U.S. Department
of Transportation
Federal Aviation Administration

Office of the Chief Counsel

800 Independence Ave., S.W.
Washington, D.C. 20591

APR - 4 2016

Jeff Schnaubelt
[redacted]

Re: Fitness for duty under 14 C.F.R. § 117.5.

Dear Mr. Schnaubelt,

This is in response to your letter posing several questions about the fitness-for-duty requirements of 14 C.F.R. § 117.5. Our answers to your questions are set out below.

1. Level of fatigue permitted under § 117.5

For your first question, you ask whether a flightcrew member may certify as fit for duty and accept a flight assignment knowing "that there is a good chance of a slight or mild amount of fatigue before the end of the flight."

Part 117 contains a set of flight, duty, and rest regulations that apply to all part 121 passenger operations and certain part 91 operations.[1] One of those regulations is § 117.5(d), which requires a flightcrew member to "affirmatively state that he or she is fit for duty prior to commencing flight." Part 117 defines "fit for duty" as "physiologically and mentally prepared and capable of performing assigned duties at the highest degree of safety."[2]

Section 117.5 does not quantify the amount of fatigue that would render a flightcrew member unfit for duty. Instead, it employs a functional test: whether the individual flightcrew member is capable of performing the assigned duties at the highest level of safety. This individualized determination is based on a multitude of factors, such as the length and difficulty of the assignment and the flightcrew member's self-knowledge of how he or she reacts to different levels of fatigue. Because of the many individual factors that go into a fitness for duty determination, the FAA declines to categorically find that a slight amount of fatigue that appears at the end of a flight duty period (FDP) would always render a flightcrew member unfit for duty.

[1] 14 C.F.R. § 117.1.
[2] 14 C.F.R. § 117.3 (fitness for duty definition).

2. Certifying fitness for duty after being awake for 16 hours

For your second question, you ask whether a flightcrew member who has been awake for 16 continuous hours may certify that he or she is fit for duty.

As discussed in the previous response, there are a multitude of individual factors that go into a fitness-for-duty determination. While there is a significantly higher likelihood that a person who has been awake for an extended period of time will not be fit for duty, the regulatory text of part 117 does not categorically prohibit a person from being awake for 16 hours. Rather, part 117 requires each flightcrew member to make an individual determination as to whether he or she is fit for duty. The FAA expects that each flightcrew member's fitness-for-duty consideration will include, as one factor, the amount of time that the flightcrew member has been continuously awake.

3. Certifying fitness for duty as to specific flight segments

For your third question, you provide the following example. A flightcrew member is assigned to an FDP with three flight segments. At the beginning of the FDP, the flightcrew member determines that he or she is fit to fly the first two segments, but will be too fatigued to fly the third flight segment. You ask whether this flightcrew member may commence the FDP and fly the first two flight segments.

The FAA answered a similar question in a document that it issued to clarify the requirements of part 117.[3] In that clarification document, the FAA considered a scenario in which a flightcrew member assigned to a six-segment FDP determined, prior to commencing the fifth flight segment, that he was fit to fly the fifth segment but would not be fit to fly the sixth flight segment. The clarification document concluded that a certificate holder would not be in violation of § 117.5 if it permitted the flightcrew member to fly on the fifth flight segment.

Applying the above analysis to your scenario, a flightcrew member who certifies that he or she is fit to fly the first two segments of a three-segment FDP may fly those segments. That flightcrew member may not fly the last segment for which he or she is not fit for duty. The FAA also emphasizes that under § 117.5(d), a flightcrew member must reassess his or her fitness for duty prior to commencing each flight segment.

4. Fitness for duty with regard to FDP extensions

For your fourth question, you note that § 117.19 allows a certificate holder to extend an FDP by up to two hours. You ask whether a flightcrew member must report to an FDP sufficiently rested to accommodate a possible two-hour FDP extension.

