Manual For
Root Cause Case Manager
Set up/Use
Version #: 2022.08.24-v5.8

Purpose

TANGO™ Root Cause Case Manager (RCCM) is a method of problem solving intended to discover the root cause of equipment failures.

Identifying and addressing root causes, rather than treating symptoms, leads to long-term elimination/mitigation of chronic failures and extension of machine life between overhauls.

RCCM aids the user in following the general process for performing and documenting root cause failure analysis and corrective actions.

Items Needed for Task

- TANGO database login credentials
- Appropriate RCCM roles selected as needed
- Appropriate Corrective Action roles selected as needed

Contents

III. Validation & Completion

    a. Check Off/Close Root Cause Cases

        i. Locate the Root Cause Case

        ii. Check Off

        iii. Check Off Error

        iv. Close Case

    b. Appendix

        i. Linked Documents

        ii. Add Documents

        iii. Upload File

        iv. Upload URL

        v. Upload Screenshot

    c. E-mail Options

        i. Database Admin Configuration

        ii. Adding Case Personnel

        iii. Manually Send Email

Why use TANGO™ RCCM

Root cause failure analysis (RCFA) is the systematic approach of identifying the underlying causes of a triggered event, evaluating, and implementing corrective action solutions, then monitoring and sustaining the effectiveness of these improvements.

A comprehensive RCFA program involves the integration and analysis of numerous pieces of data that must be translated and distributed to appropriate department personnel as they evaluate applicable corrective actions to remedy the problem (triggered event).

The TANGO Root Cause Case Manager (RCCM) is designed to meet RCFA case management needs which may not be available in spreadsheets or CMMS. Triggered event information and corrective actions are integrated into root cause cases. These cases force standardization and distribution of case status information and details to pertinent personnel.

Though this information is vital to the understanding and tracking of root cause cases, typically the early-stage root cause case information is limited. Event occurrence, severity, and associated personnel are usually the only information known when case documentation begins. As additional information becomes available, the updated/edited case information and planned next steps are documented through the RCCM.

The flexibility to update and edit case information is as important to documenting a root cause event as the accuracy of the documentation. If critical information cannot be collected and presented to the personnel that need it, and in a timely manner, the accuracy of the analysis becomes immaterial to the development of planned actions. RCCM editing and status updating notification components ensure that all actionable updates are instantly distributed to and viewable by the personnel that need them.

Documenting individual corrective actions, independent of each other, provides a more detailed picture of the effectiveness of each step in the case's management. The RCCM focuses on each action developing, independently and with equal weight, as the case progresses to completion. Monitoring case fault's corrective actions allows deeper understanding of program flaws, and provides a valuable resource for additional development of proactive remedies.

Cases have multiple faults and faults have multiple corrective actions, but the RCCM event cases cannot be checked off and closed until each corrective action assigned to each case fault has been addressed. The RCCM ensures all work is documented to completion, before a case is closed, to limit the corruption of the historical root cause data that is essential to evaluating and improving the effectiveness of the RCFA program.

As always, if you have any questions about the TANGO™ RCCM or any other TANGO products, please let us know.

Forrest Pardue
President/Owner
24/7 Systems, Inc.

I. Getting Started

For a trigger exceeded event, begin documenting the initial event information in a RCCM root cause case. RCCM cases are initiated at the asset component level and only through the TANGO™ asset tree.

If an asset component location is not located in the TANGO asset tree, add the missing component location to the asset tree. If you do not have location editing ability, the tree may be edited by your TANGO administrator, or the administrator may update your user profile configuration to include, "Allow Locations Editing."
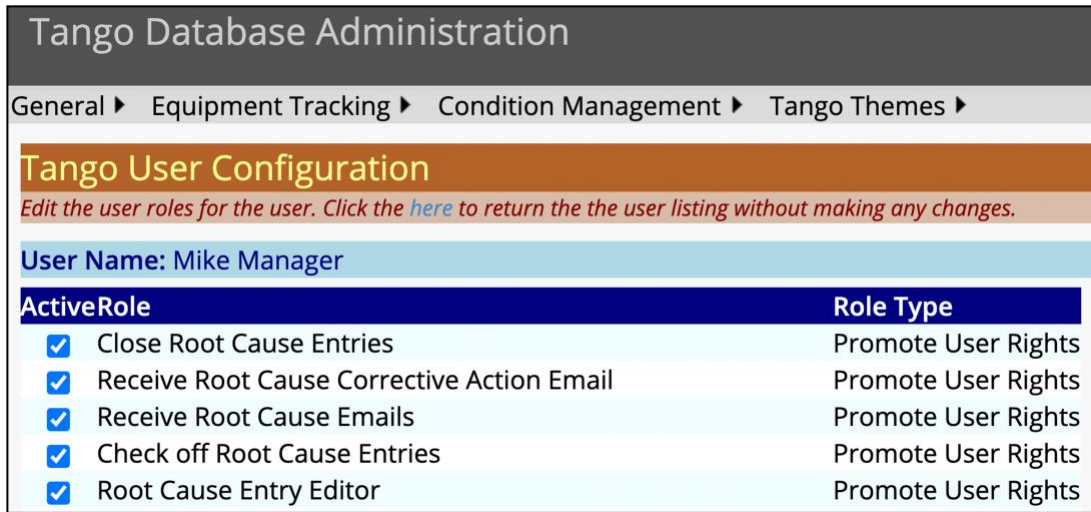
To start a RCCM case, you are required to document the case owner, severity, and date occurred. As the case develops, additional information may be added to the case or to update the previously documented information. Problem descriptions and status comments serve to continue documenting the RCCM case until faults are ready for designation.

All active TANGO user profiles are available to be assigned as the case owner. Additional TANGO users may be added to follow the case, but only a single user may be assigned as the case owner. Added personnel will be included in the email chain and will be updated through email of significant changes to the case. If desired personnel are missing from the active TANGO user list, these may be added by a TANGO administrator through TANGO Database Administration.

Once the case is initiated and the event information is updated, the case may be accessed through the RCCM dashboard. The RCCM dashboard displays all RCCM cases and a summary of the case status. The dashboard may be customized to display and export relevant information and case status types.

RCCM User Setup

To access the RCCM, TANGO™ users will need to be assigned specific roles through TANGO Database Administration. These roles may only be changed by a TANGO Admin User.

Select User Roles

- To access any route cause tools.

- Select "Root Cause Entry Editor" to create new Root Cause Cases.

- If you do not have Administrator rights, select "Check off Root Cause Entries" to check off Root Cause Cases.

- If you do not have Administrator rights, select "Close Root Cause Entries" to close Root Cause Cases.

- Select "Receive Root Cause Emails" to receive notifications for Root Cause Case creation, check off, or close.

- Select "Receive Root Cause Corrective Action Emails" to receive notifications for Corrective Action creation or close.

User Role Notes

1. All route cause email options are filtered by "User Regions."

2. Case Owners will receive notifications when their Root Cause Cases are created, checked off, or closed (regardless of roles selected).

3. Case Owners and Assigned Users will receive notifications when their case's Corrective Actions are created or closed (regardless of roles selected).

