

FRMS in air traffic control (skyguide's view)

Prepared for SASCON'15
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1. What do ATCOs do?





1. What do ATCOs do?

- ATCOs job

- › Prevent collisions between aircraft
- › Prevent collisions between aircraft and obstructions
- › Expedite and maintain an orderly flow of air traffic

They ensure **SAFETY** of above by.....

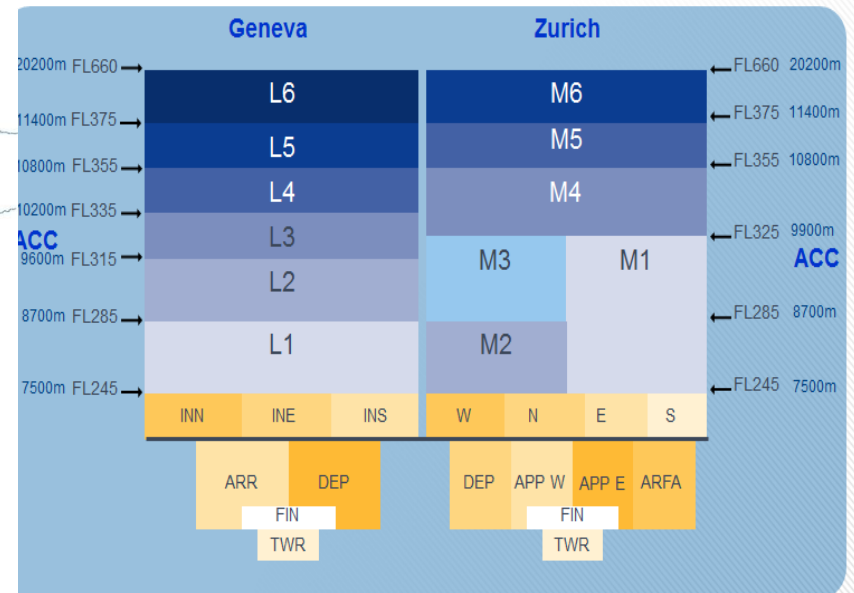
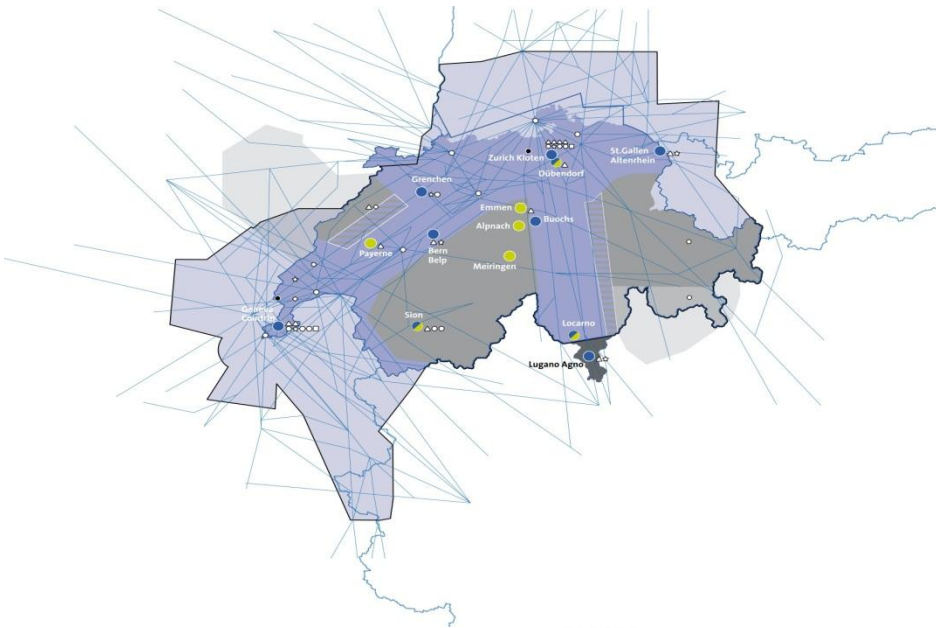
- › Issuing instructions, advices and information to pilots by radio (and data)
- › Tracking the progress of the pilots they talk to using the latest radar and software technology.
- › Notifying and assist S&R





1. What do ATCOs do? - how workload is shared

- › Airspaces are split horizontally and vertically; to handle heavy traffic demand. skyguide is among top 4 to have the busiest and most complex airspace in Europe.
- › In 2014, we handled total 1'156'583 IFR flights or average 3,169 flights a day





1. What do ATCOs do?

- Skills ATCOs need



- › Good spatial orientation
- › Good memory
- › Ability to think fast and make quick decisions
- › Assertive and confident
- › Stress resistant and stay calm under pressure
- › Excellent eyesight and hearing
- › Can work in a team
- › Service oriented

(source EUROCONTROL)





2. Aircrew fatigue vs. ATCO fatigue



- › **Definition of 'Fatigue' = same**
- › **Effects of fatigue** (Fatigue slows down human performance such as cognitive process, physical reactions, omissions and carelessness, etc) = **same.**
- › **Causes of fatigue = same** (e.g. lack/quality of sleep, interruption of circadian rhythm, mental disturbances, etc)



