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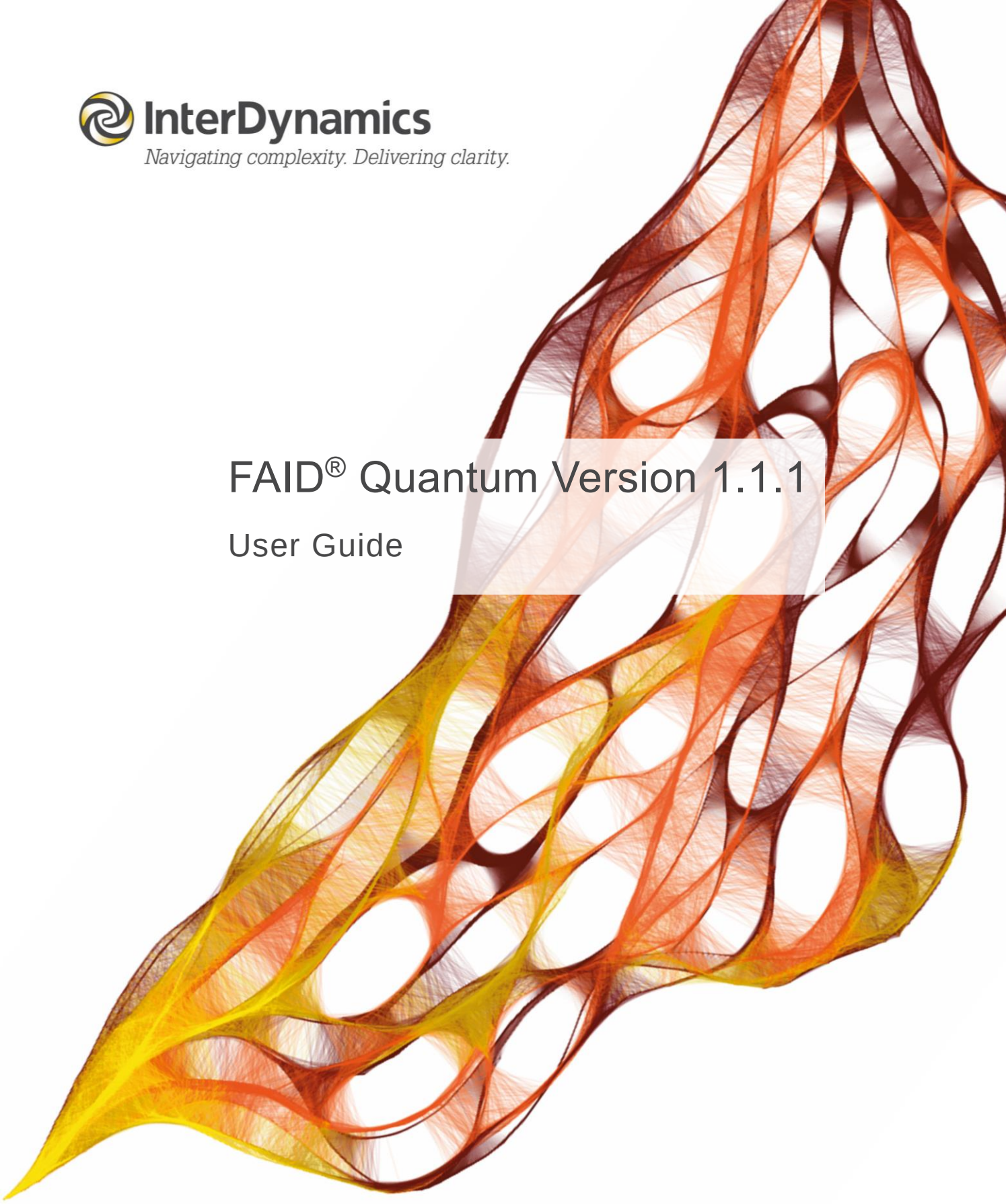

FAID® Quantum Version 1.1.1

User Guide

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Contents

This document is based on FAID Quantum Version 1.1.1

1. FAID Quantum Fatigue Assessment Software Introductory Notes

InterDynamics' FAID software and Biomathematical Model (BMM) has been an industry standard for fatigue exposure prediction and fatigue management since its introduction in the late 1990s. In 2016, InterDynamics set a new standard with FAID Quantum, which offers a whole new level of scientifically-verified alertness prediction with a new BMM. FAID Quantum software can be customised according to the users' needs to include:

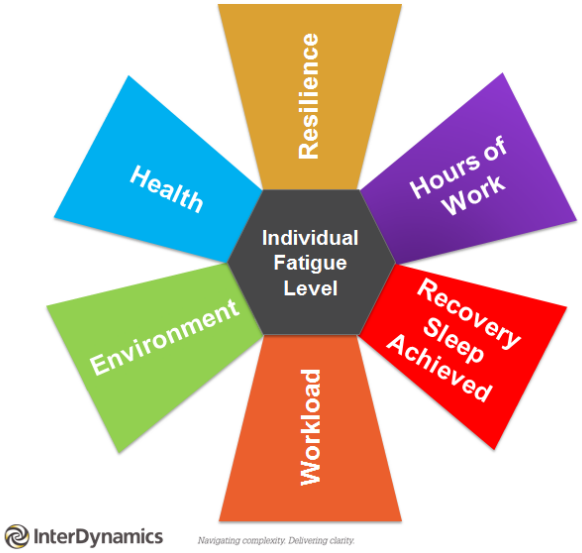
- FAID Score - using the FAID original BMM
- Optional Sleep Prediction and KSS Score - using the FAID Quantum BMM
- Optional time zone adaption (for adjustments when travelling over multiple time zones)
- Optional crew augmentation (for resting pilots on long flights)

The following document includes details of the two Biomathematical Models and all the software options. Please disregard information that does not apply to your needs and software options.

A user of a BMM is responsible for understanding how it works and its suitability for the purpose it is being used for. Please read BMM Warning for further details.

1.1. FAID Quantum Fatigue Assessment Software and Fatigue Risk Management

Fatigue levels for individuals can be the result of a number of factors including recovery sleep achieved (quality and quantity), hours of work impacts, workload, environment, health issues, and individual susceptibility/resilience to fatigue. Both work and non-work related fatigue factors contribute to safety risks at work, and as a result require proactive management by individuals and the organisation to ensure the risks associated with fatigue are controlled to a tolerable level.



FAID Quantum is a powerful analytical tool based on scientific knowledge which 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.

1.2. What you need to know about FAID Quantum

FAID Quantum has been developed using scientific research and knowledge gained over several decades on circadian factors, the effects of shift lengths, timing of shifts and the importance of previous work periods on fatigue and performance. The FAID Quantum software contains two biomathematical models of human alertness response to work and rest patterns associated with trans-meridian travel.

Many regulators and industry bodies recognise that within an FRMS, adequate management of fatigue-related risks associated with working hours involves more than simply limiting working hours. Circadian influences and biological limits to recovery are also important. Consideration of these factors and possible adaptation to time zone changes can most effectively and efficiently be supported by the strategic use of biomathematical models such as those in FAID Quantum.

FAID Quantum has been designed to be a powerful decision support tool based on what can be known with confidence: working hours or duty periods. FAID Quantum uses work hours (in UTC and local time for time zone version) as its inputs to predict the effect on fatigue and performance of different duty periods or work schedules, taking into account rest time and the number of time zones crossed. It models 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 Quantum considers the influence of work periods (time of day, length, how recent and time zones travelled) and human biological limits associated with sleep and recovery to determine work-related fatigue scores. FAID Quantum does not consider other personal factors that contribute to an individual's fatigue (i.e. sleep disorders, health, sleeping conditions etc.). However, there is an option to review the fatigue exposure taking into account less than full quality sleep during in-flight rest periods ("augmentation"). Like any biomathematical model, which (by definition) uses general population level data to provide a view of relative fatigue exposures, neither FAID Quantum nor any other model in the market can provide an accurate prediction of an individual's level of fatigue. To try to do so with FAID Quantum 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.

FAID Quantum does provide the option for actual sleep obtained to be considered in its calculations, if such data is available. While this enables FAID Quantum to reflect more closely the experience of an individual, the results are still based upon a statistical model representing the general population response to that sleep pattern and not a prediction of the individual's level of fatigue.

1.3. The FAID Quantum Biomathematical Models

No biomathematical model (BMM) can predict work-related fatigue completely, however the likelihood of fatigue impairment associated with different work hours can be reviewed using FAID Quantum software which includes two discrete BMMs.

Each of these BMMs has its own characteristics, sensitivities and strengths which are described in detail in the following sections.

1.3.1. FAID Standard BMM

The FAID Standard BMM was first released by InterDynamics in 1999 and has been a reliable contributor to assessing and managing fatigue risk since then.

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.

Using formulae and factors developed and validated by Dr Adam Fletcher and Professor Drew Dawson at the Centre for Sleep Research, University of South Australia, the FAID Standard BMM provides a representative score of the hours of work related fatigue exposure of a worker, based on the following biological determinants of fatigue:

a. Time of day of work and breaks
b. Duration of work and breaks
c. Work history in the preceding seven days
d. Biological limits on recovery sleep

This model is structured upon a probabilistic scoring method with weighting scores for each hour of a day for both work and rest. This model is most sensitive to the cumulative effects of consecutive work periods, particularly those at night.

1.3.1.1. Validation and assumptions

The formula and factors used by the FAID Standard BMM have been validated within simulated work environments and field-based situations by the Centre for Sleep Research, University of South Australia.

Provided below are the major assumptions used to develop the FAID Standard BMM.

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, Fletcher, Hursh, & Klerman, 2007). FAID is a statistical model and considers the changing likelihood and quality of recovery sleep at different times of the day.
2. The FAID Standard BMM takes into account a rolling 7-day history in its analysis, giving 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).

The development and validation of the FAID Standard BMM is well substantiated and has been published in numerous international peer-reviewed journals and books.

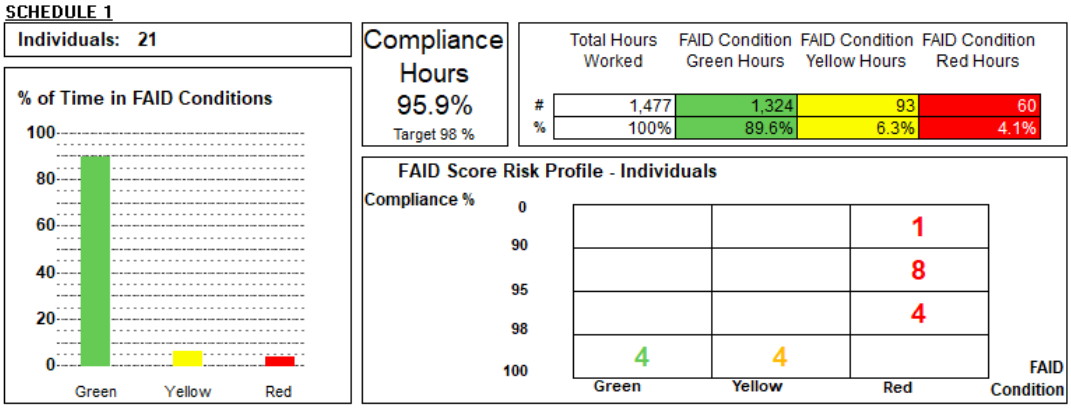
1.3.1.2. FAID Score

A standard work week of 40 hours, Monday to Friday, 9 a.m. to 5 p.m., when analysed, results in a peak FAID Score of 41. By comparison, a 40-hour week of 11 p.m. to 7 a.m. night shifts results in 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).

This score is used by the FAID Standard BMM.



Risk Profile displaying how many individuals peaked in Green, Yellow or Red FAID Score Condition

1.3.2. FAID Quantum BMM

The FAID Quantum BMM was introduced in 2016 and incorporates sleep prediction together with results in the more familiar Karolinska Sleepiness Scale (KSS).

The FAID Quantum BMM sleep prediction is based upon formulae developed by Dr David Darwent in conjunction with Professor Drew Dawson and Dr Greg Roach of the Appleton Institute, Central Queensland University. These algorithms are the best sleep-wake predictors that have yet been published (at the time of writing) in international peer-reviewed literature (Darwent, Dawson & Roach, 2012).

The FAID Quantum BMM is able to determine a predicted KSS score from predicted sleep periods utilising an implementation of the Three Process Model of Alertness (Akerstedt & Folkard,1995). The implementation in FAID Quantum BMM does not include the sleep inertia component of that model.

Most importantly, the FAID Quantum BMM allows organisations to see each of the steps in predicting fatigue. That is, the work-rest schedule, the estimated sleep-wake schedule and the resultant fatigue expressed as a KSS score.

By making the predicted sleep/wake schedule explicit, it is possible to review the degree with which the model is reflecting the real world experience of workers. This creates a direct measurable feedback mechanism for verifying FAID Quantum based on unique organisational data. This is a critical element of audit and compliance of a BMM as required under many regulatory environments.

FAID Quantum also provides the option for actual sleep obtained to be considered in its calculations. See **Section 1.7.4** *Actual Sleep*.

The FAID Quantum BMM focusses on the sleep periods consequential to the work periods and is particularly sensitive to sleep pattern disruptions and day-time sleep.

1.3.2.1. Validation

The formula and factors used by the FAID Quantum BMM have been validated by what may be the largest database of quality sleep-wake data in the world, incorporating nearly 15,000 days and nights of data collected by the Appleton Institute, Central Queensland University from various industries (including long-haul aviation) to underpin predictions.

The development and validation of the FAID Quantum BMM is well substantiated and has been published in numerous international peer-reviewed journals and books.

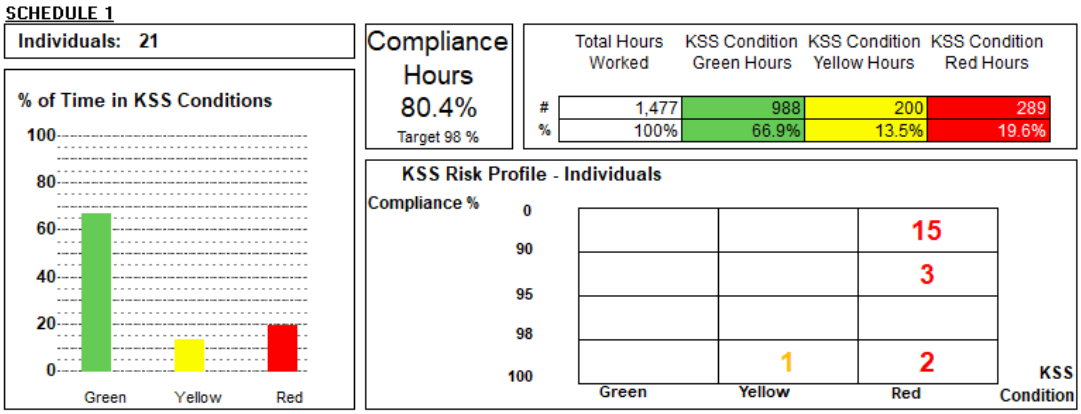
1.3.2.2. Karolinska Sleepiness Scale (KSS)

The KSS is a 9 point Likert scale often used when conducting studies involving self-reported, subjective assessment of an individual's level of drowsiness at the time.

The KSS scores are defined as follows:

9. Extremely sleepy, fighting sleep
8. Sleepy, some effort to keep alert
7. Sleepy, but no difficulty remaining awake
6. Some signs of sleepiness
5. Neither alert nor sleepy
4. Rather alert
3. Alert
2. Very alert
1. Extremely alert

The KSS has an extensive body of literature linking KSS scores to actual workplace performance and objective measures of fatigue. The FAID Quantum BMM incorporates the Karolinska Sleepiness Scale, providing predicted KSS Scores, enabling the user to better understand the numeric output aided by the descriptions associated with each score value.



Risk Profile displaying how many individuals peaked in Green, Yellow or Red KSS Condition

1.4. Setting Tolerance Levels

Biomathematical models do not make decisions on which work schedules are most appropriate in specific workplaces. What the models do, however, is provide information that can be useful when decisions about fatigue management need to be made. Tracking KSS & FAID Score results in relation to incident frequency, absenteeism levels, employee sick days or other organisationally meaningful data would allow a clearer illustration of the relationship between hours of work and its related costs.

Hours of work-related fatigue exposure can be limited by allocating work hours within a tolerance level or benchmark score.

As FAID Quantum produces both KSS and FAID scores it provides the facility for the user to set a **KTL** (**KSS Tolerance Level**) and a **FTL** (**FAID** Score **Tolerance Level**). Desirable compliance percentages can also be set. FAID Quantum provides reports specific to these settings.

Different Tolerance Levels may be set for specific tasks or roles. A lower Tolerance Level may be set for a higher risk task or role, and a higher Tolerance Level may be set for a lower risk task or role. For a specific task or role, one Tolerance Level may be used for planned hours of work, with the option of reviewing actual hours against a higher Tolerance Level, acknowledging that variances to the plan may occur on day of operations.

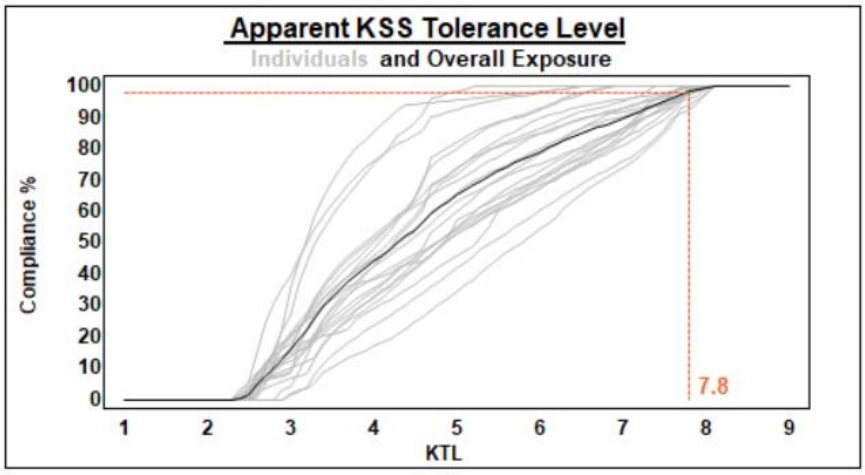
The list below represents an example of a combination of hours of work rules that could fit within an organisation's FRMS guidelines, utilising FAID Quantum software as a key component in the development and audit of fatigue risks associated with hours of work:

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

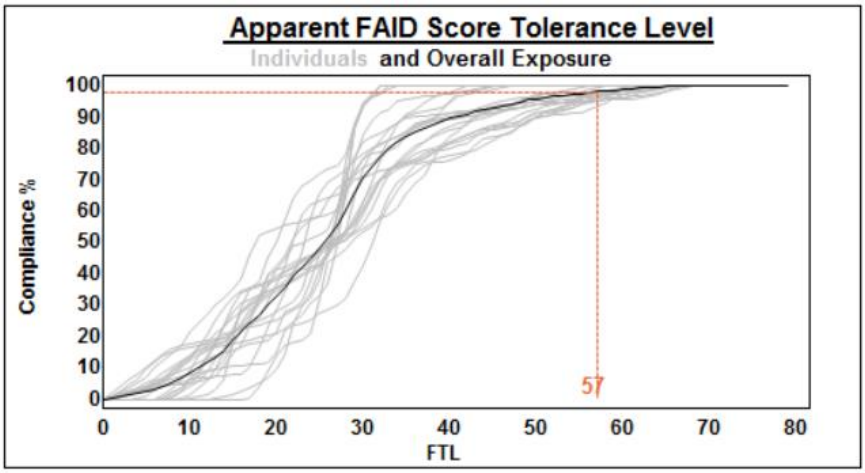
Tolerance Levels and target compliance percentages are usually determined by an organisation after carrying out a Fatigue Hazard Analysis (**FHA**) risk assessment for a specific role[1]. That is, a risk assessment which reviews the hazards of a role when fatigue is present. The risk assessment would take into account (among other things) the current hours of work fatigue exposure analysed using FAID Quantum, including, importantly, the Apparent Tolerance Levels (the overall hours of work fatigue exposure currently being tolerated by the organisation).

For more information on Tolerance Levels, please see Establishing Fatigue Tolerance Levels.

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



Apparent Tolerance Level - KSS



Apparent Tolerance Level - FAID Score

Understanding and managing an organisation's risk profile with relation to fatigue is an important process within a 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 Quantum 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;
- Drawing it all together with a fatigue risk grading will provide contextual data on the specific, system level fatigue-related risks for the organisation, and how to manage them effectively within a true risk-management framework.

As can be seen, the use of FAID Quantum in determining the Hours of Work risk profile is one component of many.

1.5. Research into circadian disruptions from changing time zones

The biggest challenge posed by multiple time-zone movement is the time required for the body to adjust to the new time-zone.

Research is not 100% conclusive regarding how adaptation to time zones occurs. There are, however, some principles that are generally agreed.

A number of researchers have proposed that the period of adjustment appears to depend on the direction of travel. Adjustment appears to be faster after westbound flights than eastbound flights (Klein & Wegmann, 1980).

More recent research (Waterhouse, Reilly, Atkinson & Edwards, 2007) has found that adaptation to an eastwards shift of more than 3 time zones takes, on average, two thirds as many days as the number of time zones crossed. That is, a 9E shift takes 6 days; a 6E takes 4 days, etc.

Additional research (Waterhouse, Edwards, Nevill, Atkinson, Reilly, Davies & Godfrey, 2000) found that adaptation to a westward shift of more than 3 time zones takes, on average, one half as many days as the number of time zones crossed. That is, an 8W takes 4 days; a 6W takes 3 days, etc.

Two other key papers (Auger & Morganthaler, 2009 and Eastman, Gazda, Burgess, Crowley, & Fogg, 2005) concluded that the maximum shift eastwards in any 24-hour period is 1.5 hours and in a westward direction is 2 hours.

It is now generally considered reasonable to make predictions of up to 9 hours East and 12 hours West. Between these there is a ‘grey zone’ in which shifts can occur in the opposite direction to the physical direction of travel; for example, a 10-hour Easterly trip by the body can be associated with the circadian sleep/wake rhythm adjusting 14 hour Westward.

Some researchers (Klein & Wegmann, 1980) propose that resynchronisation is best expressed as 50% of the remaining difference between body clock and local time every 48 hours.

It is important to note that not all international travel warrants individuals to try to move their circadian sleep/wake rhythm. For example, the adaptation will be zero or negligible in fast turnaround situations where individuals stay at their destination less than 24 hours before returning to the home time zone. If individuals stay longer than 48 hours at their destination, then adaptation will start to occur. There is a ‘grey zone’ in research knowledge between 24 hours and 48 hours. It is also generally considered that when operations occur within three time zones or less of the home time zone, there is no significant impact due to circadian adaptation.

1.6. How FAID Quantum accounts for circadian disruption caused by trans-meridian changes

The method used for calculating the hours of work fatigue score when time zone changes apply is to calculate the individual hours of work fatigue score for each hour of duty based on the individual's current ‘body clock’.

An individual's initial ‘body clock’ is based on their starting time zone from the first duty in the work schedule, which is established using the difference between UTC and local time where the first duty commenced. Adjustments to the ‘body clock’ are then made taking into account the rest time and number of time zones crossed.

1.6.1. FAID Standard BMM

In the FAID Standard BMM the researchers chose to implement rates that differ by direction of travel.

Adjustment begins at the end of the duty, and the magnitude of adjustments is as follows:

- ✈ 1.5 time zones per day when traveling in an Easterly direction
- ✈ 2 time zones per day when traveling in a Westerly direction

There are additional rules and exceptions for adjustments being made:

1. There is no adjustment to an individual's ‘body clock’ when the second of two consecutive duties involves a return to the starting time zone of the first duty in the work schedule and either:

    a. the rest period between the two duties is less than 36 hours[2], or

    b. the time zone difference is three hours or less, and the rest period between the duties is less than 48 hours[3].

2. Any duty performed at the rest period location will not prevent rule one (above) being applied. The quickest adjustment to the target time zone will be selected beyond 10 time zone changes (which is not always the direction of travel).

When analysing a work schedule, a work history of 15 days is recommended to best correct an individual’s current body clock before the start of the Analysis Period.

When displaying analysis results, if there is a difference of more than three hours between the starting time zone of a duty and the previous duty’s ending time zone, then no FAID Score Outputs will be displayed for 15 days after the end time of the previous duty. This action is to provide time for the **circadian sleep/wake rhythm adaptation** to the new time zone, in response to the absent time zone movement information.

1.6.2. FAID Quantum BMM

In the FAID Quantum BMM the researchers chose to implement resynchronisation expressed as 50% of the remaining difference between ‘body clock’ and local time adjusts every 48 hours.

When analysing a work schedule, a work history of 15 days is recommended to best correct an individual’s current body clock before the start of the Analysis Period.

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[2] *A mid-point of 36 hours has been used within FAID Standard BMM to reflect the length of time when circadian disruption begins to occur when the second of two consecutive duties returns to the starting time zone of the first duty, to accommodate the ‘grey zone’ in research knowledge between 24 hours and 48 hours.*

[3] *Recognising that circadian adaptation is less likely to occur when the time zone difference is three hours or less.*

1.6.3. Comment on differences

While these two methods seem quite different, in most cases they lead to differences in assumed ‘body clock’ position, at any given time, of less than 3 hours. This would typically be well within the variations seen between individuals and does not lead to significant differences in the calculated model scores.

1.7. FAID Quantum Assumptions and Features

1.7.1. Assumptions

FAID Quantum uses duty period start and finish times (in UTC and local time for time zone version) 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 Quantum 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 Quantum 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 to account for the longer commute scenario or extend the sleep buffer in settings.
- **Short breaks within a duty period as non-work periods**. For breaks within a duty period to be included as non-work time they need to be at least 4 hours and/or greater in duration, and quality sleeping facilities must be available (Dean, Fletcher, Hursh, & Klerman, 2007). This means that breaks, such as for meals, are not included as non-work time, as short breaks are unlikely to be long enough for recovery sleep to be obtained. However, see **Section 1.7.3** on *Augmentation* below.
- What an individual has actually achieved with regards to **recovery sleep during a non-work period**. FAID Quantum 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 predicted by FAID Quantum then the fatigue exposure indicated by FAID Quantum might be quite different from that actually experienced by the individual. However, see **Section 1.7.4** on *Actual Sleep* below.

1.7.2. Prior History or Initial State of an Individual

At the point of time at which the input data starts there is no information about the prior activity of the individual. The individual may have worked many hours or none, they also may have transited many time zones or none.

While the software can commence to calculate scores from the time of the first work period this is only valid if there was no work performed in the previous seven days and the person’s ‘body clock’ is synchronised with the start location.

If the person may have performed work in the week prior to the start of the data, it is prudent to consider as valid only the results beyond seven days after the start of the data. This is to rule out any influence the undocumented work periods might have on the scores in the first week.

If the person may have changed time zones in the fifteen days prior to the start of the data, it is prudent to consider as valid only the results beyond fifteen days after the start of the data. This

is to rule out any influence the undocumented time zone changes might have on the scores in the first fifteen days.

By default, the FAID Quantum software will determine the time of the first work period and set an analysis start date seven days later (or fifteen days for time zone version). This may be changed by the user if prior conditions are known and as appropriate recognising the fifteen and seven-day periods described above.

1.7.3. Augmentation

When using the flight crew augmentation option within FAID Quantum, breaks during a flying duty period can be recognised as a non-work period with the quality of sleep set to ‘Partial’ to indicate the less than full quality sleep during in-flight rest periods compared to the higher quality of sleep achieved with quality sleeping accommodation on the ground. ’Partial’ is by default defined as 50% of normal sleep quality and would normally apply to sleep achieved during in-flight rest. Such a selection would require Class 1 Quality Rest facilities to be available on the aircraft. 50% has only been populated for demonstration purposes.

The percentage of sleep quality represented by the ’Partial’ setting needs to be determined by the operator and can then be adjusted within the software. It should be noted that good quality in-flight rest facilities are essential for “any” quality of sleep to be obtained. An appropriate sleep quality setting can be determined through a scientific sleep study and risk assessment process.

1.7.4. Actual Sleep

FAID Quantum also provides the option for actual sleep obtained to be considered in its calculations, if such data is available. While this enables FAID Quantum to reflect more closely the experience of an individual, the results are still based upon a statistical model representing the general population response to that sleep pattern and not a prediction of an individual’s level of fatigue. This also provides a mechanism for comparing calculated KSS scores for both the predicted sleep/wake and the actual sleep/wake data to permit determination of the significance of any sleep differences.

1.7.5. Appropriate Use

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

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

The InterDynamics FRMS team.

2. Introduction

This User Guide incorporates all the functionality of FAID Quantum:

1. FAID Scores (included);
2. Karolinski Sleepiness Scale Scores (optional);
3. Sleep Prediction (optional);
4. Time Zone - circadian disruption caused by trans-meridian changes (optional).

NOTE: If the license you have purchased does not include the above optional outputs, each item can be acquired as an upgrade. Please contact InterDynamics for further information.

2.1. First Time User Instructions

The first time a user loads FAID Quantum, the user will be taken through a series of screens to introduce the background and context of the use of FAID Quantum within an FRMS. Firstly, a valid license must be submitted either via file selection, or pasting the license file text.

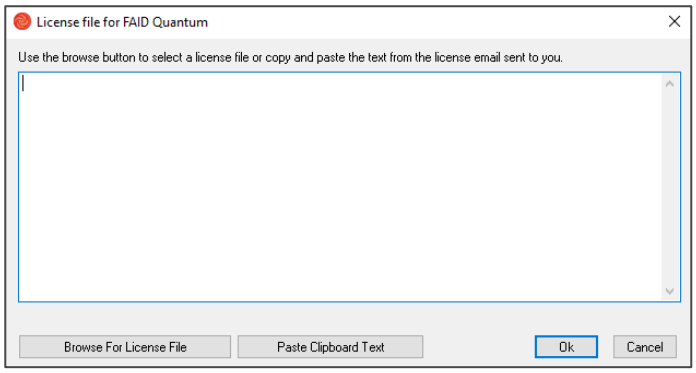


Figure 2-1 License file prompt for FAID Quantum

1. When entering the license file for FAID Quantum the user can either:
    a. Use the ‘Browse For License File’ button to select a license file, or
    b. Copy and Paste the text via the ‘Paste Clipboard Text’ button.

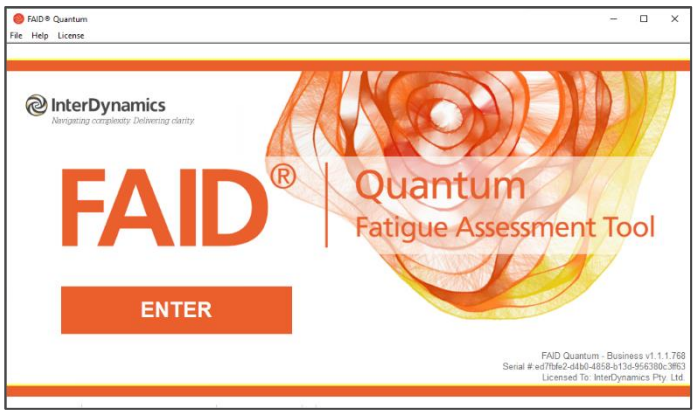


Figure 2-2 FAID Quantum opening screen

2. Once the user has submitted a valid license they can then click the **Enter** button.
3. The next screen provides an Introduction to FAID Quantum and Fatigue Risk Management, click the **Continue** button.
4. A series of Tolerance Level (TL) related screens are presented, the first asks whether the user wishes to go through a detailed explanation of setting Tolerance Levels, click **Yes**, or click **No** to skip the explanation and go straight to setting TLs (or setting them later).

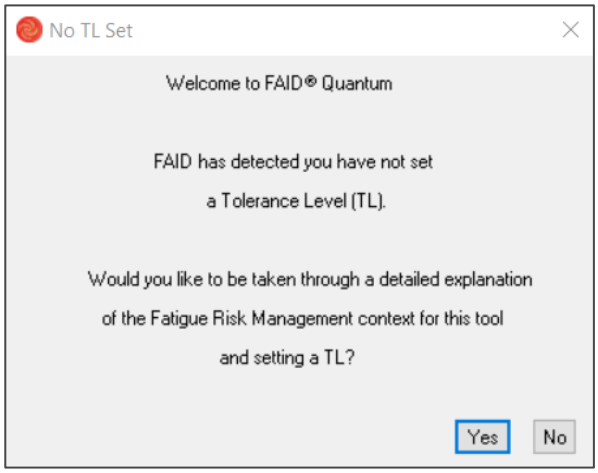


Figure 2-3 No Tolerance Level detected screen

If the user clicks **No**, the FAID Quantum 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 Quantum is opened. The bullet point list offers additional **Information** on Fatigue Hazard Analysis and can be reviewed at a later date by clicking the Information button on the Input Control Panel and selecting Display Hazard Analysis from the drop-down menu in the Information section.

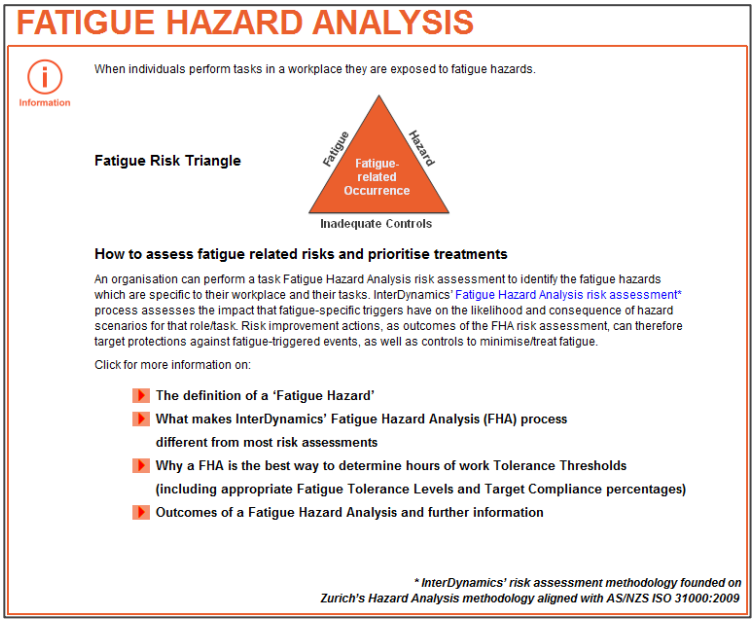


Figure 2-4 Fatigue Hazard Analysis Information

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

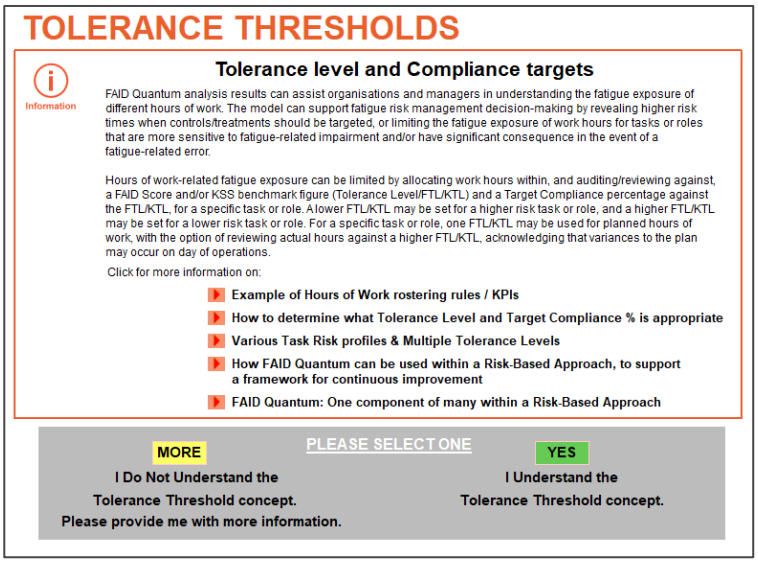


Figure 2-5 Additional information on Tolerance Level and Compliance Targets

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 Tolerance Level Threshold concept, clicking **Yes** presents the user with a screen where they can either **Select TL Later (Skip TL)**, load a **Sample Task Tolerance Level (TL) via the button** or **Manually Edit the Tolerance Level (TL) by clicking in the cells.**

8. To manually edit the TL, click on the words "**To Set a Tolerance Level Click here**".

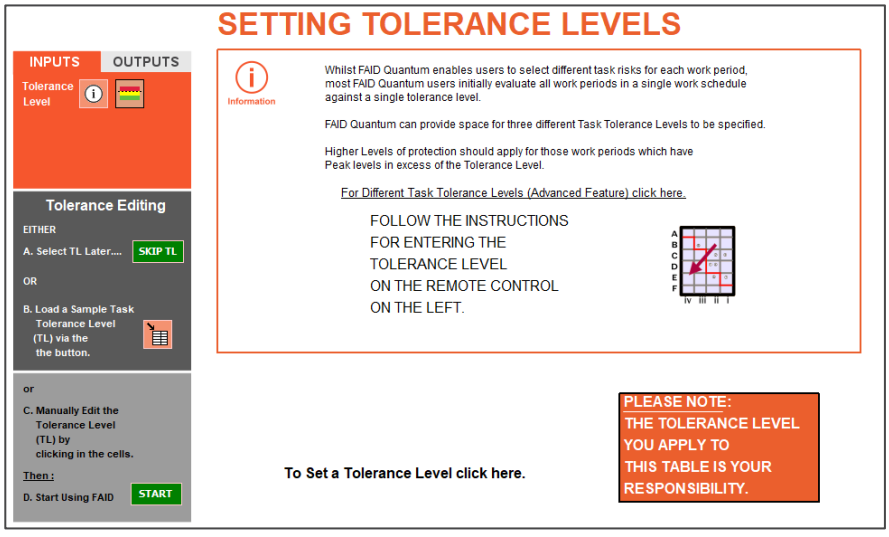


Figure 2-6 Setting Tolerance Levels Screen

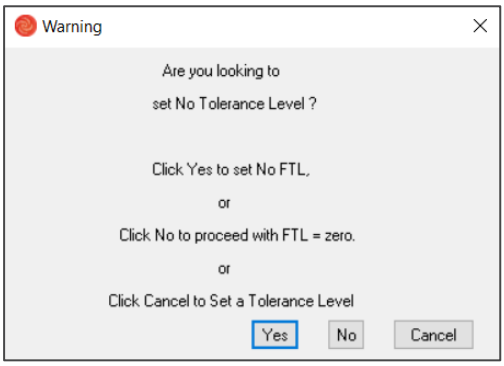
9. A dialogue box to manually edit the TLs is displayed.

	FAID Score Tolerance Level	KSS Tolerance Level
Tolerance	0	1.0

10. Enter the desired **FAID Score Tolerance Level and KSS Tolerance Level** then click the **Start Using FAID** START button.

11. After being informed that a KSS Tolerance Level and a FAID Score Tolerance Level has been set, click **OK**.

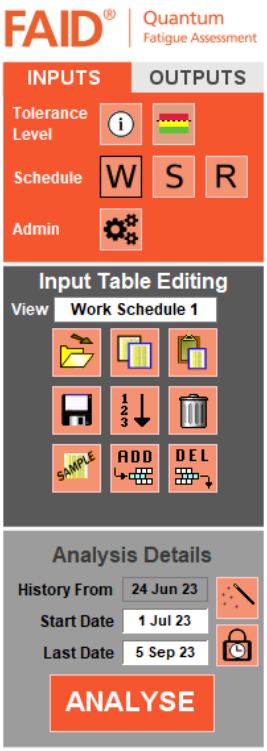
Should the user not set an FTL or KTL, the following warning will appear:



Clicking **Yes** or **No** will have the following outcomes:

1. **Yes** (Click Yes to set no FTL): the work schedules wil be analysed but will not be compared to an FTL.
2. **No** (Click No to proceed with FTL = zero): in the work schedule, every hour worked will be above the FTL.

3. Control Panel



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

- Inputs tab – includes all the functionality for entering data; 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 (Information and setting parameters such as FAID Score and KSS Tolerance Levels);
- Schedule (Work Schedules, Sleep Schedules, External Result);
- Admin (settings); and
- Analysis Details (analysing the data)

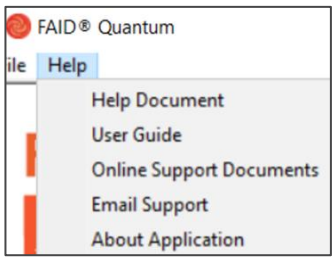
The Outputs tab has sections relating to analysis of the information entered:

- Summary
- Schedule
- Individual Score
- Utilisation

3.1. Help

Help can be accessed via:

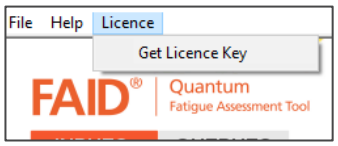
Contextual Help: Click on found above the Outputs tab on the Control Panel to open the **Help** Document to the section relating to the function being used.



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

- A Help Document (includes detailed information regarding terms, concepts and process steps),
- User Guide (internet access required),
- Online Support Documents (internet access required),
- Email Support (internet and email account required), and
- About Application - information relating to the Application

3.2. License



License: The **License** Menu provides access to read in a License Key file via the ‘Get License Key’ selection.