4. Admin Users may check off and close Root Cause Cases (regardless of roles selected).

5. Case added personnel will receive all "Root Cause Case" and "Corrective Action" email notifications for that case.

Creating a Root Cause Case
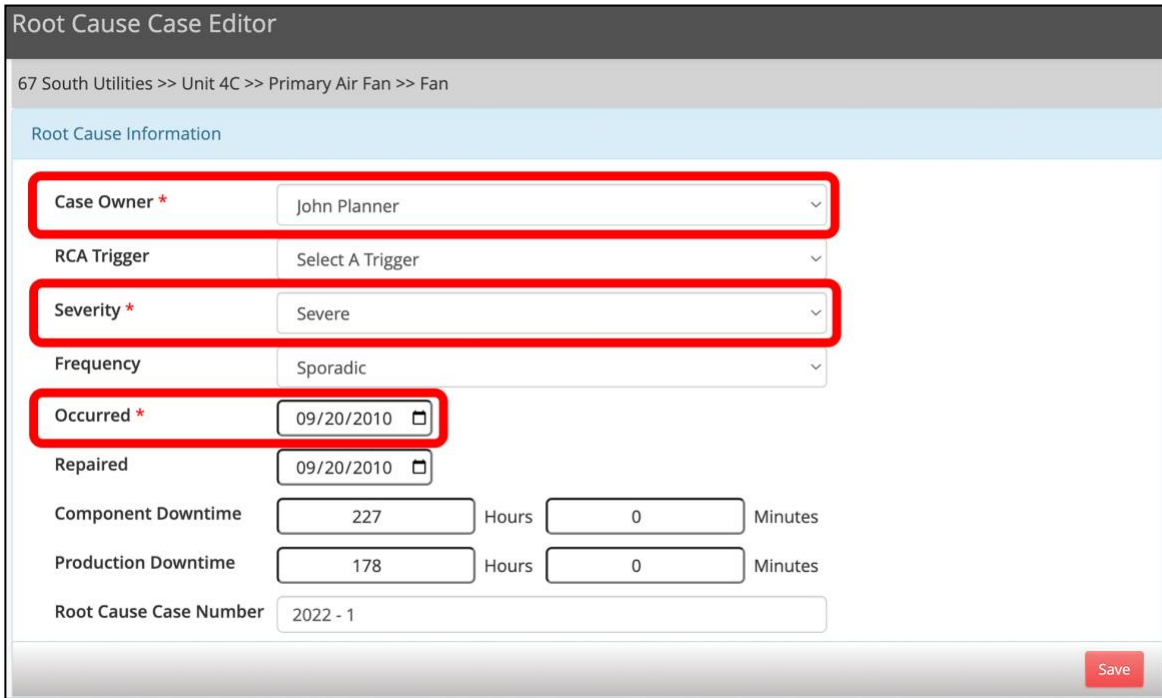
Select Location

Root Cause Cases may only be created through an asset component location in the TANGO™ Asset Tree.

To begin a Root Cause Case, click on the action arrow of the appropriate component location in the TANGO Asset Tree and select "Add Root Cause Case" under "Other Reports."
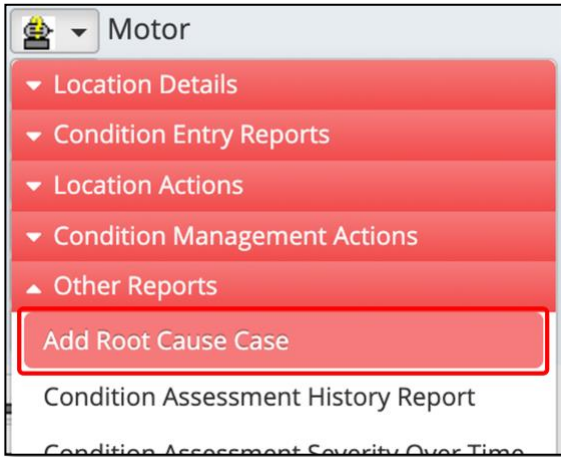
Begin A Root Cause Case

On the "Root Cause Case" page, fill out all the fields and type a summary of the case in the "Problem Summary" dialog box.

Note: The "Owner," "Severity," and "Occurred" fields are mandatory.

Additional Root Cause Case Information

Enter a short problem description in the "Problem Summery" dialog box.

If available, additional case information may be documented next.

- In the "Detailed Problem Description" dialog box, enter a detailed description of the failure.

- Enter the latest status comment in the "Status Comment" dialog box.

To exit any dialog box, click outside the dialog box.

To finish adding the Root Cause Case, click "Save."

Note: The "Problem Summary" is mandatory and will display in the tree as the case description.
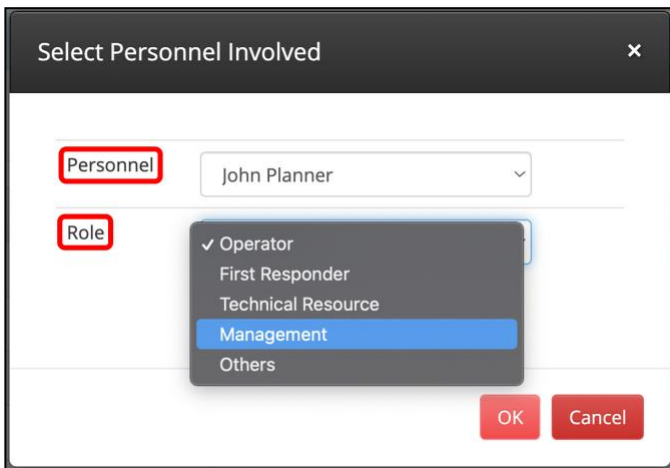
Add Personnel

The "Personnel" section allows the addition of active personnel to a root cause case. These personnel will be added to the email notification recipients list.

To add additional personnel, navigate to the "Personnel" section and click the ➕ icon next to "Add Personnel."
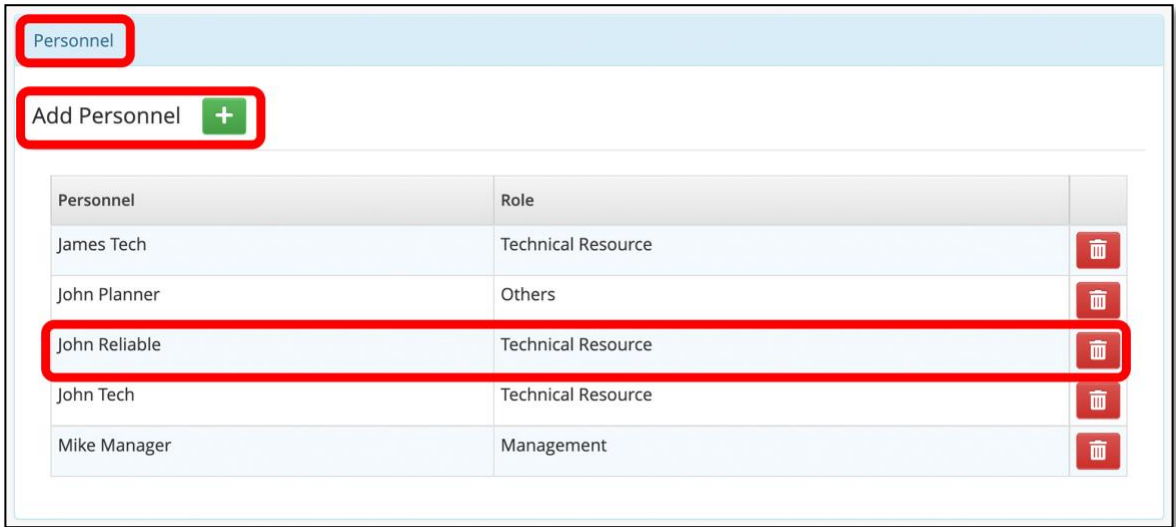
In the "Select Personnel Involved" dialog box, select the active TANGO™ user you would like added to the e-mail notification chain.

