Assurail

by LTK
LTK Engineering Services

USER'S GUIDE

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Revision History

Rev. New…………………………………………………………………………………………………… January 31, 2019

- Initial release

1.0 Introduction

The Assurail application was developed by LTK Engineering Services (LTK) to aid railroad, transit and other transportation inspection personnel with maintaining, tracking and improving the progress of inspections and quality control. Assurail contains two main components, the tablet application that runs locally on each tablet and the database and website application that runs remotely on a server. The two components communicate with each other over an internet connection. Assurail does not require a constant internet connection to meet the environmental demands of maintenance yards and rail infrastructure. An internet connection is only required after an initial installation to download the application data. The tablet will attempt to synchronize with the server whenever an active internet connection is available.

1.1 General Application Details

The Assurail tablet application was developed for the Android OS API level 28 (Version 9.0) with backwards compatibility for API level 17 (Version 4.2) and above. Assurail was developed using the Android Studio Development Environment Version 3.2.1. The output file format for installation in the Android OS is 'APK', which is a variant of the Java 'JAR' file format. The client application queries the server-side database at defined times to keep the local SQLite database in sync with the server MySQL database.

The server side of Assurail contains two subparts, the internet interface and the database. The database is a MySQL database and the internet interface is coded in PHP 5 with JS client-side extensions using the XHTML 1.0 Transitional syntax.

1.2 User's Guide Organization Overview

This Assurail User's Guide is organized into three sections: introduction, using the tablet application and using the website. The second and third sections describe how the end-user interacts with the application.

1.3 Acronyms

AJAX	Asynchronous JavaScript and XML
API	Application Programming Interface
APK	Android Package File
CRUD	Create, Read, Update and Delete
CSV	Comma Separated Values
JAR	Java Archive
JS	JavaScript
MAC	Media Access Control
OS	Operating System
PDF	Portable Document Format
PHP	PHP Hypertext Preprocessor
RSS	Really Simple Syndication
SQL	Server Query Language
UI	User Interface
URL	Universal Resource Locator
UTC	Coordinated Universal Time

Wi-Fi	Wireless Fidelity
XML	Extensible Markup Language

2.0 Using Assurail on the Tablet

This User's Guide assumes that the user has a basic understanding of the Android OS User Interface (UI) and that the Assurail application has been installed on a compatible tablet. LTK and Assurail assumes no responsibility for the configuration of the tablet outside of the scope of the Assurail application and any required third-party applications, such as Adobe Reader, to view PDF documents. While not needed in all conditions (as explained later in this User's Guide), it is assumed that the tablet has an active internet connection, unless otherwise specified, and has Adobe Reader installed.

2.1 Logging in to Assurail

The Assurail tablet application can be launched by touching the Assurail icon as shown in Figure 2-1.

Figure 2-1: Assurail Icon

After launching Assurail, the log in screen is displayed. The first time that the application is opened after an initial installation, the tablet must first download the list of active users from the server (requires an internet connection). After the download, the list of active users with appropriate permissions will be shown on the left-hand side of the screen (see Figure 2-2). This user download step is optional except after an initial installation of Assurail. This user list is maintained on the server and cannot be edited from the tablet.

Figure 2-2: Assurail Login Screen

To log in, touch the desired user name (from the list on the left-hand side of the screen) and a password prompt will be presented. Enter the password associated with the selected user name and select 'Log In'.

2.2 Program Select

Upon a successful login, the Program and Worksheet Selection screen will be displayed, as shown in Figure 2-3. The first time this screen is opened (after an initial installation of Assurail), the application must first download the list of programs and their associated tasks from the server. Based on the number of programs and tasks, and the internet connection speed, the initial download can take several minutes. Additionally, any PDF procedures or in-progress worksheet photos will be downloaded at this time. Subsequent connections (after the first time) will take considerably less time as only content that has changed is downloaded. The tablet will periodically sync new items with the server automatically; however, the user can request a sync event manually by touching the refresh button located in the top right-hand corner of the application.

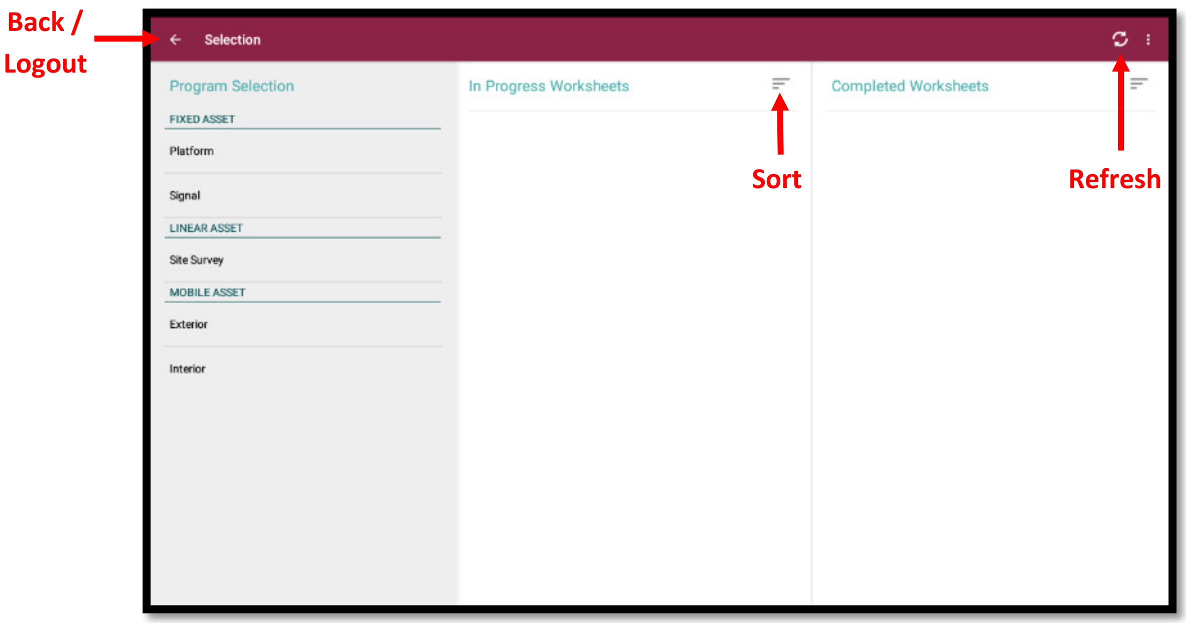


Figure 2-3: Program Selection Screen

The list of available programs is displayed in the left-hand column of the screen and are grouped by type. As shown in the example Figure 2-3, there are three program types: 'Fixed Asset', 'Linear Asset' and 'Mobile Asset'. After the programs and tasks are downloaded from the server, the application will download all in-progress and completed worksheets. Based on the number of worksheets, and the internet connection speed, the initial download can take several minutes.

2.3 Worksheet Select

To view the worksheets for a program, or to start a new worksheet, select the name of the desired program in the left-hand column. This action will bring up a listing of the current in-progress and completed worksheets, as shown in Figure 2-4.

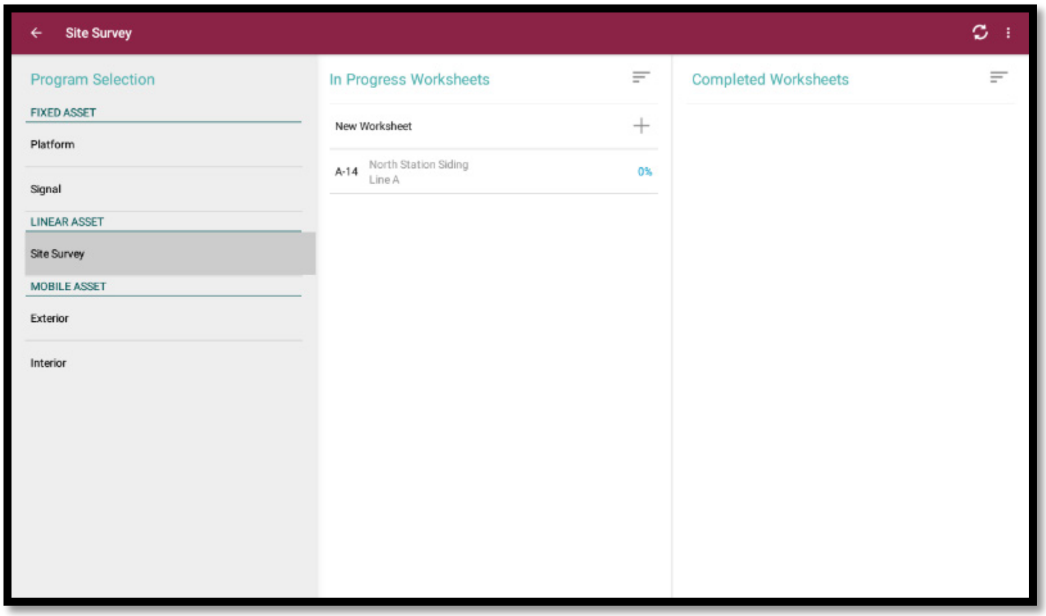


Figure 2-4: Worksheet Selection

The in-progress worksheets are shown in the middle column and are ordered alphabetically based on their name. The worksheets are shown with a set of associated information, as shown in Figure 2-5. The percent complete value shown for each worksheet is based on all tasks of a program; however, all tasks are not necessarily required to be completed before a worksheet may be marked as complete.

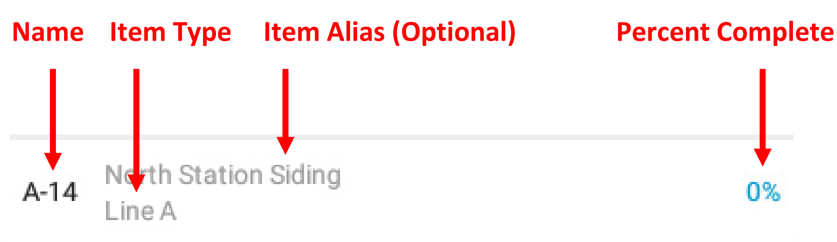


Figure 2-5: Worksheet Information

To open a worksheet, select the desired worksheet name. In-progress worksheets can be continued where they were last left off. Completed worksheets can be viewed, but not edited. To start a new worksheet, touch the 'New Worksheet (+)' button at the top of the middle column. This selection will open a prompt to select a new item, as shown in Figure 2-6. The item type (or alias if used) is automatically selected based on the item name selected.

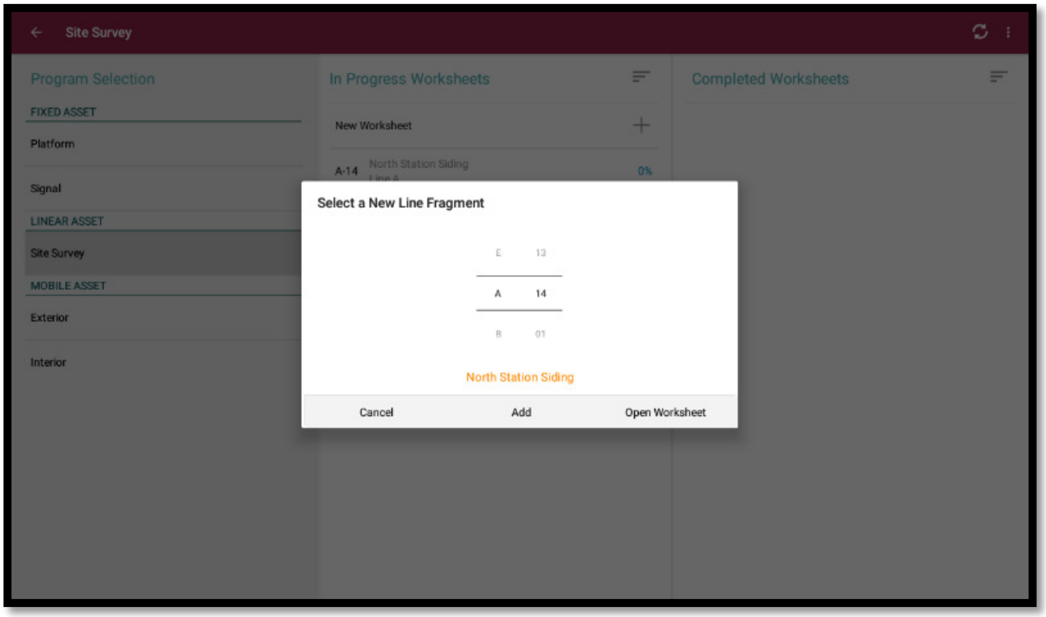


Figure 2-6: Add New Item

After selecting the item name, and if the 'Add' button is selected, a new worksheet will be created and added to the list of in-progress worksheets. After selecting the item name, and if the 'Open Worksheet' button is selected, a new worksheet will be created, and the new worksheet will be immediately opened. Assurail will not permit the creation of a new worksheet for an item name that is already in progress; however, a new worksheet can be created for the same item name if a worksheet for the existing item name was previously completed.