A browse for License file display will appear:

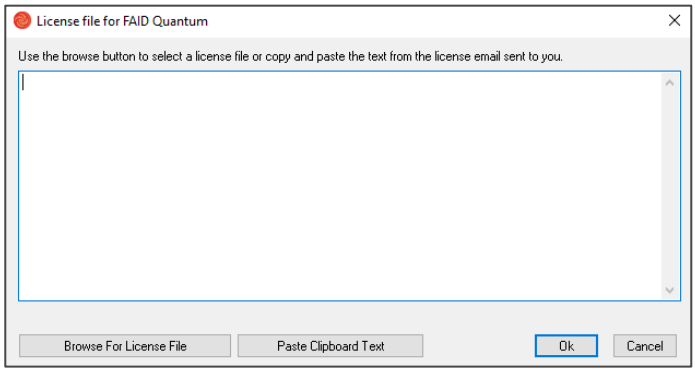


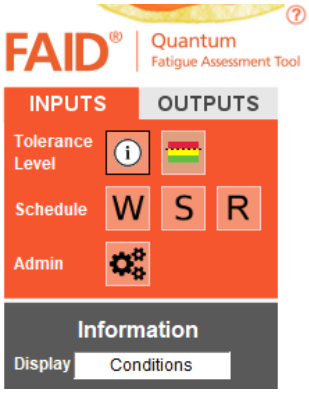
Figure 3-1 License file prompt for FAID Quantum

When entering the license file for FAID Quantum the user can either:

a. Use the ‘Browse For License File’ button to select a license file, or
b. Copy and Paste the text via the ‘Paste Clipboard Text’ button.

4. INPUTS Tab – Tolerance Level

4.1. Information



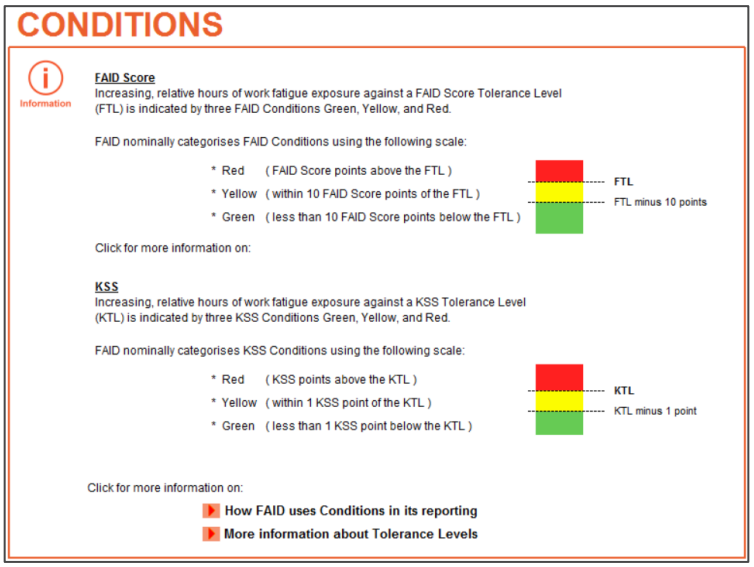
There are a number of important information screens which can be accessed by clicking the **Information** button on the **Inputs.**

In the dark gray **Information** section of the Control Panel, the user can select from four options:

- Conditions;
- FAID Score;
- Hazard Analysis; and
- KSS

4.1.1. Conditions

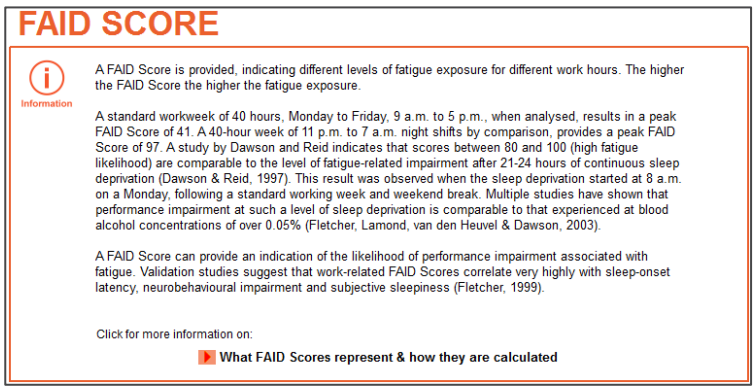
The **Conditions** screen contains information on how the red, yellow and green conditions are categorised for both FAID Score and KSS.



4-1 Conditions overview

4.1.2. FAID Score

The **FAID Score** screen gives an overview of the different levels of fatigue exposure.

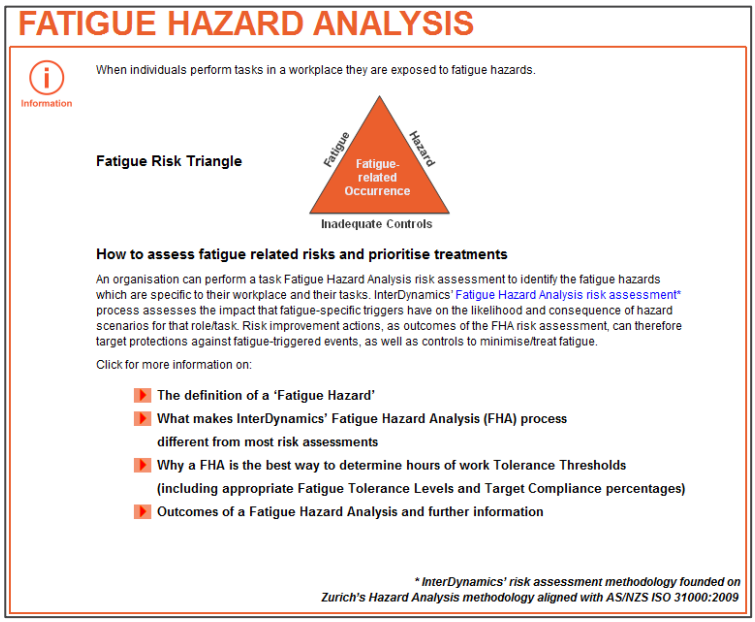


4.1.3. Fatigue Hazard Analysis

The Fatigue Hazard Analysis screen provides detailed explanations of InterDynamics' Fatigue Hazard Analysis risk assessment process and its relation to the use of FAID Quantum in the setting of Fatigue Tolerance Levels.

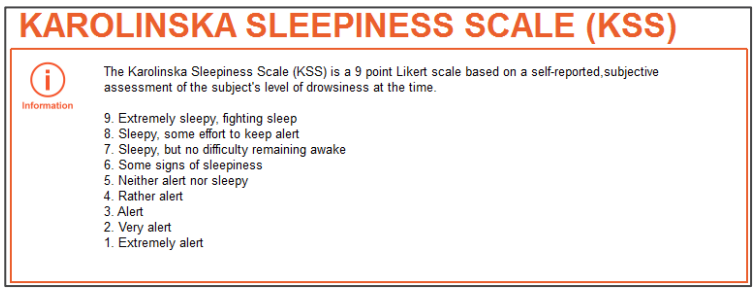
Each of the following bullet points listed on the Fatigue Hazard Analysis screen provides further information:

- 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.



4.1.4. KSS

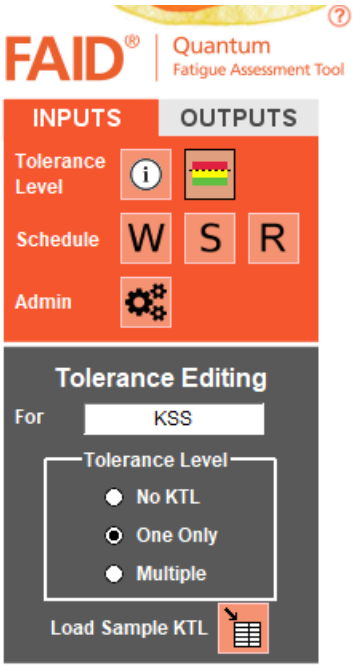
The **KSS** screen contains information on the Karolinska Sleepiness Scale (KSS).



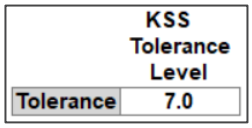
4.2. Tolerance Thresholds

4.2.1. Setting Tolerance Levels (TL) and Target Compliance %

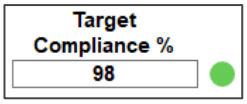
Having a Tolerance Level provides a benchmark for comparing the individual FAID Scores, KSS scores and minimum Sleep, while the Target Compliance % sets a target for compliance to the determined FAID Score Tolerance Level (FTL) and KSS Tolerance Level (KTL).



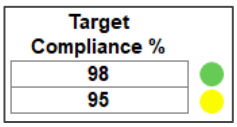
1. Click on the **Inputs** tab on the Control Panel to access the Inputs options.
2. In the **Tolerance Level** section, click on the Tolerance Thresholds  button. There are three Tolerance Editing Screens:
   - KSS
   - FAID Score
   - Sleep
3. The KSS Tolerance Thresholds screen will be displayed with an overview of the thresholds and measures by which FAID Quantum can assist in managing hours of work related fatigue risk. We recommend all users to note the bullet points containing linked information on how best to determine and apply them.
4. The middle section of the Control Panel will allow **Tolerance Editing**. Set a single Fatigue Tolerance Level by selecting the **One Only** radio button on the Tolerance Editing section of the Inputs tab.



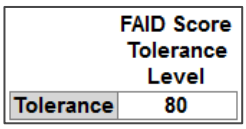
5. Left click into the white KSS Tolerance Level field box and type in the **KSS Tolerance Level** desired followed by the Enter key.



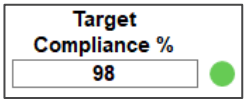
6. Set the **Target Compliance %** by left clicking into the Target Compliance field box and type in the % value followed by the Enter key. The default Target Compliance % is set at 98%.



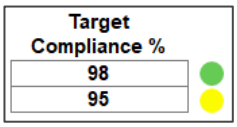
7. If in Settings – Outputs **Two Levels** are selected, then a Yellow **Target Compliance %** can be set. Default 95%.



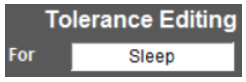
8. Set the FAID Score Tolerance Level by selecting **FAID Score** from the drop-down menu. Then left click into the white **FAID Score Tolerance Level** field box and type in the FAID Tolerance Level desired followed by the Enter key.

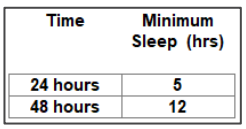


9. Set the **Target Compliance %** by left clicking into the Target Compliance field box and type in the % value followed by the Enter key. The default Target Compliance % is set at 98%.



10. If in Settings – Outputs **Two Levels** are selected, then a Yellow **Target Compliance %** can be set. Default 95%.





11. Set the **Sleep Tolerance Level** by selecting **Sleep** from the drop-down menu. Default values for 24 and 48 hours are provided but these can be amended by left clicking in the appropriate field box, entering the required value followed by the Enter key.

Conducting analysis using a single TL for both KSS and FAID Score is generally recommended for initial 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: There is the opportunity to load a Sample Tolerance Level by clicking on the **Load Sample FTL (or KTL or STL)**  button.

NOTE: When Settings > Inputs > Display > **Include Task Risk** = **NO**, only the **No FTL** or **KTL** and **One FTL** or **KTL** 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 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 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 Quantum as a key component in the development and audit of fatigue risks associated with hours of work:

- FAID Score Tolerance Level (FTL) / KSS Tolerance Level (KTL) or Sleep Tolerance Level (STL) of 'x' (or multiple FTLs or KTLs 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 or KTL
- Varying levels of actions/controls to be applied as exposures approach/exceed FTL or KTL
- Potential for differing values of x, y, and z above, for planned hours as opposed to actual hours

NOTE: The Tolerance Levels are always displayed at the bottom of all screens.

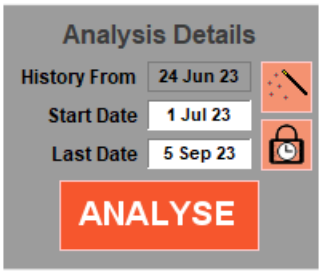
IMPORTANT: The Tolerance Levels you apply is your responsibility.

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

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

4. Click on **Load Sample Work Schedule** SAMPLE in the **Input Table Editing** options.
5. 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.

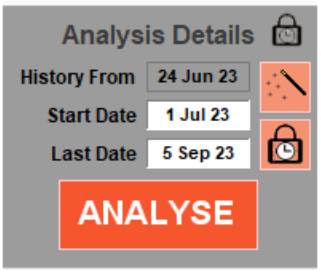
NOTE: To be effective FAID Quantum requires seven days of data as history to be entered before meaningful analysis can begin.



6. 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.
7. Click on the **Analyse** 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).



Also, the user can click on the **Lock Date** button to lock the Analysis Details.

The **Lock Date** icon will appear to indicate the **Analysis Details** will not change, unless the user manually edits a Date cell, or uses the Date and Period Wizard button**.**

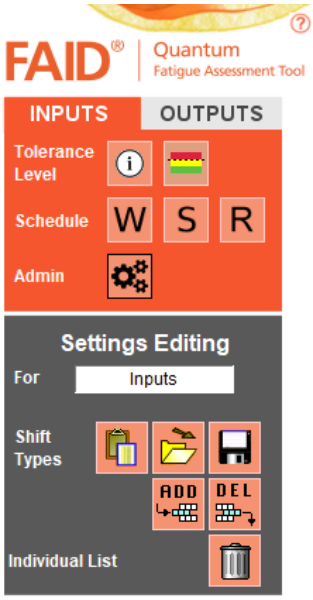
6. INPUTS Tab – Admin

6.1. Settings

In FAID Quantum, **Settings** editing is divided into different sections which can be selected from the drop-down menu:

1. Inputs
2. Analysis
3. Outputs
4. Views
5. Aviation
6. Activity Task

6.1.1. Inputs



On the **Inputs** tab in the **Admin** section click on the **Settings**  , button and select **Inputs** from the drop-down menu, the following Schedule and Add Details Settings screen will be displayed.

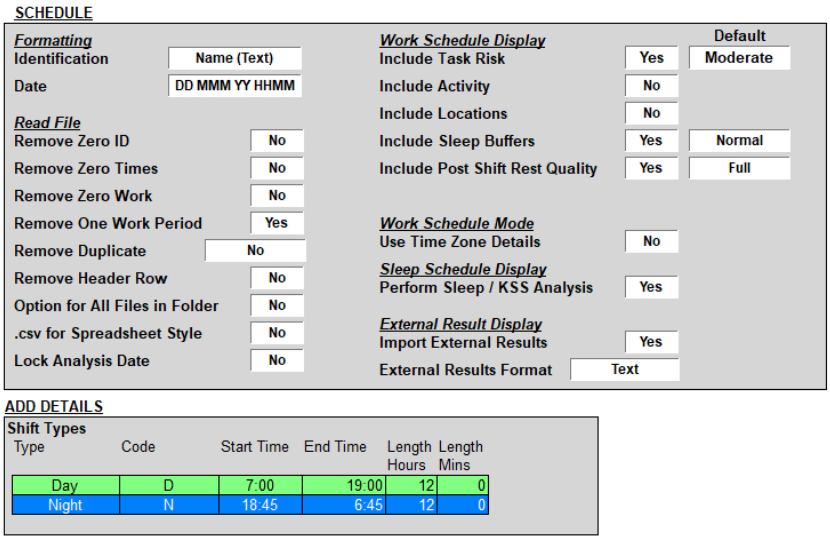


Figure 6-1 Inputs Settings Screen

6.1.1.1. Formatting

1. **Identification**: This allows the user to use “Name” (text), or “ID” (value), which allows sorting of the names alphabetically or the IDs numerically.
2. **Date**: The date format used within FAID can be selected between DD MMM YY HHMM, MMM DD YY HHMM and YYY MM DD HHMM.

6.1.1.2. Read File

1. **Remove Zero ID**: Set **Yes** to remove any work periods with a value of zero. The default for this Setting is **No**. User will be notified of number of work periods removed.
2. **Remove Zero Times**: Set **Yes** to remove work periods where the Start or End times have a zero value. The default for this setting is **No**. User is notified of number of work periods removed.
3. **Remove Zero Work**: Set **Yes** to remove work periods where no work is performed; Start Time equals End Time. The default for this setting is **No**. User is notified of number of work periods removed.
4. **Remove One Work Period**: Set **Yes** to remove IDs that only have one work period in the schedule. The default for this setting is **No**. User is notified of number of work periods removed.
5. **Remove Duplicate**: The default for this Setting is **No**. Options are No, Exact, Pattern. If you would like exact duplicate work periods removed, the user can change the setting to **Exact** so that the duplicate work periods are removed. Should the user import a work schedule with multiple individuals working exactly the same work periods, the user can change the setting to **Pattern** so that the duplicate work patterns are removed, thus individuals, during the importing of a work schedule, and only one individual working the work pattern will remain.
6. **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.
7. **Option for All Files in Folder**: Select **Yes** or **No** by click in cell. If set to YES, when the user selects to load in a file to the Work Schedule, then if any other files with the same file extension are present in the selected folder, they will also be imported and appended to the Work Schedule. Useful for importing multiple individual work schedules to create a combined work schedule.
8. **.csv for** Spreadsheet **Style**: Options are **Yes** or **No** and the following parameters apply:
    a. **No**: When importing a .csv file into a Work Schedule, the file will be read as a normal work schedule, i.e. comma separated format.
    b. **Yes**: When reading, or importing from clipboard, a Work Schedule file FAID Quantum will be looking for the format of first field, ID# (or Name), then all fields to the right are read as shift codes. If the shift code is not found in the shift code table, then the import stops and the user is informed to update the shift code table.

	A	B	C	D	E	F	G	H	I
1	1	M	M	M	M	M	OFF	M	M
2	2	M	OFF	A	A	A	OFF	A	M
3	3	M	N	OFF	M	M	M	M	N
4	4	OFF	M	A	OFF	A	N	OFF	M

9. **Lock Analysis Date**: Options are **Yes** or **No** by clicking in cell. If set to YES, the Analysis Detail Dates will not automatically change due to editing of the Work Schedule. Only editing the cells or using the Analysis Wizard button will change dates. In the Analysis Details section on remove control a ‘lock’ icon  will appear.

6.1.1.3. Work Schedule Display

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

   Default Task Risk: This field is only displayed if **Include Task Risk** is changed from **No** (default) to **Yes.** The **Default Task Risk** is displayed in the Work Schedule if a Task Risk has not been nominated. The task risk level for each work period can be changed by clicking through **Low, Moderate** and **High**.

2. **Include Activity**: Displays an additional column in the Work Schedule listing the Activity Details for each shift. Click in the cell to change to **No** which will remove this column.
3. **Include Locations**: If set to Yes, additional columns for Origin and Destination locations will be added for each shift
4. **Include Sleep Buffers**: If set to Yes, additional columns for Prior Sleep Buffer and Post Sleep Buffers will be added for each shift.
5. **Include Post Shift Rest Quality**: Displays an additional column in the Work Schedule listing the post shift rest quality. This allows the insertion of possible in-flight rest as well as nominating the quality of rest period as only Partial (as default is Full). This can be used when planning or assessing an actual roster to determine the impact of in-flight sleep augmentation.

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

NOTE: If Include Task Risk is set to **Yes**, when importing or copying a Work Schedule or Sleep Schedule into FAID Quantum, then an additional 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).

6.1.1.4. Work Schedule Mode

1. **Use Time Zone Details**: The default = **Yes** however, should the user choose to analyse work hours when time zone changes are insignificant (i.e. less than 3 hours), then changing Yes to **No** will result in the user only entering Start and End times and no time zone movement is used during analysis and is not recorded in outputs. When Selecting **No** a popup warning will inform the user that UTC Start and End Times will be overwritten with the corresponding Origin and Destination Times. NOTE: this change cannot be undone.

6.1.1.5. Sleep Schedule Display

1. **Perform Sleep / KSS Analysis**: The default is **Yes**, click to change to **No**

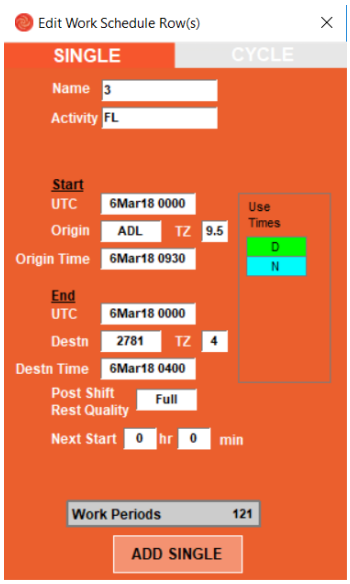
6.1.1.6. External Result Display

1. **Import External Results**: If set to Yes, allows the user to add an extra schedule of External Results, to be included in the Outputs to compare with the analysis results. When set to Yes the navigation button to External Result will appear on the Remote Control.
2. **External Results Format**: This allows the user to use value, or text, for describing the external result.

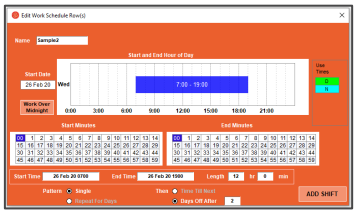
6.1.1.7. Shift Types

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

The reports in Outputs are set to look for shifts matching the Start/End times of the default Shift Types set here.



Add Shift Screen - Settings
Use Time Zone Details = Yes



Add Shift Screen - Settings
Use Time Zone Details = No

ADD DETAILS

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

To Add Shift Types:

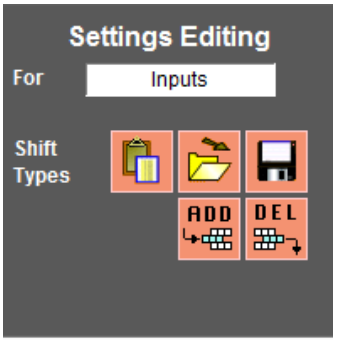
1. Click on the **Add Shift to Shift Types** 

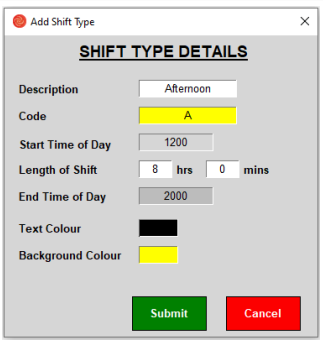
button in the **Settings Editing** section of the Control Panel.

2. In the Add Shift window enter Description, Code, Start Time of Day and Length of Shift. FAID Quantum automatically calculates the End Time of Day.

3. Select a Text Colour and Background Colour.

4. Click on **Submit**.





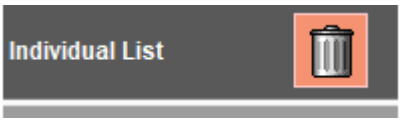
ADD DETAILS

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

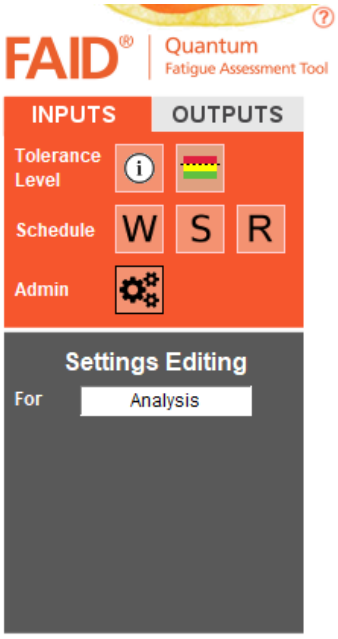
5. If there are a range of different Shift Types for different departments within an organisation, Shift Types can be created and copied in a spreadsheet and pasted using the paste from clipboard  button, or saved as a .dat file and loaded for use by clicking the save  and load  buttons.

6.1.1.8. Individual List



Individual List: If the format for the Individual Identifier is Name (Text) then when work schedules are entered, or manual entering, the names are saved to a list. If the lsit becomes too long there is an option to delete the entire list.

6.1.2. Analysis



On the **Inputs** tab in the **Admin** section click on the **Settings**  , button and select **Analysis** from the Settings Editing drop-down menu, the Analysis Settings screen will be displayed.

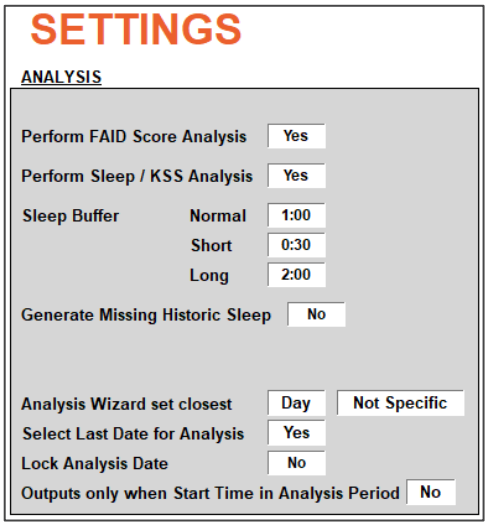


Figure 6-2 AnalysisSettings Screen

1. **Perform FAID Score Analysis**: The default is **Yes**, click to change to **No**.

2. **Perform Sleep / KSS Analysis**: The default is **Yes**, click to change to **No**.

3. **Sleep Buffer**: The Sleep Buffer specifies when an individual can start sleeping after working, the default for Normal is 1 hour, and the default for Short is 30 minutes, and the default for Long is 2 hours , i.e. if the individual finishes at 0700, and the Sleep Buffer is 1hr, then the earliest time a sleep onset will be predicted is 0800.
   If in Settings – Inputs the Include Sleep Buffers is set to No, then only the Normal Sleep Buffer will be displayed.

4. **Generate Missing Historic Sleep**: The default is **No**, click to change to **Yes**. If an individual only works in the Analysis Period, then the Sleep Prediction will only start after first shift. If **Yes,** Sleep Prediction will occur in the History Period.

5. **Analyse Wizard set closest**: 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. The default is for FAID Quantum to

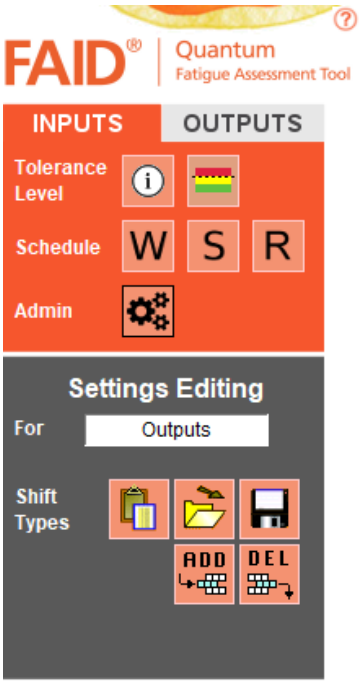
find the earliest Start Time and set the Start Date seven days forward (to allow for work history).

An additional function when running an Analysis is to set the Start Date 

which can be set seven days forward and FAID Quantum will then find the nominated closest day (useful for clients who start roster rotations on specific days).

6. **Select Last Date for Analysis:** The default is **Yes**, which displays a date for the end of the analysis in **Analysis Details** instead of defining the analysis period in weeks. This can be used if the analysis needed is only for a specific month).
7. **Lock Analysis Date:** Options are Yes or No by clicking in cell. If set to **YES**, the Analysis Detail Dates will not automatically change due to editing of the Work Schedule. Only editing the cells, or using the Analysis Wizard button will change dates. In the Analysis Details section on remove control a 'lock' icon  will appear).
8. **Outputs only when Start Time in Analysis period**: Outputs only displayed if the Start Time is after the **Start Date** in **Analysis Details**. Useful for investigating a specific month (or period) for a work schedule.

6.1.3. Outputs



On the **Inputs** tab in the **Admin** section click on the **Settings**  , button and select **Outputs** from the **Settings Editing** drop-down menu, the Outputs Settings screen will be displayed.

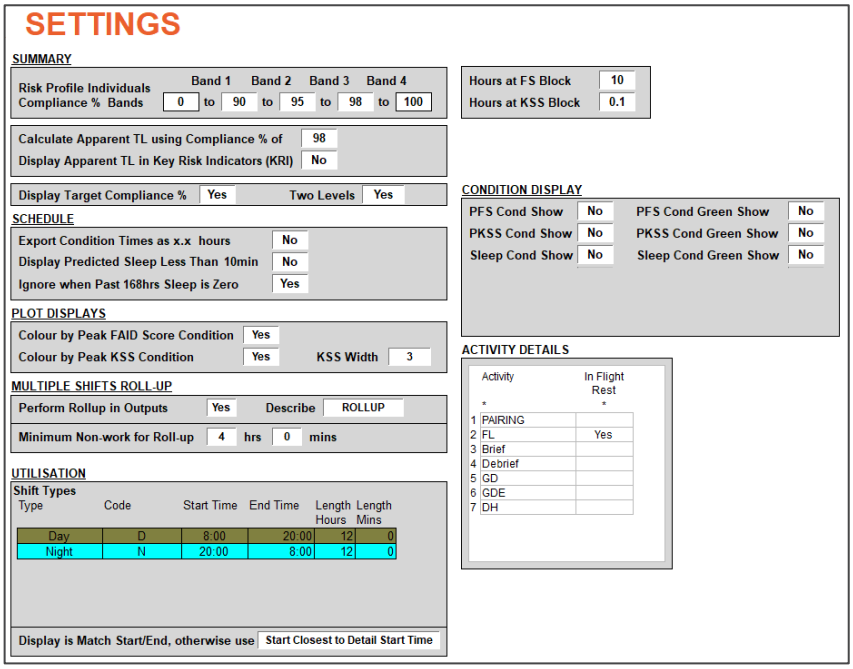


Figure 6-3 Outputs Settings Screen

6.1.3.1. Summary

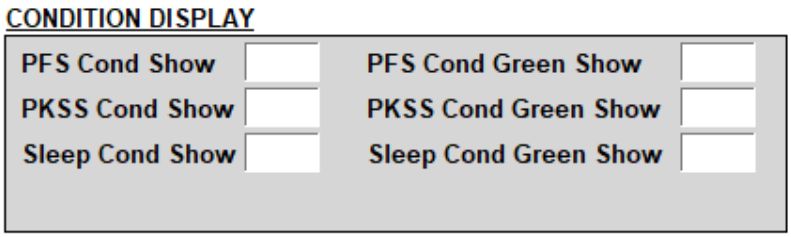
1. **Risk Profile – Individuals:** On the **Outputs** tab in the **Summary** section, in the Display Options one of the options is to display **Risk Profile** for both FAID Score and KSS (see Outputs **Section 9.1.10** for more information). One aspect of the Risk Profile is the four **Compliance %** Bands (e.g. default listing is top to bottom 0, 90, 95, 98, 100). These bands can be modified as required here in the **Outputs** section of **Settings**.
2. **Calculate Apparent TL using Compliance % of**: In the Outputs tab under Summary, Display Options can provide the Apparent TL, representing the compliance of each individual and an overall Work or Sleep Schedule compliance for different TLs ranging from zero to highest needed to achieve 100% compliance, with a highlighted display of the TL when overall 98% compliance is achieved. By default, the 'Apparent' Tolerance Level represents the FAID Score or KSS score at which 98% of the hours analysed are less than (or within). Hence, a higher 'Apparent' TL indicates higher fatigue exposure for the hours analysed. This view is similar to that seen when No TL is chosen in Inputs. When six to twelve months of actual hours of work are analysed, the Apparent TL 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 TLs. If Compliance at a different percentage is sought, the % can be changed in this field.

3. **Display Apparent TL in Key Risk Indicators (KRI)**: The default setting is **No**. In the Outputs Key Risk Indicators for the Compliance display, the Apparent TL for the overall summary as well as each individual in the work schedule will be displayed when set to **Yes**.
4. **Display Target Compliance %**: The default setting is **No**, however the user can choose to not display Compliance % by clicking to **Yes.** The Target Compliance percentage will be displayed in the Summary for Hours at Result, and also the Dashboard view.
    a. **Two Levels**: Is the percentage close to the Target Compliance for the Yellow indicator dot on Dashboard display. Click in the cell to change the percentage value. Default is **No**.
5. **Hours at FS Block**: For the Display '**Hours at Result**' the user can change the block increments used for the hours worked in each FAID Score block. The default is **10**.
6. **Hours at KSS Block**: For the Display '**Hours at Result**' the user can change the block increments used for the hours worked in each KSS Score block. The default is **1.0** .

6.1.3.2. Schedule

1. **Export Condition Times as x.x hours:** The default setting is **No**, if changed to Yes, then in the Outputs when copying to clipboard, or saving to file, the FAID Score and KSS Condition times will be saved as values (ie 2.5 instead of 2hrs 30mins). Useful for importing into spreadsheets for display.
2. **Display Predicted Sleep Less than 10min**: The default setting is **No**, however the user can choose to display predicted sleep which is less than 10 minutes in length.
3. **Ignore Sleep Cond when Past 168hrs Sleep is Zero**: The default setting is **Yes**, if changed to No, then in the Outputs the Condition highlight will occur even if in the past 168 hours there has been no sleep (ie first work period without prior sleep prediction).

6.1.3.3. Condition Display

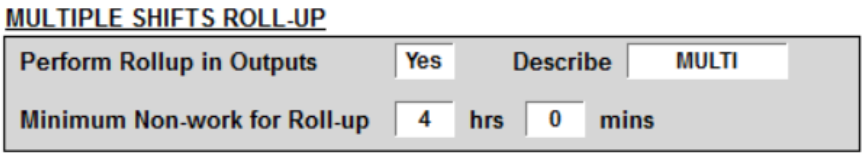


1. **Cond Show:** The user can select to change the Condition highlight in the Output Schedule depending on the highest Condition achieved. Click in cell to change **Yes** or **No** (default is No).
    - PFS Cond Show = Peak FAID Score Condition highlight cell
    - PKSS Cond Show = Peak Karolinska Sleepiness Score Condition highlight cell
    - Sleep Cond Show = Sleep Prior 24 and 48 hours Condition highlight cell
2. **Cond Green Show:** If the user is displaying the Condition highlight then the user can also select to not show the Green Condition highlight in the Output Schedule. Click in cell to change **Yes** or **No** (default is No)
    - PFS Cond Green Show = Peak FAID Score Green Condition highlight cell
    - PKSS Cond Show = Peak Karolinska Sleepiness Score Green Condition highlight cell
    - Sleep Cond Show = Sleep Prior 24 and 48 hours Condition Green highlight cell

6.1.3.4. Plot Displays

1. **Colour by Peak FAID Score Condition**: When viewing Output plot displays the user can determine whether or not the Peak FAID Score Conditions (red/yellow/green) are displayed (default setting is **Yes**). If the default is changed to **No**, the plot display colour (black) shows the FAID Score and the Yellow and Red Tolerance Level is displayed.
2. **Colour by Peak KSS Condition**: When viewing Output plot displays the user can determine whether or not the KSS Conditions (red/yellow/green) are displayed (default setting is **Yes**). If the default is changed to **No**, the plot display colours are represented simply as working or non-working hours.

6.1.3.5. Multiple Shifts Roll-up



The user can set the minimum non-work period being used in a roll-up, e.g. if the user has 4 hours in the settings and there are three shifts

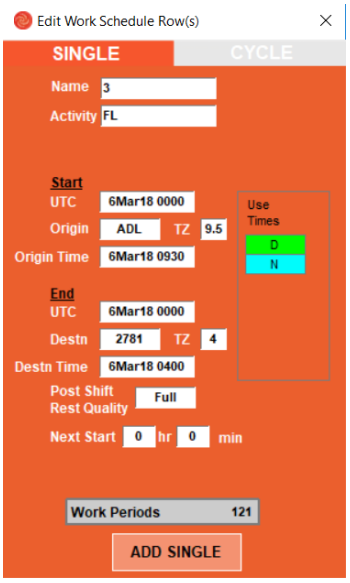
- 0800-1000
- 1030-1200
- 1800-2100

the roll-up would be 0800-1200 and 1800-2100 because the non-work between 1200 and 1800 is greater than the 4hrs. Multiple Shifts Rolled-up are indicated in the far left hand column of Work Schedules and the FAID Score Table output screens by a + symbol.

The user has the ability to describe/select the description for the rolled-up shifts. Options are:

- Multi
- Pairing
- Rollup

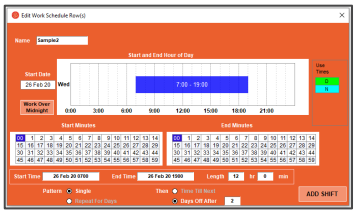
6.1.3.6. Utilisation



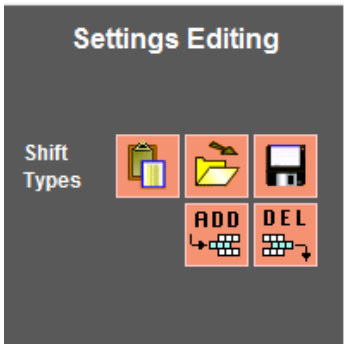
Shift Types: Default shift types can be created for ease of use when adding shifts in the Work Schedule Edit screen and these will be referenced in the Shifts Types display in Outputs.

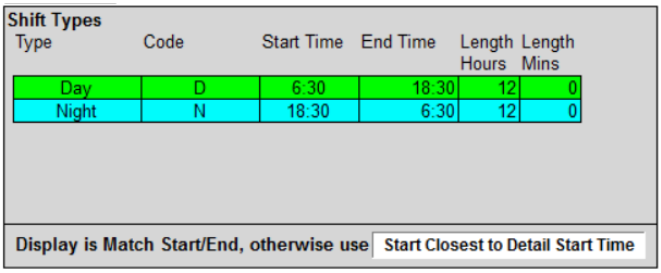
The reports in Outputs are set to look for shifts matching the Start/End times of the default Shift Types set here. If the shift Start/End times do not match exactly with the default Shift Types, the reports in Outputs can be set to classify the shifts to the most appropriate Shift type by either **Start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

Add Shift Screen - Settings
Use Time Zone Details = Yes



Add Shift Screen - Settings
Use Time Zone Details = No

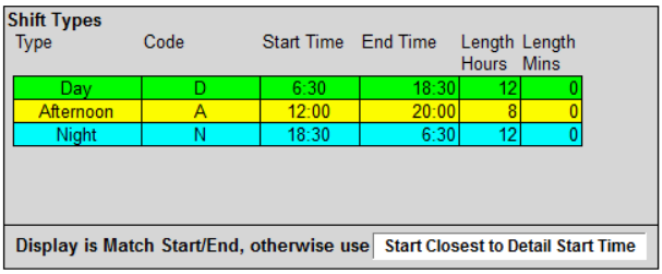


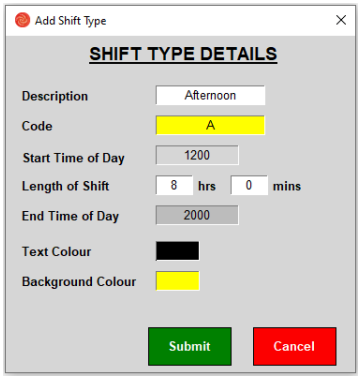


To Add Shift Types:

1. Click on the **Add Shift to Shift Types** 

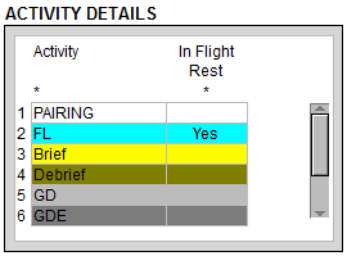
button in the **Settings Editing** section of the Control Panel.
2. In the Add Shift window enter Description, Code, Start Time of Day and Length of Shift. FAID Quantum automatically calculates the End Time of Day.
3. Select a Text Colour and Background Colour.
4. Click on **Submit**.





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.

6.1.3.7. Activity Details



The **Activity Details** colours can be edited to suit the user. When a Work Schedule is analysed the Fatigue Gantt Chart can be viewed by shading according to FAID or KSS Condition (shaded green, yellow or red) or according to Activity, or a combination of FAID Condition and Activity or KSS Condition and Activity.

Additional Activities can be added or deleted using the using the 

or 

buttons.

When using the Add In Flight Rest button in a Work Schedule, FAID Quantum will only add In Flight Rest to Activities that are set **Yes** in the **In Flight Rest** column, e.g. the User would not want to add In Flight Rest to a Ground Duty that is 8 hours in duration (see **Section 7.4.9** for further information on In Flight Rest and its application).

6.1.4. Views

Sections of FAID Quantum 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 **Settings** button and Select **Views** from the **Settings Editing** drop-down menu, the Settings will be displayed.
2. Click on the item in the **View** column to either display or hide Inputs and Outputs options.