Select the personnel's "Role." Click "OK" to save.

Repeat this action for all addition personnel.

Note: Added "Personnel" will be included with all event e-mails associated with the "Root Cause Case."
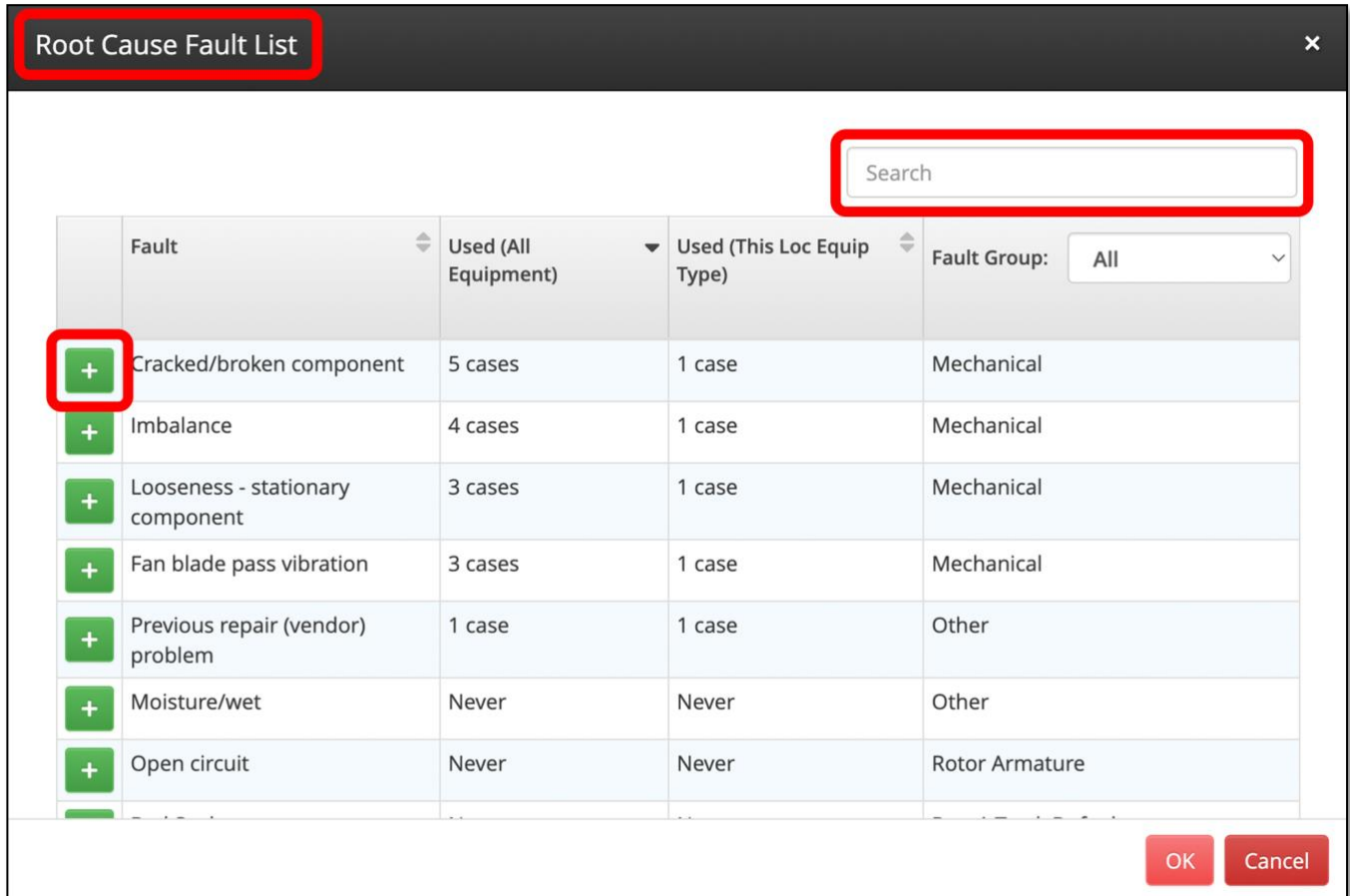
Document Determined Faults

Once faults have been determined, they may be documented on the "Root Cause Case Editor" page.

Click the "Add Fault" ➕ icon to access the "Root Cause Fault List" of all available faults.
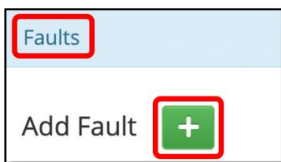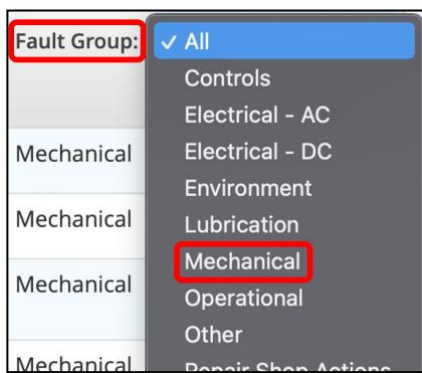
The "Root Cause Fault List" will automatically add selected faults to the "Root Cause Editor" page to detail further.

Use the "Search" box or the "Fault Group" pulldown to narrow the available fault options. Select the identified faults by clicking the "+" icon next to the desired faults.
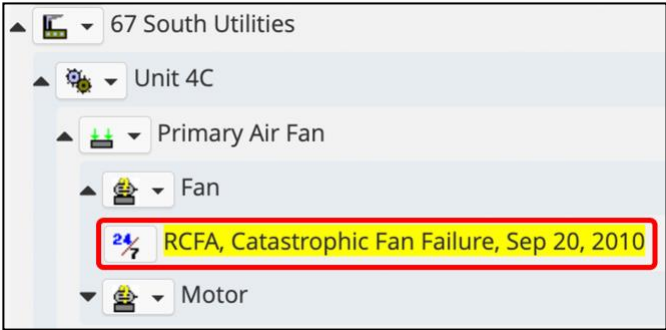
Click "OK" to return to the "Root Cause Case Editor."

Reviewing the RCCM Dashboard

Access Dashboard

All root cause cases may be accessed through the Tree or through the "Root Cause Dashboard."

To access a case through the Tree, navigate through the Tree to the desired component, unfold the component and click on the icon for the desired "Root Cause Case."