2.4 Worksheet Sorting

The list of in-progress or completed worksheets can be sorted by selecting the appropriate sort button (as shown in Figure 2-3). This action will open a list of possible sorting options including the desired sort order, as shown in Figure 2-7. The default option is to sort in ascending order alphabetically by name. Only one sort order can be applied at a time; a secondary sort by 'Name' in alphabetical ascending order is always applied.

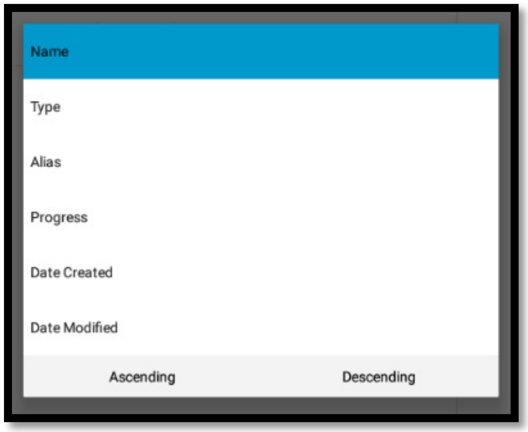


Figure 2-7: Worksheet Sorting Options

2.5 Worksheet Management

Upon opening a new, in-progress, or completed worksheet, the worksheet screen will be displayed. This screen will vary depending on the program selected and the status of the selected worksheet. A sample worksheet screen is shown in Figure 2-8. The selected program's tasks are broken down into groups which can be accessed via the tabs at the top of the screen. It is possible to switch between groups by either selecting the desired tab, or by swiping the current page left or right. In addition to the defined groups, any exception noted during the inspection that is not defined by an existing task can be documented in the 'Exceptions' tab.

To close the opened worksheet, the user can touch the back button of the tablet; however, the back button will also go back to the previously selected tab. To always go back to the worksheet "select screen", the user can touch the back-arrow button in the top left-hand corner (as shown in Figure 2-3).

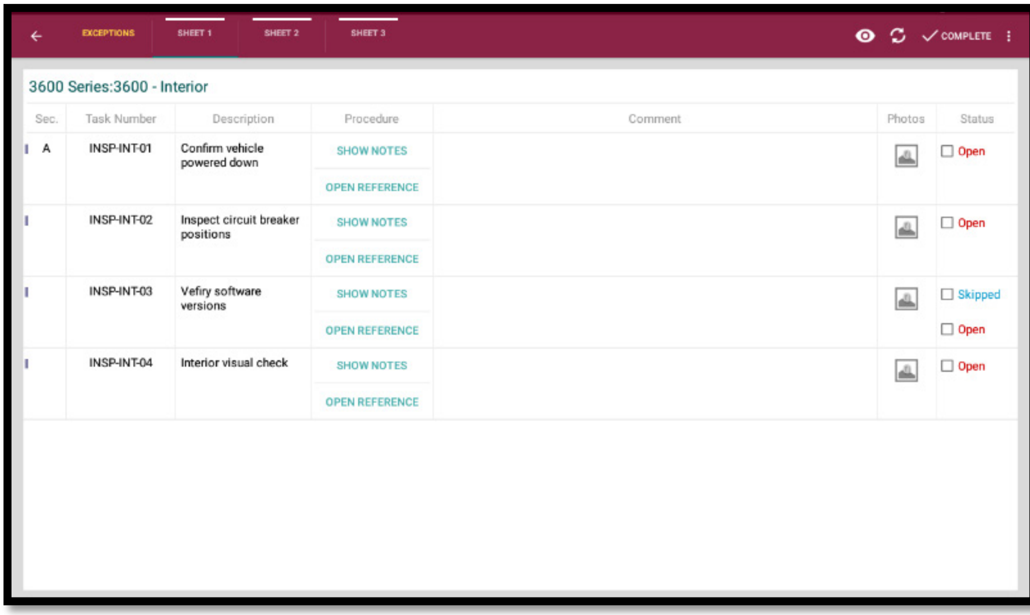


Figure 2-8: Worksheet Screen

The worksheet screen includes several columns and indicators. At the top of the worksheet, the selected item type, item name and program are displayed. Each task is shown as a separate line item in the worksheet with all task-specific information displayed in columns. The columns are described in Table 2-1.

Table 2-1: Worksheet Columns

Column Name	Column Description
Sec.	Indicates if the current task is applicable only to a specific section of the item (optional). Additionally, the status of the task is indicated by a colored square to the left of the section. • Blue indicates the task has been marked as Skipped. • Red indicates the task has been marked as Open. • Green indicates the task has been marked as Closed. • Gray indicates the task has not been marked.
Task Number	The number assigned to the task.
Description	A description of the task.
Procedure	If the 'Open Reference' button is touched, a PDF copy of the procedure will be displayed, if a procedure is associate with the task. Touching this button will not lose the current worksheet's progress. If a task has an additional description, the 'Show Notes' button will be displayed. Touching this will display additional information about the task in a pop-up window.
Comment	Field where the user enters information about any deficiencies noted during the inspection process. This field is only enabled if the 'Status' field is not marked as 'Closed' or 'Skipped'. A comment is required to be provided before a task can be marked 'Closed'. If a comment is included with a task, and the 'Skipped' box is checked, the comment will be deleted after prompting for confirmation.

Column Name	Column Description
Photos	To view any existing photos, or to take a new photo, touch the photo icon button. See Section 2.5.2 for further details. This button also indicates the number of photos associated with the task (as shown in Figure 2-9).
Status	Indicates the inspection status of the task: • Open: The task has been started. Once a task has been marked as 'Open', the 'Closed' checkbox will appear as an option. • Closed: The task has been completed. A comment is required prior to selecting this status. Once a task has been marked as 'Closed', the 'Comments' field for this task will become disabled. • Skipped: The task has been skipped. This option is only available for optional tasks. Once a task has been marked as 'Skipped', any existing comments will be deleted after prompting for confirmation.

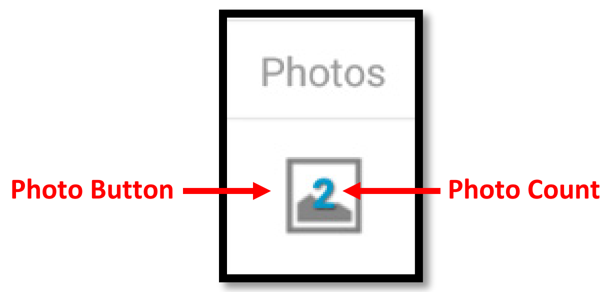


Figure 2-9: Photos Button

During the user's activities to update the progress of a worksheet, the percent complete for any group will be automatically updated and indicated at the top of the tab for that group in the form of a progress bar. Additionally, the count of items marked as 'Open' will be automatically updated and indicated in the form of a gold-colored numerical subscript in the tab label, as shown in Figure 2-10.

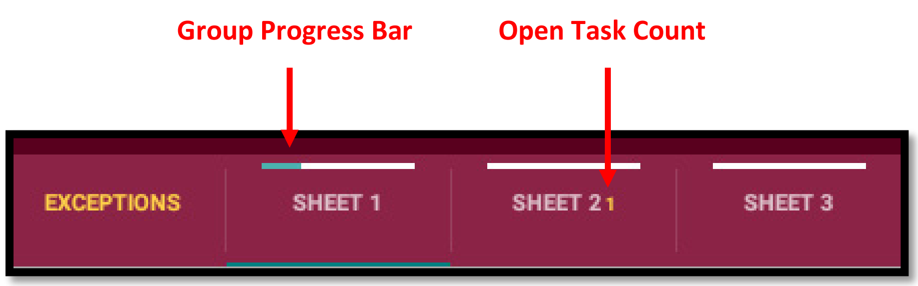


Figure 2-10: Worksheet Group Status

2.5.1 Exceptions

To record deficiencies that are not covered by any pre-defined task, the user can document these using the 'Exceptions' tab. An example is shown in Figure 2-11. Pressing the red-colored 'New' button in the top-right corner will open a new exception.

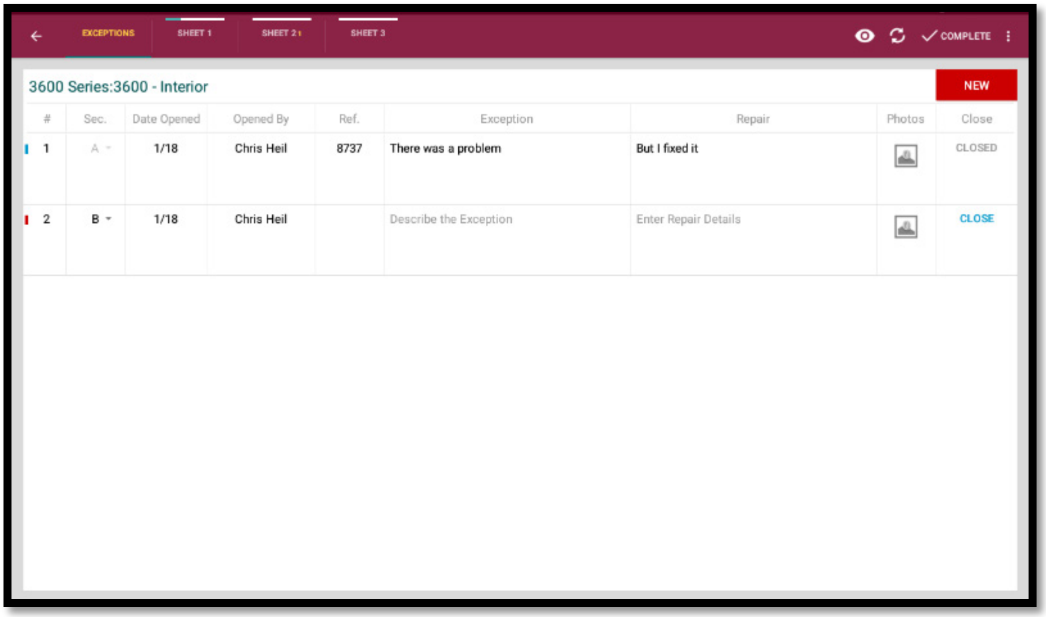


Figure 2-11: Exceptions Tab

The exceptions tab is organized in a similar manner to the task tabs. The columns are described in Table 2-2.

Table 2-2: Exception Tab Columns

Column Name	Column Description
#	Indicates the number of the exception. This value is automatically generated. Additionally, the status of the exception is indicated by a colored rectangle to the left of the exception number. • Red indicates an open exception. • Blue indicates a closed exception.
Sec.	A drop-down menu that allows the user to choose the section. This is an optional column; if the selected item type has no sections, this column will not exist.
Date Opened	Indicates the date the exception was opened.
Opened By	Indicates the user account that opened the exception.
Ref.	A reference value which can be used to track the exception in an external system.
Exception	User provided details about the exception. This field is required to be provided before the exception can be marked 'Closed'.
Repair	User provided details about the repair to the exception. This field must contain information before the exception can be closed.
Photos	To view any existing photos, or to take a new photo, touch this button. See Section 2.5.2 for further details. This button also indicates the number of photos associated with the exception (as shown in Figure 2-9).
Close	The user touches this button (the word 'Close') to close out the exception. When this button is touched, a prompt reminding the user that exceptions cannot be re-opened after they are closed appears. Touching 'OK' closes the exception. Once closed, the button becomes disabled (greyed-out) and the label changes to 'Closed'.

2.5.2 Photos

If a task or exception is noted with a deficiency, Assurail allows the user to take photos to help identify and highlight the deficiency to supplement the written description. To view or take photos for a task or exception, the user can touch the respective photo button as described in Table 2-1 and Table 2-2. This action will open the photo screen as shown in Figure 2-12.

