

FAID[®] Standard

Version 2.2

User Guide

Contents

1. Introductory Notes	4
1.1. What You Need to Know About FAID®	4
1.2. FAID Scores	5
1.3. Fatigue Tolerance Levels.....	5
1.4. FAID Inputs and Assumptions.....	7
2. Overview	9
2.1. FAID Control Panel.....	12
2.2. Help	12
3. Quick Start	13
3.1. Setting a Fatigue Tolerance Level (FTL) and Target Compliance %	13
3.2. Fatigue Hazard Analysis	14
3.3. First-time users can review a Sample Work Schedule	15
3.4. Analysing the Sample Work Schedule	15
4. INPUTS Tab	17
4.1. Adding Work Period/Shifts within FAID	17
4.1.1. Adding Single Work Periods to a Work Schedule	17
4.1.2. Adding a Cycle of Work Periods to a Work Schedule	19
4.1.3. Adding a Work Schedule by copying data	20
4.1.4. Adding a Second Work Schedule	21
5. Input Table Editing Options	22
5.1. Sorting a Work Schedule by ID# and Date	22
5.2. Deleting Work Periods within a Work Schedule	22
5.2.1. Clearing an Entire Work Schedule.....	23
5.2.2. Additional Work Schedule Editing Options.....	24
5.2.3. Saving Work Schedules	24
5.2.4. Opening FAID (RTR) files.....	25
5.2.5. Copying data out of FAID using the Clipboard.....	25
5.3. Testing Overtime or Extra Work Periods within FAID	26
5.4. FAID Settings Options	28
5.4.1. Summary.....	28
5.4.2. Work Schedule.....	29
5.4.3. Utilisation.....	31
5.4.4. Analysis.....	32
5.4.5. FAID Version Reference.....	32

5.5. Display Settings	33
5.6. Analysing the Work Schedule	34
5.7. FAID Conditions Information	35
6. OUTPUTS Tab	36
6.1. Summary	36
6.2. FAID Key Risk Indicators	41
6.2.1. Compliance	41
6.2.2. Peak FAID condition for Work Periods	43
6.2.3. Hour of Day Profile	44
6.2.4. Monthly Compliance Graph	46
6.3. Exposure Logs / Work Periods in FAID Red Condition.....	47
6.3.1. Exposure Only Log.....	47
6.3.2. Exposure and History Log	48
6.4. Work Schedule 1 & 2	49
6.5. FAID Gantt Chart.....	50
6.6. FAID Score Plot.....	52
6.6.1. Compare FAID Score Plots	53
6.6.2. Capture Plot	54
6.7. FAID Score Table	55
6.8. Compare FAID Score Tables	57
6.9. Display of Shift Types	58
6.10. Work Schedule Profiles	59
6.11. Concurrent Work Periods	62
7. Printing	63
Appendix A: InterDynamics' Methodology	64
Appendix B: FAID Related References.....	67
Other References	68
Appendix C: INPUTS Tab Buttons	69
Appendix D: OUTPUTS Tab Buttons	71

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This document is based on FAID Standard Version 2.2.0.141

1. Introductory Notes

1.1. What You Need to Know About FAID®

FAID is a biomathematical model of human alertness response to work and rest patterns. This tool was developed using scientific research and knowledge gained over several decades on circadian factors, the effects of shift lengths, and the timing of shifts and the importance of previous work periods on fatigue and performance.

FAID is a powerful analytical tool that can support the management of hours of work within an organisation's fatigue risk management guidelines. Managing hours of work taking into account fatigue is one of the major elements of a proactive and effective Fatigue Risk Management System (FRMS). Please refer to [InterDynamics' website](#) for a discussion on other key elements of an FRMS.

Many regulators and industry bodies recognise that within an FRMS adequate management of fatigue-related risks associated with working hours includes more than simply working hour limits. Circadian influencers and biological limits to recovery are also important. Consideration of these factors can most effectively and efficiently be supported by the strategic use of a biomathematical model such as FAID.

FAID has been designed to be a powerful decision support tool based on what can be known with confidence: working hours. FAID uses work hours as its input to predict the effect on fatigue and performance of different rosters or work schedules. It is a model of human biology and is best used as a statistically significant indicator of general human response, but not as a predictor of an individual's condition. This is true of all models given that variations in sleep requirements and tolerances do exist within the human population.

FAID considers the influence of work periods (time of day, length and how recent) and human biological limits associated with sleep and recovery, to determine an hours of work-related fatigue score (FAID Score). FAID does not consider other personal factors that contribute to an individual's fatigue (i.e. sleep disorders, health, actual sleep obtained, sleeping conditions etc.). Like any biomathematical model, which (by definition) uses general population level data to provide a view of relative fatigue exposures, neither FAID nor any other model in the market can provide an accurate prediction of individual level fatigue. To try to do so with FAID or any other fatigue model would be inappropriate. Individuals will always need to be considered and managed as individuals, within any fatigue risk management regime.

Understanding and managing your organisational risk profile with relation to fatigue is an important process within FRMS that involves looking at multiple areas of exposure. For example, a view of the organisation's fatigue risk profile can be gained by determining the:

- Fatigue risk profile of the workforce through an employee [Managing Fatigue Survey](#);
- Hours of work risk profile through a FAID [Hours of Work Diagnostic](#) of planned and actual hours worked;
- Workplace hazards in the context of fatigue, associated with specific roles and environmental factors through a [Fatigue Hazard Analysis](#) risk assessment; and

- Drawing it all together with a fatigue risk grading will provide contextual data on the specific fatigue-related risks for your organisation, and how to manage them effectively within a true risk-management framework.

As can be seen, the use of FAID in determining the hours of work risk profile is one component of many.

The formula and factors used by FAID have been validated within simulated work environments and field-based situations by the Centre for Sleep Research (UniSA). The development and validation of FAID is well substantiated and published in international peer-reviewed journals and books (refer to the references in Appendix B).

1.2. FAID Scores

No model can predict work-related fatigue completely, however the likelihood of fatigue impairment associated with different work hours can be reviewed using FAID. A FAID Score is provided, indicating different levels of fatigue exposure for different work hours. The higher the FAID Score the higher the fatigue exposure.

A standard workweek of 40 hours, Monday to Friday, 9 a.m. to 5 p.m., when analysed, results in a peak FAID Score of 41. A 40-hour week of 11 p.m. to 7 a.m. night shifts by comparison, provides a peak FAID Score of 97. A study by Dawson and Reid indicates that scores between 80 and 100 (high fatigue likelihood) are comparable to the level of fatigue-related impairment after 21-24 hours of continuous sleep deprivation (Dawson & Reid, 1997). This result was observed when the sleep deprivation started at 8 a.m. on a Monday, following a standard working week and weekend break. Multiple studies have shown that performance impairment at such a level of sleep deprivation is comparable to that experienced at blood alcohol concentrations of over 0.05% (Fletcher, Lamond, van den Heuvel & Dawson, 2003).

A FAID Score can provide an indication of the likelihood of performance impairment associated with fatigue. Validation studies suggest that work-related FAID Scores correlate very highly with sleep-onset latency, neurobehavioural impairment and subjective sleepiness (Fletcher, 1999).

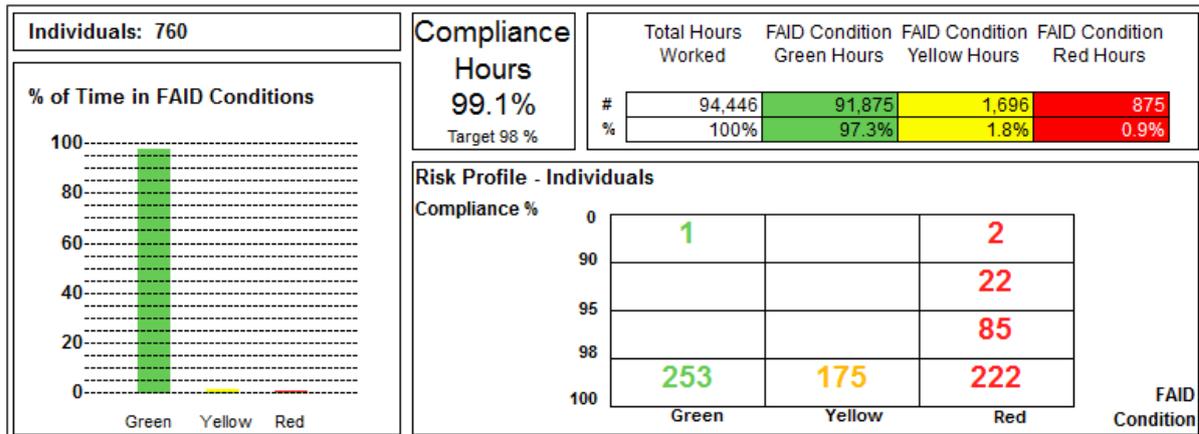
1.3. Fatigue Tolerance Levels

FAID analysis results can assist organisations and managers in understanding the fatigue exposure of different hours of work. The model can support fatigue risk management decision-making by limiting the fatigue exposure of work hours for tasks or roles that are more sensitive to fatigue-related impairment and/or have significant consequence in the event of a fatigue-related error.

Hours of work-related fatigue exposure can be limited by allocating work hours within a FAID Score benchmark figure (**Fatigue Tolerance Level / FTL**) and Target FTL Compliance percentage for a specific task or role. A lower FTL may be set for a higher risk task or role, and a higher FTL may be set for a lower risk task or role. For a specific task or role, one FTL may be used for planned hours of work, with the option of reviewing actual hours against a higher FTL, acknowledging that variances to the plan may occur on day of operations.

The below **FAID Risk Profile Report** shows how easy it is to identify individuals who have worked higher fatigue exposure hours, that are outside of the organisation's Fatigue Tolerance

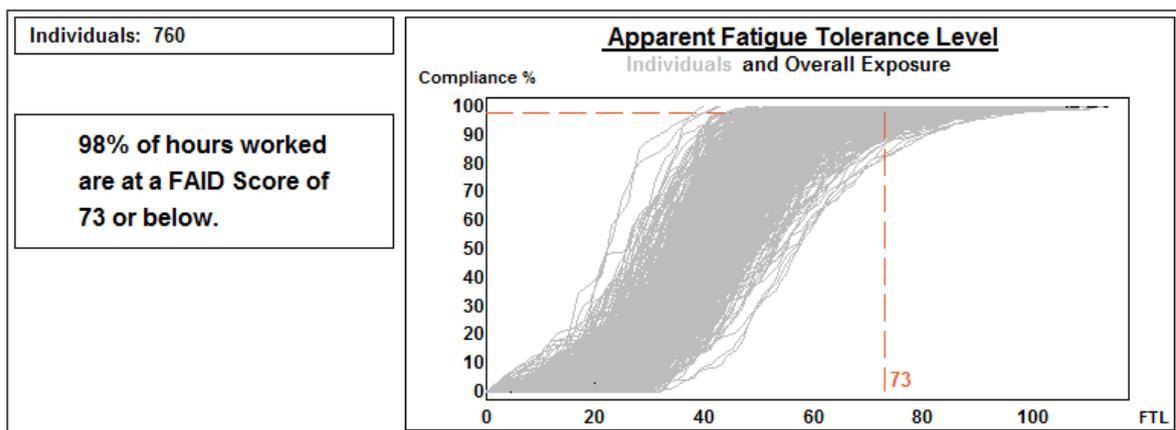
Level (indicated by red text in the Risk Matrix), and FTL Compliance percentage (displayed on the y-axis). The organisation can subsequently review and where appropriate modify the business process that currently allows these higher hours of work fatigue exposure cases.



FAID Fatigue Tolerance Levels are usually determined after carrying out a **Fatigue Hazard Analysis (FHA) risk assessment** for a specific role¹. That is, a risk assessment which reviews the hazards of a role when fatigue is present. The risk assessment would consider the current hours of work fatigue exposure analysed using FAID.

The FAID Apparent FTL report provides an indication of the current hours of work fatigue exposure, most appropriately reflected when at least 6 to 12 months of the most recent actual hours of work data is analysed. It is often helpful for an organisation to take into consideration its current Apparent FTL (current hours of work fatigue exposure) in setting a Fatigue Tolerance Level.

The below **Apparent Fatigue Tolerance Level** report from FAID shows the current hours of work fatigue exposure of an organisation being at an Apparent FTL of 73.



¹ InterDynamics' risk assessment methodology founded on Zurich's Hazard Analysis methodology aligned with AS/NZS ISO 31000:2009.

1.4. FAID Inputs and Assumptions

FAID uses work shift start and finish times as inputs, in determining the work and non-work period to be analysed. In performing its analysis of the work period and non-work periods, FAID does not take into account the following considerations:

- A reduction in opportunity for sleep when **commute times are greater than 45 minutes between home and work**. Hence, FAID will overestimate the recovery value of non-work periods in these circumstances. An organisation may wish to extend the shift start and finish time by the amount travelled longer than an hour in total (or 30 minutes each way) to account for the longer commute scenario.
- **Short breaks within shift as non-work periods**. For breaks within shift to be included as non-work time they need to be at least 4 hours or greater in duration, and quality sleeping facilities must be available (Dean, Fletcher, Hursh & Kleman, 2007). This means that breaks, such as lunch or crib breaks, are not included as non-work time, as short breaks are unlikely to be long enough for recovery sleep to be obtained.
- **Trans-meridian travel**, unless FAID Time Zone is used. If individuals travel 3 or more time zones from their home base, then it is recommended that a specialty version of FAID, FAID Time Zone be used, which takes trans-meridian travel into account.
- What an individual has actually achieved with regards to **recovery sleep during a non-work period**. FAID Time Zone formula and factors provide an estimate of the fatigue exposure typical of the average person based upon statistics gathered from a large sample group. It is not a pure measure of fatigue, and cannot by itself give an indication of whether an individual is fit for work. In the instance where individuals do not use a non-work period to obtain the recovery sleep FAID Time Zone is predicting would be statistically likely during the non-work period, then the fatigue exposure indicated by FAID might be quite different from that actually experienced by the individual.

Provided below are the major assumptions used to develop the FAID model:

1. Recovery from work-related fatigue by sleeping can be obtained at any time an individual is not working. The amount of recovery sleep assumed at any point in time is a subset of the opportunity available, dictated by time of day and competition from factors such as social pressures (Dean et al., 2007). FAID is a statistical model and considers the changing likelihood and quality of recovery sleep at different times of the day.
2. More recent work and non-work periods are weighted more heavily on an individual's current fatigue exposure than time periods further in the past. Work schedules analysed by FAID require 7 days or 168 hours of history prior to the analysis start date. FAID, in taking into account the rolling 7-day history in its analysis gives consideration to the accumulating impact of fatigue over the past 7 days. There is no weighting given to time further back than 7 days or 168 hours.
3. Individuals can only recover from fatigue that has been accumulated and cannot store recovery to offset against potential future fatigue (Dawson & Fletcher, 2001).

4. Circadian time is defined in a fixed phase relationship to clock-time. Mean phase shift between circadian and clock time has been said to be in the order of up to 1 to 2 hours without individuals having crossed time zones (Dawson & Fletcher, 2001). Variations of this magnitude would have little effect on FAID Score values. Also, the average phase shift in response to a broad range of shift schedules is typically in the order of 2 to 4 hours for night shift and less for afternoon shift (Rutenfranz, Colquhoun, Knauth & Gartner, 1977; Dawson, Encel & Lushington, 1995). Phase shifts, even in this range are unlikely to result in a significant error (Dawson & Fletcher, 2001).

FAID is an easy product to use when appropriate training is undertaken. The above points need to be considered when using FAID, to ensure its most effective and appropriate use in the organisation's operational context. Please contact us (faidtraining@interdynamics.com) if you would like **training in the context of use and functionality of FAID**.

We hope that this information assists you as you become familiar with the use of FAID as one element of a Risk-Based Approach to managing fatigue in your workplace.

The InterDynamics FRMS team.

2. Overview

The first time the user loads FAID, the user will be taken through a series of screens to introduce the user to the background and context of the use of FAID within an FRMS.

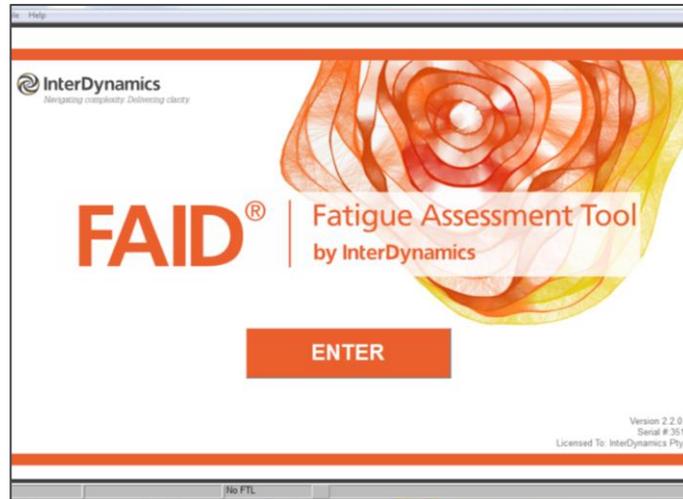


Figure 2-1 FAID opening screen

1. Click the **Enter** button.
2. The next screen provides an Introduction to FAID and Fatigue Risk Management, click on the **Continue** button.
3. A series of Fatigue Tolerance Level (FTL) related screens are presented, the first asks whether the user wishes to go through a detailed explanation of setting an FTL, click **Yes**, or Click **No** to skip the explanation and go straight to setting an FTL (or setting it later) **No**.

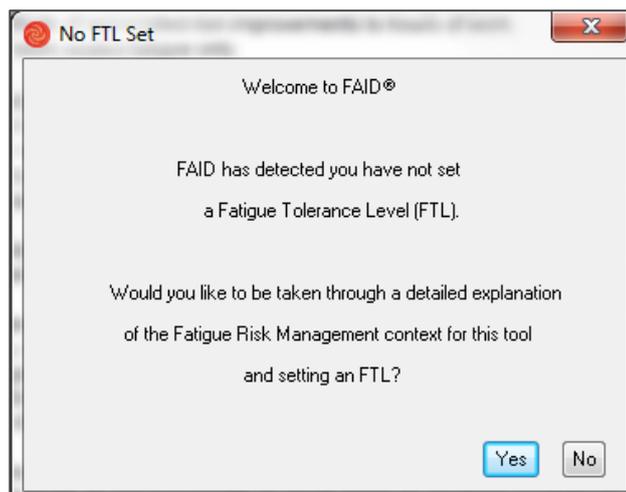


Figure 2-2 No FTL Set screen

4. If the user clicks **No**, the FAID Control Panel and Input Screen for Work Schedule 1 will appear (effectively launching the user into the programme and data entry). However, if the user clicks **Yes**, the following screens will appear giving an overview of Fatigue

Hazard Analysis and Tolerance Levels. These screens are displayed the first time that FAID is opened. The bullet point list offers additional **Information** on Fatigue Hazard

Analysis and can be reviewed at a later date by clicking the Tolerance Level button on the Input Control Panel.



