

Measurement in muddyboots.online

muddyboots.online (MBO) has the functionality to receive automated analysis imports from a variety of laboratory companies through an SFTP server along with creating outbound files for SCADA and other systems. This document will cover how to configure the Measurement module for analysis management, setup of automated approval rules, import configuration, viewing and review of analysis records, error management, and how to link approved analysis reports to the correct equipment within muddyboots.online for further distribution.

Measurement (Analysis) Process Summary:

1. Configure Equipment
 - a. Samplepoints, Meters, wellheads
 - b. Equipment Cross References (Lab, Scada, Other)
2. Load historical analyses
 - a. Completed via communication with your Muddyboots representative
3. Configure imports with the lab providers
 - a. Files are directly delivered to the MBO system at a defined frequency
4. Setup Activity Rules for managing activity review
5. Manage Analyses as they land in system
 - a. Match, Link, and Review
6. Export outbound system files
 - a. SCADA, DCS, Distributions

Configuring Equipment Required for Analysis

The first step in setting up the Measurement module for managing Analysis in muddyboots is to ensure the correct equipment has been loaded and is available for importing the references to a standard identifier from the laboratory analysis files.

The equipment types for analysis are the various 'SAMPLEPOINT's within the MBO system. The sample point type must be configured to match the primary analysis type, so for an 'oil' analysis the 'OIL SAMPLEPOINT' equipment must be utilized.

The analysis is then linked to the applicable equipment that the analysis sample was take. i.e., wellheads or meters, separators, or any other applicable equipment.

Ensuring the correct available equipment can be handled in two ways:

7. If utilizing the schematics module, 'SAMPLEPOINT's can be included on the flow diagrams during initial setup, with Pad / Wellhead / Sampling location noted on the equipment for rapid matching and importing of the cross references. The **Schematic Quick Start** procedure is a helpful resource for configuring this equipment.
8. If schematics are not being utilized, or the analysis imports are not to be associated with the flow diagrams, a sampling location list should be provided to a muddyboots representative to import into the application. A muddyboots representative can also provide training and the **Equipment Upload Quick Start** Procedure for managing equipment imports.

Once the equipment has been identified and loaded into MBO, cross references can be configured and loaded.

Configuring Cross References

(a) Bulk Importing Cross References

Navigate to the cross references page to begin importing the analysis cross reference identification from a laboratory service provider and to create export file references for outbound systems (SCADA, other). If the desired third-party system or laboratory services provider is not available, please contact a MBO representative to discuss options for the creation of import/export file translations.

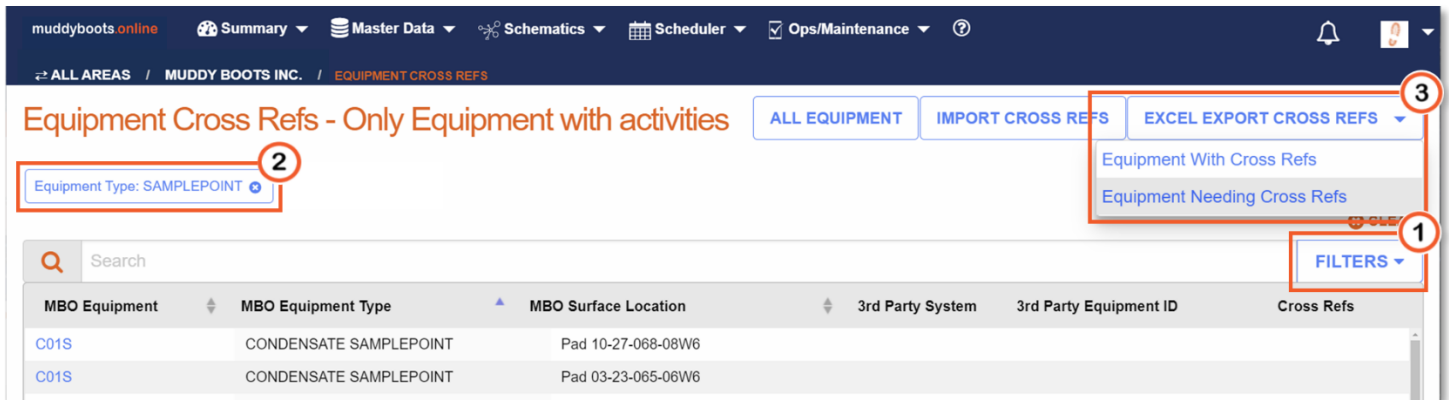
Note: Bulk importing of cross references is typically done during initial setup or during the addition on new fields. If setting up a new well or pad site, bulk importing may not be required and can be completed in app, see the next section to create cross references in app.

