IFALPA Fatigue Reporting Guidance

"Fatigue: A physiological state of reduced mental or physical performance capability resulting from sleep loss, extended wakefulness, circadian phase and / or workload (mental and / or physical activity) that can impair a person's alertness and ability to perform safety related operational duties." – ICAO Annex 6

PLEASE NOTE: This paper supersedes 22HUPBL01, of the same name.

Whatever the cause of fatigue, flight safety must not be affected as a result. Flight Crew Members must not begin to carry out any task for a flight if, due to fatigue, they are or are likely to be, unfit to perform a task required of them during the flight.

The purpose of Fatigue Reports – Safety and Data Trends

When a pilot determines they are fatigued, they may already be impaired and in a reduced state of alertness. One of the main purposes of fatigue reports is the identification of fatigue risks in daily operations. They identify areas where fatigue was a risk to safe operations or was anticipated to pose a risk. They also provide an operator with valuable information to establish a record of any accumulated fatigue issues over time. Ideally, fatigue reports inform the safety system so it can adequately resolve unacceptable fatigue risks.

When a sufficient set of fatigue reports exist, a fatigue-trend analysis can be developed from the data. Flight crew should be encouraged to think of fatigue reports as part of a cycle of fatigue data collection, like the collection and trending of aircraft engine data. Fatigue trends inform decision-makers of potential safety risks. Ill-informed decisions could result in ineffectual fatigue mitigations which do not address the identified risk.

It is a responsibility of all flight crew to contribute to the process of fatigue risk identification so that an analysis of fatigue data trends is possible. This is best achieved when the operator embraces a positive safety culture.

When to write a Fatigue Report – Inform the system

There are many instances when a fatigue report is clearly required. When a situation is less clear, it may seem subjective whether a fatigue report should be submitted.

Safety Management Systems (SMS) should allow for the reporting of fatigue in these circumstances. Such reports provide fatigue data for use in future trend analysis. Operators with a mature SMS and reporting culture are able to make positive use of reports, even in circumstances when a report isn't necessarily required. If flight crew are unsure if a report should be provided or not, the responsible thing to do is to submit the report and let the SMS decide how to use your information.

Specific circumstances when flight crew should report fatigue include:

- Cancellation of duty due to fatigue issues
    - Fatigue call by crew member
    - Duty cancellation by operator
- When utilising an extension to the flight duty limits
- Discontinuation of duty due to fatigue issues
- When the Flight Duty Period (FDP) is completed but only after some mitigating action. For example:
    - augmenting the crew (through appropriate procedures)
    - reducing the workload of the duty
    - delaying the reporting time due to rest requirements
    - unscheduled inflight rest
    - increasing supervision/monitoring of crew members or processes.
- when something is noticed in the operating environment that is likely to impact on crew members' alertness to the extent that safety margins could be reduced to unsatisfactory levels
- where fatigue was observed or where the mitigations were implemented to specifically address a fatigue concern
- Controlled rest (where permitted by your regulator and operator) / uncontrolled sleep during flight duty
- when an incident or event has occurred where fatigue may have been a contributing safety factor
- Any other situation listed in your operations manual (or fatigue manual).

Anything that exceeds limits (e.g. FDP, off duty periods, etc.), degrades your performance to an unacceptable level, or is something affecting your current or future fatigue levels, may be worth reporting.

Responsible crew conduct

The value of genuine fatigue reports is diminished by misuse of the safety reporting system. Inappropriate use of fatigue reporting in an attempt to get a better roster or other lifestyle benefits is unprofessional and a misuse of the safety reporting system.

Flight crew are personally responsible for using allocated rest periods to arrive at sign-on in a rested state. If you feel like you have truly done all that you can to recover, but still have not recovered, you need to follow your operator's fatigue reporting process. However, if this is not the case, you should adjust your behaviour so that you are sufficiently rested.

How to Write a Fatigue Report – Professional, Accurate, and Factual

The language you use in a fatigue report may affect the influence of the report. The use of emotional or extreme language, such as "this roster pairing is completely unsafe" should be avoided. This type of language lacks sufficient nuance to be useful in SMS fatigue risk assessments and may be perceived as less factual or sincere.

Try to use the terminology of the SMS itself in your fatigue report. The use of key SMS and fatigue terms will assist the audience in understanding the concerns and may also increase the likelihood that the report will positively influence a fatigue risk mitigation outcome. See Appendix A for suggested fatigue reporting terminology.

Providing accurate information is important and allows your safety department/FSAG (Fatigue Safety Action Group) to identify trends and investigate further. With accurate information, a proactive approach to producing roster fatigue mitigation can be achieved. Be factual and to the point. It is recommended to write the fatigue report as soon as feasible to provide your most accurate recollection of the event.