FATIGUE HAZARD ANALYSIS

Information

When individuals perform tasks in a workplace they are exposed to fatigue hazards.

How to assess fatigue related risks and prioritise treatments

An organisation can perform a task Fatigue Hazard Analysis risk assessment to identify the fatigue hazards which are specific to their workplace and their tasks. InterDynamics' *'Fatigue Hazard Analysis risk assessment'* process assesses the impact that fatigue-specific triggers have on the likelihood and consequence of hazard scenarios for that role/task. Risk improvement actions, as outcomes of the FHA risk assessment, can therefore target protections against fatigue-triggered events, as well as controls to minimise/treat fatigue.

Click for more information on:

- ▶ The definition of a 'Fatigue Hazard'
- ▶ What makes InterDynamics' Fatigue Hazard Analysis (FHA) process different from most risk assessments
- ▶ Why a FHA is the best way to determine hours of work Tolerance Thresholds (including appropriate Fatigue Tolerance Levels and Target Compliance percentages)
- ▶ Outcomes of a Fatigue Hazard Analysis and further information

FOR MORE INFORMATION VISIT: [InterDynamics Website](#)

Fatigue Risk Triangle

Go to Input
Tolerance Thresholds >>>

* InterDynamics' risk assessment methodology founded on Zurich's Hazard Analysis methodology aligned with AS/NZS ISO 31000:2009

Figure 2-3 Fatigue Hazard Analysis Information

5. Once the user has familiarised themselves with the concept and has clicked on the **Go to Input Tolerance Thresholds** button, the following screen appears.

TOLERANCE THRESHOLDS

Information

Tolerance level and Compliance targets

FAID analysis results can assist organisations and managers in understanding the fatigue exposure of different hours of work. The model can support fatigue risk management decision-making by revealing higher risk times when controls/treatments should be targeted, or limiting the fatigue exposure of work hours for tasks or roles that are more sensitive to fatigue-related impairment and/or have significant consequence in the event of a fatigue-related error.

Hours of work-related fatigue exposure can be limited by allocating work hours within, and auditing/reviewing against, a FAID Score benchmark figure (Fatigue Tolerance Level/FTL) and a Target Compliance percentage against the FTL, for a specific task or role. A lower FTL may be set for a higher risk task or role, and a higher FTL may be set for a lower risk task or role. For a specific task or role, one FTL may be used for planned hours of work, with the option of reviewing actual hours against a higher FTL, acknowledging that variances to the plan may occur on day of operations.

Click for more information on:

- ▶ Example of Hours of Work rostering rules / KPIs
- ▶ How to determine what FTL and Target Compliance % is appropriate
- ▶ Various Task Risk profiles & Multiple FTLs
- ▶ How FAID can be used within a Risk-Based Approach, to support a framework for continuous improvement
- ▶ FAID: One component of many within a Risk-Based Approach

MORE

I Do Not Understand the Fatigue Tolerance Threshold concept. Please provide me with more information.

PLEASE SELECT ONE

YES

I Understand the Fatigue Tolerance Threshold concept.

Figure 2-4 Additional information on Tolerance Level and Compliance Targets

6. Additional information on Setting Tolerance Thresholds is available by clicking on the links in the bulleted list.

7. Once the user is satisfied that they understand the Fatigue Tolerance Level Threshold concept, clicking **Yes** presents the user with a screen where they can either **Select an FTL Later (Skip FTL)**, load a **Sample FTL** or **Manually Edit the FTL**
8. To manually edit the FTL, click on the words “**To Set a Fatigue Tolerance Level Click here**” beneath the word “**WARNING**”.

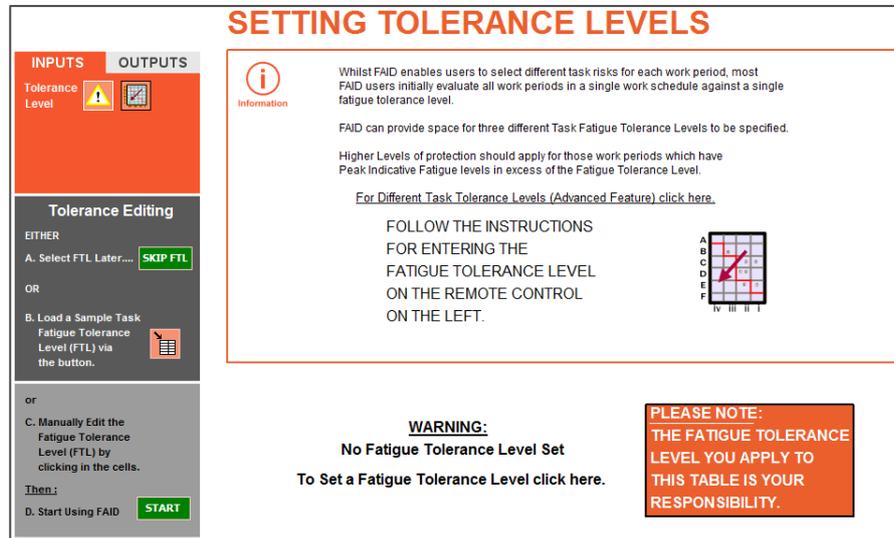


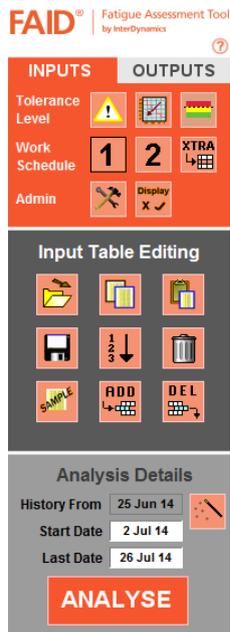
Figure 2-5 Setting Tolerance Levels Screen

9. A dialogue box to manually edit the FTL is revealed.

Fatigue Tolerance Level (FAID Score)	
Tolerance	0

10. Enter the desired **Fatigue Tolerance Level** then click **Start**.
11. After being informed that FTL has been set, click **OK**.

2.1. FAID Control Panel



The FAID Control Panel is permanently situated on the left hand side of every FAID screen. The Control Panel is divided into two areas:

- Inputs tab – includes all the functionality for entering data such as Work Schedules or shift patterns, set up parameters such as the FTL and running the Analysis; and
- Outputs tab – where the user can retrieve, save and print analysis results.

The tab that is active is always shown as orange and the inactive tab is shown as grey.

The Inputs tab has sections relating to information that will be entered on:

- Tolerance Level
- Work Schedule
- Administration

The Outputs tab has sections relating to analysis of the information entered:

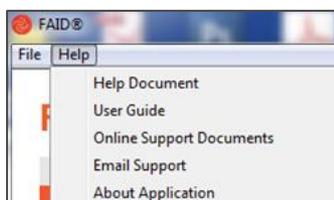
- Summary
- Work Schedule
- FAID Score
- Utilisation

2.2. Help

Help can be accessed via:



Contextual Help: Click on  found above the Outputs tab on the Control Panel to open the **Help** Document to the section relating to the function being used.



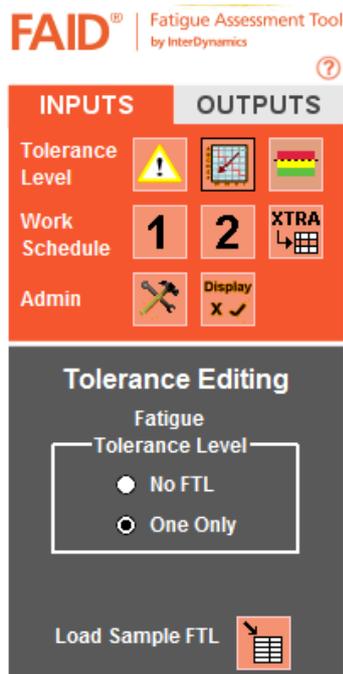
Help: The **Help** Menu provides access to

- A Help Document (includes detailed information regarding terms, concepts and process steps),
- This User Guide (internet access required),
- A User Guide for use with Standard View (internet access required),
- Online Support Documents (internet access required), and
- About Application - information relating to the Application.

3. Quick Start

3.1. Setting a Fatigue Tolerance Level (FTL) and Target Compliance %

Having a Fatigue Tolerance Level provides a benchmark for comparing the individual FAID Scores for a work-pattern, while the Target Compliance % sets a target for compliance to the determined FTL.



1. Click on the **Inputs** tab on the Control Panel to access the Inputs options.

2. In the **Tolerance Level** section, click on the Tolerance

Thresholds  button, the Tolerance Thresholds screen will be displayed with an overview of the thresholds and measures by which FAID can assist in managing hours of work related fatigue risk. We recommend all users to note the four bullet points containing linked information on how best to determine and apply them.

3. The middle section of the Control Panel will change to read **Tolerance Editing**.

4. Set a single Fatigue Tolerance Level by selecting the **One Only** radio button on the Tolerance Editing section of the Inputs tab.

Fatigue Tolerance Level (FAID Score)	
Tolerance	80

5. Set the Fatigue Tolerance Level by left clicking into the white **Tolerance** field box and type in the FAID Tolerance Level desired followed by the **Enter** key. By default a Sample FTL can be loaded via the button in the Tolerance Editing section, which can be amended.

Target Compliance %
98

6. Set the **Target Compliance %** by left clicking into the Target Compliance field box and type in the % value followed by the **Enter** key. By default, the Target Compliance % is set at 98%.

Conducting analysis using a single FTL is generally recommended for most users to compare groups of individuals performing like-risked tasks. Subsequent analysis on groups of individuals identified as having a different set of task risk factors can be done at a higher or lower FTL as appropriate.

NOTE: When **No Task Risk** has been selected (from Settings), only the **No FTL** and **One FTL** choices will be available in the Tolerance Editing options. The default setting is for No Task Risk

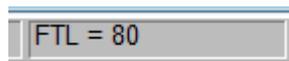
to be included in the Work Schedule details. If the user would like to include a Task Risk for hours of work in Work Schedule information, they can change the “Include Task Risk” section within Settings to Yes. Task Risk is needed when using Multiple Fatigue Tolerance Levels.

Risk Assessment processes such as InterDynamics’ Fatigue Hazard Analysis risk assessments assist in the capture and analysis of data required to set meaningful FAID Fatigue Tolerance Levels and compliance targets for selected jobs or tasks.

The following represents an example of a combination of hours of work rules that could fit within an organisations’ FRMS guidelines, utilising FAID as a key component in the development and audit of fatigue risks associated with hours of work:

- A Fatigue Tolerance Level (FTL) of 'x' (or multiple FTLs for tasks of various risks)
- Monthly, or roster cycle period compliance of all hours to be no less than 'y'% (Target Compliance)
- Individual shifts should not exceed 'z' points above the FTL
- Varying levels of actions/controls to be applied as exposures approach/exceed FTL
- Potential for differing values of x, y, and z above, for planned hours as opposed to actual hours

NOTE: The Tolerance Level is always displayed in the grey bar at the bottom of all screens.



3.2. Fatigue Hazard Analysis



Detailed explanations of InterDynamics’ Fatigue Hazard Analysis risk assessment process and its relation to the use of FAID in the setting of Fatigue Tolerance Levels and other work rules and countermeasures can be obtained from the **Inputs** tab in the **Tolerance Level** options by clicking the **Fatigue Hazard Analysis Information**  button.

Each of the following bullet points listed on the Fatigue Hazard Analysis screen provides further information:

- The definition of a ‘Fatigue Hazard’;
- What makes InterDynamics’ Fatigue Hazard Analysis (FHA) process different from most risk assessments?;
- Why a FHA is the best way to determine hours of work Tolerance Thresholds (including appropriate Fatigue Tolerance Levels and Target Compliance percentages); and
- Outcomes of a Fatigue Hazard Analysis and further information.

3.3. First-time users can review a Sample Work Schedule

FAID[®] | Fatigue Assessment Tool
by InterDynamics



1. Click on the **Inputs** tab within the FAID Control Panel to access the Inputs options.
2. In the **Work Schedule** options, click on the **Work Schedule 1**  button.
3. A blank Work Schedule screen appears which will have the following headings across the top of the screen:

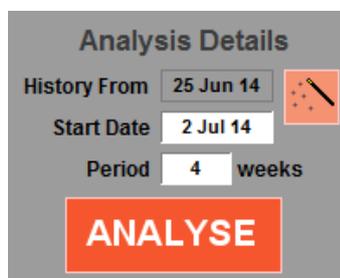
WORK SCHEDULE 1		
ID#	Start	End

4. Click on **Load Sample Work Schedule**  in the **Input Table Editing** options.

3.4. Analysing the Sample Work Schedule

Once the **Sample Work Schedule** has been loaded the user can run an analysis on the Work Schedule and compare output results scored against the set Fatigue Tolerance Level.

NOTE: To be effective FAID requires seven days of data as history to be entered before meaningful analysis can begin.



1. Click on the **Date and Period Wizard**  button. This ensures analysis will pick up latest Work Schedule data and automatically sets the **Start Date** and **History From** Date fields, ensuring seven days of work history before Start Date.
2. Click on the **Analyse**  button.

NOTE: If the user is only interested in analysis of a subset of the data, in the **Analysis Details** options, **do not** click

the Date and Period Wizard button either:

- a. With Settings **Select Last Date for Analysis = No**; change the Period weeks to be analysed (e.g. with the sample work schedule, the user could change Period from 4 weeks to 2); or
- b. With Settings **Select Last Date for Analysis = Yes**; change the Last Date of the analysis period (e.g. if looking at the sample work schedule with Start Date 2 July, the user could change Last Date from 26 July to 16 July).

The FAID software uses the start and end times of the work periods (shifts) to analyse the fatigue exposure associated with the work hours in that work pattern. When a Fatigue Tolerance Level (FTL) is set, the analysis also calculates the time an individual spends at various FAID Condition levels.

Resulting outputs can be viewed and examined by using the various functions available on the **Outputs** tab.

4. INPUTS Tab

4.1. Adding Work Period/Shifts within FAID

Users can create and add in Work Periods (shifts) within FAID on either an existing Work Schedule or an empty Work Schedule, or, Work Schedules can be imported from a spreadsheet/database (e.g. Excel). Users have the option to create a work-pattern in either **Single** or **Cycle** mode.

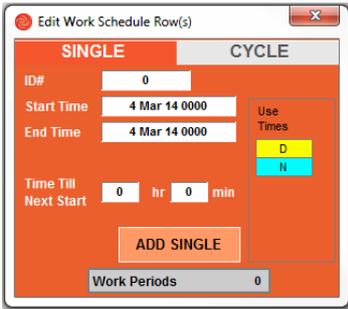
Select the mode that suits the user's working-pattern and enter the required shift details.

4.1.1. Adding Single Work Periods to a Work Schedule

Single mode allows the user to enter the start date and time and the end date and time of a single shift for a specific individual and apply it to the Work Schedule by clicking the Add Single button. Continued clicking of the Add Single button will replicate the nominated shift plus the details in Time Till Next Start (Hours/Minutes).



1. Click on the **Inputs** tab within the FAID Control Panel to access the Inputs options.
2. In the **Work Schedule** section click on the **Work Schedule 1** **1** button.
3. In the **Input Table Editing** options, click on the **Add Work Schedule Row(s)** **ADD** button to activate a pop-up menu **Edit Work Schedule Row(s)**. The pop-up menu has two tabs, Single and Cycle, choose the **Single** tab.



4. Enter the **ID** number representing an employee/team or roster pattern.

NOTE: The **ID#** field box can only recognise numeric values.

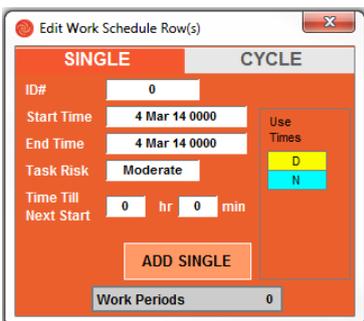
5. Enter Shift **Start Time** and a Shift **End Time**.

NOTE: Select the dates by clicking in the white cell beside Start and/or End Time and either enter/adjust details directly, or utilise the dropdown calendar to select the Day/Month/Year.

NOTE: Select the Times by using the HHMM field that follows the Day/Month/Year. Up and down arrow keys or direct numeric entry may also be used to make selections within each section of the cell. The first 00 represents hours and the last 00 represents minutes in a 24 hour clock.



6. It is also possible to add hours of work to the Work Schedule by adding shifts based on predefined Shift Definitions (see **Section 5.4.3**).



7. Select the appropriate level of **Task Risk**

Task Risk **Moderate** (If **Include Task Risk** is set to **Yes** in Settings).

NOTE: In FAID version 2.2 the default setting is for **No Task Risk** to be included in the Work Schedule details. If the user would like to include a Task Risk for hours of work in Work Schedule information, in the Settings Options the user can change the “Include Task Risk” option to **Yes** (see **Section 5.4.2**).

8. Click on the **Add Single** button to add the entered work period details onto the Work Schedule screen. The **Start Time** will change on the Edit Work Schedule display ready for adding another shift from after the period indicated in the **Time till Next Start** fields.

TIP: Repeated clicking on the Add Single button will replicate the entered shift details for successive dates incorporating the ‘Time Till Next Start’ details.

4.1.2. Adding a Cycle of Work Periods to a Work Schedule

Cycle mode allows the user to nominate a shift start date and time, shift duration in hours and the pattern of Days On to replicate the shift, and adjusts the Start Time after skipping the Days Off. Continued clicking of the **Add Cycle** button will replicate the nominated shift cycle details.



1. Click on the **Inputs** tab within the FAID Control Panel to access the Inputs options.

2. In the **Work Schedule** section, click on the **Work Schedule 1** button.

3. In the **Input Table Editing** options, click on the **Add Work Schedule Row(s)** button to activate a pop-up menu **Edit Work Schedule Row(s)**. The pop-up menu has two tabs, Single and Cycle, choose the **Cycle** tab.

