

FAQ

Version 1.13

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## **Introduction:**

In the course of the preparatory research and development of this material the following questions have been developed to assist the readers in the understanding of FAR part 117.

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## **FAQ – Fitness for duty and Fatigue education and training programs**

In flight operations, fatigue can be measured either subjectively by having crewmembers rate how they feel, or objectively by measuring crewmembers' performance.

Another way of thinking about this is that fatigue is a state that results from an imbalance between:

The physical and mental exertion of all waking activities (not only duty demands); and recovery from that exertion, which (except for recovery from muscle fatigue) requires sleep.

A variety of factors contributes to whether an individual experiences fatigue as well as the severity of that fatigue.

The major factors affecting fatigue include:

**Time of day.** Fatigue is, in part, a function of circadian rhythms. All other factors being equal, fatigue is most likely, and, when present, most severe, between the hours of 2 a.m. and 6 a.m.

**Amount of recent sleep.** If a person has had significantly less than 8 hours of sleep in the past 24 hours, he or she is more likely to be fatigued.

**Time awake.** A person who has been continually awake for a long period of time since his or her last major sleep period is more likely to be fatigued.

**Cumulative sleep debt.** For the average person, cumulative sleep debt is the difference between the amount of sleep a person has received over the past several days, and the amount of sleep he or she would have received with 8 hours of sleep at night.

**Time on task.** The longer a person has continuously been doing a job without a break, the more likely he or she is to be fatigued.

**Individual variation.** Individuals respond to fatigue factors differently and may become fatigued at different times, and to different degrees of severity, under the same circumstances.

To address factors contributing to fatigue based upon time of day, the un-augmented flight time limitations in 117.11, the FDP limitations in 117.13, 117.15, 117.17 and 117.19; and the reserve limitations in 117.21(c) & (d); have been established.

To address factors contributing to fatigue based upon the amount of recent sleep, the rest requirements in 117.25(e) & (g); have been established.

To address factors contributing to fatigue based time awake, the FDP limitations in 117.13, 117.15, 117.17 and 117.19; and the reserve limitations in 117.21; have been established.

To address factors contributing to fatigue based cumulative sleep debt, the cumulative limitations in 117.23; the rest requirements in 117.25(b); and the consecutive nighttime operations in 117.27; have been established.

To address factors contributing to fatigue based time on task, the flight time limitations in 117.11; the FDP limitations in 117.13, 117.15, 17.17 and 117.19; have been established. To address factors contributing to fatigue based individual variation, the provisions in 117.5 fitness for duty and 117.19(a)(1) FDP extensions have been established.

There are three types of fatigue:

**Transient fatigue** is acute fatigue brought on by extreme sleep restriction or extended hours awake within 1 or 2 days.

**Cumulative fatigue** is fatigue brought on by repeated mild sleep restriction or extended hours awake across a series of days.

**Circadian fatigue** refers to the reduced performance during nighttime hours, particularly during an individual's WOCL (typically between 2 a.m. and 6 a.m.).

The flight time limitations in 117.11; the FDP limitations in 117.13, 117.15, 117.17 and 117.19; the rest requirements in 117.25(e) & (g); and the reserve limitations in 117.21; addresses transient fatigue.

The FDP limitations in 117.11, 117.15 and 117.17; and the reserve limitations in 117.21(d); addresses circadian fatigue.

The cumulative limitations in 117.23 and the rest requirements in 117.25(b) & (d); addresses cumulative fatigue

The consecutive night time operations in 117.27 address the combination of cumulative fatigue induced by circadian fatigue over a series of consecutive days.

### **Jet Lag / Acclimatization Process / Status of Acclimatization**

**Jet lag** is induced by flying across time zones, which exposes the circadian body clock to sudden shifts in the day/night cycle. Because of its sensitivity to light and (to a lesser extent) social time cues, the circadian body clock will eventually adapt to a new time zone. Acclimatization process is also known as adaptation.

The acclimatization process is faster when the circadian body clock is more exposed to the time cues that it needs to lock onto the new time zone. This relates to the extent to which people adapt the pattern of sleep, eating etc., in the new time zone and the amount of time they spend outdoors in the first few days.

**Status of Acclimatization** is simply stating whether an individual has achieved a synchronization of the circadian body clock to the new time zone or not.

**Operational Note:  
Effects of Different Types of Long Haul Trip Patterns on the Circadian Body Clock**

Relatively few studies have tracked the circadian body clock across long haul trip patterns, and many are over 20 years old. The available studies suggest that different types of trip patterns affect the circadian body clock in different ways.

Sequences of back-to-back trans-meridian flights (separated by 24 hour layovers) that do not return to the domicile time zone for long periods of time tend to cause the circadian body clock to drift on its innate cycle, which is typically slightly longer than 24 hours. This is probably because these trips contain no regular 24-hour pattern to which the circadian body clock can synchronize. When they arrive back in their home time zone, crewmembers need additional days to readapt to local time.

Sequences of out-and-back trans-meridian flights (separated by 24 hour layovers) that return to the home time zone on alternate layovers seem to enable the circadian body clock to remain synchronized to the home time zone. For example, a trip pattern that involved three back-to-back return flights between the US West Coast and London (6 flights in total) with 24-hour layovers between each flight. Returning to their home time zone on every second layover appeared to keep crewmembers' circadian body clocks synchronized to West Coast time. As a result, crewmembers obtained relatively good sleep on the West Coast layovers and did not need additional days to readapt to West Coast time at the end of the trip.

There is some evidence that when crewmembers stay longer in the destination region, for example doing several days of local flying with minimal time zone changes before flying the long haul trip home, their circadian body clocks begin to adapt to the destination time zone. This may improve layover sleep. On the other hand, when they arrive back in their home time zone, they need additional days to readapt to local time.

The FAA has addressed the problems associated with jet lag through the definitions in 117.3; introducing the concept of **Theater**, and has defined a process **Acclimated**.

Further a crewmember that is not acclimated, to the theater in which they will operate, must apply penalties to Daily FDP limitations (Table B / C) and is expected to enter Table A and Tables B / C using the time zone where that individual was last acclimated to.

**Q1)** Does the FAA have any guidance concerning Fitness for Duty?

**A1)** Yes, AC 117-3 provides guidance. AC 117-3

**Q2)** Does the FAA have any guidance concerning Fatigue Education and Training?

**A2)** Yes, AC 117-2 provides guidance. AC 117-2

**Q3)** If a carrier is able to notify a pilot that their schedule has changed does the carrier use the new report time for starting/entering table B?

**A3)** This would be dependent upon as to when the pilot was informed.

**Certainly**, if the schedule change will allow for a minimum rest period of 10 hours and with a sleep opportunity of 8 hours.

**Possibly**, The FAA has a “one phone call” policy that “generally allows a certificate holder to initiate one phone call during a crewmember’s rest period. If the crewmember voluntarily chooses to answer this phone call, then the FAA does not view the call as disruptive and breaking the rest period. The sleep-opportunity requirements of § 117.25 do not eliminate this policy. However, the FAA cautions that a flightcrew member may have difficulty getting back to sleep after being woken up by a certificate holder’s phone call. In that situation, a flightcrew member may notify the certificate holder, pursuant to § 117.25(f), that his or her sleep opportunity has been interrupted. Thus, a certificate holder runs the risk of interrupting a flightcrew member’s sleep opportunity if the certificate holder calls a flightcrew member during the flightcrew member’s rest period.

**Definitely not**, if the crewmember is not informed until at time of scheduled report, that a new report time will be required and the crewmember will not be able to have a rest period of 10 hours with a sleep opportunity of 8 hours.

### **Scenario Questions:**

8 hours uninterrupted rest requirement

For example one of the crew members (ie a flight attendant's) rests was interrupted by a smoke alarm 5 hours into the uninterrupted rest period. However, the remaining crew members somehow slept through the alarm.

I would imagine that flight attendant could call in fatigued or agree to a certain amount of reasonable rest before continuing on.

The remaining crew rested and woke with the intention to operate the flight as scheduled despite the adjustment.

**SQ1)** What would be the liability for the remaining crew members?

**SA1)** The remaining Flightcrew members would still need to be able to operate the FDP within the limitations of part 117. The remaining cabin crewmembers would still be subject to the limitation in part 121 subpart P (and possibly part 117 should the options in 121.467 (c) be applied).

**SQ2)** Does the rest of the crew who say they are fine (whether they were actually awake or not) continue with the day and leave the flight attendant?

**SA2)** Only if the required crew compliment (flight deck and cabin) is met for the scheduled operations.

**SQ3)** Or once the flight attendant contacts the company, the company then contacts the other crew members and resets their show time?

**SA3)** That is certainly possible, but I think we should refer to previous question (Q03/A03)

**SQ4)** Or if the company is unable to contact the remaining crew members and ends up leaving a voice mail message that is retrieved in the morning just before the crew is ready to leave for the airport, what happens to the crews report time?

**SA4)** Again, see answers provided in (Q03/A03)

Commentary on the scenario presented.

This actually sounds to be similar to a case of what happens when a crewmember becomes sick away from base. I would imagine that a certificate holder would have contingency procedures to leave one crewmember behind and possibly have a substitute crewmember (reserve) work the remainder of the assignment.