Section 117.5(a) requires a flightcrew member to "report for any flight duty period rested and prepared to perform his or her *assigned* duties." (emphasis added). As the emphasized portion of the § 117.5(a) regulatory text indicates, the fitness-for-duty

[3] *Clarification of Flight, Duty, and Rest Requirements*, 78 FR 14166, 14169 (Mar. 5, 2013).

requirement applies to duties that are assigned, not duties that could be assigned. Accordingly, until a certificate holder decides that an FDP extension is necessary, a flightcrew member's fitness-for-duty determination is based on the assumption that the FDP will not be extended.

If a decision is made to extend the FDP, a flightcrew member must reassess his or her fitness for duty to determine whether he or she can continue to serve on the extended FDP. If the flightcrew member determines that he or she cannot serve on an extended FDP, the flightcrew member must immediately notify the certificate holder.

5. Becoming unfit for duty while airborne

For your final question, you ask what a flightcrew member should do if he discovers that he is unfit for duty while flying in an airborne aircraft. You ask whether the flightcrew member should declare an emergency and land at the nearest airport or whether non-fatigued flightcrew members should continue the flight while the fatigued flightcrew member takes an inflight nap.

If a flightcrew is augmented and there are non-fatigued flightcrew members who are able to take over a fatigued flightcrew member's duties, then they should do so to allow the fatigued flightcrew member to obtain inflight rest. If a flightcrew is unaugmented then the decision of whether to conduct an emergency landing will depend on the flightcrew member's fatigue level. If the fatigued flightcrew member determines that he can safely land the aircraft at the intended destination, then he should continue to that destination and land. However, if the flightcrew member determines that he is too fatigued to safely land at the intended destination, then he should land the aircraft at the nearest suitable location to avoid accumulating additional amounts of fatigue while operating the aircraft.

We appreciate your patience and trust that the above responds to your concerns. If you need further assistance, please contact my staff at (202) 267-3073. This response was prepared by Alex Zektser, Attorney, Regulations Division of the Office of the Chief Counsel, and coordinated with the Air Transportation Division of Flight Standards Service.

Sincerely,



Lorelei Peter
Assistant Chief Counsel for Regulations, AGC-200

January 06, 2016

Mr. Zektser,

In the spirit of the Small Business Regulatory Enforcement Fairness Act, I am requesting the following legal interpretations as they relate to FAR 117; Fitness for Duty.

Question #1: The Fitness for Duty definition under 117.3 states, "Fit for duty means physiologically and mentally prepared and capable of performing assigned duties at the highest degree of safety." There are varying levels of fatigue ranging from being mildly tired - to being delirious with difficulty staying awake. What level of fatigue can a flightcrew member experience and still operate at the "highest level of safety" as it is relates to the Fitness for Duty definition provided in 117.3? Would a slight or mild amount of fatigue allow the flightcrew member to operate at the FAA's definition of the "highest level of safety", and allow the flightcrew member to affirm fitness for duty as per 117.5(d)? This question is important to flightcrew members who are in a situation where they are taking a flight late in their duty day when they need to forecast their level of fatigue several hours into the future when making their 117.5(d) fitness for duty affirmation. Flightcrew members cannot simply use their current level of fatigue when making their fitness for duty determination, they must ascertain what their condition will be at the end of the flight. For example, a flightcrew member may not have any signs of fatigue at the beginning of a flight (when making the 117.5(d) affirmation), but the flightcrew member may be aware that there is a good chance that he/she may experience some level of fatigue several hours later when landing at the destination airport (possibly because of the time of night and/or because of time of wakefulness). Is this flightcrew member operating at the 117.3 definition of the "highest level of safety" when taking a flight knowing that there is a good chance of a slight or mild amount of fatigue before the end of the flight?

