

OPERATIONALIZING SLEEP SCIENCE: AN EMBEDDED APPROACH TO MANAGING WARFIGHTER FATIGUE & ENHANCING LETHALITY IN A HIMARS BRIGADE



INTRODUCTION

Recognizing sleep loss as a critical vulnerability in sustained Large-Scale Combat Operations (LSCO), the 18th Field Artillery Brigade, in partnership with Optimizing the Human Weapon System (OHWS), pioneered an initiative to operationalize sleep science.

This project aimed to transition from a medical and research model into an applied fatigue management model by integrating objective, near-real-time data from wearable technology into the mission command framework.

The ultimate objective was to enhance Mission Essential Task (MET) performance while mitigating safety risks by treating Soldier fatigue as a critical warfighting metric.

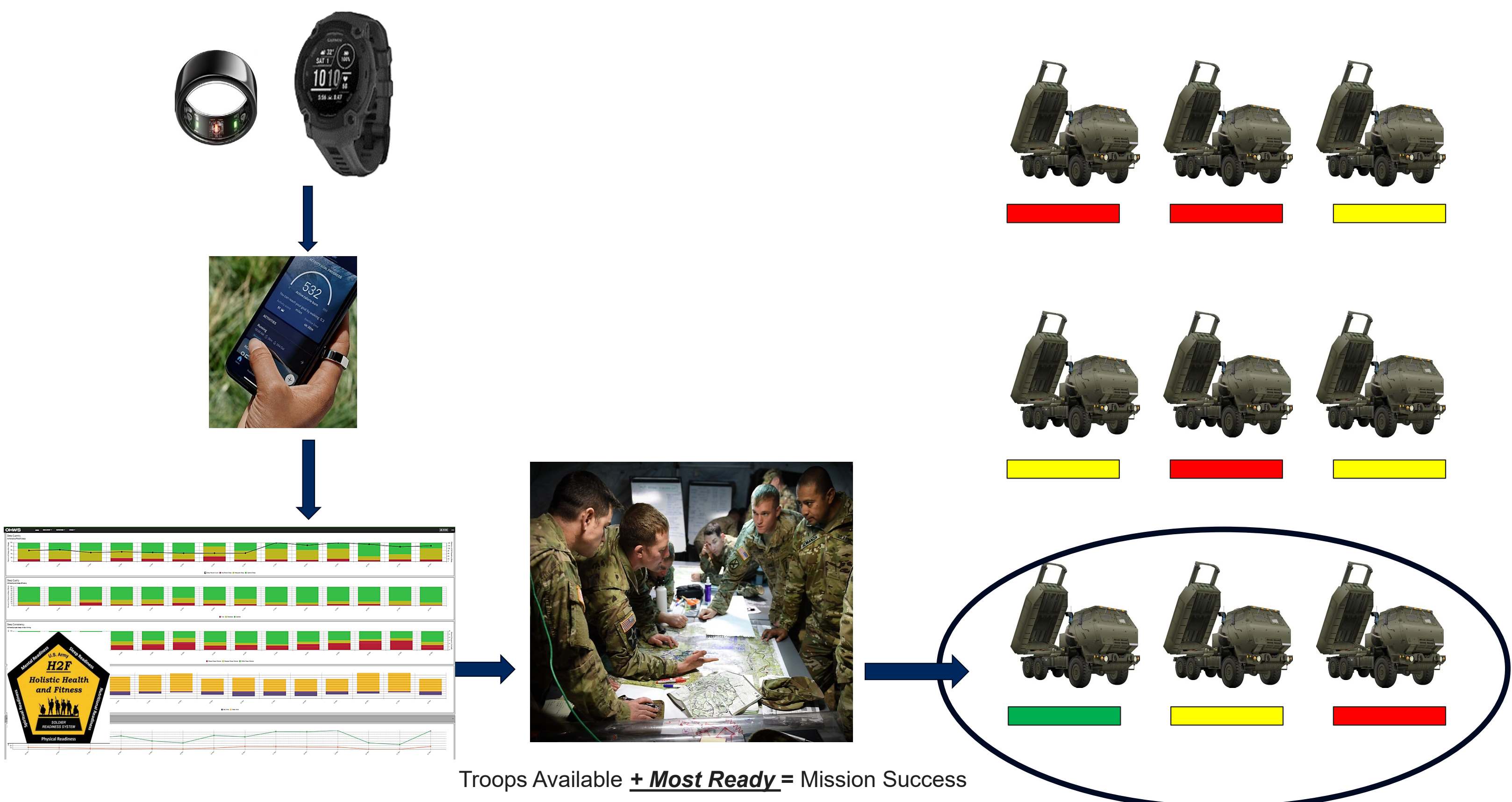
MATERIALS AND METHODS

Brigade executive officer (XO) spearheaded the integration of the H2F Occupational Therapist (OT) into brigade staff to visualize human performance metrics into battlefield analysis. In collaboration with OHWS, Soldiers were issued wearable devices and synced devices with personal phones.