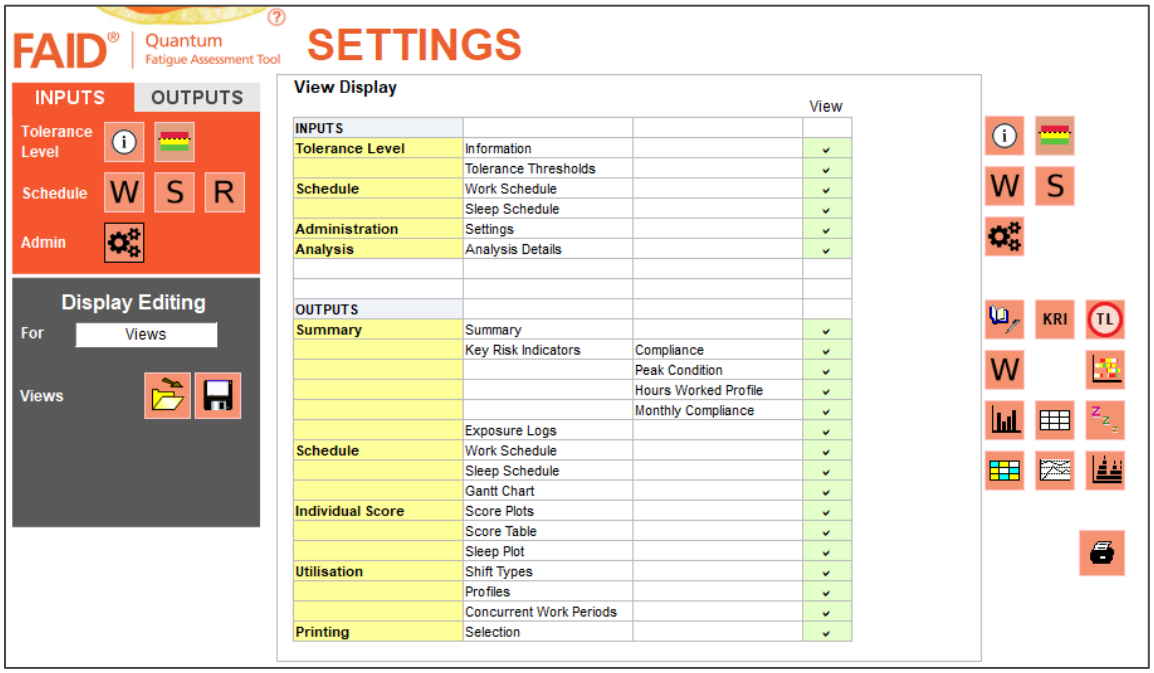
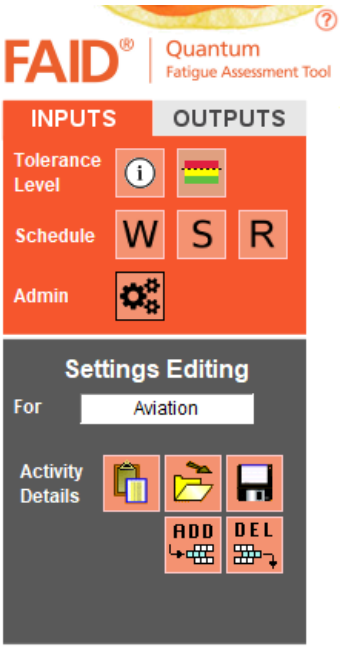


Figure 6-4 View Settings Screen

6.1.5. Aviation



On the **Inputs** tab in the **Admin** section click on the **Settings** button and Select **Aviation** from the **Settings Editing** drop-down menu, the Settings will be displayed.

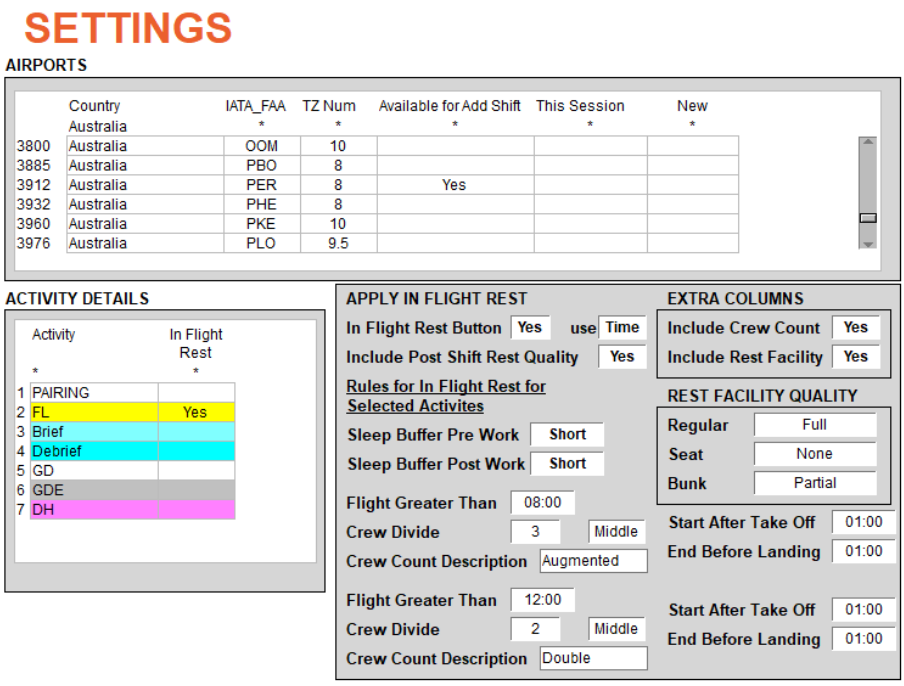
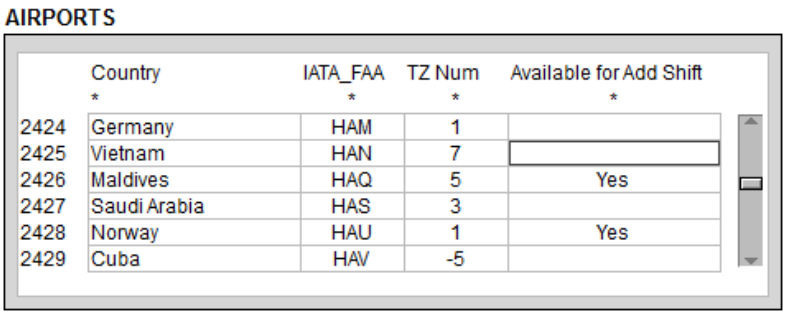
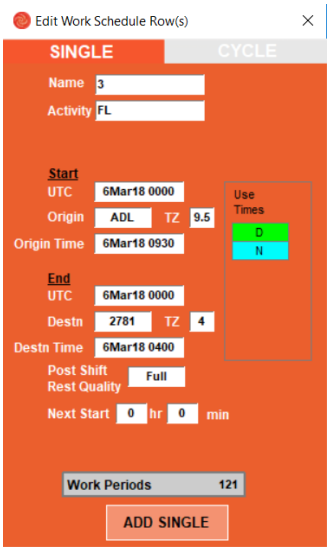


Figure 6-5 Aviation Settings Screen

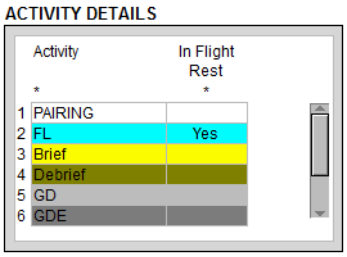
6.1.5.1. Airports

Airport codes are pre-loaded for use in Work Schedules when adding new shifts. A filter can be used by clicking on the * at the top of the column for, say, Country. Select from the drop-down menu and then for each Airport with an IATA_FAA code, click **Yes** in the **Available for Add Shift**. When adding a shift, only those airports with **Yes** in the **Available for Add Shift** will be in the drop-down menu for **Origin** and **Dest**. Additional Airport Codes can be added when editing the Work Schedule and can be deleted from the Airport Codes selection by right clicking on the number in the far left column and selecting delete row.





6.1.5.2. Activity Details



The **Activity Details** colours can be edited to suit the user. When a Work Schedule is analysed the Fatigue Gantt Chart can be viewed by shading according to FAID or KSS Condition (shaded green, yellow or red) or according to Activity, or a combination of FAID Condition and Activity or KSS Condition and Activity.

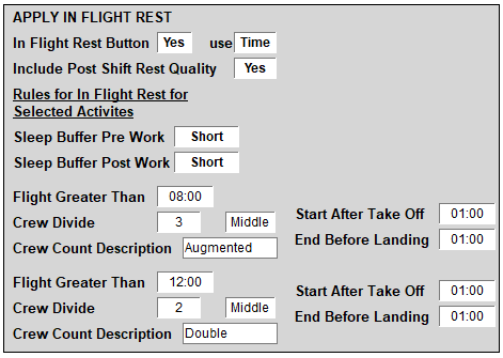
Additional Activities can be added or deleted using the using the 

or 

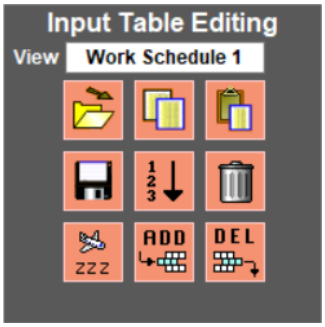
buttons.

When using the Add In Flight Rest button in a Work Schedule, FAID Quantum will only add In Flight Rest to Activities that are set **Yes** in the **In Flight Rest** column, e.g. the User would not want to add In Flight Rest to a Ground Duty that is 8 hours in duration (see **Section 7.4.910** for further information on In Flight Rest and its application).

6.1.5.3. Apply In Flight Rest



1. In FAID Quantum, the **Apply In Flight Rest** function allows the insertion of possible in flight rest periods and nominates the rest quality as “partial” (see **Section 7.4.910** or further information on In Flight Rest and its application).



2. **In Flight Rest Button**: The default setting is **No**, however, if the user is using the Time Zone functionality, selecting **Yes** will activate an icon 

in the Input Table Editing which will Add Inflight Rest.

Please Note: “Partial” is defined as 50% of normal sleep quality and would normally apply to sleep achieved during in-flight rest. Such a selection would require Class 1 Quality Rest facilities to be available on the aircraft. 50% has only been populated for demonstration purposes. The percentage of sleep quality represented by the “Partial” setting needs to be determined by the operator and could then be adjusted within the software. It should be noted that good quality in-flight rest facilities are essential for “any” quality of sleep to be obtained. An appropriate sleep quality setting can be determined through a scientific sleep study and risk assessment process.

The rules for in-flight rest are based on the total time available for in-flight rest (assumed to be one hour after departure until one hour prior to landing). The Default Settings are set to calculate: if the crew has three pilots, the total time available for in-flight rest is divided by three. If the crew has four pilots, the total available in-flight rest is divided by two.

The assumptions are that the individual pilot's available in-flight rest period is right in the middle of the total available time for rest.

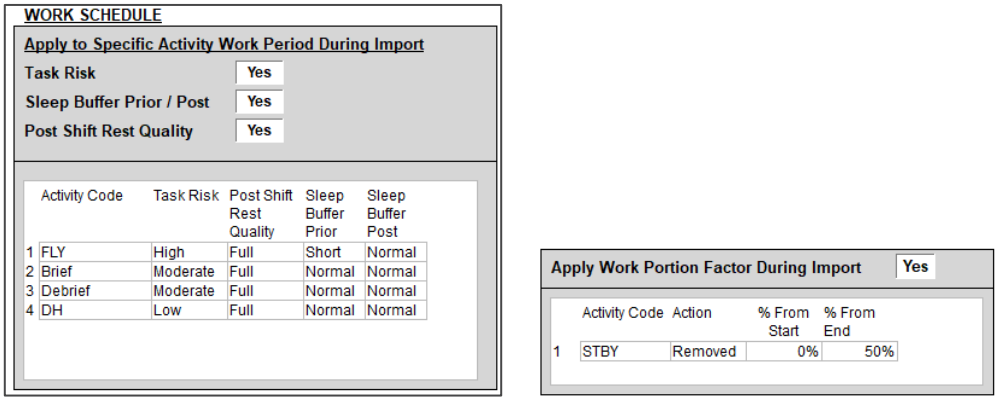
Example: Based on 3 pilots, all times in GMT

Depart city A: 1900 / Arrive city B: 0600 – 11 hours flight duty

1 hour taken off at each end of flight, total time available for rest: 9 hours
Time available for each pilot: 3 hours
Place 3 hours of available in-flight rest from 2300 to 0200

These settings can be adjusted to suit the User's flight operations.

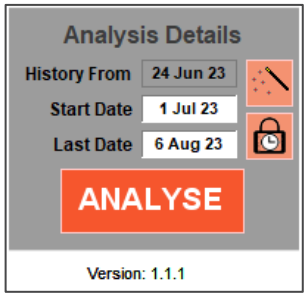
6.1.6. Activity Tasks



When Multiple Tolerance Levels have been set (see **Section 4.2**) specific task risks can be applied to Activities during import. For example, if shifts with the Code GD (ground duties) are imported a Low Task Risk can be allocated to those shifts.

Specific activities (e.g. Standby), can have a portion of those hours removed (either from the start and/or end), during the importing of the Work Schedule.

6.1.7. Version Reference



In the Settings section the user can view the version of FAID Quantum currently installed. This is found below the Analyse button on the Settings Screen. This can assist when checking whether the user is up-to-date with the latest version and with support calls.

7. INPUTS Tab – Schedule

There are three options for Schedules, Work Schedules 

, Sleep Schedules 

and External Result Schedules 

. All Schedules have the ability to load two schedules, for example:

- Work Schedules – Work Schedule 1 for Planned and Work Schedule 2 for Actual
- Sleep Schedules – Sleep Shedule 1 for Predicted sleep and Sleep Schedule 2 for Actual sleep.
- External Results Schedules – External Result Schedule 1 for Work Schedule 1 and External Result Shedule 2 for Work Schedule 2.

When FAID Quantum is first loaded all schedules are blank and there are a number of options for adding data:

Work schedules:

1. Reading an existing file (file types supported are .fqw, .rtq, .rtr, .rtz or a comma separated spreadsheet database (.csv) file). (see **Section 7.1.1** for detailed explanation of this process);
2. Pasting from the Clipboard (see **Section 7.1.3** for detailed explanation of this process);
3. Directly input via Add Shift function (see **Section 7.1.6**) or
4. Copying Work Schedule 1 to Work Schedule 2 (see **Section 7.1.2** for a detailed explanation of this process).

Sleep schedules

1. Reading an existing file (file type supported .fqs, .slp or a comma separated spreadsheet database (.csv) file) (see **Section 7.2.1** for detailed explanation of this process); or
2. Pasting from the Clipboard (see **Section 7.2.2** for detailed explanation of this process).

NOTE: All Sleep Schedules must have a corresponding Work Schedule, however if a Work Schedule is loaded without a corresponding Sleep Schedule, FAID Quantum will create a “predicted” Sleep Schedule during the analysis process.

External Result schedules:

1. Reading an existing file (file type supported .fqr, or a comma separated spreadsheet database (.csv) file) (see **Section 7.3.1** for detailed explanation of this process); or
2. Pasting from the Clipboard (see **Section 7.3.2** for detailed explanation of this process).

NOTE: All External Result Schedules must have a corresponding Work Schedule.

7.1. Work Schedule

7.1.1. Work Schedule - reading an existing Work Schedule file

When users regularly analyse and compare data, they will have FAID Quantum Work Schedule files previously stored on their system. Users can import or load this data back into FAID Quantum 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** select either Work Schedule 1 (or 2) from the drop-down **View** menu. Click on the **Read Work Schedule from File**  button to load a previously saved Work Schedule into FAID Quantum.
2. In the **Select File to Read** dialogue box, the default file type will be FAID Quantum Work Schedule (*.fqw), clicking the drop-down arrow will allow this file type to be changed to *.rtq (FAID Quantum v1.0 format), *.rtr (FAID - Business work schedule), *.rtz (FAID – Business (Time Zone) work schedule); or All Files to locate an alternate file type (a comma separated file, .csv). Locate and select the required File.
3. Click the **Open** button.
4. The selected Work Schedule file is loaded onto the Work Schedule screen.

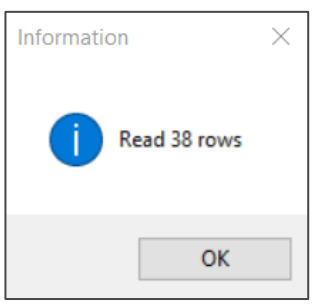
7.1.2. Adding a Second Work Schedule

1. FAID Quantum 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. In the **Input Table Editing** section of the control panel, Select **Work Schedule 2** from the **View** drop-down menu. 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.

7.1.3. Adding a Work Schedule by copying data

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

1. In spreadsheet, highlight the cells to be copied and copy to the clipboard.
2. On the **Input** tab click on the **Work Schedule** W button and in **Input Table Editing** – **View** View Work Schedule 1 select the Work Schedule (1 or 2) from the drop-down menu.
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 copied cells are 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: In Settings – Work Schedule, 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.

7.1.4. Adding Single Work Periods (Time Zone Details)

NOTE: Only available with FAID Quantum Time Zone version.

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).

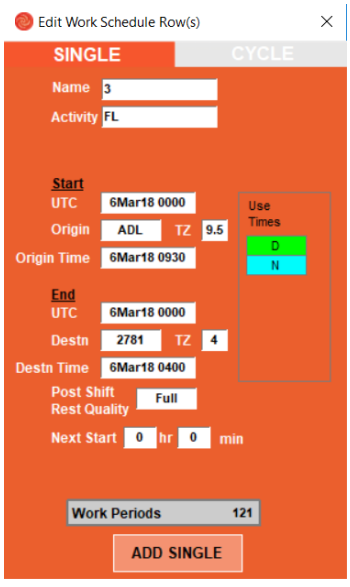
1. Click on the **Inputs** tab within the Control Panel to access the Inputs options.

2. In the **Input Table Editing** section, select the Work Schedule (1 or 2) from the drop-down menu 

that the Work Period is to be added to. Work Schedule 1 is the default option.

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 **Single** tab.

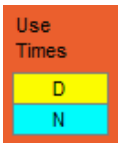


Add Shift Screen – Settings
Use Time Zone Details = Yes

(**NOTE**: **Yes** has been selected in Settings for Include Post Shift Rest Quality, Include Activity and Include Locations)

1. Enter the **Name** (either the name of the employee or a unique identifying code or number). If codes have been added, these will appear as a drop-down menu.
2. Enter the **Activity** from a drop-down menu – default options are briefing, debrief, DH (deadhead), FL (flight), GD (ground duty), GDE (ground duty extra) or PAIRING.
3. Enter the **Start UTC** (Co-ordinated Universal Time) date/time in ddmmyy hhmm format.
   Enter the **Origin** (IATA Codes) by clicking in the cell and then on the scroll arrow to select from menu. **NOTE:** Airport codes are predetermined in the Aviation Settings, **Section 6.1.5.1** Entering the first couple of letters, e.g. SY will jump up or down the list quickly.

4. The **TZ** (+ or - UTC) will auto fill, however if this is incorrect based on the user's knowledge, this time can be overwritten in the Admin section in the Settings Screen – Airport Codes. Changes for daylight saving are not taken into account and must be manually adjusted).
5. The **Origin Time** field will auto-fill based on the UTC and Origin.



6. Pre-determined shifts (see **Section 6.1.1.7**) can be selected from the Use Times options.
7. Enter the **End** fields as per 3, 4, 5, 6 above.
8. Select whether **Rest** is **Full** (default) or **Partial**.

NOTE: Two categories of sleep quality are currently established, 'Full' and 'Partial'. 'Full' is defined as 100% of normal sleep quality and would normally apply to sleep that is obtained at home or in a hotel bed. In FAID Quantum, 'Partial' has been defined as 50% of normal sleep quality for demonstration purposes only, and would normally apply to sleep achieved during in-flight rest.

The percentage of sleep quality represented by the 'Partial' setting (for demonstration purposes 50% by default) needs to be determined by the operator, which can then be adjusted within the software. It should be noted that good quality in-flight rest facilities are essential for "any" quality of sleep to be obtained.

9. Enter **Next Start** hour and minutes, which represents how long before the next shift.
10. 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.

NOTE: Select the dates by clicking in the white cell beside Start and/or End date/time field and using the dropdown calendar to select the Day/Month/Year.

NOTE: Select the Times 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.

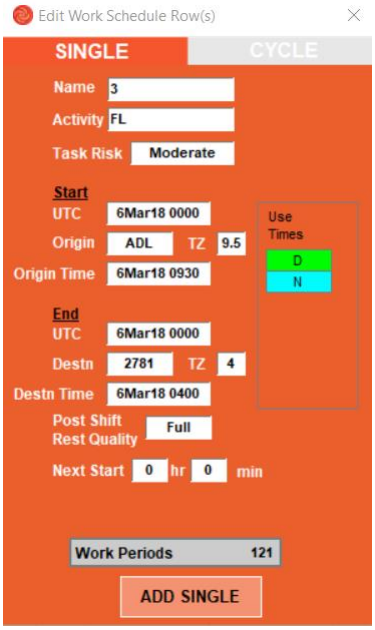
If **Include Task Risk** is set to Yes in Settings, after entering the Activity in Step 2, select the level of **Task Risk** 

NOTE: If no Task Risk details displayed in the popup, and 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 6.1.1.3**).

NOTE: **Work Periods** is a count of the number of work periods in the Work Schedule that auto-calculates.

7.1.5. Adding a Cycle of Shifts (Time Zone Details)

NOTE: Only available with FAID Quantum Time Zone version.



Add Cycle Screen – Settings
Use Time Zone Details = Yes

Include Task Risk = Yes

Follow Steps 1 – 8 for adding a Single Shift,

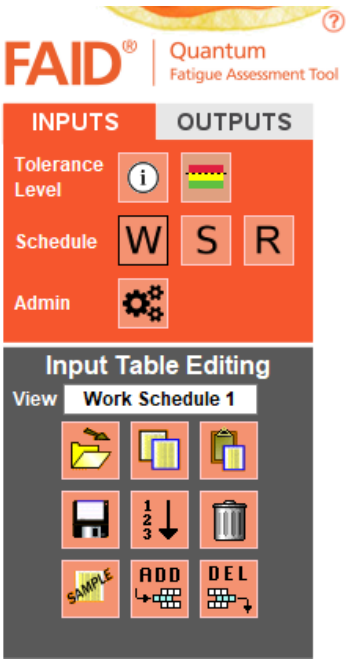
9. Enter the number of consecutive Days On and Off for the cycle.
10. Click on the **Add Cycle** button to add the entered work period details for the cycle onto the Work Schedule screen. Repeated clicking on the Add Cycle button will replicate the entered shift cycle details for successive date periods.

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, taking into account Days On and Days Off.

7.1.6. Adding Work Periods

NOTE: This function allows the user to add either Single or a Cycle of Work Periods.



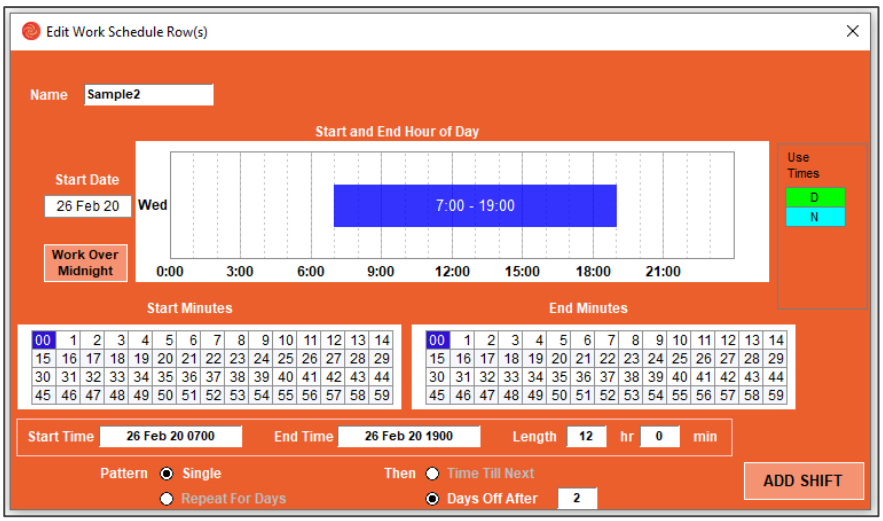
1. Click on the **Inputs** tab within the Control Panel to access the Inputs options.

2. In the **Input Table Editing** section, select the Work Schedule (1 or 2) from the drop-down menu 

that the Work Period is to be added to. Work Schedule 1 is the default option.

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)**.



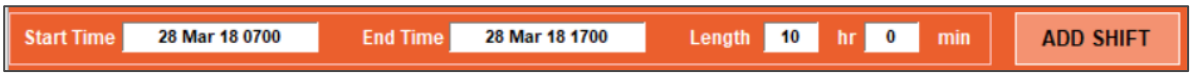
1. Enter the **ID#** (either the name of the employee or a unique identifying code or number). If codes have been added, these will appear as a drop-down menu.

2. Enter Shift **Start Date**

3. Either:

    a. Select preset Shift Types (eg. Day/Night) on right hand side of pop-up under **Use Times** (see Section 6.1.1.7 to set Shift Types) or,

    b. Enter Shift **Start Time** and a Shift **End Time**. **Length** of shift will autofill (alternatively, enter Start Time and Length and End Time will autofill).



4. If a Single Shift is to be added use radio buttons to select Single then enter Time Until Next Start.

5. If a Cycle of Shifts are to be added, change Repeat for Days and Days Off After to appropriate numbers.

6. Click **Add Shift**.

NOTE: If Admin > Settings > Inputs > **Include Task Risk** = **Yes**, then the following steps must be taken

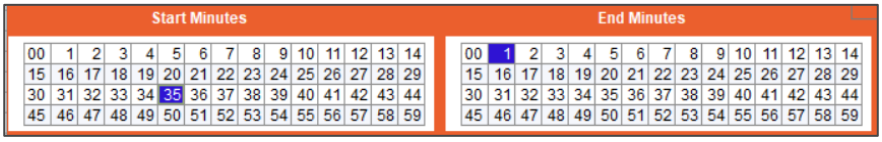
7. Select the appropriate level of **Task Risk** from the drop-down options adjacent to the **Name** field.

NOTE: If no Task Risk details displayed in the popup, and 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 6.1.1**).

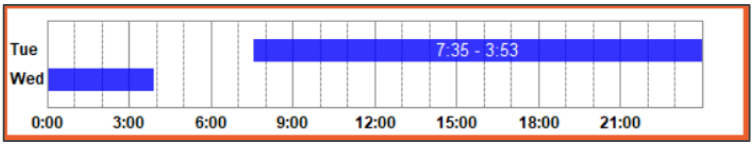
8. Click on the **Add Single** button to add the entered work period details onto the Work Schedule screen. The **Start Time** will change on the Edit Work Schedule display ready for adding another shift from after the period indicated in the **Time till Next Start** fields**.**

NOTES:

a. Repeated clicking on the Add Single button will replicate the entered shift details for successive dates.
b. Select the first date by clicking in the white cell under Start Date and either enter/adjust details directly or utilise the dropdown calendar to select the Day/Month/Year.
c. Select the Start or End Time by entering the Start Time or End Time HHMM that follows the Day/Month/Year. The first 00 represents hours and the last 00 represents minutes in a 24-hour clock.
d. If the shift extends past Midnight, Click the **Work Over Midnight** icon.
e. Start and End Minutes can be easily adjusted by clicking a cell on the numeric pad.



f. Shifts can be extended or shortened by using the left mouse button (held down) at start or end of the shift and dragging the blue bar, then release left mouse button to finish setting new time.



7.2. Sleep Schedule

7.2.1. Sleep Schedule - reading an existing Sleep Schedule from a file

Should the user have a Sleep Schedule file this can can be imported or loaded into FAID Quantum to allow additional data to be added to the Sleep Schedule or for further analysis.

1. On the **Inputs** tab in the **Input Table Editing** select either **Sleep Schedule 1** (or 2) from the drop-down **View** menu

2. Click on the **Read Sleep Schedule from File**  button to load a previously saved Sleep Schedule into FAID Quantum.
3. In the **Select File to Read** dialogue box, the default file type will be FAID Sleep Schedule (*.fqs), clicking the drop-down arrow will allow this file type to be changed to All Files to locate a database (e.g. a comma separated .csv file). Locate and select the required File.
4. Click the **Open** button.
5. The selected Sleep Schedule file is loaded onto the Sleep Schedule screen.

7.2.2. Creating a Sleep Schedule by copying Work Schedule to Sleep Schedule

1. FAID Quantum offers the option to create a predicted Sleep Schedule by copying the Work Schedule to the Sleep Schedule.
2. In the **Input Table Editing** section of the control panel, Select **Sleep Schedule 1** (or 2) from the **View** drop-down menu.
3. Click the  button in the **Input Table Editing** menu, FAID Quantum will then create a predicted Sleep Schedule based on the existing **Work Schedule**, this can then be modified as required.

Note: If a Sleep Schedule is not supplied, when the Analysis is run, FAID Quantum will create the Sleep Schedule during the analysis process.

7.2.3. Adding a Sleep Schedule by copying data

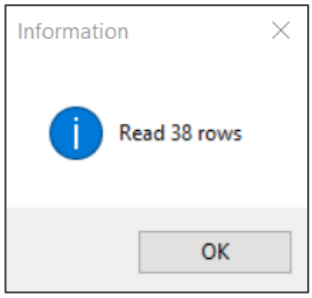
Users have the option to import a Sleep Schedule from a spreadsheet/database (e.g. Excel) into FAID Quantum onto the Sleep Schedule screen.

1. In a spreadsheet (e.g. Excel), highlight the cells to be copied and right click to copy to the clipboard.

2. On the **Input** tab **Click** on the **Sleep Schedule**  button.

3. In the Input Table Editing > View, select either Sleep Shecule 1 or 2.

4. In Input Table Editing click on the **Paste Clipboard to Sleep Schedule**  button. An information box will display indicating the number of rows of data that were imported. Click the **OK** button to continue.

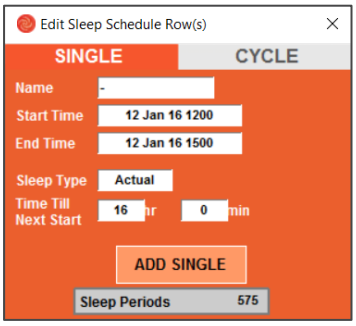


5. The Sleep Schedule is imported onto the selected Sleep Schedule screen/Worksheet.

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

7.2.4. Adding Sleep Periods within FAID Quantum

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

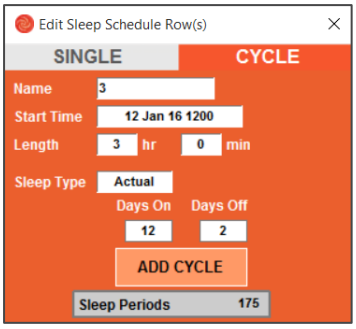


7.2.4.1. Adding a Single Sleep Period

1. On the **Input** tab Click on the **Sleep Schedule**  button.

2. In **Input Table Editing** > **View** select **Sleep Schedule 1** (or 2) from the drop-down menu

3. Enter the **Name** (either the name of the employee or a unique identifying code or number). If codes have been added, these will appear as a drop-down menu.
4. Enter **Start Time** and **End Time**
5. Enter **Time till next Start** in hours and minutes
6. Click on the **Add Single** button.



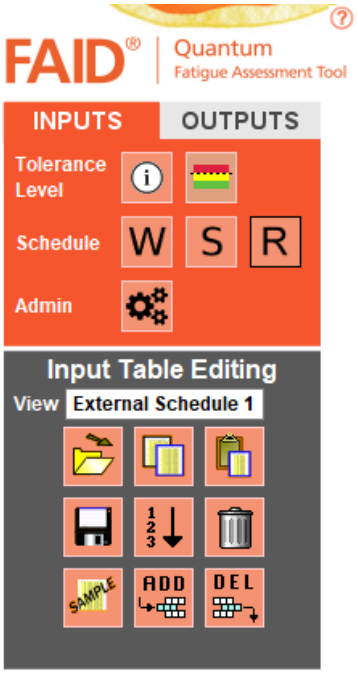
7.2.4.2. Adding a Cycle of Sleep Periods

Follow steps 1 – 4 above

5. Enter the number of consecutive **Days On** and **Off** for the cycle.
6. 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.

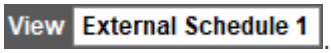
7.3. External Result

7.3.1. External Result Schedule - reading an existing External Result Schedule from a file



Should the user have an External Result Schedule file this can be imported or loaded into FAID Quantum to allow additional data to be added to the External Result Schedule or for further analysis. There are many options for using the External Result feature; the result could be an incident, accident, near miss, self-assessment by individual at start or end of work period, behavioural alertness test results (ie PVT).

1. On the **Inputs** tab in the **Input Table Editing** select either **External Result Schedule 1** (or 2) from the drop-down **View** menu

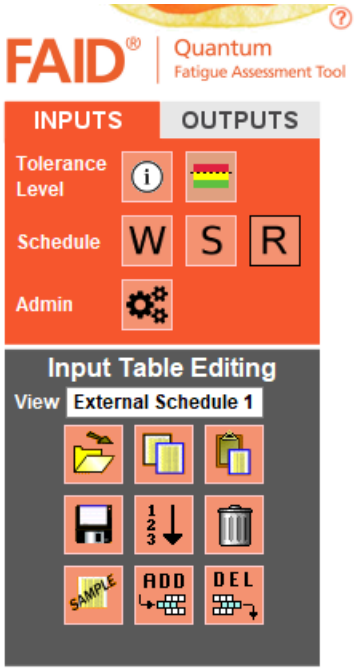


2. Click on the **Read External Result Schedule from File**  button to load a previously saved External Result Schedule into FAID Quantum.
3. In the **Select File to Read** dialogue box, the default file type will be FAID External Result Schedule (*.fqr), clicking the drop-down arrow will allow this file type to be changed to All Files to locate a database (e.g. a comma separated .csv file). Locate and select the required File.

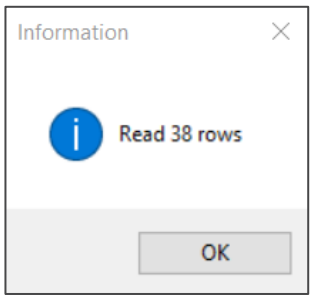
4. Click the **Open** button.
5. The selected External Result Schedule file is loaded onto the External Result Schedule screen.

7.3.2. Adding an External Result Schedule by copying data

Users have the option to import an External Result Schedule from a spreadsheet/database (e.g. Excel) into FAID Quantum onto the External Result Schedule screen.



1. In a spreadsheet (e.g. Excel), highlight the cells to be copied and right click to copy to the clipboard.
2. On the **Input** tab **Click** on the **External Result Schedule** R button.
3. In the Input Table Editing > View, select either External Result Schedule 1 or 2.
4. In Input Table Editing click on the **Paste Clipboard to External Result Schedule** button. An information box will display indicating the number of rows of data that were imported. Click the **OK** button to continue.

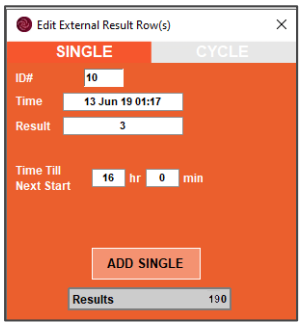


5. The External Result Schedule is imported onto the selected External Result Schedule screen/Worksheet.

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

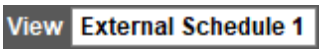
7.3.3. Adding External Result Periods within FAID Quantum

Users can create and add in External Result Periods within FAID Quantum on either an existing External Result Schedule or an empty External Result Schedule, or External Result Schedules can be imported from a spreadsheet/database (e.g. Excel). Users have the option to enter external Result in either **Single** or **Cycle** mode.

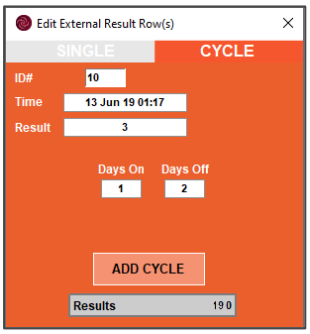


7.3.3.1. Adding a Single External Result

1. On the **Input** tab Click on the **External Result Schedule** R button.
2. In **Input Table Editing** > **View** select **External Result Schedule 1** (or 2) from the drop-down menu



3. Enter the **Name** (either the name of the employee or a unique identifying code or number). If codes have been added, these will appear as a drop-down menu.
4. Enter **Time**
5. Enter **Time till next Start** in hours and minutes
6. Click on the **Add Single** button.



7.3.3.2. Adding a Cycle of External Result

Follow steps 1 – 4 above

5. Enter the number of consecutive **Days On** and **Off** for the cycle.
6. Click on the **Add Cycle** button to add the entered external Result details for the cycle onto the External Result Schedule screen. Repeated clicking on the Add Cycle button will replicate the entered shift cycle details for successive date periods.

7.4. Additional Input Table Editing Features

7.4.1. Copying data out of FAID Quantum using the Clipboard

Users have the option to export a Work Schedule from FAID Quantum to the clipboard and then paste into a spreadsheeet/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.

7.4.2. Sorting a Work, Sleep, or External Result Schedule by Name and Date

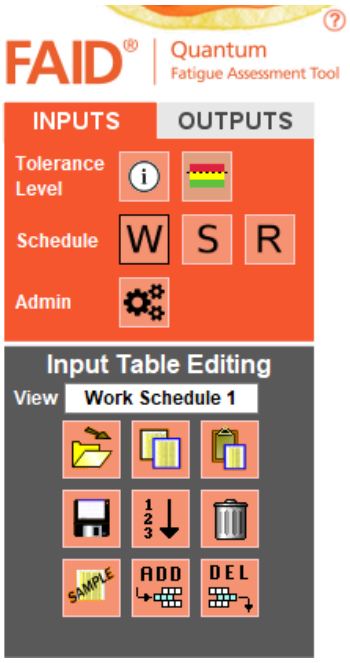
When shifts or sleep periods are added after a Work , Sleep, or External Result Schedule has already been created, FAID Quantum always adds them as a new row at the bottom of the Schedule.

To **Sort by Name then Date**, select either Work Schedule W, Sleep Schedule S, or External Result R and select either Schedule 1 or 2.

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

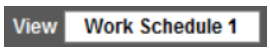
The Schedule will then be re-ordered by **Name** and then **Date**.

7.4.3. Deleting Work Periods within a Schedule

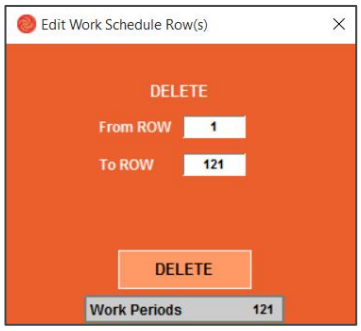


Users can delete Work Periods (shifts), Sleep Periods, or External Results from a Schedule.

To delete a work period or a sleep period, select either Work Schedule W, Sleep Schedule S, or External Result Schedule R and select the appropriate Schedule (1 or 2) from the **Input Table Editing** > **View** drop-down menu

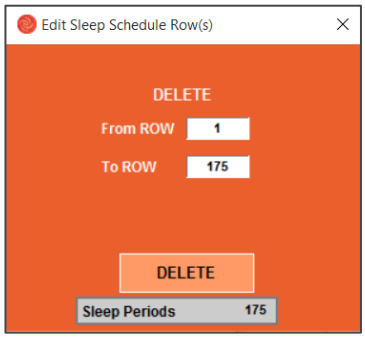


In the **Input Table Editing** section click on the **Delete Row(s) from Schedule** DEL button to activate the **Edit Schedule Row(s)** window.



Edit Work Schedule Row(s)

1. Enter the **From Row** number to delete from the Schedule.
2. Enter the **To Row** number to delete from the Schedule.
3. Click on the **Delete** button to delete the nominated work, sleep, or external results from the Schedule.

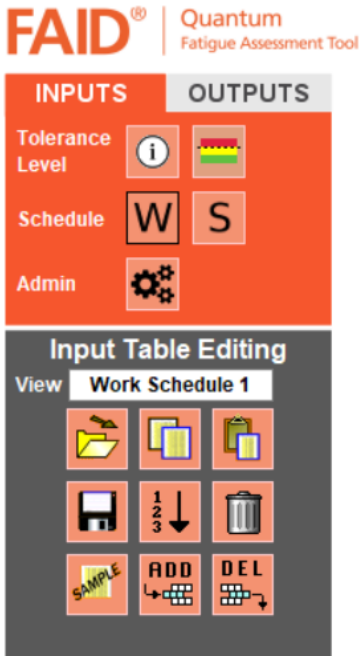


Edit Sleep Schedule Row(s)

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.

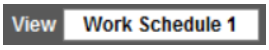
NOTE: Rows can be deleted from the Schedule when the user right mouse clicks on a row, and clicks on the word Delete.

7.4.4. Clearing an Entire Schedule



Users can clear an entire Work, Sleep, or External Result Schedule of all entries.

1. To Clear a specific entry, select either Work Schedule W , Sleep Schedule S, or External Result Schedule R and select the appropriate Schedule (1 or 2) from the **Input Table Editing** > **View** drop-down menu.



2. In the **Input Table Editing** section click on the **Clear Schedule** button to clear all Work Periods (shifts) or Sleep periods, External Result within the displayed Schedule.