Note: A *Company Administrative* role is required to perform the following tasks. If the Company Admin tab is not present, contact the company administrator to be given the “Company Admin” role or to determine who is responsible for this task within your organization.

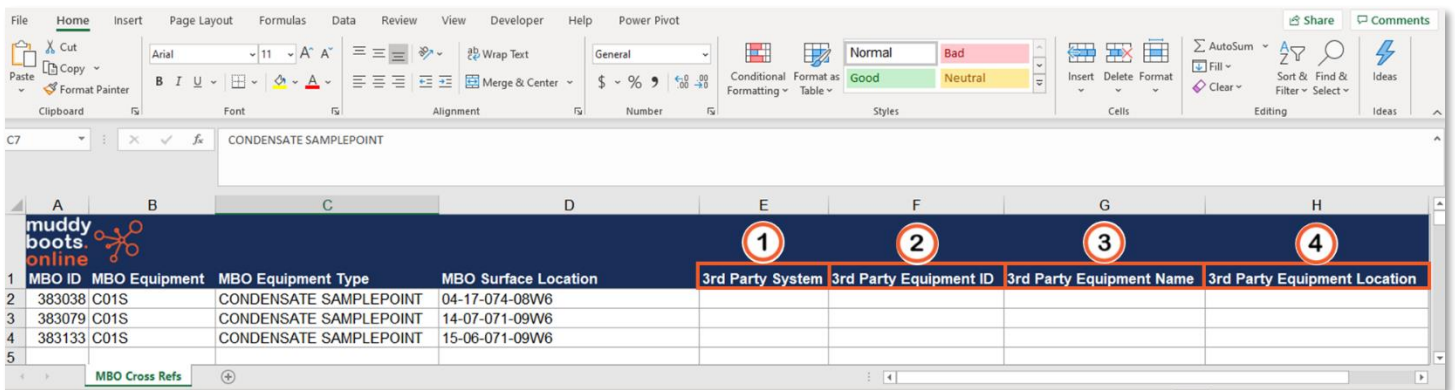
The screenshot shows the 'All Areas Equipment' page in the muddyboots online application. The top navigation bar includes 'Summary', 'Master Data', 'Schematics', 'Scheduler', and 'Ops/Maintenance'. The user profile 'Mitchell Bolt' is visible in the top right. A dropdown menu is open under the 'Company Admin' header, showing options like 'Affiliations', 'Company Info', 'Equipment Cross Refs' (highlighted with a red circle and '1'), 'Hierarchy', 'Tags', 'Shift Log', and 'Users'. Below the dropdown is a table of equipment records.

| Field | Site Name | Name | Short Note | Current Status |
|---------|----------------------------------|----------------------------|---------------|----------------|
| Calgary | 04-22 Princes Island Gas Battery | 100/04-23-024-01W5/02 | | In Service |
| Calgary | 04-22 Princes Island Gas Battery | 04-22 SEPARATOR | | In S |
| Calgary | 04-22 Princes Island Gas Battery | G02M | | In S |
| Calgary | 04-22 Princes Island Gas Battery | C01M | | In S |
| Calgary | 04-22 Princes Island Gas Battery | 200 BBL CONDY | TANK | In S |
| Calgary | 04-22 Princes Island Gas Battery | 24232-7 PIG LAUNCHER | | In S |
| Calgary | 04-22 Princes Island Gas Battery | TRUCK OUT | | In S |
| Calgary | 01-08-023-03W5 | 100/07-06-024-01W5/00 | | In S |
| Calgary | 07-06-023-03W5 | 102/07-06-024-01W5/01 | | In S |
| Calgary | 07-06 MRU Gas Plant | FROM 04-22 PRINCE'S ISLAND | AB BT 0034234 | In S |

- **1** To access the table for bulk configuration of the equipment cross references, click the Equipment Cross Refs category under the Company Admin header found within the personal dropdown