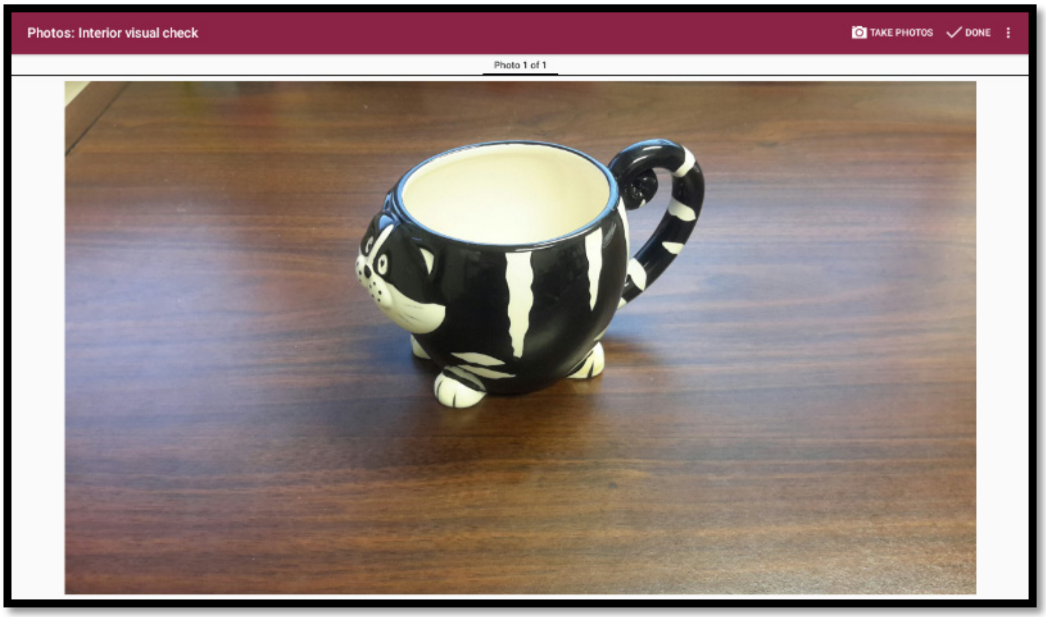


Figure 2-12: Photo Screen

The current task or description will be displayed in the top left-hand corner of the photo screen. The current photo being displayed and the total photo count (photo x of y format) are displayed at the top of the photo. If no photos exist for the specified task or exception, this field will indicate 'No photos'. If there are multiple photos, the user can scroll between each by swiping the current photo to the left or right. To take a new photo, the user can touch the 'Take Photos' button in the top right-hand corner, which will open the camera application.

Assurail uses the tablet's built-in camera application to take photos. Standard camera applications allow the user to switch between the rear-facing camera and front-facing camera and focus the image on the spot tapped by the user's finger. For specific camera application usage instructions, see the tablet manufacturer's documentation.

After taking a photo, Assurail will display the photo and prompt the user to decide if the photo is ok, or if the photo should be discarded and retaken. Accepting or canceling the photo will return the user to the photo screen. To return to the worksheet, the user can touch the 'Done' button located in the top right-hand corner, as shown in Figure 2-12.

2.5.3 Completed Task Showing / Hiding

As a worksheet may contain many tasks that span the course of several days, or longer, to complete, finding incomplete tasks may be challenging. To streamline the process of locating incomplete tasks, Assurail includes a 'show/hide' completed tasks button as shown in Figure 2-13. When this button is activated, signified by the icon with a diagonal line-through, tasks which are marked as 'Closed' or 'Skipped' are hidden from view. If all tasks in a tab are hidden as a result, the entire tab is also hidden. The user can deactivate the show/hide button and all 'Closed' or 'Skipped' tasks are shown again.

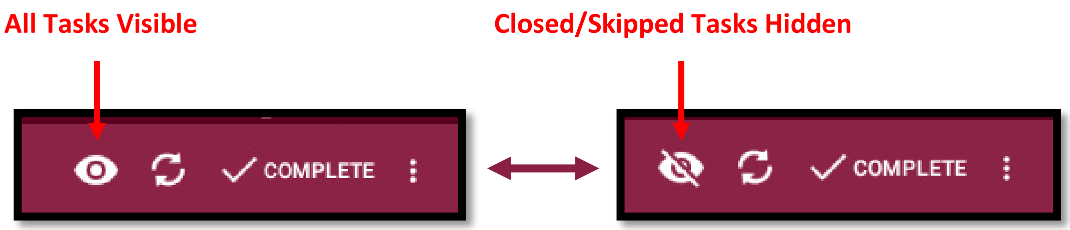


Figure 2-13: Show/Hide Completed Tasks Button

2.5.4 Completing a Worksheet

Once a worksheet has been completed, the user must mark the worksheet as complete. This can be accomplished by touching the 'Complete' button in the top right-hand corner of the worksheet, as shown in Figure 2-8. After touching this button, Assurail will verify that the worksheet is eligible for a completed status. If any issues are confirmed that prevent the worksheet from being completed, Assurail will display a pop-up window indicating items for user action prior to completing the worksheet, as shown in Figure 2-14. A task is only considered complete if it is marked as either 'Closed' or 'Skipped'. An exception is only considered complete if it is marked as 'Closed'. If there are no outstanding issues, when the 'Complete' button is tapped, a prompt reminding the user that completed worksheet cannot be re-opened appears. Tapping OK completes the worksheet. Once a worksheet is completed, it cannot be reopened.

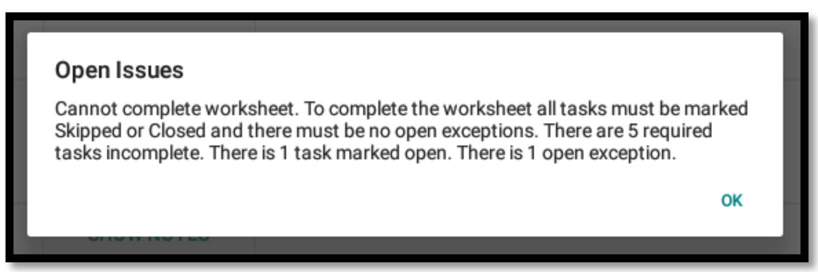


Figure 2-14: Open Issues Prompt

2.6 Settings

Various settings can be controlled from the settings screen. To open the settings screen, touch the menu button (three vertical dots) located in the top right-hand corner of any Assurail screen and then select 'Settings', as shown in Figure 2-15. The settings menu is available from any screen, including from the Login Page.

Figure 2-15: Settings Button

Touching the settings button will open the settings screen, as shown in Figure 2-16.

Figure 2-16: Settings Screen

The 'Sync Server' option allows the user to select the root URL of the server. The default URL is selected during installation, and only needs to be changed if the sync server's address changes. If the URL is changed to a new location, and the content of the database at the new URL is different than the old database, the application data must be cleared using the 'Reset Application Database' button.

Assurail keeps track of the last successful sync of each tablet, and only requests from the server information that has changed since the last successful sync. The last date and time the list of worksheets was synchronized with the server is shown under the 'Last Sync Time'.

The Assurail local database (located on the tablet itself) can be reset using the 'Reset Application Database' button. This action will erase all data stored in the local database on the tablet, including any unsynchronized progress. After the database is cleared, the application will become unusable until the next synchronization action is completed as this reset action will clear any program and task lists; therefore, this action should not be performed without an internet connection to allow the user the ability to re-download the database. Note that the reset action does not clear any data on the server, only on the tablet.

2.7 Assurail Auto Update

If a newer version of Assurail is published (see Section 3.4.8), each tablet will automatically download the updated APK file. Once the file has finished downloading to a tablet, Assurail will prompt each tablet user to install the update. Assurail will continuously prompt each tablet user to install the update when one is available.

3.0 Using the Assurail Website

This user's guide assumes that the user has a basic understanding of operating an internet browser, and that the chosen browser accepts cookies, has JavaScript enabled, and is W3C standards compliant.

3.1 Logging in to the Assurail Website

The URL (address) of the Assurail website will be provided to the user by LTK and will be the same URL that is listed in the sync server setting for the tablet, as described in Section 2.6. After entering the URL of the website into an internet browser, the user will be directed to the login screen, as seen in Figure 3-1. To log in, the user must provide their username and password. See Section 3.4.1 for assignment of users.

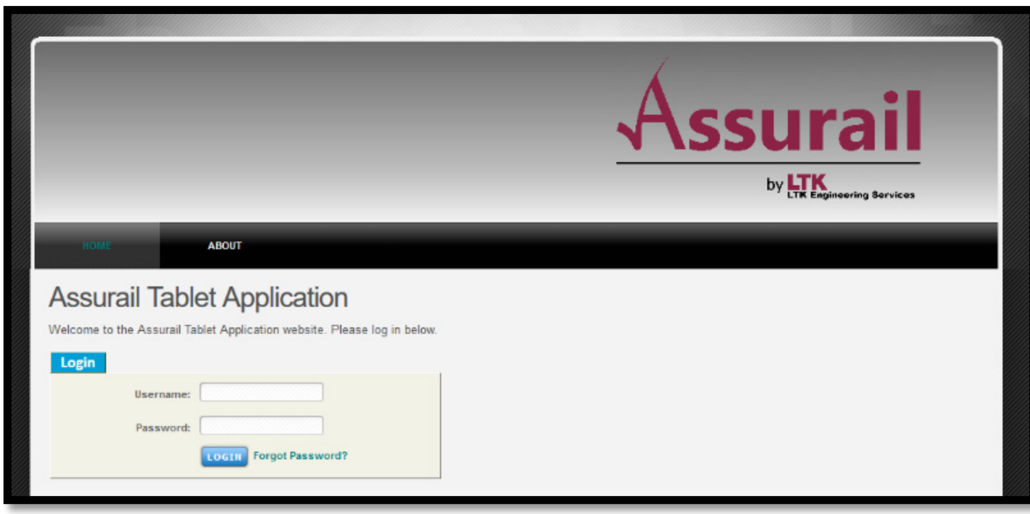


Figure 3-1: Website Login Screen

3.1.1 Forgot Password

If a user is unable to remember his/her password, select the 'Forgot Password' link adjacent to the login button. This action will prompt the user for his/her username and email address. If the username and email combination exists in the database, the user will receive an email containing temporary credentials that can be used to log in. The temporary credentials expire within 24 hours. The temporary credentials can only be used once, at which time the user will be required to change their password.

3.2 Navigating the Assurail Website

After logging in, the Assurail Home Page will be displayed, and the navigation bar will include a list of available options based on the user's permission level, as seen in Figure 3-2. See Section 3.4.1.3 for more information pertaining to permission levels. Any item in the navigation bar with a downward pointing arrow can be expanded if the mouse pointer is placed on top of the item. Any sub-menu item with a rightward pointing arrow can be expanded in the same manner.

After logging in, the user's name is displayed on the left-hand side of the navigation bar. All web pages associated with a specific navigation bar grouping can be accessed either from the navigation bar drop down menus or from the 'What would you like to do…?' section.

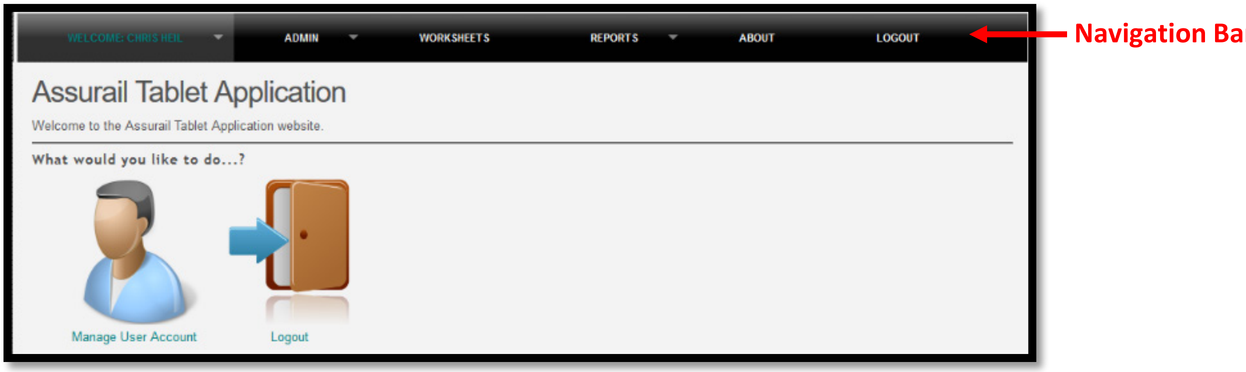


Figure 3-2: Website Home Page

3.3 Home Page

The Assurail Home Page provides basic functionality. The Home Page menu has the following structure:

- Manage User Account
- Logout

3.3.1 Manage User Account

The Manage User Account Page provides the user the ability to update his/her email address and password. Passwords must be at least four characters long. Password changes are uploaded to the tablet(s) during the next successful sync operation. If a tablet hasn't synced successfully after a user changes his/her password, the previous password will still be the valid password on the tablet; however, that user account will not be able to upload any changes from the tablet with the expired credentials. The user must log in with his/her updated password to be able to sync updated worksheets.