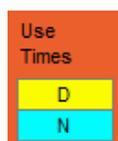
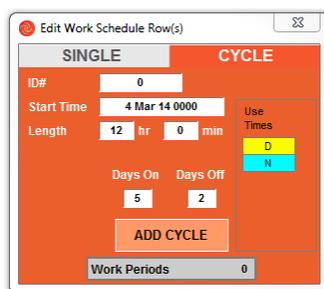
4. Enter the **ID** number representing an employee/team or roster pattern.

NOTE: The **ID#** field box can only recognise numeric values.

5. Enter shift Start and Time.

NOTE: Select the dates by clicking in the white cell beside Start and/or End Time and either enter/adjust details directly, or utilise the dropdown calendar to select the Day/Month/Year.

NOTE: Select the Times by using the HHMM field that follows the Day/Month/Year. Up and down arrow keys or direct numeric entry may also be used to make selections within each section of the cell. The first 00 represents hours and the last 00 represents minutes in a 24 hour clock.



6. Enter in the Shift **Length** in hours.

7. It is also possible to add hours of work to the Work Schedule by adding shifts based on predefined Shift Definitions (see [Section 5.4.3](#)).

8. If **Include Task Risk** is set to **Yes** in Settings, Select the appropriate level of **Task Risk** **Task Risk** **Moderate**.

NOTE: In FAID version 2.2 the default setting is for **No Task Risk** to be included in the Work Schedule details. If the user would like to include a Task Risk for hours of work in

Work Schedule information, they can change the “Include Task Risk” section within Setting to Yes (see **Section 5.4.2** Work Schedules).

9. Enter the number of consecutive **Days On** and **Off** for the cycle.
10. Click on the **Add Cycle** button to add the entered work period details for the cycle onto the Work Schedule screen. Repeated clicking on the Add Cycle button will replicate the entered shift cycle details for successive date periods.

TIP: **Work Periods** under **Add Cycle** enables the user to keep track of the number of work periods added.

NOTE: When using **Add Cycle**, should the cycle start times change, always check to confirm that the next start date is correct.

4.1.3. Adding a Work Schedule by copying data

Users have the option to import a previous Work Schedule from a spreadsheet/database (e.g. Excel) into FAID onto the Work Schedule screen.

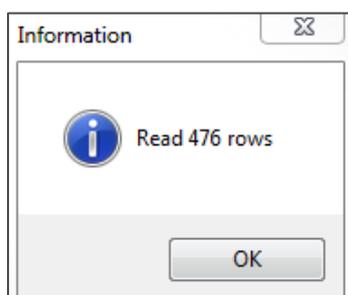


1. In spreadsheet, highlight the cells to be copied and right click to copy to the clipboard.

2. On the **Input** tab **Click** on the **Work Schedule 1** button. 

3. In Input Table Editing click on the **Paste Clipboard to Work Schedule**  button.

4. An information box will display indicating the number of rows of data that were imported. Click the **OK** button to continue.



5. The Work Schedule is imported onto the selected Work Schedule screen/Worksheet.

NOTE: If there are rows of data currently in the Work Schedule an Information box will ask to Append to Current Work Schedule (Yes / No / Cancel).

NOTE: If Include Task Risk is set at **Yes**, a fourth field with a Task Risk (Low, Moderate or High) must be included in the data to be imported.

4.1.4. Adding a Second Work Schedule



1. FAID offers the option to add a second Work Schedule to enable analysis comparisons for example when Work Schedule 1 contains planned shifts and Work Schedule 2 contains actual shifts worked.
2. Click on the **Work Schedule 2** button. A blank screen is offered where Work Schedules can be imported or created.
3. Alternatively by clicking the button in the **Input Table Editing** menu, **Work Schedule 1** can be copied to **Work Schedule 2** and then modified as required.

5. Input Table Editing Options

5.1. Sorting a Work Schedule by ID# and Date

FAID® | Fatigue Assessment Tool
by InterDynamics



When shifts are added after a Work Schedule has already been created, FAID always adds them as a new row at the bottom of the Work Schedule.

In the **Input Table Editing** section clicking on the **Sort Work**

Schedule by ID# then Date  button in the **Input Table Editing** menu, re-orders shifts by ID # and then Date.

5.2. Deleting Work Periods within a Work Schedule

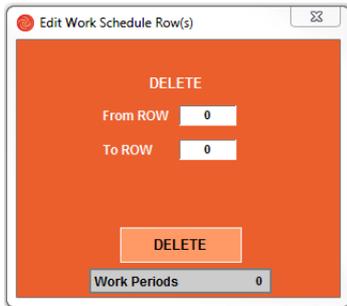
FAID® | Fatigue Assessment Tool
by InterDynamics



Users can delete Work Periods (shifts) from a Work Schedule.

In the **Input Table Editing** section click on the **Delete**

Row(s) from Work Schedule  button to activate the **Edit Work Schedule Row(s)** window.



1. Enter the **From Row** number to delete from the roster.
2. Enter the **To Row** number to delete from the roster.
3. Click on the **Delete** button to delete the nominated work periods from the Work Schedule.

NOTE: When deleting, be aware that the user will not be prompted to confirm deletion. It is recommended that the user regularly saves when changing data.

5.2.1. Clearing an Entire Work Schedule



Users can clear an entire Work Schedule of all work periods (shifts).



1. Click on the **Clear Work Schedule**  button in the **Input Table Editing** menu, to clear all Work Periods (shifts) within the displayed Work Schedule.
2. A **Delete Warning!** will appear. Click on **Ok** to confirm the changes.

5.2.2. Additional Work Schedule Editing Options

Work Schedule editing is also available via a menu that is displayed when the user right mouse clicks on a row. Available options appear: Append Row, Insert Row, Duplicate Row, Delete Row, Fill Down and Index Down.

8	110122	16 Nov 11 0739	16 Nov 11 1600
9	110122	17 Nov 11 0758	17 Nov 11 1546
10	110122	18 Nov 11 0747	18 Nov 11 1545
11	110122	19 Nov	
12	110122	20 Nov	
13	110122	23 Nov	
14	110122	24 Nov	
15	110122	26 Nov	
16	110122	27 Nov	
17	110122	30 Nov	
18	110122	1 Dec	
19	110122	3 Dec	
20	110122	4 Dec 11 0900	4 Dec 11 2100
21	110122	5 Dec 11 0552	5 Dec 11 1407

Figure 5-1 Editing Options using mouse

5.2.3. Saving Work Schedules

FAID® Fatigue Assessment Tool
by InterDynamics



Users have the ability to save their Work Schedules and store the data for future reference.

1. On the **Inputs** tab in the **Input Table Editing** section click on the **Save Work Schedule to File**  button to save the currently displayed Work Schedule.
2. In the **Select File to Write** dialogue box, enter or select a desired File Name.
3. Choose the folder/file the user wants to save in.
4. Click the **Save** button.

NOTE: FAID will automatically save all Work Schedules as an '.rtr' file extension, which is effectively a comma separated text file (.csv) file format.

NOTE: Work Schedules 1 and 2 must be saved independently. An easily recognised file naming convention which differentiates between Work Schedules 1 and 2 and notes their function, e.g. work_schedule_1_actual.rtr is recommended.

5.2.4. Opening FAID (RTR) files

FAID[®] | Fatigue Assessment Tool
by InterDynamics



When users regularly analyse and compare data, they will have FAID Work Schedule files previously stored on their system. Users can import or load this data back into FAID to allow new data to be added to the Work Schedule or for further analysis.

1. On the **Inputs** tab in the **Input Table Editing** section, click on the **Read Work Schedule from File**  button to load a previously saved Work Schedule into FAID.
2. In the **Select File to Read** dialogue box, locate and select the required File.
3. Click the **Open** button.
4. The selected Work Schedule file is loaded onto the Work Schedule screen.

5.2.5. Copying data out of FAID using the Clipboard

FAID[®] | Fatigue Assessment Tool
by InterDynamics



Users have the option to export a Work Schedule from FAID to the clipboard and then paste into a spreadsheet/database (e.g. Excel).

1. On the **Inputs** tab in the **Input Table Editing** section, click the **Copy Work Schedule to Clipboard**  button to copy the Work Schedule.
2. Click **Ok**.
3. Use the paste function to paste the Work Schedule into the spreadsheet.

5.3. Testing Overtime or Extra Work Periods within FAID

An extra shift can be analysed as a 'what if?' scenario before being added to the Work Schedule. The extra shift can be analysed against all available IDs to determine which individuals' FAID Scores over the subsequent 7 days would be least effected by the allocation of the overtime shift, prior to the discussion of the actual state of the individual and the offering of overtime.

FAID® | Fatigue Assessment Tool
by InterDynamics

INPUTS | **OUTPUTS**

Tolerance Level [Warning Icon] [Graph Icon] [Bar Chart Icon]

Work Schedule [1] [2] [XTRA]

Admin [Wrench Icon] [Display X]

Extra Work Period

Work [Schedule 1]

Start Time [20 Feb 14 0000]

Work Length [8] hrs

End Time [20 Feb 14 08:00]

OR ID # [1]

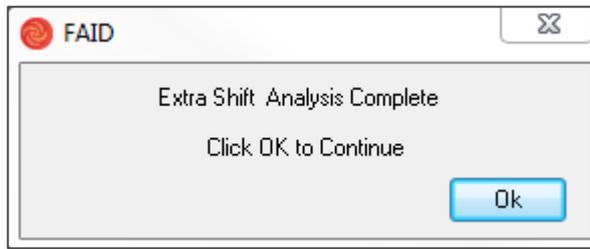
[ID#] [ALL]

1. On the **Inputs** tab in the **Work Schedule** section click on the **Extra Shift Analysis**  button for access to the **Extra Work Period** options.
2. Select which **Work Schedule** (1 or 2) to apply the Extra Shift to.
3. Enter in a **Start Time** (and date).

NOTE: Select the date by clicking in the white cell beside Start Time and either enter/adjust details directly, or utilise the dropdown calendar to select the Day/Month/Year.

NOTE: Select the time by using the four zeros that follow the Day/Month/Year. Up and down arrow keys or direct numeric entry may also be used to make selections within each section of the cell. The first 00 represents hours and the last 00 represents minutes in a 24 hour clock.

4. Enter in the **Work Length** in hours.
5. Nominate **All ID** numbers or an **Individual ID** number to test the extra shift against. To nominate the ID# to test extra shift against, either click the ID#  button or the **All**  button to toggle between the two options.
6. Click the **Analyse** Button. FAID will insert the extra shift into nominated ID's Work Schedules and calculate any change to FAID Scores.



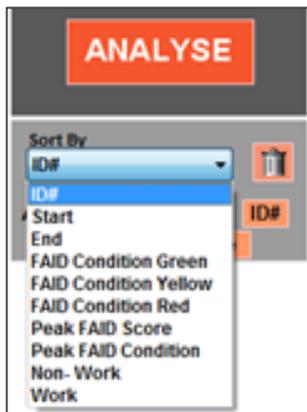
A confirmation message will appear to state that the Extra Shift Analyses is peak complete. Click on the **OK** button to continue. The Extra Work Period Schedule for affected individuals will be displayed.

INPUTS		OUTPUTS		ID#	Start	End	FAID Condition Green	FAID Condition Yellow	FAID Condition Red	Peak FAID Score	Peak FAID Condition	Non-Work	Work
1	1	26 Jun 14 0700	26 Jun 14 1645	1	26 Jun 14 0700	26 Jun 14 1645	9hr 45min			13	-67	0.0	9.8
2	1	27 Jun 14 0700	27 Jun 14 1612	1	27 Jun 14 0700	27 Jun 14 1612	9hr 12min			24	-56	14.3	9.2
3	1	28 Jun 14 0700	28 Jun 14 1600	1	28 Jun 14 0700	28 Jun 14 1600	9hr 0min			40	-40	14.8	9.0
4	1	29 Jun 14 0700	29 Jun 14 1648	1	29 Jun 14 0700	29 Jun 14 1648	9hr 48min			54	-26	15.0	9.8
5	1	30 Jun 14 0630	30 Jun 14 1642	1	30 Jun 14 0630	30 Jun 14 1642	10hr 12min			68	-12	13.7	10.2
6	1	1 Jul 14 0600	1 Jul 14 1800	1	1 Jul 14 0600	1 Jul 14 1800	9hr 42min	2hr 12min	6min	80	0	13.3	12.0
7	1	3 Jul 14 0630	3 Jul 14 1612	1	3 Jul 14 0630	3 Jul 14 1612	9hr 42min			66	-14	36.5	9.7
8	1	4 Jul 14 0630	4 Jul 14 1719	1	4 Jul 14 0630	4 Jul 14 1719	10hr 49min			70	-10	14.3	10.8
9	1	5 Jul 14 0630	5 Jul 14 1640	1	5 Jul 14 0630	5 Jul 14 1640	8hr 59min	1hr 11min		75	-5	13.2	10.2
10	1	6 Jul 14 0630	6 Jul 14 1706	1	6 Jul 14 0630	6 Jul 14 1706	9hr 1min	1hr 35min		78	-2	13.8	10.6
11	1	7 Jul 14 0700	7 Jul 14 1600	1	7 Jul 14 0700	7 Jul 14 1600	7hr 43min	1hr 14min	2min	80	0	13.9	9.0
12	1	10 Jul 14 0630	10 Jul 14 1700	1	10 Jul 14 0630	10 Jul 14 1700	10hr 30min			43	-37	62.5	10.5
13	1	11 Jul 14 0630	11 Jul 14 1754	1	11 Jul 14 0630	11 Jul 14 1754	11hr 24min			52	-28	13.5	11.4
14	1	12 Jul 14 0630	12 Jul 14 1714	1	12 Jul 14 0630	12 Jul 14 1714	10hr 44min			62	-18	12.6	10.7
15	1	13 Jul 14 0630	13 Jul 14 1657	1	13 Jul 14 0630	13 Jul 14 1657	9hr 50min	37min		71	-9	13.3	10.4
16	2	27 Jun 14 0700	27 Jun 14 1600	2	27 Jun 14 0700	27 Jun 14 1600	9hr 0min			13	-67	0.0	9.0
17	2	28 Jun 14 0700	28 Jun 14 1600	2	28 Jun 14 0700	28 Jun 14 1600	9hr 0min			24	-56	15.0	9.0
18	2	29 Jun 14 0700	29 Jun 14 1636	2	29 Jun 14 0700	29 Jun 14 1636	9hr 36min			39	-41	15.0	9.6
19	2	30 Jun 14 1730	1 Jul 14 0230	2	30 Jun 14 1730	1 Jul 14 0230	9hr 0min			55	-25	24.9	9.0
20	2	1 Jul 14 1730	2 Jul 14 0230	2	1 Jul 14 1730	2 Jul 14 0230	9hr 0min			63	-17	15.0	9.0
21	2	2 Jul 14 1730	3 Jul 14 0230	2	2 Jul 14 1730	3 Jul 14 0230	9hr 0min			69	-11	15.0	9.0
22	2	6 Jul 14 0700	6 Jul 14 1730	2	6 Jul 14 0700	6 Jul 14 1730	10hr 30min			28	-52	76.5	10.5
23	2	7 Jul 14 0700	7 Jul 14 1600	2	7 Jul 14 0700	7 Jul 14 1600	9hr 0min			41	-39	13.5	9.0
24	2	8 Jul 14 0700	8 Jul 14 1600	2	8 Jul 14 0700	8 Jul 14 1600	9hr 0min			49	-31	15.0	9.0
25	2	9 Jul 14 1730	10 Jul 14 0242	2	9 Jul 14 1730	10 Jul 14 0242	9hr 12min			58	-22	25.5	9.2
26	2	10 Jul 14 1730	11 Jul 14 0348	2	10 Jul 14 1730	11 Jul 14 0348	9hr 25min	53min		72	-8	14.8	10.3
27	2	11 Jul 14 1730	12 Jul 14 0306	2	11 Jul 14 1730	12 Jul 14 0306	8hr 47min	49min		80	0	13.7	9.6
28	3	26 Jun 14 0800	26 Jun 14 1600	3	26 Jun 14 0800	26 Jun 14 1600	8hr 0min			11	-69	0.0	8.0
29	3	27 Jun 14 0700	27 Jun 14 1600	3	27 Jun 14 0700	27 Jun 14 1600	9hr 0min			22	-58	15.0	9.0
30	3	28 Jun 14 0700	28 Jun 14 1706	3	28 Jun 14 0700	28 Jun 14 1706	10hr 6min			36	-44	15.0	10.1

Figure 5-2 Work Schedule showing extra shifts added

Individuals' rosters are displayed and the tested Extra Work Period is highlighted.

Displayed information can be sorted by ID#, by the Extra Work Period or by a range of FAID Conditions or Scores.



NOTE: Sorting by ID # shows how the extra shift will fit into each individuals' current roster, which provides a better overall view of how the extra shift will potentially affect the 168 hours after the extra shift.

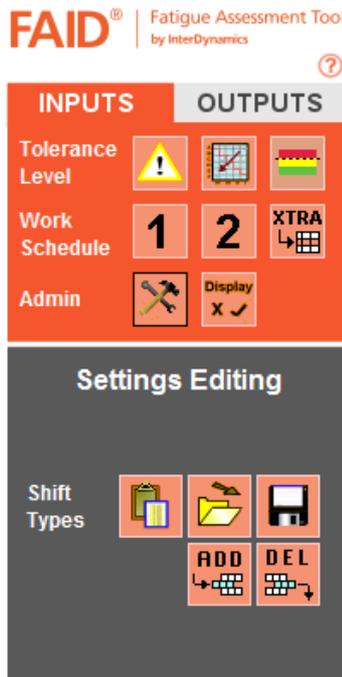
Once the actual state and circumstances of the individual has been discussed, and the individual has accepted the extra shift, the user can allocate it to that individuals' roster.

1. Allocate the extra shift to **All ID numbers** or to an **Individual ID number**. Click the **ID# ID#** button or the **All ALL** button to toggle between the two options.

- Click on the **Add to Schedule** button to move the shift from the hypothetical 'Extra Work' area into the roster of the nominated person.

NOTE: When clicking **ALL ID#s** and **Add to Schedule**, only those IDs that have been tested and are valid will be added to the Schedule.

5.4. FAID Settings Options



On the **Inputs** tab in the **Admin** section click on the **Settings**  button the Settings screen will be displayed.