2. Aircrew fatigue vs. ATCO fatigue - more commonalities?



	Aircrew	ATCOs
Operations	24/7, various shifts incl. night shift	Same
Work place	Cockpit,	Tower, facility
Work environment	Work in a team (captain, co-pilot)	Same (radar executive, planner)
Specifics	Layovers, night flying, crossing time zones, multiple take-offs / landings	Same workplace Workload varies (position time, season, traffic volume, mixed traffic)
Qualification	License, ratings, medical	Same
	Report fit for duty	same



2. Aircrew fatigue vs. ATCO fatigue - more commonalities?

Air Crew

Fatigue in accidents

- Statistics shows **15-20%** of fatal aviation accident (source Flight Global at FRMS forum)

ATCOs

(US)

- Controller fatigue has been implicated in several accidents and incidents (Comair 5191 NTSB 2007)
- Several runway incursions involved controllers working quick turnaround shifts within 9 hours or less between shifts (Price, 2008).

NASA/FAA study

- Significantly more fatigued ATCOs in 2010 compared to the 1999 survey.
- 18% of respondents had an operational event in 2009 and of 56% thinks it was contributed by fatigue.
- 61% of respondents said they have dozed off during work duties, and 70% of such dozing cases happened in midnight shifts.

EUROPE

- **no official data or joint fatigue survey done** (locally yes, but not shared officially)





3. FRMS among ANSPs

Today there are **no regulations to manage ATCO fatigue** systematically. Therefore, many ANSPs do their own ""**Best Efforts** to manage ATCO fatigue.

International and European regional efforts exist:

- › **EUROCONTROL, CANSO, IFATCA** – fatigue management references, guidance
- › **EASA ATCO licencing** – mandatory fatigue and stress management training in unit training. Optional in refresher training as a part of HF training.

But there are **growing concerns** among ANSP community that the risk of **fatigue-related accidents or incidents may increase in the future.**



3. FRMS among ANSPs

- For example: NASA/FAA survey and skyguide survey

DOT/FAA/HFD-13/001
Federal Aviation Administration


Evaluating the Effectiveness of Schedule Changes for Air Traffic Service (ATS) Providers: Controller Alertness and Fatigue Monitoring Study

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December 2012
Technical Report

This document is available to the public through the National Technical Information Service (NTIS), Alexandria, VA 22312. A copy is retained for reference at the Federal Aviation Administration Human Factors Division's Library.



U.S. Department of Transportation
Federal Aviation Administration

Safety Study 2014
Sources of fatigue status among skyguide's ATCOs

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abstract

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3. FRMS among ANSPs

- For example: NASA/FAA survey and skyguide survey



Response rate	18%	40%
# of controllers / Facilities	18'000 (En Route Centers, TRACONS, ATC towers)	564 (ACC, TWR/APP, Lower airspace, regional aerodromes, Military)
Work hours / Shift patterns	40 hours per week (avg 5 days/w, 8 hrs or 4 days/w, 10 hrs, up to 6 days/w 10 hrs), night shift	35 or 38 hours per week (avg 5 days/w, up to 7 hrs a day), (expert/SPVRs ~41 hrs), night shift 10 hrs.
Method	Survey and field study	Survey
Key findings (Survey only)	<ul style="list-style-type: none"> - Controllers appear more fatigued in the 2010 report than the 1999 survey. - 18% of respondents had an operational event. And 56% of such respondents thinks fatigue was contributing factor. - ATCO gave 3.7 of 5.0 score to the statement, "fatigue affects their ability to perform" - More frequent midnight shifts as well as quick turns (8 or 9 hours) before a morning or midnight shift give ATCOs feeling of more tiredness. 	<ul style="list-style-type: none"> - Tendency higher "Duty periods are adequate", "workload/traffic volume are manageable" "I get good quality of sleep". - Tendency average to slightly low "Level of staffing is adequate", "Shift rotation makes me tired"



3. FRMS among ANSPs

- For example: NASA/FAA survey and skyguide survey



FAA Recommendations	At skyguide?
Fatigue countermeasures for midnight shift are necessary.	Agree.
Increase min. # of hours (currently 9) would allow longer recovery sleep opportunities and potentially improve controller alertness)	Min. 11 hours between 2 shifts (9 hours reduced rest once per week is allowed)
Reduce frequency of 6-day work schedule	Agree.
Investigate and monitor issues in fatigue culture	Skyguide's survey shows we have good fatigue awareness. Therefore, we should continue.