3.3.2 Logout

Selecting the Logout link will close the current Assurail website session. The logout function is also available in the navigation bar.

3.4 Admin Page

The Admin Page is accessed via the navigation bar and is only available to users with the appropriate permissions. This page provides administrator functions to maintain the web and tablet applications as shown in Figure 3-3.

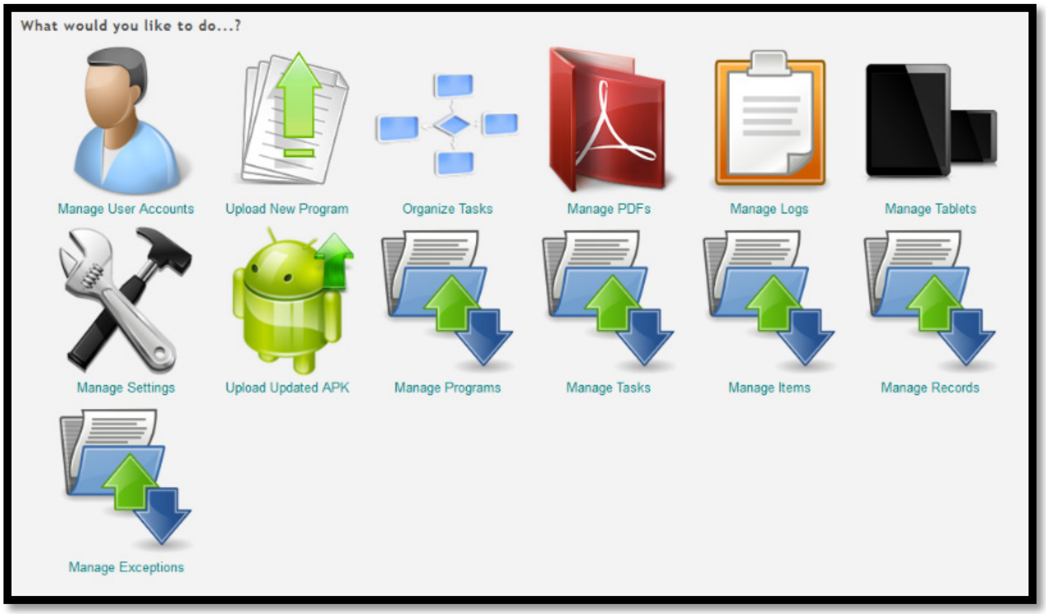
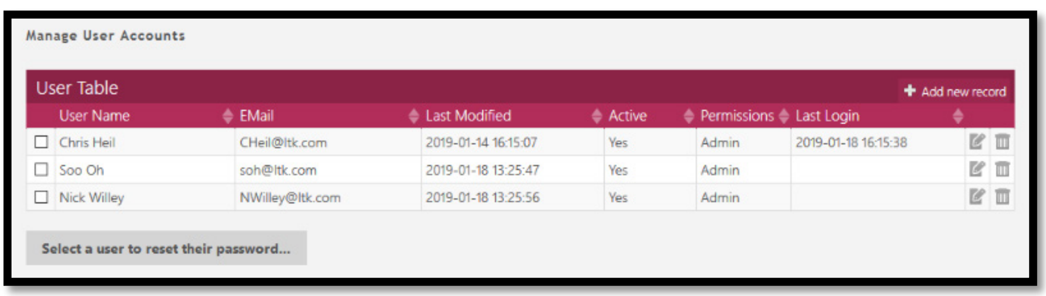


Figure 3-3: Admin Page

3.4.1 Manage Users

User accounts for both the web and tablet applications are maintained on the Manage Users Page. The user table displays the list of accounts and associated details. An example of the user table is shown in Figure 3-4. This page, along with the other admin pages, displays tabular information using the jTable plug-in. For more information about the jTable plug-in, see Appendix A. Via the user table the user can add a user, modify a user's permission level, deactivate a user, and reset a user's password.


Manage User Accounts

User Table — + Add new record

User Name	EMail	Last Modified	Active	Permissions	Last Login
Chris Heil	CHeil@ltk.com	2019-01-14 16:15:07	Yes	Admin	2019-01-18 16:15:38
Soo Oh	soh@ltk.com	2019-01-18 13:25:47	Yes	Admin	
Nick Willey	NWilley@ltk.com	2019-01-18 13:25:56	Yes	Admin	

Select a user to reset their password...

Figure 3-4: User Table

All user account changes are propagated to the tablet(s) the next time that each tablet syncs. Until a tablet performs a user sync operation, the previous information will remain on the tablet; however, all changes take effect immediately on the website and in the server database, including the handshaking protocol used during syncing of new data, other than user accounts. This means that even if a user logs into an un-synced tablet with old credentials, he/she will not be able to sync any new information to nor download any updated information from the server. Any local records that the user creates or modifies using the old credentials will remain saved locally on the tablet and will be synced to the server the next time a valid user account logs into that tablet.

3.4.1.1 Adding a New User

A new user can be added by selecting the 'Add new record' button in the top right-hand corner of the table and providing the required information. After selecting 'Save', the new user will be created, and their password will be set to the word 'password'.

3.4.1.2 Modifying a User Account

A user with admin permissions can update user account information. To modify an email address or permission level, select the edit record icon (next to the trash can icon) and edit the information as desired. A user account that has performed any action cannot be deleted from the database; however, a user account can be set to inactive. If an account is set to inactive, it cannot be used to log into any tablet or the website. To reset a password (changes previous password to the word 'password') select the box to the left of the desired user name and then press the reset password button in the lower left-hand side of the page.

All changes go into effect immediately upon saving, including changes made to any user account. For example, if an administrator sets his/her account to inactive, he/she would immediately be unable to use Assurail and would require another administrator to restore his/her account. Likewise, if an administrator sets his/her own permission level below admin, he/she would no longer be able to make any administrator changes, including setting his/her own permission level back to Admin.

3.4.1.3 Permission Levels

Permission levels for the Assurail tablet application and website are described in Table 3-1.

Table 3-1: Permission Levels

Permission Level	Admin Functions	Website Access	Tablet Access
Inactive	No	No	No
Read Only	No	Yes	No
User	No	Yes	Yes
Admin	Yes	Yes	Yes

3.4.2 Upload New Program

The Upload New Program Page can be accessed via the drop-down Admin menu located on the navigation bar of the Assurail Home Page. To upload a new program and its associated tasks, an XML file can be created using the accompanied Excel macro-enabled workbook which can then be uploaded to the server. See Appendix B for instructions on using the Excel workbook. Once a valid XML file is generated, it can be uploaded from this page by following the steps listed below:

1. Select the 'Browse' button in the 'Upload New Program' pop-up window form, as shown in Figure 3-5, and navigate to the previously created XML file.

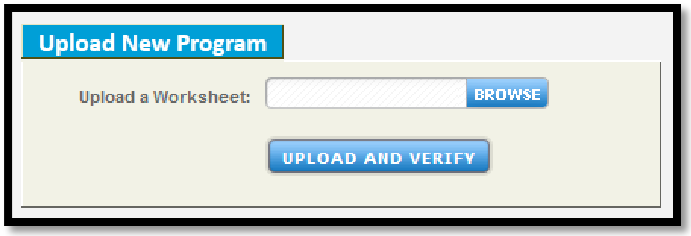


Figure 3-5: Upload New Program Form

2. After the XML file is selected, select the 'Upload and Verify' button. Note that only XML files may be uploaded. If any errors are found with the uploaded XML file, or if the uploaded program already exists, an error message will be displayed detailing the problem(s).
3. After the XML is uploaded, Assurail will display information about the uploaded file and ask for user confirmation before importing the uploaded records and tasks into the database, as shown in Figure 3-6.

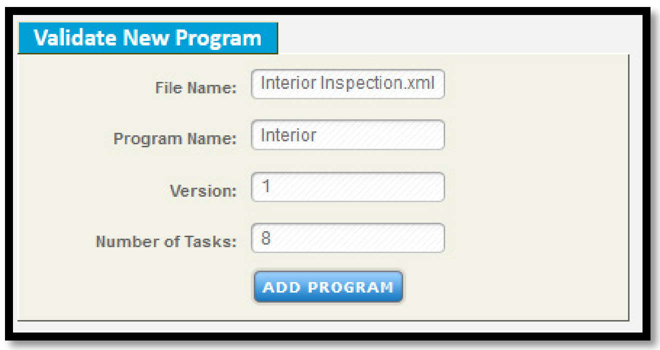


Figure 3-6: Validate New Program Form

4. If the displayed information is correct, select the 'Add Program' button to import the program and associated tasks into the database. Once the server has successfully added the program and tasks, a success message will be displayed.

3.4.3 Organize Tasks

The Organize Tasks Page can be accessed via the Admin drop-down menu on the navigation bar. This page enables a user to easily reorder the tasks of a given program and/or change the group to which they belong.

First, the program of interest must be selected from the filter section of the page. After selecting a program, all active tasks for that program are displayed in their current group and order. A task can be reordered by dragging and dropping it into the desired position. A task can be placed into a different group by dragging and dropping it onto the tab of the desired group. This action will cause the newly moved task to be placed last in the new group.

Additionally, if a task is coded as 'required', it will be displayed in red font with an asterisk to the right and the 'Req'd' button will be highlighted. It is possible to change a task from 'required' to 'not required' by selecting (toggling) the 'Req'd' button. Note that any changes to either the task order or status are not applied to the database until the user selects the 'Apply Changes' button in the lower left-hand corner. If the user attempts to navigate away from the page with unsaved changes, Assurail will notify the user. An example of the Organize Tasks Page is shown in Figure 3-7.

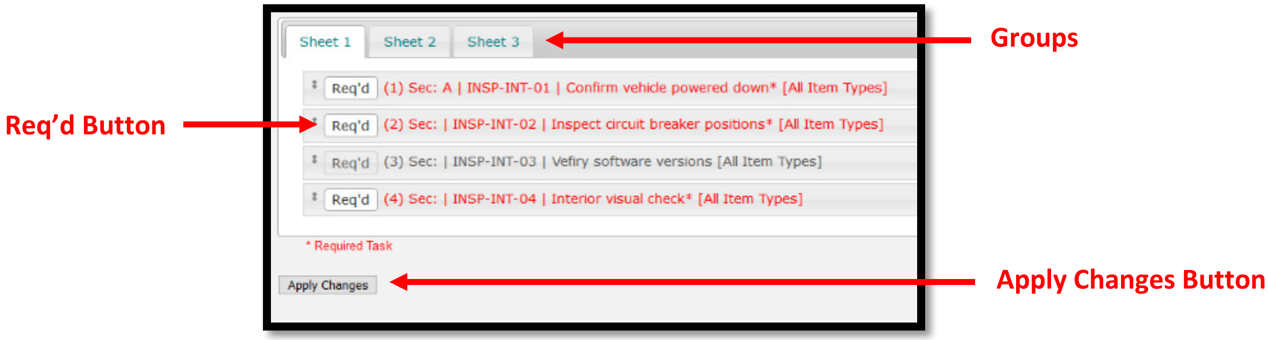


Figure 3-7: Organize Tasks

3.4.4 Manage PDFs

The Manage PDFs Page can be accessed via the Admin menu on the navigation bar. This page facilitates management of all PDF files. PDFs can be uploaded and deleted in bulk. A user can view the total number of tasks which reference each PDF, view which specific tasks reference each PDF, manage the task references to each PDF, and edit PDF filenames.

First, the directory of interest must be identified by selecting the desired folder, as shown in Figure 3-8. Once the directory is selected, the PDFs contained in that folder are displayed, along with associated information including: file name, total number of task references, file size and modified date. Selecting the PDF name will open the respective file for viewing in a separate tab.