### **117.5 Fitness for duty.**

(a) Each flightcrew member must report for any flight duty period rested and prepared to perform his or her assigned duties.

(b) No certificate holder may assign and no flightcrew member may accept assignment to a flight duty period if the flightcrew member has reported for a flight duty period too fatigued to safely perform his or her assigned duties.

(c) 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.

(d) As part of the dispatch or flight release, as applicable, each flightcrew member must affirmatively state he or she is fit for duty prior to commencing flight.

## **117.9 Fatigue education and training program.**

(a) Each certificate holder must develop and implement an education and awareness training program, approved by the Administrator. This program must provide annual education and awareness training to all employees of the certificate holder responsible for administering the provisions of this 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.

(b) The fatigue education and awareness training program must be designed to increase awareness of:

- (1) Fatigue;
- (2) The effects of fatigue on pilots; and
- (3) Fatigue countermeasures

(c) Education and Training Program Review:

(1) Each certificate holder must update its fatigue education and awareness training program every two years and submit the update to the Administrator for review and acceptance.

(2) Not later than 12 months after the date of submission of the fatigue education and awareness training program required by (c)(1) of this section, the Administrator shall review and accept or reject the update. If the Administrator rejects an update, the Administrator shall provide suggested modifications for resubmission of the update.

## FAQ – Daily Flight Time Limitations.

The FAA states that the usage of daily flight time limitations (FTL) allows for less restrictive daily FDP limitations and less restrictive rest requirements, thus allow the airlines more flexibility.

The FAA has also stated that 8 to 9 hours of flight deck duty is an acceptable safety range. Daily flight time limitations retain their primary purpose: to mitigate transient fatigue that is brought about by time on task.

The FAA has made two fundamental changes to the daily flight time limitations:  
The elimination of the concept of “Legal to Start/Legal to Go”

The addition of a diurnal component for un-augmented flightcrew members.

To ensure that certificate holders reasonably schedule flight crewmembers for assignments that will not exceed FTL during the course of operation, the FAA has imposed the following requirements:

Mandatory reporting whenever a flight crewmember has exceeded a FTL.

Requirements for corrective actions to avoid any further instances where a FTL has been exceeded.

**Q4)** What are the flight time limitations for a flight crewmember assigned to a FDP as a member of a 2-pilot flightcrew?

**A4)** 117.11(a)(1) stipulates to follow the flight time limitations as depicted in Table A. At Report Time when acclimated using either local time at the start of the FDP series or the pilot’s home base time if within 60 degrees longitude or the time zone to where the flight crewmember was last acclimated to when the flight crewmember is in an un-acclimated state.

**Table A to Part 117—Maximum Flight Time Limits for Un-augmented Operations**

Time of Report (Acclimated)	Maximum Flight Time (hours)
0000-0459	8
0500-1959	9
2000-2359	8

**Q5)** What are the flight time limitations for a flight crewmember assigned to a FDP as a member of a 3-pilot flightcrew?

**A5)** 13 hours as stipulated in 117.11(a)(2). Flight time will include any flight deck time as well as in-flight rest periods.

**Q6)** What are the flight time limitations for a flight crewmember assigned to a FDP as a member of a 4-pilot flightcrew?

**A6)** A06) 17 hours as stipulated in 117.11(a)(3). Flight time will include any flight deck time as well as in-flight rest periods.

**Q7)** Can a flightcrew member, assigned to a FDP as a member of a 2-pilot crew be rescheduled to exceed the flight time limits in Table A?

**A7)** No, this will violate 117.11(a)(1). No certificate holder may schedule and no flightcrew member may accept an assignment or continue an assigned flight duty period if the total flight time:

Will exceed the limits specified in Table A of this part if the operation is conducted with the minimum required flightcrew.

**Q8)** Can a flightcrew member, assigned to a FDP as a member of a 2-pilot crew takeoff if it is known that the total flight time within the FDP will exceed the flight time limits in Table A?

**A8)** No, this also will be a violation of 117.11(a)(1), no flightcrew member may accept an assignment or continue an assigned flight duty period if the total flight time:

Will exceed the limits specified in Table A of this part if the operation is conducted with the minimum required flightcrew.

**Q9)** Can a flightcrew member, assigned to a FDP as a member of a 2-pilot crew takeoff if it is NOT known that the total flight time within the FDP will exceed the flight time limits in Table A?

**A9)** Yes, 117.11(b), permits: due to unforeseen operational circumstances that arise after takeoff that are beyond the certificate holder's control, a flightcrew member may exceed the maximum flight time specified in paragraph (a) of this section and the cumulative flight time limits in 117.23(b) to the extent necessary to safely land the aircraft at the next destination airport or alternate, as appropriate.

**Q10)** What are the responsibilities of the certificate holder should the flight time limitations stipulated in 117.11(a) be exceeded?

**A10)** The certificate holder must report to the Administrator within 10 days any flight time that exceeded the maximum flight time limits permitted by this section, in accordance with 117.11(c).

### **117.11 Flight time limitation.**

(a) No certificate holder may schedule and no flightcrew member may accept an assignment or continue an assigned flight duty period if the total flight time:

(1) Will exceed the limits specified in Table A of this part if the operation is conducted with the minimum required flightcrew.

(2) Will exceed 13 hours if the operation is conducted with a 3-pilot flightcrew.

(3) Will exceed 17 hours if the operation is conducted with a 4-pilot flightcrew.

(b) If unforeseen operational circumstances arise after takeoff that are beyond the certificate holder's control, a flightcrew member may exceed the maximum flight time specified in paragraph (a) of this section and the cumulative flight time limits in 117.23(b) to the extent necessary to safely land the aircraft at the next destination airport or alternate, as appropriate.

(c) Each certificate holder must report to the Administrator within 10 days any flight time that exceeded the maximum flight time limits permitted by this section or § 117.23(b). The report must contain a description of the extended flight time limitation and the circumstances surrounding the need for the extension.

## **FAQ – Daily Flight Duty Time Limitations – Un-augmented flight crew.**

One of the regulatory concepts that this rule introduces is the restriction on flightcrew members' maximum FDP.

In creating a maximum FDP limit, the FAA attempted to address three concerns:

- Flightcrew members' circadian rhythms

- The amount of time spent at work

- The number of flight segments that a flightcrew member is scheduled to fly during his or her FDP.

The FAA also introduced penalties for un-acclimated operations.

**Q11)** How is FDP calculated?

**A11)** FDP is measured from the time a pilot reports with the intention of flight to the arrival time (IN time) of the last operating flight, or when the carrier notifies a pilot that there is no further intention of flight in the FDP, (117.3 Definitions – Flight duty period ).

**Q12)** What are the flight duty time limitations for a flight crewmember assigned to a FDP as a member of a 2-pilot flightcrew?

**A12)** 117.13(a)(b) stipulates to follow the flight duty time limitations as depicted in Table B. acclimated, at Report Time using either local time at the start of the FDP series or the pilot's home base time if within 60 degrees longitude or the time zone to where the flight crewmember was last acclimated to when the flight crewmember is in an un-acclimated state. The number of Flight Segments includes only segments where a takeoff, landing, or enroute control, is expected to be executed or monitored by the flight crewmember except for air interrupts or diversions. A Deadhead is not a flight segment, and a ground return to gate is not a flight segment

**Table B to Part 117—Flight Duty Period: Un-augmented Operations**

Scheduled Time of Start (Acclimated Time)	Maximum Flight Duty Period (hours) Limits for Lineholders Based on Number Of Operational Flight Segments						
	1	2	3	4	5	6	7+
0000-0359	9	9	9	9	9	9	9
0400-0459	10	10	10	10	9	9	9
0500-0559	12	12	12	12	11.5	11	10.5
0600-0659	13	13	12	12	11.5	11	10.5
0700-1159	14	14	13	13	12.5	12	11.5
1200-1259	13	13	13	13	12.5	12	11.5
1300-1659	12	12	12	12	11.5	11	10.5
1700-2159	12	12	11	11	10	9	9
2200-2259	11	11	10	10	9	9	9
2300-2359	10	10	10	9	9	9	9

**Q13)** If a flight crewmember is re-scheduled during a FDP from 3 flight segments to 5 flight segments, is the FDP limitation based upon 3 or 5 segments?

**A13)** The subsequent increase in flight segments due to re-scheduling requires a re-evaluation of the FDP limitation based upon 5 segments. (117.13(a))

**Q14)** If a flight crewmember has a diversion during a FDP that causes an increase in flight segments from 4 to 5 segments, is the FDP limitation based upon 4 or 5 segments?

**A14)** Yes, Accordingly, because there was no intent to treat diversions as flight segments, a diversion does not constitute a new flight segment for purposes of part 117. In the example presented the FDP limitation would be based on 4 segments

**Q15)** If a flight crewmember is assigned to a FDP with 4 flight segments and is subsequently re-scheduled to 2 different flight segments after operating the first 2 flight segments must a re-evaluation of the FDP limits occur?

**A15)** Yes, 117.13(a) no certificate holder may assign and no flightcrew member may accept an assignment for an un-augmented flight operation if the scheduled flight duty period will exceed the limits in Table B of this part.

### **117.13 Flight duty period: Un-augmented operations.**

(a) Except as provided for in § 117.15, no certificate holder may assign and no flightcrew member may accept an assignment for an unaugmented flight operation if the scheduled flight duty period will exceed the limits in Table B of this part.

