

Good practice guidelines - Fatigue Factors

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ORR's guidance "[Managing Rail Staff Fatigue](#)" (MRSF) outlines a "triangulation" approach to assessing likely fatigue from a working pattern. The first step involves comparing the work pattern against good practice guidelines, to identify potentially fatiguing features.

MRSF paragraph 7.2 outlines that working patterns should take account of any role-specific fatigue guidance. For jobs where there is no role-specific guidance, some good practice guidelines - fatigue factors – have been collated from MRSF Section 6 and RSSB Report T1083 (see footnote¹), and are outlined overleaf.

The fatigue factors are not prescriptive limits, but the more a working pattern features these fatigue factors, the greater the likely need to assess and control potential fatigue risks. Because such fatigue factors increase the likelihood of fatigue, where it is reasonably practicable, you should avoid them. If it is not reasonably practicable to avoid a fatigue factor, the company should:

- Justify why it is not reasonably practicable to avoid the fatigue factor (clearly for instance, if a 24/7 service is essential, some work has to be done at night), then
- Minimise the fatigue factor – reduce it to an unavoidable minimum, then
- Assess and control, so far as reasonably practicable, the associated risks from fatigue, documenting the reasons for decisions.

ORR recommends using the fatigue factors (not the old "Hidden limits", which can be fatiguing) when:

- Assessing **current** work patterns and designing **new** working patterns;
- Agreeing the **rostering principles** underlying work patterns;
- Assessing proposed **changes** to work patterns (e.g. overtime, rest-day working, shift swaps);
- Investigating **incidents** and fatigue **concerns**;

¹ Note: for background on the fatigue factors (FF) see ORR's Managing Rail Staff Fatigue at section 6, and RSSB's Project T1083 report by Welbees & Dedale Asia Pacific at Appendix I.1, p136.

- Developing key **performance indicators** (KPIs) for fatigue, to help identify likely fatigue hotspots and prioritise fatigue risk control efforts.

The significance of any fatigue factors should be considered by a supervisor or manager competent in managing risks from fatigue, to help them decide whether in the circumstances to allow the proposed work to take place and, if so, the nature of any extra controls which may be necessary.

Don't forget – you should also consider the other two corners of the fatigue triangle when assessing work patterns i.e.

- using a bio-mathematical fatigue tool; and
- feedback from staff on how fatiguing they actually find the work pattern.

Fatigue factors

- Time of day factors:
 - Night shift covering the period between 00:00 and 05:00 (FF1)
 - Early shift starting between 05:00 and 07:00 (FF2)
 - Very early shift starting before 05:00 (FF3)
- Duty length factors:
 - Very early shifts starting before 05:00 and over 8h long (FF4)
 - Day shift over 12h long (FF5)
 - Night shift (see above) over 10h long (FF6)
 - Early shift (see above) over 10h long (FF7)
- Recovery time factors:
 - Less than 2 days rest after a block of consecutive nights (FF8)
 - Less than 2 days rest after a block of consecutive early starts (FF8b)
 - More than 13 consecutive shifts without a 48h break (FF11)
- Intervals between duties factors:
 - Less than 12h rest in any 24h period for day shifts (FF13)
 - Less than 14h rest in any 24h period for night shifts (FF9)
 - Only one day rest after night shifts (FF12)
- Cumulative fatigue factors:
 - More than 4 consecutive 12h day shifts (FF10)
 - More than 4 consecutive nights in a rotating pattern (FF14)
 - More than 4 consecutive early shifts in a rotating pattern (FF15)
 - More than 3 consecutive night shifts over 8h long (FF16)
 - More than 6 consecutive night or early shifts in a permanent pattern(MRSF)
 - More than 12 consecutive day shifts (MRSF)
 - More than 7 consecutive 8h shifts (MRSF)
 - More than 55 hours worked in a 7 day period (MRSF)
- Circadian phase shift (body-clock adjustment) factors:
 - Backward rotating pattern (FF17)
 - Rotating pattern of about a week (FF18)
 - Successive shift start times vary by more than 2 hours (FF19)
 - First night shift (FF20)



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