Figure 3-8: Select PDF Directory

3.4.4.1 Uploading PDFs

A user can upload one or multiple PDFs at once to the server. All PDFs located in any directory will be automatically uploaded (pushed) to the tablet(s) during their next sync. If a PDF is deleted from the server, it will not be automatically erased from the tablet(s). If a PDF file is uploaded (pushed) and has the same file name as a file already stored on the tablet(s), the file on the tablet will be overridden with the newly uploaded version.

PDFs can be uploaded in two ways: selecting the 'Add Files' button, or by dragging and dropping files from a separate window into the area between the three upload buttons (Add files, Start upload, Cancel upload) and the displayed table of existing PDFs (as shown in Figure 3-9).

Once PDFs are selected for upload (via one of the two methods described above), they are added to the upload queue (an example is shown in Figure 3-9) but not yet uploaded to the server. The files can be uploaded individually by selecting the respective 'Start' button located to the right of each file name and size, or simultaneously by selecting the blue-colored 'Start Upload' button. Only PDF files can be uploaded. If a PDF file in the upload queue has the same name as a file already stored on the server, a number in parenthesis will be appended to the end of the uploaded file name. During the upload process, progress bars will appear next to each file name, and an overall progress bar will be displayed at the top.

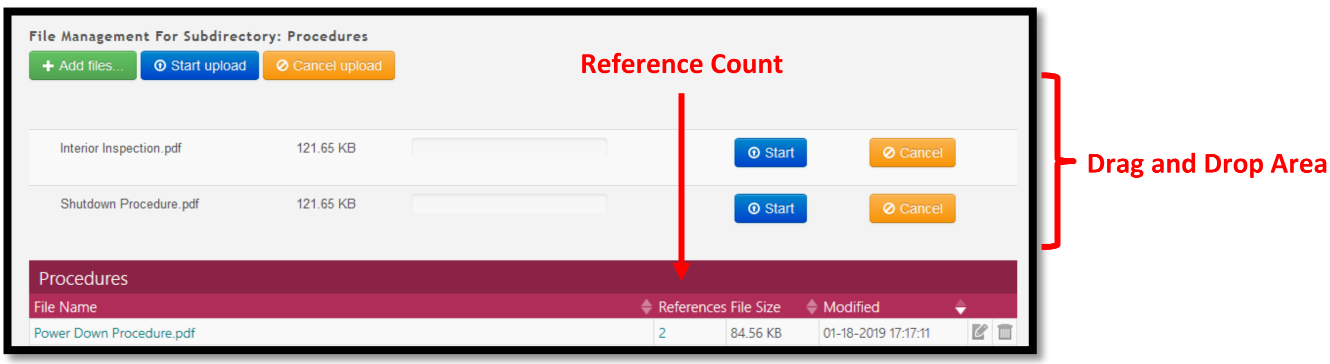


Figure 3-9: Upload Queue

Once PDF files have been successfully uploaded, their names become hyperlinks to allow easy viewing in a new tab, and red-colored Delete buttons appear to the right of each PDF file name, as shown in Figure 3-10. Selecting the delete button will delete the respective file from the server. If the Uploading PDFs page is refreshed, the newly upload files will appear in the list of files and the upload queue will be cleared. After upload, PDF task references can be managed by following the steps in Section 3.4.4.2.

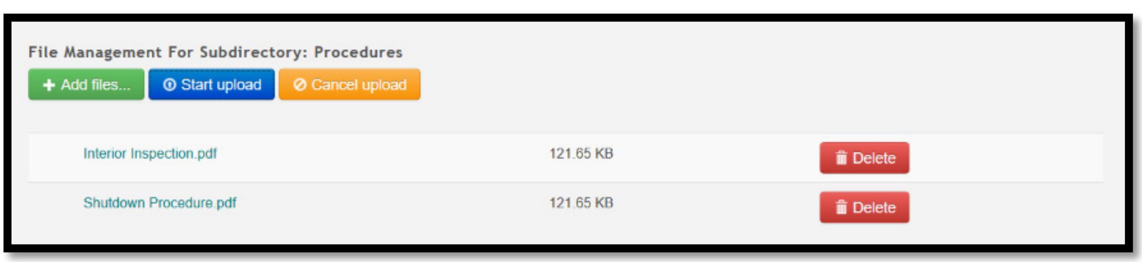


Figure 3-10: Uploaded Files

3.4.4.2 Managing PDF Task References

In a worksheet, each task can have a defined procedure, or other information, that is linked to one of the specific PDF documents that are uploaded to the server. More than one task can reference the same PDF, but a task can only reference one PDF. The user can select a PDF for association to a specific task from the 'Manage Tasks' page (see Section 3.4.9.2) or select multiple tasks at once for association to a specific PDF.

The number of references for each PDF can be viewed in the 'References' column of the PDF table next to each file name. To view the specific tasks that reference the PDF, or to associate the PDF with a set of tasks, select the reference count for the desired PDF (as shown in Figure 3-9). This action will display the Manage PDF References page, as shown in Figure 3-11.

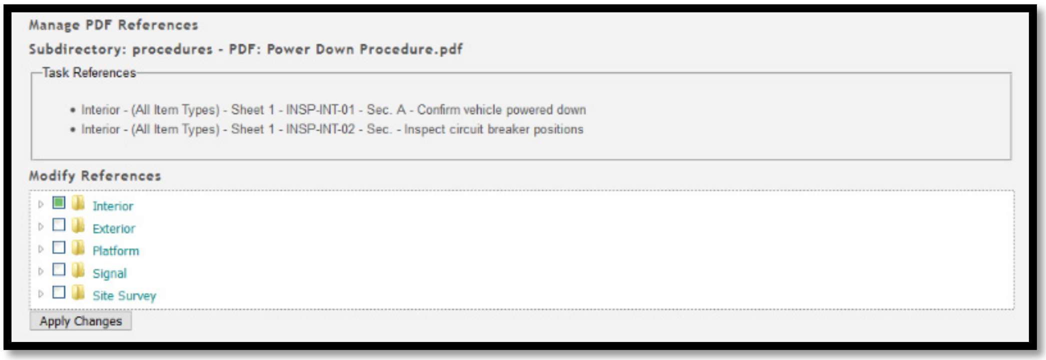


Figure 3-11: Manage PDF References

The selected PDF file name and subdirectory are displayed at the top of the page. Displayed directly below the PDF file name is the 'Task References' section listing of the specific tasks that reference the selected PDF. It is possible to modify the PDFs task references using the 'Modify References' tree, located just below the Task References section. The tree is organized in folders by program, and then by group. To expand or collapse a folder, select the arrow to the left of the checkbox, or select the folder name. If a folder has a task inside of it that is selected, it will be indicated by the respective checkbox being colored. If all tasks inside a folder are selected, it will be indicated by the respective box being checked. To select or deselect a task, select the checkbox next to the task of interest. If a task is already assigned to another PDF, the task name will be followed by an 'Already Assigned PDF' indication in parenthesis.

To save changes made to the selected task, select the 'Apply Changes' button located below the modify references tree. A task can reference only one PDF. If a task that was already assigned a different PDF is checked and saved, the new reference will replace the old reference.

3.4.4.3 Editing PDF Filename

To modify a PDF filename, select on the edit record icon (next to the trash can icon) and select 'Save'. If the filename already exists, a dialog notifying the user will appear and the old filename is preserved. The reference count for the filename will remain unchanged after the file is successfully renamed. If a PDF file is renamed, any tasks which reference the PDF will be automatically updated to reference the updated filename.

3.4.5 Manage Logs

The Manage Logs Page can be accessed via the Admin drop-down menu located on the navigation bar. For auditing purposes, actions taken on the server are logged. Although actions taken on a tablet are not logged, all interactions between the tablet(s) and the server are. Since the log can grow quite large over time, Assurail includes tools to allow the user to filter the log. Additionally, the log can be syndicated via an RSS 2.0 feed, which can be synced with Microsoft Outlook or any other RSS feed reader.

The log can be filtered by using the 'Filter' section of the Manage Logs Page, as shown in Figure 3-12. If no filters are selected, then all log entries are shown. If any filters are applied, only entries meeting all selected criteria will be shown. The 'Select Device' column will display the nickname given to a tablet, if one exists, or the Android ID of the tablet if a nickname doesn't exist. See Section 3.4.6 for more information about tablet nicknames.

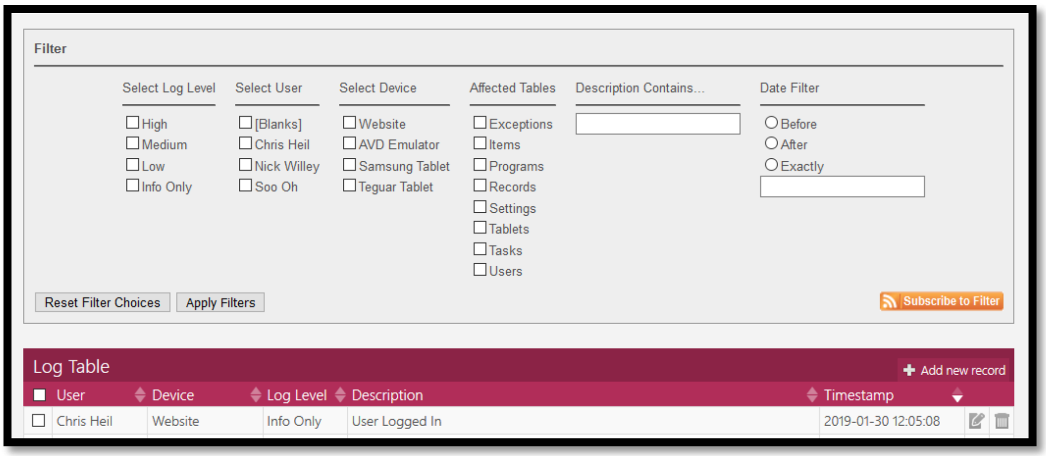


Figure 3-12: Log Filter

The 'Select User' column filters the log based on user name, and the 'Select Device' column filters based on a specific tablet. For example, if a user wanted to see all activity that a specific user had performed, they would check the box next to that user and click on 'Apply Filters'. To search for specific text in the description, the 'Description Contains…' field can be used to insert text. This field is not case sensitive.

3.4.5.1 RSS 2.0 Log Syndication

If a filter is of special interest to a user, the filter can be applied and then the user can select the 'Subscribe to Filter' button to open the RSS feed in a new tab. It is then possible to subscribe to the filtered feed in Outlook, or any other RSS reader application, which will notify the user automatically when new items are added to the log matching the designated filter criteria.

3.4.6 Manage Tablets

The Manage Tablets Page can be accessed via the Admin drop-down menu located on the navigation bar. This page is used to track information and status of all tablets. Tablets are tracked via their Android ID which is unique to each connected device. Whenever a tablet interacts with the server, it checks to see if the tablet has connected to the server previously; if it has, the server updates the tablet appropriately, if it has not, the tablet is added to the table.

The first time a tablet connects to the server, it is automatically added to the table, but it is not given a nickname. A nickname can be given to a tablet by selecting the 'Edit Record' icon (next to the trash can icon). Only the nickname may be edited. Using a nickname is not required but may make recognition of each tablet easier. If no nickname is given, the Android ID will be used. The columns of the table are described in Table 3-2.

Table 3-2: Manage Tablets Table

Column Name	Description
Nickname	Nickname given to the tablet.
Android ID	Unique ID associated with the tablet.
Last IP	IP address from which the tablet last synced with the server.
Last User	User account that was last logged into the tablet to sync with the server.
Last Action	Last sync action that the tablet made. Possibilities include: • 'userList' – downloaded list of users, • 'programs' – downloaded list of programs and tasks, • 'upload' – tablet passed new information to the server, and the server responded with the latest items, records and exceptions, as well as any PDFs, photos or APK files, and • 'sendPic' – tablet uploaded photo(s).
Last User Sync	Time the tablet last synced the list of users (userList action).
Last Sync	Time the tablet last synced the list of items, records and exceptions (upload action).
Version	Version of the installed APK on the tablet.
Last Connected	The most recent time the tablet connected to the server.
First Connected	The first time the tablet connected to the server.

3.4.7 Manage Settings

The Manage Settings Page can be accessed via the Admin drop-down menu located on the navigation bar. This page allows administrators to modify settings. Since the setting values are automatically adjusted, this page provides administrators a way to view and modify manually if necessary. There are three settings required by the application as described in Table 3-3.