(b) If the flightcrew member is not acclimated:

(1) The maximum flight duty period in Table B of this part is reduced by 30 minutes.

(2) The applicable flight duty period is based on the local time at the theater in which the flightcrew member was last acclimated.

## FAQ – Daily Flight Duty Time Limitations – Augmented flightcrew.

In formulating this rule, the FAA considered the fact that augmentation is currently used by air carriers to mitigate fatigue. An augmented flight is staffed by more than the minimally-required number of flightcrew members, and the extra staffing allows the flightcrew members to work in shifts and rest during the flight. Existing regulations allow higher flight times for augmented flights, and this allows air carriers to conduct longer flights.

The rule introduces the following concepts and requirements to augmented operations:

- A diurnal component
- A classification of onboard rest facilities
- Inflight rest requirements
- Penalties for un-acclimated operations

Like the Flight time limitations for augmented operations, the FDP limitations for augmented operations are used to offset transient fatigue brought about by how long a flight crewmember has been awake.

The diurnal component will mitigate fatigue associated with the circadian cycles.

*Authors note: Based upon previous FAA interpretations, it is believed that all operational flight segments within the FDP must have the augmented flightcrew compliment.*

**Q16)** What conditions are required for the determination of the flight duty time limitations for a flight crewmember assigned to a FDP as a member of an augmented flightcrew?

**A16)** The class of the in-flight rest facility as stipulated in (117.3 Definitions – Rest Facility) and Augmentation as stipulated in (117.3 Definitions – Augmented flightcrew). The class of the rest facility is further defined in [AC 117-1](#).

**Q17)** What are the flight duty time limitations for a flight crewmember assigned to a FDP as a member of an augmented flightcrew?

**A17)** 117.17(a) and (b) stipulates to follow the flight duty time limitations as depicted in Table C. If acclimated, at Report Time using either local time at the start of the FDP series or the pilot's home base time if within 60 degrees longitude or the time zone to where the flight crewmember was last acclimated to when the flight crewmember is in an un-acclimated state. The Class of the in-flight rest facility and the applied crew compliment.

**Table C to Part 117—Flight Duty Period: Augmented Operations**

Scheduled Time of Start (Acclimated Time)	Maximum Flight Duty Period (hours) Based on Rest Facility and Number of Pilots					
	Class 1 Rest Facility		Class 2 Rest Facility		Class 3 Rest Facility	
	3 Pilots	4 Pilots	3 Pilots	4 Pilots	3 Pilots	4 Pilots
0000-0559	15	17	14	15.5	13	13.5
0600-0659	16	18.5	15	16.5	14	14.5
0700-1259	17	19	16.5	18	15	15.5
1300-1659	16	18.5	15	16.5	14	14.5
1700-2359	15	17	14	15.5	13	13.5

**Q18)** Are there specific in-flight rest requirements for members of an augmented flightcrew?

**A18)** Yes, the pilot flying the aircraft during the last landing must have had 2 consecutive hours rest in the second half of the FDP, and the pilot performing monitoring duties during landing must have had 90 consecutive minutes rest. (117.17(c) refers)

**Q19)** Are there any scheduled landing limitations for augmented flightcrew?

**A19)** Yes, 3 flight segments as stipulated under 117.17(d)

**Q20)** May the scheduled landing limitations for augmented flightcrew be exceeded due to a diversion?

**A20)** Yes, Accordingly, a diversion would not count toward the 3-segment limit that applies to augmented operations.

**Q21)** Are there any additional flightcrew qualifications for augmented flightcrew?

**A21)** Yes, at all times on the flight deck a flightcrew member qualified in accordance to 121.543(b)(3)(i) is in operation of the flight controls. (117.17(e) refers)

### **117.17 Flight duty period: Augmented flightcrew.**

- (a) For flight operations conducted with an acclimated augmented flightcrew, no certificate holder may assign and no flightcrew member may accept an assignment if the scheduled flight duty period will exceed the limits specified in Table C of this part.
- (b) If the flightcrew member is not acclimated:
  - (1) The maximum flight duty period in Table C of this part is reduced by 30 minutes.
  - (2) The applicable flight duty period is based on the local time at the theater in which the flightcrew member was last acclimated.
- (c) No certificate holder may assign and no flightcrew member may accept an assignment under this section unless during the flight duty period:
  - (1) Two consecutive hours in the second half of the flight duty period are available for in-flight rest for the pilot flying the aircraft during landing.
  - (2) Ninety consecutive minutes are available for in-flight rest for the pilot performing monitoring duties during landing.
- (d) No certificate holder may assign and no flightcrew member may accept an assignment involving more than three flight segments under this section.
- (e) At all times during flight, at least one flightcrew member qualified in accordance with § 121.543(b)(3)(i) of this chapter must be at the flight controls.

## FAQ – Cumulative Flight Time and Flight Duty Time

In formulating this rule, the FAA found that “scientific studies suggest that long periods of time on duty infringe upon an individual’s opportunity to sleep, thus causing a ‘sleep debt’ which is also known as cumulative fatigue.”

With the effective date of 04 Jan 2014, it is expected that cumulative flight time will account for all flight time accrued from 05 Jan 2013 and forward from that date, and that cumulative flight duty time will account for FDP time accrued from 00:00 07 Dec 2013 and forward from that date/time, Should a certificate holder implement FAR 117 earlier than 04Jan 2014, the respective lookback should be adjusted accordingly.

**Q22)** What are the cumulative flight time limitations for flightcrew members?

**A22)** The cumulative flight time limitations are stipulated in 117.23(b)(1) 100 hours in 672 hours or 117.23(b)(2) 1000 hours in 365 calendar days, the cumulative flight time will include any flight time performed for any certificate holder or part 91K Program manager during the applied periods (117.23(a) refers).

**Q23)** Is it permissible to exceed the cumulative flight time limitations, when a crewmembers FDP has not been re-scheduled?

**A23)** No, The FAA clarified on 05-Mar-2013. The cumulative flight time limits are hard limits and could only be exceeded after a flight takes off.

Authors Note: The current text of the regulation, differs ,117.23(b): No certificate holder may schedule and no flightcrew member may accept an assignment if the flightcrew member’s total flight time will exceed ...A technical correction is anticipated.

**Q24)** What are the cumulative flight duty time limitations for flightcrew members?

**A24)** The cumulative flight duty time limitations are stipulated in 117.23(c)(1) 60 hours in 168 hours or 117.23(c)(2) 190 hours in 672 hours, the cumulative flight duty time will include any flight duty time performed for any certificate holder or part 91K Program manager during the applied periods (117.23(a) refers).

**Q25)** Is it permissible to exceed the cumulative flight duty time limitations, when a crewmembers FDP has not been re-scheduled?

**A25)** No, The FAA clarified on 05-Mar-2013. The cumulative flight duty time limits are hard limits and can only be exceeded after a flight takes off.

Authors Note: The current text of the regulation, differs ,117.23(c): No certificate holder may schedule and no flightcrew member may accept an assignment if the flightcrew member's total flight duty time will exceed ...A technical correction is anticipated.

**Q26)** Are reserve assignments subject to the cumulative FDP limitations?

**A26)** A flightcrew member assigned to Airport/Stand-by is considered to be assigned to a FDP (ref 117.3 Definitions) and is subject to cumulative FDP limitations. A flightcrew member assigned to either Long-Call or Short-Call Reserve is not considered to be assigned to FDP. Even if a Short-Call Reserve is assigned a FDP during the RAP, the time from the start of the RAP to the start of the FDP is not to be included in the calculation of the cumulative FDP time.

### **117.23 Cumulative duty limitations.**

(a) The limitations of this section include all flying by flightcrew members on behalf of any certificate holder or 91K Program Manager during the applicable periods.

(b) No certificate holder may schedule and no flightcrew member may accept an assignment if the flightcrew member's total flight time will exceed the following:

- (1) 100 hours in any 672 consecutive hours or
- (2) 1,000 hours in any 365 consecutive calendar day period.

(c) No certificate holder may schedule and no flightcrew member may accept an assignment if the flightcrew member's total Flight Duty Period will exceed:

- (1) 60 flight duty period hours in any 168 consecutive hours or
- (2) 190 flight duty period hours in any 672 consecutive hours.

## FAQ – Rest Requirements

Rest Requirements are used to ensure flightcrew members will not report or become overly fatigued while assigned to a FDP. The average person requires approximately 8 hour of sleep, to provide for that opportunity each flightcrew member will be provided a rest period that will permit for a minimum sleep opportunity, immediately before the commencement of an assignment that involves/may involve a FDP.

A **Rest Period** as defined in 117.3: means a continuous period determined prospectively during which the flightcrew member is free from all restraint by the certificate holder, including freedom from present responsibility for work should the occasion arise.

A **Duty** as defined in 117.3: means any task that a flightcrew member performs as required by the certificate holder, including but not limited to flight duty period, flight duty, pre- and post-flight duties, administrative work, training, deadhead transportation, aircraft positioning on the ground, aircraft loading, and aircraft servicing.

