The FAA’s Fatigue Risk Management Program for Air Navigation Service Providers

Presented to: 10th International Conference on MANAGING FATIGUE

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Air Traffic Organization
Federal Aviation Administration
Washington, DC

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Views or opinions expressed herein are solely those of the author and do not necessarily reflect the opinions of the FAA or the federal government.
Air Navigation Services in the United States

- **UNITED STATES:**
  - Regulator = FAA
  - Service Provider = FAA, contract (towers only)

- **SOME OTHER COUNTRIES:**
  - Regulator = Government civil aviation authority
  - Provider = Company
FAA – Where is ATC fatigue management located?

**FAA Lines of Business**
- Airports (ARP)
  - Air Traffic Organization (ATO)
- Aviation Safety (AVS)
- Commercial Space Transportation (AST)
- Security and Hazardous Materials Safety (ASH)

**ATO Lines of Business**
- Air Traffic Services
- Management Services
- Mission Support Services
- Program Management Organization
- Safety & Technical Training
- System Operations Services
- Technical Operations
- Flight Program Operations

**Safety & Technical Training Lines of Business**
- Safety (AJI-1000)
- Technical Training (AJI-2000)
- Policy & Performance (AJI-3000)

**Safety Services**
- Safety Services Group (AJI-1500)
  - Eric Saldana
- Safety Services Support (Air Traffic/MSS) Team (AJI-1510)
  - Vacant
- Safety Services Support Team (AJI-1520)
  - Norman Davis
- Safety Services Support (PMO/Sys Ops/Tech Ops) Team (AJI-1530)
  - Greg Escobar
- Human Performance Team (AJI-1550)
  - Jason Demagalski

**Fatigue Risk Management Element**
FAA ATO Definition of “Fatigue”
Identical to ICAO* definition

6. Definitions. The following definitions apply in this order.

a. Fatigue. A physiological state of reduced mental or physical performance capability resulting from sleep loss or extended wakefulness, circadian (from Latin circa meaning “about” and dies meaning “day”) phase, or workload (mental and/or physical activity) that can impair an individual’s alertness and ability to perform safety-related duties.

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U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
Air Traffic Organization Policy

ORDER
JO 1030.7A

8/31/2012

SUBJ: Air Traffic Organization Fatigue Risk Management

Fatigue Risk Management (FRM) is a vital component of the Federal Aviation Administration’s (FAA) Safety Management System (SMS) and establishes the policy to define, assess, and manage fatigue-related safety risk within the National Airspace System (NAS).

Joseph Teixeira
Vice President
ATO Safety and Technical Training

August 31, 2012

*International Civil Aviation Organization, website: www.icao.int
Who is Covered by the Order?
## Approaches to Fatigue Risk Management for ANSPs*

<table>
<thead>
<tr>
<th>PRESCRIPTIVE APPROACH</th>
<th>RISK MANAGEMENT APPROACH</th>
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<tbody>
<tr>
<td><strong>REGULATOR:</strong></td>
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<tr>
<td>- Sets limits (work hours etc.)</td>
<td>- Ensures that ANSP manages fatigue risk to level equivalent to – or better than – prescriptive approach</td>
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<tr>
<td>- Fatigue risk managed within Safety Management System (SMS)</td>
<td>- Establishes <strong>fatigue risk management system (FRMS)</strong> regulations and develops processes for approval and oversight of an ANSP’s FRMS</td>
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<tr>
<td><strong>SERVICE PROVIDER (ANSP):</strong></td>
<td><strong>ANSP:</strong></td>
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<tr>
<td>- Abides by prescriptive limits</td>
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<tr>
<td>- Implements personal fatigue mitigation</td>
<td>- Identifies fatigue limits</td>
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<td></td>
<td>- Manages risk to stay within limits</td>
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<td>- Identifies safety objectives and targets</td>
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<td>- Self-monitors via FRMS processes</td>
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*ANSP: Air Navigation Service Provider*
FAA ATO Fatigue Risk Management Program
Aligns with FAA ATO Safety Management System
FAA ATO Fatigue Risk Management Program

FATIGUE POLICY
2-6-6. RELIEF PERIODS

a. Personnel performing watch supervision duties are responsible for ensuring that breaks are administered in an equitable manner and applied so as to promote the efficiency of the agency. They are also responsible for ensuring that breaks are of a reasonable duration.

NOTE: Breaks to recuperate are permitted in activities necessitated by the need to effectively manage.

b. Personnel performing watch supervision duties are responsible for knowing their employees to ensure that breaks are administered in an equitable manner and applied so as to promote the efficiency of the agency. They are also responsible for ensuring that breaks are of a reasonable duration.

2-6-7. BASIC WATCH SCHEDULE

a. Facility watch schedules must take into account normal traffic flow, thereby permitting the posting of a continuing schedule for an indefinite period of time. Facility management is responsible for ensuring that watch schedules are in accordance with collective bargaining agreements.

b. Air traffic controllers and watch supervisors are those directly subject to a collective bargaining agreement.