Table 3-3: Manage Settings Table

Setting Name	Description
last_modified_pdf	Timestamp of the last PDF file that was modified on the server.
last_modified_photo	Timestamp of the last photo uploaded to the server.
latest_apk_version	Current APK version loaded on the server.

3.4.8 Upload Updated APK

The Upload Updated APK Page can be accessed via the Admin drop-down menu located on the navigation bar. This page allows an administrator to upload an updated version of the Assurail tablet application (APK file). After navigating to this page, the 'Upload Updated APK' form is shown, as shown in Figure 3-13, which displays the current version and upload date of the APK located on the server. If a new APK version is uploaded to the server, it is automatically uploaded (pushed) to all tablets during their next sync. (See Section 2.7 for information regarding the tablet auto update feature).

Figure 3-13: Upload Updated APK Form

An updated APK can be uploaded to the server using the following steps:

1. Select the 'Browse' button in the 'Upload Updated APK' form, as shown in Figure 3-13, and then navigate to the desired APK file.
2. Once the desired APK file is selected, select the 'Upload and Verify' button. Only APK files can be uploaded. If any errors are found with the uploaded APK file, an error message will be displayed detailing the problem(s) for resolution by the user.
3. After the file is uploaded, Assurail will display information about the uploaded file and request confirmation from the user before replacing the current APK file with the newly uploaded version, as shown in Figure 3-14.

Figure 3-14: Validate New APK Form

4. If the displayed information is correct, the user must select the 'Upload APK' button to replace the current APK file with the newly uploaded APK file. Once Assurail has successfully replaced the APK file with the newly uploaded version, a success message will be displayed.

While it is possible to upload an APK file with the same or older version than the previous one, the new APK file will not be uploaded to any tablet unless it is identified as a newer version. Assurail only checks the version number of any uploaded APK file, not the integrity of the file.

3.4.9 Manage Tables

The Manage Tables page can be accessed via the Admin drop-down menu located on the navigation bar. The tables within Assurail are automatically maintained as necessary; therefore, there is no typical or routine need to modify or create entries in these tables. However, Assurail does provide a user, with the appropriate permissions, to manage tables. All table pages use the "jTable" plug-in. For more information about using the jTable plug-in, see Appendix A. The terminologies 'Program', 'Task', 'Item' and 'Record' are explained graphically in Figure 3-15 and Figure 3-16.

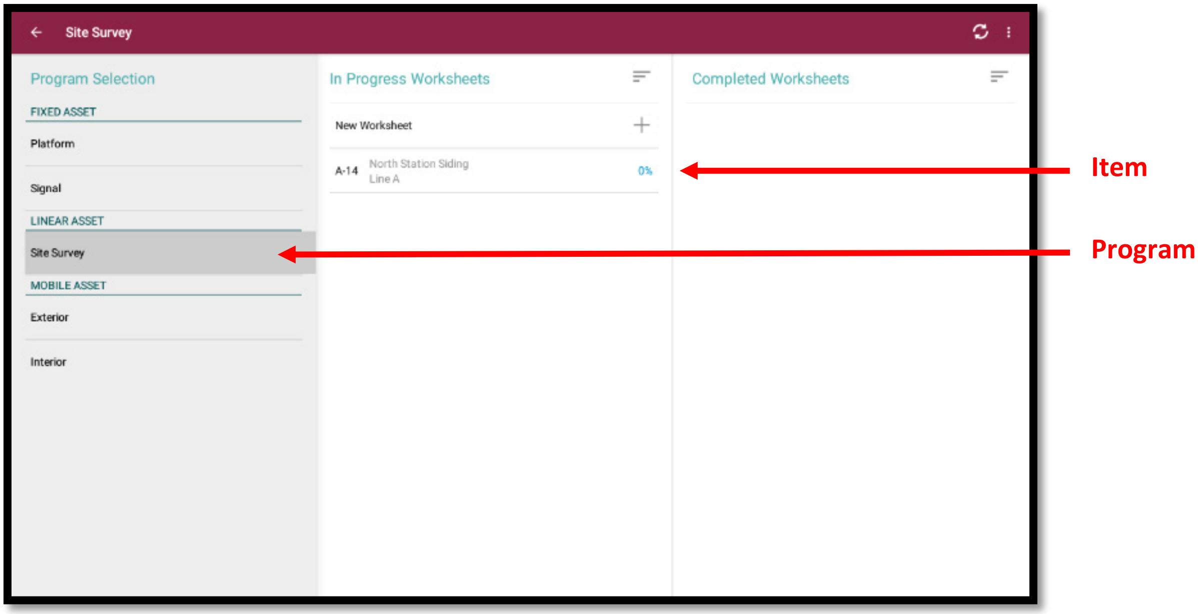


Figure 3-15: Programs and Items

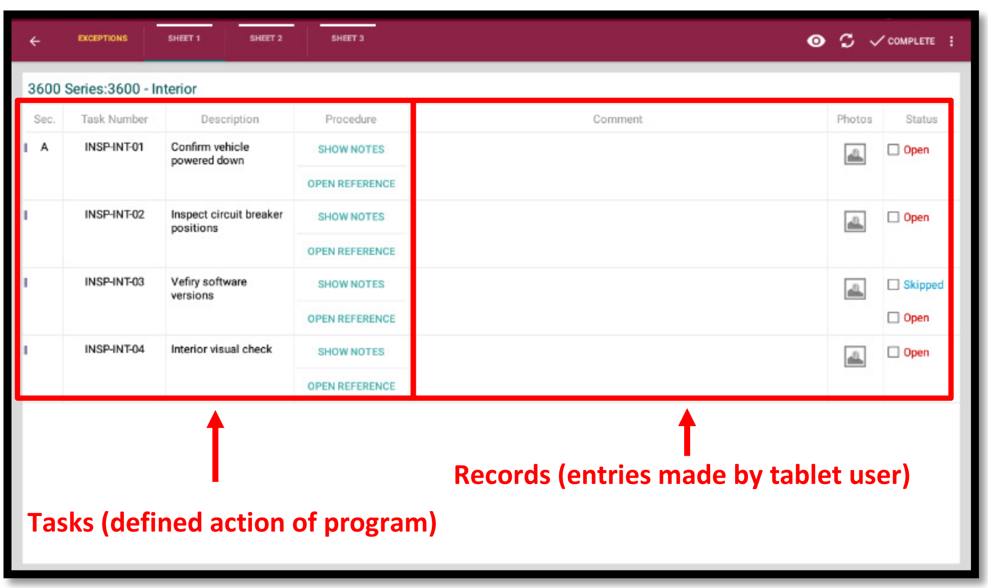


Figure 3-16: Tasks and Records

3.4.9.1 Manage Programs

The Manage Programs Page can be accessed via the Admin Page or the Admin>Manage Tables menu on the navigation bar. The Manage Programs Page includes a table containing information regarding the programs uploaded to Assurail. The columns of the table are described in Table 3-4.

Table 3-4: Manage Programs Table

Column Name	Description
Program Name	Name of the program.
Item Type	Item type that the program applies to, for example 'LRV'. This is used to determine which 'New Item' dialog menu will be shown on the tablet (see Figure 2-6).
Group	Name of the groupings/tabs on the worksheet, as seen on the tablet, and how the tasks are organized, for example 'Day' or 'Page' (see Figure 2-10).
Version	Version of the program. Used to replace an entire program. This column is currently not active in Assurail.
Program Type	Type of program, for example 'Mobile Asset' or 'Fixed Asset', and how the programs are grouped (see Figure 2-3).
Last Modified	Time the program was last modified.
Procedure?	If the program includes supplemental procedure information, in addition to PDF documentation. 'Yes' means there is a supplemental procedure.
Layout	Determines the layout. This column is currently not active in Assurail.

3.4.9.2 Manage Tasks

The Manage Tasks Page can be accessed via the Admin Page or the Admin>Manage Tables menu on the navigation bar. The Manage Tasks Page includes a table containing information regarding the tasks uploaded to Assurail. Each task is associated with a program. If a new task is added to a program, upon the next sync action, it will be added to any future items created on the tablet(s) and to any in progress items on the tablet(s).

It is possible to apply filters to the task table using the 'Filter' section of the page. Once the filter feature is activated, a drop-down menu is displayed to show only tasks for a specific program. Once a program is selected, the user can filter by a specific group. Once the filter parameters are selected by the user, the 'Load Program' button is selected to apply the filter. The columns of the task table are described in Table 3-5.

Table 3-5: Manage Tasks Table

Column Name	Description
Program	Program the task is associated with.
Group	Group the task is associated with in the worksheet.
Sec.	Section of the item the task applies to, for example 'A' or 'B'.
Task No.	Name/identifier of the task.
Description	Description of the task.
Last Modified	Time the task was last modified.
Required?	If the task is required (cannot be skipped).
Item Type	Item type(s) the task applies to. If left blank, applies to all item types.
Sort Order	Sequence number of the task used to determine the order on the worksheet. The actual value is not important, just the order.
PDF Name	Filename of the associated PDF, if one exists.
Is Current?	If the task is active. This field is used if the task becomes retired as tasks cannot be deleted, if ever used on any tablet. If retired (not current), the task will not be

Column Name	Description
	shown on the tablet(s) for future or in-progress worksheets; however, it will not be removed from previously completed worksheets.

3.4.9.3 Manage Items

The Manage Items page can be accessed via the Admin Page or the Admin>Manage Tables menu on the navigation bar. The Manage Items Page includes a table containing information regarding the items that have been opened by the tablet(s). New items cannot be created on the website. The columns of the items table are described in Table 3-6.

Table 3-6: Manage Items Table

Column Name	Description
Program	Program with which the task is associated.
Type	Type of item (see Table 3-4).
Name	Name of item.
Alias	Alias of the item (if applicable), or 'None'.
Completed	Was the item completed? If completed, the item will appear on the 'Completed' section of the worksheet selection (see Figure 2-4 and Figure 3-17).
Completed By	User name that completed the item. Is blank if not complete.
Last Modified (UTC)	Time the item was last modified on a tablet (UTC time zone).
Created (UTC)	Time the item was created on a tablet (UTC time zone).
Server Modified	Time the item was last modified on the server.

3.4.9.4 Manage Records

The Manage Records page can be accessed via the Admin Page or the Admin>Manage Tables menu on the navigation bar. The Manage Records Page includes a table containing information regarding the records opened and maintained by the tablet(s). New records cannot be created on the website. It is possible to apply filters to the records table using the 'Filter' section of the page. Once the filter section is activated, a drop-down menu is displayed to show only records for a specific item. Once the filter parameters are selected by the user, the 'Load Item' button is selected to apply the filter. The columns of the table are described in Table 3-7.

Table 3-7: Manage Records Table

Column Name	Description
Item	Item the record is associated with.
Task	Task the record is associated with.
User	User name that last modified the record. Field is blank if the record was never modified.
Status	Status of the record: Incomplete, Open, Closed, or Skipped.
Comment	User provided comment about the record.
Last Modified (UTC)	Time the record was last modified on a tablet (UTC time zone).
Program	Program the record is associated with.
Photos	CSV string of photo filenames associated with the record. Field is blank if there are no photos.

Column Name	Description
Server Modified	Time the record was last modified on the server.
Date Opened (UTC)	Time the record was marked as 'Open' on the tablet (UTC time zone). Field is blank if not marked as opened.
Date Closed (UTC)	Time the record was marked as 'Closed' on the tablet (UTC time zone). Field is blank if not marked as closed.

3.4.9.5 Manage Exceptions

The Manage Exceptions page can be accessed via the Admin Page or the Admin>Manage Tables menu on the navigation bar. The Manage Exceptions Page includes a table containing information regarding the exceptions opened and maintained on the tablet(s). New exceptions cannot be created on the website. It is possible to apply filters to the exceptions table using the 'Filter' section of the page. After the filter feature is activated, a drop-down menu is displayed to show only exceptions for a specific item. Once the filter parameters are selected by the user, the 'Load Item' button is selected to apply the filter. The columns of the table are described in Table 3-8.