An **Airport/Standby Reserve (ASB)** is considered duty as well as FDP (see 117.3 definitions)

A **Short Call Reserve (SCR)**, is considered duty since a **Reserve Availability Period (RAP)** has been assigned to the crewmember, and a RAP is defined as duty. (see 117.3 definitions)

A **Long Call Reserve (LCR)** is not considered duty, however the crewmember must be contactable during the time a crewmember is assigned to LCR; the crewmember is not at rest.

**Q27)** May a flightcrew member be assigned any Duty or Reserve during a Rest Period?

**A27)** No, this is a violation of 117.25(a), a flightcrew member may not be scheduled to a FDP, ASB, SCR, or any other activity designated as duty during an assigned rest period.

**Q28)** How is a rest period calculated?

**A28)** Simply as the span of time from the end of the duty/reserve period preceding a rest period to the start of the duty/reserve period following a rest period.

**Q29)** Do all duty periods require a rest period before duty?

**A29)** No, FDP, ASB and SCR all have a minimum rest requirement of a minimum 10 hour rest period immediately before start, with a minimum 8 hour uninterrupted sleep opportunity (117.25(e) refers), Other activities such as administrative work do not have rest requirements stipulated under FAR 117.

**Q30)** Is a crewmember still legal when; scheduled with an 11 hour rest period that would provide for a 9:30 sleep opportunity, is it permissible to reduce the rest period to 9:30 with a 8:00 sleep opportunity?

**A30)** No, the rest period must meet the conditions of 117.25(e), there is no reduction.

**Q31)** Is a crewmember still legal when scheduled with a 10 hour rest period that would provide for a 8:00 sleep opportunity, but the transportation to the rest facility took longer than usual and the crewmember will only have 7:30 sleep opportunity?

**A31)** No, the crewmember must always have a sleep opportunity of 8:00 and must notify the certificate holder (117.25(f) refers)

**Q32)** What are the weekly rest requirements?

**A32)** The weekly rest requirements are defined in 117.25(b), Before beginning any reserve or flight duty period a flightcrew member must be given at least 30 consecutive hours free from all duty within the past 168 consecutive hour period. The 168 hour look back is at the start of the FDP or reserve.

**Q33)** If a flightcrew member is operating a FDP in a new theater, is it legal to accept an assignment without the 36 hour rest period defined in 117.25(c)?

**A33)** Yes, the rest period mentioned 117.25(c) is not a rest requirement, but rather a method for a flightcrew member to become acclimated within a theater, the other method is to remain within the theater for a period of no less than 72 hours. Once acclimated, a flightcrew member may accept a FDP with no 30 minute reduction to the scheduled FDP limits defined in 117.139(b)(1) or 117.17(b)(1) as appropriate.

**Q34)** Are there any rest requirements for a flightcrew member who has been away from base for an extended period of time?

**A34)** Yes, the rest period mentioned 117.25(d) requires that a flightcrew member who has been away from base for more than 168 consecutive hours and has traveled more than 60° longitude during a FDP or series of FDPs, is required to have a rest period upon return to home base of no less than 56 consecutive hours, that includes 3 physiological nights rest.

**Q35)** Are there any rest requirements for a flightcrew member engaged in deadhead transportation?

**A35)** Yes, the rest requirements are defined in 117.25(g). The rest period specified must be no less than 10 hours or the time in deadhead transportation, it is required when the time in deadhead transportation exceeds FDP requirements in Table B.

### **117.25 Rest period.**

(a) No certificate holder may assign and no flightcrew member may accept assignment to any reserve or duty with the certificate holder during any required rest period.

(b) Before beginning any reserve or flight duty period a flightcrew member must be given at least 30 consecutive hours free from all duty within the past 168 consecutive hour period.

(c) If a flightcrew member operating in a new theater has received 36 consecutive hours of rest, that flightcrew member is acclimated and the rest period meets the requirements of paragraph (b) of this section.

(d) If a flightcrew member travels more than 60° longitude during a flight duty period or a series of flight duty periods that require him or her to be away from home base for more than 168 consecutive hours, the flightcrew member must be given a minimum of 56 consecutive hours rest upon return to home base. This rest must encompass three physiological nights' rest based on local time.

(e) No certificate holder may schedule and no flightcrew member may accept an assignment for any reserve or flight duty period unless the flightcrew member is given a rest period of at least 10 consecutive hours immediately before beginning the reserve or flight duty period measured from the time the flightcrew member is released from duty. The 10 hour rest period must provide the flightcrew member with a minimum of 8 uninterrupted hours of sleep opportunity.

(f) If a flightcrew member determines that a rest period under paragraph (e) of this section will not provide eight uninterrupted hours of sleep opportunity, the flightcrew member must notify the certificate holder. The flightcrew member cannot report for the assigned flight duty period until he or she receives a rest period specified in paragraph (e) of this section.

(g) If a flightcrew member engaged in deadhead transportation exceeds the applicable flight duty period in Table B of this part, the flightcrew member must be given a rest period equal to the length of the deadhead transportation but not less than the required rest in paragraph (e) of this section before beginning a flight duty period.

## FAQ – Flight Duty Time Extensions

This new section sets forth the limits on the number of FDPs that may be extended; implements reporting requirements for affected FDPs; and distinguishes extended FDPs due to unforeseen operational circumstances that occur prior to takeoff from those unforeseen operational circumstances that arise after takeoff.

**Q36)** Is it permissible to exceed the scheduled flight duty time limitation by more than 2 hours, if extension is known before takeoff?

**A36)** No, this will be a violation of 117.19(a)(1).

**Q37)** Is it permissible to exceed the scheduled flight duty time limitation if a flightcrew member will exceed the cumulative FDP limits in 117.23(c)(1) or (2), if extension is known before takeoff?

**A37)** No, this will be a violation of 117.19(a)(3).

**Q38)** Is it permissible to exceed the scheduled flight duty time limitations by more than 30 minutes if extension is known before takeoff?

**A38)** Yes, provided the PIC and the certificate holder concur (117.19(a)(1) refers)

Authors Note:

Both the PIC and Certificate holder need to agree, although the PIC will have the ultimate authority, the Certificate holder would still need to determine if it is safe to perform the flight within the prescribed limitations, inform the PIC, and both must agree as to the course taken. Both the Certificate holder and the PIC are responsible for the safety of the passengers, to not consider this aspect could be interpreted as a violation of FAR 91.13(a).

FAR 91.13 Careless or reckless operation.

*Aircraft operations for the purpose of air navigation.* No person may operate an aircraft in a careless or reckless manner so as to endanger the life or property of another.

The FAA has also advised that a pilot simply taking the flight in an extended FDP is concurrence. No need for the carrier to ask the pilot and no need for the pilot to affirmatively state.

**Q39)** Is it permissible to exceed the scheduled flight duty time limitations by more than 30 minutes, if extension is known before takeoff, more than once in a 168 hr period prior to receiving a rest period required under 117.25(b)?

**A39)** No, 117.19(a)(2) provides: An extension in the flight duty period under paragraph (a)(1) of this section of more than 30 minutes may occur only once prior to receiving a rest period described in 117.25(b)

**Q40)** What are the responsibilities of the certificate holder should the scheduled flight duty time limitations stipulated in 117.19(a) be exceeded by more than 30 minutes, when the extension was known before takeoff and permitted to operate?

**A40)** The certificate holder certificate holder must report to the Administrator within 10 days any flight duty period that exceeded the maximum flight duty period permitted in Tables B or C of this part by more than 30 minutes (117.19(a)(4) refers), and, must implement the corrective action(s) reported in paragraph (a)(4) of this section within 30 days from the date of the extended flight duty period.(117.19(a)(5) refers)

**Q41)** Is it permissible to exceed the scheduled flight duty time limitations when then extension was not anticipated before takeoff?

**A41)** Yes, 117.19(b)(1) permit such extensions to the extent necessary to safely land the aircraft at the next destination airport or alternate airport, as appropriate, however, any extension greater than 30 minutes may occur only once prior to receiving a rest period described in § 117.25(b).

**Q42)** What are the responsibilities of the certificate holder should the scheduled flight duty time limitations stipulated in 117.19(b) be exceeded by more than 30 minutes?

**A42)** The certificate holder certificate holder must report to the Administrator within 10 days any flight duty period that exceeded the maximum flight duty period permitted in Tables B or C of this part by more than 30 minutes (117.19(b)(4) refers).

**Q43)** What is defined as an unforeseen circumstance besides maintenance or unforeseen weather, would any of the following count as an unforeseen circumstance, late passengers due to TSA delays, late fueling, and what other factors would fall into this category?

**A43)** 117.3 Definitions provides: Unforeseen operational circumstance means an unplanned event of insufficient duration to allow for adjustments to schedules, including unforecast weather, equipment malfunction, or air traffic delay that is not reasonably expected. Diversions are also not foreseen, the FAA has clarified questions regarding an increase in the permitted number of flights within a FDP (117.13/117.17) as follows:

- Accordingly, because there was no intent to treat diversions as flight segments, a diversion does not constitute a new flight segment for purposes of part 117.
- Accordingly, a diversion would not count toward the 3-segment limit that applies to augmented operations.