SETTINGS

SUMMARY

Risk Profile Individuals Compliance % Bands to to to to

Band 1 Band 2 Band 3 Band 4

Calculate Apparent FTL using Compliance % of

WORK SCHEDULE

<u>File Import</u>		<u>Display</u>	
Remove Zero ID	<input type="text" value="No"/>	Date Format	<input type="text" value="DD MMM YY HHMM"/>
Remove Zero Times	<input type="text" value="No"/>	Include Task Risk	<input type="text" value="No"/>
Remove Zero Work	<input type="text" value="No"/>		
Remove Header Row	<input type="text" value="No"/>		

UTILISATION

Shift Types		Type	Code	Start Time	End Time	Length	Length
						Hours	Mins
Day	D		6:30	18:30	12	0	
Night	N		18:30	6:30	12	0	

Display is Match Start/End, otherwise use

ANALYSIS

Analysis Wizard set closest

Select Last Date for Analysis

Figure 5-3 Settings Screen

The settings screen is divided into four sections:

- Summary
- Work Schedule
- Utilisation; and
- Analysis

5.4.1. Summary

On the **Outputs** tab in the **Summary** section, in the **Display Options** one of the options is to display **Risk Profile** (see Outputs section for more information). One aspect of the **Risk Profile - Individuals** is the four **Compliance % Bands** (e.g. default listing is top to bottom 0, 90, 95, 98, 100). These bands can be modified as required here in the **Summary** section of **Settings**.

Risk Profile Individuals	Band 1	Band 2	Band 3	Band 4
Compliance % Bands	0	to 90	to 95	to 98 to 100

Calculate Apparent FTL using Compliance % of	98
--	----

In the **Outputs** tab under **Summary**, Display Options can provide the **Apparent FTL**, representing the compliance of each ID and an overall Work Schedule compliance for different FTLs ranging from zero to highest needed to achieve 100% compliance, with a highlighted display of the FTL when overall 98% compliance is achieved. By default, the 'Apparent' Fatigue Tolerance Level represents the FAID Score at which 98% of the hours analysed are less than (or within). Hence, a higher 'Apparent' FTL indicates higher fatigue exposure for the hours analysed. This view is similar to that seen when No FTL is chosen in Inputs. When six to twelve months of actual hours of work are analysed, the Apparent FTL indicates the level of hours of work-related fatigue risk that the organisation has been tolerating 98% of the time (using default settings). It also defines a point from which to begin investigating business processes that resulted in the outlying 2% of hours (under this scenario), and informing decisions around the setting of FTLs. If Compliance at a different percentage is sought, the % can be changed in this field.

5.4.2. Work Schedule

Information relating to **File Import**

1. **Remove Zeros:** When importing hours of work entries, FAID can automatically be set to remove zero Identification values, or when there are zero Start or End Times, or if there are zero work hours. For each choice click in cell to change between **No** and **Yes**: Should there be a shift with zero values in any of these parameters, the whole shift is removed and a notification is displayed of the number of shifts removed.
 - IDs is for zero identification number
 - Times is for no Time entered into cell
 - Work is for no work performed (Start Time equals End Time)
2. **Remove Header Row:** select **Yes** or **No** by clicking in cell. If Set to YES, the first row in the imported Work Schedule will be ignored.
3. **Default Task Risk -** If **Include Task Risk** is changed from **No** (default) to **Yes** (see point 5 below), then a field for the **Default Task Risk** is displayed in the Work Schedule. The task risk level for each work period can be changed by clicking through **Low**, **Moderate** and **High**.

Information relating to **Display**

4. **Date Format:** The date format used within FAID can be selected between DD MMM YY HHMM and MMM DD YY HHMM.

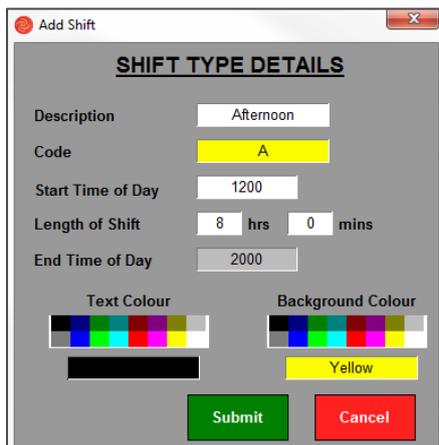
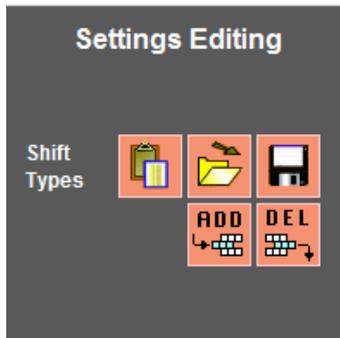
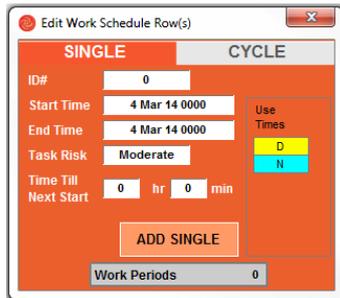
5. **Include Task Risk:** Whilst FAID enables users to select different task risks for each work period; most FAID users initially evaluate all work periods in a Work Schedule against a single Fatigue Tolerance Level (FTL) thereby not requiring Task Risk ratings. Click to select **Yes** to enable the use of multiple FTL's.

NOTE: When **No Task Risk** has been included (from Settings), only **No FTL** or **One FTL** choices will be available in the Fatigue Tolerance Level (FTL) section.

The default setting is for **No Task Risk** to be included in the Work Schedule details. If the user would like to include a Task Risk for hours of work in Work Schedule information, they can change the "Include Task Risk" section within Setting to **Yes**.

NOTE: If Include Task Risk is set to **Yes**, when importing or copying a Work Schedule into FAID, then a fourth field with a Task Risk against each shift must be included in the data to be imported (with each shift labelled as either Low, Moderate or High Task Risk).

5.4.3. Utilisation



Shift Types: Default shifts can be created for ease of use when adding shifts in the Work Schedule Edit screen and these will be referenced in the Shifts Types display in Outputs.

The reports in Outputs are set to look for shifts matching the Start/End times of the default Shift Types set here. If the shift Start/End times do not match exactly with the default Shift Types, the reports in Outputs can be set to classify the shifts to the most appropriate Shift type by either **Start Closest to Detail Start Time**, or **Start >=Detail Start Time** via the dropdown menu.

Shift Types						
Type	Code	Start Time	End Time	Length Hours	Length Mins	
Day	D	6.30	18.30	12	0	
Night	N	18.30	6.30	12	0	

Display is Match Start/End, otherwise use **Start Closest to Detail Start Time**

To Add Shift Types:

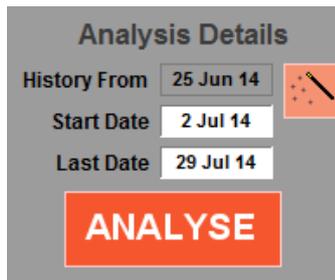
1. Click on the **Add Shift to Shift Types**  button in the **Settings Editing** section of the Control Panel.
2. In the Add Shift window enter Description, Code, Start Time of Day and Length of Shift. FAID automatically calculates the End Time of Day.
3. Select a Text Colour and Background Colour.
4. Click on **Submit**.

Shift Types						
Type	Code	Start Time	End Time	Length Hours	Length Mins	
Day	D	6.30	18.30	12	0	
Afternoon	A	12.00	20.00	8	0	
Night	N	18.30	6.30	12	0	

Display is Match Start/End, otherwise use **Start Closest to Detail Start Time**

5. If there are a range of different Shift Types for different departments within an organisation, Shift Types can be created and copied in a spreadsheet and pasted using the paste from clipboard  button, or saved as a .dat file and loaded for use by clicking the save  and load  buttons.

5.4.4. Analysis



Analysis Details

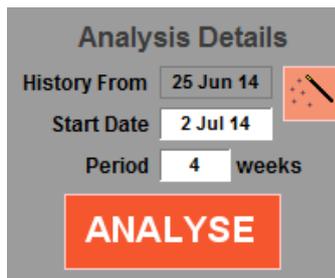
History From 

Start Date

Last Date

ANALYSE

The analysis wizard can be configured to reflect analysis up to a particular day of the week to enable consistent comparisons to a certain date. If analysis up to a certain date is required, this feature can be activated here, alternatively analysis to a month rather than day can be selected.



Analysis Details

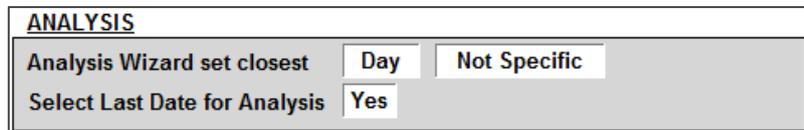
History From 

Start Date

Period weeks

ANALYSE

The default is for FAID to find the earliest Start Time and set the Start Date seven days forward (to allow for work history). An additional function is to set the Start Date seven days forward and then find the nominated closest day (useful for clients who start roster rotations on specific days).



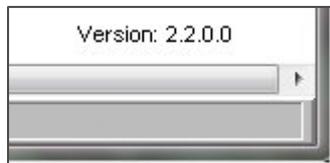
ANALYSIS

Analysis Wizard set closest Day Not Specific

Select Last Date for Analysis Yes

The user can either have an analysis period be defined by Weeks, or a specific last date (for example if the analysis needed is only for a specific month).

5.4.5. FAID Version Reference



In the Settings section the user can view the version of FAID currently installed. This is found in the bottom far right corner of the Settings screen. This can assist when checking whether the user is up-to-date with the latest version and with support calls.

5.5. Display Settings

Sections of FAID that are not used may be simply hidden from view by un-ticking **View** within the Display area.

1. On the **Inputs** tab in the **Admin** section click on the **View the Display Settings**  button.
2. Click on the item in the **View** column to either display or hide Inputs and Outputs options.



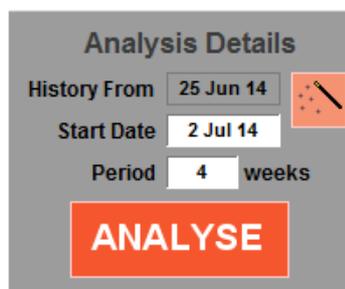
View Display		View	
INPUTS			
Tolerance Level	Fatigue Hazard Analysis	<input checked="" type="checkbox"/>	
	Tolerance Thresholds	<input checked="" type="checkbox"/>	
	FAID Conditions	<input checked="" type="checkbox"/>	
Work Schedule	Work Schedule 1	<input checked="" type="checkbox"/>	1 2 XTRA
	Work Schedule 2	<input checked="" type="checkbox"/>	
	Extra Shift Analysis	<input checked="" type="checkbox"/>	
Administration	Settings	<input checked="" type="checkbox"/>	
Analysis	Analysis Details	<input checked="" type="checkbox"/>	
OUTPUTS			
Summary	Summary	<input checked="" type="checkbox"/>	
	Key Risk Indicators	<input checked="" type="checkbox"/>	
	Compliance	<input checked="" type="checkbox"/>	FTL
	Peak FAID Condition	<input checked="" type="checkbox"/>	
	Hours Worked Profile	<input checked="" type="checkbox"/>	1 2
	Monthly Compliance	<input checked="" type="checkbox"/>	
Work Schedule	Exposure Logs	<input checked="" type="checkbox"/>	
	Work Schedule 1	<input checked="" type="checkbox"/>	
	Work Schedule 2	<input checked="" type="checkbox"/>	
	Gantt Chart	<input checked="" type="checkbox"/>	
FAID Score	Plot	<input checked="" type="checkbox"/>	
	Tabular	<input checked="" type="checkbox"/>	
Availability	Shift Types	<input checked="" type="checkbox"/>	
	Profiles	<input checked="" type="checkbox"/>	
	Concurrent Work Periods	<input checked="" type="checkbox"/>	
Printing	Selection	<input checked="" type="checkbox"/>	

Figure 5-4 Display Settings

5.6. Analysing the Work Schedule

Once users have successfully added a Work Schedule (either **1** or **2**), by their selected method, they can run an analysis of the Work Schedule and compare output results scored against the set Fatigue Tolerance Level.

NOTE: To be effective FAID requires 7 days of data as history to be entered before meaningful analysis can begin.



1. Click on the **Date and Period Wizard**  button. This ensures analysis will pick up latest Work Schedule data and automatically sets the Start Date and **History From** Date fields ensuring seven days of work history before Start Date.
2. If the user is only interested in analysis of a subset of the data, in the **Analysis Details** options, enter the **Start Date** and the time **Period** to be analysed (remembering that seven days of work history should always be allowed before the desired Start Date which reflects the start of analysis outputs).
3. Click on the **Analyse**  button

NOTE: All data within either Work Schedule (**1** or **2**) will be analysed. If data is entered into both Work Schedule 1 and Work Schedule 2, they can be compared in the Outputs section.

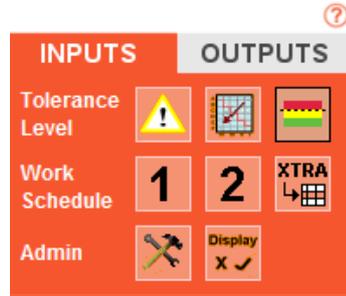
If the Start Date is manually changed to the first date of shift data entered, the first week of analysis/Outputs will under-estimate the fatigue exposure of the hours of work, as no work periods existed in the preceding 7 days that have been counted as history data. Thus it is recommended that the Start Date not be changed to the date of the first shifts entered.

The FAID software uses the start and end times of the work periods (shifts) to analyse the fatigue associated with the work hours in that work pattern. When a Fatigue Tolerance Level (FTL) is set, the analysis also calculates the time an individual spends at various FAID Condition levels.

Resulting outputs can be viewed and examined by using the various functions available on the **Outputs** tab.

5.7. FAID Conditions Information

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by InterDynamics



An introductory screen with detailed explanations of Indicative Fatigue Assessment can be selected by clicking the **FAID Conditions** button on the **Inputs** tab.

On the **Input** tab in the **Tolerance Level** section click on the **FAID Conditions Information**  button. The FAID Conditions information screen will be displayed. Note the bullet point links provided for further information.

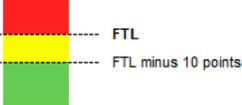
FAID CONDITIONS

i
Information

Increasing, relative hours of work fatigue exposure against a Fatigue Tolerance Level (FTL) is indicated by three FAID Conditions Green, Yellow, and Red.

FAID nominally categorises FAID Conditions using the following scale:

- * Red (FAID Score points above the FTL)
- * Yellow (within 10 FAID Score points of the FTL)
- * Green (less than 10 FAID Score points below the FTL)

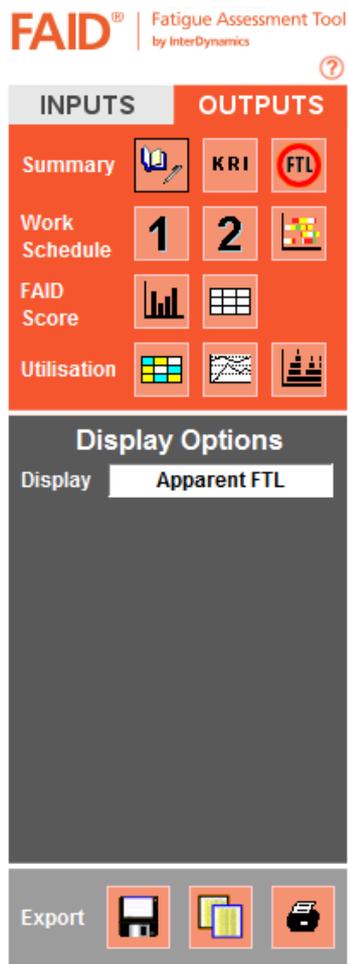


Click for more information on:

- ▶ [How FAID uses FAID Conditions in its reporting.](#)
- ▶ [More information about Fatigue Tolerance Levels.](#)

Figure 5-5 FAID Conditions overview

6. OUTPUTS Tab



Once a Work Schedule is analysed, the user will be presented with the **Hours at FAID Score Summary** screen as a default view.

This Summary can be re-accessed by clicking on the **Summary**  button.

The **Outputs** tab is split into four sections:

- Summary
- Work Schedule
- FAID Score
- Utilisation

6.1. Summary

If an FTL was selected, on this screen FAID provides the Compliance percentage which is the percentage of hours of the analysed Work Schedule that are below the set Tolerance Level, as well as the user defined corporate Target Compliance percentage to compare performance against.

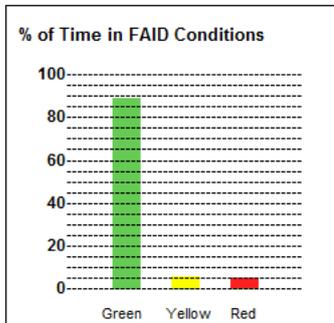
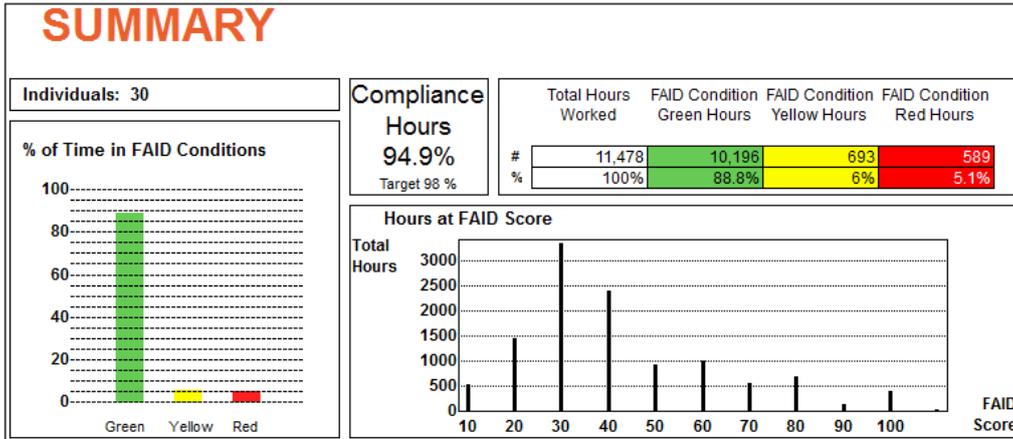
The screen also displays the FAID Conditions for the total number of hours worked within the analysed Work Schedule. These can be used to categorise the level of controls that are required to be implemented by users based on the scale that is set by FAID. FAID Conditions use the following scale:

- **Red** (Above FTL)
- **Yellow** (Within 10 points of FTL)
- **Green** (Less than -10 points below FTL)

If two Work Schedules have been added, all Display Options will show both Work Schedules for comparison purposes.