3. A **Delete Warning!** will appear. Click on **Ok** to confirm the changes.

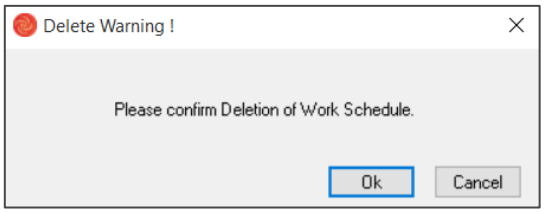


Figure 7-1 Delete Warning for Work Schedule

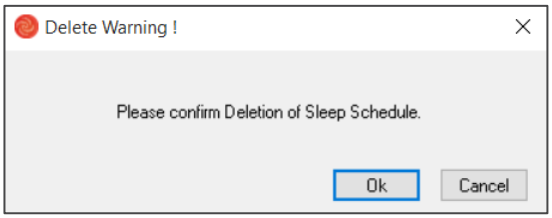


Figure 7-2 Delete Warning for Sleep Schedule

7.4.5. Additional Work and External Result Schedule Editing Options

Work and External Result 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, Duplicate (Customised), Delete Row, Delete Error Row(s), Attempt Clean Error Row(s), Fill Down and Index Down.

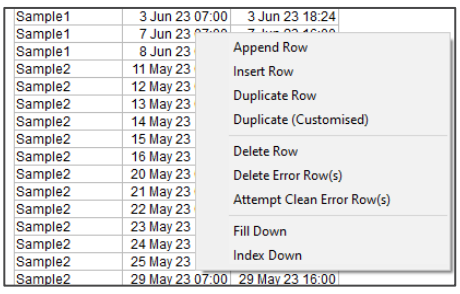
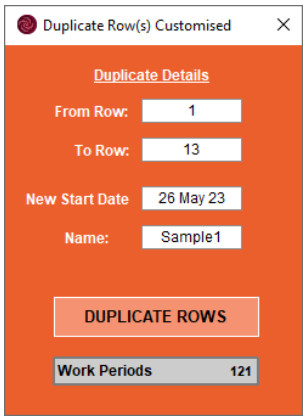


Figure 7-3 Work Schedule editing options using mouse



When selecting the **Duplicate Row(s) Customised** a pop-up display will appear where the user can select the *From Row, To Row,* a *New Start Date,* and the *Name* to use.

7.4.6. Additional Sleep Schedule Editing Options

Sleep Schedule editing is also available via a menu that is displayed when the user right mouse clicks on a row. The only available option is Delete Row.

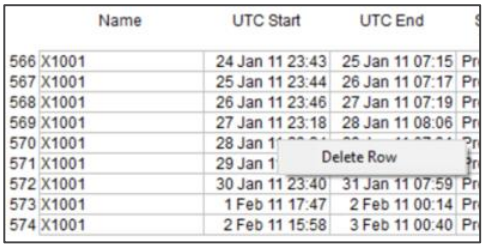
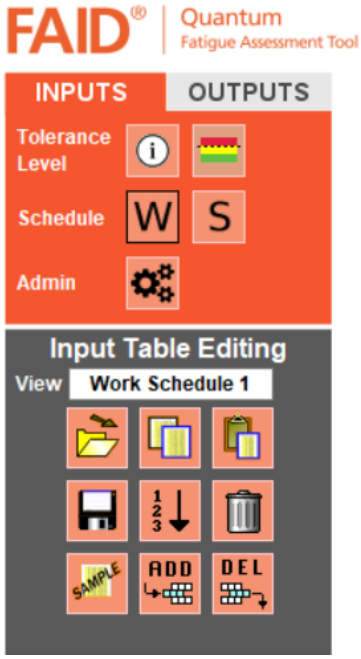


Figure 7-4 Sleep Schedule editing options using mouse

7.4.7. Saving Work Schedules



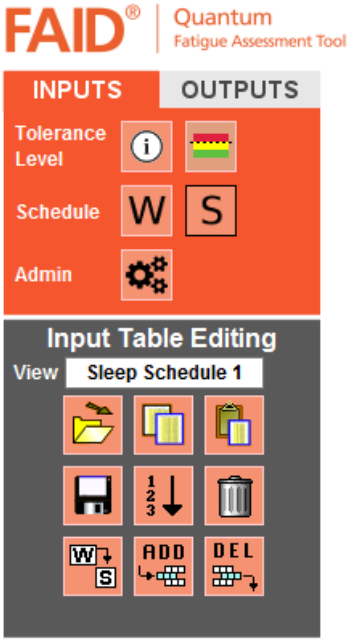
Users have the ability to save their Work Schedules and store the data for future reference.

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

NOTE: FAID Quantum file extension for Work Schedules is .fqw, 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.fqw is recommended.

7.4.8. Saving Sleep Schedules



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

1. On the **Inputs** tab in the **Input Table Editing** section from the **View** drop drown menu, select the Sleep Schedule to be saved (Sleep Schedule 1 or 2).
2. Click on the **Save Sleep Schedule to File** button to save the currently displayed Sleep Schedule.
3. In the **Select File to Write** dialogue box, enter or select a desired File Name.
4. Choose the folder/file the user wants to save in.
5. Click the **Save** button.

NOTE: The FAID Quantum Sleep Schedule file extension used is .fqs, which is effectively a comma separated text file (.csv) file format.

NOTE: Sleep Schedules 1 and 2 must be saved independently. An easily recognised file naming convention which differentiates between Sleep Schedules 1 and 2 and notes their function, e.g. sleep_schedule_1_actual.fqs is recommended.

7.4.9. Saving External Result Schedules

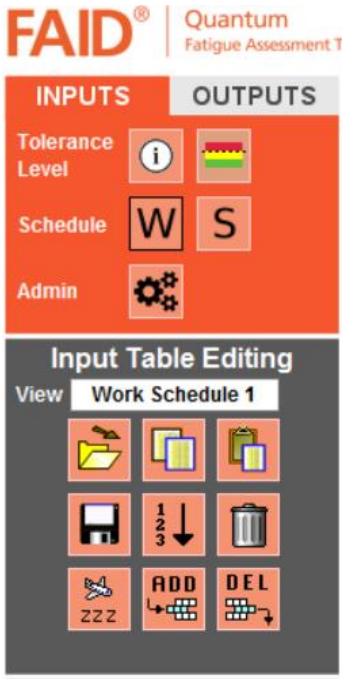
Users have the ability to save their External Result Schedules and store the data for future reference.

1. On the **Inputs** tab in the **Input Table Editing** section from the **View** drop drown menu, select the External Result Schedule to be saved (Sleep Schedule 1 or 2).
2. Click on the **Save External Result Schedule to File**  button to save the currently displayed External Result Schedule.
3. In the **Select File to Write** dialogue box, enter or select a desired File Name.
4. Choose the folder/file the user wants to save in.
5. Click the **Save** button.

NOTE: The FAID Quantum External Result Schedule file extension used is .fqr, which is effectively a comma separated text file (.csv) file format.

NOTE: External Result Schedules 1 and 2 must be saved independently. An easily recognised file naming convention which differentiates between External Result Schedules 1 and 2 and notes their function, e.g. externalresult_schedule_1_actual.fqr is recommended.

7.4.10. Add In-Flight Rest



This function allows the insertion of possible in-flight rest as well as nominating the quality of rest period as only Partial. This can be used when planning or assessing an actual roster to determine the impact of in flight sleep augmentation.

In the **Input Table Editing** section click on the **Add In Flight Rest** button in the **Input Table Editing** menu.

Additional rows are added to the Work Schedule showing Post Shift Rest Quality as “Partial”, indicating an opportunity for in flight rest, taking into account the less than full quality sleep during inflight rest periods.

NOTE: Should the user wish to use this function and the appropriate icon is not visible (but the Sample icon is visible in bottom left hand corner), go to Admin > Settings > Aviation and change the **In Flight Rest Button** from **No** to **Yes**.

TIP: To be able to easily view the difference that adding In-Flight Rest would make, first copy Work Schedule 1 to Work Schedule 2 and apply the In Flight Rest to Work Schedule 1, run the analysis and then compare Work Schedules.

Please Note: “Partial” is defined as 50% of normal sleep quality and would normally apply to sleep achieved during in-flight rest. Such a selection would require Class 1 Quality Rest facilities to be available on the aircraft. 50% has only been populated for demonstration purposes. The percentage of sleep quality represented by the “Partial” setting needs to be determined by the operator and could then be adjusted within the software. It should be noted that good quality in-flight rest facilities are essential for “any” quality of sleep to be obtained. An appropriate sleep quality setting can be determined through a scientific sleep study and risk assessment process.

	Name	UTC Start	Origin	Origin Start	UTC End	Destn	Destination End	Post Shift Rest Quality	Activity Code
1	D10000	27 Dec 10 1955	LHR	27 Dec 10 1955	27 Dec 10 2125	LHR	27 Dec 10 2125	Full	Brief
2	D10000	27 Dec 10 2125	LHR	27 Dec 10 2125	28 Dec 10 0058		28 Dec 10 0058	Partial	FL
3	D10000	28 Dec 10 0606		28 Dec 10 0606	28 Dec 10 0940	HKG	28 Dec 10 1740	Full	FL
4	D10000	28 Dec 10 0940	HKG	28 Dec 10 1740	28 Dec 10 1010	HKG	28 Dec 10 1810	Full	Debrief
5	D10000	30 Dec 10 0950	HKG	30 Dec 10 1750	30 Dec 10 1110	HKG	30 Dec 10 1910	Full	Brief
6	D10000	30 Dec 10 1110	HKG	30 Dec 10 1910	30 Dec 10 1433		30 Dec 10 2233	Partial	FL
7	D10000	30 Dec 10 1656		31 Dec 10 0056	30 Dec 10 2020	SYD	31 Dec 10 0720	Full	FL
8	D10000	30 Dec 10 2020	SYD	31 Dec 10 0720	30 Dec 10 2050	SYD	31 Dec 10 0750	Full	Debrief
9	D10000	1 Jan 11 0325	SYD	1 Jan 11 1425	1 Jan 11 0445	SYD	1 Jan 11 1545	Full	Brief
10	D10000	1 Jan 11 0445	SYD	1 Jan 11 1545	1 Jan 11 0810		1 Jan 11 1910	Partial	FL
11	D10000	1 Jan 11 1035		1 Jan 11 2135	1 Jan 11 1400	HKG	1 Jan 11 2200	Full	FL

Figure 7-5 Work Schedule after Flight Rest has been added

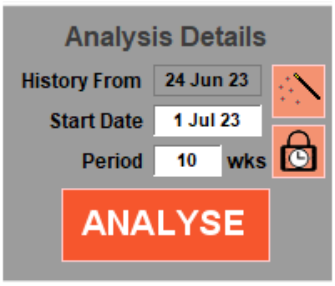
NOTE: In the Input Settings **Yes** must be selected for **Include Post Shift Rest Quality** in order for In Flight Rest to be added.

8. INPUTS Tab - Analysis

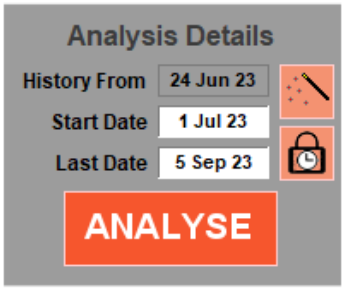
Once users have successfully added a **Work Schedule** (either **1** or **2**), by their selected method, and have entered a Sleep Schedule if one is available (either 1 or 2), an analysis can be run to compare output results scored against the set Tolerance Levels.

If a Sleep Schedule is not provided, FAID Quantum will generate a predicted Sleep Schedule during the analysis process.

NOTE: When analysing a work schedule with Time Zone movement, a work history of 15 days is recommended to best correct an individual's current body clock before the start of the Analysis Period.



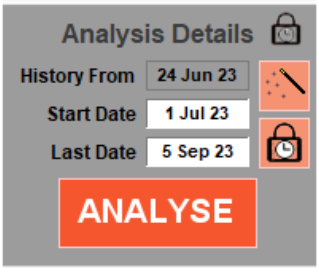
1. Click on the **Date and Period Wizard** button. This ensures analysis will pick up latest Work Schedule data and automatically sets the **Start Date** and **History From** Date fields ensuring the appropriate days of work history is used before Start Date.



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). To analyse a subset of data, go to **Admin** > **Settings** > **Analysis** and ensure that **Select Last Date for Analysis** = **Yes**

3. Click on the **Analyse** ANALYSE button

Also, the user can click on the **Lock Date** button to lock the Analysis Details.



The **Lock Date** icon will appear to indicate the **Analysis Details** will not automatically change if Work Schedule is edited, unless the user manually edits a Date cell, or uses the Date and Period Wizard button**.**

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

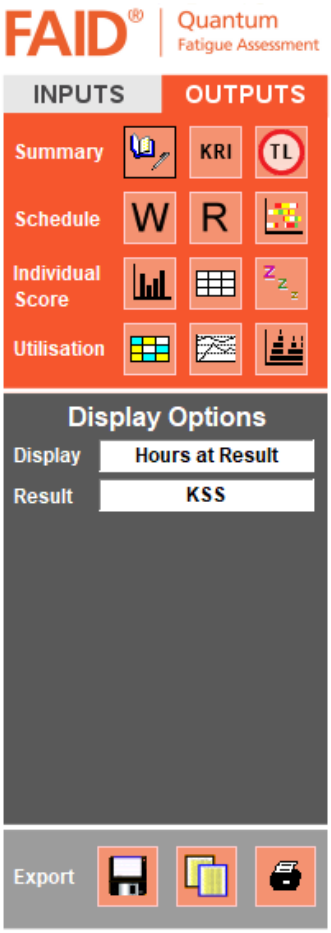
If the Start Date is manually changed to the first date of shift data entered, the first week of analysis/Outputs will under-estimate the fatigue exposure of the hours of work, as no work periods existed in the preceding 15 days, when Time Zone movement in Work Schedule that have been counted as history data (when Input Settings > Work Schedule > Use Time Zone Details = Yes) or 7 days that have been counted as history data (when Input Settings > Work Schedule > Use Time Zone Details = No). Thus, it is recommended that the Start Date not be changed to the date of the first shifts entered.

When reviewing time zone travel, fifteen days of history is required to ensure that a reasonable estimate is provided for the starting body clock of individuals.

FAID Score: FAID Quantum 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 FAID Score Tolerance Level (FTL) is set, the analysis also calculates the time an individual spends at various FAID Condition levels.

KSS: The FAID Quantum BMM is able to determine a KSS score from predicted sleep periods utilising an implementation of the Three Process Model of Alertness (Akerstedt & Folkard,1995). The implementation in FAID Quantum BMM does not include the sleep inertia component of that model. Resulting outputs can be viewed and examined by using the various functions available on the **Outputs** tab.

9. OUTPUTS Tab



Once a Work Schedule is analysed, the user will be presented with the **Hours at Result - KSS 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
- Schedule
- Individual Score
- Utilisation

9.1. Summary

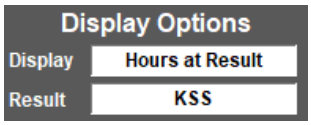
9.1.1. Hours at Result – KSS Summary

If a KTL was selected, on this screen FAID Quantum provides the Compliance percentage which is the percentage of hours of the analysed Sleep Schedule that are below the set Tolerance Level, as well as the user defined corporate Target Compliance percentage to compare performance against (if Target Compliance percentage is not displayed, go to Inputs > Admin > Settings > Summary > Display Target Compliance % = No and change to **Yes** (see **Section 6.1.3.1**).

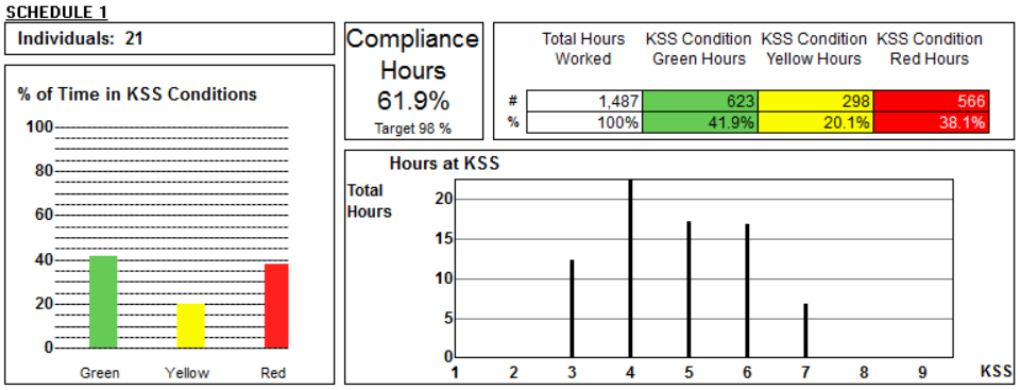
The screen also displays the KSS Conditions for the total number of hours worked within the analysed Work Schedule. These can be used to categorise the level of controls that are required to be implemented by users based on the scale that is set by FAID Quantum. KSS Conditions use the following scale:

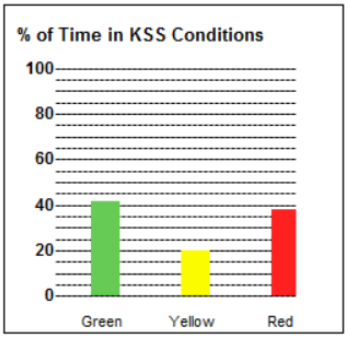
- Red (KSS points above the KTL)
- Yellow (Within 1 KSS point of the KTL)
- Green (Less than 1 KSS point below the KTL)

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

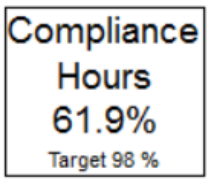


The Hours at Result - KSS display gives a summary of the overall analysis of the Work Schedule. In-depth explanations of the results follow.

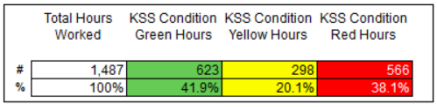




This graph displays the **% of Time in KSS Condition**s (Green, Yellow & Red) over the entire Work Schedule. When the Display Option **Shift Peak Condition GYR** is selected, the graph shows number and percentage of shifts in KSS Conditions.



Compliance % for the Sleep 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**.



This table shows total hours worked based on KSS 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 KSS Conditions rather than **hours** in KSS Conditions.

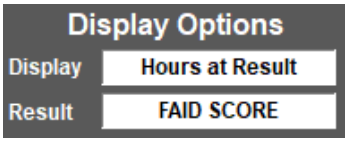
9.1.2. Hours at Result – FAID Score Summary

If a Tolerance Level was selected, on this screen FAID Quantum 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 (if Target Compliance percentage is not displayed, goto Inputs > Admin > Settings > Outputs > Summary > Display Target Compliance % = No and change to **Yes** (see **Section 6.1.3.1**).

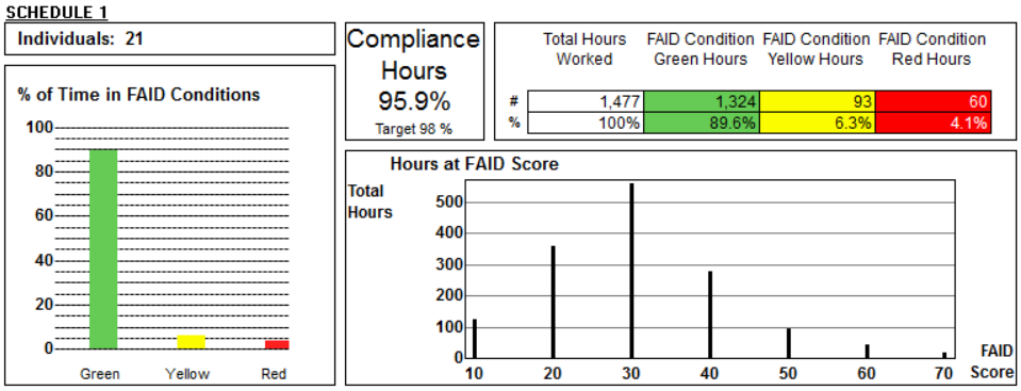
The screen also displays the FAID Conditions for the total number of hours worked within the analysed Work Schedule. These can be used to categorise the level of controls that are required to be implemented by users based on the scale that is set by FAID Quantum. FAID Conditions use the following scale:

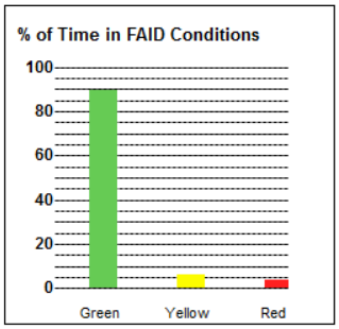
- Red (Above FTL)
- Yellow (Within 10 points of FTL)
- Green (Less than 10 points below FTL)

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

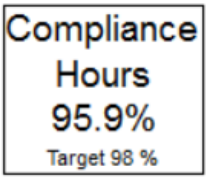


The Hours at Result FAID Score display gives a summary of the overall analysis of the Work Schedule. In-depth explanations of the results follow.





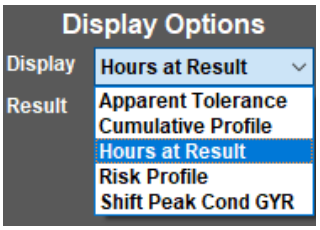
This graph displays the **% of Time in FAID Conditions** (Green, Yellow & Red) over the entire Work Schedule. When the Display Option **Shift Peak Condition GYR** is selected, the graph shows number and percentage of shifts in FAID Conditions.



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
#	1,477	1,324	93	60
%	100%	89.6%	6.3%	4.1%

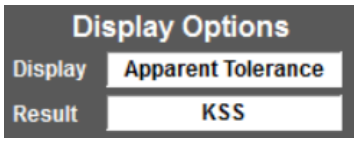
This table shows total hours worked based on FAID Conditions when Display option for hours is selected. When the Display Option **for shifts (i.e. Shift Peak GYR Condition)** is selected, the table shows number and percentage of **shifts** in FAID Conditions rather than **hours** in FAID Conditions.



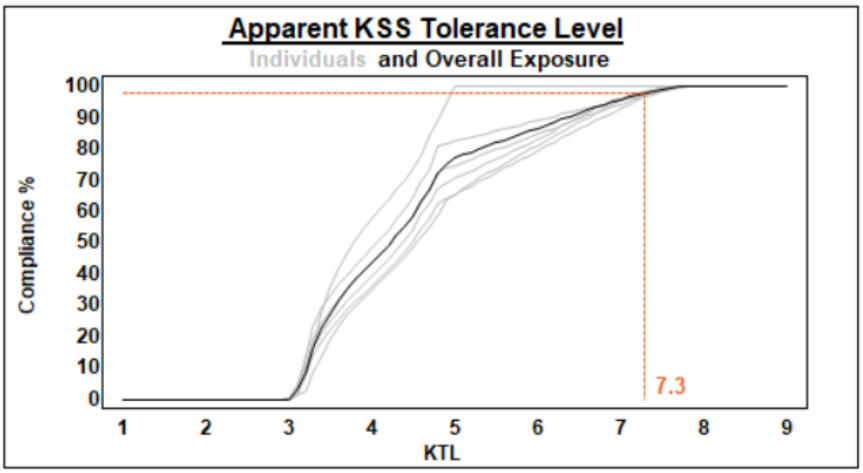
The default Display Option is **Hours at Result**.

In **Display Options**, click in the **Display** box, a drop-down menu provides the options.

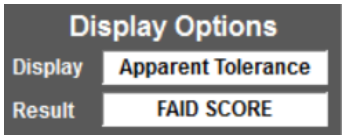
9.1.3. Apparent Tolerance – KSS Summary



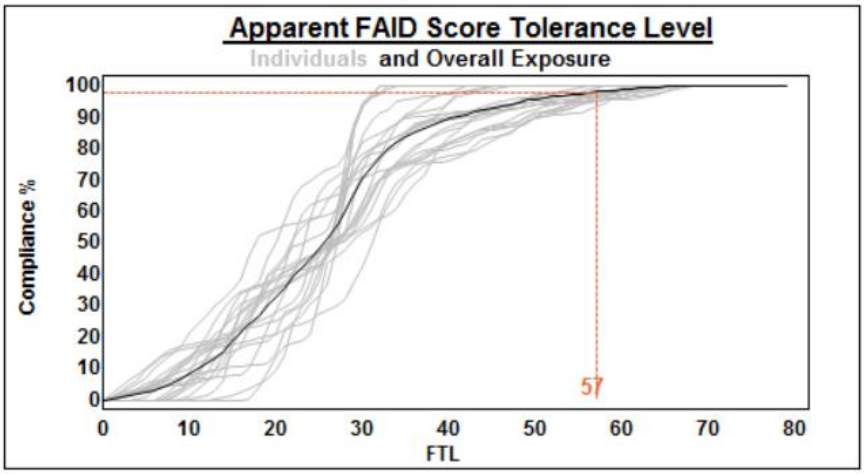
The **Apparent KTL** display represents the compliance of each individual and an overall Sleep Schedule compliance for different KTLs ranging from one to highest needed to achieve 100% compliance, with a highlighted display of the KTL when overall 98% (default) compliance is achieved. The 'Apparent' Tolerance Level represents the KSS at which (by default) 98% of the hours analysed are less than (or within). Hence, a higher 'Apparent' KTL 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 KTL is chosen in Inputs. When six to twelve months of Actual Hours of Work are analysed, the Apparent KTL 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 KTLs.



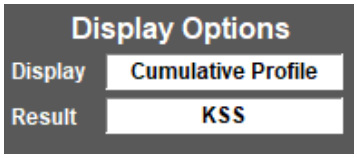
9.1.4. Apparent Tolerance – FAID Score Summary



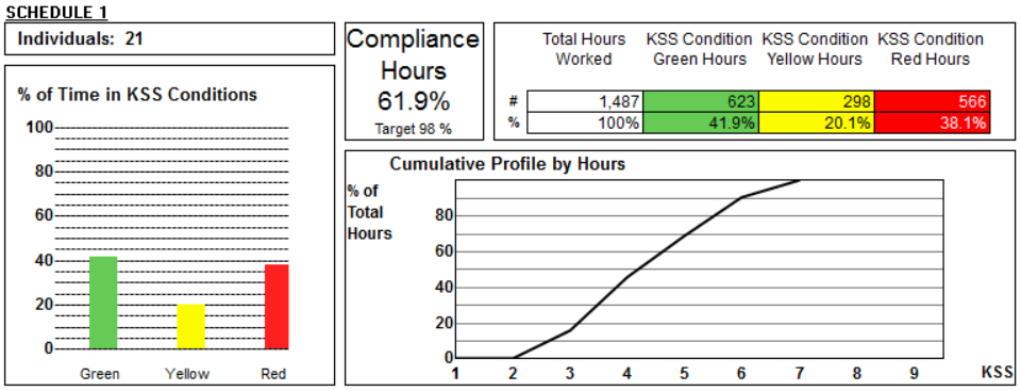
The **Apparent FTL** (default with No FTL) display represents the compliance of each individual and an overall Work Schedule compliance for different FTLs ranging from zero to highest needed to achieve 100% compliance, with a highlighted display of the FTL when overall 98% (default) compliance is achieved. The 'Apparent' Fatigue Score 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.



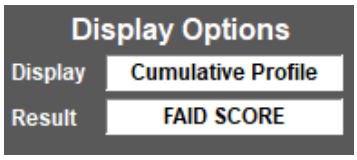
9.1.5. Cumulative Profile – KSS Summary



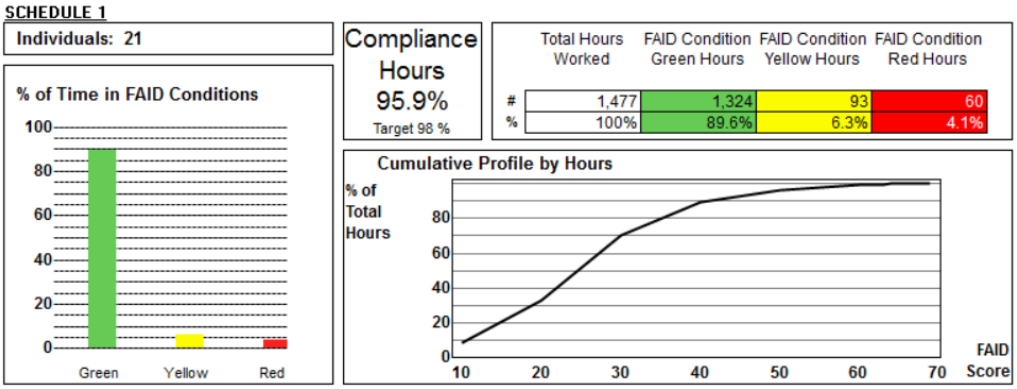
The **Cumulative Profile** display shows the cumulative percentage of total hours at each 1 KSS bracket. A profile showing a quick rise in the y-axis would represent the bulk of the total hours being worked at a lower KSS, with a lesser percentage of the hours worked at the higher end of the scale.



9.1.6. Cumulative Profile – FAID Score Summary



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.



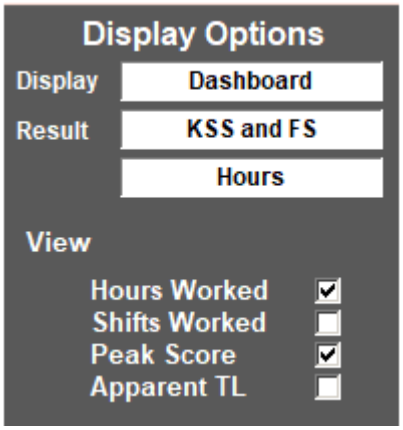
9.1.7. Dashboard – KSS Summary

If a KTL was selected, on this screen FAID Quantum provides the Compliance percentage which is the percentage of hours, and shifts, 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 (if Target Compliance percentage is not displayed, go to Inputs > Admin > Settings > Summary > Display Target Compliance % = No and change to **Yes** (see **Section 6.1.3.1**).

The screen also displays the Peak KSS Score and Apparent Tolerance Level 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 Quantum. KSS Conditions use the following scale:

- Red (KSS points above the KTL)
- Yellow (Within 1 KSS point of the KTL)
- Green (Less than 1 KSS point below the KTL)

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

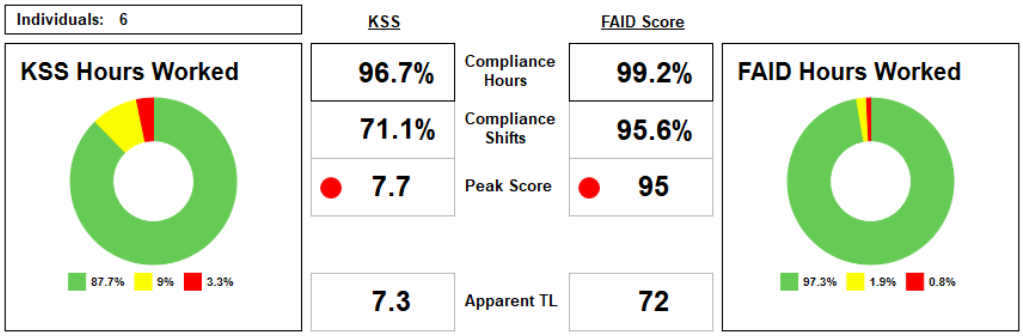


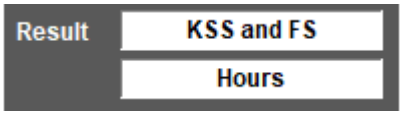
There are Display Options for the Dashboard view.

Results can be KSS, FAID Score, or a combination of both.

The **View** has the options, via tick box, to have:

- Hours Worked
- Shifts Worked
- Peak Score
- Apparent TL





The donut graphs displays the selected **View** (Hours, Shifts, Peak Score) over the entire Work Schedule. The graph shows number and percentage of hours, or shifts, in KSS Conditions.

The corporate **Target Compliance % is indicated**. Depending on the Display Option chosen, this changes from **Compliance Hours** to **Compliance Shifts**.

Red dot for non-compliance, Green dot for compliance. If **Two-Levels** selected in Settings – Ouputs then Yellow dot will be displayed too.

9.1.8. Dashboard – FAID Score Summary

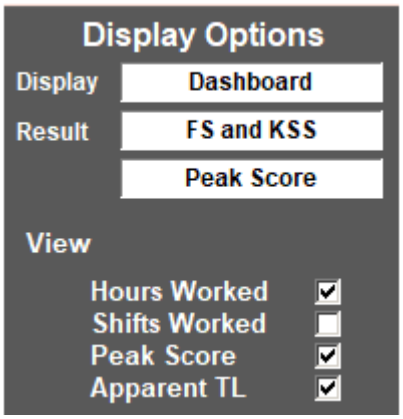
If a Tolerance Level was selected, on this screen FAID Quantum provides the Compliance percentage which is the percentage of hours, and shfits, of the analysed Work Schedule that are below the set Tolerance Level, as well as the user defined corporate Target Compliance percentage to compare performance against (if Target Compliance percentage is not displayed, goto Inputs > Admin > Settings > Outputs > Summary > Display Target Compliance % = No and change to **Yes** (see **Section 6.1.3.1**).

The screen also displays the Peak FAID Score and Apparent Tolerance Level 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 Quantum. 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.

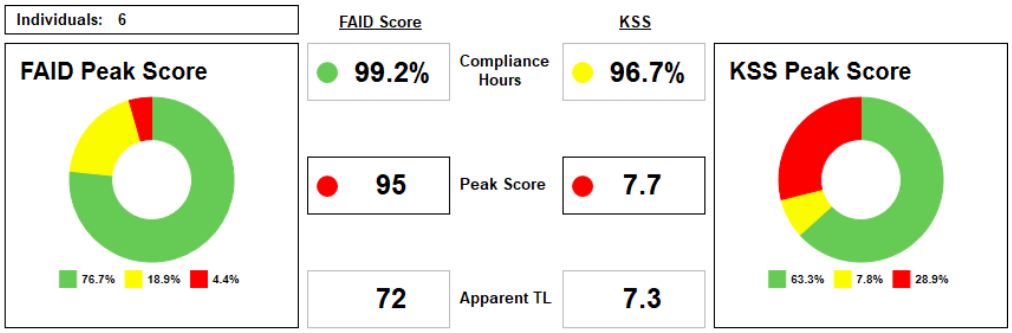


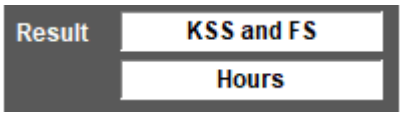
There are Display Options for the Dashboard view.

Results can be FAID Score, KSS, or a combination of both.

The View has the options, via tick box, to have:

- Hours Worked
- Shifts Worked
- Peak Score
- Apparent TL



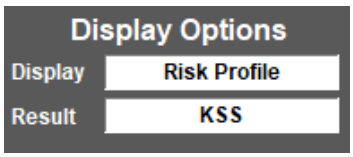


The donut graphs displays the selected **View** (Hours, Shifts, Peak Score) over the entire Work Schedule. The graph shows number and percentage of hours, or shifts, in FAID Conditions.

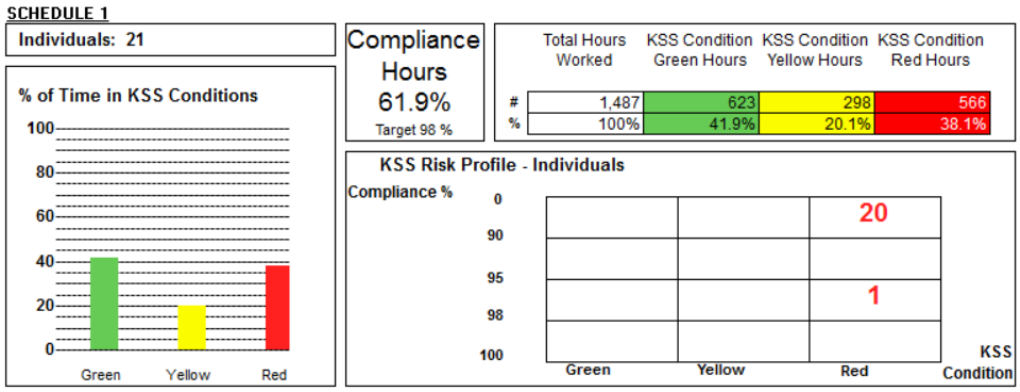
The corporate **Target Compliance % is indicated**. Depending on the Display Option chosen, this changes from **Compliance Hours** to **Compliance Shifts**.

Red dot for non-compliance, Green dot for compliance. If **Two-Levels** selected in Settings – Ouputs then Yellow dot will be displayed too.

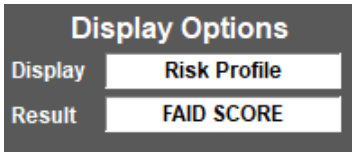
9.1.9. Risk Profile – KSS Summary



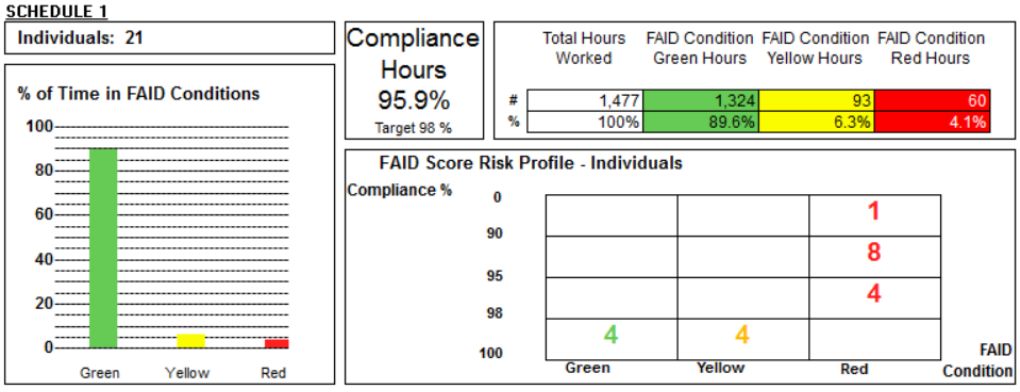
The **Risk Profile** display shows a count of how many individuals peaked in Green, Yellow or Red KSS Conditions, and places them into the matrix based on their relevant Compliance % band (as set-up in the Settings section of the Inputs tab) and Peak KSS Condition. Also displayed are the Total Hours worked and the percentage of KSS Condition Hours. In the example below, the work patterns analysed showed 20 individuals with scores peaking in the KSS Red Condition (above the KTL) with Compliance percentages <90% and one individual Compliance between 95 and 98%.



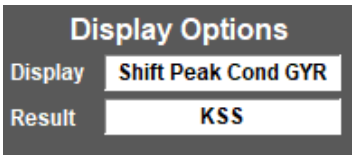
9.1.10. Risk Profile – FAID Score Summary



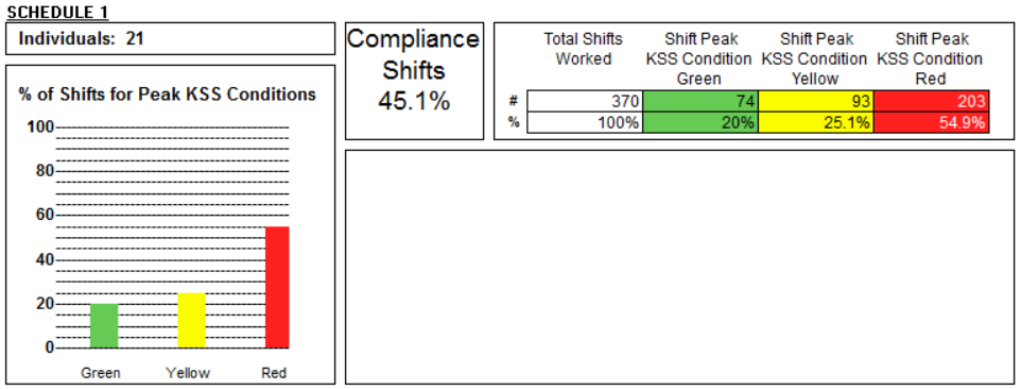
The **Risk Profile** display shows a count of how many individuals peaked in Green, Yellow or Red FAID Conditions, and places them into the matrix based on their relevant Compliance % band (as set-up in the Settings section of the Inputs tab) and Peak FAID Condition. Also displayed are the Total Hours worked and the percentage of FAID Condition Hours. In the example below, the work patterns analysed showed 13 individuals with FAID Scores peaking in the FAID Red Condition (above the FTL) with Compliance percentages lower than 98%. Four individuals' peak scores were within 10 points of the FTL, and the remaing four individuals had Peak FAID Scores less than 10 points below the FTL.