*Author's interpretation:*

*TSA, Late Fueling, would fall into this category, as would Pax with special needs for boarding (wheelchair assistance or stowing of carry-on baggage into the belly. The intent is to be able to identify those situations affecting the certificate holder that can or cannot be reasonably foreseen. If a delay before takeoff will cause a flightcrew member to exceed any of the permitted limitations in part 117 the flight may not continue.*

**Q44)** How do I determine whether a FDP may be extended to 2:00 or only to 0:30?

**A44)** At time of report for the FDP assigned, look back 168:00, if any FDP ending within that 168:00 lookback has been extended by more than 0:30, and NO intervening rest period greater than or equal to 30:00 can be found, the FDP may only be extended up to 0:30, before takeoff. (117.19(a)(1) and (2) refers.

## **117.19 Flight duty period extensions.**

(a) For augmented and unaugmented operations, if unforeseen operational circumstances arise prior to takeoff:

(1) The pilot in command and the certificate holder may extend the maximum flight duty period permitted in Tables B or C of this part up to 2 hours. The pilot in command and the certificate holder may also extend the maximum combined flight duty period and reserve availability period limits specified in Sec. 117.21(c)(3) and (4) of this part up to 2 hours.

(2) An extension in the flight duty period under paragraph (a)(1) of this section of more than 30 minutes may occur only once prior to receiving a rest period described in § 117.25(b).

(3) A flight duty period cannot be extended under paragraph (a)(1) of this section if it causes a flightcrew member to exceed the cumulative flight duty period limits specified in 117.23(c).

(4) Each certificate holder must report to the Administrator within 10 days any flight duty period that either exceeded the cumulative flight duty periods specified in 117.23(c), or exceeded maximum flight duty period permitted in Tables B or C of this part by more than 30 minutes. The report must contain the following:

(i) A description of the extended flight duty period and the circumstances surrounding the need for the extension; and

(ii) If the circumstances giving rise to the extension were within the certificate holder's control, the corrective action(s) that the certificate holder intends to take to minimize the need for future extensions.

(5) Each certificate holder must implement the corrective action(s) reported in paragraph (a)(4) of this section within 30 days from the date of the extended flight duty period.

(b) For augmented and unaugmented operations, if unforeseen operational circumstances arise after takeoff:

(1) The pilot in command and the certificate holder may extend maximum flight duty periods specified in Tables B or C of this part to the extent necessary to safely land the aircraft at the next destination airport or alternate airport, as appropriate.

(2) An extension of the flight duty period under paragraph (b)(1) of this section of more than 30 minutes may occur only once prior to receiving a rest period described in § 117.25(b).

(3) An extension taken under paragraph (b) of this section may exceed the cumulative flight duty period limits specified in 117.23(c).

(4) Each certificate holder must report to the Administrator within 10 days any flight duty period that exceeded the maximum flight duty period limits permitted by Tables B or C of this part by more than 30 minutes. The report must contain a description of the circumstances surrounding the affected flight duty period.

## **FAQ – Daily Flight Duty Time Limitations – Split Duty.**

One of the problems that this rule was intended to address is the performance degradation experienced by flightcrew members who conduct overnight FDPs and perform their duties during the WOCL after receiving less-restful daytime sleep.

This rule addresses this problem by incentivizing fatigue mitigation measures.

One of these fatigue mitigation measures is split duty, which is based on the premise that there are times during an unaugmented nighttime FDP when a certificate holder could reasonably provide a flightcrew member with an opportunity for rest.

This rest opportunity (opportunity to sleep) would allow a flightcrew member to get some sleep during the night. The nighttime sleep could be used to mitigate the performance degradation created by working through the WOCL.

**Q45) Is the usage of Split Duty Limitations required?**

**A45) No, 117.15 is an optional component to the regulations, however, the benefits associated with this section, may only be used only if the entire section is complied with, additionally, 117.15, may only be applied to unaugmented operations.**

**Q46) What conditions must be satisfied to allow for the benefits of Split Duty?**

**A46) The entire section 117.15 (a)(b)(c)(d)(e) and (f)**

**Q47) What conditions satisfy a rest opportunity?**

**A47) The rest opportunity must be provided between the hours 22:00 and 05:00 (local time), it must be at least 3 hours in duration in a suitable accommodation, it must have been scheduled before the crewmember reports for the FDP and it may not be reduced and must be after the first flight segment has been completed. 117.15 (a)(b)(c)(d) and (e) refer.**

**Q48) If a crewmember is scheduled 5 hours in a suitable accommodation, can that time be reduced to 3 hours?**

**A48) Yes, as long as the crewmember was notified at time of report that only 3 hours would be applied to the limitation of 117.15(f)**

**Q49) If the time spent in a suitable accommodation is not part of a FDP; do additional limitations exist for a Split Duty apart from those in 117.15?**

**A49) Yes, the FDP less the time in a suitable accommodation, must adhere to the limitations of 117.13 as well as the limitations for extended FDP 117.19(a) and (b). The time in a suitable accommodation does not include the time to travel to/from the accommodation.**

**Q50) Is there a maximum time a crewmember may be on a Split Duty?**

**A50)** Yes, the Combined FDP time and time spent in a suitable accommodation, must not exceed 14:00, 117.15(f) refers.

**Q51)** Can a Split Duty be extended before takeoff beyond the limitations in 117.15(f)?

**A51)** No, the Combined FDP time and time spent in a suitable accommodation, must not exceed 14:00, 117.15(f) refers. However, any extensions beyond the 14:00 limitation after takeoff must comply with 117.19(b).

### **117.15 Flight duty period: Split duty.**

For an unaugmented operation only, if a flightcrew member is provided with a rest opportunity (an opportunity to sleep) in a suitable accommodation during his or her flight duty period, the time that the flightcrew member spends in the suitable accommodation is not part of that flightcrew member's flight duty period if all of the following conditions are met:

- (a) The rest opportunity is provided between the hours of 22:00 and 05:00 local time.
- (b) The time spent in the suitable accommodation is at least 3 hours, measured from the time that the flightcrew member reaches the suitable accommodation.
- (c) The rest opportunity is scheduled before the beginning of the flight duty period in which that rest opportunity is taken.
- (d) The rest opportunity that the flightcrew member is actually provided may not be less than the rest opportunity that was scheduled.
- (e) The rest opportunity is not provided until the first segment of the flight duty period has been completed.
- (f) The combined time of the flight duty period and the rest opportunity provided in this section does not exceed 14 hours.

## FAQ – Consecutive nighttime operations

In formulating this rule, the FAA was particularly concerned about cumulative fatigue caused by repeatedly flying at night.

Nighttime operations are particularly fatiguing because flightcrew members who work during these operations do so during the WOCL after obtaining less restful daytime sleep.

Studies have shown that this type of work not only leads to transient fatigue, but also leads to cumulative fatigue if repeated over a series of consecutive nights.

FRMS modeling showed substantially deteriorating performance after the third consecutive nighttime FDP for flightcrew members who worked nightshifts during the WOCL and obtained sleep during the day.

However, the FAA noted that if a sleep opportunity is provided during each nighttime FDP, that sleep opportunity may sustain flightcrew member performance for five consecutive nights.

**Q52)** Are augmented operations that infringe upon the WOCL considered a night time operation?

**A52)** Yes, A flightcrew member serving on an augmented FDP will be considered a nighttime operation, since due to the durations of flight operations required for an augmented FDP would not allow for a 2 hour rest in a suitable accommodation, that complies with the conditions in 117.25(a), (c), (d), and (e), the limitation is simply 3 consecutive nighttime operations.

**Q53)** If a flightcrew member is assigned to deadhead transportation that infringes the WOCL, is that considered a nighttime operation?

**A53)** Yes under the following conditions, should the time in deadhead transportation be assigned before a flight time without an intervening rest period required under 117.25(e).

**Q54)** If a crewmember is assigned to a long call reserve, short call reserve or airport/stand-by reserve, which infringes upon the WOCL, considered a night time operation?

**A54)** An Airport/Stand-by reserve would be considered a night time operation as it is considered a FDP (117.3 Definitions refers), while Long-call and Short-call reserves are not considered to be an FDP.

**Q55)** Is a flightcrew member required to receive a 2 hour rest in a suitable accommodation in order to comply with the consecutive night operations?

**A55)** No, this is an optional provision to 117.27, however when a crewmember serving on a nighttime operation for a 4<sup>th</sup> or 5<sup>th</sup> consecutive night, that crewmember must have been scheduled for and must have been given, for all of the consecutive nighttime operations, a 2 hour rest in a suitable accommodation, than complies with the conditions in 117.25(a), (c), (d), and (e). All Nights 1, 2, 3, 4 and 5 must have been scheduled/given the 2 hour rest.

**Q56)** Is it legal to assign a flightcrew member to 3 consecutive night operations, followed by an FDP, which is not considered a night time operation, followed by another nighttime operations?

**A56)** Yes, in the case presented, the flightcrew member has not had more than 3 consecutive night time operations and is not required to have the 2 hour rest in suitable accommodation.

**Q57)** If a flightcrew member is assigned a FDP that starts before 2 am and continues into the WOCL, followed by a FDP that starts after 2 am but before 5:59 am, are these considered consecutive nighttime operations?

**A57)** Accordingly, an FDP “infringes on the window of circadian low” for the purposes of § 117.27 if any portion of that FDP takes place during the WOCL. Thus, an operation that begins during the WOCL would “infringe on the window of circadian low” and be subject to § 117.27 because a portion of that operation would be conducted during the WOCL. An operation that remains entirely free of the WOCL would not “infringe on the window of circadian low” for the purposes of § 117.27 because no portion of that operation would be conducted during the WOCL.