Display Options
 Display **Hours at FAID Score**

The Hours at FAID Score Display gives a summary of the overall analysis of the Work Schedule. In-depth explanations of the results follow.



This graph displays the **% of Time in FAID Conditions** (Green, Yellow & Red) over the entire Work Schedule. When the Display Option **Shift Peak GYR Condition** is selected, the graph shows number and percentage of shifts in FAID Conditions.

Compliance Hours
 94.9%
 Target 98 %

Compliance % for the Work Schedule as a whole is displayed, as well as the user defined corporate Target Compliance %. Depending on the Display Option chosen, this changes from **Compliance Hours** to **Compliance Shifts**.

	Total Hours Worked	FAID Condition Green Hours	FAID Condition Yellow Hours	FAID Condition Red Hours
#	11,478	10,196	693	589
%	100%	88.8%	6%	5.1%

This table shows total hours worked based on FAID Conditions when Display option for hours is selected. When the Display Option **for shifts (i.e. Shift Peak GYR Condition)** is selected, the table shows number and percentage of **shifts** in FAID Conditions rather than **hours** in FAID Conditions.

Display Options

Display **Hours at FAID Score**

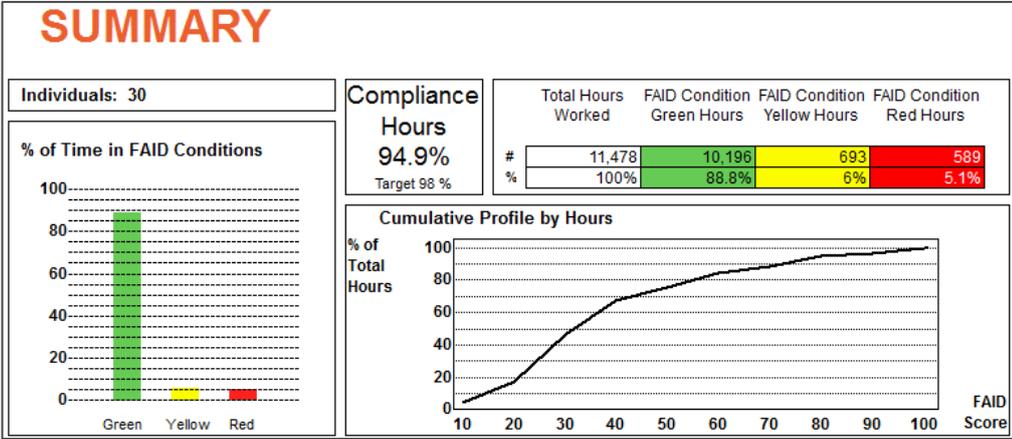
Apparent FTL
 Cumulative Profile
 Hours at FAID Score
 Risk Profile
 Shift Peak GYR Cond

The default Display Option is **Hours at FAID Score**.

Click on **Display Options** field box to change the **display**. A drop down menu provides the options.

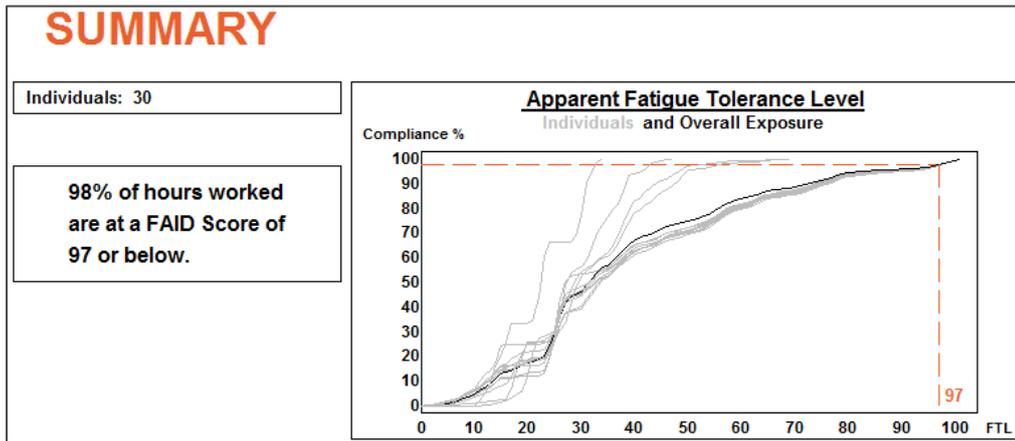
Display Options
 Display **Cumulative Profile**

The **Cumulative Profile** display shows the cumulative percentage of total hours at each FAID Score, from lowest to highest. A profile showing a quick rise in the y-axis would represent the bulk of the total hours being worked at lower FAID Scores, with a lesser percentage of the hours worked at the higher end of the scale.



Display Options
 Display **Apparent FTL**

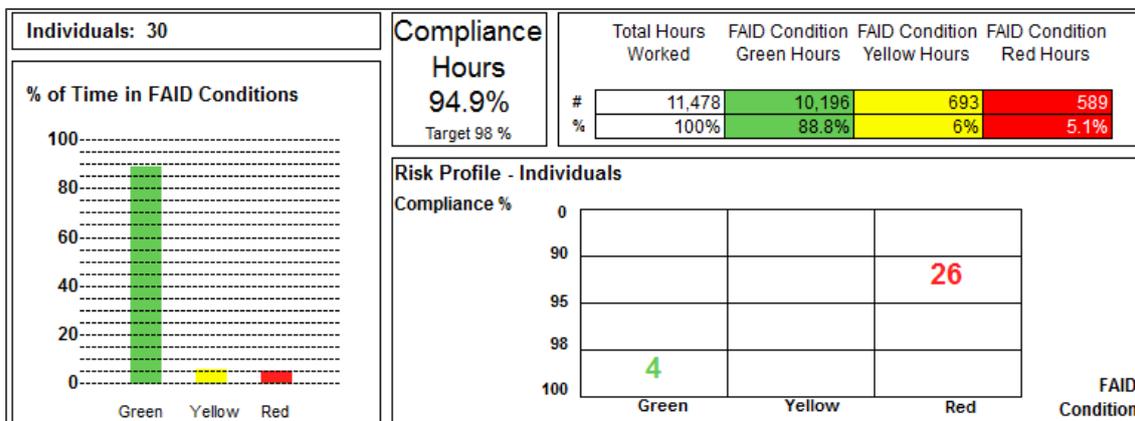
The **Apparent FTL** (default with No FTL) display represents the compliance of each ID and an overall Work Schedule compliance for different FTLs ranging from zero to highest needed to achieve 100% compliance, with a (default) highlighted display of the FTL when overall 98% compliance is achieved. The 'Apparent' Fatigue Tolerance Level represents the FAID Score at which (by default) 98% of the hours analysed are less than (or within). Hence, a higher 'Apparent' FTL indicates higher fatigue exposure for the hours analysed. The actual percentage can be specified in the Settings section. This view is similar to that seen when No FTL is chosen in Inputs. When six to twelve months of Actual Hours of Work are analysed, the Apparent FTL indicates the level of hours of work-related fatigue risk that the organisation has been tolerating 98% of the time (in this example). It also defines a point from which to begin investigating business processes that resulted in the outlying 2% of hours and informing decisions around the setting of FTLs.



Display Options

Display
Risk Profile

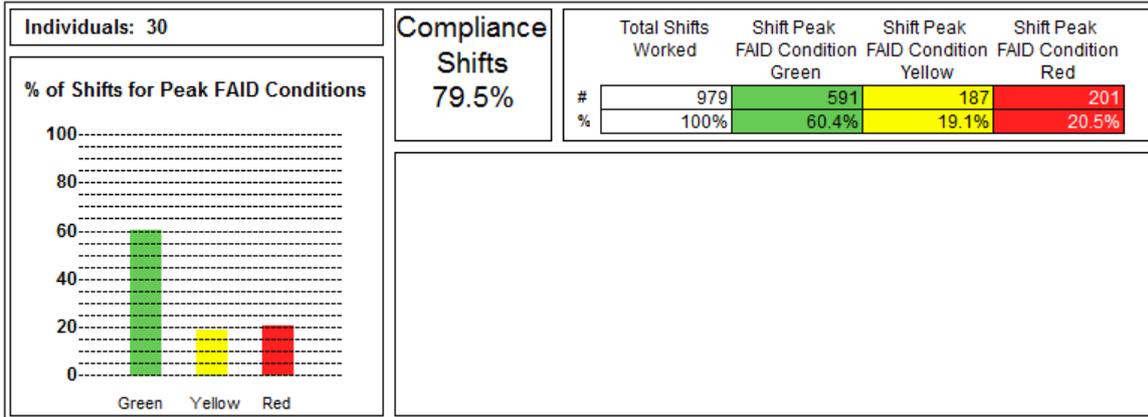
The Risk Profile display shows a count of how many individuals peaked in Green, Yellow or Red FAID Conditions, and places them into the matrix based on their relevant Compliance % band (as set-up in the Settings section of the Inputs tab) and Peak FAID Condition. Also displayed are the Total Hours worked and the percentage of FAID Condition Hours. In the example below, the work patterns analysed showed 26 individuals with scores peaking in the FAID Red Condition (above the FTL) with Compliance percentages between 90% and 95%. Four individuals' peak scores were more than 10 points below the FTL, with compliance of between 98% and 100%.



Display Options

Display
Shift Peak GYR Cond

The **Shift Peak GYR Condition** display indicates how many shifts achieved the various FAID Conditions (in Green, Yellow, Red). Also displayed are the Total Shifts worked and the percentage of Shifts Peaks for the different FAID Conditions.



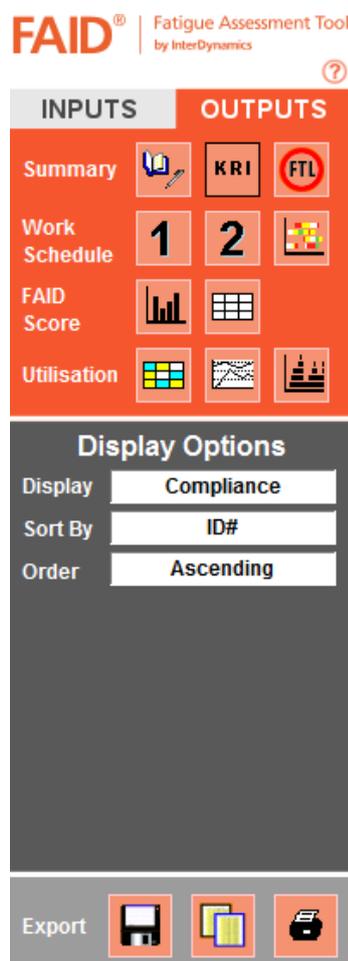
6.2. FAID Key Risk Indicators

There are four types of Key Risk Indicators available on the **Output** tab in the **Summary** section, which can be used to analyse a Work Schedule.

The **Key Risk Indicators** are:

- **Compliance** Percentage to the Fatigue Tolerance Level
- **Peak FAID Condition** for Work Periods
- **Hours of Day** Hours worked profile & Percentage of Hours Worked above the set Tolerance Level
- **Monthly Compliance** display

6.2.1. Compliance



1. On the **Outputs** tab in the **Summary** section click on the **Key Risk Indicators** **KRI** button.
2. In the **Key Risk Indicators** section, the opening table for the Key Risk Indicator defaults to **Compliance**, which details the FTL Compliance Percentage overall and per ID#, as well as the percentage of time in each FAID Condition.
3. The **Compliance Work Schedule** table can be sorted by:
 - ID#
 - Total Hours
 - Total Hours >FTL
 - Compliance (%)
 - FAID Condition Green %
 - FAID Condition Yellow %
 - FAID Condition Red %
 - Peak FAID Score

Display Options	
Display	Compliance
Sort By	ID#
Order	Ascending

FTL Compliance %							
Work Schedule	Total Hours	Total Hr > Tolerance	Compliance (%)	FAID Condition Green %	FAID Condition Yellow %	FAID Condition Red %	Peak FAID Score
1	985.4	28.3	97.1	92.8	4.3	2.9	116

Compliance Work Schedule 1							
ID#	Total Hours	Total Hrs> FTL	Compliance (%)	FAID Condition Green %	FAID Condition Yellow %	FAID Condition Red %	Peak FAID Score
1	192.8	5.6	97.1	92.2	4.9	2.9	107
2	146.8	0.0	100.0	96.7	3.3	0.0	80
3	157.4	0.0	100.0	99.6	0.4	0.0	74
4	131.0	3.5	97.3	94.3	3.1	2.7	95
5	159.9	4.9	97.0	93.0	4.0	3.0	102
6	197.5	14.3	92.8	84.0	8.8	7.2	116

As part of the Key Risk Indicators, the **FTL Compliance %** table indicates the Total Hours worked over the whole Work Schedule, the Total Hours worked above the Fatigue Tolerance Level, the Compliance as a percentage and the percentage of time spent in the different FAID Conditions.

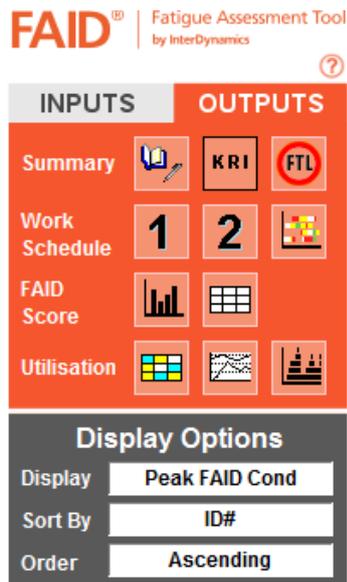
This is further refined at the lower table, where the figures are broken down by individual ID# statistics.

TIP: In order to facilitate quicker and easier access to the data, direct navigation is possible to a chosen ID's FAID Score Plot or Table from any table of summary or Work Schedule in the Output sections via a simple right-click selection.

Compliance Work Schedule 1							
ID#	Total Hours	Total Hrs> FTL	Compliance (%)	FAID Condition Green %	FAID Condition Yellow %	FAID Condition Red %	Peak FAID Score
1	164.8	0.0	100.0	98.2	1.8	0.0	79
2	146.8	0.0	100.0	96.7	3.3	0.0	80
3	157.4	0.0	100.0	99.6	0.4	0.0	74
4	131.0	3.5	97.3	94.3	3.1	2.7	95
5	130.9	1.6	97.0	93.0	4.0	1.2	91
6	156.5	1.9	92.8	84.0	8.8	1.2	95

View FAID Score Plot
View FAID Score Table

6.2.2. Peak FAID condition for Work Periods



1. On the **Outputs** tab, in the **Summary** section click on the **Key Risk Indicators** **KRI** button.
2. In the Key Indicators select the **Peak FAID Cond** from the **Display Options**.
3. The **Work Schedule** table can be sorted by:
 - ID
 - #Green
 - #Yellow
 - #Red
 - Total
 - %Green
 - %Yellow
 - %Red

Peak FAID Condition	# of Work Periods	% of Work Periods
Green	61	67.8
Yellow	17	18.9
Red	12	13.3
Total	90	100.0

ID#	# of Work Periods			Total	% of Work Periods		
	Max Green	Max Yellow	Max Red		Max Green	Max Yellow	Max Red
1	11	3	2	16	68.8	18.8	12.5
2	11	5	0	16	68.8	31.3	0.0
3	14	2	0	16	87.5	12.5	0.0
4	8	3	2	13	61.5	23.1	15.4
5	8	2	3	13	61.5	15.4	23.1
6	9	2	5	16	56.3	12.5	31.3

The Peak FAID Conditions for Work Periods tables provide a breakdown of the Work Periods based on the Peak FAID Conditions achieved.

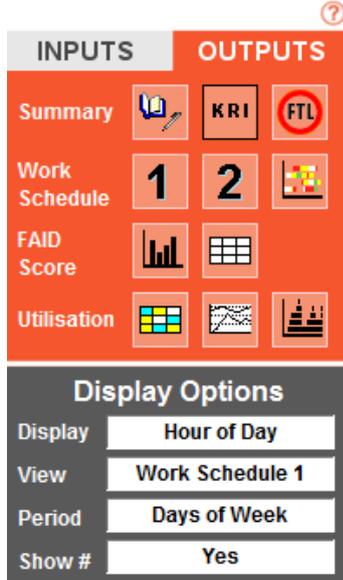
The top table shows the total number of work periods in the Work Schedule, how many work periods and the percentage of work periods categorised into each Peak FAID Condition.

The lower table shows the number and percentages of work periods for each individual ID and how they are categorised into each Peak FAID Condition.

Note: FAID nominally categorises FAID Conditions using the following scale:

- **Red** (Above FTL)
- **Yellow** (Within 10 points of FTL)
- **Green** (Less than -10 points below FTL)

6.2.3. Hour of Day Profile



1. On the **Outputs** tab in the **Summary** section click on the **Key Risk Indicators** **KRI** button.
2. In the **Display Options** select **Hour of Day**.
3. The **Hours Worked Profile** table and **Percentage (%) of Hours Worked > Tolerance Level** table can display:
 - Days of Week
 - Weekly
 - Monthly

Hours Worked Profile																								
	Hr 1	Hr 2	Hr 3	Hr 4	Hr 5	Hr 6	Hr 7	Hr 8	Hr 9	Hr 10	Hr 11	Hr 12	Hr 13	Hr 14	Hr 15	Hr 16	Hr 17	Hr 18	Hr 19	Hr 20	Hr 21	Hr 22	Hr 23	Hr 24
Sun	2	2	2	1			1	10	10	10	10	10	10	10	10	8	6	6	6	6	5	3	2	
Mon	2	2	2	1			1	7	7	7	7	7	7	7	7	5	6	7	7	6	6	5	4	
Tue	4	4	4	2				8	8	8	8	8	8	8	8	6	6	6	6	6	6	5	3	
Wed	3	3	3	2	1			4	4	4	4	4	4	4	4	4	6	9	9	9	9	9	8	
Thu	8	8	8	6	3		2	10	10	10	10	10	10	10	10	10	6	7	9	9	7	7	6	5
Fri	5	5	5	3	1		1	11	11	11	11	11	11	11	11	11	8	9	11	11	11	11	9	9
Sat	9	9	9	7	4		1	7	7	7	7	7	7	7	7	7	5	5	5	5	4	2	2	

Percentage (%) of Hours Worked > Tolerance Level																								
	Hr 1	Hr 2	Hr 3	Hr 4	Hr 5	Hr 6	Hr 7	Hr 8	Hr 9	Hr 10	Hr 11	Hr 12	Hr 13	Hr 14	Hr 15	Hr 16	Hr 17	Hr 18	Hr 19	Hr 20	Hr 21	Hr 22	Hr 23	Hr 24
Sun								50	20	5														
Mon								100	29	29	29	8									1	17		
Tue									13	13	13	10									8	17	19	
Wed																								
Thu																								
Fri																								
Sat																								

The Hours of Day Worked Profile screen shows the **Hours Worked Profile** table and the **Percentage (%) of Hours Worked > Tolerance Level** table. On this screen the user can examine the relative fatigue exposure at each hour of the day.