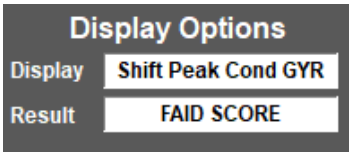
9.1.11. Shift Peak Condition GYR – KSS Summary



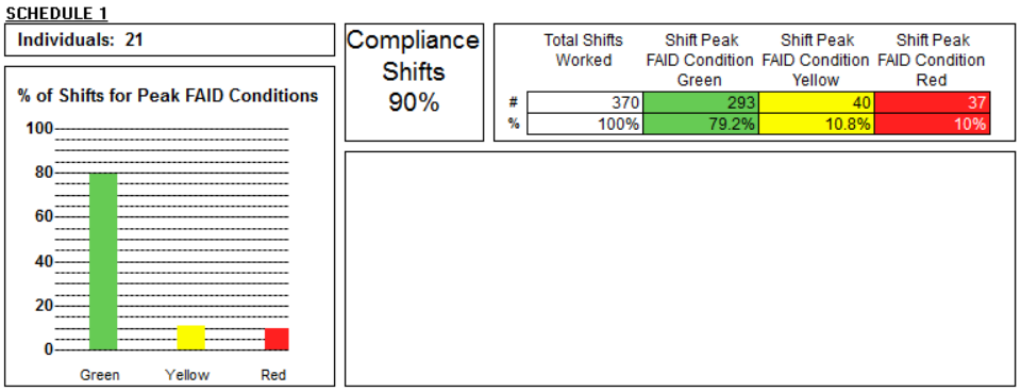
The **Shift Peak Condition GYR** display indicates how many shifts achieved the various KSS Conditions (in Green, Yellow, Red). Also displayed are the Total Shifts worked and the percentage of Shifts Peaks for the different KSS Conditions.



9.1.12. Shift Peak Condition GYR – FAID Score Summary



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



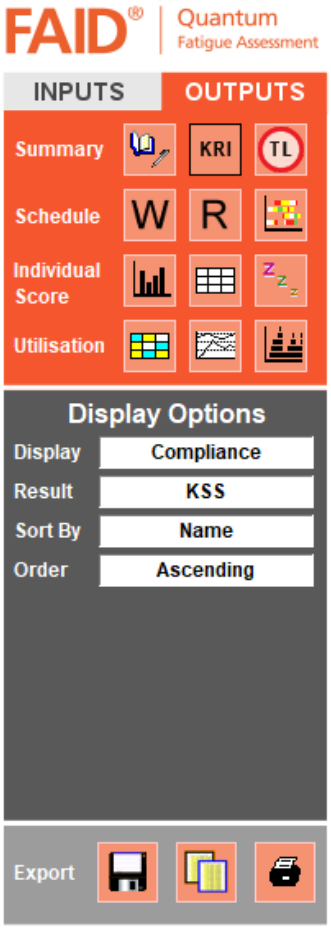
9.2. Key Risk Indicators

There are different types of Key Risk Indicators available on the **Output** tab in the **Summary** section, which can be used to analyse a Work Schedule, each Key Risk Indicator is broken down into KSS and FAID Score outputs.

The **Key Risk Indicators** are:

- **Compliance** - Percentage to the KSS (or FAID Score) Tolerance Level for hours worked
- **Peak Condition** – Peak KSS (or FAID Score) Condition for Work Periods
- **Hour of Day** - Hours worked profile & Percentage of Hours Worked above the set Tolerance Level.
- **Monthly Compliance** - Graphical display of the Compliance each month
- **Rollup Peak Condition** – Peak KSS (or FAID Score) Condition for Rolled up Work Periods (if in Settings Outputs Perform Rollup in Outputs = Yes).
- **External Results** – KSS (or FAID Score) for external results at the time, or within one hour of work period (if in Settings Inputs Inport External Results = Yes).

9.2.1. Compliance – KSS



1. On the **Outputs** tab in the **Summary** section click on the **Key Risk Indicators** KRI button.

2. In the **Display Options** section, the default in **Display** is **Compliance**, and in the Result select **KSS** which details the KTL Compliance Percentage overall and per Name, as well as the percentage of time in each KSS Condition.

3. The **Compliance Work Schedule** table can be sorted by:
   - Name
   - Total Hours
   - Total Hours >KTL
   - Compliance (%)
   - KSS Condition Green %
   - KSS Condition Yellow %
   - KSS Condition Red %
   - Peak KSS
   - Apparent KTL *

*optional if Selected in Settings – Outputs.

KTL Compliance %

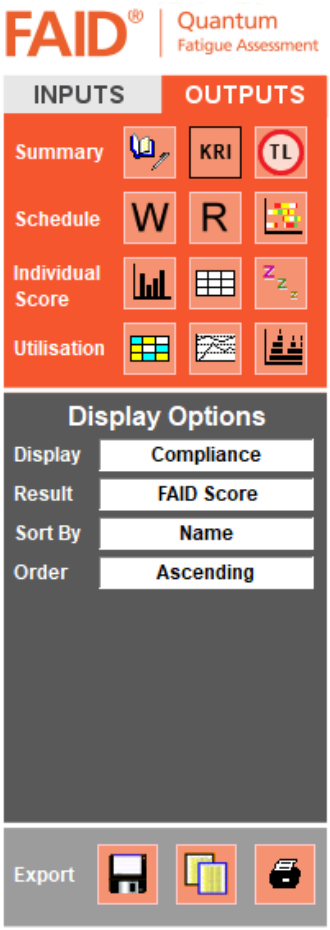
Work Schedule	Total Hours	Total Hrs> KTL	Compliance (%)	KSS Condition Green %	KSS Condition Yellow %	KSS Condition Red %	Peak KSS
1	1,487.5	278.7	81.3	61.9	19.3	18.7	8.2
2	1,487.5	278.7	81.3	61.9	19.3	18.7	8.2

Work Schedule 1

	Name	Total Hours	Total Hrs> KTL	Compliance (%)	KSS Condition Green %	KSS Condition Yellow %	KSS Condition Red %	Peak KSS
1	D10000	98.8	19.0	80.7	60.4	20.4	19.3	8.2
2	D10001	74.8	17.5	76.7	53.6	23.1	23.3	8.2
3	D10002	84.2	25.1	70.2	51.4	18.8	29.8	7.9
4	D10003	49.1	14.0	71.4	54.0	17.4	28.6	7.8
5	D10004	68.3	22.1	67.6	41.2	26.3	32.4	8.2
6	D10005	101.8	17.2	83.1	68.5	14.5	16.9	7.7
7	D10006	78.6	25.6	67.4	50.3	17.0	32.6	7.8
8	D10007	68.2	19.2	71.9	55.4	16.5	28.1	7.9
9	D10008	47.4	8.6	81.8	55.3	26.5	18.2	7.8
10	D10009	63.8	21.6	66.1	44.1	22.0	33.9	7.7

Figure 9-1 Key Risk Indicators - KTL Compliance % Report

9.2.2. Compliance – FAID Score



1. On the **Outputs** tab in the **Summary** section click on the **Key Risk Indicators** KRI button.

2. In the **Display Options** section, the default in **Display** is **Compliance**, and in the Result select **FAID Score** which details the FTL Compliance Percentage overall and per Name, as well as the percentage of time in each FAID Score Condition.

3. The **Compliance Work Schedule** table can be sorted by:
   - Name
   - Total Hours
   - Total Hours >FTL
   - Compliance (%)
   - FAID Condition Green %
   - FAID Condition Yellow %
   - FAID Condition Red %
   - Peak FAID Score
   - Apparent FTL *

* Optional if selected in Settings – Outputs

FTL Compliance %

Work Schedule	Total Hours	Total Hrs> FTL	Compliance (%)	FAID Condition Green %	FAID Condition Yellow %	FAID Condition Red %	Peak FAID Score
1	1,476.7	17.3	98.8	95.9	2.9	1.2	68
2	1,476.7	17.3	98.8	95.9	2.9	1.2	68

Work Schedule 1

	Name	Total Hours	Total Hrs> FTL	Compliance (%)	FAID Condition Green %	FAID Condition Yellow %	FAID Condition Red %	Peak FAID Score
1	D10000	98.8	1.3	98.6	96.6	2.0	1.4	64
2	D10001	74.8	1.9	97.5	91.3	6.2	2.5	66
3	D10002	84.2	1.3	98.4	92.5	5.9	1.6	64
4	D10003	54.5	2.0	96.4	90.1	6.3	3.6	67
5	D10004	62.1	1.5	97.5	89.8	7.7	2.5	65
6	D10005	101.8	3.6	96.5	94.0	2.4	3.5	66
7	D10006	78.6	0.4	99.4	91.3	8.1	0.6	61
8	D10007	68.2	0.9	98.6	96.3	2.3	1.4	63
9	D10008	47.4	0.5	98.9	94.9	3.9	1.1	61
10	D10009	63.8	2.7	95.8	94.2	1.6	4.2	68
11	D10010	39.7	1.0	97.4	90.0	7.3	2.6	62
12	D10011	73.5	0.0	100.0	95.0	5.0	0.0	58
13	D10012	59.5	0.0	100.0	100.0	0.0	0.0	45

Figure 9-2 Key Risk Indicators - FTL Compliance % Report

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

This is further expanded in the bottom table, where the figures are broken down by individual statistics.

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

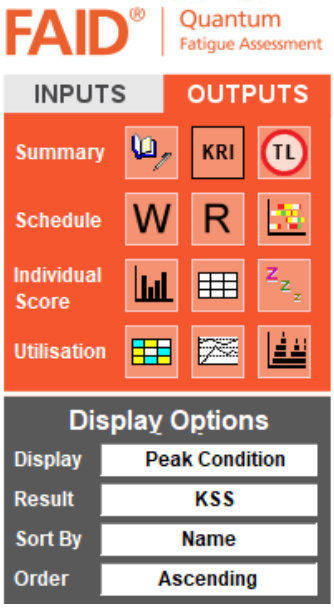
Work Schedule 1

	Name	Total Hours	Total Hrs> KTL	Compliance (%)	KSS Condition Green %	KSS Condition Yellow %	KSS Condition Red %	Peak KSS
1	D10000	98.8	19.0	80.7	60.4	20.4	19.3	8.2
2	D10001	74.8	17.5	76.7	53.6	23.1	23.3	8.2
3	D10002	84.2	25.1	70.2	51.4	18.8	29.8	7.9
4	D10003	49.1	14.0	71.4	54.0	17.4	28.6	7.8
5	D10004	68.3	22.1	67.6	41.2	26.3	32.4	8.2
6	D10005	101.8	17.2	83.1	68.5	14.5	16.9	7.7
7	D10006	78.6	25.6	67.4	50.3	17.0	32.6	7.8
8	D10007	68.2	19.2	71.9	55.4	16.5	28.1	7.9
9	D10008	47.4	8.6				18.2	7.8
10	D10009	63.8	21.6				33.9	7.7
11	D10010	39.7	12.5				31.4	7.5
12	D10011	73.5	22.0				30.0	8.2
13	D10012	59.5	7.2				12.2	7.9
14	D10013	84.3	1.3				1.5	6.4
15	D10014	59.1	1.0				1.7	6.6
16	D10015	72.4	6.2				8.5	7.7
17	D10016	101.8	23.5				23.1	7.9

View FAID Score Plot
View FAID Score Table
View KSS Plot
View KSS Table
View Sleep Estimate Plot

Figure 9-3 Right clicking on a row to retrieve additional data

9.2.3. Peak Condition for Work Periods – KSS



1. On the **Outputs** tab, in the **Summary** section click on the **Key Risk Indicators** KRI button.
2. In the Key Indicators **Display Options** section, from the drop-down menus, select **Peak Condition** for **Display** and select **KSS** for **Result.**
3. The **Work Schedule** table can be sorted in **ascending** or **descending** order by:
   - Name
   - #Green
   - #Yellow
   - #Red
   - Total
   - %Green
   - %Yellow
   - %Red

Peak KSS Conditions for Work Periods

Peak KSS Condition	# of Work Periods	% of Work Periods
Green	167	0.5
Yellow	81	0.2
Red	122	0.3
Total	370	100.0

Work Schedule 1

	Name	# of Work Periods Max KSS	# of Work Periods Max KSS	# of Work Periods Max KSS	Total	% of Work Periods Max KSS	% of Work Periods Max KSS	% of Work Periods Max KSS
1	D10000	10	6	10	26	38.5	23.1	38.5
2	D10001	8	4	8	20	40.0	20.0	40.0
3	D10002	7	4	11	22	31.8	18.2	50.0
4	D10003	5	5	4	14	35.7	35.7	28.6
5	D10004	4	6	7	17	23.5	35.3	41.2
6	D10005	12	5	8	25	48.0	20.0	32.0
7	D10006	6	6	8	20	30.0	30.0	40.0
8	D10007	9	4	8	21	42.9	19.0	38.1
9	D10008	4	2	6	12	33.3	16.7	50.0
10	D10009	7	3	9	19	36.8	15.8	47.4
11	D10010	4	2	4	10	40.0	20.0	40.0

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

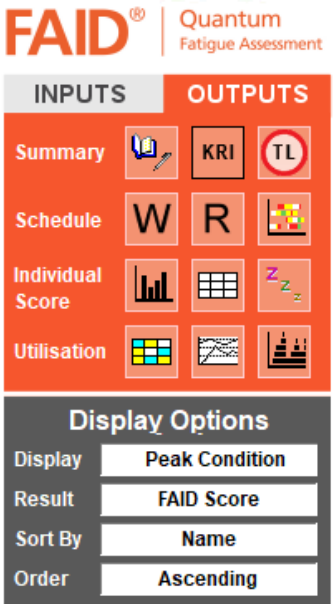
The top table shows the total number of work periods in the Work Schedule, how many work periods and the percentage of work periods categorised into each Peak KSS Condition.

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

NOTE: FAID Quantum nominally categorises KSS Conditions using the following scale:

- *Red* (KSS points above the KTL)
- *Yellow* (Within 1 KSS point of the KTL)
- *Green* (Less than 1 KSS point below the KTL)

9.2.4. Peak Condition for Work Periods – FAID Score



1. On the **Outputs** tab, in the **Summary** section click on the **Key Risk Indicators** KRI button.
2. In the Key Indicators **Display Options** section, from the drop-down menus, select **Peak Condition** for **Display** and select **FAID Score** for **Result.**
3. The **Work Schedule** table can be sorted in **ascending** or **descending** order by:
   - Name
   - #Green
   - #Yellow
   - #Red
   - Total
   - %Green
   - %Yellow
   - %Red

Peak FAID Score Conditions for Work Periods

Peak FAID Condition	# of Work Periods	% of Work Periods
Green	333	90.0
Yellow	15	4.1
Red	22	5.9
Total	370	100.0

Work Schedule 1

	Name	# of Work Periods Max Green	# of Work Periods Max Yellow	# of Work Periods Max Red	Total	% of Work Periods Max Green	% of Work Periods Max Yellow	% of Work Periods Max Red
1	D10000	21	3	2	26	80.8	11.5	7.7
2	D10001	17	1	2	20	85.0	5.0	10.0
3	D10002	18	2	2	22	81.8	9.1	9.1
4	D10003	10	2	2	14	71.4	14.3	14.3
5	D10004	14	1	2	17	82.4	5.9	11.8
6	D10005	21	0	4	25	84.0	0.0	16.0
7	D10006	17	2	1	20	85.0	10.0	5.0
8	D10007	19	0	2	21	90.5	0.0	9.5
9	D10008	10	0	2	12	83.3	0.0	16.7
10	D10009	17	0	2	19	89.5	0.0	10.5

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

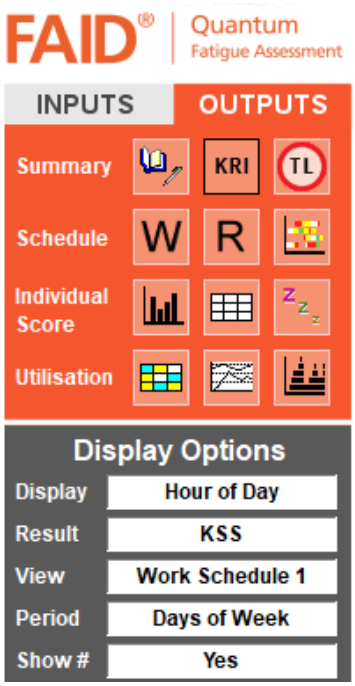
The top table shows the total number of work periods in the Work Schedule, how many work periods and the percentage of work periods categorised into each Peak FAID Score Condition.

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

NOTE: FAID Quantum nominally categorises FAID Score Conditions using the following scale:

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

9.2.5. Hour of Day Profile – KSS



1. On the **Outputs** tab in the **Summary** section click on the **Key Risk Indicators** KRI button.

2. From the drop-down menus in the **Display Options** select **Hour of Day** in **Display** and **KSS** in **Result**.

3. The **Hours Worked Profile** table and **Percentage (%) of hours Worked > Tolerance Level** table can display:

   - Days of Week
   - Weekly
   - Monthly

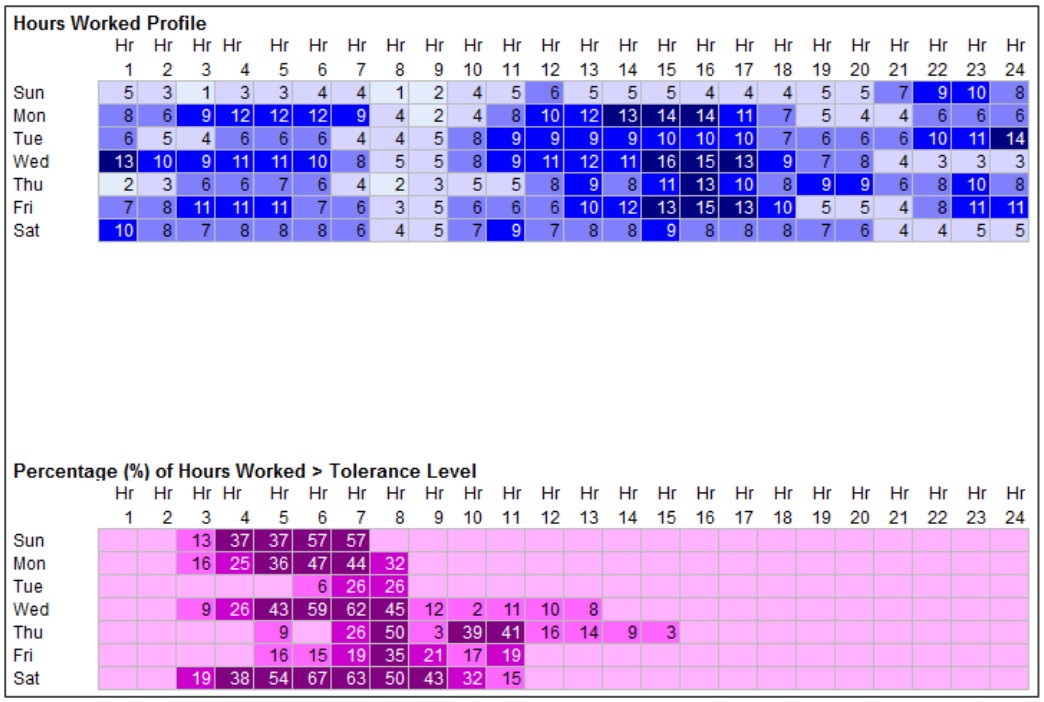
Hours Worked Profile

	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	43	45	47	49	49	49	45	32	15	8	6	8	6	7	5	4	5	6	5	6	8	12	15	28
Mon	40	46	47	47	47	47	43	31	18	15	15	17	16	16	15	14	11	8	10	9	10	14	21	40
Tue	55	60	61	62	62	61	55	39	18	16	16	18	20	20	19	19	18	15	17	17	16	18	21	37
Wed	50	55	57	59	59	59	56	41	22	19	16	18	16	15	16	16	14	11	9	10	6	6	8	27
Thu	43	51	54	55	55	55	54	39	13	8	6	10	10	9	10	11	9	7	7	9	8	9	17	33
Fri	47	54	54	54	54	52	46	32	15	10	9	10	12	11	12	13	12	13	14	14	13	15	22	36
Sat	50	52	52	52	52	50	45	34	18	15	15	14	14	13	10	10	9	8	7	7	5	6	12	29

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	10	7	6	6	6	3																		3
Mon	15	18	17	17	16	11	3																	7
Tue	10	7	7	8	7	6	4	3	6	3														8
Wed	16	13	14	13	11	8	5	2	5	5														3
Thu	5	4	5	5	4	3	2	3	8	11													9	16
Fri	17	11	13	14	6	4	4	6	14	11													3	13
Sat	18	12	15	17	16	13	9	12	23	16														5

Figure 9-4 - Days of Week showing Local time



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	5	3	1	3	3	4	4	1	2	4	5	6	5	5	5	4	4	4	5	5	7	9	10	8
Mon	8	6	9	12	12	12	9	4	2	4	8	10	12	13	14	14	11	7	5	4	4	6	6	6
Tue	6	5	4	6	6	6	4	4	5	8	9	9	9	9	10	10	10	7	6	6	6	10	11	14
Wed	13	10	9	11	11	10	8	5	5	8	9	11	12	11	16	15	13	9	7	8	4	3	3	3
Thu	2	3	6	6	7	6	4	2	3	5	5	8	9	8	11	13	10	8	9	9	6	8	10	8
Fri	7	8	11	11	11	7	6	3	5	6	6	6	10	12	13	15	13	10	5	5	4	8	11	11
Sat	10	8	7	8	8	8	6	4	5	7	9	7	8	8	9	8	8	8	7	6	4	4	5	5

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			13	37	37	57	57																	
Mon			16	25	36	47	44	32																
Tue						6	26	26																
Wed			9	26	43	59	62	45	12	2	11	10	8											
Thu					9		26	50	3	39	41	16	14	9	3									
Fri					16	15	19	35	21	17	19													
Sat			19	38	54	67	63	50	43	32	15													

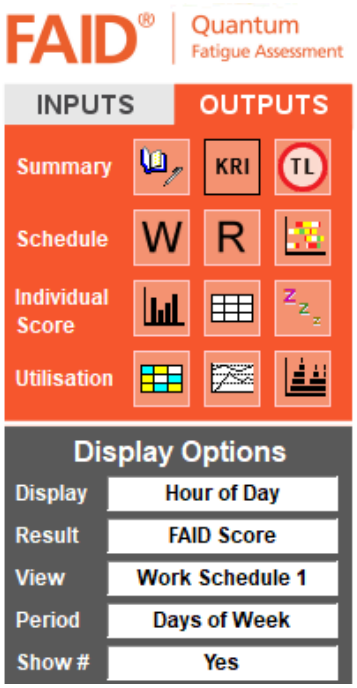
Figure 9-5 Days of Week showing UTC time

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, using either UTC or Local Time (if Time Zones used during the Analysis process).

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

9.2.6. Hour of Day Profile – FAID Score

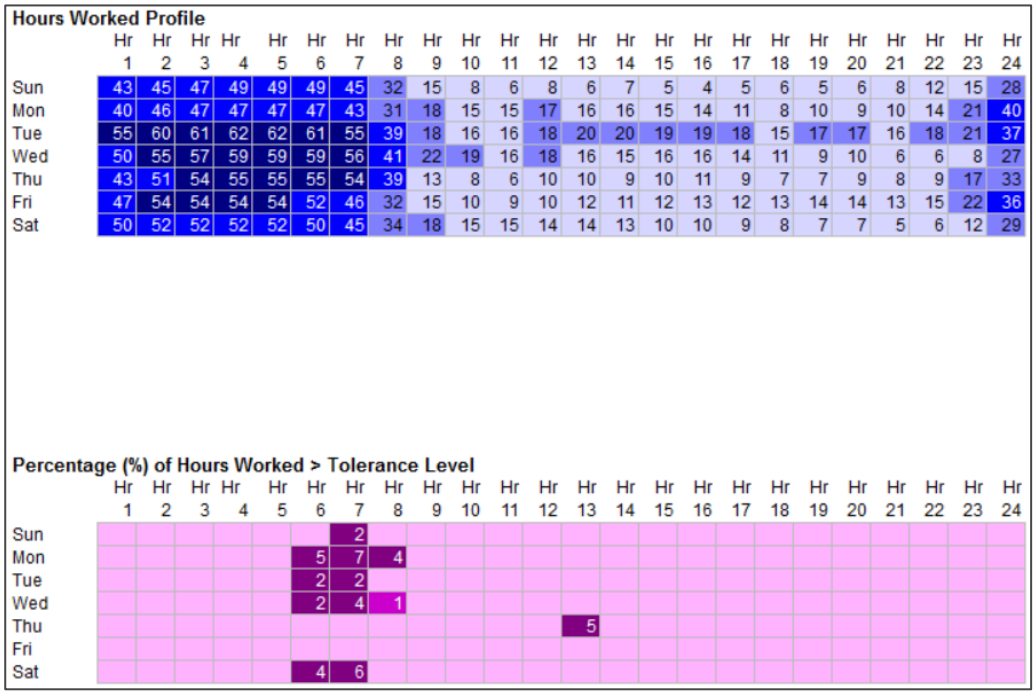


1. On the **Outputs** tab in the **Summary** section click on the **Key Risk Indicators** KRI button.

2. From the drop-down menus in the **Display Options** select **Hour of Day** in **Display** and **FAID Score** in **Result**.

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	43	45	47	49	49	49	45	32	15	8	6	8	6	7	5	4	5	6	5	6	8	12	15	28
Mon	40	46	47	47	47	47	43	31	18	15	15	17	16	16	15	14	11	8	10	9	10	14	21	40
Tue	55	60	61	62	62	61	55	39	18	16	16	18	20	20	19	19	18	15	17	17	16	18	21	37
Wed	50	55	57	59	59	59	56	41	22	19	16	18	16	15	16	16	14	11	9	10	6	6	8	27
Thu	43	51	54	55	55	55	54	39	13	8	6	10	10	9	10	11	9	7	7	9	8	9	17	33
Fri	47	54	54	54	54	52	46	32	15	10	9	10	12	11	12	13	12	13	14	14	13	15	22	36
Sat	50	52	52	52	52	50	45	34	18	15	15	14	14	13	10	10	9	8	7	7	5	6	12	29

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							2																	
Mon						5	7	4																
Tue						2	2																	
Wed						2	4	1																
Thu													5											
Fri																								
Sat						4	6																	

Figure 9-6 - Days of Week showing Local time

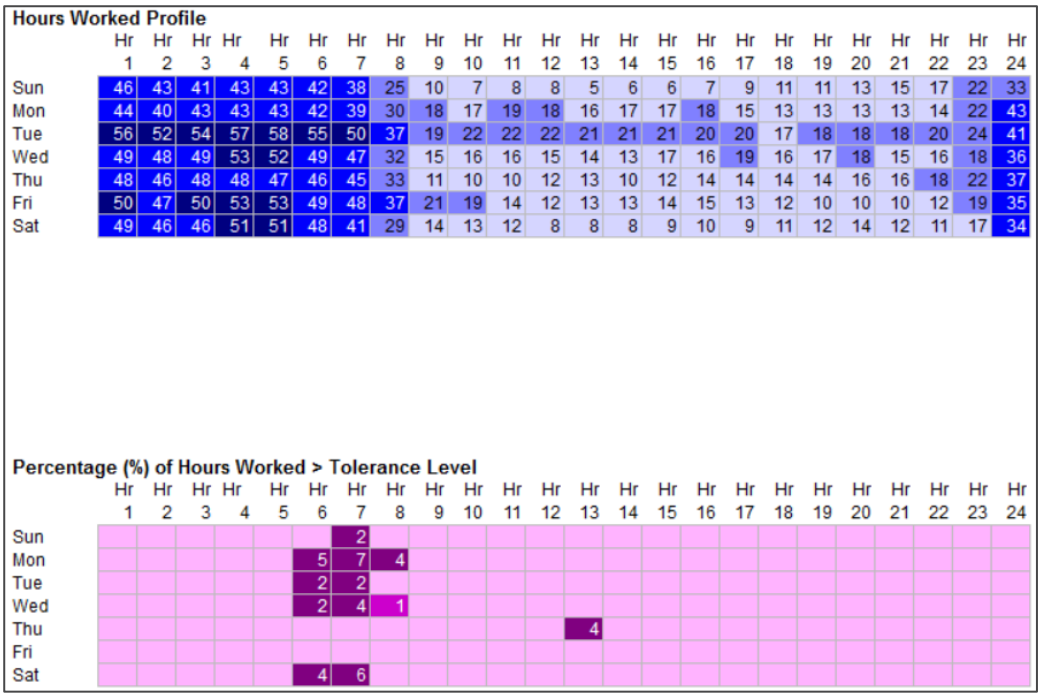


Figure 9-7 Days of Week showing UTC time

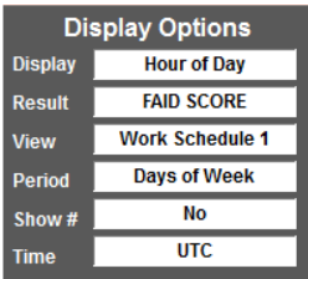
The Hours of Day Worked Profile screen shows the **Hours Worked Profile** table and the **Percentage (%) of Hours Worked > Tolerance Level** table. On this screen the user can examine the relative fatigue exposure at each hour of the day.

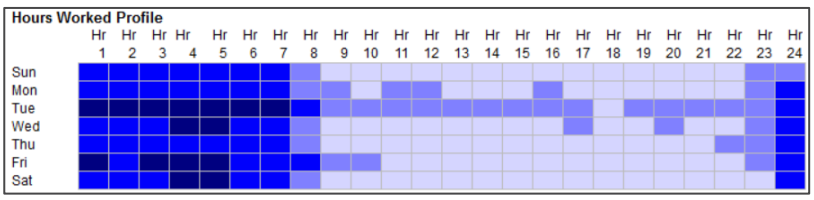
The **Hours Worked Profile** table shows the total number of hours worked at specific times of the day for the entire Work Schedule, using either UTC or Local Time (if Time Zones used during the Analysis process).

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

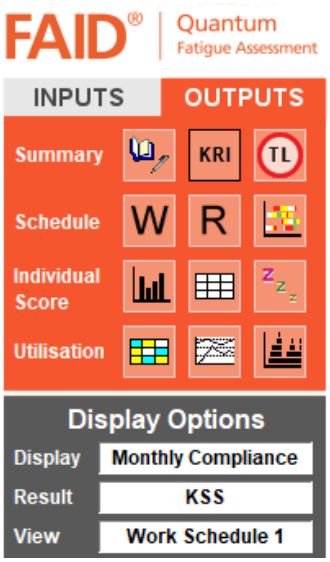
NOTE:

- 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).





9.2.7. Monthly Compliance Graph



1. On the **Outputs** tab in the **Summary** section click on the **Key Risk Indicators** KRI button.

2. From the in the **Display Options** drop-down menu select **Monthly Compliance** and then select either **KSS** or **FAID Score** from the **Result** drop-down menu.

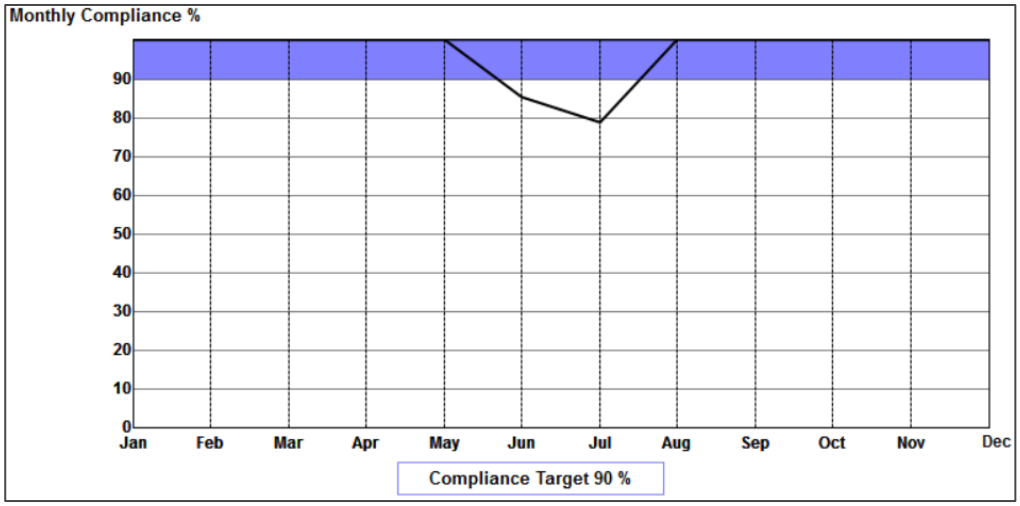


Figure 9-8 KSS Monthly Compliance Graph – Target Compliance set at 90%

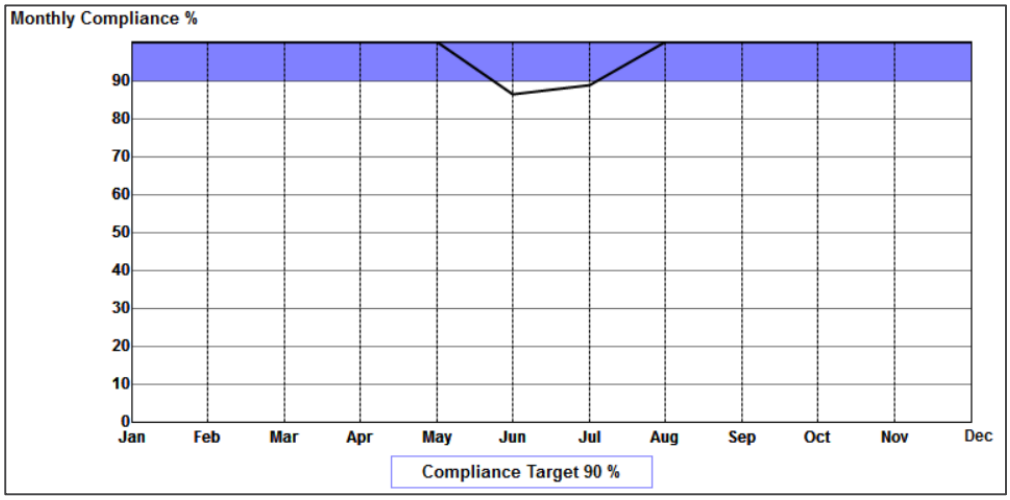


Figure 9-9 FAID Score Monthly Compliance graph – Target Compliance set at 90%

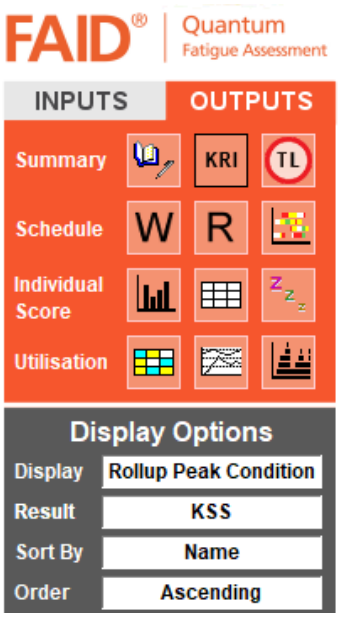
The Monthly Compliance Graph is a graphical output reporting the overall **Compliance %** based on the period of the Work Schedule analysed for each month of the year.

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

In Inputs under **Tolerance Leve**l – **Tolerance Thresholds**, the user can set the Target Compliance percentage for the Work Schedule for both **KSS** and **FAID Score**. The Monthly Compliance Graph tracks compliance against the target compliance over a twlelve month period. On the graphs, above the set Target Compliance level (set at 90%) 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%.

9.2.8. Rollup Peak Condition - KSS

To obtain outputs for Rollup Peak Condition, in Input > Settings > Outputs, Perform Rollup should = Yes.



1. On the **Outputs** tab, in the **Summary** section click on the **Key Risk Indicators** KRI button.
2. In the Key Indicators **Display Options** section, from the drop-down menus, select **Rollup Peak Condition** for **Display**, then choose **Result** = KSS**.**
3. The **Rolled up Work Periods** table can be sorted in **ascending** or **descending** order by:
   - Name
   - Number Maximum Rolled up Green
   - Number Maximum Rolled up Yellow
   - Number Maximum Rolled up Red
   - Total
   - Percentage Maximum Rolled up Green
   - Percentage Maximum Rolled up Yellow
   - Percentage Maximum Rolled up Red

Peak KSS Conditions for Rolled Up Work Periods

Rolled Up Peak KSS Condition	# of Work Periods	% of Work Periods
Green	113	60.4
Yellow	4	2.1
Red	70	37.4
Total	187	100.0

Work Schedule 1

	Name	# of Work Periods Max Rollup	# of Work Periods Max Rollup	# of Work Periods Max Rollup	Total	% of Work Periods Max Rollup	% of Work Periods Max Rollup	% of Work Periods Max Rollup
1	D10000	6	0	5	11	54.5	0.0	45.5
2	D10001	5	1	4	10	50.0	10.0	40.0
3	D10002	8	0	4	12	66.7	0.0	33.3
4	D10003	6	1	3	10	60.0	10.0	30.0
5	D10004	4	0	5	9	44.4	0.0	55.6
6	D10005	11	0	4	15	73.3	0.0	26.7
7	D10006	5	0	3	8	62.5	0.0	37.5
8	D10007	4	0	5	9	44.4	0.0	55.6
9	D10008	3	0	2	5	60.0	0.0	40.0
10	D10009	5	0	4	9	55.6	0.0	44.4
11	D10010	5	0	3	8	62.5	0.0	37.5
12	D10011	5	0	5	10	50.0	0.0	50.0
13	D10012	4	0	3	7	57.1	0.0	42.9
14	D10013	9	1	0	10	90.0	10.0	0.0
15	D10014	7	1	2	10	70.0	10.0	20.0
16	D10015	5	0	3	8	62.5	0.0	37.5
17	D10016	7	0	5	12	58.3	0.0	41.7
18	D10017	2	0	2	4	50.0	0.0	50.0
19	D10018	3	0	3	6	50.0	0.0	50.0
20	D10019	6	0	4	10	60.0	0.0	40.0
21	D10020	3	0	1	4	75.0	0.0	25.0

Figure 9-10 Peak FAID Conditions for Rolled Up Work Periods - Result = KSS

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

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

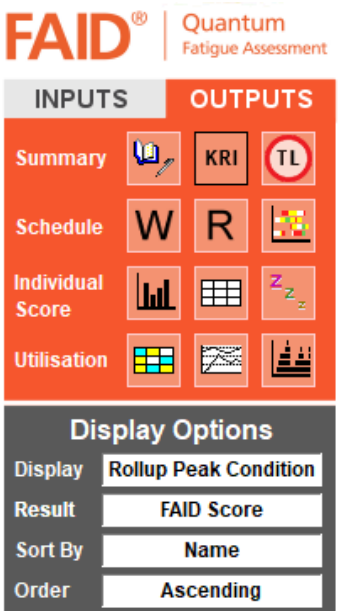
The lower table shows the number and percentages of rolled up work periods for each individual and how they are categorised into each Peak KSS Condition.

NOTE: FAID Quantum nominally categorises KSS Conditions using the following scale:

- *Red* (Above KTL)
- *Yellow* (Within 1 point of KTL)
- *Green* (Less than 1 point below KTL)

9.2.9. Rollup Peak Condition – FAID Score

To obtain outputs for Rollup Peak Condition, in Input > Settings > Outputs, Perform Rollup should = Yes.



1. On the **Outputs** tab, in the **Summary** section click on the **Key Risk Indicators** KRI button.
2. In the Key Indicators **Display Options** section, from the drop-down menus, select **Rollup Peak Condition** for **Display**, then choose **Result** = **FAID Score**).
3. The **Rolled up Work Periods** table can be sorted in **ascending** or **descending** order by:
   - Name
   - Number Maximum Rolled up Green
   - Number Maximum Rolled up Yellow
   - Number Maximum Rolled up Red
   - Total
   - Percentage Maximum Rolled up Green
   - Percentage Maximum Rolled up Yellow
   - Percentage Maximum Rolled up Red

Peak FAID Conditions for Rolled Up Work Periods

Rolled Up Peak FAID Condition	# of Work Periods	% of Work Periods
Green	176	94.1
Yellow	8	4.3
Red	3	1.6
Total	187	100.0

Work Schedule 1

	Name	# of Work Periods Max Rollup	# of Work Periods Max Rollup	# of Work Periods Max Rollup	Total	% of Work Periods Max Rollup	% of Work Periods Max Rollup	% of Work Periods Max Rollup
1	D10000	11	0	0	11	100.0	0.0	0.0
2	D10001	8	1	1	10	80.0	10.0	10.0
3	D10002	12	0	0	12	100.0	0.0	0.0
4	D10003	9	1	0	10	90.0	10.0	0.0
5	D10004	8	0	1	9	88.9	0.0	11.1
6	D10005	14	1	0	15	93.3	6.7	0.0
7	D10006	8	0	0	8	100.0	0.0	0.0
8	D10007	9	0	0	9	100.0	0.0	0.0
9	D10008	5	0	0	5	100.0	0.0	0.0
10	D10009	8	1	0	9	88.9	11.1	0.0
11	D10010	7	1	0	8	87.5	12.5	0.0
12	D10011	9	0	1	10	90.0	0.0	10.0
13	D10012	7	0	0	7	100.0	0.0	0.0
14	D10013	10	0	0	10	100.0	0.0	0.0
15	D10014	9	1	0	10	90.0	10.0	0.0
16	D10015	7	1	0	8	87.5	12.5	0.0
17	D10016	12	0	0	12	100.0	0.0	0.0
18	D10017	4	0	0	4	100.0	0.0	0.0
19	D10018	6	0	0	6	100.0	0.0	0.0
20	D10019	9	1	0	10	90.0	10.0	0.0
21	D10020	4	0	0	4	100.0	0.0	0.0

Figure 9-11 Peak FAID Conditions for Rolled Up Work Periods - Result = FAID Score

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

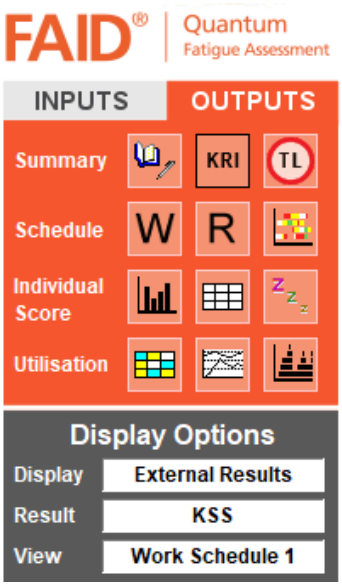
The top table shows the total number of rolled up work periods in the Work Schedule, how many rolled up work periods and the percentage of rolled up work periods categorised into each Peak FAID Score Condition.