Question #2: There is much evidence that human performance is compromised to an unsafe level after being continuously awake 16-hours. Would a flightcrew member be operating at the "highest level of safety" according to the Fitness for Duty definition in 117.3 if he/she affirms Fit for Duty as per 117.(d) knowing that his/her flight is scheduled to end at a time when the flightcrew member will be awake for 16+ continuous hours? For example, a flightcrew member is alert and fit at the time he/she makes his/her fitness for duty affirmation at a time when he/she has been awake for 13 continuous hours ... but the flight is 4-hours in duration, and by the time the flightcrew member lands he/she will have been continuously awake for 17 hours. If the flightcrew member is aware of the hazardous effects of being awake more than 16 continuous hours, is that flightcrew member operating at the "highest level of safety" as per the 117.3 Fitness for Duty definition, knowing that there is a high likelihood that he/she will experience an unsafe level of fatigue (according to the studies shown below) before the flight lands at the destination airport?

Here is some literature that points to the danger of being continuously awake for 16-hours:

--- A 2011 National Research Council study on The Effects of Commuting on Pilot Fatigue, states, "Fatigue as a risk to individual pilot performance can result from being awake continuously for more than approximately 16 hours", and is very specific that pilots should not be on duty when they've been awake for 16 consecutive hours.
http://www.nap.edu/catalog/13201/the-effects-of-commuting-on-pilot-fatigue
Page 79, 97

--- A 2000 Sleep Deprivation Study[1] was done by the University of South Wales (Williamson - Feyer). The report states, "Many people remain awake for periods of 16 hours or more for reasons of work, family, or social

life. These results suggest that after this duration of wakefulness fatigue reaches a level that can compromise safe performance. The researchers also reported that being awake for 17 continuous hours can have some of the same hazardous effects as having a blood/alcohol content of .05%.
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1739867/
Page 653, 654

[1] There are two earlier studies that have similar results: Dawson-Reid 1997, Lamond-Dawson 1999

--- A 2012 FAA Advisory Circular on Fitness for Duty (AC117-3 Fitness for Duty) cautions pilots about long commutes to work & extended pre-duty activities, and warns pilots not to be awake more than 16-hours before the end of the scheduled duty day.
http://www.faa.gov/documentLibrary/media/Advisory_Circular/AC%20117-3.pdf
Page 7, 8

Question #3: 117.5(a) states that "Each flightcrew member must report for any flight duty period rested and prepared to perform his or her assigned duties." If the flight crewmember is scheduled for multiple flights within a flight duty period, is the flightcrew member required to report sufficiently rested to safely perform his/her duties during all the scheduled flights within the flight duty period? For example, a flightcrew member is scheduled to fly three flights within his/her flight duty period, but knows that he/she will likely only be able to operate the first two flights safely because an unsafe level of fatigue is very likely to settle in before he/she initiates the third and final scheduled flight within the flight duty period. Is it legal for this flightcrew member to report for this flight duty period knowing that he/she will not be able to complete all of his/her assigned duties within the scheduled flight duty period?

Question #4: 117.5(a) states that "Each flightcrew member must report for any flight duty period rested and prepared to perform his or her assigned duties." As per 117.5(a), must the flightcrew member report for a flight duty period sufficiently rested to accommodate any possible flight duty period extensions as described in 117.19? For example, a flightcrew member is scheduled for a 12-hour flight duty period, is this flightcrew member required as per 117.5(a) to report for this flight duty period sufficiently rested and prepared to accommodate a 2-hour 117.19 flight duty period extension that would bring that flightcrew member to a 14-hour flight duty period?

Question #5: 117.5(c) states that "no certificate holder may permit a flightcrew member to continue a flight duty period if the flightcrew member has reported him or herself too fatigued to continue the assigned flight duty period." What is a flightcrew member to do in a situation when he reports himself/herself too fatigued to continue the flight duty period while he/she is operating a flight while airborne? Should the other flightcrew member declare a mayday emergency and land at the nearest suitable airport? Should the non-fatigued flightcrew members continue the flight while the fatigued flightcrew member takes an inflight nap? Should the fatigued flightcrew member be permitted to perform any duties while fatigued? Fatigue researchers have equated higher levels of fatigue as having the same hazardous effects of being intoxicated by alcohol; should the situation be treated like the fatigued flightcrew member is incapacitated?

Please acknowledge receipt of this email, and thanks in advance for the time and work required to provide these legal interpretations.

Kind Regards,

Jeff Schnaubelt
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