### **117.27 Consecutive nighttime operations.**

A certificate holder may schedule and a flightcrew member may accept up to five consecutive flight duty periods that infringe on the window of circadian low if the certificate holder provides the flightcrew member with an opportunity to rest in a suitable accommodation during each of the consecutive nighttime flight duty periods.

The rest opportunity must be at least 2 hours, measured from the time that the flightcrew member reaches the suitable accommodation, and must comply with the conditions specified in § 117.15(a), (c), (d), and (e).

Otherwise, no certificate holder may schedule and no flightcrew member may accept more than three consecutive flight duty periods that infringe on the window of circadian low.

For purposes of this section, any split duty rest that is provided in accordance with § 117.15 counts as part of a flight duty period.

## FAQ – Reserve status.

Airport/standby reserve is known by several terms among various certificate holders, but ultimately involves a flightcrew member on call at an accommodation or other facility at or near an airport. The flightcrew member is not at home and is not resting. The purpose of such reserve duty is to have an available flightcrew member close to the operation in case of a schedule irregularity. Flightcrew members on these assignments can receive notice to report to work in as little as 1 hour before departure time, requiring them to be in a constant state of readiness. Because of the unique nature of these assignments, and the fact that the flightcrew member is not resting, an airport/standby reserve assignment is considered to be an FDP, regardless of whether a flying assignment is ultimately received by the flightcrew member.

An **Airport/Standby Reserve (ASB)** is considered duty as well as FDP (see 117.3 definitions)

A short-call reserve flightcrew member typically receives an assignment on relatively short notice, meaning he or she would not be provided an adequate time for a legal rest period before reporting for duty. Report times are typically within two to 3 hours from notification. Short-call reserve differs from airport/standby reserve in that the flightcrew member is likely to be at home and available for contact by the certificate holder, rather than at the airport or a hotel actively awaiting an assignment. Although the flightcrew member may be at home, the opportunity for sleep before reporting for duty cannot be guaranteed. Therefore, a limit on the amount of time spent on short-call reserve duty is necessary.

A **Short Call Reserve (SCR)**, is considered duty since a **Reserve Availability Period (RAP)** has been assigned to the crewmember, and a RAP is defined as duty. (see 117.3 definitions)

Long call reserve pilots are given relatively substantial advance notice of when they are to fly. This notice may be from 10 hours to over 24 hours. A long-call reserve flightcrew member typically receives an assignment for duty well in advance and will have a sleep opportunity before reporting for duty, and may have enough notice of the assignment to plan his or her rest accordingly.

A **Long Call Reserve (LCR)** is not considered duty, however the crewmember must be contactable during the time a crewmember is assigned to LCR; the crewmember is not at rest.

**Q58)** If a flightcrew member is assigned to any reserve assignment are there any specific limitations?

**A58)** Unless specifically assigned to an Airport/Stand-by Reserve, or Short-Call Reserve assignment, the flightcrew member is considered to be assigned to Long-Call Reserve (117.21(a) refers). The flightcrew member, is not considered on duty, however the crewmember is also not considered to be at rest. There are no specific limitations as to how long a flightcrew member may be assigned to Long-Call Reserve but the pilot would still require 30 hours of rest within the past 168 consecutive hours before beginning a reserve or flight duty period.

**Q59)** Are there any rest requirements for a Flightcrew member assigned to Long-Call Reserve who is further assigned to Short-Call Reserve or FDP?

**A59)** Yes, the crewmember must be released from Long-Call Reserve in accordance with 117.21(e) to provide for a Rest Period before the start of next assignment that meets the requirements in 117.25(e). Further if a FDP assignment starts before 2 am and extends into the WOCL, at least 12 hours notification must be provided (117.21(d) refers)

**Q60)** If a flightcrew member is assigned to an Airport/Stand-by Reserve assignment are there any specific limitations and rest requirements?

**A60)** Airport/Stand-By Reserve is considered as a part of an FDP (117.3 Definitions refers); as such need to be applied to the appropriate FDP limitation set forth in 117.13, 117.15, 117.17, 117.19, 117.23 and 117.27. Further such an assignment must satisfy the rest requirements 117.25(b) and 117.25(e)

**Q61)** If a flightcrew member is assigned to a Short Call Reserve assignment are there any specific limitations and rest requirements?

**A61)** A Short-Call Reserve must comply with the rest requirements 117.25(b) and 117.25(e), further a Reserve Availability Period (RAP) may not exceed 14 hours (117.21(c)(1)).

**Q62)** If a flightcrew member assigned to a RAP is assigned to an Un-Augmented FDP during the RAP are there any further Limitations?

**A62)** Yes, 117.21(c)(3) provides, that the FDP assigned must be scheduled to end at the earlier of:

The start time of the RAP plus 16 hours

Using the start time of the RAP, apply Table B limit plus 4 hours.

Using the start time of the FDP assigned, apply the Table B limit.

The FAA has provided the following examples:

For the first example, an acclimated flightcrew member begins a RAP at 0600. That flightcrew member is then assigned to an unaugmented FDP that begins at 1200 and consists of two flight segments. According to Table B, the FDP limit for a two-segment FDP that begins at 1200 is 13 hours. The applicable 13-hour FDP limit plus 4 hours equals 17 hours. Because this is greater than 16 hours, under § 117.21(c)(3), the pertinent RAP + FDP limit for this unaugmented operation is 16 hours. Given that the flightcrew member in this example began his RAP at 0600, he will have 6 hours of RAP time by the time his FDP will start at 1200. As a result, to stay within the 16-hour RAP + FDP limit, this flightcrew member's FDP cannot exceed 10 hours without an extension, as his RAP will use up 6 hours of the 16-hour RAP + FDP limit.

For the second example, an acclimated flightcrew member begins a RAP at 1100. That flightcrew member is then assigned to an unaugmented FDP consisting of five flight segments that begin at 1500. According to Table B, the FDP limit for a five-segment FDP that begins at 1500 is 11.5 hours. The applicable 11.5-hour FDP limit plus 4 hours equals 15.5 hours. Because this is smaller than 16 hours, under § 117.21(c)(3), the pertinent FDP + RAP limit for this unaugmented operation is 15.5 hours. Since the flightcrew member in this example began his RAP at 1100, he will have 4 hours of RAP time by the time his FDP will start at 1500. Consequently, this flightcrew member can take the full 11.5-hour FDP as the 11.5-hour FDP plus the 4 hours of RAP will not exceed the 15.5-hour RAP + FDP limit.

**Q63)** If a flightcrew member assigned to a RAP is assigned to an Augmented FDP during the RAP are there any further Limitations?

**A63)** Yes, 117.21(c)(4) provides, that the FDP assigned must be scheduled to end at the earlier of:

Using the start time of the RAP, apply Table C limit plus 4 hours.  
Using the start time of the FDP assigned, apply the Table C limit.

**Q64)** May the FDP assigned during a RAP be extended?

**A64)** Yes, 117.19(a)(1) has been corrected to permit extensions to combined RAP and FDP as defined in 117.21(c)(3) or (4) up to 2 hours, however the FDP may not be extended any further than the limitations defined in 117.19(a)(1)(2) and (3)

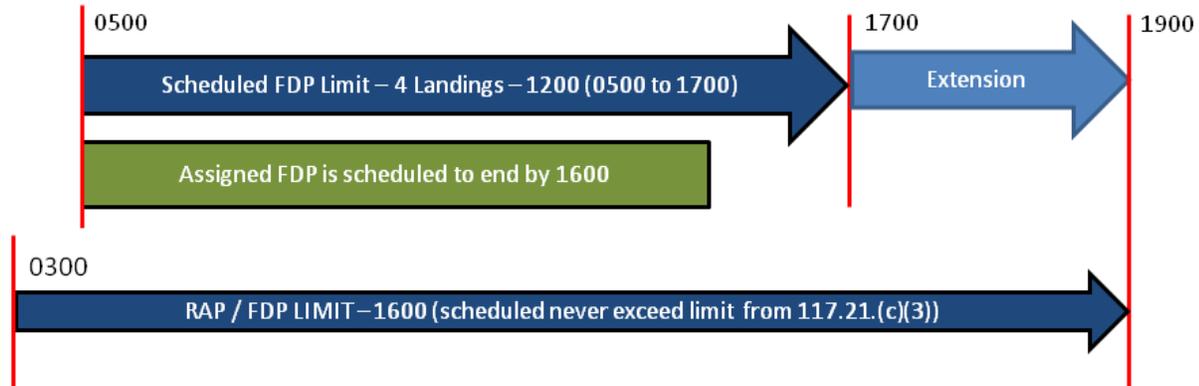
## Scenario Questions:

Combined RAP and FDP with extensions.