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

NOTE: FAID Quantum nominally categorises FAID Score Conditions using the following scale:

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

9.2.10. External Results – KSS

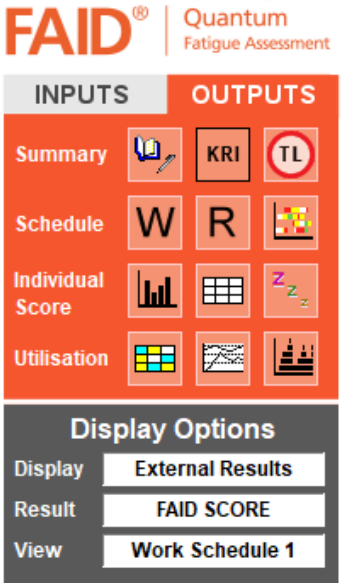


1. On the **Outputs** tab, in the **Summary** section click on the **Key Risk Indicators** KRI button.
2. In the Key Indicators **Display Options** section, from the drop-down menus, select **External Results** for **Display** and select **KSS** for **Result.**

External Result Block	Hours at KSS	External Result Count	Average External Results	Std Dev External Results
1 to 2	0.0	0	0.0	0.0
2 to 3	27.6	0	0.0	0.0
3 to 4	385.8	53	4.9	0.3
4 to 5	280.5	1	5.0	0.0
5 to 6	84.1	0	0.0	0.0
6 to 7	80.2	7	7.0	0.0
7 to 8	29.2	25	7.5	0.5
8 to 9	0.0	0	0.0	0.0

The External Results by Result Block tables provide a breakdown of the KSS achieved at the time of the external result. The KSS is grouped into blocks starting at ‘1 to 2’ up to ‘8 to 9’.

9.2.11. External Results – FAID Score

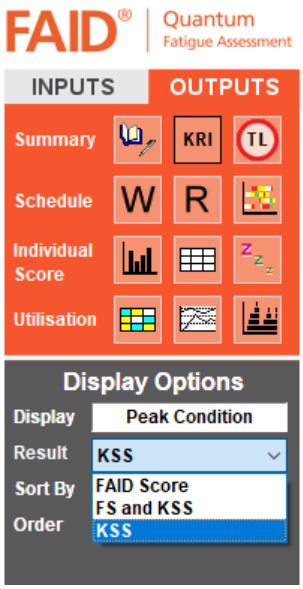


1. On the **Outputs** tab, in the **Summary** section click on the **Key Risk Indicators** KRI button.
2. In the Key Indicators **Display Options** section, from the drop-down menus, select **External Results** for **Display** and select **FAID Score** for **Result.**

External Result Block	Hours at FAID Score	External Result Count	Average External Results	Std Dev External Results
0 to 10	10.5	0	0.0	0.0
10 to 20	27.1	1	4.0	0.0
20 to 30	150.1	17	4.9	0.7
30 to 40	278.6	26	5.0	0.0
40 to 50	218.1	13	5.3	0.8
50 to 60	120.8	6	7.3	0.5
60 to 70	58.1	9	7.2	0.4
70 to 80	17.0	10	7.4	0.5
80 to 90	6.3	1	8.0	0.0
90 to 100	0.8	3	8.0	0.0
100 to 110	0.0	0	0.0	0.0
110 to 120	0.0	0	0.0	0.0

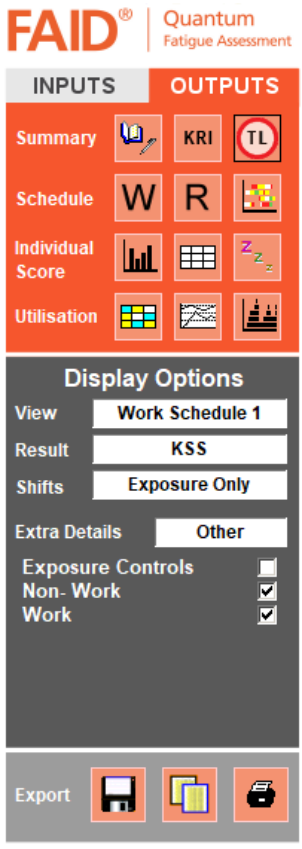
The External Results by Result Block tables provide a breakdown of the FAID Score achieved when the External Results occur. The FAID Score is grouped into blocks of ten starting at ‘0 to 10’ up to the highest FAID Score achieved.

9.2.12. Combination Result Displays – FAID Score and KSS



1. On the **Outputs** tab, in the **Summary** section click on the **Key Risk Indicators** KRI button.
2. In the Key Indicators **Display Options** section, from the drop-down menus, select **Compliance** or **Peak Condition** for **Display.**
3. Select **FS** and **KSS** for **Result** from the drop-down menu.
4. Both **FAID Score** and **KSS Results** will be displayed together on the one table.

9.3. Exposure Logs / Work Periods in Red Conditions



The Tolerance Level Exposure Logs screen displays a table output for reporting individual work period details for individual(s) that have exceeded the KTL or FTL during a specific work period. There are two exposure log reports available for use:

- Exposure Only
- Exposure and History Log

1. On the **Outputs** tab in the **Summary** section click on the **Tolerance Level Exposure Logs** TL button.
2. In **Display Options** from the **View** drop-down menu select the appropriate **Work Schedule** (1 or 2), and from the **Result** drop-down menu select either **KSS** or **FAID Score** then from **Shifts** select to view **Exposure Only** or **Exposure and History** viewing on the Report.

Extra Columns can be displayed as follows:

KSS

- KSS Condition Yellow
- KSS Condition Red
- Peak KSS
- Peak KSS Condition

Other

- Exposure Controls
- Task Risk
- Non-Work
- Work

FAID

- FAID Condition Yellow
- FAID Condition Red
- Peak FAID Score
- Peak FAID Condition

Aviation

- Location Codes
- Location Times
- Location Time Zones

Sleep

- Post Shift Rest Quality
- Sleep Est Prior 24 hours
- Sleep Est Prior 48 Hours

Schedule

- Show Sleep Schedule

9.3.1. Exposure and History Log - KSS

The **Exposure and History Log** displays only the shifts/work periods that have exceeded the KTL, 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 KSS exposure, and make potential changes to an individual's work periods to avoid exposure to the Red KSS Condition (if planned shifts). 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 **Describe Controls Applied** cell in the applicable row. **Yes** appears in the cell and the user can enter the control applied in the 'Describe Controls Applied' cell. 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).

	Controls Applied	Describe Controls Applied	Name	Start	End	KSS Condition Yellow	KSS Condition Red	Peak KSS	Non-Work	Work
1			Sample2	30 May 20 17:30	31 May 20 02:30	2hr 0min		6.8	15.0	9.0
2			Sample2	31 May 20 17:30	1 Jun 20 02:30	2hr 2min		6.8	15.0	9.0
3			Sample2	4 Jun 20 07:00	4 Jun 20 17:30			4.5	76.5	10.5
4			Sample2	5 Jun 20 07:00	5 Jun 20 16:00			4.7	13.5	9.0
5			Sample2	6 Jun 20 07:00	6 Jun 20 16:00			4.7	15.0	9.0
6			Sample2	7 Jun 20 17:30	8 Jun 20 02:42	2hr 3min		6.8	25.5	9.2
7	Yes	Caffeine Strategy	Sample2	8 Jun 20 17:30	9 Jun 20 03:48	2hr 29min	50min	7.3	14.8	10.3
8	Yes	Two Person in Cabin	Sample2	9 Jun 20 17:30	10 Jun 20 03:06	2hr 30min	20min	7.1	13.7	9.6

Figure 9-12 Exposure & History Log Table showing controls applied

9.3.2. Exposure Only Log – KSS

The **Exposure Only** log displays only the shifts/work periods that have exceeded the KTL. It displays the amount of time for the work period an individual will spend in the Yellow and Red KSS 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 KTL.

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

	Controls Applied	Describe Controls Applied	Name	Start	End	KSS Condition Yellow	KSS Condition Red	Peak KSS	Non-Work	Work
1			D10000	3 Jan 11 23:30	4 Jan 11 04:50	2hr 27min	1hr 19min	7.4		5.3
2	Yes		D10000	4 Jan 11 04:50	4 Jan 11 05:20		30min	7.6		0.5
3			D10000	14 Jan 11 18:05	15 Jan 11 06:20	2hr 29min	3hr 23min	7.9		12.3
4			D10000	15 Jan 11 06:20	15 Jan 11 06:50		30min	7.9		0.5
5	Yes	Additional Person Needed On Floor	D10000	18 Jan 11 22:00	19 Jan 11 11:45	4hr 8min	6hr 47min	7.8		13.8

Figure 9-13 Exposure Only Log Table showing controls applied

9.3.3. Exposure and History Log – FAID Score

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 Condition (if planned shifts). 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 **Describe Controls Applied** cell in the applicable row. **Yes** appears in the cell and the user can enter the control applied in the 'Describe Controls Applied' cell. 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).

	Controls Applied	Describe Controls Applied	Name	Start	End	FAID Condition Yellow	FAID Condition Red	Peak FAID Score	Non-Work	Work
1			Sample4	7 Jun 20 17:30	8 Jun 20 04:30	45min	1hr 32min	89	14.3	11.0
2			Sample4	16 Jun 20 17:30	17 Jun 20 04:36	1hr 9min	1hr 57min	95	14.1	11.1
3	Yes	Radio In	Sample5	16 Jun 20 17:30	17 Jun 20 04:30	44min	1hr 38min	91	13.2	11.0
4			Sample6	16 Jun 20 17:30	17 Jun 20 04:36	1hr 7min	1hr 56min	95	14.0	11.1

Figure 9-14 Exposure & History Log Table showing controls applied

9.3.4. Exposure Only Log – FAID Score

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 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 **Describe 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' cell. To **remove** the commentary, delete Control description/commentary entered and click on **Yes** and the cell reverts to a blank cell (no controls applied).

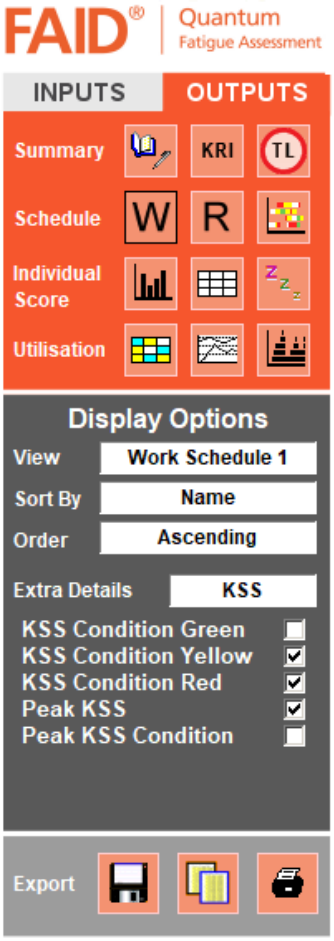
	Controls Applied	Describe Controls Applied	Name	Start	End	FAID Condition Yellow	FAID Condition Red	Peak FAID Score	Non-Work	Work
47			Sample5	12 Jun 20 07:00	12 Jun 20 16:32			13	147.2	9.5
48			Sample5	13 Jun 20 07:00	13 Jun 20 17:35			24	14.5	10.6
49			Sample5	14 Jun 20 17:30	15 Jun 20 04:18			59	23.9	10.8
50			Sample5	15 Jun 20 17:30	16 Jun 20 04:18	1hr 8min		75	13.2	10.8
51	Yes	Radio In	Sample5	16 Jun 20 17:30	17 Jun 20 04:30	44min	1hr 38min	91	13.2	11.0

Figure 9-15 Exposure Only Log Table

9.4. Work & Sleep Schedules

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

9.4.1. Work Schedule Output



1. On the **Outputs** tab in the **Schedule** section click on the **Work Schedule** W button.
2. In the **Display Options** section, click on the **View** drop-down menu and select **Work Schedule 1**. When a second Work Schedule has been added for a comparison of actual to planned Work Schedules (for example), select **Work Schedule 2** from the drop-down menu.
3. The default **Sort By** display is sort by **Name** / **Ascending.** Other sorting options are:
   - FAID Condition Yellow
   - FAID Condition Red
   - Peak FAID Score
   - KSS Condition Yellow
   - KSS Condition Red
   - Peak KSS
4. **Extra Details** provide the opportunity to display **KSS, FAID Score**, **Sleep**, **Aviation, Other**, and **Schedule** outputs when viewing the Work Schedule simply by checking the boxes against each option. When extra columns are added, the **Sort By** drop-down menu expands to include those extra columns checked.

WORK SCHEDULE OUTPUT

	Name	UTC Start	UTC End	FAID Condition Green	FAID Condition Yellow	FAID Condition Red	Peak FAID Score	Peak FAID Condition
1	D10000	11 Jan 11 10:30	11 Jan 11 16:30	6hr 0min			7	-53
2	D10000	12 Jan 11 14:00	12 Jan 11 20:00	6hr 0min			13	-47
3	D10000	13 Jan 11 15:20	13 Jan 11 16:50	1hr 30min			12	-48
4	D10000	13 Jan 11 16:50	14 Jan 11 01:00	8hr 10min			32	-28
5	D10000	14 Jan 11 01:00	14 Jan 11 01:30	30min			32	-28
6	D10000	14 Jan 11 21:45	14 Jan 11 23:05	1hr 20min			29	-31
7	D10000	14 Jan 11 23:05	15 Jan 11 06:20	5hr 7min	1hr 17min	51min	63	3
8	D10000	15 Jan 11 06:20	15 Jan 11 06:50			30min	64	4
9	D10000	18 Jan 11 20:30	18 Jan 11 22:00	1hr 30min			19	-41
10	D10000	18 Jan 11 22:00	19 Jan 11 06:15	8hr 9min	6min		50	-10
11	D10000	19 Jan 11 06:15	19 Jan 11 06:45		30min		51	-9

Figure 9-16 Work Schedule Output with Extra Columns = FAID and all boxes checked no other Extra Columns checked

Extra Column Options (depending on what Settings have been selected):

KSS

- KSS Condition Green
- KSS Condition Yellow
- KSS Condition Red
- Peak KSS
- Peak KSS Condition

Other

- Location Codes
- Activity Code
- Task Risk
- Non-Work
- Work

FAID

- FAID Condition Green
- FAID Condition Yellow
- FAID Condition Red
- Peak FAID Score
- Peak FAID Condition

Time Zone

- Location Times
- Location Time Zones

Sleep

- Sleep
- Post Shift Rest Quality
- Sleep Est Prior 24 hours
- Sleep Est Prior 48 Hours
- Sleep Type

Schedule

- Show Sleep Schedule
- Show Work Schedule

TIP: Clicking on the **Copy Work Schedule Output to Clipboard**  button allows the data to be used in reports.

TIP: A plus sign in the column on the far left of the Work Schedule Output indicates a shift which has been "rolled-up". Right clicking on a row provides the option to Open all Activities (-) or Close all Activities (+). Opening all Activities expands the 'rolled-up' shifts, for more information on Multiple Shifts Roll-up and how they are determined, see **Section 6.1.3.5.**

WORK SCHEDULE OUTPUT

	+ -	Name	UTC Start	Origin	UTC End	Destn	Activity Code	FAID Condition Green	FAID Condition Yellow	FAID Condition Red	Peak FAID Score	Peak FAID Condition	Non-Work	Work	Origin Start	Destination End	StartTZ	EndTZ	Post Shift Rest Quality
1	+	D10000	11 Jan 11 10:30	LHR	11 Jan 11 16:30	LHR	GD	6hr 0min			7	-53	173.2	6.0	11 Jan 11 10:30	11 Jan 11 16:30	0	0	Full
2	+	D10000	12 Jan 11 14:00	LHR	12 Jan 11 20:00	LHR	GD	6hr 0min			13	-47	21.5	6.0	12 Jan 11 14:00	12 Jan 11 20:00	0	0	Full
3	+	D10000	13 Jan 11 15:20	LHR	14 Jan 11 01:30	JFK	PAIRING	10hr 10min			32	-28	19.3	10.2	13 Jan 11 15:20	13 Jan 11 20:30	0	-5	Full
4	+	D10000	14 Jan 11 21:45	JFK	15 Jan 11 06:50	LHR	PAIRING	6hr 27min	1hr 17min	1hr 21min	64	4	20.3	9.1	14 Jan 11 16:45	15 Jan 11 06:50	-5	0	Full
5	+	D10000	18 Jan 11 20:30	LHR	19 Jan 11 06:45	DEL	PAIRING	9hr 39min	36min		51	-9	85.7	10.3	18 Jan 11 20:30	19 Jan 11 12:15	0	5.5	Full
6	+	D10000	20 Jan 11 06:55	DEL	20 Jan 11 18:25	LHR	PAIRING	11hr 30min			39	-21	24.2	11.5	20 Jan 11 12:25	20 Jan 11 18:25	5.5	0	Full
7	+	D10000	23 Jan 11 21:00	LHR	24 Jan 11 05:50	ACC	PAIRING	8hr 43min	7min		50	-10	74.6	8.8	23 Jan 11 21:00	24 Jan 11 05:50	0	0	Full
8	+	D10000	28 Jan 11 09:10	ACC	28 Jan 11 17:50	LHR	PAIRING	8hr 40min			15	-45	99.3	8.7	28 Jan 11 09:10	28 Jan 11 17:50	0	0	Full
9	+	D10000	31 Jan 11 11:30	LHR	1 Feb 11 01:25	NRT	PAIRING	13hr 55min			32	-28	65.7	13.9	31 Jan 11 11:30	1 Feb 11 10:25	0	9	Full
10	+	D10000	3 Feb 11 01:40	NRT	3 Feb 11 16:00	LHR	PAIRING	14hr 20min			36	-24	48.3	14.3	3 Feb 11 10:40	3 Feb 11 16:00	9	0	Full
11	+	D10001	11 Jan 11 03:25	SYD	11 Jan 11 14:30	HKG	PAIRING	11hr 5min			36	-24	30.6	11.1	11 Jan 11 14:25	11 Jan 11 22:30	11	8	Full

Figure 9-17 Work Schedule 1 sorted by Name

WORK SCHEDULE OUTPUT

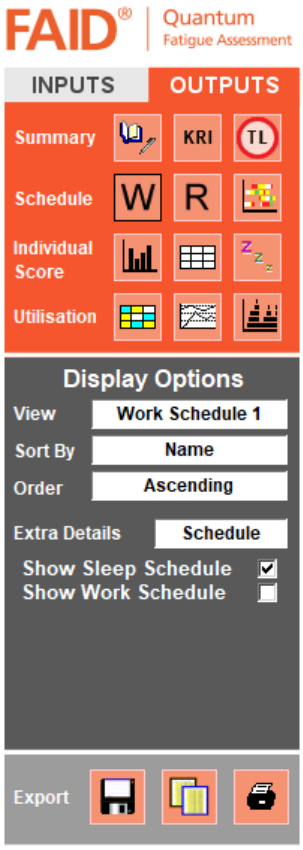
	+ -	Name	UTC Start	Origin	UTC End	Destn	Activity Code	FAID Condition Green	FAID Condition Yellow	FAID Condition Red	Peak FAID Score	Peak FAID Condition	Non-Work	Work	Origin Start	Destination End	StartTZ	EndTZ	Post Shift Rest Quality
1	+	D10000	11 Jan 11 10:30	LHR	11 Jan 11 16:30	LHR	GD	6hr 0min			7	-53	173.2	6.0	11 Jan 11 10:30	11 Jan 11 16:30	0	0	Full
2	-	D10000	12 Jan 11 14:00	LHR	12 Jan 11 20:00	LHR	GD	6hr 0min			13	-47	21.5	6.0	12 Jan 11 14:00	12 Jan 11 20:00	0	0	Full
3	+	D10000	13 Jan 11 15:20	LHR	14 Jan 11 01:30	JFK	PAIRING	10hr 10min			32	-28	19.3	10.2	13 Jan 11 15:20	13 Jan 11 20:30	0	-5	Full
4	-	D10000	14 Jan 11 21:45	JFK	14 Jan 11 23:05	JFK	Brief	1hr 20min			29	-31	20.3	1.3	14 Jan 11 16:45	14 Jan 11 18:05	-5	-5	Full
5	-	D10000	14 Jan 11 23:05	JFK	15 Jan 11 06:20	LHR	FL	5hr 7min	1hr 17min	51min	63	3		7.3	14 Jan 11 18:05	15 Jan 11 06:20	-5	0	Full
6	-	D10000	15 Jan 11 06:20	LHR	15 Jan 11 06:50	LHR	Debrief			30min	64	4		0.5	15 Jan 11 06:20	15 Jan 11 06:50	0	0	Full
7	-	D10000	18 Jan 11 20:30	LHR	18 Jan 11 22:00	LHR	Brief	1hr 30min			19	-41	85.7	1.5	18 Jan 11 20:30	18 Jan 11 22:00	0	0	Full
8	-	D10000	18 Jan 11 22:00	LHR	19 Jan 11 06:15	DEL	FL	8hr 9min	6min		50	-10		8.3	18 Jan 11 22:00	19 Jan 11 11:45	0	5.5	Full
9	-	D10000	19 Jan 11 06:15	DEL	19 Jan 11 06:45	DEL	Debrief		30min		51	-9		0.5	19 Jan 11 11:45	19 Jan 11 12:15	5.5	5.5	Full
10	+	D10000	20 Jan 11 06:55	DEL	20 Jan 11 18:25	LHR	PAIRING	11hr 30min			39	-21	24.2	11.5	20 Jan 11 12:25	20 Jan 11 18:25	5.5	0	Full
11	+	D10000	23 Jan 11 21:00	LHR	24 Jan 11 05:50	ACC	PAIRING	8hr 43min	7min		50	-10	74.6	8.8	23 Jan 11 21:00	24 Jan 11 05:50	0	0	Full
12	+	D10000	28 Jan 11 09:10	ACC	28 Jan 11 17:50	LHR	PAIRING	8hr 40min			15	-45	99.3	8.7	28 Jan 11 09:10	28 Jan 11 17:50	0	0	Full
13	+	D10000	31 Jan 11 11:30	LHR	1 Feb 11 01:25	NRT	PAIRING	13hr 55min			32	-28	65.7	13.9	31 Jan 11 11:30	1 Feb 11 10:25	0	9	Full
14	+	D10000	3 Feb 11 01:40	NRT	3 Feb 11 16:00	LHR	PAIRING	14hr 20min			36	-24	48.3	14.3	3 Feb 11 10:40	3 Feb 11 16:00	9	0	Full
15	+	D10001	11 Jan 11 03:25	SYD	11 Jan 11 14:30	HKG	PAIRING	11hr 5min			36	-24	30.6	11.1	11 Jan 11 14:25	11 Jan 11 22:30	11	8	Full

Figure 9-18 The same Work Schedule as in Figure above with Rolled-up Shifts expanded (Rows 4 - 9)

NOTE: At the bottom of each Work Schedule output, a scroll bar allows the user to scroll across and view **Extra Columns**.

Figure 9-19 Scroll bar

9.4.2. Sleep Schedule Output



1. When External Results are included in the analysis; on the **Outputs** tab in the **Schedule** section click on the **Work Schedule** W button
2. From the **Extra Columns** select **Schedule** and from the drop-down menu check show **Sleep Schedule.**
3. In the **Display Options** section, click on the **View** drop-down menu and select **Sleep Schedule 1**. When a second Sleep Schedule has been added for a comparison of actual to planned Work Schedules (for example), select **Sleep Schedule 2** from the drop-down menu.
4. When no External Results are included in the analysis; on the **Outputs** tab in the **Schedule** section click on the **Sleep Schedule** S button.
5. The default **Sort By** display is sort by **Name** / **Ascending.** Other sorting options are
   - UTC Start
   - UTC End
   - Sleep DN
   - KSS Condition Green
   - KSS Condition Yellow
   - KSS Condition Red
   - Peak FAID Score
   - Peak FAID Condition
6. **Extra Details** provide the opportunity to display **FAID**, **Sleep**, **Aviation, Other** and **Schedule** outputs when viewing the Sleep Schedule simply by checking the boxes against each option. When extra columns are added, the **Sort By** drop-down menu expands to include those extra columns checked.

Extra Column Options (depending on what Settings have been selected):

KSS

- KSS Condition Green
- KSS Condition Yellow
- KSS Condition Red
- Peak KSS
- Peak KSS Condition

Other

- Location Codes
- Activity Code
- Task Risk
- Non-Work
- Work

- **FAID**
- FAID Condition Green
- FAID Condition Yellow
- FAID Condition Red
- Peak FAID Score
- Peak FAID Condition

Aviation

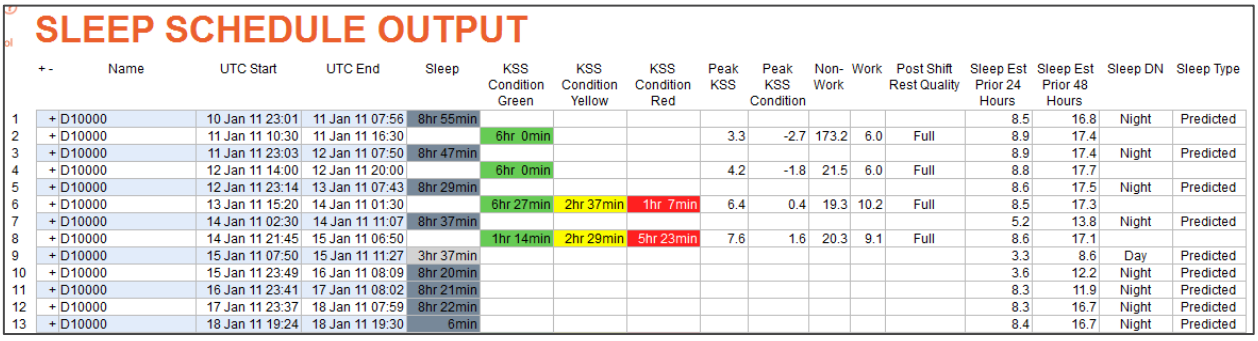
- Location Times
- Location Time Zones

Sleep

- Sleep
- Post Shift Rest Quality
- Sleep Est Prior 24 hours
- Sleep Est Prior 48 Hours
- Sleep Type

Schedule

- Show Work Schedule
- Show Sleep Schedule

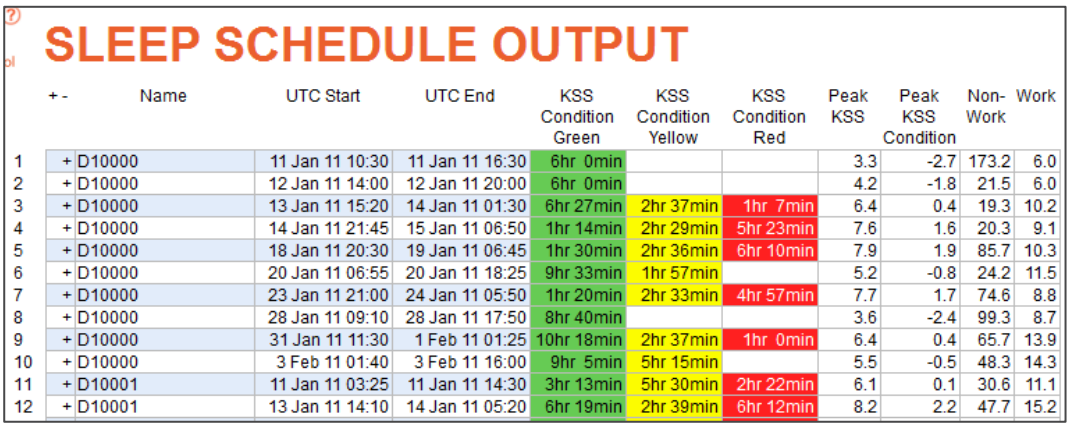


SLEEP SCHEDULE OUTPUT

	+ -	Name	UTC Start	UTC End	Sleep	KSS Condition Green	KSS Condition Yellow	KSS Condition Red	Peak KSS	Peak KSS Condition	Non-Work	Work	Post Shift Rest Quality	Sleep Est Prior 24 Hours	Sleep Est Prior 48 Hours	Sleep DN	Sleep Type
1	+	D10000	10 Jan 11 23:01	11 Jan 11 07:56	8hr 55min									8.5	16.8	Night	Predicted
2	+	D10000	11 Jan 11 10:30	11 Jan 11 16:30		6hr 0min			3.3	-2.7	173.2	6.0	Full	8.9	17.4		
3	+	D10000	11 Jan 11 23:03	12 Jan 11 07:50	8hr 47min									8.9	17.4	Night	Predicted
4	+	D10000	12 Jan 11 14:00	12 Jan 11 20:00		6hr 0min			4.2	-1.8	21.5	6.0	Full	8.8	17.7		
5	+	D10000	12 Jan 11 23:14	13 Jan 11 07:43	8hr 29min									8.6	17.5	Night	Predicted
6	+	D10000	13 Jan 11 15:20	14 Jan 11 01:30		6hr 27min	2hr 37min	1hr 7min	6.4	0.4	19.3	10.2	Full	8.5	17.3		
7	+	D10000	14 Jan 11 02:30	14 Jan 11 11:07	8hr 37min									5.2	13.8	Night	Predicted
8	+	D10000	14 Jan 11 21:45	15 Jan 11 06:50		1hr 14min	2hr 29min	5hr 23min	7.6	1.6	20.3	9.1	Full	8.6	17.1		
9	+	D10000	15 Jan 11 07:50	15 Jan 11 11:27	3hr 37min									3.3	8.6	Day	Predicted
10	+	D10000	15 Jan 11 23:49	16 Jan 11 08:09	8hr 20min									3.6	12.2	Night	Predicted
11	+	D10000	16 Jan 11 23:41	17 Jan 11 08:02	8hr 21min									8.3	11.9	Night	Predicted
12	+	D10000	17 Jan 11 23:37	18 Jan 11 07:59	8hr 22min									8.3	16.7	Night	Predicted
13	+	D10000	18 Jan 11 19:24	18 Jan 11 19:30	6min									8.4	16.7	Night	Predicted

Figure 9-20 Sleep Schedule Output with Extra Columns = KSS and Sleep and all boxes checked no other Extra Columns checked

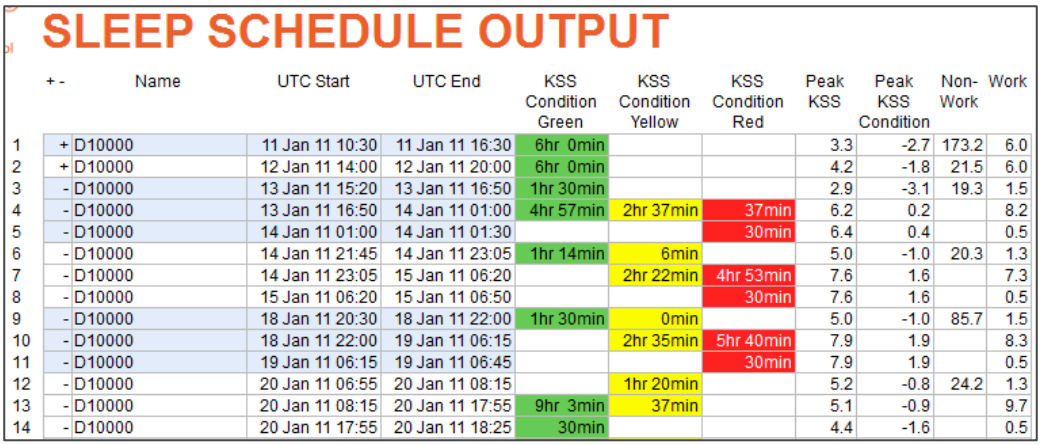
TIP: A plus sign in the column on the far left of the Sleep Schedule Output indicates a shift which has been "rolled-up". Right clicking on a row provides the option to Open all Activities (-) or Close all Activities (+). Opening all Activities expands the 'rolled-up' shifts, for more information on Multiple Shifts Roll-up and how they are determined, see **Section 6.1.3.5.**



SLEEP SCHEDULE OUTPUT

	+ -	Name	UTC Start	UTC End	KSS Condition Green	KSS Condition Yellow	KSS Condition Red	Peak KSS	Peak KSS Condition	Non-Work	Work
1	+	D10000	11 Jan 11 10:30	11 Jan 11 16:30	6hr 0min			3.3	-2.7	173.2	6.0
2	+	D10000	12 Jan 11 14:00	12 Jan 11 20:00	6hr 0min			4.2	-1.8	21.5	6.0
3	+	D10000	13 Jan 11 15:20	14 Jan 11 01:30	6hr 27min	2hr 37min	1hr 7min	6.4	0.4	19.3	10.2
4	+	D10000	14 Jan 11 21:45	15 Jan 11 06:50	1hr 14min	2hr 29min	5hr 23min	7.6	1.6	20.3	9.1
5	+	D10000	18 Jan 11 20:30	19 Jan 11 06:45	1hr 30min	2hr 36min	6hr 10min	7.9	1.9	85.7	10.3
6	+	D10000	20 Jan 11 06:55	20 Jan 11 18:25	9hr 33min	1hr 57min		5.2	-0.8	24.2	11.5
7	+	D10000	23 Jan 11 21:00	24 Jan 11 05:50	1hr 20min	2hr 33min	4hr 57min	7.7	1.7	74.6	8.8
8	+	D10000	28 Jan 11 09:10	28 Jan 11 17:50	8hr 40min			3.6	-2.4	99.3	8.7
9	+	D10000	31 Jan 11 11:30	1 Feb 11 01:25	10hr 18min	2hr 37min	1hr 0min	6.4	0.4	65.7	13.9
10	+	D10000	3 Feb 11 01:40	3 Feb 11 16:00	9hr 5min	5hr 15min		5.5	-0.5	48.3	14.3
11	+	D10001	11 Jan 11 03:25	11 Jan 11 14:30	3hr 13min	5hr 30min	2hr 22min	6.1	0.1	30.6	11.1
12	+	D10001	13 Jan 11 14:10	14 Jan 11 05:20	6hr 19min	2hr 39min	6hr 12min	8.2	2.2	47.7	15.2

Figure 9-21 Sleep Schedule 1 sorted by Name



SLEEP SCHEDULE OUTPUT

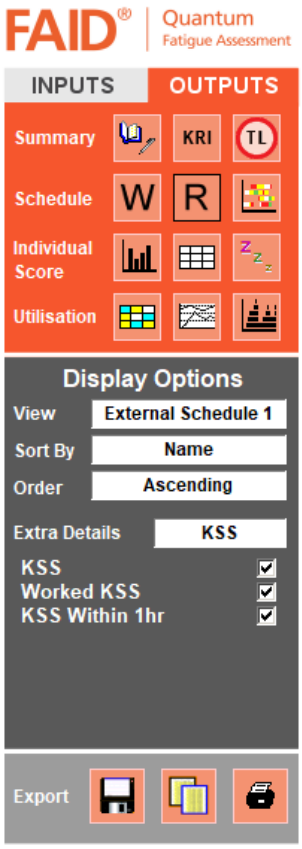
	+ -	Name	UTC Start	UTC End	KSS Condition Green	KSS Condition Yellow	KSS Condition Red	Peak KSS	Peak KSS Condition	Non-Work	Work
1	+	D10000	11 Jan 11 10:30	11 Jan 11 16:30	6hr 0min			3.3	-2.7	173.2	6.0
2	+	D10000	12 Jan 11 14:00	12 Jan 11 20:00	6hr 0min			4.2	-1.8	21.5	6.0
3	-	D10000	13 Jan 11 15:20	13 Jan 11 16:50	1hr 30min			2.9	-3.1	19.3	1.5
4	-	D10000	13 Jan 11 16:50	14 Jan 11 01:00	4hr 57min	2hr 37min	37min	6.2	0.2		8.2
5	-	D10000	14 Jan 11 01:00	14 Jan 11 01:30			30min	6.4	0.4		0.5
6	-	D10000	14 Jan 11 21:45	14 Jan 11 23:05	1hr 14min	6min		5.0	-1.0	20.3	1.3
7	-	D10000	14 Jan 11 23:05	15 Jan 11 06:20		2hr 22min	4hr 53min	7.6	1.6		7.3
8	-	D10000	15 Jan 11 06:20	15 Jan 11 06:50			30min	7.6	1.6		0.5
9	-	D10000	18 Jan 11 20:30	18 Jan 11 22:00	1hr 30min	0min		5.0	-1.0	85.7	1.5
10	-	D10000	18 Jan 11 22:00	19 Jan 11 06:15		2hr 35min	5hr 40min	7.9	1.9		8.3
11	-	D10000	19 Jan 11 06:15	19 Jan 11 06:45			30min	7.9	1.9		0.5
12	-	D10000	20 Jan 11 06:55	20 Jan 11 08:15		1hr 20min		5.2	-0.8	24.2	1.3
13	-	D10000	20 Jan 11 08:15	20 Jan 11 17:55	9hr 3min	37min		5.1	-0.9		9.7
14	-	D10000	20 Jan 11 17:55	20 Jan 11 18:25	30min			4.4	-1.6		0.5

Figure 9-22 The same Sleep Schedule as in Figure above with Rolled-up Shifts expanded (Rows 3 - 14)

NOTE: At the bottom of each Sleep Schedule output, a scroll bar allows the user to scroll across when **Extra Columns** have been selected.

Figure 9-23 Scroll bar

9.5. External Result Schedule



The External Result screen displays a table output for reporting the FAID Score or KSS result for the External Results during a specific work period, or within one hour of work.

1. On the **Outputs** tab in the **Schedule** section click on the **External Result** R button.
2. In **Display Options** from the **View** drop-down menu select the appropriate **Work Schedule** (1 or 2), and from the **Result** drop-down menu select either **KSS** or **FAID Score.**
3. The default **Sort By** display is sort by **Name** / **Ascending.** Other sorting options are:
    - Time
    - Result
    - FAID Score
    - KSS
4. The default **Sort By** display is sort by **Name** / **Asc**
5. **Extra Details** provide the opportunity to display **FAID**, **KSS**, **Aviation,** and **Schedule** outputs when viewing the External Result Schedule simply by checking the boxes against each option. When extra columns are added, the **Sort By** drop-down menu expands to include those extra columns checked.

Extra Column selections (depending on what Settings have been selected):

FAID

- FAID Score
- Worked FS
- FAID Score Within 1hr

KSS

- FAID Score
- Worked FS
- KSS Within 1hr

Time Zone

- Location Times
- Location Time Zones

Sleep

- Sleep
- Post Shift Rest Quality
- Sleep Est Prior 24 hours
- Sleep Est Prior 48 Hours
- Sleep Type

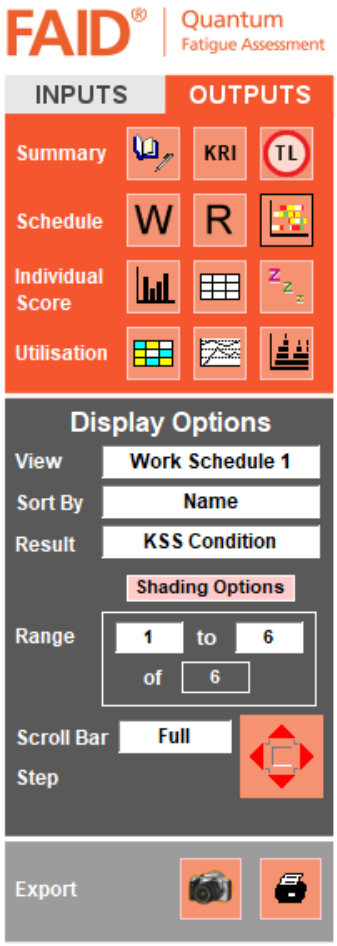
Schedule

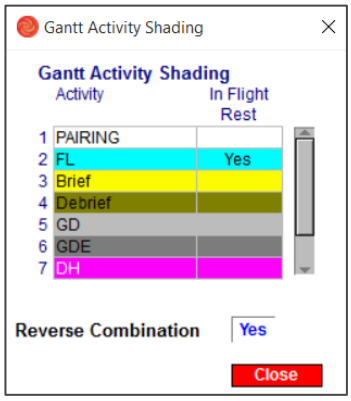
- Worked

Other

- Activity Code
- Task Risk

9.6. Gantt Chart





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 Tolerance Level has been nominated, the work period is displayed by its Peak FAID or KSS Condition colour.