3. FRMS among ANSPs - at skyguide



Already in place (besides fatigue survey)

Fatigue, Stress, Sleep, health education for ATCOs

Roster planning with considerations to health and safety

* Psychoactive substance control policy, procedures in place

* Critical Incident Stress Management (CISM)

On-going / Planned

Roster health check

EASA regulation compliance efforts

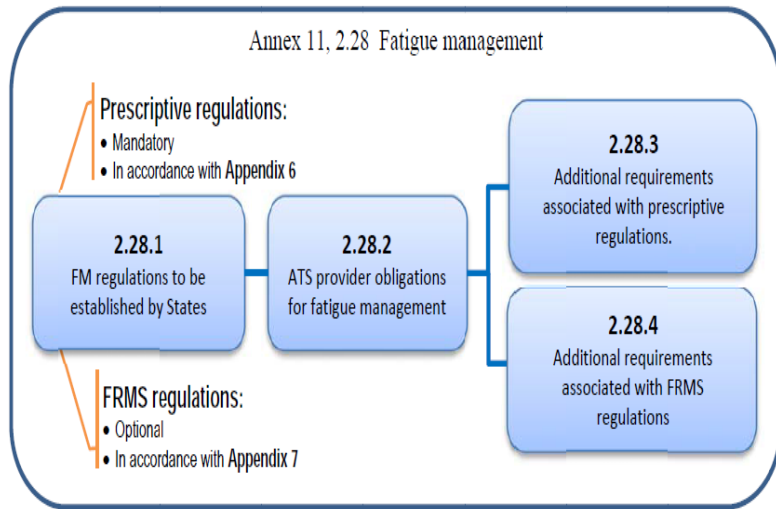
Fostering positive fatigue culture



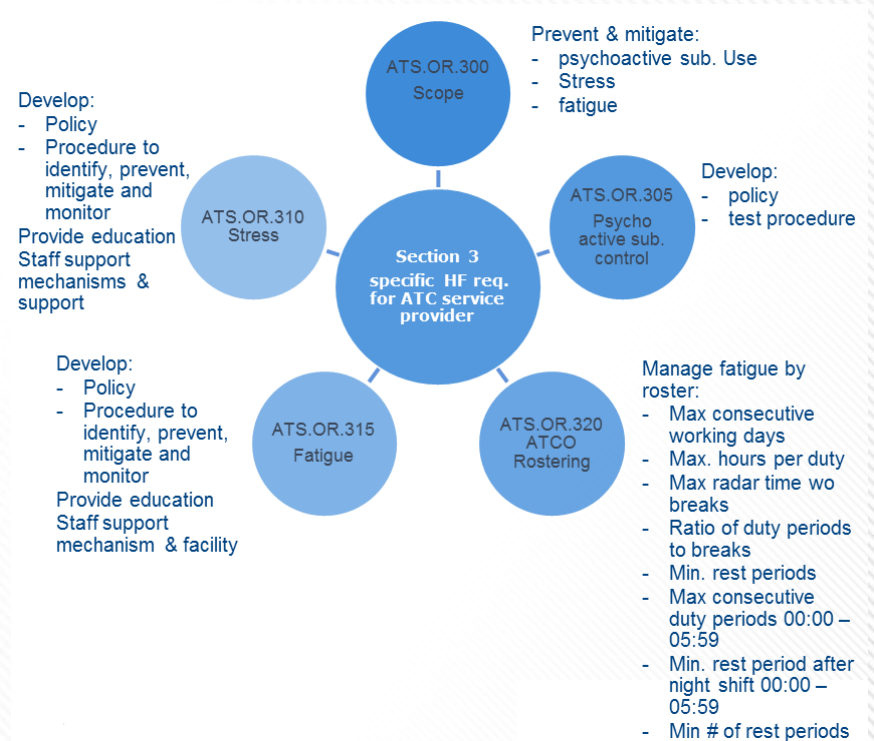
3. FRMS among ANSPs

- In development @ ICAO and EASA

ICAO Annex 11



EASA Opinion 03-2015







4. Wrap-up and way forward

- › Regardless, who you are; a pilot or an ATCO, where you are; USA or Switzerland, the **defense mechanism to fatigue risk management remains the same – optimizing workers' sleep should be the first action.**
 - An **organization** must consider adequate staffing and scheduling.
 - **Individuals** must report fit for duty to perform their best.

- › It means, "**Fatigue risk management should not be a one-way effort; instead, a shared responsibility!!**"



4. Wrap-up and way forward

- FRMS as a shared responsibility



Organisation

- › Fatigue risk management policy and framework, Workload and Workplace/Ergonomics improvement.

Bargaining agent / Work Plan

- › Staffing, work plan, break and rest to accommodate peak and seasonal traffic, biological clock and individual needs.



Individual

- › Quality sleep, healthy life style, stress management



4. Wrap-up and way forward

- **FRMS as a way to enhance safety and performance efficiency**



Organisation

- › **Enhance safety and safer working environment.**
- › **Expected productivity improvements**
- › **Enhance organisational culture and more success for change management implementation.**

Bargaining agent / Work Plan

- › **Ensure effective level of people's alertness at normal and abnormal situations.**



Individual / Team

- › **Improve human capabilities in physiological, psychological and cognitive factors.**





4. Wrap-up and way forward

- Final words.... Towards FRMS

**THE SWISS AVIATION
COMMUNITY NEEDS TO WORK
TOGETHER TOWARDS MORE
ACTIVE FRMS
IMPLEMENTATION!!**

Teamwork

Work performed
combined effort pro
organized cooperation
working together or a
to achieve better res



4. Wrap-up and way forward - Q&A

Thank YOU for your attention.

Any questions? Feedback?



skyguide 

Thank YOU.

 member of
FABEC