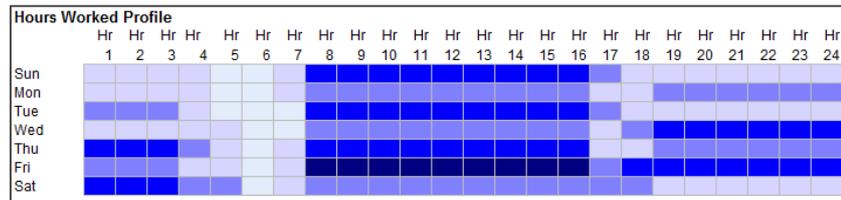
The **Hours Worked Profile** table shows the total number of hours worked at specific times of the day for the entire Work Schedule.

The **Percentage of Hours Worked > Tolerance Level** table shows the percentage of hours worked at specific times of the day that exceed the set FTL.

NOTE:

- In the **Hours Worked Profile** table - the greater the number of hours worked the deeper the colour blue.
- In the **Percentage of Hours Worked > Tolerance Level** table – the greater the percentage of hours above the FTL the deeper the colour purple.
- The cells in both tables correspond to the same period of time.
- In the KRI's Hours Worked Profile section the number displayed for Hours Worked Profile can be switched off if there are large numbers in the analysis that are affecting the view. Clicking in the cell **Show #** toggles between **Yes** (display numbers) and **No** (don't display numbers).

Display Options	
Display	Hour of Day
View	Work Schedule 1
Period	Days of Week
Show #	No



6.2.4. Monthly Compliance Graph

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by InterDynamics

INPUTS OUTPUTS

Summary  **KRI** 

Work Schedule **1** **2** 

FAID Score  

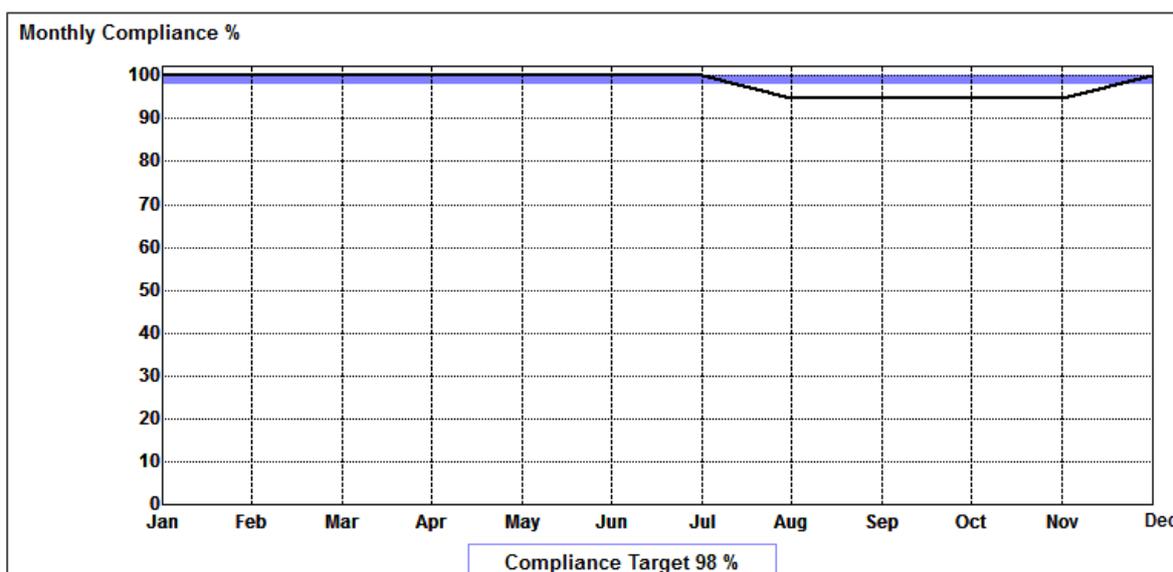
Utilisation   

Display Options

Display **Monthly Compliance**

View **Work Schedule 1**

1. On the **Outputs** tab in the **Summary** section click on the **Key Risk Indicators** **KRI** button.
2. In the Display Options select **Monthly Compliance**.

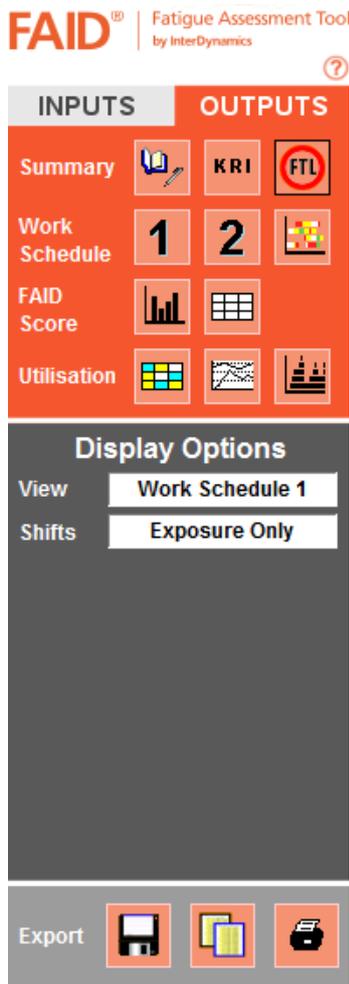


The Monthly Compliance Graph is a graphical output reporting the overall **Compliance %** based on the period of the Work Schedule analysed for each month of the year.

It is useful as an auditing tool once a substantial portion of roster data is available (e.g. 1 year).

In Inputs under Tolerance Thresholds – Fatigue Tolerance Level, the user can set the Target Compliance percentage for the Work Schedule. The Monthly Compliance Graph tracks compliance against the target compliance over a twelve month period.. On the graph, above the set Target Compliance level is coloured blue, below is white. If the graph line dips below the blue into the white in a given month, the Work Schedule for that month is non-compliant. By default, the Target Compliance is set to 98%.

6.3. Exposure Logs / Work Periods in FAID Red Condition



The FTL Exposure Logs screen displays a table output for reporting individual work period details for individual IDs that have exceeded the FTL during a specific work period. There are two exposure log reports available for use:

- Exposure Only
- Exposure and History

1. On the **Outputs** tab in the **Summary** section click on the **Exposure Logs**  button.
2. In the **Display Options Shifts** section, select to view **Exposure Only** or **Exposure and History** viewing on the Report.

6.3.1. Exposure Only Log

The **Exposure Only** log displays only the shifts/work periods that have exceeded the FTL. It displays the amount of time for the work period an individual ID will spend in the Yellow and Red FAID Conditions. It also allows the user to record and describe, against the work period, any Controls put in place to mitigate any risks involved, or what operational circumstances resulted in the exceeding of the FTL.

To record Controls or other commentary, the user clicks in the **Controls Applied** cell in the applicable row. **Yes** then appears in the cell and the user can enter the control applied in the 'Describe Controls Applied' row that becomes visible below. To **remove** the commentary, delete the Control description/commentary entered and click on **Yes** and the cell reverts to a blank cell (no controls applied). Clicking **Yes** again closes the Describe Controls Applied row.

FTL EXPOSURE LOGS										
ID#	Start	End	FAID Condition Yellow	FAID Condition Red	Peak FAID Score	Peak FAID Condition	Controls Applied	Non-Work	Work	
1	4	9 Jul 14 1730	10 Jul 14 0430	45min	1hr 32min	89	9		14.3	11.0
2	4	18 Jul 14 1730	19 Jul 14 0436	1hr 9min	1hr 57min	95	15	Yes	14.1	11.1
3	Describe Controls Applied:									
4	5	18 Jul 14 1730	19 Jul 14 0430	44min	1hr 38min	91	11		13.2	11.0
5	6	18 Jul 14 1730	19 Jul 14 0436	1hr 7min	1hr 56min	95	15		14.0	11.1

Figure 6-1 Exposure Only table

6.3.2. Exposure and History Log

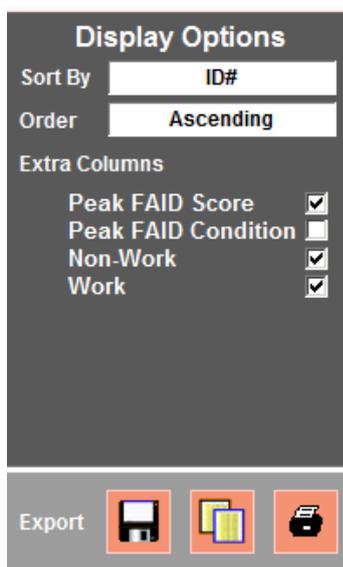
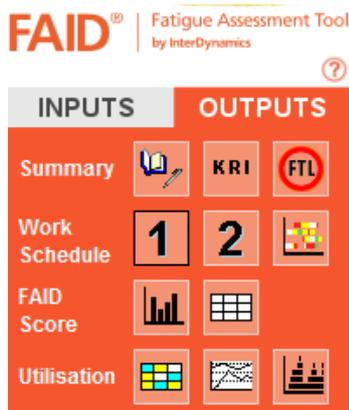
The **Exposure and History Log** displays only the shifts/work periods that have exceeded the FTL, as well as the details of the shifts in the proceeding 168 hours. This allows the user to investigate the shift pattern that caused the higher fatigue exposure, and make potential changes to an individual’s work periods to avoid exposure to the Red FAID Conditions (if planned shifts). Once again users are also able to record reasons for higher exposure and any controls implemented against the relevant work period.

To record Controls or other commentary, the user clicks in the **Controls Applied** cell in the applicable row. **Yes** then appears in the cell and the user can enter the control applied in the ‘Describe Controls Applied’ row that becomes visible below. To **remove** the commentary, delete the Control description/commentary entered and click on **Yes** and the cell reverts to a blank cell (no controls applied). Clicking **Yes** again closes the Describe Controls Applied row.

FTL EXPOSURE LOGS										
ID#	Start	End	FAID Condition Yellow	FAID Condition Red	Peak FAID Score	Peak FAID Condition	Controls Applied	Non-Work	Work	
1	4	4 Jul 14 0700	4 Jul 14 1615			29	-51			9.3
2	4	5 Jul 14 0700	5 Jul 14 1726			39	-41		14.8	10.4
3	4	6 Jul 14 0700	6 Jul 14 1600			50	-30		13.6	9.0
4	4	7 Jul 14 1730	8 Jul 14 0336			64	-16	Yes	25.5	10.1
5	Describe Controls Applied:									
6	4	8 Jul 14 1730	9 Jul 14 0312	30min		74	-6		13.9	9.7
7	4	9 Jul 14 1730	10 Jul 14 0430	45min	1hr 32min	89	9		14.3	11.0
8	4	13 Jul 14 0700	13 Jul 14 1624			34	-46		74.5	9.4
9	4	14 Jul 14 0700	14 Jul 14 1651			43	-37		14.6	9.8
10	4	15 Jul 14 0700	15 Jul 14 1704			51	-29		14.2	10.1
11	4	16 Jul 14 1730	17 Jul 14 0454	36min		77	-3		24.4	11.4
12	4	17 Jul 14 1730	18 Jul 14 0324	1hr 2min		79	-1		12.6	9.9
13	4	18 Jul 14 1730	19 Jul 14 0436	1hr 9min	1hr 57min	95	15	Yes	14.1	11.1
14	Describe Controls Applied:									
15	5	14 Jul 14 0700	14 Jul 14 1632			13	-67		147.2	9.5
16	5	15 Jul 14 0700	15 Jul 14 1735			24	-56		14.5	10.6
17	5	16 Jul 14 1730	17 Jul 14 0418			59	-21		23.9	10.8

Figure 6-2 Exposure & History Log Table

6.4. Work Schedule 1 & 2



Work Schedules 1 and 2 are a visual display of the Work Schedules with the FAID Condition against each individual shift and how many hours and minutes were spent in each Condition.

1. On the **Outputs** tab in the **Work Schedule** section click on the **Work Schedule 1**  button.

2. When a second Work Schedule has been added for a comparison of actual to planned Work Schedules (for example), click on the **Work Schedule 2**  button.

3. The default **Sort By** display is sort by **ID# / Ascending**.

4. The Extra Columns Display section provides the opportunity to display additional information by checking the boxes against each option. Work schedules can be sorted by:

- ID#
- Start
- End
- FAID Condition Green
- FAID Condition Yellow
- FAID Condition Red
- Peak FAID Score
- Non-work
- Work

5. Clicking on the **Copy Work Schedule Output to**

Clipboard  button allows the data to be used in reports.

WORK SCHEDULE 1 OUTPUT										
ID#	Start	End	FAID Condition Green	FAID Condition Yellow	FAID Condition Red	Peak FAID Score	Non-Work	Work		
1	4	18 Jul 14 1730	19 Jul 14 0436	8hr 1min	1hr 9min	1hr 57min	95	14.1	11.1	
2	6	18 Jul 14 1730	19 Jul 14 0436	8hr 3min	1hr 7min	1hr 56min	95	14.0	11.1	
3	5	18 Jul 14 1730	19 Jul 14 0430	8hr 39min	44min	1hr 38min	91	13.2	11.0	
4	4	9 Jul 14 1730	10 Jul 14 0430	8hr 43min	45min	1hr 32min	89	14.3	11.0	
5	1	3 Jul 14 0630	3 Jul 14 1612	9hr 42min			43	0.0	9.7	
6	1	4 Jul 14 0630	4 Jul 14 1719	10hr 49min			51	14.3	10.8	
7	1	5 Jul 14 0630	5 Jul 14 1640	10hr 10min			60	13.2	10.2	
8	1	6 Jul 14 0630	6 Jul 14 1706	10hr 36min			68	13.8	10.6	
9	1	7 Jul 14 0700	7 Jul 14 1600	8hr 20min	40min		75	13.9	9.0	
10	1	10 Jul 14 0630	10 Jul 14 1700	10hr 30min			43	62.5	10.5	
11	1	11 Jul 14 0630	11 Jul 14 1754	11hr 24min			52	13.5	11.4	
12	1	12 Jul 14 0630	12 Jul 14 1714	10hr 44min			62	12.6	10.7	
13	1	13 Jul 14 0630	13 Jul 14 1657	9hr 50min	37min		71	13.3	10.4	
14	1	14 Jul 14 0630	14 Jul 14 1701	8hr 52min	1hr 39min		79	13.6	10.5	

Figure 6-3 Work Schedule 1 sorted by FAID Condition Red/Descending

6.5. FAID Gantt Chart

The screenshot shows the FAID software interface. At the top, there is a logo for 'FAID® Fatigue Assessment Tool by InterDynamics'. Below this is a navigation bar with 'INPUTS' and 'OUTPUTS' tabs. Under 'OUTPUTS', there are several icons for different views: Summary, KRI, FTL, Work Schedule, FAID Score, and Utilisation. The 'Work Schedule' icon is selected, and a sub-menu is open showing '1' and '2' options. Below the navigation bar is a 'Display Options' panel. It has a 'View' dropdown set to 'Work Schedule 1' and a 'Sort By' dropdown set to 'ID#'. There is a 'Range' section with input fields for '1' to '20' of '30'. The 'Scroll Bar' is set to 'Full'. There are 'Export' icons for a camera and a printer. At the bottom, there is another 'Scroll Bar' set to 'Month' and a 'Step' dropdown set to 'Month'.

The Gantt Chart is a visual tool that displays each work period for individuals within the Work Schedule as a separate coloured block. If a Fatigue Tolerance Level has been nominated, the work period is displayed by its Peak FAID Condition colour.

1. On the Outputs tab in the Work Schedule section click on the Gantt Chart  button.
2. The Gantt Chart display can be changed using the Display Options. The Sort by options available are:
 - ID#
 - Peak FAID Score
 - Non-Compliance %
3. The number of individual IDs and the position in the ranking can be changed to the user's needs using the **Range** on the Control Panel.
4. The Period view can be changed using the **Scroll Bar** on the Control Panel. The options available are
 - Day
 - Week
 - Month
 - Year
 - Full (Default view)
5. When anything other than **Full** is selected the **Step** 

button can be used to step to the left, right, up or down and the length of the step can be determined (Day, Week, Month, Year) by selecting the appropriate **Step** from the drop down menu.

6. The Gantt Chart can display using either Work Schedule 1, 2, or a comparison of the two Work Schedules.

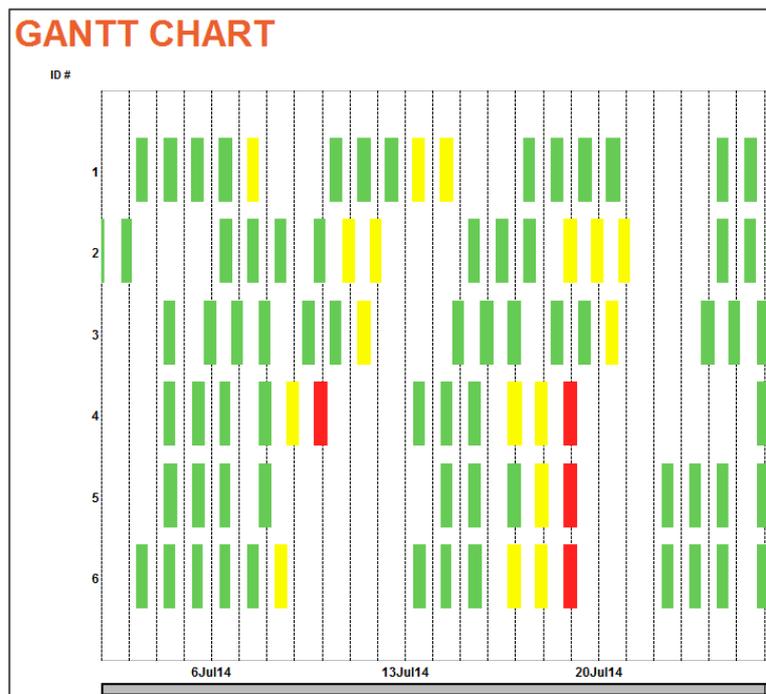
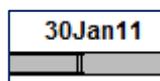


Figure 6-4 Fatigue Gantt Chart ranked by ID#

NOTE: The horizontal scroll bar at the bottom of the graph can be adjusted to change the x-axis scale view for the graph. Left click and drag to the left or right the double vertical bars in the grey horizontal scroll bar.