1. On the Outputs tab in the **Schedule** section click on the **Gantt Chart**  button. The Gantt Chart display can be changed using the Display Options on the Control Panel.
2. The Gantt Chart **View** can be changed to use either Work Schedule 1, 2, or a comparison of the two Work Schedules.
3. The **Sort by** options available are:
   - Name
   - Peak FAID Score
   - Peak KSS Score
   - FS (FAID Score) Non-Compliance %
   - KSS Non-Compliance %
4. **Result** offers the opportunity to colour the display for:
   - FAID Condition
   - Activity
   - KSS Condition
   - Combination of FAID Condition/KSS
   - Combination of FAID Condition/Activity
   - Combination of KSS Condition/Activity
5. The Gantt Activity Shading legend can be viewed by clicking **Shading Options**. Additional Activites can be added or colours changed in Settings > Aviation > Activity Details (see **Section 6.1.5.2**)

   NOTE: The way that the shading is presented (activity with FAID or KSS Condition in a band in the middle, or FAID or KSS Condition with activity as a band in the middle) can also be reversed on this screen by clicking in the **Yes** field.

   The number of IDs can be changed to the user's needs using **Range** on the Control Panel.
6. The Period view can be changed using the **Scroll Bar** on the Control Panel. The options are
   - Day
   - Week
   - Month
   - Year
   - Full (Default view)

NOTE: 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.

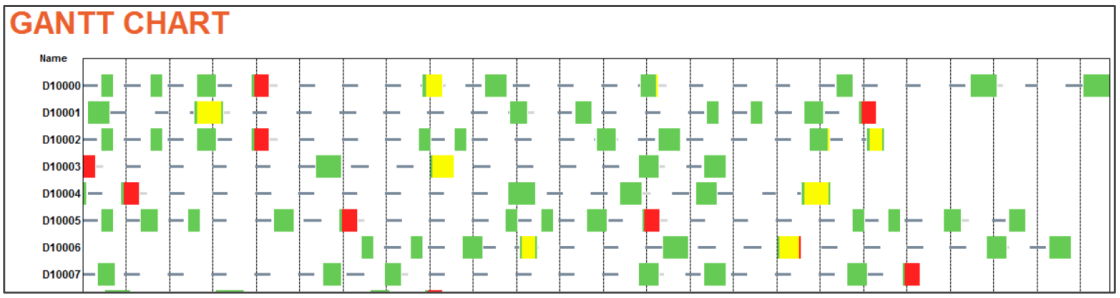


Figure 9-24 Gantt Chart ranked by Name using Work Schedule 1 showing FAID Condition only

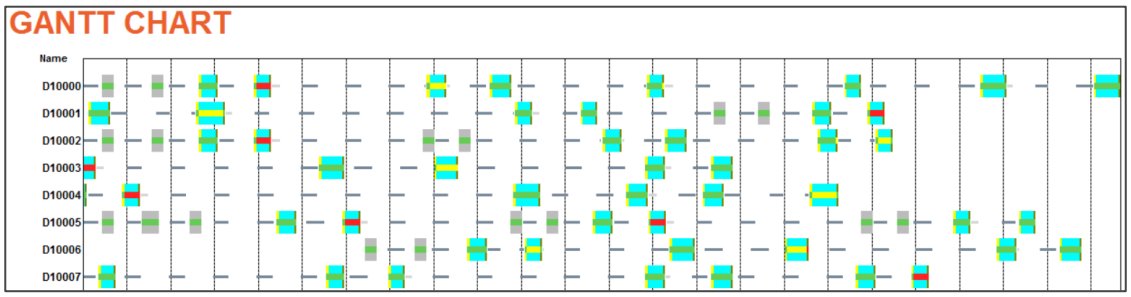
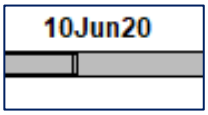


Figure 9-25 Gantt Chart ranked by Name using Work Schedule 1 with a Combination of FAID Condition (middle band) and Activity (top and bottom bands)

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 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. Previous or next shift details can be viewed by clicking the orange left or right arrows.

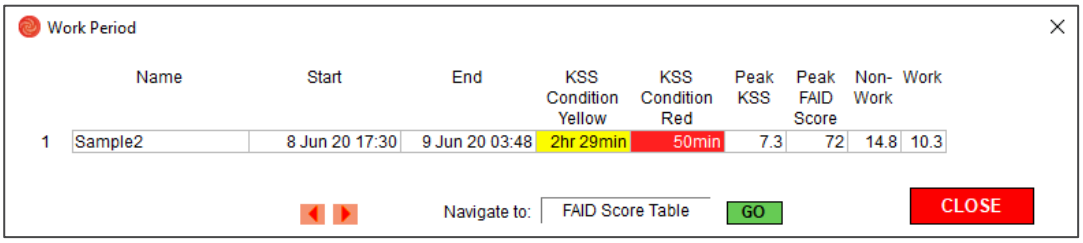


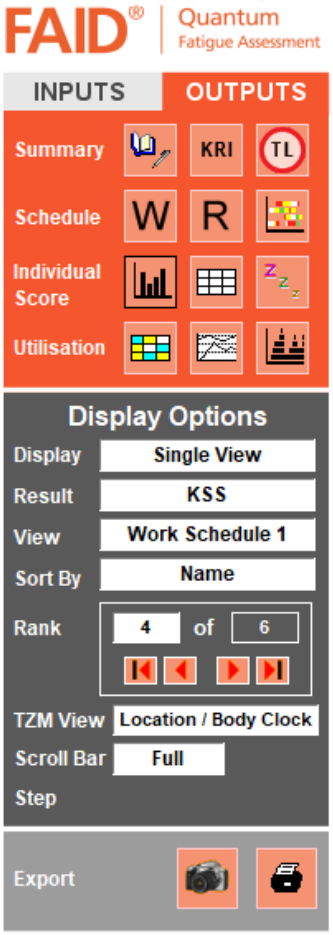
Figure 9-26 Event details displayed for Work Period, use scroll bar to view extra detail

9.7. Individual Score Plot

The Individual **Score Plot** and **Time Zone Movements** (when Time Zone movements used during analysis) display the progress of an individual's FAID Score and KSS over the course of their work periods (shifts) and the Time Zone Movements (offset from UTC). If Tolerance Levels have been set for the analysis then both the FAID Score and KSS plots are displayed in the colour of the highest Condition achieved for each work period.

Different Individual graphs can be viewed by changing the name within the Summary table at the top of the screen, or by changing the rank fields in the Outputs Panel.

9.7.1. Individual Score Plot – FAID Score



1. In the **Outputs** tab in the **Individual Score** section, click on the **Plot Score** button.

2. In **Display Options**, select the **Display** from the drop-down menu:
   - **Single View**: displays the FAID Score Plot and the Time Zone Movements (offset from UTC) for an individual;
   - **Multiple View**: Displays the KSS Score Plot and the FAID Score Plot for an individual
   - **Compare**: Displays the FAID Score Plot for the individual selected and below that the user can compare the FAID Score Plot for a different individual.
3. In the **Display Options**, select **FAID Score** from the **Result** drop-down menu.
4. In the **Display Options**, Select **Work Schedule 1** or **2** from the **View** drop-down menu.
5. From the **Sort By** drop-down menu select:
   - Name
   - Peak FAID Score
   - Peak KSS
   - FS (FAID Score) Non-Compliance%
   - KSS Non-Compliance %

6. Users can view different individual's FAID Score Plot graphs by:
    - Manually entering in the Name in the **Rank** section of the Control Panel (when the **Rank By** field is set to Name);
    - Clicking the Left or Right arrows in the **Rank** section on the Control Panel; or
7. Manually entering in the Name or selecting a name from the dropdown list within the Name field of the Summary table.
8. When **Single View** is selected from the Display menu, select the **TZM View** required.

The **TZ Movements (offset from UTC)** graph indicates two TZ Movements; one for the work period's Location (offset from UTC), and a second for the individual's Body Clock Time Zone (offset from UTC). The TZ Movements Plot displays the changes in Location Time Zones for an individual across the work schedule, and the individual's Body Clock attempting to align with the individual's current location across the work schedule.

The **TZM View** options change the Time Zone Movements (offset from UTC), to reflect

- Location / Body Clock
- Body Clock Only
- Location Only
- None

NOTE: Night time is determined as between the time of 1800hr and 0600hr.

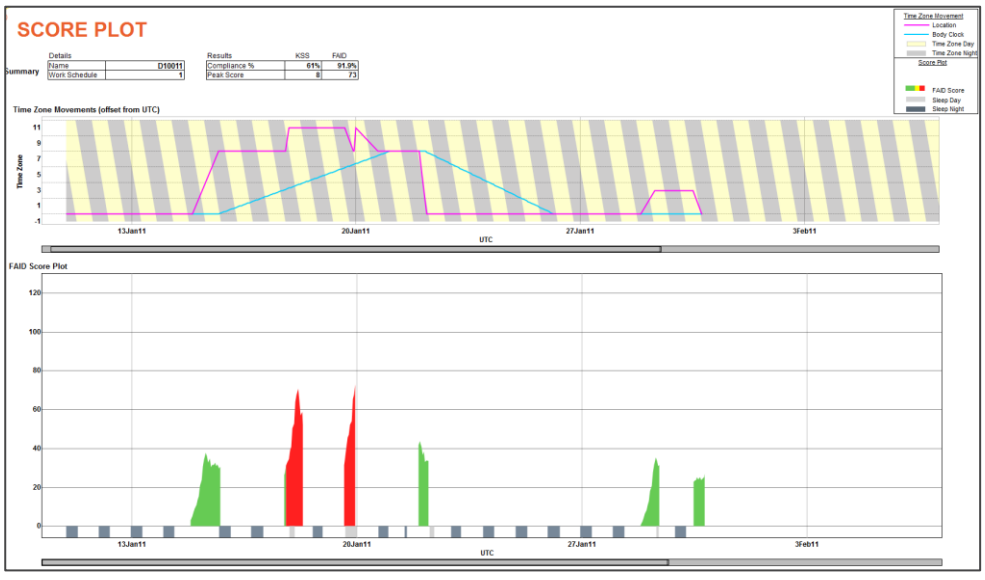
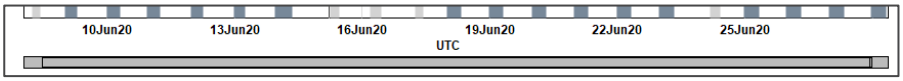
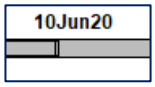


Figure 9-27 Single View - TZ Movement & FAID Score Plot ranked by Individual, TZM View = Location/Body Clock

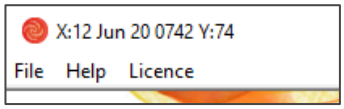
NOTE: The diagonal bars on the **Time Zone Movements (offset from UTC)** represent at the Time Zone daytime (6am to 6pm) shaded yellow and at the Time Zone night-time (6pm to 6am) shaded grey.

NOTE: The bar above the dates are shaded to indicate when sleep opportunities exist for either Sleep during the day (light grey) or Sleep during the night (dark grey).



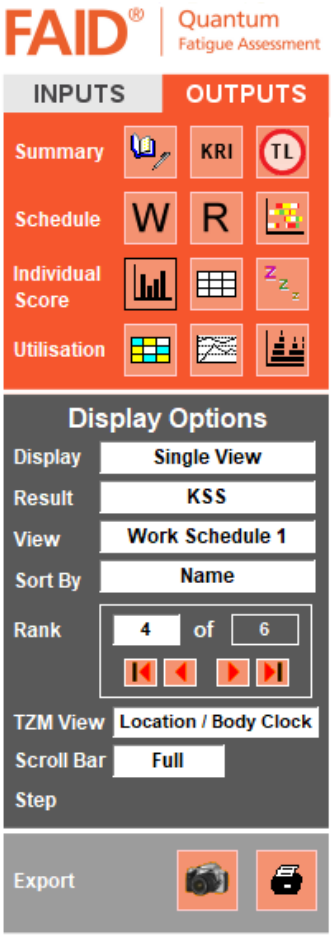


NOTE: The horizontal scroll bar at the bottom of the graph can be adjusted to change the x-axis scale view for the graph. Left click and drag to the left or right the double vertical bars in the grey horizontal scroll bar.



NOTE: To get 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 top left hand corner of the FAID screen. This is useful when the y-axis scale is difficult to read.

9.7.2. Individual Score Plot – KSS



1. In the **Outputs** tab in the **Individual Score** section, click on the **Plot Score** button.

2. In **Display Options**, select the **Display** from the drop-down menu:
   - **Single View**: displays the KSS Score Plot and the Time Zone Movements (offset from UTC) for an individual;
   - **Multiple View**: Displays the KSS Score Plot and the FAID Score Plot for an individual
   - **Compare**: Displays the KSS Score Plot for the individual selected and below that the user can compare the KSS Sore Plot for a different individual.
3. In the **Display Options**, select **KSS** from the **Result** drop-down menu.
4. In the **Display Options**, Select **Work Schedule 1** or **2** from the **View** drop-down menu.
5. From the **Sort By** drop-down menu select:
   - Name
   - Peak FAID Score
   - Peak KSS
   - FS (FAID Score) Non-Compliance %
   - KSS Non-Compliance %
6. Users can view different individual KSS Score Plot graphs by:

- Manually entering in the Name in the **Rank** section of the Control Panel (when the **Rank By** field is set to Name);
- Clicking the Left or Right arrows in the **Rank** section on the Control Panel; or
- Manually entering in the Name or selecting from a dropdown of the Name Value within the **Name** field of the Summary table.

7. When **Single View** is selected from the Display menu, select the **TZM View** required.

The **TZ Movements (offset from UTC)** graph indicates two TZ Movements; one for the work period's Location (offset from UTC), and a second for the individual's Body Clock Time Zone (offset from UTC). The TZ Movements Plot displays the changes in Location Time Zones for an individual across the work schedule, and the individual's Body Clock attempting to align with the individual's current location across the work schedule.

The **TZM View** options change the Time Zone Movements (offset from UTC), to reflect

- Location / Body Clock
- Body Clock Only
- Location Only
- None

NOTE: Night time is determined as between the time of 1800hr and 0600hr

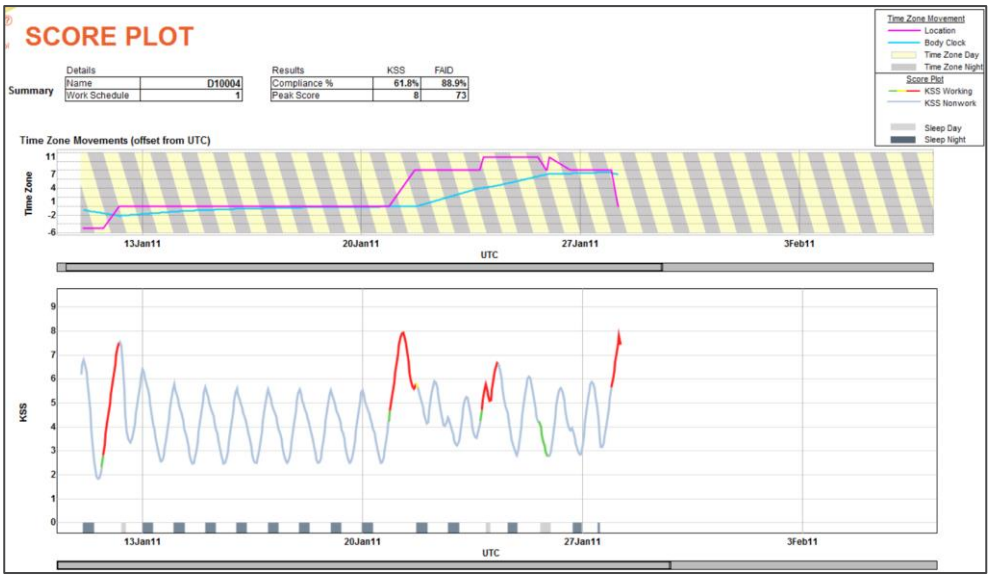
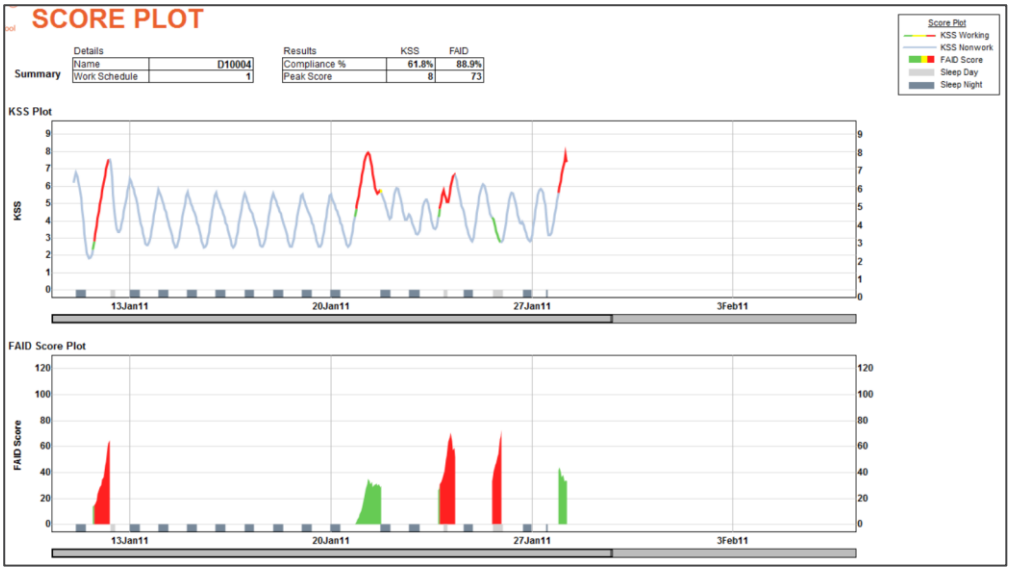


Figure 9-28 Single View - TZ Movement & KSS Score Plot ranked by Individual, TZM View = Location/Body Clock

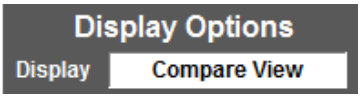
9.7.3. Multiple View

Multiple View displays both the KSS Score Plot and the FAID Score Plot simultaneously. In the **Display Options** select **Multiple View** from the **Display** drop-down menu.



9.7.4. Compare FAID Score Plots or KSS Score Plots

Users have the ability to compare between various Individual FAID Score Plots or KSS Score Plots on the one screen. This function can be used to view the differences between various individual FAID Score Plots or KSS Score Plots.

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

to compare the FAID Score (or KSS Score) Plots of two individuals.

Figure 9-29 FAID Score Plots comparing two IDs

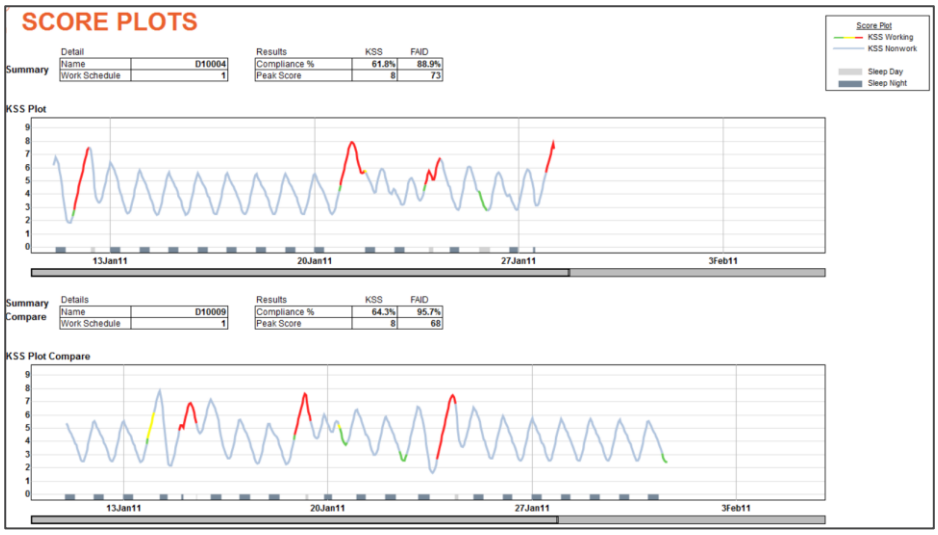


Figure 9-30 KSS Score Plots comparing two IDs

2. Change the number in the name detail field to compare a different individuals' FAID Score (or KSS Score) Plot graph with the one at the top of the screen, or click the Left or Right arrows on the Outputs Panel.

3. When the Compare View display is selected, the user can click on the **Move Details** 

arrows to move an individual either up or down from the top or bottom plot.

4. 

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 or KSS Score Plots for either individual.

5. Click in the Display field to return to **Single View** to return back to the single FAID Score or KSS Score Plot display.

9.7.5. Capture Plot

Users have the ability to capture a screenshot of various graphs and tables within FAID Quantum. When FAID Quantum 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 portable network graphic (.png) file, which can then be printed or inserted into a report as required.

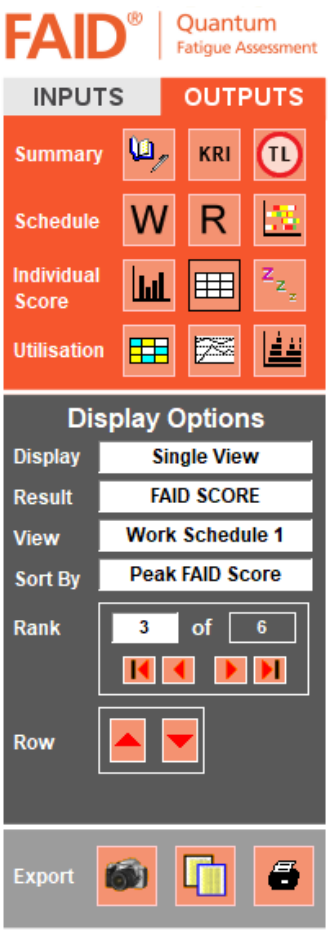
Click the **Camera**  button to capture a screenshot of all the data on the screen.

- Enter or select a name for the file.
- Choose the folder/file to save the file in.
- Click the **Save** button.

NOTE: FAID will automatically save all screenshots as a '.png' file extension.

9.8. Individual Score Table

9.8.1. Individual Score Table – FAID Score



The **Score Table** displays the time spent at each FAID Score or KSS Condition for each work period or Activity (e.g. PAIRINGS or, when expanded, the various Activity Coded duty segments: Brief, FL, Debrief etc.).

1. On the **Outputs** tab in the **Individual Score** section click the **Score Table** button. The Score Table view will be displayed.
2. In **Display Options**, select the **Display** from the drop-down menu:
   - **Single View**: displays the FAID Score Table and the Time Zone Movements (offset from UTC) for an individual;
   - **Multiple View**: Displays the KSS Score Table and the FAID Score Table for an individual
   - **Compare**: Displays the FAID Score Table for the individual selected and below that the user can compare the FAID Score Table for a different individual.
3. In the **Display Options**, select **FAID Score** from the **Result** drop-down menu.
4. In the **Display Options**, Select **Work Schedule 1** or **2** from the **View** drop-down menu.
5. From the **Sort By** drop-down menu select:
   - Name
   - Peak FAID Score
   - Peak KSS
   - FS (FAID Score) Non-Compliance%
   - KSS Non-Compliance %

NOTE: The default columns displayed are:

- +-
- Name
- UTC Start
- UTC End

Should **Extra Column** Options be checked in the Work Schedule Outputs, these will automatically be viewed in the Score Table:

KSS

- KSS Condition Green
- KSS Condition Yellow
- KSS Condition Red
- Peak KSS
- Peak KSS Condition

Other

- Location Codes
- Activity Code
- Task Risk
- Non-Work
- Work

FAID

- FAID Condition Green
- FAID Condition Yellow
- FAID Condition Red
- Peak FAID Score
- Peak FAID Condition

Time Zone

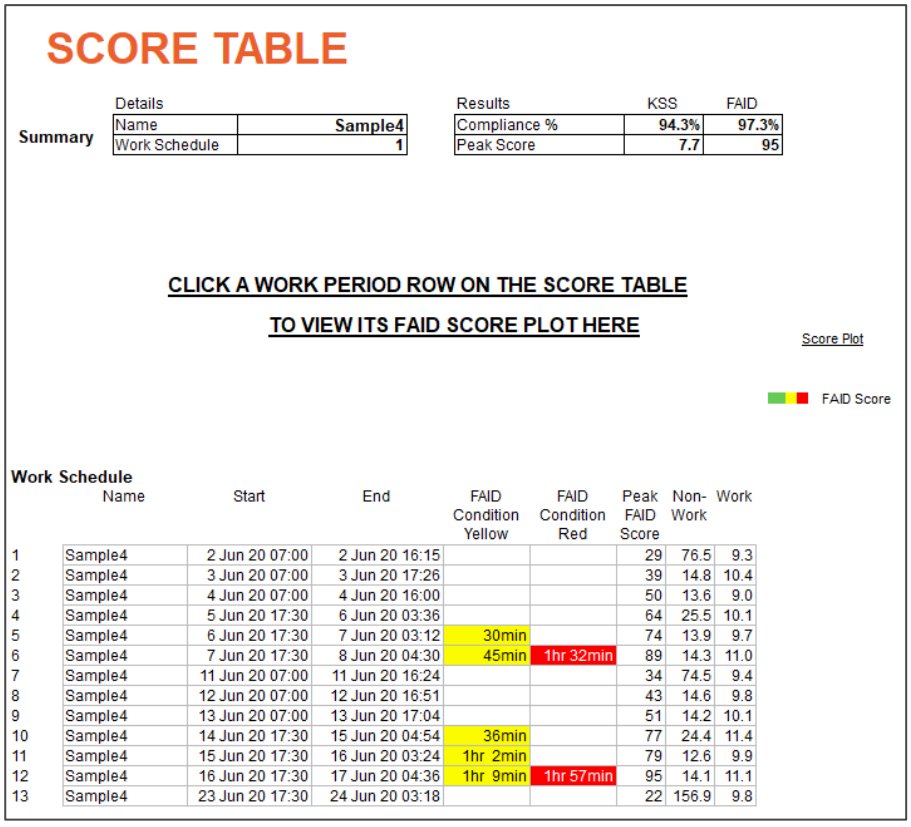
- Location Times
- Location Time Zones

Sleep

- Sleep
- Post Shift Rest Quality
- Sleep Est Prior 24 hours
- Sleep Est Prior 48 Hours
- Sleep Type

Schedule

- Show Sleep Schedule
- Show Work Schedule



SCORE TABLE

Summary

Details	
Name	Sample4
Work Schedule	1

Results	KSS	FAID
Compliance %	94.3%	97.3%
Peak Score	7.7	95

CLICK A WORK PERIOD ROW ON THE SCORE TABLE

TO VIEW ITS FAID SCORE PLOT HERE

Score Plot

FAID Score

Work Schedule

	Name	Start	End	FAID Condition Yellow	FAID Condition Red	Peak FAID Score	Non-Work	Work
1	Sample4	2 Jun 20 07:00	2 Jun 20 16:15			29	76.5	9.3
2	Sample4	3 Jun 20 07:00	3 Jun 20 17:26			39	14.8	10.4
3	Sample4	4 Jun 20 07:00	4 Jun 20 16:00			50	13.6	9.0
4	Sample4	5 Jun 20 17:30	6 Jun 20 03:36			64	25.5	10.1
5	Sample4	6 Jun 20 17:30	7 Jun 20 03:12	30min		74	13.9	9.7
6	Sample4	7 Jun 20 17:30	8 Jun 20 04:30	45min	1hr 32min	89	14.3	11.0
7	Sample4	11 Jun 20 07:00	11 Jun 20 16:24			34	74.5	9.4
8	Sample4	12 Jun 20 07:00	12 Jun 20 16:51			43	14.6	9.8
9	Sample4	13 Jun 20 07:00	13 Jun 20 17:04			51	14.2	10.1
10	Sample4	14 Jun 20 17:30	15 Jun 20 04:54	36min		77	24.4	11.4
11	Sample4	15 Jun 20 17:30	16 Jun 20 03:24	1hr 2min		79	12.6	9.9
12	Sample4	16 Jun 20 17:30	17 Jun 20 04:36	1hr 9min	1hr 57min	95	14.1	11.1
13	Sample4	23 Jun 20 17:30	24 Jun 20 03:18			22	156.9	9.8

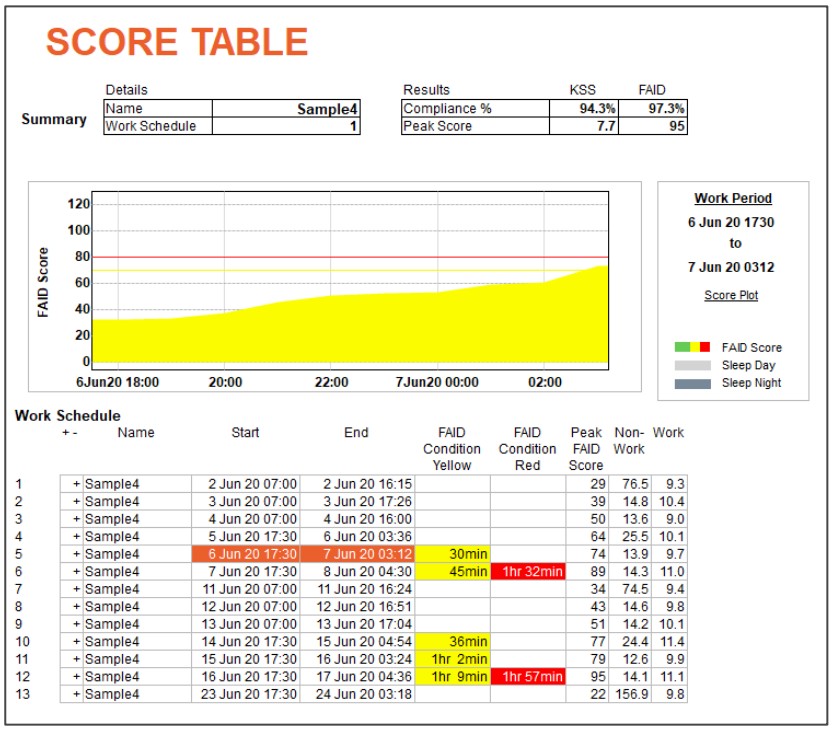
Figure 9-31 Score Table - Result FAID Score

NOTE: Users can alter the view of individual graphs by:

- Manually entering in the Name 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 Name field or selecting from a dropdown the Name within the Name field of the Summary table.

9.8.1.1. Individual Score Plot

Clicking on a work period row within the Individual Score Table at the bottom of the screen will bring up the Individual Score Plot graph for that work period (the row being analysed will now be highlighted).



SCORE TABLE

Summary	Details		Results	KSS	FAID
	Name	Sample4	Compliance %	94.3%	97.3%
	Work Schedule	1	Peak Score	7.7	95

Work Schedule

	+ -	Name	Start	End	FAID Condition Yellow	FAID Condition Red	Peak FAID Score	Non-Work	Work
1	+	Sample4	2 Jun 20 07:00	2 Jun 20 16:15			29	76.5	9.3
2	+	Sample4	3 Jun 20 07:00	3 Jun 20 17:26			39	14.8	10.4
3	+	Sample4	4 Jun 20 07:00	4 Jun 20 16:00			50	13.6	9.0
4	+	Sample4	5 Jun 20 17:30	6 Jun 20 03:36			64	25.5	10.1
5	+	Sample4	6 Jun 20 17:30	7 Jun 20 03:12	30min		74	13.9	9.7
6	+	Sample4	7 Jun 20 17:30	8 Jun 20 04:30	45min	1hr 32min	89	14.3	11.0
7	+	Sample4	11 Jun 20 07:00	11 Jun 20 16:24			34	74.5	9.4
8	+	Sample4	12 Jun 20 07:00	12 Jun 20 16:51			43	14.6	9.8
9	+	Sample4	13 Jun 20 07:00	13 Jun 20 17:04			51	14.2	10.1
10	+	Sample4	14 Jun 20 17:30	15 Jun 20 04:54	36min		77	24.4	11.4
11	+	Sample4	15 Jun 20 17:30	16 Jun 20 03:24	1hr 2min		79	12.6	9.9
12	+	Sample4	16 Jun 20 17:30	17 Jun 20 04:36	1hr 9min	1hr 57min	95	14.1	11.1
13	+	Sample4	23 Jun 20 17:30	24 Jun 20 03:18			22	156.9	9.8

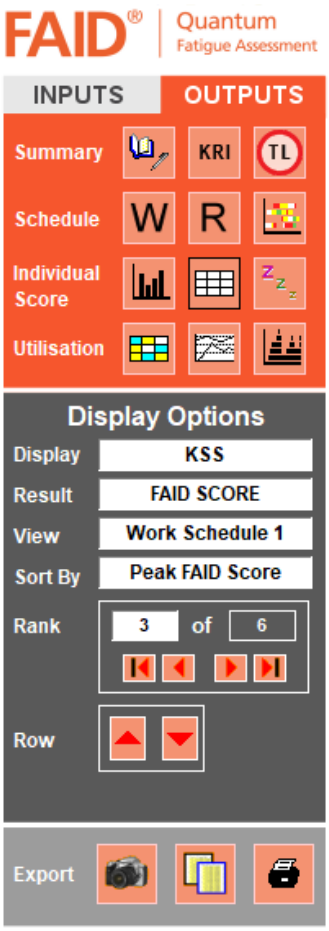
Figure 9-32 FAID Score Table analysing a individual, note the expanded Multiple Shifts in rows 4-6

TIP: A plus sign in the column on the far left of the Individual Score Table indicates multiple or rolled up shifts. Right clicking on a row provides the option to Open all Activities (-) or Close all Activities (+). Opening all Activities expands the ‘rolled-up’ shifts.

NOTE: At the bottom of the Score Table, the scroll bar allows the user to view additional information.

Figure 9-33 Scroll bar

9.8.2. Individual Score Table – KSS



1. On the **Outputs** tab in the **Individual Score** section click the **Score Table** button. The Score Table view will be displayed.
2. In **Display Options**, select the **Display** from the drop-down menu:
   - **Single View**: displays the KSS Score Table and the Time Zone Movements (offset from UTC) for an individual;
   - **Multiple View**: Displays the KSS Score Table and the FAID Score Table for an individual
   - **Compare**: Displays the KSS Score Table for the individual selected and below that the user can compare the KSS Score Table for a different individual.
3. In the **Display Options**, select **KSS** from the **Result** drop-down menu.
4. In the **Display Options**, Select **Work Schedule 1** or **2** from the **View** drop-down menu.
5. From the **Sort By** drop-down menu select:
   - Name
   - Peak FAID Score
   - Peak KSS
   - FS (FAID Score) Non-Compliance%
   - KSS Non-Compliance %

NOTE: The default columns displayed are:

- +-
- Name
- UTC Start
- UTC End

Should **Extra Column** Options be checked in the Work Schedule Outputs, these will automatically be viewed in the Score Table:

KSS

- KSS Condition Green
- KSS Condition Yellow
- KSS Condition Red
- Peak KSS
- Peak KSS Condition

FAID

- FAID Condition Green
- FAID Condition Yellow
- FAID Condition Red
- Peak FAID Score
- Peak FAID Condition

Sleep

- Sleep
- Post Shift Rest Quality
- Sleep Est Prior 24 hours
- Sleep Est Prior 48 Hours
- Sleep Type

Other

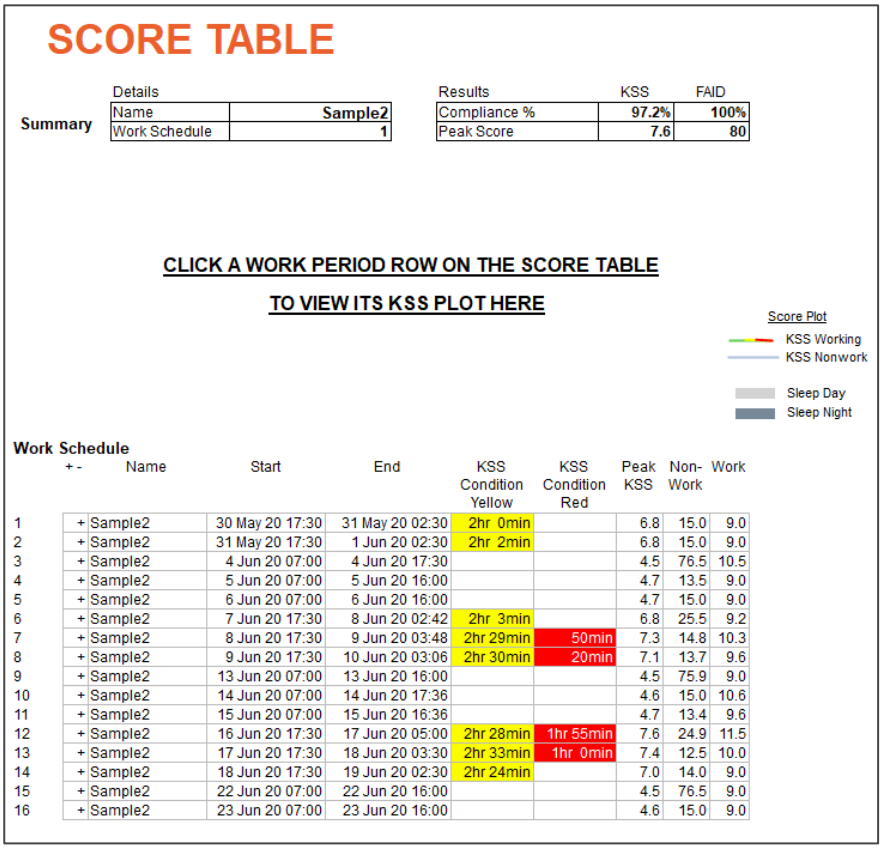
- Location Codes
- Activity Code
- Task Risk
- Non-Work
- Work

Time Zone

- Location Times
- Location Time Zones

Schedule

- Show Sleep Schedule
- Show Work Schedule



SCORE TABLE

Summary	Details	
	Name	Sample2
	Work Schedule	1

Results	KSS	FAID
Compliance %	97.2%	100%
Peak Score	7.6	80

CLICK A WORK PERIOD ROW ON THE SCORE TABLE

TO VIEW ITS KSS PLOT HERE

Score Plot
KSS Working
KSS Nonwork
Sleep Day
Sleep Night

Work Schedule

	+ -	Name	Start	End	KSS Condition Yellow	KSS Condition Red	Peak KSS	Non-Work	Work
1	+	Sample2	30 May 20 17:30	31 May 20 02:30	2hr 0min		6.8	15.0	9.0
2	+	Sample2	31 May 20 17:30	1 Jun 20 02:30	2hr 2min		6.8	15.0	9.0
3	+	Sample2	4 Jun 20 07:00	4 Jun 20 17:30			4.5	76.5	10.5
4	+	Sample2	5 Jun 20 07:00	5 Jun 20 16:00			4.7	13.5	9.0
5	+	Sample2	6 Jun 20 07:00	6 Jun 20 16:00			4.7	15.0	9.0
6	+	Sample2	7 Jun 20 17:30	8 Jun 20 02:42	2hr 3min		6.8	25.5	9.2
7	+	Sample2	8 Jun 20 17:30	9 Jun 20 03:48	2hr 29min	50min	7.3	14.8	10.3
8	+	Sample2	9 Jun 20 17:30	10 Jun 20 03:06	2hr 30min	20min	7.1	13.7	9.6
9	+	Sample2	13 Jun 20 07:00	13 Jun 20 16:00			4.5	75.9	9.0
10	+	Sample2	14 Jun 20 07:00	14 Jun 20 17:36			4.6	15.0	10.6
11	+	Sample2	15 Jun 20 07:00	15 Jun 20 16:36			4.7	13.4	9.6
12	+	Sample2	16 Jun 20 17:30	17 Jun 20 05:00	2hr 28min	1hr 55min	7.6	24.9	11.5
13	+	Sample2	17 Jun 20 17:30	18 Jun 20 03:30	2hr 33min	1hr 0min	7.4	12.5	10.0
14	+	Sample2	18 Jun 20 17:30	19 Jun 20 02:30	2hr 24min		7.0	14.0	9.0
15	+	Sample2	22 Jun 20 07:00	22 Jun 20 16:00			4.5	76.5	9.0
16	+	Sample2	23 Jun 20 07:00	23 Jun 20 16:00			4.6	15.0	9.0

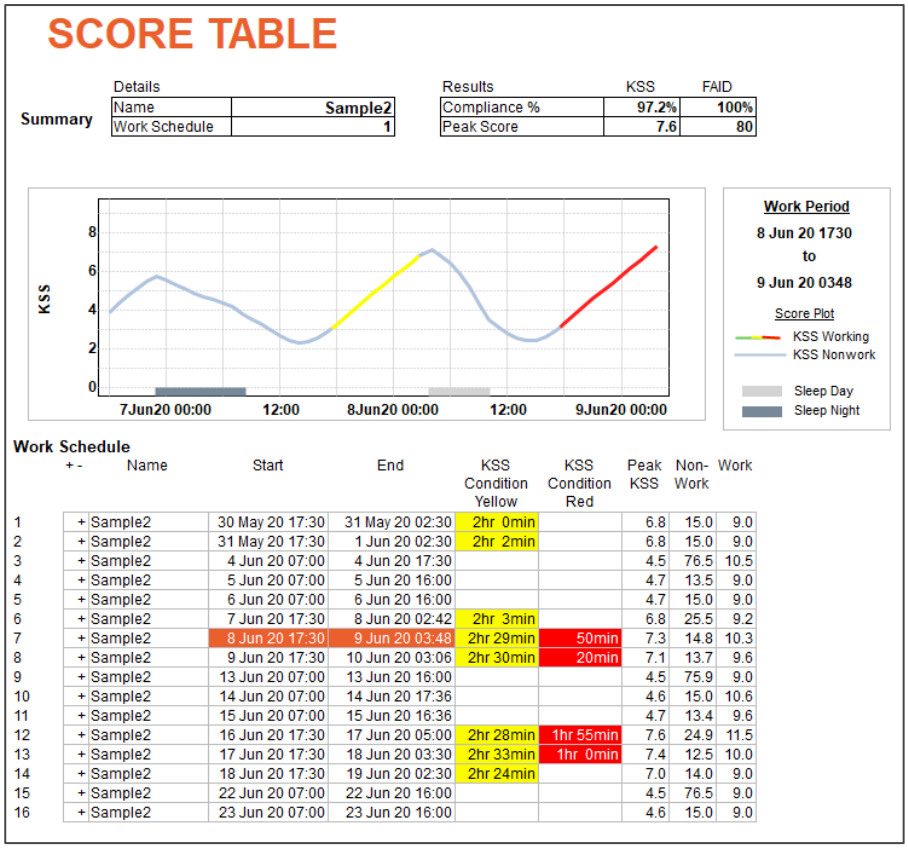
Figure 9-34 Score Table - Result KSS

NOTE: Users can alter the view of individual graphs by:

- Manually entering in the Name 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 Name or selecting from a dropdown the Name within the Name field of the Summary table.