Case Dashboard

The "Root Cause Case Dashboard" presents all the Root Cause Cases on single page.

The "Root Cause Case Dashboard" may only be accessed by clicking the "Root Cause" icon in the TANGO™ toolbar at the top of the screen.


Note: The "Root Cause" icon is only available to users assigned with the "Root Cause Entry Editor" role.

The "Root Cause Dashboard" may be customized to display only desired cases and/or case information.

Dashboard column headers may be used to reorder ascending or descending or to search for rows containing the entered text.

Toggle icons on the column headers will display only rows with empty fields for the column.

Click the toggle icons to only display cases that have no documented information in the column.
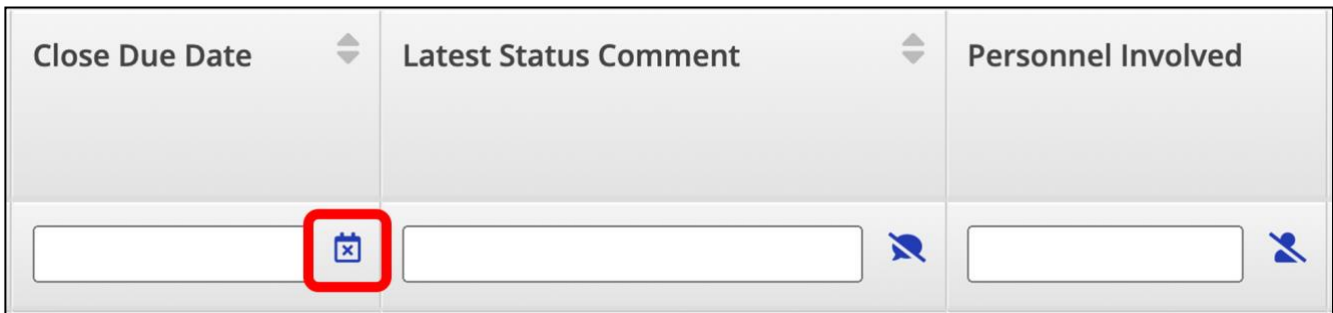
The left side of the footer displays the ratio of cases displayed to cases available, while the right side of the footer navigates the user to the top of the dashboard.

Click the "Top of Page" button to quickly navigate to the top of the dashboard.

Report Options

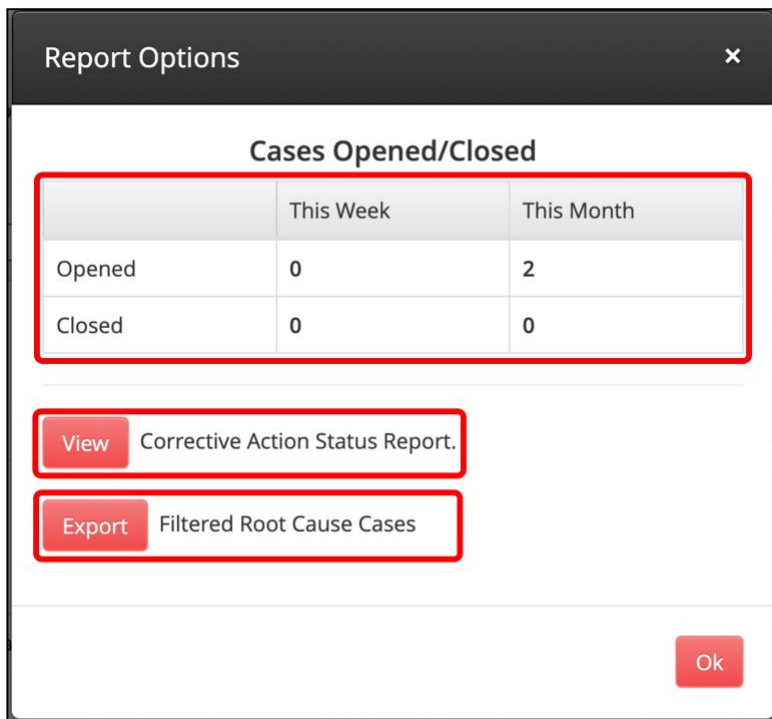To view addition report options, click the "Report Options" icon.

This will show a "Case Open/Close" report, provide access to the "Corrective Action Status Report" and export options for the "Root Cause Case Dashboard."

Click the "View" button to open a list of all corrective actions by user in the "Corrective Actions Status Report."

Click "Export" to download an Excel spreadsheet of the current/filtered case information displayed through the "Root Cause Case Dashboard."

Click "OK" to exit the "Report Options."

Filter Columns

Columns for the "Root Cause Case Dashboard" may be customized to present only the case information the user needs to view. A dashboard view may be set as the user's default view or set for a single use.

To change presented column information, click on the "Filter Columns" icon and select all desired columns.

Note: All column changes happen real-time.

Once selected, click "Save" to make the selected columns the default dashboard view. Click "Close" to display the selected columns as a temporary dashboard view.

Filter Columns   ✕

- ☑ Actions
- ☑ Severity
- ☑ RCFA Number
- ☐ Trigger
- ☑ Unit
- ☑ Function
- ☑ Asset
- ☑ Component
- ☐ Equipment Type
- ☑ Root Cause Identified
- ☑ Problem Occurred On
- ☑ Due To Close Date
- ☐ Problem Summary
- ☑ Latest Status Comment
- ☑ Personnel Involved
- ☐ Case Owner
- ☑ Corrective Actions
- ☑ Status

[Save] [Close]

"Save" will remember User Preferences, "Close" will not.

Filter By Case

Cases may also be filtered by case status parameters:

- All cases opened in range

- All cases due to close in range

- All cases closed in range

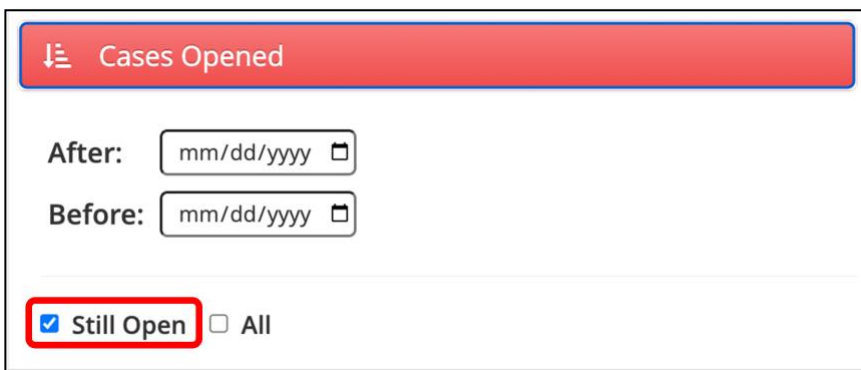- All cases with no comments in range

Click on the "Filter by Case" icon in the "Root Cause Case Dashboard" screen for filter options.

