

## Parallel Session

### *Current State of Mitigation: Flight Operations*

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# *Correlation between Fatigue Reports and Flight Performance Deviations*

Jack Rubino, M.D.  
United Airlines Flight Center

**9:00 - 9:25**

**June 18, 2008**



**Jack Rubino, M.D.**  
*Biography*

Jack Rubino, M.D. has been the Manager of Human Factors at the United Airlines Flight Center since 1999. He is a former United Air Force Flight Surgeon and served in Operation Desert Storm and was awarded a Medal of Meritorious Service. He also was a Board Certified Ob-Gyn and a Fellow of the American Board of Obstetricians and Gynecologists.

Dr. Rubino is a pilot with a Type rating on the B-737, B-747-400, B-757/767 and B-777. He is also type rated on the Airbus A-320 and A-330. He has been an instructor pilot on the B-757/767 and B-777 and also an instructor on the A-320. He is a partner and pilot for Global Flying Group, which does test flights and ferry flights for the major aircraft leasing companies.

Education: Villanova University, B.S in Biology, Temple University School of Medicine, Medical Degree, Thomas Jefferson University, Philadelphia, PA completed residency in OB-GYN, The United States Air Force School of Aerospace Medicine, Brooks Air Force Base, TX.

# Fatigue Seminar

June 18, 2008

Presented at the FAA Fatigue Management Symposium: Partnerships for Solutions; Vienna, VA: June 17-19, 2008



Federal Aviation Administration

# Stress and Fatigue

Dr. Jack Rubino

Why talk about it?

- Raise awareness of safety-related issues regarding fatigue
- Provide tools that can be used to defeat fatigue

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# Stress and Fatigue Overview

## Contributing factors of fatigue

- Increased productivity requirements necessitate longer hours
- Schedules of flight operations require odd work hours
- Commuting to and from domicile adds to work time
- Cockpit is dry, noisy, complex and sometimes stressful
- Stress of social and family pressures

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# Stress and Fatigue by the numbers

- Less than six hours of sleep is **Acute Fatigue**.
- The average sleep you need each night, less the actual sleep you get is your **Sleep Debt**.
- Sleep debt of more than six hours without recovery produces **Cumulative Fatigue**.

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# Stress and Fatigue

## By the numbers

- Window of circadian low - 0200 to 0500 body time
- Hours on duty  $\geq$  12 hours
- Hours awake  $\geq$  16 hours
- Medical conditions
  - Sleep apnea
  - Medications
  - Depression
  - Etc.

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# Stress and Fatigue

## What United is Doing

- A Safety Review Team meets monthly to review all FSAP Reports, FSIs, and Crew Desk calls
- Group consists of:
  - VP of Flight Operations
  - VP Safety
  - Crew Planning
  - Managing Director of Domicile Operations
  - Managing Director of Flight Standards and Training
  - Human Factors
- One result of this group is to eliminate late night calls from the Crew Desk

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# Fatigue Risk Management Strategy (FRMS)

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- The FRMS is an apolitical, joint UAL/ALPA effort whose focus is improving safety through the understanding and development of relevant fatigue mitigation strategies for UAL worldwide flight operations.
- The FRMS is a three-part program, using a scientific, evidence-based approach to risk posed by fatigue.

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# FRMS Elements

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- A training and education program geared towards pilots, schedule builders, flight managers, and crew schedulers or anyone else whose decisions directly impact fatigue related risk operations;
- The use of scheduling software to identify fatigue inducing pairings and monthly schedules; and
- The development of an audit metric to measure whether or not the mitigations are effective.

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# Training and Education

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- Tiered, multi-level training, directed towards individuals whose decisions impact fatigue-related risk operations.
- Promote knowledge about the risks, causes, and consequences of pilot fatigue.
- Varied delivery modes and formats
- Responsibilities of management and pilots
- Competency based assessment?

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# SAFETE-FAST

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The software that we are looking at uses a biomathematical model called the **Sleep, Activity, Fatigue, and Task Effectiveness** or **SAFETE** model and is embedded in software known as **Fatigue Avoidance Scheduling Tool (FAST)**, developed by Dr. Steven Hirsch.

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