Table 3-8: Manage Exceptions Table

Column Name	Description
#	Sequence number of the exception.
Sec.	Section the exception is associated with. Not all item types have sections. For those without, the field will default to 'N/A'.
User	User that opened the exception.
Ref	Optional reference column to link to an external tracking system.
Closed	Is the exception closed?
Exception	Description of the exception provided by the user.
Repair	Repair description of the exception provided by the user.
Last Modified (UTC)	Time the exception was last modified on a tablet (UTC time zone).
Program	Program the exception is associated with.
Item	Item name the exception is associated with.
Photos	CSV string of photo filenames associated with the exception. Field is blank if there are no photos.
Date Opened (UTC)	Time the exception was opened (UTC time zone).
Server Modified	Time the exception was last modified on the server.

3.5 Worksheets Select Page

The Worksheets Select Page can be accessed via the navigation bar. The Worksheets Select Page provides a user of the Assurail website the ability to see the same worksheet layout and status seen on the tablet(s). Worksheets viewed from the website are read-only and cannot be edited. The Worksheet Select Page is shown in Figure 3-17.

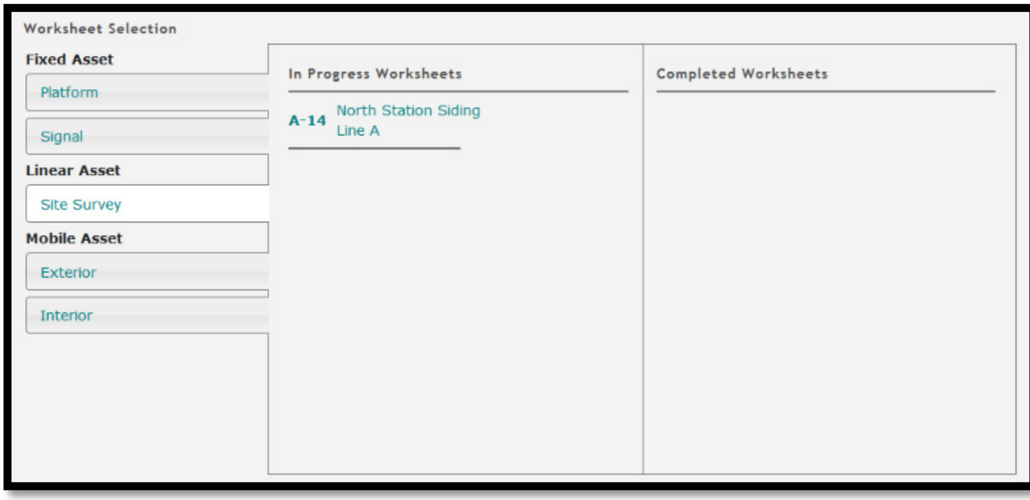


Figure 3-17: Worksheets Select Page

On the Worksheets Select Page, programs are sorted in the left-hand column and are grouped by program type. Selecting a program from the left column will display a listing of the in-progress and completed worksheets, in separate columns. Selecting a worksheet will open that specific worksheet, an example is shown in Figure 3-18.


3600 Series: 3600 (Interior)

Exceptions | Sheet 1 | Sheet 2 | Sheet 3

Sec	Task Number	Description	Procedure	Comment	Photos	Status
A	INSP-INT-01*	Confirm vehicle powered down		Confirmed	0	Closed
	INSP-INT-02*	Inspect circuit breaker positions			1	Incomplete
	INSP-INT-03	Vefiry software versions			1	Skipped
	INSP-INT-04*	Interior visual check			1	Incomplete

* Required Task

Figure 3-18: Worksheet Page

After selecting a worksheet, the tasks are grouped along the top within tabs, and each can be selected to view that group. The first (left) tab is always the exceptions tab and clicking on this tab will display exceptions, if any exist. If a task is required, its task number will be displayed in red and include an asterisk afterwards. If a PDF is associated with the task, a PDF icon will be displayed in the 'Procedure' column, and if selected will open the PDF in a new tab. If the task has an additional procedure defined, a notepad icon will be displayed in the 'Procedure' column, and if selected will open the notes in a popup box. If photos are associated with a task, the quantity of photos is displayed in the 'Photos' column. If the number of photos is greater than zero, selecting the number will open a carousel of the photos in a popup box.

3.6 Reports Page

The data collected by Assurail can be used to provide information, statistics and trends. Reports generated by Assurail are displayed via charts and tables. The Reports Page is accessed via the navigation bar and is shown in Figure 3-19.

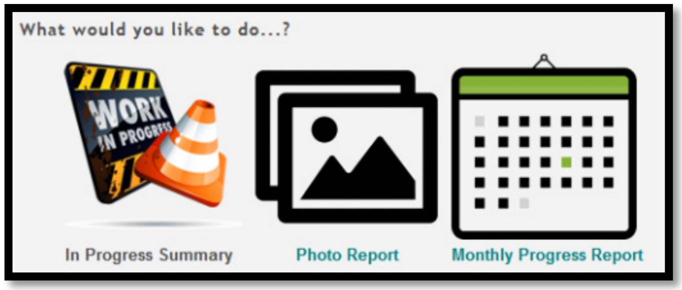


Figure 3-19: Reports Page

3.6.1 In-Progress Summary Report

After pressing the Reports button located in the navigation bar, the main reports page is shown. This page shows the status of items that are currently listed as in-progress. An example is shown in Figure 3-20.

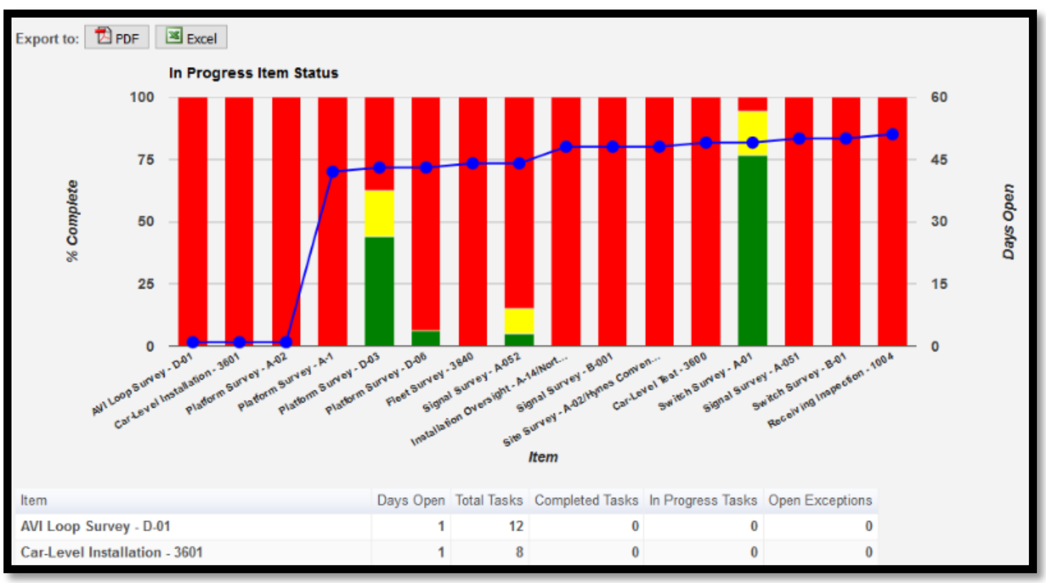


Figure 3-20: In Progress Chart

Each in-progress item is listed along the x-axis. The item name is preceded by the associated program name. The stacked red/yellow/green bars show the progress (% Complete) of that specific item. Red represents incomplete tasks, yellow represents opened tasks, and green represents completed (closed or skipped) tasks, with percent displayed along the (left) y-axis. The blue line represents the number of days each item has been open, with number of days displayed along the (right) y-axis.

If the user hovers the cursor over sections of the graph, a tooltip popup will display the value and title of the item. Additionally, a table is included below the chart to display the same information in tabular form. The user can sort the table by clicking the column headers.

This report can be exported to a PDF or Excel file by using the associated export button located above the graph.

3.6.2 Photo Report

Collected photos can be viewed by generating a photo report. This report allows desired photos to be filtered based on a specific program or item.

To show all photos, click on the 'Load Program' button of the Reports Page without making a filtering selection. It is possible to apply filters to the report using the 'Filter' section. A drop-down menu is displayed that allows the user to report only photos for a specific program. Once a program is selected, the user can apply further filtering for a specific item, as shown in Figure 3-21. Select the 'Load Program' button to apply the filter.

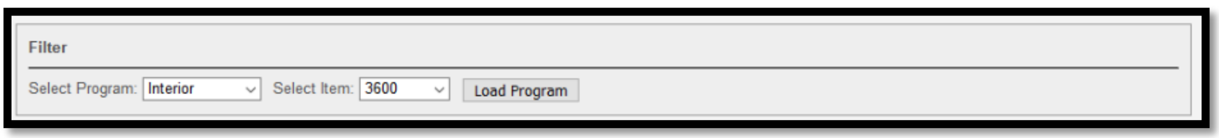


Figure 3-21: Photo Report Example Filter

The applicable photos are shown as thumbnails grouped by program and item, as applicable, as shown in Figure 3-22.

Figure 3-22: Photo Report

Selecting a specific photo thumbnail will open an enlarged version of the photo and display the photo's associated program and item. The enlarged photos can be scrolled through by selecting the arrows on the left or right side of the photo. The photo display window can be closed by selecting the 'X' in the bottom-right corner, or by pressing the keyboard's escape key.

Photo reports can be exported to a PDF file by selecting the export to PDF button located at the top of the report.

3.6.3 Monthly Progress Report

A monthly progress report can be generated that will list items that were opened or completed in a calendar month. The month can be selected using the filter drop-down menu. Only months with activity are listed, as shown in Figure 3-23. To generate the report, select a month and select the 'Load Report' button.

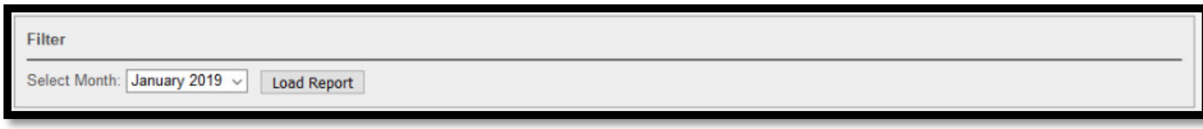


Figure 3-23: Monthly Progress Report Example Filter

Opened items in the selected month will be shown first with items grouped by program and completed items will be listed next, as shown in Figure 3-24.

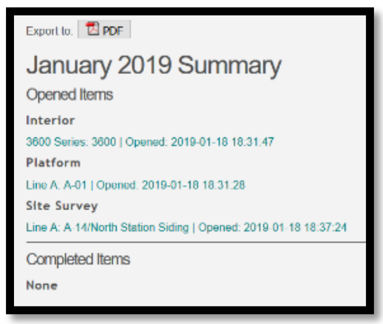


Figure 3-24: Monthly Progress Report

The monthly progress report can be exported to a PDF file by selecting the export to PDF button located at the top of the report.

Appendices

A Using the jTable Plug-in

Most of the tables generated by Assurail are constructed using the jTable plug-in. Full documentation and source code for the jTable plug-in can be found on the jTable website at http://www.jtable.org.

The jTable plug-in is used to create AJAX based CRUD tables. Each instance of jTable use by Assurail is configured slightly differently. All features are described in this appendix, but not all are available for every table generated.

A.1 Add New Record

If a jTable allows the user to add a new record, the 'Add new record' button will be available in the top right corner of the table as shown in Figure A-1.

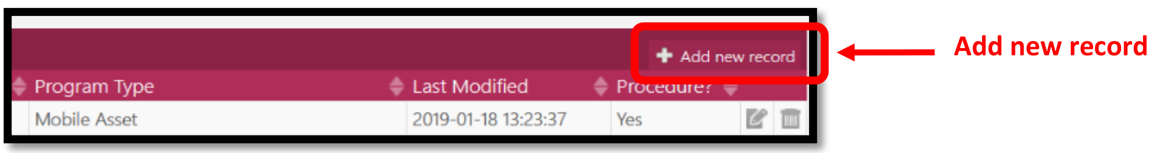


Figure A-1: Add New Record

When the 'add new record' button is selected, the new item form is displayed listing the fields that must be completed, an example is shown in Figure A-2 on the left. If any field requirements or validations are not met, the user will be alerted as shown in Figure A-2 on the right.