Click "Cases Opened" to choose to filter by

- All cases that are still open (*default*)

- All cases that were ever opened (*including closed*)

- Cases that were opened before a date

- Cases that were opened after a date

- Cases opened within a date range

Click "Due to Close Cases" to filter by

- All cases due to close
- All cases past due
- All cases due to closed in a day range

Click "Closed Cases" to choose to filter by

- All closed cases
- All closed cases in a day range

Click "Latest Status Comment Date" to filter by

- Cases that have not been commented on, in a day range
- Cases that have no status updates, in a day range
- Cases that have no comments updating case status, in a day range

II. Corrective Actions

As faults become more defined and actions are developed, Corrective Actions may be added or updated through the RCCM Root Cause Case Editor.

Not all faults that contribute to an event reach the same problem level, but they are all still informative as the root cause case unfolds. Once fault information is available for documentation, the faults may be selected from a RCCM pre-set fault list. The fault list is customizable by an administrator through TANGO™ Database Administration.

RCCM allows you to further document multiple faults related to an individual event, their place in the event chain, and each corrective action taken for an individual fault. Just as each event will require documentation of multiple faults, each fault will require documentation of multiple corrective actions.

Corrective actions for a case's faults do not need to be assigned to the "Root Cause" faults. Often there are multiple faults attributed to a case, which were not designated with the problem level of "Root Cause." Alternate problem level faults still need corrective actions assigned to address overall underlying problems.

Adding a corrective action requires assigning an action owner to oversee the work, an estimated completion due date, and a short description of the Corrective Action.

All active TANGO user profiles will be available to be assigned as the action owner, but only a single user may be assigned as the action owner. If desired personnel are missing from the active TANGO user list, they may be added (by a TANGO administrator) through TANGO Database Administration.

Once corrective actions are defined, status updates like EDIT, Comment, Suspend, Delete, and Close may be applied to each action. All status updates will be documented with a timestamp and a signature of the TANGO user making the change. Each status change will be documented with the action and added to the action history.

All open corrective actions are displayed in the Corrective Actions Status Report. The report may be accessed through the options found in the Root Cause Case Dashboard. The actions report displays a summary of all open corrective actions, chronologically and by action owner. Each action in the report may redirect the user to the associated root cause case for additional updating.

Defining Corrective Actions

Corrective actions associated with a root cause fault may be assigned to the fault through the "Root Cause Case Editor." Additional corrective actions must be entered, one at a time, through the selected fault.

Select Faults

To add a fault to a root cause case, click the "Add Fault" ➕ icon.
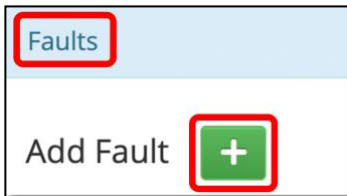
Clicking the Add Faults icon displays a list of all databases available faults.

Database available faults may be searched by "Fault" or filtered by "Fault Group."

Click the "Add Fault" icon next to the desired faults to instantly add faults to the root cause case.

After adding faults, assign the problem level and add a fault comment to each fault.
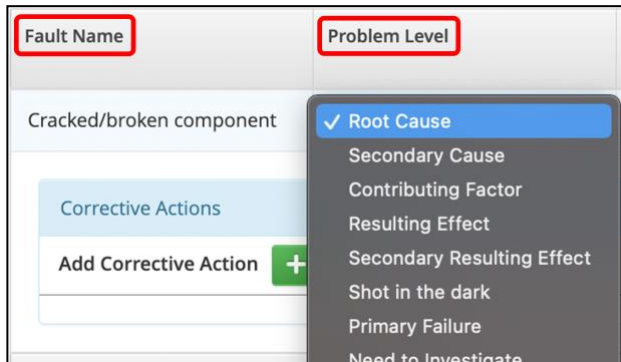
Add Corrective Actions

Under the selected fault, click the "Add Corrective Action" ![icon] icon to add a corrective action.
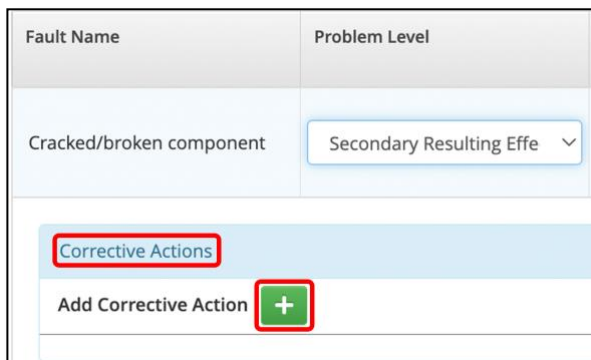
Add Action Information

To add information to the corrective action, fill in the data fields as available.

- Corrective Action Information – Summary of the corrective action. *(required)*
- Action Owner - Corrective action owner from the TANGO user list. *(required)*
- Completion Due – Expected completion date for the corrective action. *(required)*
- Work Order – Work order number for the corrective action.
- Completion Date - Date the corrective action was completed.

Note: Selecting a completion date will automatically close the corrective action

Click "OK" to save and close the dialog box.

Repeat this process for each fault's assigned corrective action.

Update Corrective Action Status

After created, corrective actions may be updated to reflect status changes.

- Edit – Change corrective action information.
- Suspend – Pause corrective action progress.
- Close – Complete corrective action documentation

  Note: Closed corrective actions will only display the "Edit" icon.

Edit Corrective Action

Select the "Edit" icon to update or edit the appropriate "Corrective Action."

Make any changes needed to update the corrective action information.

Click "OK" to save and exit dialog box.

Add Corrective Action Comment

Click the "Corrective Action Comments" ➕ icon to add comments to the corrective action.

Enter comments into the dialog box.

Click "OK" to save.

When the change is complete, a "Corrective Action Comment Saved" notification will appear.

To delete a corrective action comment, click the trash icon to the right of the comment to be deleted.

Confirm the comment deletion.
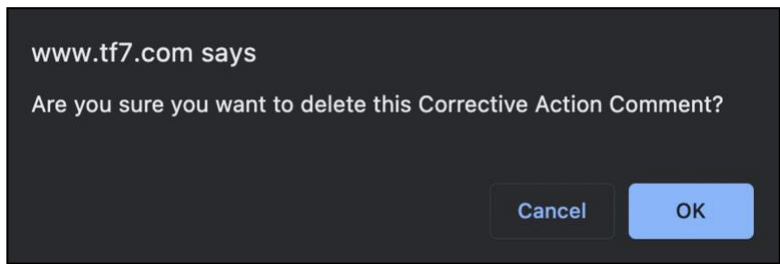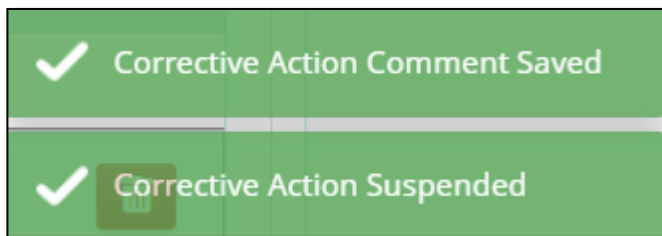

When the delete is complete, a "Comment Deleted" notification will appear.
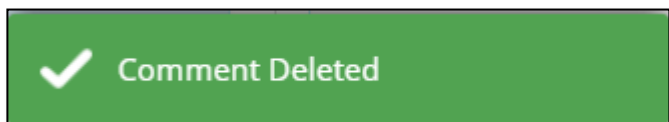
Suspend Corrective Action

Select the Pause icon from the icon list to designate suspended movement to a corrective action.