2-6-13. SINGLE PERSON MIDNIGHT OPERATIONS

a. In order to ensure that a receiving controller is prepared to accept an aircraft, coordination between facilities/operational areas must be accomplished either manually via landline, or positively acknowledged via automation, for example, acceptance of the handoff by keystroke entry, when an operational area is operated with one ATCS between the hours of 0000L to 0500L.

NATCA, FAA announce tentative contract agreement

The National Air Traffic Controllers Association and the Federal Aviation Administration announced a tentative agreement on a new collective bargaining agreement.

MEMORANDUM OF UNDERSTANDING BETWEEN THE NATIONAL AIR TRAFFIC CONTROLLERS ASSOCIATION AND THE FEDERAL AVIATION ADMINISTRATION

Section 8. All operational personnel are obligated by their significant safety duties and professional responsibilities to prepare for duty with consideration for being well-rested and mentally alert. It is the employees’ responsibility to recognize and report to their supervisor when they are unable to perform operational duties due to fatigue. Upon request, employees that self-declare as unable to perform operational duties due to fatigue will be granted leave in accordance with the leave provisions contained within the 2009 CBA. Additionally, at his/her request, an employee that self-declares as fatigued, shall be assigned other facility duties, to the extent such duties are available. If no such duties are available, the employee will be granted leave as described above.
ATO Fatigue Safety Steering Committee (FSSC)

- Established by charter
- Meets in-person quarterly
- Reviews work schedule compliance with JO 7210.3Z
- Reviews fatigue-related incidents and voluntary safety reports
- Recommends courses of action, revisions to Orders, process updates, etc.
FAA ATO Fatigue Risk Management Program

FATIGUE RISK MANAGEMENT

FATIGUE SAFETY PROMOTION

FATIGUE SAFETY ASSURANCE

- Identify Fatigue Hazards
- Analyze/assess risk posed to NAS safety
- Generate risk mitigation strategy
- Identify key safety performance indicators
- Create risk mitigation implementation plan

FATIGUE HAZARD IDENTIFICATION

SAFETY CAMPAIGNS

FATIGUE SAFETY STEERING COMMITTEE

ORDERS

TRAINING / EDUCATION

AUDITS / EVALUATIONS

ATSAF / TSAP REVIEW

COMMUNICATIONS

CBAs, MOUs, MOAs

March 22, 2017
Work Schedule Fatigue Risk Quantification

- Commercially available modeling software
- Estimated sleep* obtained prior to various shift types (early AM, days, mids, etc.) and on days off
- Work schedule risk score = area below 77% effectiveness

<table>
<thead>
<tr>
<th>INTERVAL TYPE</th>
<th>SLEEP PERIOD DURATION (HRS)</th>
<th>SLEEP QUALITY</th>
<th>MAXIMUM POSSIBLE SLEEP (HRS)</th>
<th>SLEEP ONSET TIME</th>
<th>SLEEP OFFSET TIME</th>
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<tbody>
<tr>
<td>NIGHT SLEEP prior to an RDO</td>
<td>Up to 8.50</td>
<td>excellent (100%)</td>
<td>Up to 8.50</td>
<td>23:00 (or 90-minute rule*)</td>
<td>7:30</td>
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<tr>
<td>NIGHT SLEEP - before AFTERNOON</td>
<td>Up to 7.50</td>
<td>excellent (100%)</td>
<td>Up to 7.50</td>
<td>00:00 (or 90-minute rule*)</td>
<td>7:30</td>
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<tr>
<td>(1300-1959 start)</td>
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<tr>
<td>NIGHT SLEEP - before MIDDAY</td>
<td>Up to 12.50</td>
<td>excellent (100%)</td>
<td>Up to 8.50</td>
<td>23:00 (or 90-minute rule*)</td>
<td>7:30</td>
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<tr>
<td>(1000-1259 start)</td>
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<tr>
<td>NIGHT SLEEP - before DAY</td>
<td>Up to 12.50</td>
<td>excellent (100%)</td>
<td>Up to 8.50</td>
<td>23:00 (or 90-minute rule*)</td>
<td>7:30</td>
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<td>(0700-0959 start)</td>
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<tr>
<td>NIGHT SLEEP - before EARLY AM</td>
<td>Up to 12.50</td>
<td>excellent (100%)</td>
<td>Up to 8.50</td>
<td>23:00 (or 90-minute rule*)</td>
<td>7:30</td>
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<td>(before 0700 start)</td>
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* Estimated from ATC survey and actigraphy results + assumptions based on sleep literature

March 22, 2017
Fatigue Risk Quantification

Area below 77%

ACCEPTANCE of RISK is a BUSINESS DECISION (made by FAA ATO Safety VP)
Fatigue Risk Quantification – NEXT STEPS