An example of a fatigue report and a description of the data fields is provided in Attachment B.

Summary

In order to gain a sufficient dataset for analysis, it is essential that the culture of the operator normalize and encourage fatigue reporting. The operator and flight crew both have roles to play in building and maintaining an effective fatigue reporting culture and these groups should work together to achieve this outcome.

Fatigue reports are also an important tool for aviation authorities in overseeing operators' fatigue risk management or safety in general. Without fatigue reports it is difficult for authorities to evaluate if flight operations pose unacceptable risks due to fatigue.

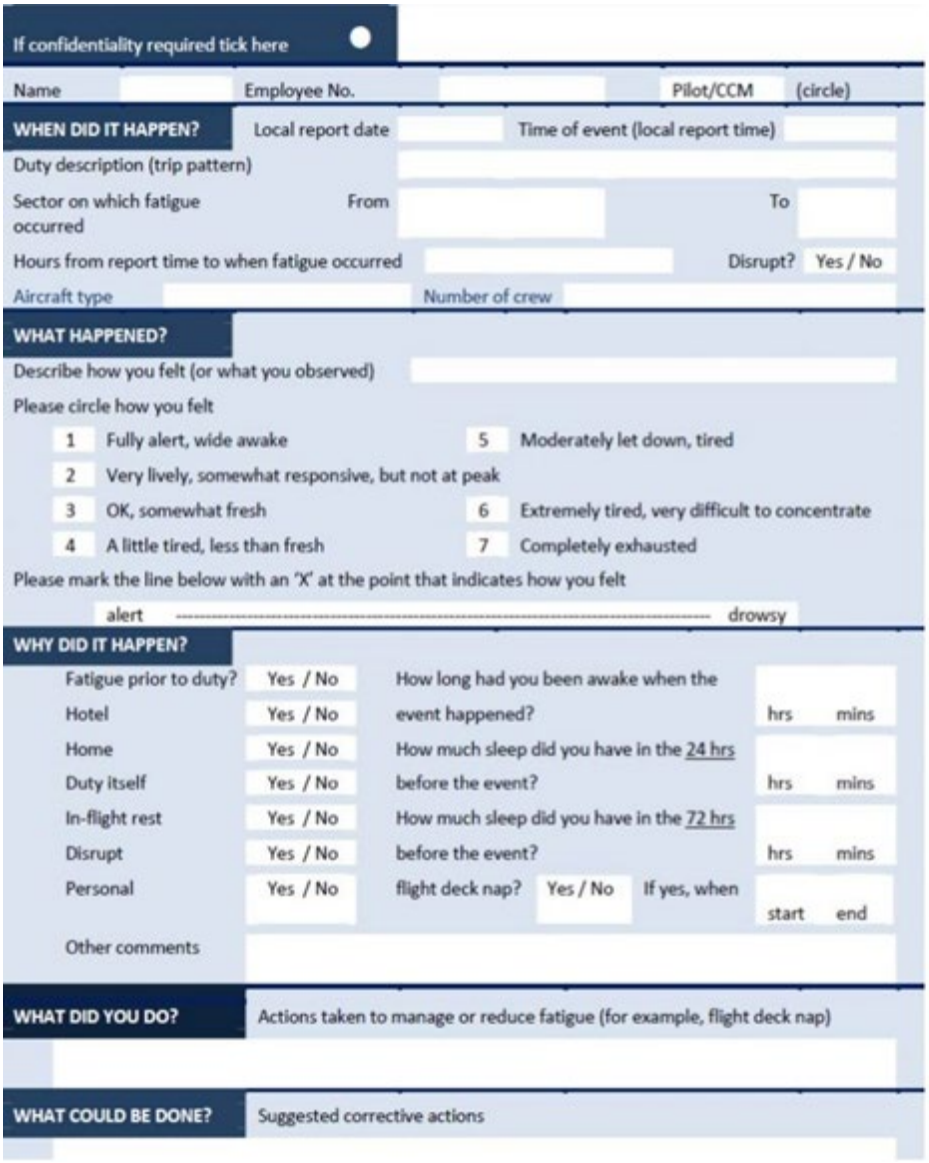
Appendix A: Useful Fatigue Reporting Terminology

