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Fatigue Management Seminar

FAR 117 Fitness for Duty and Responsibilities
January 22–23, 2020
McLean, Va.



FRMS Mitigations

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Institutes for Behavior Resources

Day 2

January 23 from 1030-1115

“FRMS and Mitigations”



Fatigue Management Seminar
FAR 117 Fitness for Duty and Responsibilities

FRMS Exceptions to Flight and Duty Time Limits

- As a general rule, anytime there is a request for additional flight duty time, there must be offsetting mitigations to achieve an equivalent level of safety.
- The operation under the exception is called an Alternative Means of Compliance or AMOC.
- Mitigations fall into several main categories
 - Additional rest/sleep opportunities
 - Timing of flights relative to the circadian rhythm
 - Additional crewmembers
 - Additional fatigue monitoring
 - Reductions in allowable duty time extensions



In-flight Sleep

- With four flight crew, inflight sleep is taken two at a time, provided there are adequate sleep facilities.
- A Class 1 facility provides the highest quality of sleep.
- The longer the flight, the greater the inflight sleep opportunity.
- However, the trade-off between added flight time and added sleep is not linear.
- Studies indicate that a single inflight sleep period is best kept to less than 5 hrs – the person sleeping needs time for personal hygiene and the flight crew needs periodic relief.
- Recent guidelines suggest two inflight sleep periods per crewmember – one short and one long. This addresses the needs of both the sleeping crewmembers and the flight deck crew.
- The timing of the sleep periods must maximize sleep for the landing crew.
- For example, the landing crew may be provided a minimum of 3 hrs rest in the second half of the flight.



Layover Sleep

- Initially, layovers for very long flights were about two days.
- FRMS applications for short exceptions to the limits have reduced that to a single 24 hr period reducible to some minimum, such as 20 hrs.
- Longer FDPs will require a 48 hr layover, reducible to 44 hrs.
- It is important that the timing of the layover permit an uninterrupted sleep opportunity during the base time *physiological night*.



Pre-duty Rest

- For FDP exemptions, it is always expected that the pre-duty rest will be longer than the minimum of 10 hrs.
- The prescriptive pre-duty rest is usually not less than 12 hrs.
- Often it is also specified that the prior rest will include one physiological night at base time, between the hours of 0100 and 0700.



Post-duty Rest - Examples

- At the completion of the FRMS city pair, there is usually a recovery period required before any additional duties can be assigned.
 - For any other duty, the minimum rest might be 40 hrs. to include at least two physiological nights.
 - For another FRMS duty, the minimum might be 56 hrs.
- There may also be a limit on the number of consecutive FRMS duties.



Crew Complement

- Normally, the use the maximal allowable FDP under Part 117, four flight crew will be assigned.
- Some FRMS procedures call for one Captain and three First Officers.
- More recently, applications have provided for two Captains and two First Officers, on the grounds that the resting crew is more able to get meaningful sleep with a Captain on the flight deck at all times.



Other Mitigations

- Training regarding the requirements of the FRMS-AMOC operation. Often a “route guide” is provided that suggests how rest should be taken during the flights and on the layover.
- The timing of the flights might be limited such that critical phases of flight avoid the window of circadian low, in base time.
- Limitations on the use of reserves, for example, the landing crewmember may not be a reserve.
- Limitations of the available FDP extension, for example, the allowable extension may be reduced from 2 hr to 1.5 hr.
- Monitoring of fatigue reports to assure that the AMOC does not generate additional fatigue reports compared to operations within the Part 117 limits.
- The FAA issues a set of “Conditions and Limitations” that defines how the AMOC must be performed and what data shall be collected to validate the equivalent level of safety.

