAA: Airworthiness Department

Date : 01/12/2018