When the change is complete, a "Corrective Action Suspended" notification will appear.

A suspension signature, time stamp and the entered suspension comment will be added to the corrective action overview.

Note: Neither corrective actions nor their comments may be deleted while the corrective actions are suspended.

Resume Corrective Action

Suspended corrective action may be resumed by clicking the "Resume Corrective Action" icon.

When the change is complete, a "Corrective Action Resumed" notification will appear.
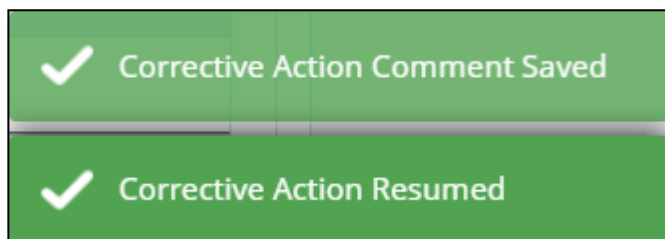
A resumed signature, time stamp and delete comment icons will appear on the corrective action overview.

Note: All corrective action options are reinstated once a corrective action has been resumed.

Complete Corrective Action

There are two ways to complete a corrective action:

- Select a "Completion Date" from the "Corrective Action" page.
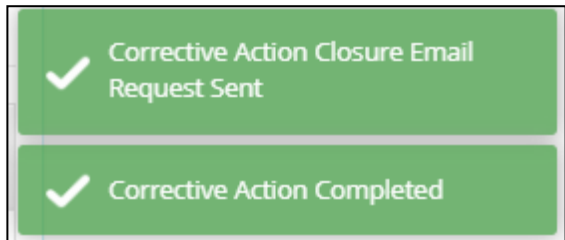- Click the "Complete Corrective Action" icon from the corrective action options.

Select the "Complete Corrective Action" icon from the icon list to start the completion of a corrective action.

Click "OK" to confirm corrective action closure.
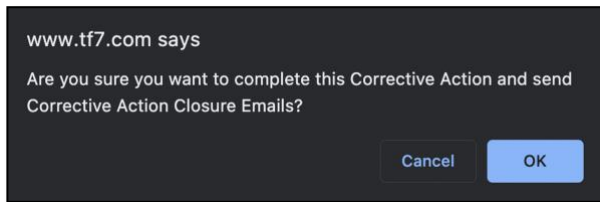
When the change is complete, closure and email confirmation notifications will appear.

A "Completed By" signature, time stamp and edit icon will appear on the corrective action overview.

Repeat this process for all corrective action status updates.

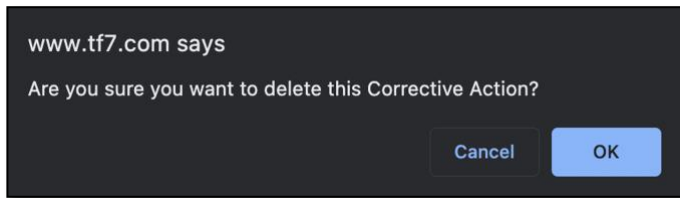*Note: The right to close and/or suspend corrective actions are assigned by database administrators.*

Delete Corrective Action

To delete a corrective action, click the "Delete Corrective Action" icon to the right of the corrective action description.

Note: Only open corrective actions may be deleted, suspended, or closed.
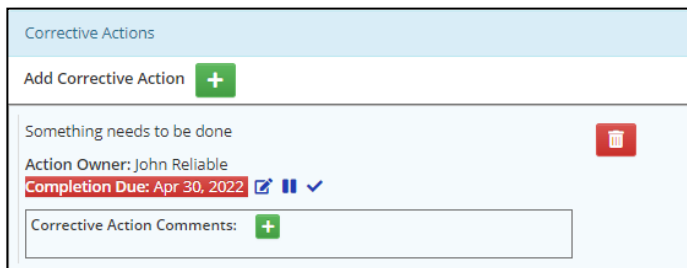
Confirm delete.

www.tf7.com says

Are you sure you want to delete this Corrective Action?

Cancel   OK

When the change is complete, a "Corrective Action Deleted" notification will appear.

✔ Corrective Action Deleted

Note: Only open corrective actions may be deleted, suspended, or closed. Deleting a corrective action cannot be reversed.

Corrective Action Status Report

An overview of corrective actions may be reviewed in the "Corrective Action Status Report."

The "Corrective Action Status Report" may be accessed through the "Root Cause Case Dashboard" or the TANGO™ Asset Tree.

To open the report from the dashboard, click the "Options" icon then the "View" button.

To open the report from the TANGO Asset Tree, click "Other Reports," under the Plant level, and select "Root Cause Correction Action Status Report."
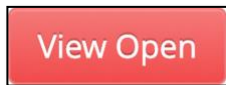
Once open, the report will display all currently open actions assigned to each TANGO™ user, alphabetically.
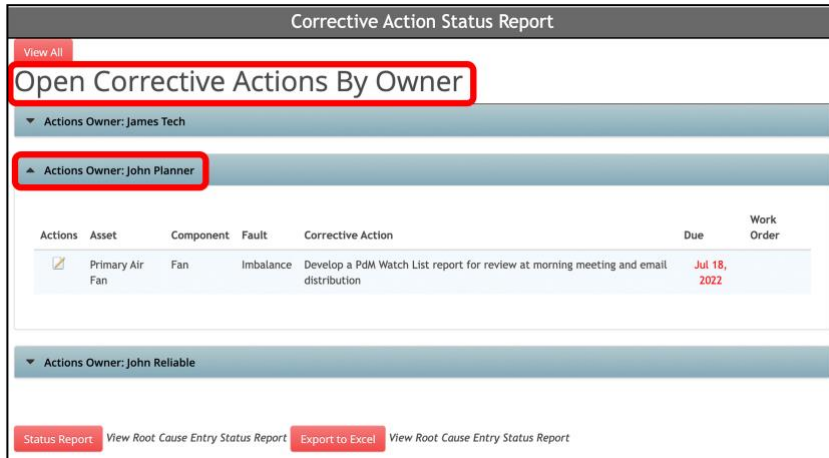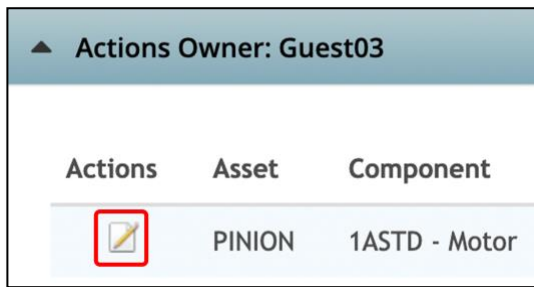

To display all actions ever opened, click the "View All" button. (Including closed)
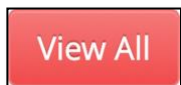
Click again to return to the currently open report.

To see details of a corrective action, click the action's edit icon.

Note: Clicking the edit icon will close the report and take you to the "Root Cause Case Editor."