9.8.2.1. Individual Score Plot

Clicking on a work period row within the Individual Score Table at the bottom of the screen will bring up the Individual Score Plot graph for that work period (the row being analysed will now be highlighted).



SCORE TABLE

Summary	Details		Results	KSS	FAID
	Name	Sample2	Compliance %	97.2%	100%
	Work Schedule	1	Peak Score	7.6	80

Work Schedule

	+ -	Name	Start	End	KSS Condition Yellow	KSS Condition Red	Peak KSS	Non-Work	Work
1	+	Sample2	30 May 20 17:30	31 May 20 02:30	2hr 0min		6.8	15.0	9.0
2	+	Sample2	31 May 20 17:30	1 Jun 20 02:30	2hr 2min		6.8	15.0	9.0
3	+	Sample2	4 Jun 20 07:00	4 Jun 20 17:30			4.5	76.5	10.5
4	+	Sample2	5 Jun 20 07:00	5 Jun 20 16:00			4.7	13.5	9.0
5	+	Sample2	6 Jun 20 07:00	6 Jun 20 16:00			4.7	15.0	9.0
6	+	Sample2	7 Jun 20 17:30	8 Jun 20 02:42	2hr 3min		6.8	25.5	9.2
7	+	Sample2	8 Jun 20 17:30	9 Jun 20 03:48	2hr 29min	50min	7.3	14.8	10.3
8	+	Sample2	9 Jun 20 17:30	10 Jun 20 03:06	2hr 30min	20min	7.1	13.7	9.6
9	+	Sample2	13 Jun 20 07:00	13 Jun 20 16:00			4.5	75.9	9.0
10	+	Sample2	14 Jun 20 07:00	14 Jun 20 17:36			4.6	15.0	10.6
11	+	Sample2	15 Jun 20 07:00	15 Jun 20 16:36			4.7	13.4	9.6
12	+	Sample2	16 Jun 20 17:30	17 Jun 20 05:00	2hr 28min	1hr 55min	7.6	24.9	11.5
13	+	Sample2	17 Jun 20 17:30	18 Jun 20 03:30	2hr 33min	1hr 0min	7.4	12.5	10.0
14	+	Sample2	18 Jun 20 17:30	19 Jun 20 02:30	2hr 24min		7.0	14.0	9.0
15	+	Sample2	22 Jun 20 07:00	22 Jun 20 16:00			4.5	76.5	9.0
16	+	Sample2	23 Jun 20 07:00	23 Jun 20 16:00			4.6	15.0	9.0

Figure 9-35 Score Table – KSS analysing a particular Name, note the expanded Multiple Shift in rows 8 - 10

NOTE: At the bottom of the KSS Plot, grey bars indicate whether Sleep opportunities are during the day (Sleep Day) or during the night (Sleep Night).

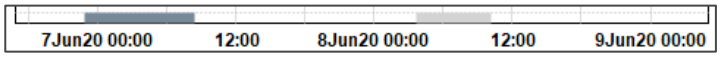


Figure 9-36 - Bar showing Sleep Night opportunities

TIP: A plus sign in the column on the far left of the FAID Score Table indicates multiple or rolled up shifts. Right clicking on a row provides the option to Open all Activities (-) or Close all Activities (+). Opening all Activities expands the 'rolled-up' shifts.

NOTE: At the bottom of the Score Table, the scroll bar allows the user to view additional information.

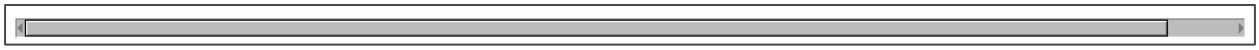
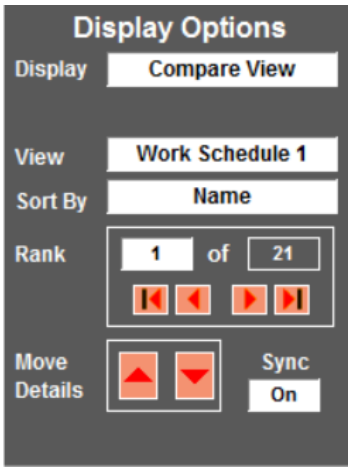


Figure 9-37 Scroll bar

9.8.3. Compare Individual Score Tables



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

1. In the **Display Options** section, click in the **Display** field and select **Compare View** from the drop-down menu to compare the FAID Score Tables or KSS Scores of two individuals in the same Work Schedule or the same individual in different Work Schedules.

2. From the **View** drop-down menu select **Work Schedule 1** or 2.

3. In the FAID Score Tables screen, in the lower **Detail** table, change the number in the Name value field to compare a different Name's FAID Score Table (or KSS 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.**

4. 

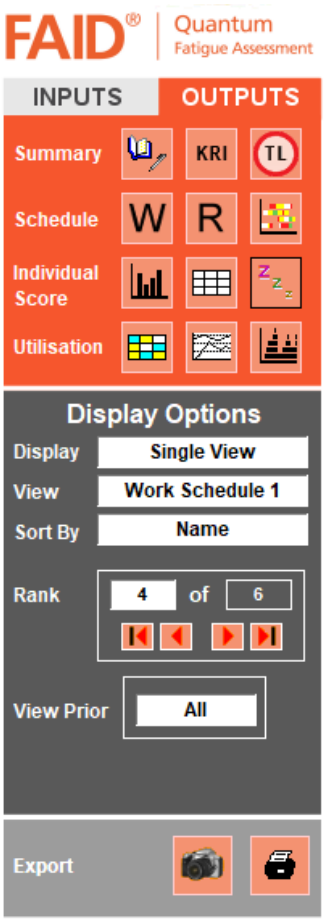
The user has the option to sync the scrolling of both tables or by toggling the **On** cell to **Off** can look at different dates of the FAID or KSS Score Tables for either Name.

5. In **Display**, click back to **Single View** to return back to the single Score Table display.

6. When the Compare View display is selected, the user can click on the **Move Details** 

arrows to move a Name either up or down from the top or bottom plot.

9.9. Sleep Estimate Plots



The **Sleep Estimate Plot** provides an estimate of the opportunities for sleep in the Prior 24 and 48 hours.

1. On the **Outputs** tab in the **Individual Score** section click the **Sleep Estimate Plots** button. The Sleep Estimate Plot will be displayed.
2. In **Display Options**, select the Display from the drop-down menu:
   - **Single View**: displays the Sleep Estimate Plot for an individual;
   - **Compare**: Displays the Sleep Estimate Plot for the individual selected and below that the user can compare the Sleep Estimate Plot for a different individual.
3. In the **Display Options**, Select **Work Schedule 1** or **2** from the **View** drop-down menu.
4. From the **Sort By** drop-down menu select:
   - Name
   - Peak FAID Score
   - Peak KSS
   - FS (FAID Score) Non Compliance%
   - KSS Non Compliance %
5. In the **View Prior** the user has the option to view:
   - All
   - Prior 48 hours
   - Prior 24 hours

NOTE: Users who are not using the KSS or Sleep Analysis functionality will not be able to view the above outputs.

NOTE: Users can alter the view of individual graphs by:

- Manually entering in the Name 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 Name field or selecting from a dropdown the Name within the Name field of the Summary table.

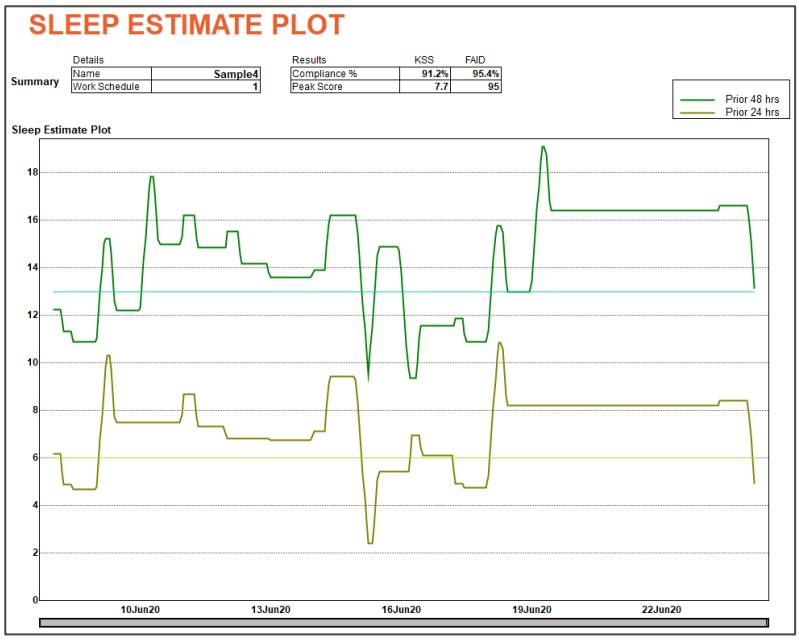
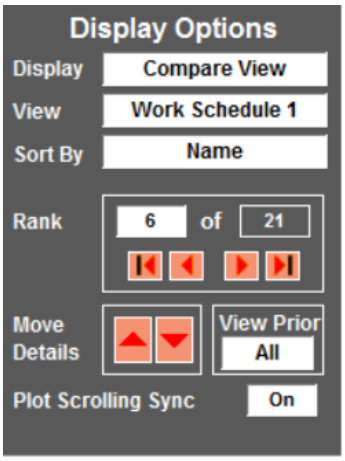


Figure 9-38 Sleep Estimate plot for one individual

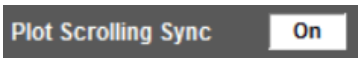
NOTE: The blue and brown lines indicate the Tolerance Levels for Sleep in Prior 24 hours (brown) and 48 hours (blue).

9.9.1. Compare Sleep Estimate Plots



Users have the ability to compare various individuals Sleep Estimate Plots on the one screen or compare the same individuals Sleep Estimate Plots in different Work Schedules.

1. In the **Display Options** section, click in the **Display** field and select **Compare View** from the drop-down.
2. In the **View** drop-down menu select **Work Schedule 1** or **2**.
3. From the **Sort By** drop-down menu select:
   - Name
   - Peak FAID Score
   - Peak KSS
   - FS (FAID Score) Non Compliance%
   - KSS Non Compliance %
4. Users can view different individuals Sleep Estimate Plot by:
   - Manually entering in the Name in the **Rank** section of the Control Panel (when the **Rank By** field is set to Name);
   - Clicking the Left or Right arrows in the **Rank** section on the Control Panel; or

5. 

The user has the option to sync the scrolling of both tables or by toggling the **On** cell to **Off** can look at different dates of the Sleep Estimate Plot for either Name.

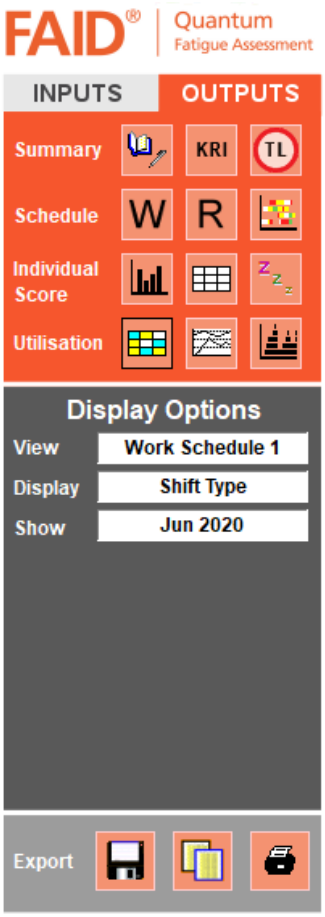
6. In **Display**, click back to **Single View** to return back to the single Sleep Estimate Plot display.

7. When the Compare View display is selected, the user can click on the **Move Details** 

arrows to move a Name either up or down from the top or bottom plot.

NOTE: The blue and brown lines indicate the Tolerance Levels for Sleep in Prior 24 hours (brown) and 48 hours (blue).

9.10. Display of Shift Types



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 (see **Section 6.1.1.7**). 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. From the drop-down **View** menu select **Work Schedule 1** or **2**.
3. Users can alter the view of individual tables by clicking in the **Display Options** drop-down menu. Options available are:
   - Shift Type
   - Individuals
   - Gantt
4. Users also have the option of changing the **Show** from **Days in Schedule** to a particular **Month**.

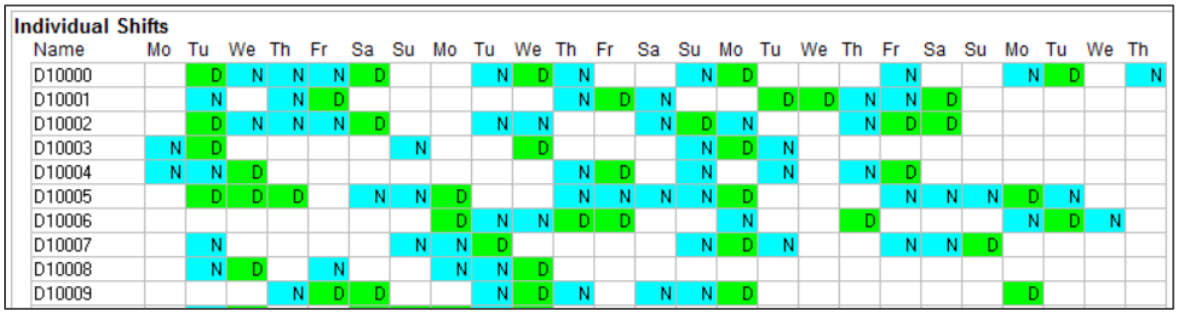


Figure 9-39 Types of Shifts for individuals based on the days in the Work Schedule

NOTE: An event details box will display when a block on the Gantt Chart is selected from Display Options. 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. Previous or next shift details can be viewed by clicking the orange left or right arrows.

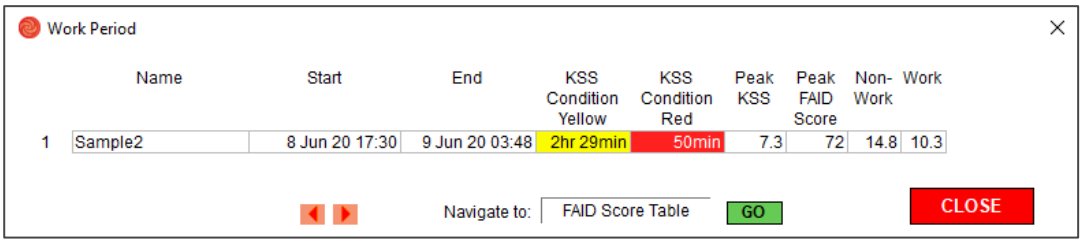
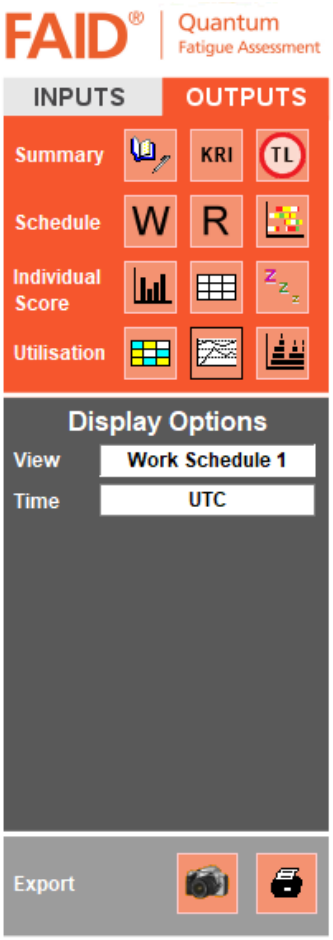


Figure 9-40 Event details displayed for Work Period, use scroll bar to view extra detail

9.11. Work Schedule Profiles



In the **Utilisation** section of the Outputs tab **Work Schedule Profiles** provides an overview of the number of work period starts (Daily, Monthly, and Hour of Day), number of starts for different Shift Lengths, and also a count for non-work period lengths (Short < 32hours and Long > 32 hours).

1. On the **Outputs** tab in the **Utilisation** section, click the **Work Schedule Profiles**  button. The various Work Schedule Profiles will be displayed.

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

3. Select the **Time** from the drop-down menu:
   - UTC; or
   - Local Time

NOTE: When Use Time Zone Details = No (see **Section 6.1.1.1**) the only option is “local time”.

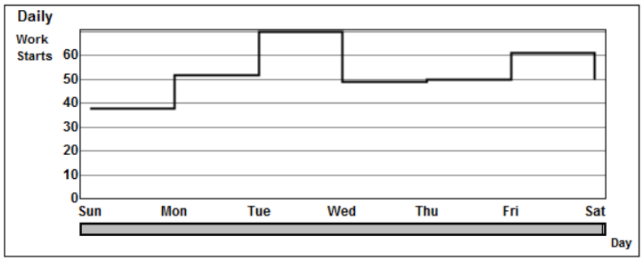
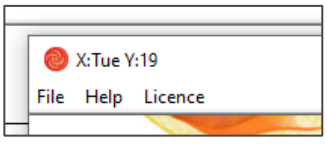


Figure 9-41 Daily Profile graph (UTC)

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.

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 Quantum screen. This is particularly useful when the axis scale is difficult to read.



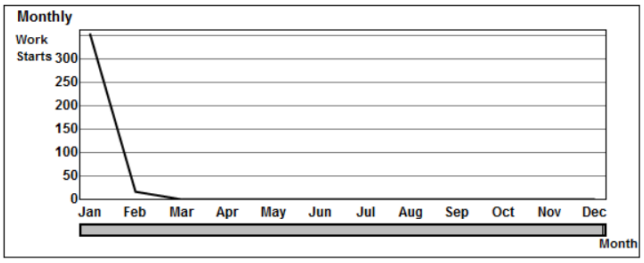


Figure 9-42 Monthly Profile graph

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

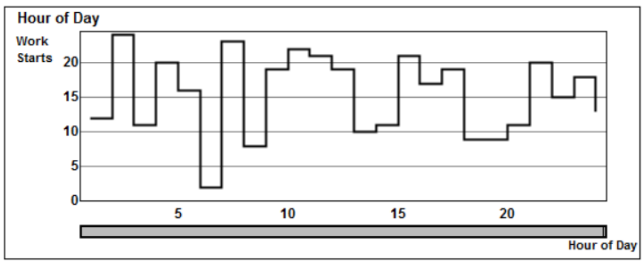


Figure 9-43 Hour of Day Profile graph (UTC)

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

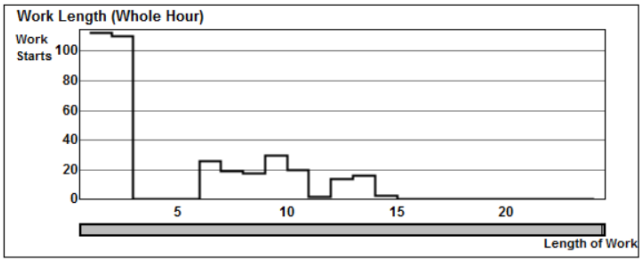


Figure 9-44 Work Lengths (Whole Hour) Profile graph

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

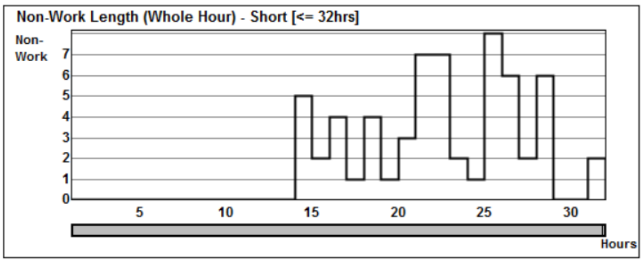


Figure 9-45 Non-Work Length (Whole Hour) Plot - Short [<=32 hours] graph

Non-Work Length (Whole Hour) Plot – Short [<= 32 hours] provides the number of breaks (and their duration) for a particular period, e.g. 7 x 22 hour breaks.

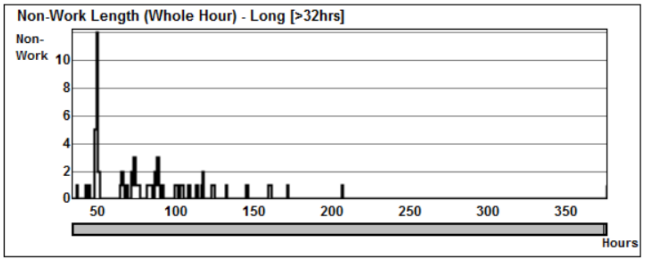
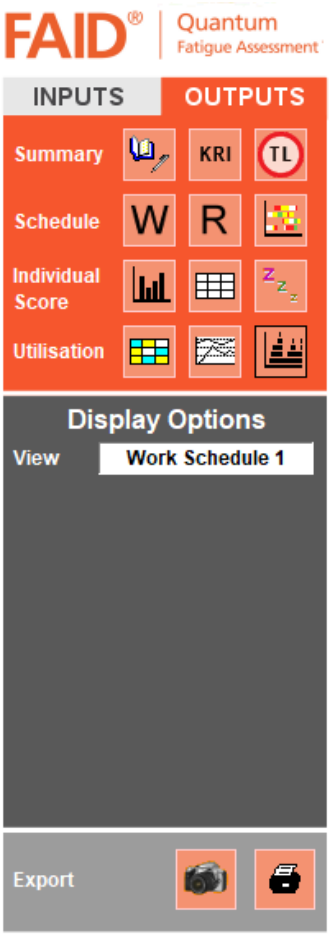


Figure 9-46 Non-Work Length (Whole Hour) Plot - Long [>32 hours]

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

9.12. Concurrent Work Periods



The Concurrent Work Periods Gantt Chart shows the number of shifts which occur at the same time or overlap and shows the minimum number of individuals that would be needed to work the hours which 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 scroll to the right or left.

NOTE; By clicking on a specific Gantt Chart bar, details of the shift are displayed.

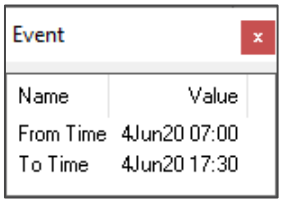
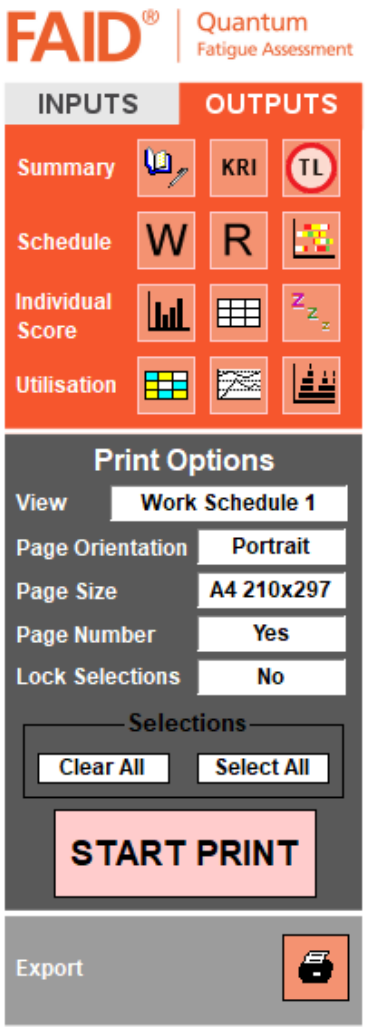


Figure 9-47 Concurrent Work Gantt Chart

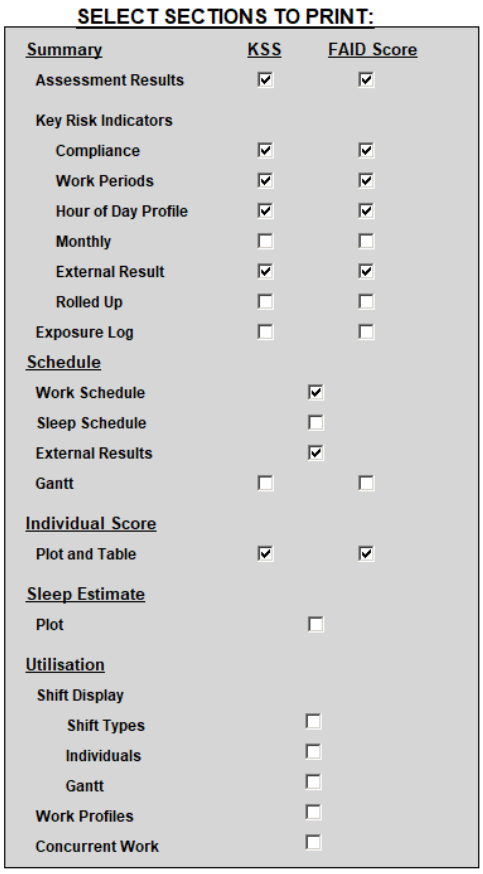
10. Printing



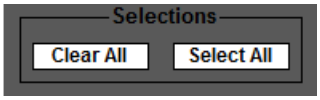
In each section of the Output data, the user has the ability to print out data.

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. Ensure the Cover Sheet checkbox is checked if a cover sheet is desired. Check the required boxes and enter details for the cover sheet:
    - Title (one or two lines)
    - Organisation
    - Date
    - Analysis
    - Tolerance Level

5. Select the required sections to print by checking the corresponding checkboxes.

6. If the selection to be printed does not fit on the size of the page required, the user can change the column widths (in the Work Schedule) at the top near the column title using the mouse cursor, hold down and left click. The software will remember the width and copy to all other tables.

7. Select the appropriate page size.

8. Click the **Start Print** button. The computer's print options will be displayed.

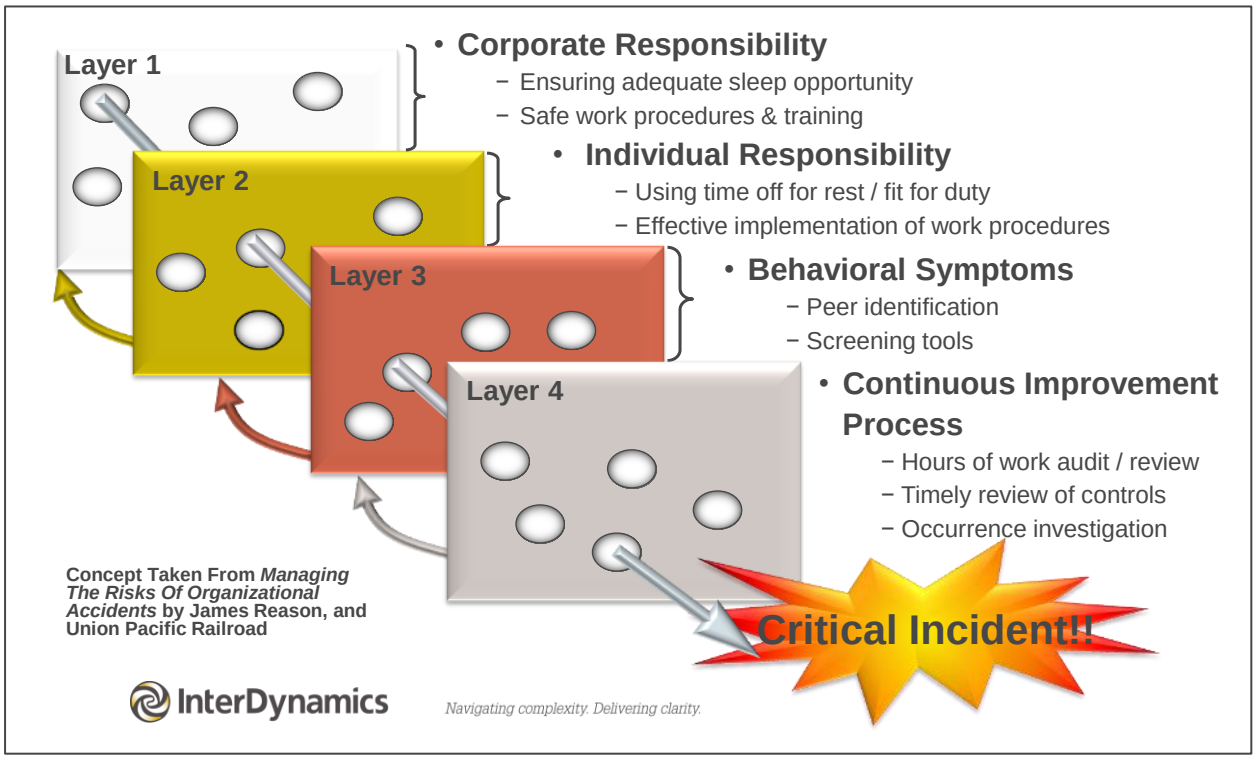
9. Slect appropriate printer and then click on the **Print** button. The report will be printed to the selected printer.

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 needing 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.



The Defences-in-Depth model (Dawson & McCulloch, 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) 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 organisation's fatigue policy commitment.

Our experience assisting clients of all sizes across various industries and circumstances has brought insights into the most effective organisational team structures and project plans for successful implementation.

The aim of the Risk-Based Approach is to provide our clients with the best possible tools and resources to manage fatigue risks. It is founded on four pillars: consultation, staff engagement, shared responsibility and effective risk management.

This comprehensive methodology includes three key steps:

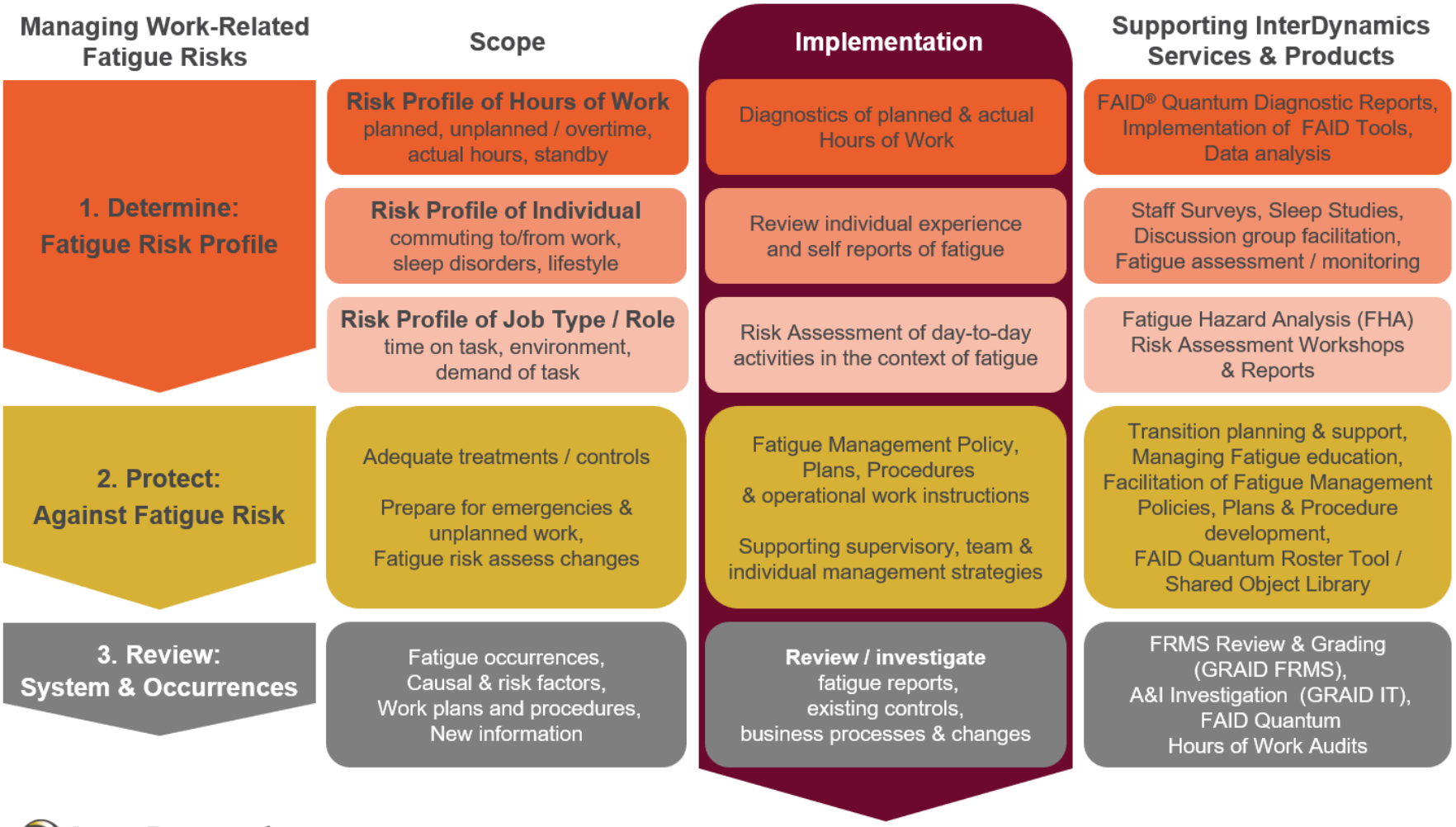
1. **Determining** the fatigue risk profile of the organisation
2. **Protecting** against unacceptable fatigue-related risks
3. **Reviewing** systems to ensure protection measures remain adequate

Suggested FRMS Scope and Implementation activities are outlined in the second & third columns of the diagram, respectively. The last column presents supporting InterDynamics services and products that facilitate the FRMS journey. Deliverables and findings from each implementation activity give additional insight into the organisation's specific requirements for managing fatigue effectively, as well as providing valuable input into the Fatigue Management Plan and supporting Work Procedures.

InterDynamics' Risk-Based Approach to managing fatigue targets improved safety and performance as key outcomes of the FRMS.

InterDynamics and Zurich Risk Engineering have developed an organisational fatigue risk grading system (GRAID™) to provide senior and operational managers with a systematic methodology to ascertain the quality of their organisational risks associated with fatigue. In conducting FRMS reviews, InterDynamics can provide a valuable third-party perspective on the depth, breadth and relevance of your Fatigue Risk Management System.

Our Risk-Based Approach to Managing Fatigue



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Appendix B: References

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Appendix C: Inputs Tab Buttons

Tolerance Level

Button	Name	Description
	Information	Provides information on FAID Conditions, KSS Conditions, KSS, FAID Score and Hazard Analysis.
	Tolerance Level	Provides an overview of the thresholds and measures by which FAID Quantum can assist in managing hours of work related fatigue risk.

Schedule

Button	Name	Description
	Work Schedule	Presents Work Schedule 1 or 2 and allows data to be inputted and edited.
	Sleep Schedule	Presents Sleep Schedule 1 or 2 and allows data to be inputted and edited.
	External Result	Presents External Result 1 or 2 and allows data to be inputted and edited.
	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.

Admin

Button	Name	Description
	Settings	Provides access to Settings, including the setting of default shift patterns and Aviation specific settings such as Airport details and in-flight rest settings etc. Also provides access to View setup to allow menu buttons to be displayed or hidden.

Input Table Editing

Button	Name	Description
	Load	Allows a saved Work, Sleep, or External Result Schedule to be loaded.
	Copy	Allows a Work , Sleep, or External Result Schedule to be copied, then pasted into another Work, Sleep, or External Result Schedule or exported and available to paste into a spreadsheet/database (e.g. Excel) or document (e.g. Word).
	Paste	Allows an exported spreadsheet/database (e.g. Excel) Work or Sleep Schedule to be imported into FAID Quantum into either Work , Sleep, or External Result Schedules.
	Save	Saves the displayed Work , Sleep, or External Result Schedule to file.
	Sort	Sorts the displayed Work , Sleep, or External Result Schedule by Name then by Date. Extra shifts added to a Work , Sleep, or External Result Schedule are added at the end of previously entered shifts. The Sort button moves shifts into their appropriate order, thereby resolving errors.
	Clear	Clears all data from the displayed Work , Sleep, or External Result Schedule.
	Sample	Loads the Sample Work Schedule. This can be used for practice or training purposes. If Time Zone Details = Yes in Settings, and In Flight Rest Button = Yes this icon is replaced by the Add in Flight Rest icon.
	Add In-Flight Rest	Adds predetermined in-flight rest to the work schedule depending on length of work periods.
	Add	Displays the Add Work, Sleep, External Result to specific Schedule Function to allow shifts, work periods, sleep periods or external results to be added to the displayed Schedule.
	Delete	Displays the Delete Row from Work, Sleep, or External Resulkt Schedule Function to allow nominated rows in the Schedule to be deleted. (Note: To delete only 1 row, the same row number must be entered in both From Row and To Row fields. Otherwise FAID Quantum will delete all rows from the nominated From Row to the end of the displayed Schedule.)
	Copy Schedule 1 to Schedule 2	Copies shift data entered into Work or Sleep Schedule 1 into Work or Sleep Schedule 2 for editing. Note this button only appears when within Work Schedule 2.
	Copy Work Schedule to Sleep Schedule	Creates a predicted Sleep Schedule based on the existing Work Schedule which can be then modified as required.

Analysis Run

Button	Name	Description
	Date and Period Wizard	Ensures analysis will pick up latest Work Schedule data and automatically sets the History From Date field to fifteen days prior to the Start Date. (Note: To be effective FAID requires 15 days of data as history to be entered before meaningful analysis can begin).
	Lock Dates	Allows the User to Lock the Analysis Dates. When Locked a locked icon will appear and the Dates will not automatically change when Work Schedule is edited. Only editing the Dates or using the Date and Period Wizard can change the Dates.
	Analyse	Performs the Fatigue Score Analysis on any data entered into either Work Schedule.

Appendix D: Outputs Tab Buttons

Summary

Button	Name	Description
	Summary	Provides summary Indicative Fatigue Assessments. Includes display options for Apparent FTL and KTL, Cumulative Profile by Hours, Hours at FAID Score and KSS, Risk Profile, and Shift Peak GYR Condition.
	Key Risk Indicators	Displays the Key Risk Indicators Panel on the Outputs Menu: Tolerance Level Compliance Percentage, Peak Condition for Work Periods, Hour of Day Profiles, Peak Conditions for Rolled Up Shifts and the Monthly Compliance Display.
	FTL Exposure Logs	Provides details of which work periods (shifts) are exposed to FAID Score and KSS condition Red (above TL) and allows risk mitigation steps to be recorded. Includes Exposure Only or Exposure and History logs.

Schedule

Button	Name	Description
	Work Schedule	Displays the output for Work Schedules 1 or 2 including time in Peak FAID Score and KSS Conditions, Peak FAID Scores and KSS and length of Work and Non-Work periods.
	External Result	Displays the output for External Results 1 or 2, including Peak FAID Score and KSS result at time of external result, or within one hour of work period.
	Sleep Schedule	Displays the output for Sleep Schedules 1 or 2, including time in Peak FAID Score and KSS Conditions, Peak FAID Scores and KSS and length of Work and Non-Work periods. (Visible when no External Results display).
	Gantt Chart	Displays planned work periods (shifts) colour coded by the FAID Condition and/or KSS Condition of the work period.
	Capture	Clicking on icon saves Gantt Chart as an image.
	Click to move	When Gantt Chart is shown in anything other than Full view clicking on icon moves chart to left, right, up or down.

FAID Score

Button	Name	Description
	Score Plots	Displays a Score Plot graph and TZ Movement for individual employee Names displaying a profile for each work period (shift), colour coded by the Peak FAID or KSS Condition of the work period.
	Score Tables	Displays a Score Table for individual FAID Score and KSS Outputs.
	Sleep Estimate Plot	Provides an estimate of the opportunities for sleep in the prior 48 and 24 hours.

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 Periods	Displays a chart of the concurrent Work Periods (shifts) within a Work Schedule.