Fatigue and Report Terminology	Fatigue and Operational Implications
Afternoon nap window (Sometimes referred to as SWOCL, Secondary Window of Circadian Low)	A time of increased sleepiness in the middle of the afternoon (acclimatized time zone). The precise timing varies and if (preflight) naps are expected to occur beyond the suitable window, they may not occur or to the length anticipated.
Circadian body clock and cycle	A neural pacemaker in the brain that is sensitive to the day/night cycle (via a special light input pathway from the eyes) and determines our preference for sleeping at night. Adjustments to this cycle are resisted by the circadian body clock but are best made using known adaption periods, such as those used for readaptation after desynchronization scenarios caused by trans-meridian flight.
Circadian disruption / switching	Circadian disruption is a state where the body's internal 24-hour biological clock, or circadian rhythm, becomes out of sync with the natural day-night cycle and environmental cues like light and activity. This misalignment can be caused by factors such as shift work, jet lag, poor sleep hygiene, and operational factors such as disruptive scheduling with insufficient adaptation time factored in. Reverse rostering (switching from late to early duties), or significant trans-meridian displacement can be a challenge, particularly eastward displacement.
Chronotype(s)	An individual's natural tendency to be a "morning person" or "evening person", influencing their sleep wake cycle and periods of alertness and activity.
Evening wake maintenance zone	A period of several hours in the circadian body clock cycle, just before usual bedtime, when it is very difficult to fall asleep. This can cause restricted sleep and increased fatigue risk with early duty start times.
Hazard (fatigue hazard)	A condition with the potential to cause or contribute to insufficient levels of alertness for adequate pilot performance and monitoring.
Homeostatic process	A cumulative pressure to gain sleep that builds up across the waking period and discharges exponentially across sleep. Typically, more than 16 hours awake is considered to have the potential to adversely impact required levels of alertness.
Internal alarm clock (Circadian drive to awaken)	A time in the circadian body clock cycle when there is a very strong drive for waking and it is difficult to fall asleep or stay asleep, making it difficult for adjustments in an established circadian cycle. It may also cause early waking (in line with the established cycle) when continued sleep is desired for upcoming operational needs.

Mitigations / fatigue countermeasures	Interventions designed to reduce or offset a specific identified fatigue risk
Napping	Naps can improve subsequent alertness and reaction speed and are a valuable mitigation strategy. However, napping too long may induce sleep inertia issues.
Recovery sleep	Sleep required for recovery from the effects of sleep loss, such as sleep restriction, sleep debt, and effects of circadian disruption and circadian switching.
Sleep debt	Related to the homeostatic process and cumulative sleep pressures. As sleep debt builds, sleepiness progressively increases, and performance becomes increasingly impaired. People tend to become less reliable in performing tasks and at assessing their own level of impairment at increasing levels of sleep debt and impairment.
Sleep inertia	Transient disorientation, grogginess and performance impairment that can occur after wakening, and is affected by such things as the time of waking in the circadian cycle, or residual homeostatic pressure (or sleep debt).
Sleep Restriction	Obtaining less sleep than needed. The effects of sleep restriction accumulate, with resulting performance impairment. It can be affected by the timing of the available sleep opportunity, overall pattern of scheduled duties, external factors, and the duration of off duty periods.
Sleep Quality or Quantity	Capacity of sleep to restore waking function. The duration and quality can both affect the ability to provide restorative function. The quality and quantity of sleep can be affected by many things such as, the timing of sleep to the circadian cycle, sleep architecture, and sleep hygiene.
Standby (on call / reserve)	Akin to being on-call, standby requires readiness to receive an assignment of flight duty, which cannot be considered equal to a period of off-duty. This is because holding oneself in a state of standby and readiness has a contributory effect on fatigue, including when sleeping.
Unforeseen operational circumstance	Unexpected conditions / disruptions to planned schedules, which occur after the commencement of a flight duty period that cannot reasonably be predicted and accommodated. These may contribute to workload, the length of the duty or a need for crew self-assessment of alertness or fatigue.
Unrestricted sleep	Sleep which is not restricted by any demands, including demands of being on standby or early wake ups.
Window of Circadian Low (WOCL)	Time in the circadian body clock cycle when subjective fatigue and sleepiness are greatest and sleep is important for its restorative effects. Typically, the WOCL occurs around 0200 to 0600 hours (for someone fully adapted to local time).

Appendix B: Completing an Example Fatigue Report

(Source: Doc 9966 - Manual for the Oversight of Fatigue Management Approaches)



If confidentiality required tick here ●

Name | Employee No. | Pilot/CCM (circle)

WHEN DID IT HAPPEN? Local report date | Time of event (local report time)

Duty description (trip pattern)

Sector on which fatigue occurred From To

Hours from report time to when fatigue occurred | Disrupt? Yes / No

Aircraft type | Number of crew

WHAT HAPPENED?

Describe how you felt (or what you observed)

Please circle how you felt

1 Fully alert, wide awake
2 Very lively, somewhat responsive, but not at peak
3 OK, somewhat fresh
4 A little tired, less than fresh
5 Moderately let down, tired
6 Extremely tired, very difficult to concentrate
7 Completely exhausted

Please mark the line below with an 'X' at the point that indicates how you felt

alert ---------- drowsy

WHY DID IT HAPPEN?