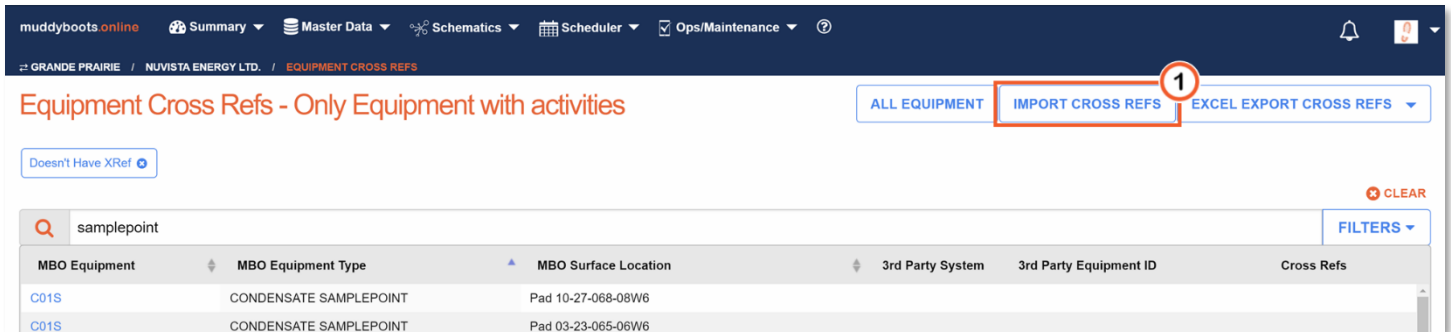
- **1** **2** Using the Filter dropdown, select the appropriate equipment type(s) and apply the filters to limit the equipment list. In this example 'SAMPLEPOINT' has been selected to encompass all SAMPLEPOINT types
- **3** Click the Excel Export Cross Refs dropdown and select Equipment Needing Cross Refs. This will download the correctly formatted excel template for uploading the cross reference identifiers



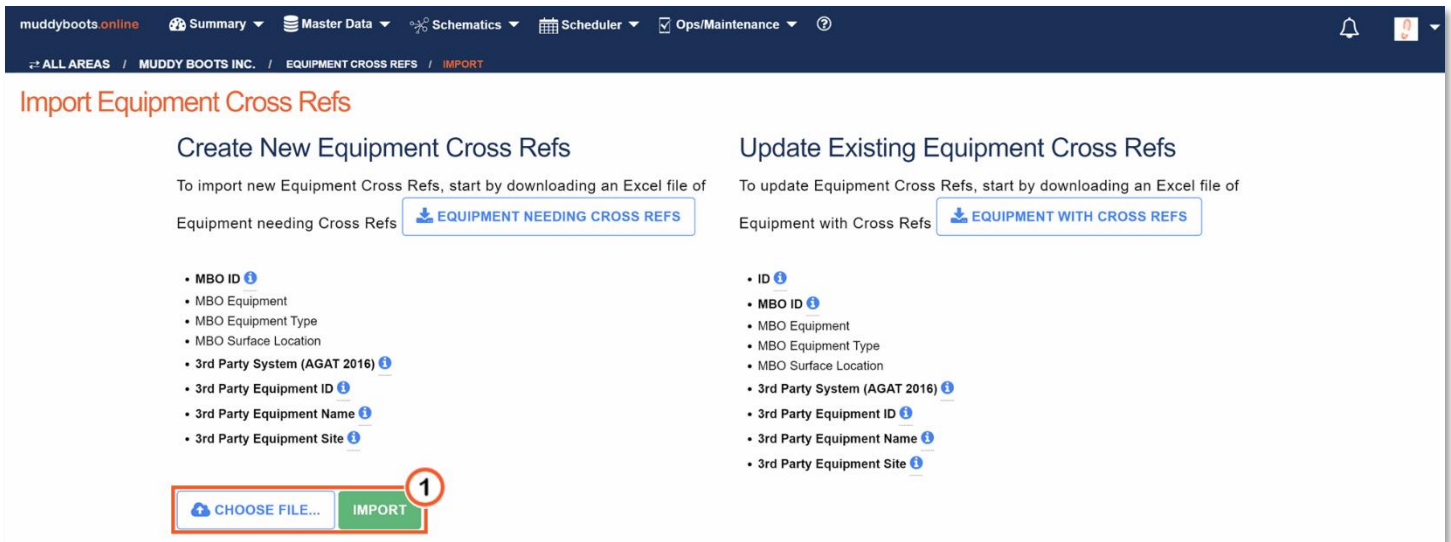
The excel export has 4 required fields to be populated prior to import:

- **1** 3rd Party System: Laboratory Services Provider or other system being utilized
- **2** 3rd Party XRef ID: Unique Identifier used on the analysis files to complete the link or the unique identifier used by the other system
Note: Ensure the identifier matches the identifier provided to the laboratory, any errors will result in mis-matched cross references increasing the manual linking process
- **3** 3rd Party Equipment Name: Name / Number given to the laboratory or other system to identify the equipment. If the 3rd party identifier is not present, use the equipment name/identifier/tag. The UWI is typically part of the name on single wells, but this depended on the naming convention utilized
- **4** 3rd Party Equipment Location: User defined, typically Surface Location (LSD), Plant Name, Process Area

Once the export file has been populated, it is ready to be imported into MBO.



- **1** Click the **IMPORT CROSS REFS** button to open the importing page



- **1** Click the **CHOOSE FILE...** button and select the previously prepared file from the local system's directory. This will add the name of the selected file to the **IMPORT** button
- Now click the converted Import button to import cross references (Ex. **IMPORT MBO - EQUIP NEEDING XREFS.XLSX**)

Create Equipment Cross Refs

1 sheet to import, totalling 2 records.
#1 MBO Cross Refs
2 records to import, including 2 errors.

Next step:
 Cancel this import
 You can upload the spreadsheet again after you've edited it.

CONTINUE

| Row | Message |
|-----|--|
| 2 | Error: X ref name can't be blank |
| | Error: X ref site can't be blank |
| | Error: Third party system must exist |
| 3 | Error: Third party system can't be blank |
| | Error: X ref can't be blank |

- 1 Muddy Boots has processed this file but has not yet imported the resources to the system. The total number of records, along with an error count if applicable, will be displayed.
- 2 This is the final opportunity for canceling the import. This option will always be available, with or without errors. If the cross reference excel document requires additional changes, the import may be cancelled.
- 3 If the cross reference file(s) are acceptable, and no errors are listed, click **CONTINUE** to load the cross references into MBO.
- 4 **Note:** If any file errors exist, they will be listed in this section, with the row # along with each independent error description.

Equipment Cross Refs - Only Equipment with activities

Equipment Type: SAMPLEPOINT

| MBO Equipment | MBO Equipment Type | MBO Surface Location | 3rd Party System | 3rd Party Equipment ID | Cross Refs |
|---------------|------------------------|----------------------|------------------|------------------------|------------|
| C01S | CONDENSATE SAMPLEPOINT | Pad 02-24-068-07W6 | AGAT 2016 | 190485 | 4 |
| C01S | CONDENSATE SAMPLEPOINT | Pad 04-03-069-08W6 | AGAT 2016 | 191294 | 4 |

- 1 Cross References have now been successfully loaded and can be seen populated on the cross references page or viewed on individual 'SAMPLEPOINT' equipment types

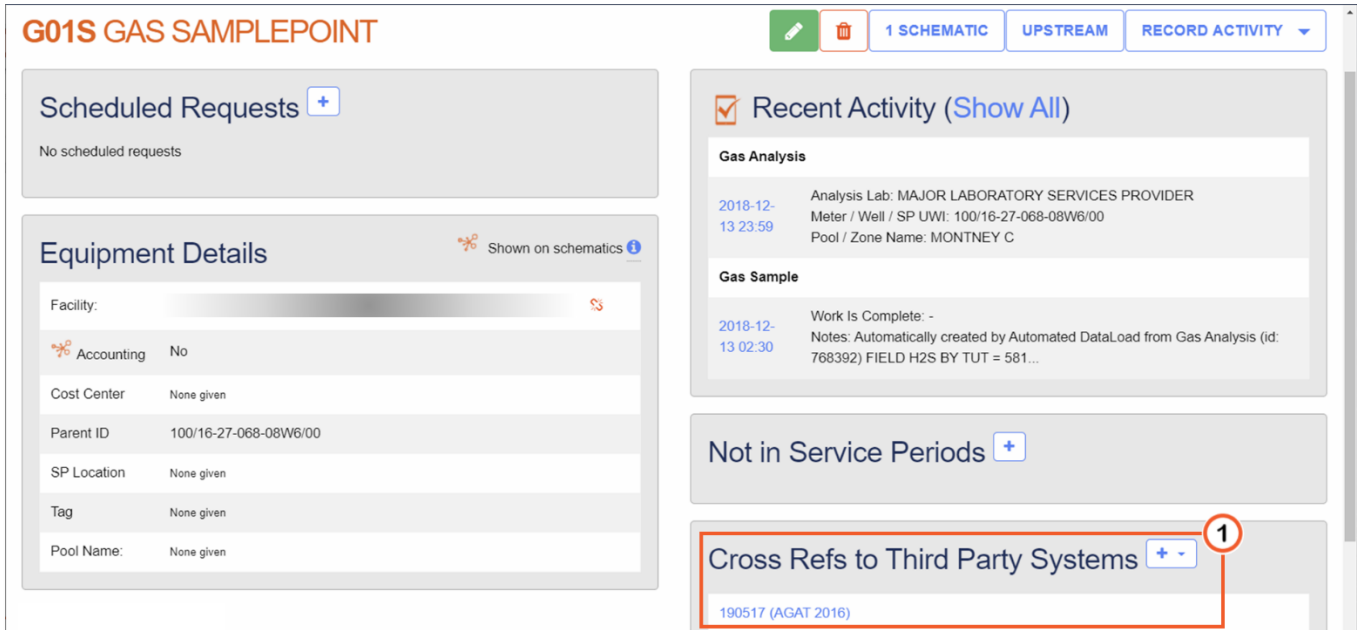
Note: Multiple Cross References can be imported on the same equipment (i.e., Test Separator sample points). This is accomplished by repeating the above process of adding cross references to the same set of equipment, for more information contact your muddyboots representative.

