

# GRAID Investigation Tool

## About InterDynamics

InterDynamics is a leading provider of decision support and risk management methodologies and software. Servicing an international market, our extensive client base spans the spectrum of shiftwork and safety-critical industries, including transportation, mining, logistics, healthcare and manufacturing.

### Fatigue Risk Management Solutions:

Helping businesses identify, assess and manage the risks associated with work-related fatigue at both operational and management levels.

### Decision Support Solutions:

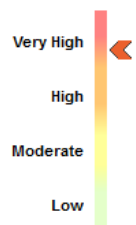
Helping organisations plan and schedule their business operations more effectively.

Our collaborative approach to customer service also helps us stand out from the crowd. Our experienced team can call on a wealth of problem-solving expertise to offer advice that is both practical and implementable.

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InterDynamics' GRAID™ Investigation Tool can be used to rate the likelihood of fatigue contributing to an occurrence. This systematic and situation specific assessment tool offers organisations a consistent and practical approach to reviewing occurrences or fatigue reports as part of their Fatigue Risk Management System (FRMS). A key outcome of the Tool is a GRAID Scorecard, and an indication from Low to Very High of the likelihood that fatigue was a significant contributor to the occurrence.



InterDynamics has developed the GRAID Investigation Tool to support organisations in the ongoing improvement of their FRMS.

In an occurrence investigation, GRAID facilitates a systematic approach, and the ability to identify the relative contribution of fatigue-related elements. Organisations can use the GRAID Scorecard results to target high priority areas for improvement or further detailed review.

| Likelihood That Fatigue Contributed to Occurrence: <b>Very High</b> |         |             |   |                  |           |
|---|---------|-------------|---|------------------|-----------|
| Level   | Element | Type        | Element Name  | Influence Factor | Completed |
| Stage 2   | PR4     | Preliminary | Non-compliance to work/rest rules                       | M                | C         |
| Stage 2   | PR5     | Preliminary | Samn-Perelli fatigue checklist                          | VH               | D         |
| Stage 2   | PR6     | Preliminary | Self observed symptoms/behaviours                       | M                | B         |
| Stage 2   | PR7     | Preliminary | Personal health/medication                              | M                | C         |
| Stage 2   | PR8     | Preliminary | Third party observations of symptoms/behaviours         | M                | D         |
| Stage 3   | EP1     | Extended    | Use of rest days  | M                | B         |
| Stage 3   | EP2     | Extended    | Secondary employment                                    | H                | C         |
| Stage 3   | EP3     | Extended    | Jetlag/significant time zone changes (within past week) | M                | D         |
| Stage 3   | EP4     | Extended    | Prior sleep in previous 48 hours                        | VH               | B         |
| Stage 3   | EP5     | Extended    | Fatigue-related training                                | L                | C         |
| Stage 3   | EP6     | Extended    | Sleep disturbance due to alcohol                        | L                | D         |
| Stage 3   | EP7     | Extended    | Commute times prior to occurrence                       | M                | A         |
| Stage 3   | EP8     | Extended    | Sleep inertia   | M                | B         |
| Stage 3   | EP9     | Extended    | FAID combined hours of work assessment                  | H                | A         |
| Stage 3   | EP10    | Extended    | Fatigue detection technology                            | M                | B         |
| Stage 3   | EC11    | Extended    | Alerting strategies                                     | M                | A         |
| Stage 3   | EC12    | Extended    | Quality of employer provided sleeping environment       | M                | B         |
| Stage 3   | EC13    | Extended    | Predictability of working hours                         | L                | C         |
| Stage 3   | EC14    | Extended    | Medical screening and monitoring                        | M                | D         |
| Stage 3   | EC15    | Extended    | Record of absenteeism/sick days                         | M                | A         |
| Stage 3   | EC16    | Extended    | Expectations and incentives which may increase personal | H                | A         |
| Stage 3   | EC17    | Extended    | Fatigue risk management policies and procedures         | L                | A         |
| Stage 3   | EC18    | Extended    | Fatigue hazard analysis                                 | M                | A         |
| Stage 3   | EC19    | Extended    | Rostering practices take into account fatigue           | H                | B         |
| Stage 3   | EC20    | Extended    | Response/control measures                               | M                | C         |

GRAID applies a risk grading system developed by Zurich Risk Engineering. Information from the grading process can be used to enhance the development and implementation of the organisation's fatigue risk management initiatives.

GRAID IT provides users the opportunity to review 20 fatigue-related elements to test the likelihood of fatigue as a contributing factor. The elements are grouped into 3 review stages:

1. Stage 1: Details
2. Stage 2: Preliminary
3. Stage 3: Extended

Stage 1: Details, prompts the user to document any facts, data, and/or comments associated with the occurrence or fatigue report being investigated, under the 'Information Details' field of each element. A user can choose 3 options when completing a Stage 1 element:

1. SUBMIT - when submitting documented 'Information Details'.
2. Don't know? – no information is available to document.
3. NA – when the element is not applicable to the investigation.

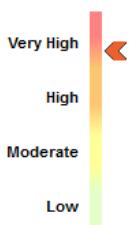
Stage 2: Preliminary, takes the user through eight initial questions pertaining to the specific individual(s) involved and circumstances surrounding the occurrence. The grading of these questions determines whether there is a strong indication that there was a Low likelihood that fatigue was a significant contributing factor in the occurrence. If so, the grading may be concluded at that point. If however the likelihood was not determined to be Low, any of the preliminary questions were answered 'N/A', 'Don't Know', or not answered, then the user is required to continue through the complete grading to receive a GRAID outcome and likelihood rating.

Stage 3: Extended provides a higher resolution of investigation, with consideration to both personal and corporate/systemic fatigue-related contributors.

Users have 5 options under each of Stage 2 and 3 elements, incorporating the grading scale (right):

|     |  |
|-----|--|
| A   | Low Risk or Extensive Control              |
| B   | Medium Risk or Comprehensive Control       |
| C   | High Risk or Limited Control               |
| D   | Very High Risk or Severely Lacking Control |
| E   | Don't Know                                 |
| N/A | Not Applicable                             |

Once selected, grading scales for each element are summarised in the GRAID Scorecard and can be reviewed at any time by selecting: Scorecard



There are no mandatory elements within GRAID, although users will need to complete a sufficient number of Stage 2 and 3 elements to receive feedback on the likelihood of fatigue being a contributing factor.

### Related References

1. Edwards, D., Sirois, W. G., Dawson, T. A., Davis, W., Trutschel, U., Aguirre, A., Sommer, D., Operator Fatigue, Detection Technology Review (2008), Caterpillar, Peoria, IL.
2. Gutierrez, J.L.G., Jimenez, B.M., Hernandez, E.G., & Lopez, A.L., (2004-5), Swedish Occupational Fatigue Inventory (SOFI): Factorial replication, reliability and validity. *International Journal of Industrial Ergonomics* 35 (2005) 737:746.
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4. Hart, S.G., (2006), NASA-Task Load Index (NASA-TLX); 20 Years Later, NASA-Ames Research Center, Moffett Field, CA.
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6. Hystad, S. W., Saus, E.R., Saetrevik, B., Eid, J., (2013) Fatigue in seafarers working in the offshore oil and gas re-supply industry: effects of safety climate, psychosocial work environment and shift arrangement, *Int Marit Health* 2013; 64, 2:72-79