



Dedicated to innovation in aerospace

Operator Fatigue: Measurement suite

PRODUCTS & SERVICES



Quantifying and measuring operator fatigue & mitigation strategies

The incidence of fatigue is underestimated in virtually every transportation mode because is hard to quantify and measure. High consequence environments such as nuclear industry, healthcare and transportation are dealing with unpredictable workings hours, long duty periods, circadian (day-night) disruptions and insufficient sleep. A dedicated measurement and quantification suite will help to develop fatigue mitigation strategies.



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The level of fatigue is hard to establish unambiguously; mostly the result of fatigue on operator performance is assessed. Compared to well-rested people, sleep-deprived people are less alert, make more mistakes, have memory difficulties and make more risky decisions.

WHAT WE DELIVER

NLR has available a dedicated operator performance measurement suite that can be applied to determine the level of fatigue in an operational setting.

A REAL THREAT

Recognize that fatigue management requires major changes in both organizational culture and operator behaviour. New generations of civil long-haul aircraft with increased range, increased traffic volumes and more commercial competition only further impacts the need to apply new operator fatigue mitigating methodologies. According to a British Airline Pilots' Association questionnaire "56% of the pilots admitted to being asleep while on the flight deck and, of those, nearly one in three said they had woken up to find their co-pilot also asleep". Similar in the military aviation "no single factor ranked more detrimental to performance and safety than fatigue" (Wheeler 2002).

Project examples: Determining the Flight Time Limitations (FTL) for Dutch NH-90 helicopter crew in maritime operations:

- Benchmarking on FTL regulations
 - In-flight (non-intrusive) & post-flight measurements
 - Actigraphy, questionnaires, debriefings, expert observers, workshops, and interviews

Project example: Developing methodologies to better manage fatigue in commercial pilot operations:

- Measuring campaign with graduated Airline Transport Pilot License (ATPL) students and airline pilots
 - Ambulatory observation protocol
 - Lab measurement protocol with physiological, psychometric, and performance measures
 - Flight tests using NLR's flight simulator



OUR FATIGUE ASSESSMENT CAPABILITIES

- Benchmarking on (Flight Time Limits - FTL) regulations
- Performing crew schedule evaluations for fatigue avoidance
- Non-intrusive operational measurements
- Lab physiological, psychometric performance measures (Eye-tracking, ECG , EEG)
- Simulator trails using NLR's flight simulators
- Actigraphy sleep quality assessment, questionnaires, debriefings and interviews