U.S. Department
of Transportation
Federal Aviation
Administration

Advisory Circular

Subject: Fatigue Education and Awareness Training Program

Date: 10/11/12 **AC No:** 117-2
Initiated by: AFS-220 **Change:**

1. PURPOSE. This advisory circular (AC) presents guidelines for developing and implementing a Fatigue Education and Awareness Training Program. These guidelines apply to those certificate holders conducting operations under Title 14 of the Code of Federal Regulations (14 CFR) part 117. This AC presents an acceptable means, but not necessarily the only way, that certificate holders may comply with Fatigue Education and Awareness Training Program requirements prescribed in part 117, § 117.9. Each 14 CFR part 121 certificate holder conducting operations under part 117 must have a Federal Aviation Administration (FAA)-approved Fatigue Education and Awareness Training Program as prescribed in § 117.9. The training program must be designed to increase awareness and understanding of fatigue, the effects of fatigue on pilots, and fatigue countermeasures. This AC may also provide valuable information to certificate holders conducting operations other than under part 117 to educate their employees on the effects of fatigue on the safety of flight. The contents of this document do not have the force and effect of law and are not meant to bind the public in any way. This document is intended only to provide clarity to the public regarding existing requirements under the law or agency policies.

2. AUDIENCE. The information contained in this AC applies to all part 121 certificate holders conducting operations under part 117, all employees responsible for administering the provisions of the new rule, including flightcrew members, dispatchers, individuals directly involved in the scheduling of flightcrew members, individuals directly involved in operational control, and any employee providing direct management (an employee's immediate supervisor) oversight of those areas. Personnel responsible for crew scheduling or involved with operational control need to understand the causes of fatigue as well as the risk that pilot fatigue poses to safe operations.

3. REGULATORY REQUIREMENTS.

- Title 14 CFR part 91.
- Title 14 CFR part 117, § 117.9.
- Title 14 CFR part 121.

4. RELATED READING MATERIAL (current editions).

- AC 120-100, Basics of Aviation Fatigue.
- AC 120-103, Fatigue Risk Management Systems for Aviation Safety.
- AC 117-3, Fitness for Duty.

5. DEFINITIONS.

a. Fatigue. Is a physiological state of reduced mental or physical performance capability resulting from lack of sleep or increased physical activity that can reduce a crewmember's alertness and ability to safely operate an aircraft or perform safety-related duties.

b. Fit for Duty. Means being physiologically and mentally prepared and capable of performing assigned duties in flight with the highest degree of safety. This function also assumes that the flightcrew member is properly rested.

6. BACKGROUND. Fatigue training requirements are critical to mitigating the risk of fatigue by ensuring that both flightcrew members and certificate holders understand the effects of fatigue on the safety of flight. Each part 121 certificate holder operating under part 117 must develop, implement, update, and maintain an FAA-approved Fatigue Education and Awareness Training Program. The training program must be part of a certificate holder's FAA-approved ground training curriculum. The Fatigue Education and Awareness Training Program required under § 117.9 is an expansion of the Fatigue Risk Management Plan (FRMP) training requirements outlined in Public Law (PL) 111-216, § 212(b)(2)(B). The training applies to all employees responsible for administering the provisions of the new rule, including flightcrew members, dispatchers, individuals directly involved in the scheduling of flightcrew members, individuals directly involved in operational control, and any employee providing direct management oversight of those areas.

7. TRAINING PROGRAM ELEMENTS.

a. The Fatigue Education and Awareness Training Program. This training program should provide instruction and information in the areas of general fatigue science, the effects of fatigue on pilots, and fatigue countermeasures. The Fatigue Education and Awareness Training Program subject areas are identical as those outlined in Information for Operators (InFO) 10017, Fatigue Risk Management Plans (FRMP) for Part 121 Air Carriers – Part Two, dated August 19, 2010. The certificate holder's Fatigue Education and Awareness Training Program may include the following subject areas:

(1) Review of FAA flight, duty, and rest regulatory requirements.

- Review of applicable sections of 14 CFR parts 91, 117, and 121;
- Review of National Transportation Safety Board (NTSB) safety recommendations regarding fatigue; and
- Effects of fatigue on flight operations.

(2) Awareness of the certificate holder's FRMP.

- Flight time, duty, and rest schemes consistent with limitations;
- Fatigue reporting policy, procedures, and processes;
- Fatigue mitigation policies and procedures; and
- Responsibilities of management and employees to mitigate or manage the effects of fatigue and improve flightcrew member flight deck alertness.

(3) The basics of fatigue, including sleep fundamentals and circadian rhythms.

- Basic terms and definitions related to the science of fatigue,
- Basic sleep fundamentals,
- Overview of circadian rhythms, and
- Signs and symptoms of fatigue.

(4) The causes and awareness of fatigue.