Fatigue prior to duty? Yes / No
Hotel Yes / No
Home Yes / No
Duty itself Yes / No
In-flight rest Yes / No
Disrupt Yes / No
Personal Yes / No

How long had you been awake when the event happened? hrs mins

How much sleep did you have in the 24 hrs before the event? hrs mins

How much sleep did you have in the 72 hrs before the event? hrs mins

flight deck nap? Yes / No If yes, when start end

Other comments

WHAT DID YOU DO? Actions taken to manage or reduce fatigue (for example, flight deck nap)

WHAT COULD BE DONE? Suggested corrective actions

Personal Details

Time of Occurrence & Flight Details

Occurrence Details and Alertness-scale

Casual Factors & Sleep Evaluation

Mitigation strategies utilised

Suggested future improvement

Fatigue reports are typically structured with these sections and require:

- Personal Details – This is information including your position and name. There should be an option for a confidential report, this does not mean that it is an anonymous report.
- Time of Occurrence & Flight Details – Information from this section helps to gather data that is related to the effect on (or from) circadian disruption, WOCL-encroachment and the effects of time on duty and sectors flown, etc. It is also a way to gather data for specific flights to see if any patterns or trends are emerging.

- Occurrence Details and Alertness-Scale - Details about the event itself. To provide an understanding of the effects of fatigue, try to communicate how your duties were affected. (I.e. "experienced micro-sleeps", "missed radio calls", "forgot procedures", "had a hard time doing basic maths" etc.). Simply writing "felt tired" is not indicative of performance decrease and possible threats arising from it

  Note: If the occurrence details require reference to people and decisions, use official position names such as Operational Staff, Dispatch Crew, Captain etc. Avoid the use of names or gendered pronouns such as he or she. This will help focus the necessary attention on the report rather than any particular individual.

  - Use of Alertness Scales – the alertness scales used in this part are normally either the "Samn-Perelli Scale" or the "Karolinska Sleepiness Scale (KSS)". Both are shown below and are simple subjective measures that are deemed fairly accurate in conjunction with a fair and honest approach to reporting fatigue hazards.

	Samn-Perelli Scale (SP)
1	Fully alert, wide awake
2	Very lively, somewhat responsive but not at peak
3	OK, somewhat fresh
4	A little tired, less than fresh
5	Moderately let down, tired
6	Extremely tired, very difficult to concentrate
7	Completely exhausted, unable to function effectively

	Karolinska Sleepiness Scale (KSS)
1	Extremely alert
2	Very alert
3	Alert
4	Rather alert
5	Neither alert nor sleepy
6	Some signs of sleepiness
7	Sleepy, but no effort to keep awake
8	Sleepy, some effort to keep awake
9	Very sleepy, great effort to keep awake, fighting sleep

- Causal Factors and Sleep Evaluation - This part is designed to determine the causal factors behind the fatigue. It might be more or less extensive depending on your company, but there's often a "free text" option here. This is where it is important to use accurate, factual, SMS terminology. Examples of appropriate SMS terminology and causal factors may include:
  - Inappropriate rest facilities (i.e. poor sleep environment; noise, temperature, comfort)
  - Insufficient rest time/Sleep deprivation (i.e. reduced rest, poor scheduling)
  - Disruptive schedules (i.e. alternating day/night duties, duties encroaching the window of circadian low (WOCL), roster disruption/changes)

- Personal Reasons/Factors (i.e. health issues, family problems, commuting)
- Time awake and stress
- Multiple sectors
- Stressful/demanding duties (I.e. systems failures/lack of automation, MELs, weather/environmental degradation, poor company/operational support, night flying, time critical operations, cockpit temperature and pressurization, route variations, aerodrome unfamiliarity, high noise or vibration level)
- Commuting and positioning flights
- Poor sustenance (I.e. dehydration/dryness and or crew meal issues)

Remember, there may be multiple causal factors, and all should be noted in the report.

- Mitigation Strategies Used - This is where you report what you did to counteract or reduce the threats of the fatigue. Options may include co-ordination/reduction of workload, food & drink, caffeine intake, in-flight rest, or simply informing the other crew members of the issue. For chronic, and/or re-occurring fatigue issues, you might include any changes in sleeping patterns, daily stress management, doctor's visits, etc. The effect of the strategy(ies) used in mitigating the fatigue can also provide useful information.
- Suggested Future Improvement – This section is the reporter's opportunity to provide proactive suggestions for the fatigue mitigation remedy. The mitigation suggestions should be proportionate to that of the actual fatigue risk raised in the report. Include suggestions related to individual and organisational responsibility when appropriate. A good starting point for suggestions is to pair them with the causal factors previously noted in the report.