Assumptions:

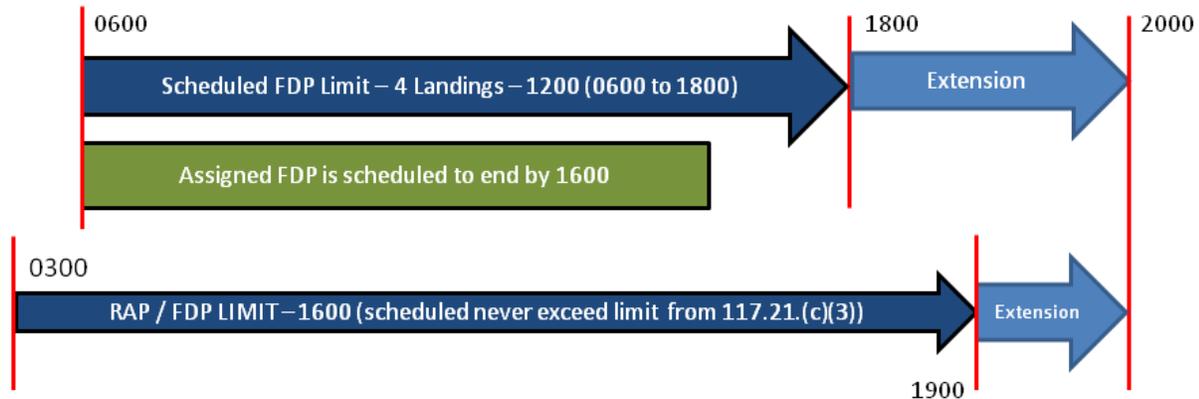
No Extension in the previous 168 hours without a 30 hour intervening rest period.

Extensions above scheduled FDP limitations will not exceed the Cumulative FDP limits in 168 / 672 hours.



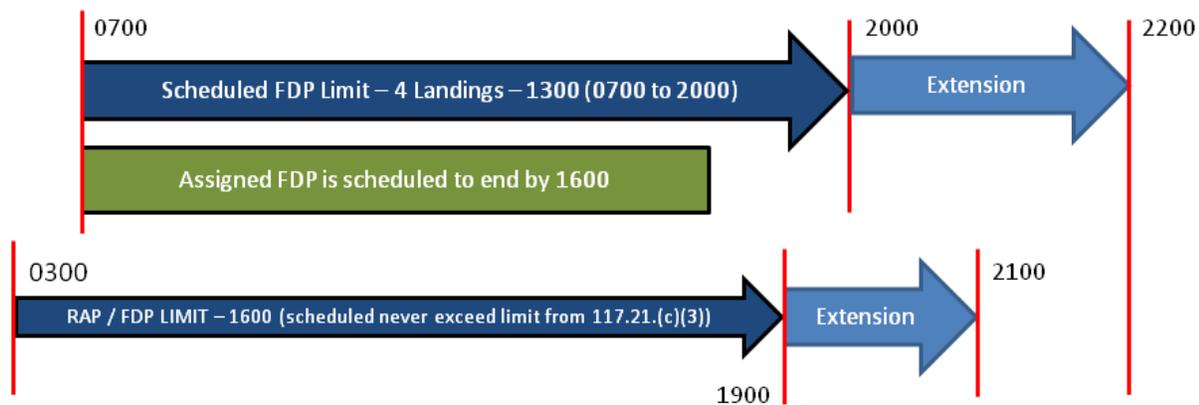
**SQ5)** Are Extensions of a FDP assigned during the RAP beyond the 16 hour limit from 117.21(c)(3) as illustrated above?

**SA5)** No, in the case illustrated above; the Flightcrew member must be able to expect before takeoff to end the FDP by 19:00. There is no additional extension to a FDP when assigned during a RAP. Should an extension occur after takeoff the FDP may be extended as long as necessary to safely land the aircraft.



**SQ6)** Are Extensions of a FDP assigned during the RAP beyond the 16 hour limit from 117.21(c)(3) as illustrated above?

**SA6)** Yes, in the case illustrated above; the Flightcrew member must be able to expect before takeoff to end the FDP by 20:00. The extension allows the combined RAP and FDP to reach 17 hours in duration. The extension is provided for in 117.19(a)(1).



**SQ7)** Are Extensions of a FDP assigned during the RAP beyond the 16 hour limit plus 2 hours as illustrated above?

**SA7)** No, in the case illustrated above; the Flightcrew member must be able to expect before takeoff to end the FDP by 21:00. The extension allows the combined RAP and FDP to reach 18 hours in duration while the FDP will be limited to 14 hours. The extension is provided for in 117.19(a)(1).

## **117.21 Reserve status.**

- (a) Unless specifically designated as airport/standby or short-call reserve by the certificate holder, all reserve is considered long-call reserve.
  
- (b) Any reserve that meets the definition of airport/standby reserve must be designated as airport/standby reserve. For airport/standby reserve, all time spent in a reserve status is part of the flightcrew member's flight duty period.
  
- (c) For short call reserve,
  - (1) The reserve availability period may not exceed 14 hours.
  
  - (2) For a flightcrew member who has completed a reserve availability period, no certificate holder may schedule and no flightcrew member may accept an assignment of a reserve availability period unless the flightcrew member receives the required rest in § 117.25(e).
  
  - (3) For an unaugmented operation, the total number of hours a flightcrew member may spend in a flight duty period and a reserve availability period may not exceed the lesser of the maximum applicable flight duty period in Table B of this part plus 4 hours, or 16 hours, as measured from the beginning of the reserve availability period.
  
  - (4) For an augmented operation, the total number of hours a flightcrew member may spend in a flight duty period and a reserve availability period may not exceed the flight duty period in Table C of this part plus 4 hours, as measured from the beginning of the reserve availability period.
  
- (d) For long call reserve, if a certificate holder contacts a flightcrew member to assign him or her to a flight duty period that will begin before and operate into the flightcrew member's window of circadian low, the flightcrew member must receive a 12 hour notice of report time from the certificate holder.
  
- (e) A certificate holder may shift a reserve flightcrew member's reserve status from long-call to short-call only if the flightcrew member receives a rest period as provided in § 117.25(e).

## FAQ – Applicability

This rule applies to flightcrew members operating under part 91 only if at least one their flight segments is operated under part 117.

Flightcrew members operating under part 91 and who do not have any flight segments subject to part 117 (*e.g.* pilots flying only part 91 operations) are not subject to the provisions of this rule.

This rule allows all-cargo operations to voluntarily determine, as part of their collective bargaining and business decisions, whether they wish to operate under part 117.

In order to prevent manipulation of this voluntary provision, certificate holders who wish to operate their all cargo operations under part 117 cannot pick and choose specific flights to operate under this rule.

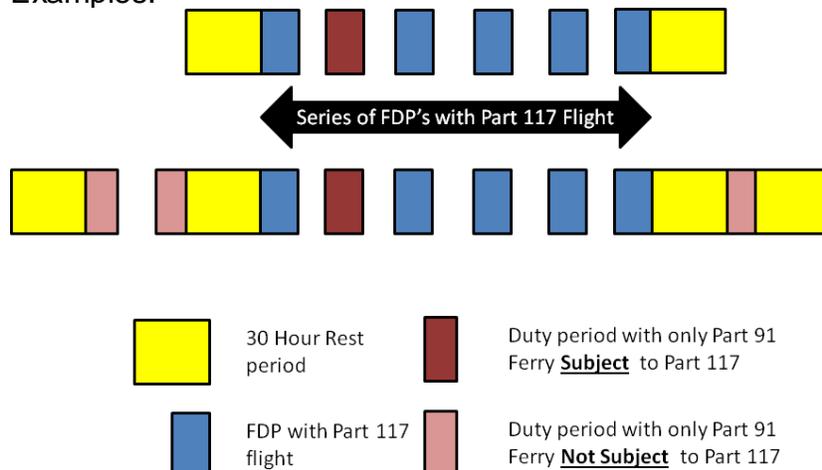
Instead, the certificate holders can only elect to operate under part 117:

- All of their all-cargo operations conducted under contract to a U.S. government agency; and
- All of their all-cargo operations not conducted under contract to a U.S. Government agency.

**Q65)** If a Flightcrew member is assigned a part 91 ferry flight, are the Flight Time Limitations, FDP Limitations and Rest Requirements exemptions still permitted as under the OLD part 121 regulations?

**A65)** No, 117.1 requires that part 117 applies to a flight operation under part 91, other than subpart K, on behalf of the part 121 certificate holder if any flight segment is conducted under part 121 subparts Q, R or S (passenger operation). The key to understand this provision is to understand that a part 91 ferry flight will be considered equivalent to a part 117 flight if such a flight is within the same series of FDPs. The FAA has defined a series of FDPs as: **A series of FDPs consists of FDPs that take place between the 30 hours of rest specified in 117.25(b).**

Examples:



## **117.1 Applicability.**

- (a) This part prescribes flight and duty limitations and rest requirements for all flightcrew members and certificate holders conducting passenger operations under part 121 of this chapter.
- (b) This part applies to all operations directed by part 121 certificate holders under part 91, other than subpart K, of this chapter if any segment is conducted as a domestic passenger, flag passenger, or supplemental passenger operation.
- (c) This part applies to all flightcrew members when participating in an operation under part 91, other than subpart K of this chapter, on behalf of the part 121 certificate holder if any flight segment is conducted as a domestic passenger, flag passenger, or supplemental passenger operation
- (d) Notwithstanding paragraphs (a), (b) and (c) of this section, a certificate holder may conduct under part 117 its part 121 operations pursuant to 121.470, 121.480, or 121.500.