NOTE: An event details box will display when a block on the Fatigue Gantt Chart is clicked. The Event Details box displays information relating to the selected work period. The user can navigate to a more specific table or display for further review.

ID#	Start	End	FAID Condition Green	FAID Condition Yellow	FAID Condition Red	Peak FAID Score	Non- Work	Work
110320	11 Dec 11 0740	11 Dec 11 1240	4hr 36min	24min		74	15.4	5.0

Work Period

Navigation: < > Navigate to: FAID Score Table GO CLOSE

Figure 6-5 Event details displayed for Work Period

6.6. FAID Score Plot

FAID® | Fatigue Assessment Tool
by InterDynamics

INPUTS | **OUTPUTS**

Summary | KRI | FTL

Work Schedule | 1 | 2

FAID Score | [Bar Chart Icon] | [Table Icon]

Utilisation | [Gantt Chart Icon] | [Stacked Bar Chart Icon]

Display Options

Display: Single View

View: Work Schedule 1

Sort By: ID#

Rank: 1 of 30

Export: [Camera Icon] [Printer Icon]

The FAID Score Plot displays the progress of an individual IDs' FAID Scores over the course of the work periods (shifts). If a Fatigue Tolerance Level has been set for the analysis then the FAID Score plot is displayed in the colour of the highest FAID Condition achieved for each work period.

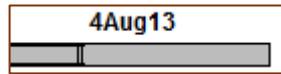
Different IDs' graphs can be viewed by changing the ID number within the Summary Details table at the top of the screen, or by changing the Rank fields on the Outputs Panel.

1. In the **Outputs** tab in the **FAID Score** section, click on the **FAID Plot Score**  button.
2. In the **Single View** Display, users can view different IDs' FAID Score Plot graphs by
 - Manually entering in the ID# in the Rank section of the Control Panel;
 - Clicking the Left or Right arrows in the Rank section on the Control Panel; or
 - Manually entering in the ID# or selecting from a dropdown the ID# value within the ID# field of the Summary Details table.

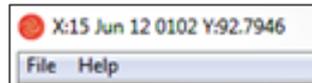


Figure 6-6 FAID Score Plot ranked by Individual

NOTE: The horizontal scroll bar at the bottom of the graph can be adjusted to change the x-axis scale view for the graph. Left click and drag to the left, or right, the double vertical bars in the grey horizontal scroll bar.



NOTE: To get a reading at an exact point on the graph, left click on the graph (and can also hold down left click and drag around) to reveal the x and y-axis co-ordinates, which are displayed in the very top left hand corner of the program.



6.6.1. Compare FAID Score Plots

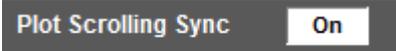
Users have the ability to compare between various IDs' FAID Score Plots on the one screen. This function can be used to view the differences between various IDs' FAID Score Plots.

1. In the **Display Options** panel, click the **Display** field and change from **Single View** to



Figure 6-7 FAID Score Plots comparing two individuals

2. Change the number in the ID# value field in the lower Detail table to compare a different IDs' FAID Score Plot graph with the one at the top of the screen, or click the Left or Right arrows on the Display Options Panel.

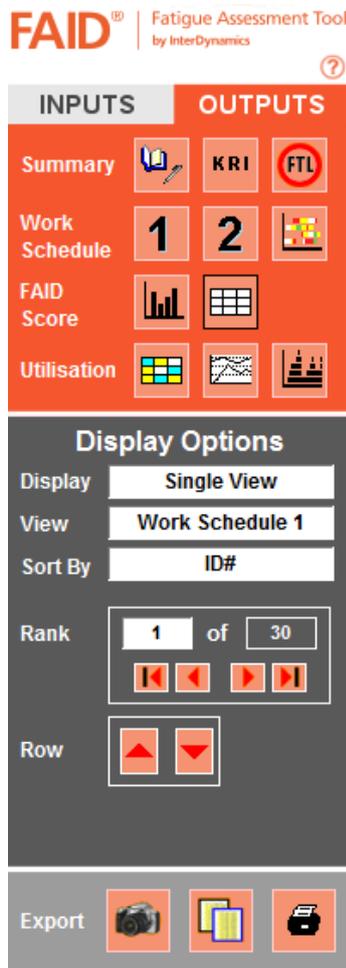
3. The user has the option to sync the scrolling of both plots , or by toggling the **On** to **Off** can look at different dates of the FAID Score Plots for either ID.
4. When the Compare View display is selected, the user can click on the **Move Details**  arrows to move an ID either up or down from the top or bottom plot.
5. Click in the Display field to return to **Single View** to return back to the single FAID Score Plot display.

6.6.2. Capture Plot

Users have the ability to capture a screenshot of various graphs and tables within FAID. When FAID is in Output mode, the Camera Icon will be displayed to indicate screen capture availability. Pressing this button will allow the output image to be saved as a bitmap (.BMP) file, which can then be printed or inserted into a report as required.

1. Click the **Camera**  button to capture a screenshot of all the data on the screen.
2. Enter or select a name for the file.
3. Choose the folder/file to save the file in.
4. Click the **Save** button.

6.7. FAID Score Table



The **FAID Score Table** displays the time spent at each FAID Condition for each work period, the Peak FAID Score for the IDs' work periods and the length of each work period and the prior rest break.

Users can also view an intra shift plot that displays the progress of the FAID Scores over a selected work period. Work Periods are selected by clicking on a work period row within the FAID Score Table at the bottom of the screen.

1. On the **Outputs** tab in the **FAID Score** section click the **FAID Score Table**  button. The FAID Score Table view will be displayed.
2. Users can alter the view of individual graphs by:
 - Manually entering in the ID# in the Rank section of the Control Panel;
 - Clicking the Left or Right arrows in the Rank section on the Control Panel; or
 - Manually entering in the ID# or selecting from a dropdown the ID# value within the ID# field of the Summary table.
3. The FAID Score Table can display using either Work Schedule 1 or 2 by clicking in the **View** field.
4. Click on a work period row within the FAID Score Table at the bottom of the screen to bring up the Work Period Graph (the row being analysed will now be highlighted).

5. The User can use the **Row** arrows  to move through the various shifts in the FAID Score Table to view the graph analysing the Work Period.

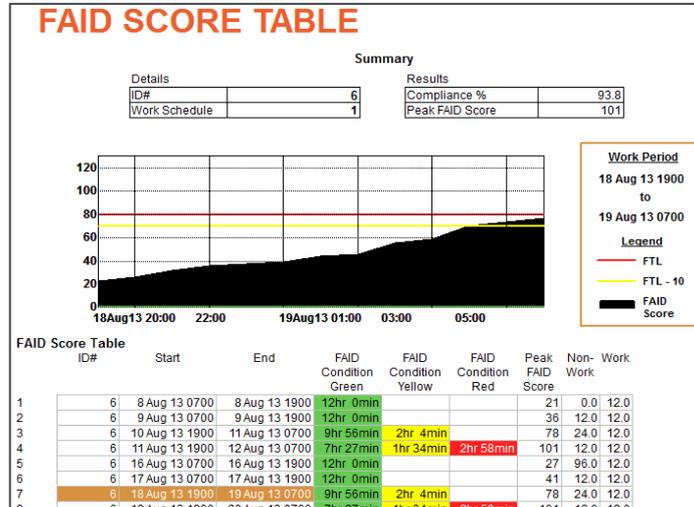
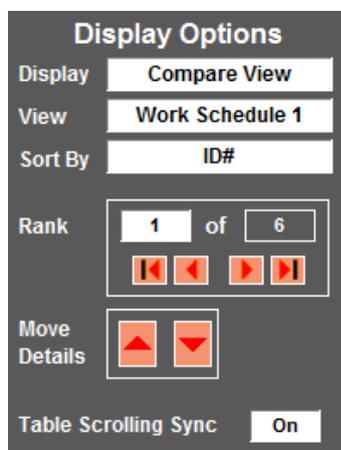
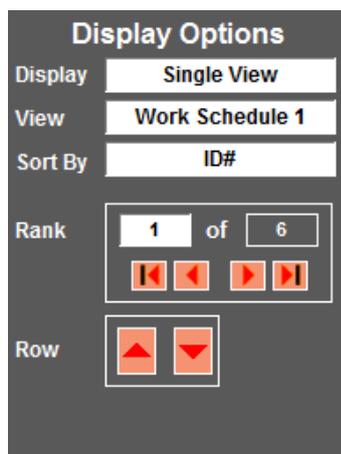


Figure 6-8 FAID Score Table analysing a particular ID#

6.8. Compare FAID Score Tables



Users have the ability to compare various IDs' **FAID Score Tables** on the one screen. This function can be used to view the differences between IDs' FAID Score Tables.

1. In the **Display Options** section, click in the **Display** field and select **Compare View** to compare the FAID Score Tables of two IDs in the same Work Schedule or the same ID in different Work Schedules.
2. In the FAID Score Tables screen, in the lower **Detail** table, change the number in the ID# value field to compare a different IDs' FAID Score Table with the one at the top of the screen, or click the Left or Right arrows when either in **Single View** or **Compare View** is selected in **Display**.
3. The user has the option to sync the scrolling of both tables **Table Scrolling Sync On** or by toggling the **On** cell to **Off** can look at different dates of the FAID Score Table for either ID.
4. In **Display**, click back to **Single View** to return back to the single FAID Score Table display.
5. When the Compare View display is selected, the user can click on the **Move Details**  arrows to move an ID either up or down from the top or bottom plot.

6.9. Display of Shift Types

FAID® Fatigue Assessment Tool
by InterDynamics

INPUTS | **OUTPUTS**

Summary | KRI | FTL

Work Schedule | 1 | 2

FAID Score

Utilisation

Display Options

View: Work Schedule 1

Display: Shift Type

Show: Days in Schedule

From: 7 Aug 13

Export

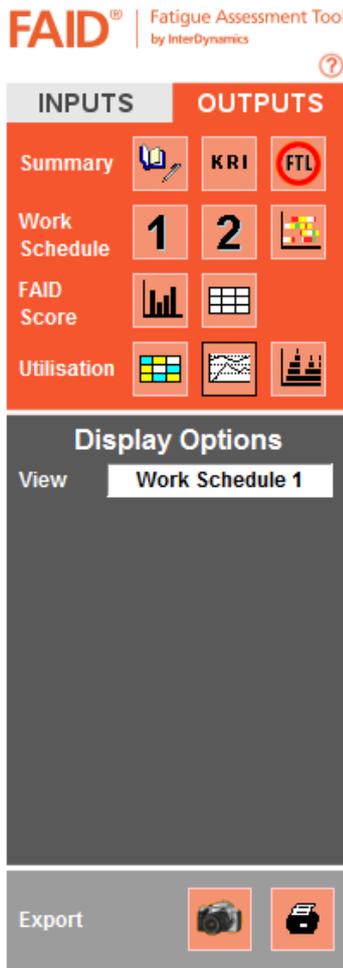
In the Utilisation section of the Outputs tab, the **Display of Shift Types** provides an overview of shift patterns based on the types of shifts set in the Input tab under Administration/Settings. The default view of Shift Types gives a count of the number of work periods, starting for the particular day that either matches the Shift Definition's start and end times, or if no match is found the Shift Definition that is closest to the work period's Start Time is used (unless changed to Start <= Detail Start Time in Inputs tab under Settings). For example, with the default settings in place, a work shift that starts at 0630 (when there are two Shift details in the list types Day Start Time 0645 and Night start Time 1845) will display in the Outputs as DAY, as the Start Time of 0630 is closest to the default 'Day' Start Time.

1. On the **Outputs** tab in the **Utilisation** section, click the  **Display Shift Types** button. The Display of Shift Types table will be displayed.
2. Users can alter the view of individual tables by clicking in the **Display Options**. Options available are:
 - Shift Type
 - Individuals
 - Gantt
3. Users also have the option of changing the **View** from **Days in Schedule** to a particular **Month**.

Individual Shifts		We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We		
ID#	6		D	D	N	N					D	D	N	N							D	D	N	N								
	32																															
	37						D	D	N	N																						
	81	D	D	D	D					D	D	D	D								D	D	D	D								
	92						D	D	N	N																						
	118	D	D	N	N					D	D	N	N																			
	120						D	D	N	N																						
	123													D	D	N	N															
	134						D	D	N	N																			D	D	N	N
	276						D	D						D	D	D					D	D	D	D				D	D	D	D	

Figure 6-9 Types of Shifts for individuals based on the days in the Work Schedule

6.10. Work Schedule Profiles



In the **Utilisation** section of the Outputs tab, **Work Schedule Profiles** provides an overview of number of work period starts (Daily, Monthly, Hours of Day), number of starts for different Shift Lengths, and also a count for work and non-work period lengths.

1. On the **Outputs** tab in the **Utilisation** section, click the

Work Schedule Profiles



button. The various Work Profiles will be displayed.

2. Users can alter the Work Schedule viewed by clicking in the View box of **Display Options**.

Daily Profile is the count of the number of shifts (y-axis) that start on a particular day of the week (x-axis). The user can zoom in using the scroll bar at the bottom of each graph.

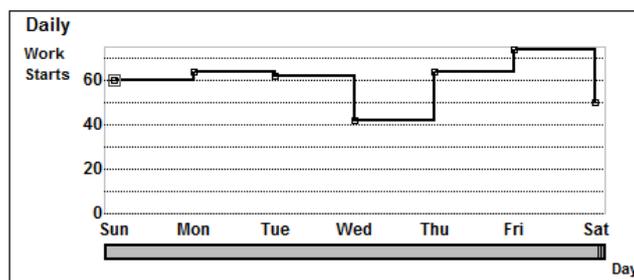


Figure 6-10 Daily Profile graph

NOTE: By clicking on the data point or any line on the graph the x and y-axis co-ordinates are revealed in the top left hand corner of the FAID screen.



Monthly Profile provides a count of the number of work starts in a particular month.

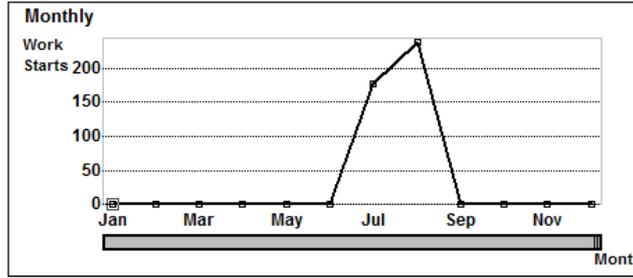


Figure 6-11 Monthly Profile graph

Hour of Day Profile provides a count of the number of work starts in a particular hour within a 24-hour period.

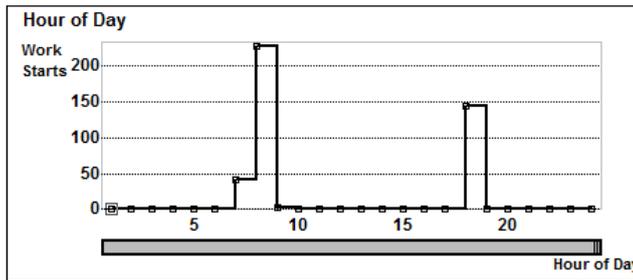


Figure 6-12 Hour of Day Profile graph

Work Lengths (Whole Hour) Profile provides the number of work starts for a particular duration, e.g. 21 shifts each of 9 hours duration.

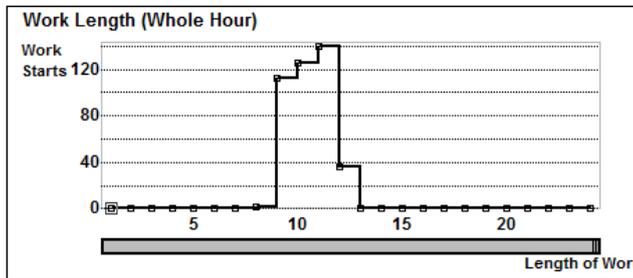


Figure 6-13 Work Lengths (Whole Hour) Profile graph

Non-Work Length (Whole Hour) Plot – Short [\leq 32 hours] provides the number of breaks (and their duration) under or equal to 32 hours in length, e.g. 14 x 22 hour breaks.

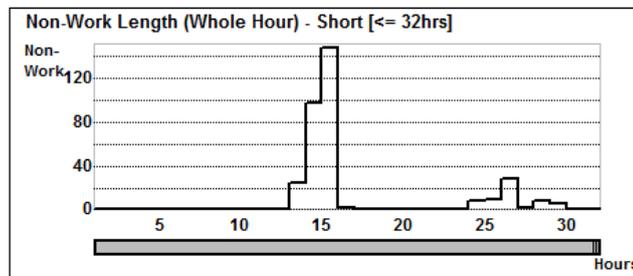


Figure 6-14 Non-Work Length (Whole Hour) Plot - Short [\leq 32 hours] graph

Non-Work Length (Whole Hour) Plot – Long [>32 hours] provides the number of breaks and their duration) over 32 hours in length, e.g. 2 breaks of 77 hours in duration.

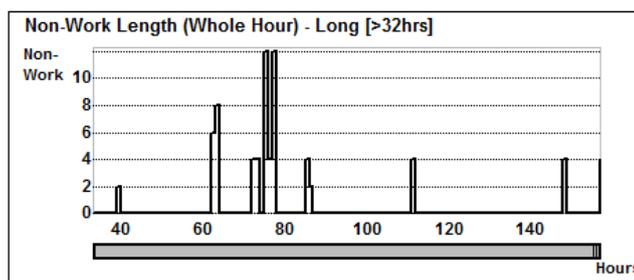
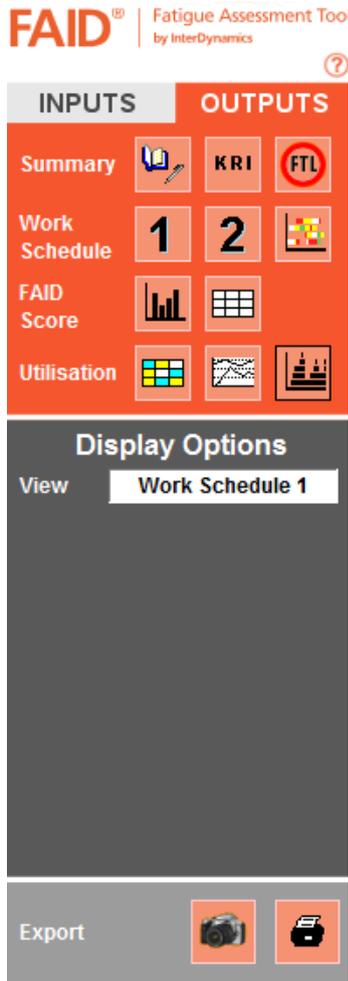


Figure 6-15 Non-Work Length (Whole Hour) Plot - Long [>32 hours]

6.11. Concurrent Work Periods



The Concurrent Work Periods Gantt Chart shows the number of shifts that occur at the same time or overlap, and shows the minimum number of individuals that would be needed to work the hours that have been analysed.