Click the "Status Report" button to return to the "Root Cause Dashboard."

Click the "Export to Excel" button to download an Excel spreadsheet of the "Corrective Actions Status Report."

III.   Validation & Completion

When finalizing a case, the difference between checking off and closing a case is validation. RCCM cases must be "Checked Off" before they may be "Closed," which makes validation a requirement for full case closure.

In the RCCM, preparing a case for checkoff requires the completion of all corrective actions assigned to the case, scheduled case closure date, and checkoff comments. After this documentation, the corrective work that has been completed needs to be reassessed and verified it is within bounds of the desired parameters.

After the corrective actions have been verified, the case is ready to be closed. If a corrective action is holding up the case validation process, all case personnel will know who the corrective action is assigned to and when it was scheduled to be completed.

This RCCM procedure ensures that all corrective actions in a case are "Checked Off" and the findings are communicated so that nobody is left in the dark and no balls were dropped. These procedures also ensure accountability of the personnel assigned to the work.

To eliminate possible communication problems, the RCCM also distributes detailed notifications to the appropriate personnel at key steps in the case. Unlike the action specific notification emails sent out for corrective action changes, check off and close stage notification emails will be sent out to all the personnel associated with the case during its life cycle.

When mistakes are made or last-minute details become available, the RCCM allows you to "Undo" the "Checked Off" or "Closed" status designation. This change will allow you to make any edits or updates that are required during each step of the case. If the options to "Undo" checked off and closed cases are not available, notify your TANGO™ administrator to make the changes or to edit your user profile to include the "Check off Root Cause Entries" and "Close Root Cause Entries" roles.

With the final closure of a case, the historical record of the case and all corrective action solutions are available for future program evaluation and improvement. This information is accessible through the Root Cause Case Dashboard and the assigned asset component location of the TANGO asset tree.

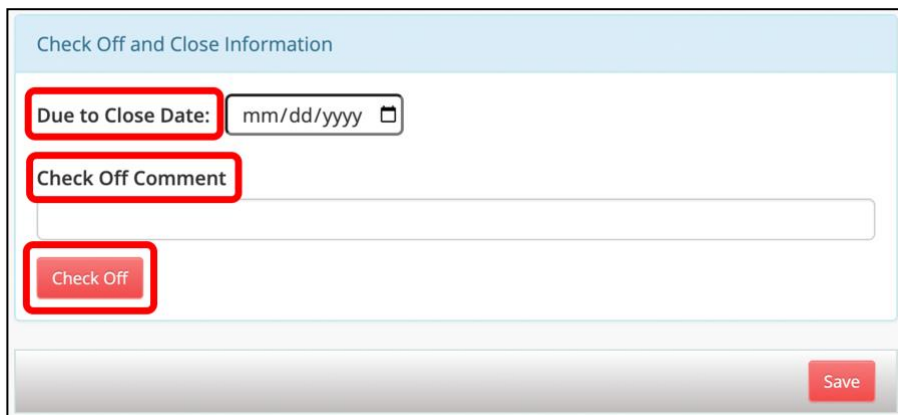# Check Off/Close Root Cause Cases

Locate the Root Cause Case

On the "Root Cause Case Editor" page, the root cause case status may be elevated to "Checked Off" and/or "Closed."

To elevate the status of a root cause case, navigate to the correct case on the "Root Cause Case Dashboard." Click the "Actions" icon and select "View/Edit Root Cause Case."
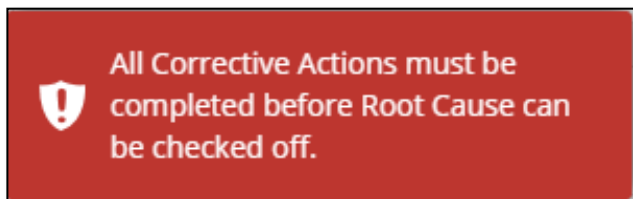

Check Off

At the bottom of the "Root Cause Case Editor" page, enter known check off information. To "Check Off" a case, enter the expected close date, a final check off comment, and click the "Check Off" button.

Check Off Error

To "Check Off" a case, all case assigned corrective actions must be designated "Suspended" or "Complete." If not, an error notification will appear.

Close Case

Once a root cause case is checked off, the check off status may be undone and edited, or the root cause case may be closed.

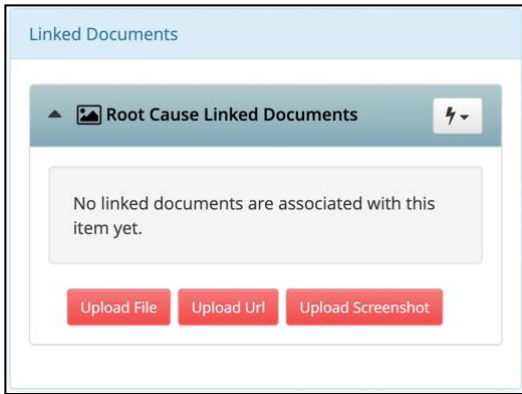To close a checked off case, click the "Close" button, then click "Save."

Note: Clicking "Save" will redirect to the "Root Cause Case Dashboard" page.
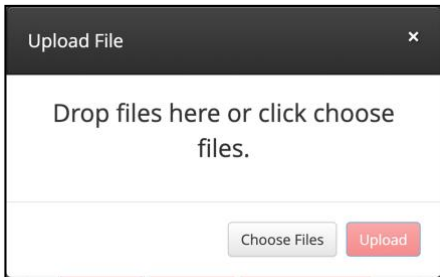
IV. Appendix

A1. Linked Documents

Add Documents

On the "Root Cause Editor" page, under the "Linked Documents" section, select the document upload format (File, URL, or Screenshot).

Upload File

Click on the "Choose Files" button to open your file manager and select a document(s).

Select a document "Type" and edit the document "Description." Repeat this process to upload additional documents.
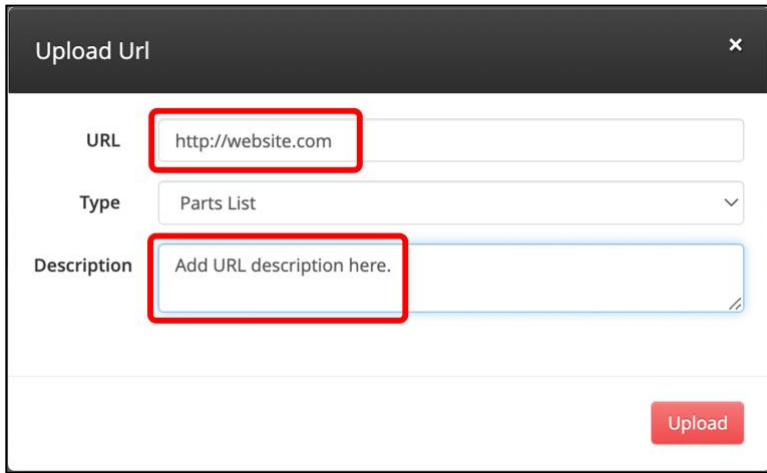
Click the "Upload" button to upload all selected documents.
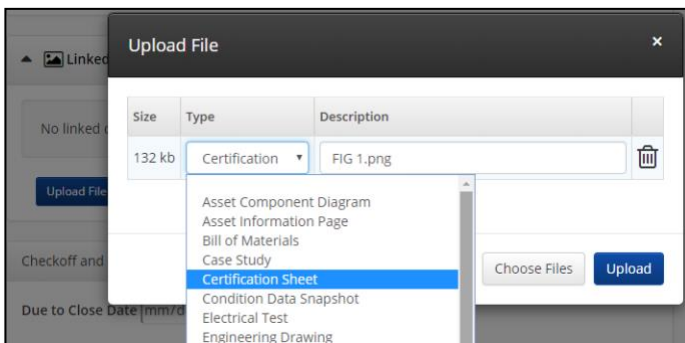
Upload URL