## **FAQ – Definitions**

### **117.3 Definitions.**

In addition to the definitions in §§ 1.1 and 110.2 of this chapter, the following definitions apply to this part. In the event there is a conflict in definitions, the definitions in this part control for purposes of the flight and duty limitations and rest requirements of this part.

#### **Acclimated**

means a condition in which a flightcrew member has been in a theater for 72 hours or has been given at least 36 consecutive hours free from duty.

#### **Airport/standby reserve**

means a defined duty period during which a flightcrew member is required by a certificate holder to be at an airport for a possible assignment.

#### **Augmented flightcrew**

means a flightcrew that has more than the minimum number of flightcrew members required by the airplane type certificate to operate the aircraft to allow a flightcrew member to be replaced by another qualified flightcrew member for in-flight rest.

#### **Calendar day**

means a 24-hour period from 0000 through 2359 using Coordinated Universal Time or local time.

#### **Certificate holder**

means a person who holds or is required to hold an air carrier certificate or operating certificate issued under part 119 of this chapter.

#### **Deadhead transportation**

means transportation of a flightcrew member as a passenger or non-operating flightcrew member, by any mode of transportation, as required by a certificate holder, excluding transportation to or from a suitable accommodation. All time spent in deadhead transportation is duty and is not rest. For purposes of determining the maximum flight duty period in Table B of this part, deadhead transportation is not considered a flight segment.

#### **Duty**

means any task that a flightcrew member performs as required by the certificate holder, including but not limited to flight duty period, flight duty, pre- and post-flight duties, administrative work, training, deadhead transportation, aircraft positioning on the ground, aircraft loading, and aircraft servicing.

#### **Fatigue**

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

## **Fatigue risk management system (FRMS)**

means a management system for a certificate holder to use to mitigate the effects of fatigue in its particular operations. It is a data-driven process and a systematic method used to continuously monitor and manage safety risks associated with fatigue-related error.

## **Fit for duty**

means physiologically and mentally prepared and capable of performing assigned duties at the highest degree of safety.

## **Flight duty period (FDP)**

means a period that begins when a flightcrew member is required to report for duty with the intention of conducting a flight, a series of flights, or positioning or ferrying flights, and ends when the aircraft is parked after the last flight and there is no intention for further aircraft movement by the same flightcrew member. A flight duty period includes the duties performed by the flightcrew member on behalf of the certificate holder that occur before a flight segment or between flight segments without a required intervening rest period. Examples of tasks that are part of the flight duty period include deadhead transportation, training conducted in an aircraft or flight simulator, and airport/standby reserve, if the above tasks occur before a flight segment or between flight segments without an intervening required rest period.

## **Home base**

means the location designated by a certificate holder where a flightcrew member normally begins and ends his or her duty periods.

## **Lineholder**

means a flightcrew member who has an assigned flight duty period and is not acting as a reserve flightcrew member.

## **Long-call reserve**

means that, prior to beginning the rest period required by § 117.25, the flightcrew member is notified by the certificate holder to report for a flight duty period following the completion of the rest period.

## **Physiological night's rest**

means 10 hours of rest that encompasses the hours of 0100 and 0700 at the flightcrew member's home base, unless the individual has acclimated to a different theater. If the flightcrew member has acclimated to a different theater, the rest must encompass the hours of 0100 and 0700 at the acclimated location.

## **Report time**

means the time that the certificate holder requires a flightcrew member to report for an assignment.

## **Reserve availability period**

means a duty period during which a certificate holder requires a flightcrew member on short call reserve to be available to receive an assignment for a flight duty period.

## **Reserve flightcrew member**

means a flightcrew member who a certificate holder requires to be available to receive an assignment for duty.

## **Rest facility**

means a bunk or seat accommodation installed in an aircraft that provides a flightcrew member with a sleep opportunity.

**The class of the rest facility is further defined in [AC 117-1](#).**

### **Class 1 rest facility**

means a bunk or other surface that allows for a flat sleeping position and is located separate from both the flight deck and passenger cabin in an area that is temperature-controlled, allows the flightcrew member to control light, and provides isolation from noise and disturbance.

### **Class 2 rest facility**

means a seat in an aircraft cabin that allows for a flat or near flat sleeping position; is separated from passengers by a minimum of a curtain to provide darkness and some sound mitigation; and is reasonably free from disturbance by passengers or flightcrew members.

### **Class 3 rest facility**

means a seat in an aircraft cabin or flight deck that reclines at least 40 degrees and provides leg and foot support.

## **Rest period**

means a continuous period determined prospectively during which the flightcrew member is free from all restraint by the certificate holder, including freedom from present responsibility for work should the occasion arise.

## **Scheduled**

means to appoint, assign, or designate for a fixed time.

## **Short-call reserve**

means a period of time in which a flightcrew member is assigned to a reserve availability period.

## **Split duty**

means a flight duty period that has a scheduled break in duty that is less than a required rest period.

## **Suitable accommodation**

means a temperature-controlled facility with sound mitigation and the ability to control light that provides a flightcrew member with the ability to sleep either in a bed, bunk or in a chair that allows for flat or near flat sleeping position. Suitable accommodation only applies to ground facilities and does not apply to aircraft onboard rest facilities.

**Theater**

means a geographical area in which the distance between the flightcrew member's flight duty period departure point and arrival point differs by no more than 60 degrees longitude.

**Unforeseen operational circumstance**

means an unplanned event of insufficient duration to allow for adjustments to schedules, including unforecast weather, equipment malfunction, or air traffic delay that is not reasonably expected.

**Window of circadian low**

means a period of maximum sleepiness that occurs between 0200 and 0559 during a physiological night.

## **FAQ – FRMS.**

In accordance with Public Law 111–216, each part 121 certificate holder had to submit to the FAA a Fatigue Risk Management plan (FRMP). A FRMP is statutorily required for each part 121 air carrier; whereas, a Fatigue Risk Management System (FRMS) is an optional approach to fatigue mitigation.

Under an FRMS, a certificate holder develops processes that manage and mitigate fatigue and meet an equivalent level of safety.

A certificate holder may decide to use FRMS as a supplement to the requirements adopted in the rule, or it may use the FRMS to meet certain elements of this rule for which the adopted regulatory standard is not optimal.

The implementing guidance in AC 120–103 details each component, the minimum necessary tools for a complete and effective FRMS, the steps in the FRMS process and the roles and responsibilities of all the participants.

An FRMS is a data-driven and scientifically based process that allows for continuous monitoring and management of safety risks associated with fatigue-related error. See AC 120–103 at p.3. Furthermore, an FRMS is an effective mitigation strategy when the organization bases it on valid scientific principles.

### **117.7 Fatigue risk management system.**

- (a) No certificate holder may exceed any provision of this part unless approved by the FAA under a Fatigue Risk Management System that provides at least an equivalent level of safety against fatigue-related accidents or incidents as the other provisions of this part.
- (b) The Fatigue Risk Management System must include:
  - (1) A fatigue risk management policy.
  - (2) An education and awareness training program.
  - (3) A fatigue reporting system.
  - (4) A system for monitoring flightcrew fatigue.
  - (5) An incident reporting process.
  - (6) A performance evaluation.

## **FAQ – Emergency and government sponsored operations.**

The applicability provision of this section now specifically articulates the two categories of operations that are affected:

- Operations conducted pursuant to contracts with the U.S. Government department and agencies.
- Operations conducted pursuant to a deviation issued by the Administrator under 119.57 that authorizes an air carrier to deviate from the requirements of parts 121 and 135 to perform emergency operations.

### **117.29 Emergency and government sponsored operations.**

(a) This section applies to operations conducted pursuant to contracts with the U.S. Government and operations conducted pursuant to a deviation under § 119.57 of this chapter that cannot otherwise be conducted under this part because of circumstances that could prevent flightcrew members from being relieved by another crew or safely provided with the rest required under § 117.25 at the end of the applicable flight duty period.

(b) The pilot-in-command may determine that the maximum applicable flight duty period, flight time, and/or combined flight duty period and reserve availability period limits must be exceeded to the extent necessary to allow the flightcrew to fly to the closest destination where they can safely be relieved from duty by another flightcrew or can receive the requisite amount of rest prior to commencing their next flight duty period.

(c) A flight duty period may not be extended for an operation conducted pursuant to a contract with the U.S. Government if it causes a flightcrew member to exceed the cumulative flight time limits in § 117.23(b) and the cumulative flight duty period limits in § 117.23(c).

(d) The flightcrew shall be given a rest period immediately after reaching the destination described in paragraph (b) of this section equal to the length of the actual flight duty period or 24 hours, whichever is less.

(e) Each certificate holder must report within 10 days:

(1) any flight duty period that exceeded the maximum flight duty period permitted in Tables B or C of this part, as applicable, by more than 30 minutes; and

(2) any flight time that exceeded the maximum flight time limits permitted in Table A of this part and § 117.11, as applicable; and

(3) Any flight duty period or flight time that exceeded the cumulative limits specified in § 117.23.

(f) The report must contain the following:

(1) a description of the extended flight duty period and flight time limitation, and the circumstances surrounding the need for the extension; and

(2) if the circumstances giving rise to the extension(s) were within the certificate holder's control, the corrective action(s) that the certificate holder intends to take to minimize the need for future extensions.

(g) Each certificate holder must implement the corrective action(s) reported pursuant to paragraph (f)(2) of this section within 30 days from the date of the extended flight duty period.