



Aviation regulators have long acknowledged fatigue as a risk to be mitigated. The passage of new duty time limits in Europe and the United States (14 CFR Part 117) speaks to this point. Duty time limitations are not enough because they disregard the individual sleep/wake history of the flight crew. As a result, duty time regulations are either too restrictive and inflexible or overly permissive and unsafe. The differences in duty time regulations between certificated and non-certificated carriers supports this point.

Following duty time regulations, many carriers turn to schedule-based mathematical models to minimize the impact of fatigue. Most operators stop there thinking that it is enough because they are exceeding the regulatory guidance. Those that use preflight risk assessments rely on a determination by the pilots of their own fatigue level. Relying on subjective determination is not effective as studies by Dr. H.P.A. Van Dongen of Washington State University show that people are notoriously bad self-evaluators of their own fatigue.

3393 Aviation Services developed a bio-mathematical model, called RAMP®, which integrates into operator-specific, custom designed preflight risk assessments with only 4 simple inputs. For the crewmember, all they need to enter is the time they woke up, the time their duty day will end, rate the quality of their sleep on a scale provided, and choose how many time zones they are crossing. RAMP® does the rest to provide an objective, science-based fatigue rating. This model produces data that is analyzed monthly and provides a baseline for comparison to existing and proposed schedules or missions.

The simplicity of RAMP® as a preflight risk assessment is the key to its efficiency and effectiveness. Where regulations, duty time limits and schedule-based mathematical models fail to account for prior sleep history and circadian disruption, RAMP® succeeds. Regulations, SOP and restrictions on duty and work cycles do most of the work in preventing the worst fatigue events from happening. A simple model, like RAMP®, adequately assesses and identifies risk and fatigue together and is more likely to be adopted and integrated into an operator's processes and metrics. Put simply, regulations and policy do most of the work while RAMP® provides the baseline, a look at the outliers and a prediction of the upcoming operations.

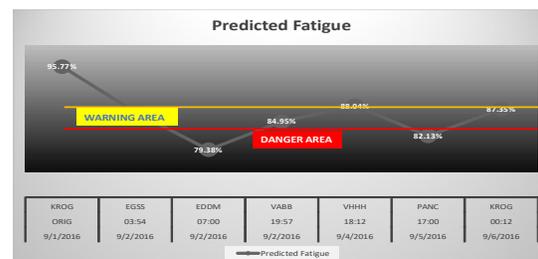
RAMP® (Risk Assessment Mitigation for Pilots) is a comprehensive framework for collecting and correlating individual fatigue with risks and hazards during actual operational settings in a useful, practical output. It produces a factual, evidence-based, data-driven program for risk evaluation, classification and reduction. This program allows users and management to target specific risks with appropriate interventions and produces data-driven, needs based safety program interventions in preflight, post event analysis and is specific to the operational challenges of each individual department, user and manager. RAMP® can help uncover latent preconditions for error prior to an incident or accident and point the way for a pre-emptive intervention.

Sample Input

Actual Wake Up Time * Duty End Time (estimated) * Sleep Quality * Circadian Shift *

% effective: Calculate EBAC: Calculate Current Total: Calculate

Sample Output



In simple terms, RAMP® helps identify the holes in the Swiss cheese.

For more information and a demonstration of this unique safety tool, please contact Mr. James Zawrotny.

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