- Shift work,
- Workload,
- Cumulative duty,
- Time zone changes, and
- Illness and stress.

(5) The effects of operating through multiple time zones.

- Sleep phase shift,
- Circadian rhythm disruption ("jetlag"),
- Operations in westerly directions,
- Operations in easterly directions, and
- Acclimation.

(6) The effects of fatigue relative to pilot performance.

- Judgment error,
- Loss of situational awareness/reduced attention,
- Degradation of performance,
- Increased reaction time, and
- Diminished memory.

(7) Fatigue countermeasures, prevention, and mitigation.

- Prevention,
- Adequate rest,
- Nutrition,
- Mitigation,
- Rest management,
- Rest facilities, and
- Suitable accommodations.

(8) The influence of lifestyle, including nutrition, exercise, and family life on fatigue.

- Nutrition,
- Exercise,
- Hydration,

- Family life,
- Caffeine and stimulants, and
- Alcohol use.

(9) Familiarity with sleep disorders.

- Insomnia,
- Sleep apnea, and
- Restless leg syndrome.

(10) The effects of fatigue as a result of commuting.

- Responsible commuting and good commuting practices,
- Being properly rested prior to begin a duty assignment,
- Travel delays, and
- Lack of adequate rest.

(11) Pilot responsibility for ensuring adequate rest and fitness for duty.

- Flightcrew member responsibility,
- Responsibility in accordance with § 117.5,
- Obtaining quality rest,
- Personal strategies for preventing and managing fatigue risk,
- Responsibility to report fatigue, and
- Fatigue recognition and personal assessment of fatigue and identifying signs of fatigue in others.

(12) Certificate holder's responsibility for ensuring adequate rest and fitness for duty.

- Responsibility in accordance with § 117.5,
- Fatigue reporting procedures,
- Actions to be taken in the event of a fatigue report, and
- Scheduling practices.

(13) Operational procedures to follow when one identifies or suspects fatigue risk in oneself or others.

(14) Incorporate lessons learned regarding the effects of fatigue and mitigation initiatives relative to the certificate holder's operations.

8. ADEQUACY OF THE TRAINING PROGRAM. Each part 121 certificate holder operating under part 117 should develop a methodology for continually assessing the effectiveness of their training program. The assessment should consider current fatigue science, data collected from flightcrew member fatigue reports, lessons learned, and measurements used to evaluate the effectiveness of the training program.

9. FATIGUE EDUCATION AND AWARENESS TRAINING PROGRAM UPDATES. Each part 121 certificate holder operating under part 117 must update their Fatigue Education and Awareness Training Program every two years. The certificate holder should submit their update to the FAA for review 12 months prior to the expiration date of their training program. The certificate holder's initial Fatigue Education and Awareness Training Program and all non-minor changes to that program must receive FAA approval per § 117.9(a) prior to implementation. Updates to this program only need to be accepted by the FAA as a minor change to the program and do not go through the approval process. However, the FAA emphasizes that a major change to the Fatigue Education and Awareness Training Program would be considered a new program, and this change would have to be approved by the FAA before it is implemented.

a. Revisions. Training program revisions should be submitted electronically to the Air Transportation Division via email at 9-AFS-200-Correspondence@faa.gov, and provide its Principal Operations Inspector (POI) with a copy. Upon receipt of the package, the Air Transportation Division will acknowledge to the sender receipt of the package via automatic email reply.

b. Accepted/Rejected Updates. The FAA will either accept or reject the updates within 12 months of the submission. If an update is rejected, the FAA will provide the certificate holder with suggested modifications for resubmission of their update.

10. FREQUENCY OF TRAINING. All personnel covered under § 117.9 must be trained annually.

11. CONTACT INFORMATION. For more information about the content of this AC, please contact the Air Transportation Division at 202-267-8166.

12. AC FEEDBACK FORM. For your convenience, the AC Feedback Form is the last page of this AC. Note any deficiencies found, clarifications needed, or suggested improvements regarding the contents of this AC on the Feedback Form.

/s/ for
John M. Allen
Director, Flight Standards Service

Advisory Circular Feedback Form

If you find an error in this AC, have recommendations for improving it, or have suggestions for new items/subjects to be added, you may let us know by contacting the Air Transportation Division at 9-AFS-200-Correspondence@faa.gov or the Flight Standards Directives Management Officer at 9-AWA-AFB-120-Directives@faa.gov.

Subject: AC 117-2, Fatigue Education and Awareness Training Program

Date: _____

Please check all appropriate line items:

☐ An error (procedural or typographical) has been noted in paragraph _____ on page _____.

☐ Recommend paragraph _____ on page _____ be changed as follows:

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☐ In a future change to this AC, please cover the following subject:
(Briefly describe what you want added.)

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☐ Other comments:

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☐ I would like to discuss the above. Please contact me.

Submitted by: _____ Date: _____