(b) Individual Cross Reference Creation and Editing

To minimize setup time, in-app changes are suggested for small datasets, individual cross reference additions or minor updates.

Two navigation pathways can be taken to add, update, or delete cross references:

1. Navigate to page of the desired equipment



- **1** Select to add a new reference or select the current **3rd Party Reference** to edit or delete. **Note:** The current **3rd Party Reference** is a hyperlink
- Both selections will direct to the screen shown below.

2. Select the Equipment Name from the Equipment Cross Refs page. This will open the pane for creating new cross references. The same selections are required as those from the excel equipment cross reference export:

The screenshot shows the 'Editing Equipment Cross Ref for PAS PA' page. At the top, there's a navigation bar with 'muddyboots.online' and various menu items like 'Summary', 'Master Data', 'Schematics', 'Scheduler', 'Measure', and 'Operations'. Below the navigation bar, the page title is 'Editing Equipment Cross Ref for PAS PA'. On the left, there's a section for 'MBO Equipment' with details: 'Name 03-19 Bt Vent Gas', 'Equipment Type METER - ORIFICE, EFM', and 'Site 03-19-084-12W6 - 03-19-084-12W6'. On the right, there's a section for 'Other Cross References for 03-19 Bt Vent Gas' with '21582G (Generic 2023)'. The main form is titled 'Cross Reference for PAS PA' and contains five fields: 1. 'Third Party System' (PAS PA), 2. 'XRef ID' (21582G), 3. 'Name' (BT0123036 HILL 03-1), 4. 'Location' (BT 0123036 VENT), and 5. 'XRef ID: UWI (F)' with a dropdown menu showing 'Name: UWI w/ no for (PAS PA Export File)' and 'Location: GAS-PRO (PAS PA Export File)'. At the bottom left, there's a green button labeled 'UPDATE EQUIPMENT CROSS REF' and a trash icon.

- ① 3rd Party System: Laboratory Services Provider or other system being utilized
- ② XRef ID: Unique Identifier used on the analysis files to complete the link or the unique identifier used by the other system
Note: Ensure the identifier matches the identifier provided to the laboratory, any errors will result in mis-matched cross references increasing the manual linking process
- ③ Name: Name / Number given to the laboratory or other system to identify the equipment. If the 3rd party identifier is not present, use the equipment name/identifier/tag. The UWI is typically part of the name on single wells, but this depended on the naming convention utilized
- ④ Location: User defined, typically Surface Location (LSD), Plant Name, Process Area
- ⑤ System Description: Depending on the *Third Party System* chosen, a description may be available with instruction on the information to provide in three system categories if it differs from the standards noted above.

Load Historical Analyses

Reach out to your MBO representative to define your historical import needs. Muddyboots will provide an import template and review the data requirements prior to backloading the legacy data.

Configure Imports with Laboratory Service Providers

Reach out to your MBO representative to determine the configuration process with your Laboratory Service provider(s) of choice. As Muddyboots has the labs deliver data directly to our system, configuration points will be conducted between Muddyboots and the Service providers directly, with input required on the types, frequency, and richness of data required.