Section 3

The Safety Analysis and Risk Mitigation Process

Figure 3.7: Risk Matrix

*Risk is high when there is a single point or common cause failure.
FAA ATO Fatigue Risk Management Program

FATIGUE SAFETY ASSURANCE

- Identify Fatigue Hazards
- Analyze/assess risk posed to NAS safety
- Generate risk mitigation strategy
- Identify key safety performance indicators
- Create risk mitigation implementation plan
Voluntary Safety Reporting Program: ATSAP

✓ Personnel voluntarily report safety and operational concerns (including fatigue)

✓ REPORTING is NON-PUNITIVE (cannot be used to de-certify or de-credential an air traffic controller)

✓ Identifies emerging fatigue hazards
FAA ATO Fatigue Risk Management Program

FATIGUE SAFETY PROMOTION

- **Fatigue Risk Management**
  - Identify Fatigue Hazards
  - Analyze/assess risk posed to NAS safety
  - Generate risk mitigation strategy
  - Identify key safety performance indicators
  - Create risk mitigation implementation plan

- **Fatigue Hazard Identification**

- **Fatigue Safety Assurance**

- **Fatigue Policy**

- **Fatigue Safety Promotion**

- **Fatigue Safety Steering Committee**

- **Orders**

- **Training/Education**

- **Audits/Evaluations**

- **Communications**

- **CBAs, MOUs, MOAs**

March 22, 2017
Fatigue Safety Training, Campaigns, Communications

TRAINING

BULLETINS

DO YOU KNOW YOUR FACILITY’S PROCEDURES for SINGLE-PERSON MIDNIGHT OPERATIONS? (0000L – 0500L)

ORDER JO 7210.3Z

Effective Date: December 10, 2015

WHO: Controllers working midnights.
WHAT: Midnight Operations Required Hand-off Procedures
HOW: Hand-off MUST be accomplished either:
- MANUALLY - e.g., verbal communication via landline
- POSITIVELY ACKNOWLEDGED - via automation
WHY: The pressure for rest and our biological clock degrade alertness during midnight shifts. Requiring a positive action to accept traffic will help ensure that controllers are alert and prepared.

PARTNERSHIP for SAFETY CAMPAIGN

As part of our overall safety goals, ATSAP has established a system for our Controllers and Other Employees to voluntarily identify and report safety and operational concerns.

Fully Charged is a joint campaign sponsored by the FAA, NATEA, and PASS to promote fatigue education awareness by providing the workforce with tools to self-educate and mitigate fatigue hazards.

FRA and our industry partners are working hard to reduce the risk of runway excursions.

Runway Safety Video by Ric Loewen

Remote Training Spreads Safety Without Spending Money

All Points Safety connects the dots and helps you understand how safety and operations programs fit together, so you better

Events
Tuesday October 18 1-2pm EST
PFS National Monthly Teleconference
Thursday October 20 1-2pm EST
Summary: FAA ATO Fatigue Risk Management Program

- Current approach: PRESCRIPTIVE (facilities may apply for waivers)
- Operates based on 4 components of SMS:
  - FATIGUE POLICY
  - FATIGUE RISK MANAGEMENT PROCESSES
  - FATIGUE SAFETY ASSURANCE ACTIVITIES
  - FATIGUE SAFETY PROMOTION ACTIVITIES
- Overseen by representative Fatigue Safety Steering Committee (FSSC)
- Dynamic: subject to continuous refinements / revisions: INTERNATIONAL ANSP FM BENCHMARKING PROJECT
ATO FRMP – Acknowledgements (partial list…)

Tom Nesthus, CAMI/FAA
Darendia McCauley, CAMI/FAA
Annie Glenn, FAA
Ken Myers, FAA
Duane Dupon, FAA
Dave Buczek, DB&A
Greg Ricketts, ATO/FAA
Phil Barbarello, NATCA
Ginger Demakos, NATCA
Dean Iacopelli, NATCA
Dale Wright, NATCA
Peter Gimbrere, NATCA
Genna Teitelbaum, NATCA
Steve Hursh, IBR
Melissa Mallis, M3 Alertness Mgmt
Francine James, IBR
Lauren Waggoner, IBR

Terry Biggio, ATO/FAA – prior FRMT Lead
Jeff Richards, NATCA (FSSC member)
Kathy Sanford, PASS (prior FSSC member)
Rick Huss, ATO/FAA – prior FRMT Lead
Bob Jones, ATO/FAA (prior FSSC member)
Wanda Geist, ATO/FAA (prior Technical Operations advisor)
Jason Canton, ATO/FAA (FSSC member)
Kelly McGonigal, PASS (FSSC member)
Jim Mayer, ATO/FAA (current Technical Operations advisor)
QUESTIONS and POINT of CONTACT

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