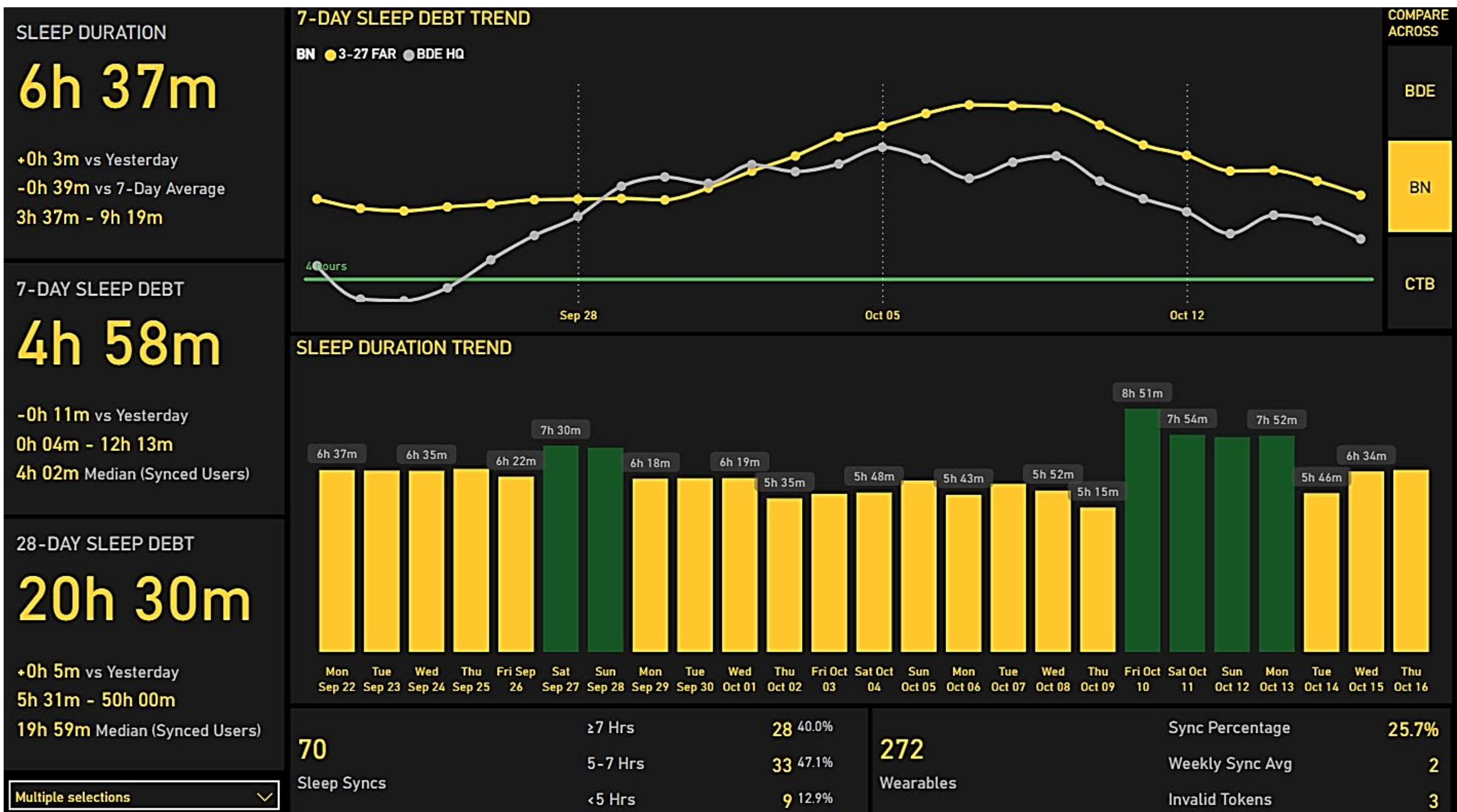
The data was fed into the Athlete Management System (AMS) to visualize sleep debt and sleep quantity. The data was screenshot and uploaded into MAVEN.

Sleep data was shown and briefed during the Command Update Brief (CUB).

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Data-empowered insights: support readiness & provide the Measure of Effectiveness (MOE) to answer, "Are we doing the right thing?"



RESULTS

Analysis of wearable data from 40 Soldiers in the 3-27th Battalion during a 10-day training evaluation revealed an average sleep debt of 5.73 hours per soldier, with a range from 0 to 16.91 hours.

OT integration and expertise resulted in implementation of sleep science principles improving risk assessment and safety controls reducing risk of fatigue related incidents during training.

Collaboration between OT and Brigade staff/XO improved transparency on the battlefield.

CONCLUSION

The data exposed critical issues to include the substantial sleep debt accrued by night-shift personnel prompting change in operational planning and self-assessment of the effectiveness of work/rest plans against METs and their impact on performance.

Notable outcome were the cultural shift towards prioritizing work and sleep cycles as an integral part of mission success.

Wearables, subject matter experts, the command team and field team collaboration are critical components to integrating fatigue management into the operational environment and achieving optimal results.

Integrating technologies and personnel into existing workflows, training and operational environments requires careful and deliberate planning and coordination.

Commanders need to better understand the impact fatigue will have on the risk to mission and develop and train realistic strategies to maintain performance during sustained and continuous operations in LSCO.