Fatigue Risk Management: FAA Fatigue Working Group and Research Update



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Federal Aviation Administration

Areas of Concern





Cargo Loading

Maintenance





Scope of Concern



24/7 Operations Extended duty days Restricted sleep opportunities Scheduled and On-Demand operations New types/combinations of operations Significant time zone changes Workload (multiple flight segments) Environmental challenges



Efficiency



Fatigue Risk Management

- Policy/Regulation
 - 14 CFR Part 117 Flightcrew Member Duty and Rest Requirements
 - 8900.1 CHG 301 Management of Aviation Fatigue
 - AC 120-103A FRMS
 - JO 1030.7A ATO FRMS
 - AC 120-115 Maintainer FRMS
- Collaboration (ongoing)
 - FAA Fatigue Working Group (Academia, Regulators, Industry, and Labor)
 - Federal Inter-Agency Fatigue Working Group
 - AMRAC (DOD Interagency collaboration)
 - NATO (International Aviation collaboration)

Research





Workgroup Purpose

- Formalize communication across types of operations with consideration for stakeholder concerns and priorities for aviation fatigue research,
- Provide data for prioritization of fatigue research recommendations and capitalize on overlapping opportunities, in-house resources, pooling of resources, and industry collaboration;
- Meet annually with all stakeholders to re-assess priorities and research gaps relating to fatigue.

(NOTE: The workgroup data/findings will not necessarily result in funded research, but it will provide critical information to policy offices for research prioritization decisions, synergy across operations, resource pooling, and collaboration)



Status Update

- Internal FAA meeting from each type of operation.
- Full meeting across operational subgroups to include policy-holders, industry-stakeholders, and labor.
- Subgroup Meeting(s): Identify and document respective fatigue research priorities, develop justification of research needs, and identify opportunities for synergy with other sub-groups.







Aviation Fatigue Research: ALL FAA Ops

Research 1: Study of performance decrements and genetic biomarkers during sleep loss or mistimed sleep

Outcome:

-Are performance decrements and operational safety risks similar for short-term acute sleep loss, restricted sleep over several nights, and circadian disruption (shiftwork)?

-To what extent can genetic biomarkers be used to expand understanding beyond hours of sleep, to actually measuring performance deficits and providing a personalized risk assessment?

-What genetic biomarkers could be most useful for inferring the risk from fatigue in postmortem accident investigations?







Aviation Fatigue Research: Pilots

Research 2: Fatigue Mitigation in Flight Operations: Part 117.7 FRMS for exceedances

Research 3: Study sleeploss, workload, and fatigue associated with Short Haul, Multi-Segment Flight Operations

Research 4: Study impact of circadian rhythm adaptation following 8-9 hr time zone transitions on aircrew sleep, behavioral performance, and recovery requirements

Outcome: Inform updates to Part 117 regarding minimums, city pairs, rest accommodations, etc for short-haul multi-segments, long range and ultra long-range operations. Provide insight to the modeling, predictions, and mitigations for long-range operations.





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Aviation Fatigue Research: ATC

Research 5: Compare current air traffic controller sleep times with times recorded during a fatigue baseline study in 2012

Outcome: Evaluate how ATO fatigue management activities have positively impacted sleep opportunity and sleep duration for controllers or if any modifications are warranted.

Research 6: Gather air traffic controller selfassessed workload and fatigue data and align with air traffic operational data, errors and incidents.

Outcome: Identify operational conditions that increase controller workload and fatigue and correlate with operational errors and incidents, and inform possible mitigations.





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Aviation Fatigue Research: Maintenance

Research 7: Examine fatigue risk across aviation maintenance industry and develop effective fatigue risk management strategies that can be integrated into safety management systems.

Outcome: Guidance for operators and inspectors to supplement Part 5 for integration of fatigue risk management within SMS.





Take Home Message

- The working group was well-timed in its formulation
- There is significant opportunity for resource pooling, collaboration and partnership.
- Continued formalized communication within the FAA and across the Transportation Industry and International Communication is important to identify these opportunities.
- Fatigue research and application is a priority for fatigue risk management and updates to policy, guidance, and regulations as our operational environments and aircraft capabilities continue to change.
- New additions to the workgroup this year: UAS



QUESTIONS?