Click on the "Upload URL" button to enter the document origin, to select the document "Type," and to add a document "Description."
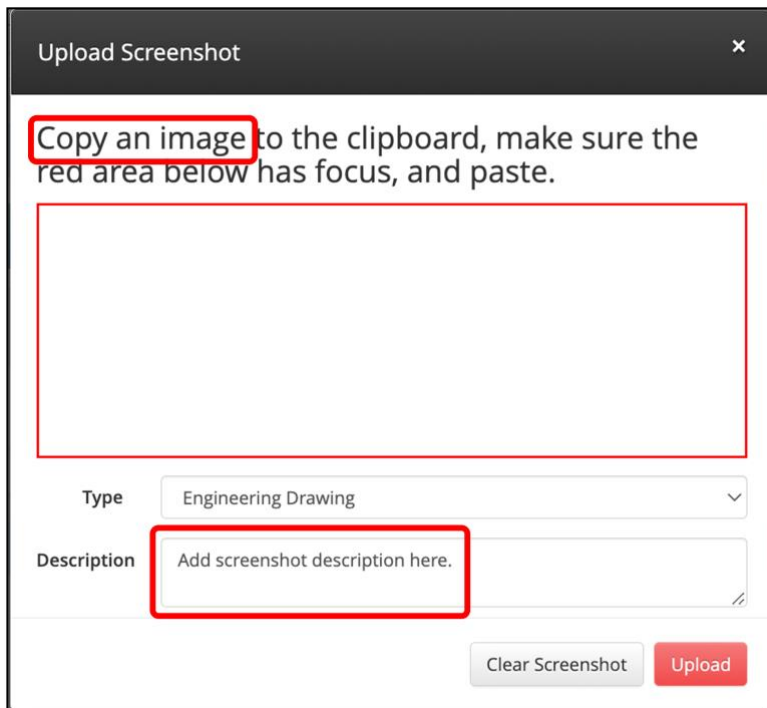
Click "Upload."

Upload Screenshot

Click on the "Upload Screenshot" button to paste a screenshot, to select the document "Type," and to add a document "Description."

Click "Upload."

A2. E-mail Options

Event triggered root cause e-mails are automatically sent to "Case Owners", "Action Owners", and "Personnel Involved" when a Root Cause Case or a Corrective Action is created and/or closed. These emails may be configured by database through Database Admin or by adding personnel to a root cause case.

Non-triggered emails may be manually sent, by case, through the "Root Cause Case Dashboard." These emails may be sent to any valid email address.

Database Admin Configuration

To configure for a database, navigate to the user in TANGO™ Database Administration. Activate the desired email roles for the user. Save the user configuration.

Active	Role	Role Type
☑	Receive Root Cause Corrective Action Email	Promote User Rights
☑	Receive Root Cause Emails	Promote User Rights
☑	Root Cause Entry Editor	Promote User Rights
☑	Root Cause Checkoff Email Recipient	Promote User Rights

- Receive Root Cause Corrective Action Emails
    - o Opened / Closed
- Receive Root Cause Case Emails
    - o Opened / Closed
- Receive Root Cause Case Checkoff Emails
    - o Checked off

Note: Only a database administrator may configure a user's email options. All root cause case emails are limited to user regions.
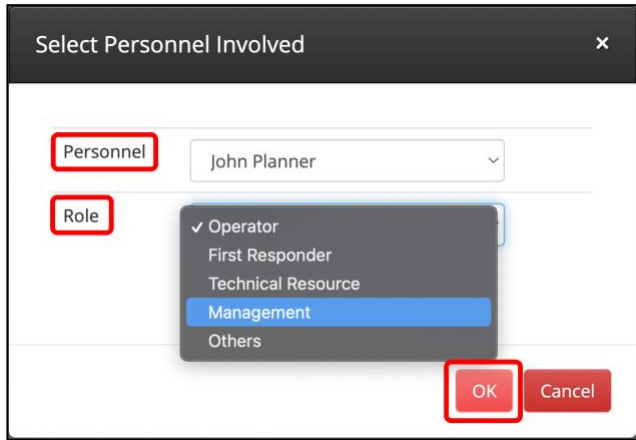
Adding Case Personnel

To add additional personnel to the e-mail recipients list, navigate to the "Root Cause Editor" page. Under the section "Personnel," click on the ➕ icon next to "Add Personnel."

In the "Select Personnel Involved" dialog box, select the TANGO™ user you would like added to the e-mail chain. Next, select the personnel's "Role." Click "OK."

Note: Added "Personnel" will be included with all event e-mails associated with the "Root Cause Case."
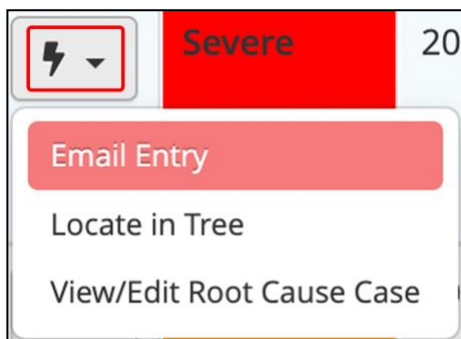
When personnel and their rolls have been selected, a "Successfully updated the personnel involved" notification will appear.
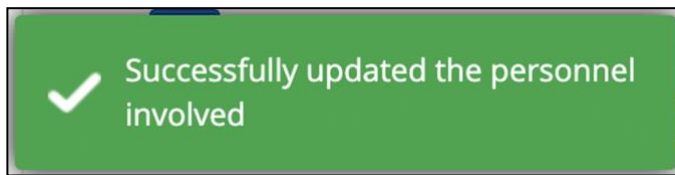
Repeat this process for additional personnel.

Manually Send Email

To send case details manually, navigate to the dashboard and select "Email Entry" from the Action Options pulldown.
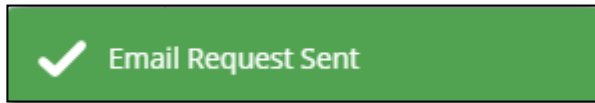

Select a current user or enter a valid email address and click the corresponding ⊞ icon. Repeat for all additional addresses.

To remove an address from the email list, click the Delete icon next to the desired address.

Click "Send" to email the case details to the manually created email list.

Once complete a "Email Request Sent" notification will appear.

Manually sent emails will contain all case information.