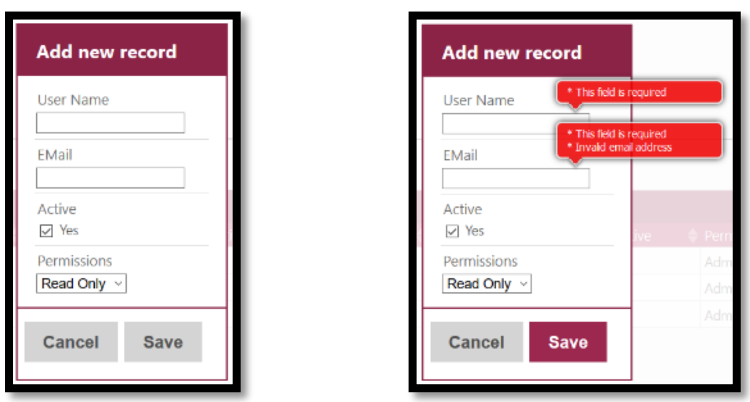


Figure A-2: New Item Form

A.2 Edit Record

If a jTable allows the user to edit a record, the 'Edit Record' button is displayed at the right-hand side of the specific record. An example is shown in Figure A-3.

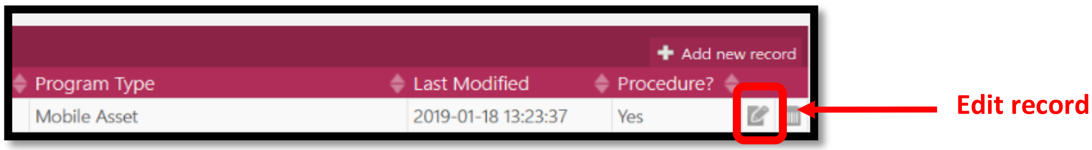


Figure A-3: Edit Record

When the Edit record button is selected, the edit record form (similar to the new record form discussed above) is displayed.

A.3 Delete Record

If a jTable allows the user to delete a record, the 'Delete Record' button is displayed at the right-hand side of the specific record. An example is shown in Figure A-4.

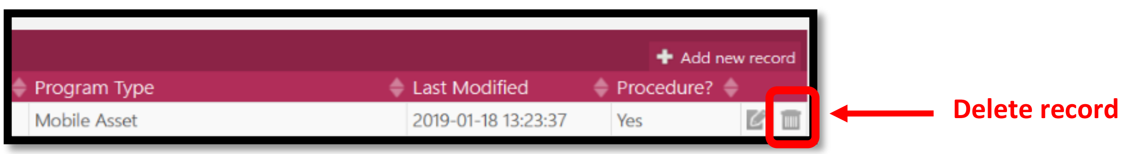


Figure A-4: Delete Record

When the delete record button is selected, a confirmation dialog is displayed. If the user accepts the confirmation dialog, the record is deleted. If Assurail enforces any deletion restrictions, the delete action will not take place (for example, a user can only be deleted if they have not performed any action).

A.4 Record Select

If a jTable allows the user to select a row, there will be checkboxes displayed at the left-hand side of the records. If multiple rows can be selected simultaneously, a checkbox will be displayed to the left in the header row. An example of the checkboxes is shown in Figure A-5.

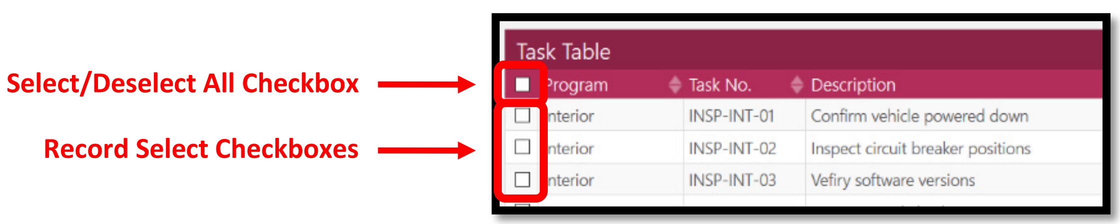


Figure A-5: Record Select

Selecting the checkbox in the header row will select or deselect all of displayed records. This action will not select records that are not shown as in the case with a paged table (see Section A.7). Typically, a table which allows for row selection will display buttons below the table for performing actions on the selected row(s).

A.5 Record Sorting

When a jTable is first displayed, there is a default sorting methodology applied. If a row is sortable, the user can select the header row to sort by the desired column in ascending order or select again to sort that same column in descending order. If a row is sortable, an up and down arrow icon is displayed to the right of the column name as seen in Figure A-6.

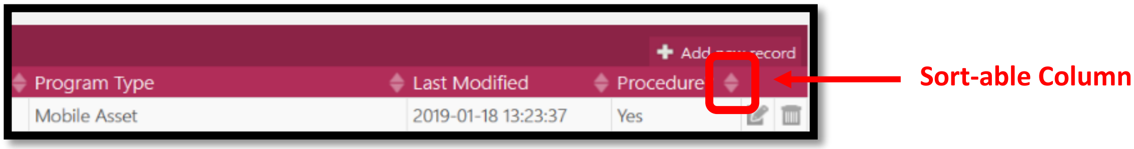


Figure A-6: Record Sort

A.6 Column Hiding/Showing

When a jTable is first displayed, there is a defined set of visible columns. If there are hidden columns, the user can un-hide them by right-clicking on the column headers and choosing which columns to show or hide. An example is shown in Figure A-7.

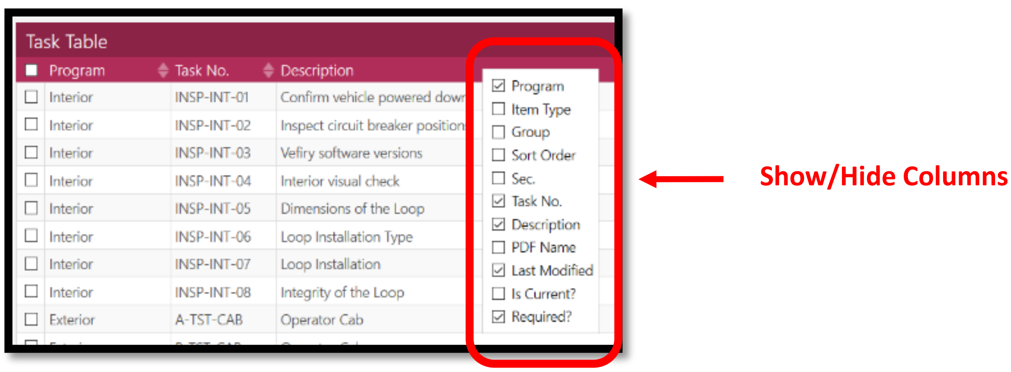


Figure A-7: Column Show/Hide

A.7 Table Paging

If a jTable is paged, then the paging toolbar will be displayed at the footer of the table. The paging toolbar will display the current record numbers being displayed as well as the total count of records on the right-hand side of the toolbar. The number of rows to display on a page can be selected using the 'Row count' drop-down menu. The current page can be selected from the 'Go to page' drop down menu. The page buttons can be used to select a specific page, the next or previous page, or the first or last page. An example of the paging toolbar is shown in Figure A-8.

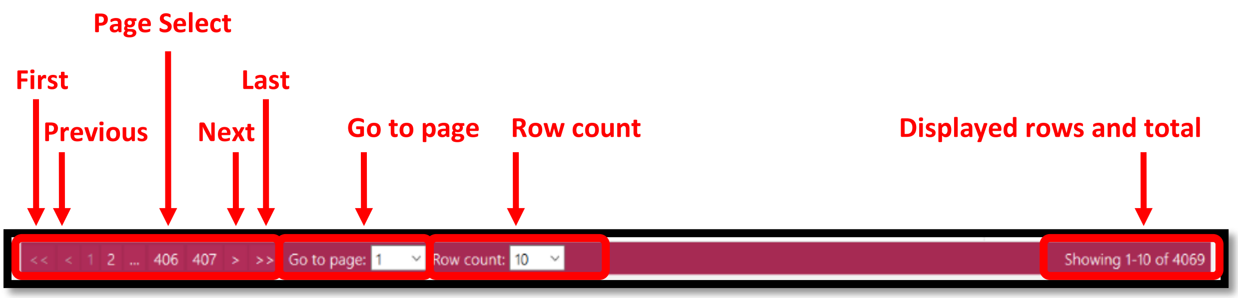


Figure A-8 Table Paging

A.8 Column Resizing

When a jTable is first displayed, there is a present column width defined. It is possible to resize a column by placing the cursor between columns in the header row until the cursor changes from an arrow to the resize tool, as shown in Figure A-9. To resize the columns, drag the column to the left or right.

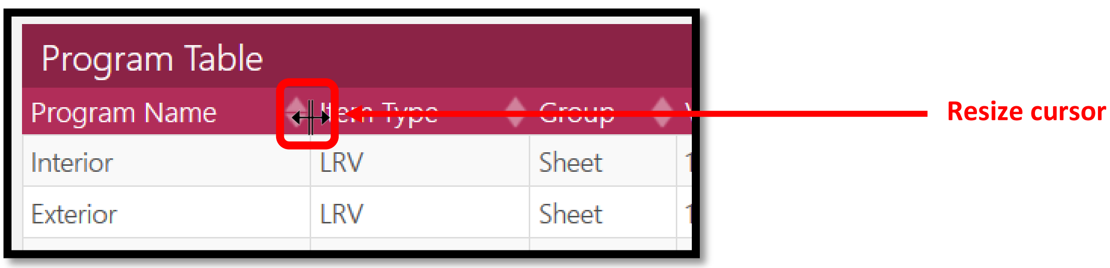


Figure A-9: Column Resizing

B Using the Excel Program Creation Workbook

To facilitate the creation of a new program in the form which can be used by Assurail, an Excel macro enabled workbook feature was created. This workbook contains two tabs: one for the program (the Program Tab) and one for the tasks associated with the program (the Tasks Tab). Once the file is opened, Excel may display a security warning about the macro, the warning must be accepted before Excel will generate the required XML file.

B.1 Program Tab

The program tab contains the columns that must be completed to define the program. The column headers are in row 4, and the required information must be placed in the row directly below the header (row 5). The columns are described in Table B-1. The user must ensure that the item tag in cell B1 is 'program', and the output location for the generated XML file should be listed in cell D1.

Table B-1: Program Tab

Column Name	Description
name	Name of the program, for example 'Interior' or 'Exterior'.
worksheet	PDF file name of the worksheet. This column is not used.
item_type	Item type that the program applies to, for example 'LRV'.
layout	Determines the layout. This column is not used.
version	Version of the program. Used to replace an entire program. Should be an integer representation of a version number.
has_procedure	Indicates if the program has supplemental procedure information in addition to the PDF documentation. '1' for yes, or '0' for no.
program_type	Type of program, for example 'Fixed Asset' or 'Mobile Asset' used for grouping.
group_name	Name of the groupings/tabs on the worksheet. How the tasks are organized, for example 'Day' or 'Page'.

B.2 Tasks Tab

The tasks tab contains the columns that must be completed for each task. The column headers are in row 4, and the required information must be placed in its own row starting directly below the header (row 5). The columns are described in Table B-2. The user must ensure that the item tag in cell B1 is 'task'.

Table B-2: Tasks Tab

Column Name	Description
task_number	Sequence number of the task used to determine the order of the tasks on the worksheet.
group	Group the task is associated with in the worksheet. Used to separate the worksheet into tabs.
name	Name or identifier of the task, for example 'INSP-INT-01'.
description	Description of the task, for example 'Confirm vehicle is powered down'.
pdf_name	PDF filename (including the '.pdf' extension) of the associated task documentation, if one exists.
car	Section of the item the task applies to, for example 'A', 'B' or 'C'.

Column Name	Description
item_type	Item type the task applies to. If left blank, then it applies to all item types.
procedure	Supplemental procedure description in addition to the PDF documentation. Will only be displayed if the program has the column 'has_procedure' set to '1'.
ok_only	Not used, must be set to 0.
is_required	If the task is a required task or not. Required tasks cannot be skipped. '1' for yes, '0' for no.

B.3 Generating Output XML

Once the 'program' and 'tasks' tabs have been completed, an XML file can be generated by opening the program tab and placing the desired filename and location in cell D1. For example, if cell D1 contained 'C:\Users\output.xml', the file 'output.xml' would be created in the directory 'C:\Users'. To generate the file, click on the 'Generate XML' button located at the top of the worksheet. Once the XML file has been generated, the user will be notified. The generated XML file is now ready to be uploaded to the Assurail website (see Section 3.4.2).