1. On the **Outputs** tab in the **Utilisation** section, click the **Concurrent Work Periods**  button.
2. Users can alter the Work Schedule viewed by clicking in the **Display Options**.
3. The scroll bar at the bottom can be used to change the view of the plot.

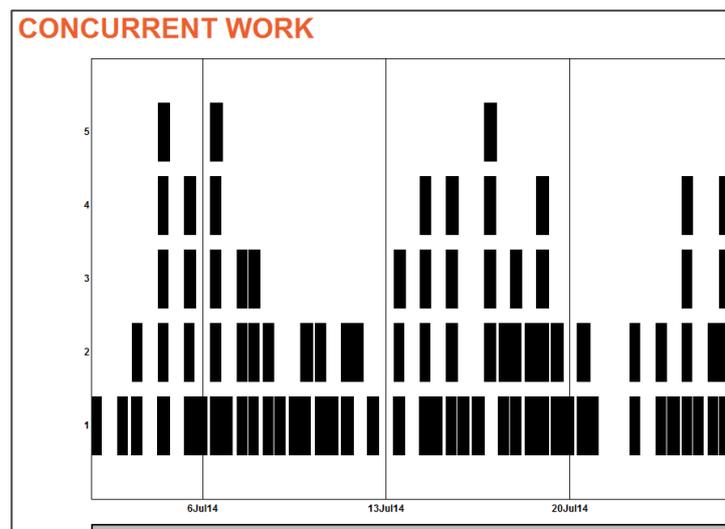
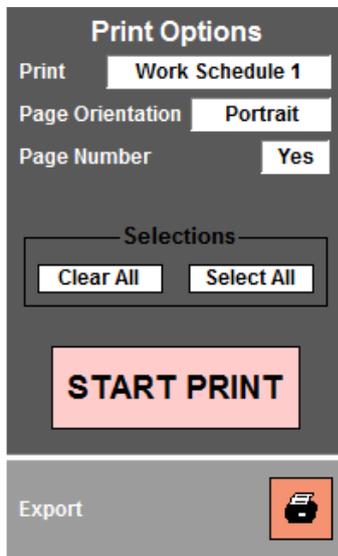


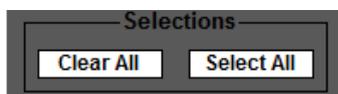
Figure 6-16 Utilisation Concurrent Work Gantt Chart

7. Printing



SELECT SECTIONS TO PRINT:

<u>Summary</u>	
Assessment Results	<input checked="" type="checkbox"/>
<u>Key Risk Indicators</u>	
Compliance	<input checked="" type="checkbox"/>
Work Periods	<input checked="" type="checkbox"/>
Hour of Day Profile	<input type="checkbox"/>
Monthly	<input type="checkbox"/>
Exposure Log	<input type="checkbox"/>
<u>Work Schedule</u>	
Work Schedule	<input type="checkbox"/>
Gantt	<input type="checkbox"/>
<u>FAID Score</u>	
Plot and Table	<input type="checkbox"/>



In each section of the Output data, the user has the ability to print out data.

1. Click on the  button to open up the Print Setup form.
2. When the user navigates to the Print section it will only have the section ticked that the user was previously viewing.
3. There is an option for the user to Clear All or Select All sections for printing.
4. If a Cover Sheet is required, click the Cover Sheet checkbox so it is ticked. Check the required boxes and enter details for the cover sheet:
 - Title (one or two lines)
 - Organisation
 - Date
 - Analysis Details
 - Fatigue Tolerance Level
5. Select the required sections to print by checking the corresponding checkboxes.
6. Click the **Print** button. The computer's print options will be displayed.
7. Select appropriate printer and then click on the **Print** button. The report will be printed to the selected printer.

NOTE: The Work Schedule views can be quite extensive if there is a lot of data involved, where possible the user might want to consider printing to a PDF or print only the Summary information.

Appendix A: InterDynamics' Methodology

Many organisations faced with the challenge of managing fatigue can easily become daunted by the prospect. Impairment associated with fatigue can be difficult to detect, and harder still, is judging the level of impairment that could present a danger. Added to the complexity of individual differences in experiencing fatigue is the context for individuals (e.g. job type, activities, environment, time of day, etc.) and the degree to which this is vulnerable to fatigue.

Given the diverse factors needed to be taken into account in managing work-related fatigue, a risk-based approach that gives consideration to models like James Reason's 'Swiss Cheese' model is often recommended.

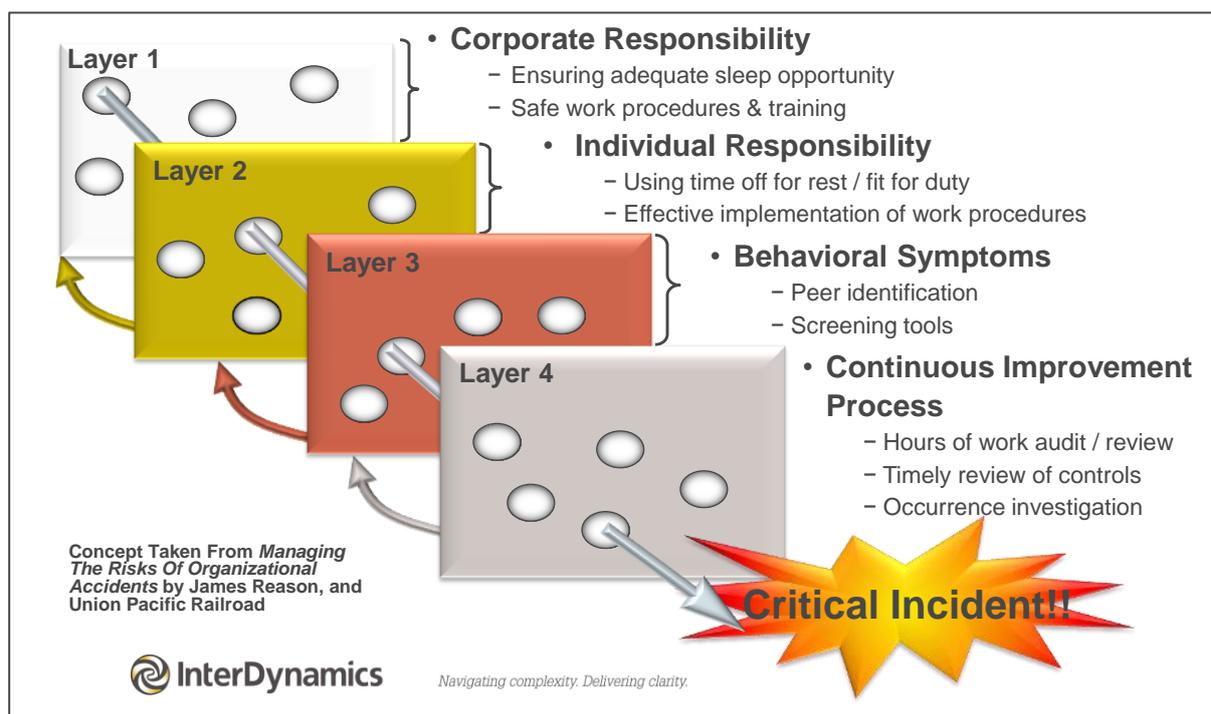


Figure 7-1 Fatigue Risk Management System Model

The Defences-in-Depth model (Dawson & McCulloch, Sleep Med. Rev. 2005) applies James Reason's model to the fatigue context, targeting prevention through a series of barriers, safeguards and defences. InterDynamics has included these concepts and ideas in its Risk-Based Approach to managing fatigue, summarised in the diagram *Our Risk-Based Approach to Managing Fatigue* at the end of this Appendix.

InterDynamics' approach recognises the development of an appropriately informed plan to manage fatigue (a Fatigue Management Plan/Procedure) as foundational to the effective implementation and on-going improvement of a Fatigue Risk Management System (FRMS). Staff engagement and consultation is key to a smooth FRMS implementation, as cultural change is often required for the organisation to transition its perception and management of fatigue in line with the organisations' fatigue policy commitment.

There are three key steps under InterDynamics' methodology:

1. **Determining** the fatigue risk profile of the organisation,
2. **Protecting** unacceptable fatigue-related risks, and
3. **Reviewing** systems to ensure protection measures remain adequate.

Suggested FRMS Scope and Implementation activities are outlined in the second & third columns of Figure 7-2, respectively.

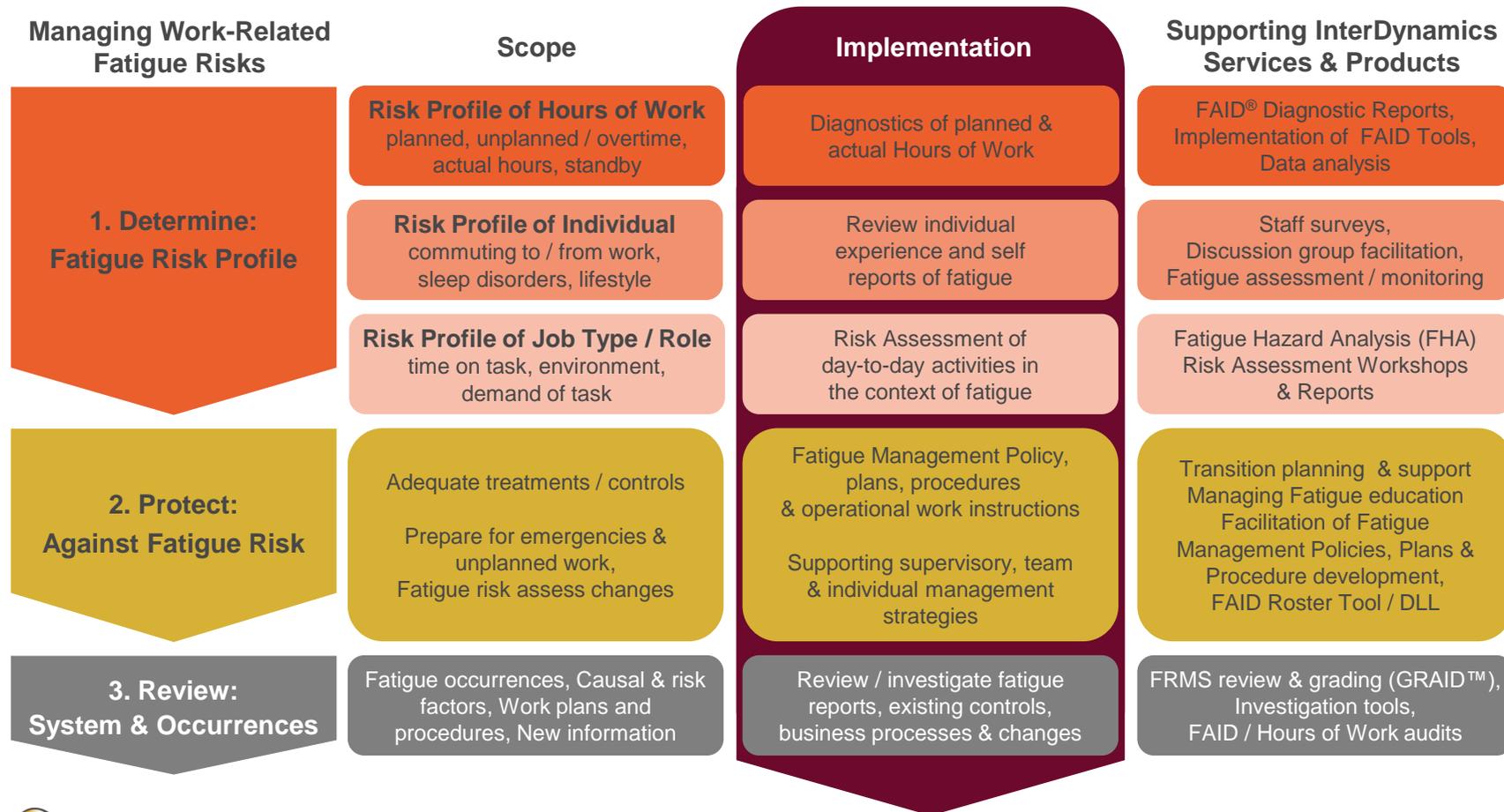
The last column presents supporting InterDynamics' services & products that facilitate the FRMS journey. Deliverables and findings from each implementation activity give additional insight into the organisational specific requirements to managing fatigue effectively, and provide valuable input into the Fatigue Management Plan and supporting Work Procedures.

Founded on staff engagement, shared responsibility and effective risk management, InterDynamics' Risk-Based Approach to managing fatigue targets improved safety and performance as key outcomes of the FRMS.

Products and services to assist in the development and implementation of multiple levels of control include:

- Organisational FRMS benchmarking and grading systems
- Fatigue surveys
- Managing fatigue training for employees
- Facilitation of Fatigue Hazard Analysis risk assessments
- Training in the context and use of FAID
- Change management support
- Assistance in incident/occurrence reporting and investigation
- Hours of work fatigue diagnostic reports (planned and actual)
- Data analysis
- Fatigue management policy, procedure and FRMS reviews and development, and
- The provision of decision-making support tools (such as the internationally recognised and scientifically supported biomathematical model FAID) to assist in the identification and treatment of fatigue-related risks.

Our Risk-Based Approach to Managing Fatigue



Navigating complexity. Delivering clarity.

Figure 7-2 Our Risk-Based Approach to Managing Fatigue

Appendix B: FAID Related References

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Appendix C: INPUTS Tab Buttons

Tolerance Level

Button	Name	Description
	Fatigue Hazard Analysis	Provides an overview of Fatigue Hazard Analysis information.
	Tolerance Thresholds	Allows the Fatigue Tolerance Level(s) and Target Compliance % to be set.
	FAID Conditions	Provides an explanation of FAID Conditions and how they are used within FAID

Work Schedule

Button	Name	Description
	Work Schedule 1	Presents Work Schedule 1 and allows data to be inputted and edited.
	Work Schedule 2	Presents Work Schedule 2 and allows data to be inputted and edited.
	Extra Work Analysis	Opens the Extra Shift Analysis Panel to allow impact of extra work shifts to be analysed before being added to the Work Schedule.

Admin

Button	Name	Description
	Settings	Provides access to Settings, including the setting of default shift patterns.
	Display Settings	Provides access to the Display View setup to allow menu buttons to be displayed or hidden.

Input Table Editing

Button	Name	Description
	Read Work Schedule from File	Allows a saved Work Schedule to be loaded onto the worksheet.
	Copy	Allows a Work Schedule to be copied onto another Work Schedule or exported into a spreadsheet or document.
	Paste	Allows a spreadsheet Work Schedule to be imported into FAID onto either Work Schedule 1 or Work Schedule 2.

Button	Name	Description
	Save	Saves the displayed Work Schedule to file.
	Sort Work Schedule	Sorts the displayed Work Schedule by ID number then by Date. Extra shifts added to a Work Schedule are added at the end of previously entered shifts. The Sort button moves shifts into their appropriate order, thereby resolving errors.
	Clear Work Schedule	Clears all data from the displayed Work Schedule.
	Load Sample Work Schedule	Loads the Sample Work Schedule. This can be used for practice or training purposes.
	Add Rows	Displays the Add Work Period to Work Schedule Function to allow shifts or work periods to be added to the displayed Work Schedule.
	Delete Rows	Displays the Delete Row from Work Schedule Function to allow nominated rows in the Work Schedule to be deleted.
	Copy Work Schedule 1 to Work Schedule 2	Copies shift data entered into Work Schedule 1 into Work Schedule 2 for editing. Note this button only appears when within Work Schedule 2.

Analysis Details

Button	Name	Description
	Date and Period Wizard	Ensures analysis will pick up latest Work Schedule data and automatically sets the Start Date (of reporting) seven days after the first date of shifts entered (represented by the 'History From' date). Note: To be effective FAID requires 7 days of data as history before meaningful analysis can begin.
	Analyse	Performs the FAID Score Analysis on any data entered into either Work Schedule using the details within the Analysis Details section.

Appendix D: OUTPUTS Tab Buttons

Summary

Button	Name	Description
	Summary	Provides display options for Apparent FTL, Cumulative Profile, Hours at FAID Score, Risk Profile and Shift Peak GYR Condition.
	Key Risk Indicators	Displays the Key Risk Indicators Panel on the Outputs Menu: Compliance, Peak FAID Condition for Work Periods, Hour of Day Profiles and the Monthly Compliance Display.
	FTL Exposure Logs	Provides details of which work periods (shifts) are exposed to FAID Condition Red (above FTL), and allows risk mitigation steps to be recorded. Includes Exposure Only and Exposure and History views.

Work Schedule

Button	Name	Description
	Work Schedule 1	Displays the output for Work Schedule 1, including time in FAID Conditions, Peak FAID Scores and length of Work and Non-Work periods.
	Work Schedule 2	Displays the output for Work Schedule 2, including time in FAID Conditions, Peak FAID Scores and length of Work and Non-Work periods.
	Export to Clipboard	Exports the Table to Clipboard.
	Gantt Chart	Displays work periods (shifts) colour coded for their Peak FAID condition.
	Capture	Clicking on button saves image.
	Click to move	When Gantt Chart is shown in anything other than Full view clicking on button moves chart to left, right, up or down.
	Print	Clicking on button takes user to print menu

FAID Score

Button	Name	Description
	FAID Score Plots	Displays a FAID Score Plot graph for individual ID numbers displaying a profile for each work period (shift), colour coded by the Peak FAID Condition of the work period.
	FAID Score Tables	Displays a FAID Score Table for individual ID numbers.

Utilisation

Button	Name	Description
	Shift Types	Provides a visual display of shift types (e.g. Day Shifts vs. Night Shifts).
	Work Schedule Profiles	Provides a visual display of Work Profiles.
	Concurrent Work	Displays a chart of the concurrent Work Periods (shifts) within a Work Schedule.