Configuring Activity Rules

Activity rules can be setup to manage the approval process as activities are recorded or imported through an automated data load by a third party. These rules can be used as a visual reference or to allow for auto-acceptance of the activity where the rule is applied.

The screenshot shows the 'Activity Rules' page in the MBO system. The page header includes navigation tabs for Summary, Master Data, Schematics, Scheduler, and Ops/Maintenance. The breadcrumb trail is 'ALL AREAS / MUDDY BOOTS INC. / ACTIVITY RULES'. The main content area displays a table of activity rules with columns for Name, Activity Type, Number of Rules, and Applies to. A search bar is located above the table. On the right side, there is a user profile dropdown menu for 'Mitchell Bolt' with options like 'Mark as Homepage', 'My Profile', 'My Downloads', 'GraphQL query tool', 'Unmatched Rows', 'Maintenance Admin', 'Workflows', 'Company Admin', 'Operations Admin', 'MBO', and 'Logout'. A red circle with the number 1 highlights the 'Activity Rules' option in the dropdown menu.

| Name | Activity Type | Number of Rules | Applies to |
|---|--|-----------------|------------|
| Gas Accept | Gas Analysis | 24 | All Fields |
| Hydrocarbon Liquid Accept | Hydrocarbon Liquid Analysis | 16 | All Fields |
| Meter - Liquid Meter Proving Acceptance Rules | Liquid Meter Proving Report | 9 | All Fields |
| Meter - Orifice Chart Acceptance Rules | Orifice Meter Calibration Report | 17 | All Fields |
| Meter - Orifice EFM Acceptance Rules | EFM Orifice Meter Calibration | 24 | All Fields |
| Meter - Static and Temperature EFM Acceptance Rules | EFM Static and Temperature Calibration | 11 | All Fields |
| Meter - V-Cone EFM Acceptance Rules | EFM V-Cone Meter Calibration | 21 | All Fields |

- **1** Select the Activity Type Rules from Operations Admin in the profile drop down.
Note: The *Operations Admin* role is required to make these Rules
- Click **+ ACTIVITY RULE** to add a new Activity Type Rule

Note: Activity Rules can apply to Any activity but may need to be made configurable by your MBO representative.


- **1 2** Activity Rules require both a Rule Name and an Activity Type to be chosen. The list of activities available can be expanded, please request changes here via Support.
- **3** Auto Accept: Activities will be auto accepted if this option is toggled 'Yes' and all the created activity rules are in a 'pass' state. When toggled 'No', activities will need to be manually reviewed.
Note: Any activity that does not meet all the rule criteria will need to be reviewed, no automatic 'Fail' state will be generated.
- **4** Activity Rule scoping can be completed with scoping options by Field or individual piece of equipment.
Tip: Create a generic version for the whole company first before getting into the fine tuning of fields or specific equipment types.

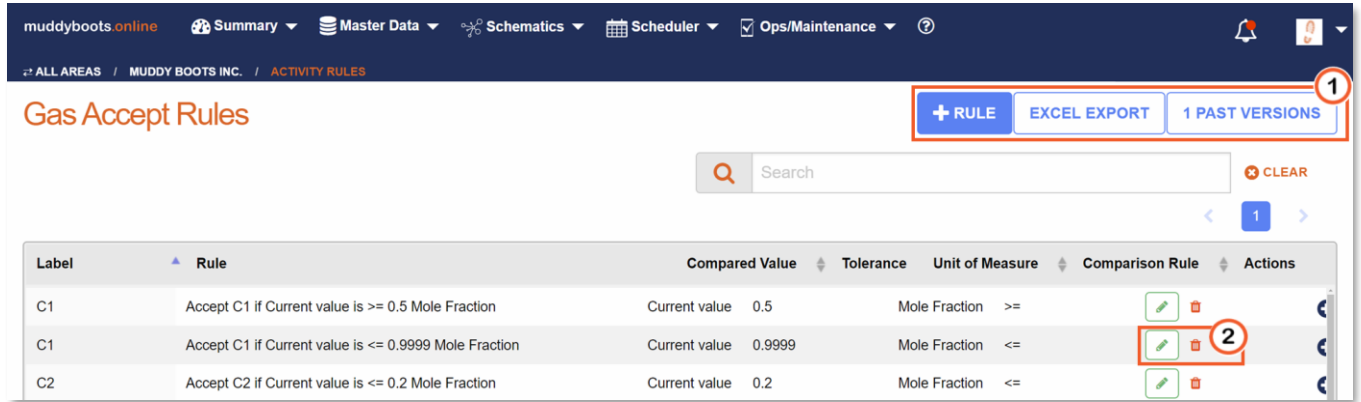
Existing Activity Rules can be edited or deleted follows:


| Name | Activity Type | Number of Rules | Applies to | Actions |
|---------------------------|-----------------------------|-----------------|------------|---------|
| Gas Accept | Gas Analysis | 24 | All Fields | |
| Hydrocarbon Liquid Accept | Hydrocarbon Liquid Analysis | 16 | All Fields | |

- Click to delete a previously created activity rule.
- Click to edit a previously created activity rule template.
- Click to edit the individual rules within the rule template.

(a) Viewing Individual Rules within a Rule Template

Click  to add or edit individual rules within the rule template



- ① Use the three navigation buttons to:
 - Add a rule: 
 - Export the list of rules for this rule template to excel for review.
 - View Past Versions of the rules datatable (with an option to export).
- ② Individual rules can be edited or deleted.

(b) Adding / Editing Individual Rules within a Rule Template



- When adding a new rule, the form element needs to first be chosen prior to being presented with the rule options.
 - Text and String form elements will have limited 'Match Text' or 'Match Previous' options
 - Float / data value form elements will have compare previous, percent differences, standard deviation, amongst other options
- Click Continue once Rule Type and The Form Element are selected.

New Rule

H2S

* Compared value: Current Value

* Comparison rule: Equal to

Tolerance: 2

Unit of measure: %

[BACK](#) [CREATE RULE](#)

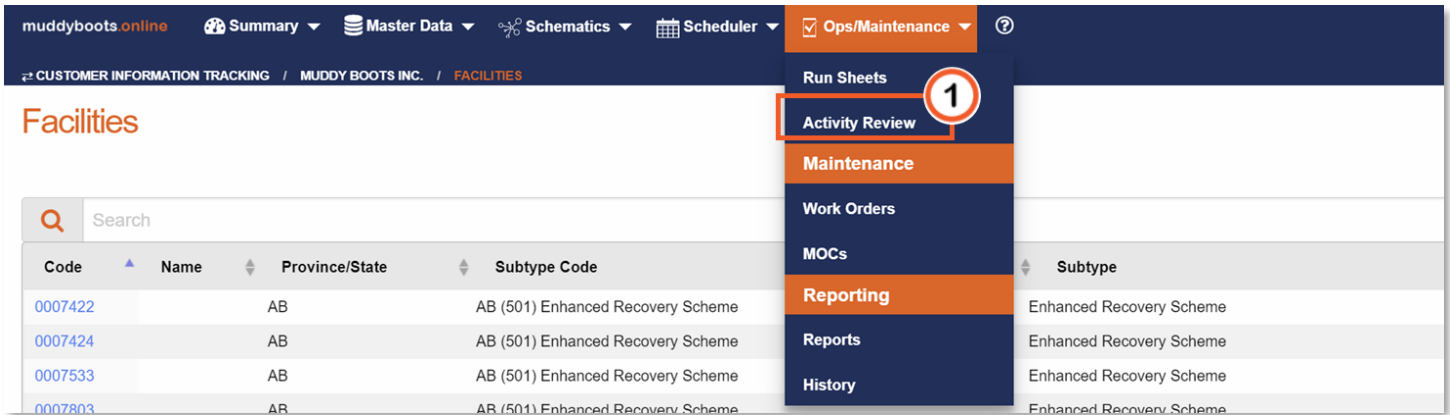
New Individual element rules have several options available to meet operational requirements:

- **Compared Value**
 - Current Value is the most common choice: Refers to the value that was a part of the analysis in question
 - Past Value: Refers to the previously recorded activity value accepted in the system
 - Standard Deviation – Standard Deviation is based on the last 3 analyses. These will also fail where there is not enough historical data available
- **Comparison Rule: Equal to, greater than etc.**
 - In the example above, anything outside of 2 percent of the previous value of H2S will fail the rule as presented and be denoted with an X
- **Tolerance: The allowable limit based on the chosen unit of measure**
 - In this photo the tolerance for the H2S is 2 %
- **Unit of Measure – This will typically be the UOM of the current form element or percent – other options are available in the drop down**

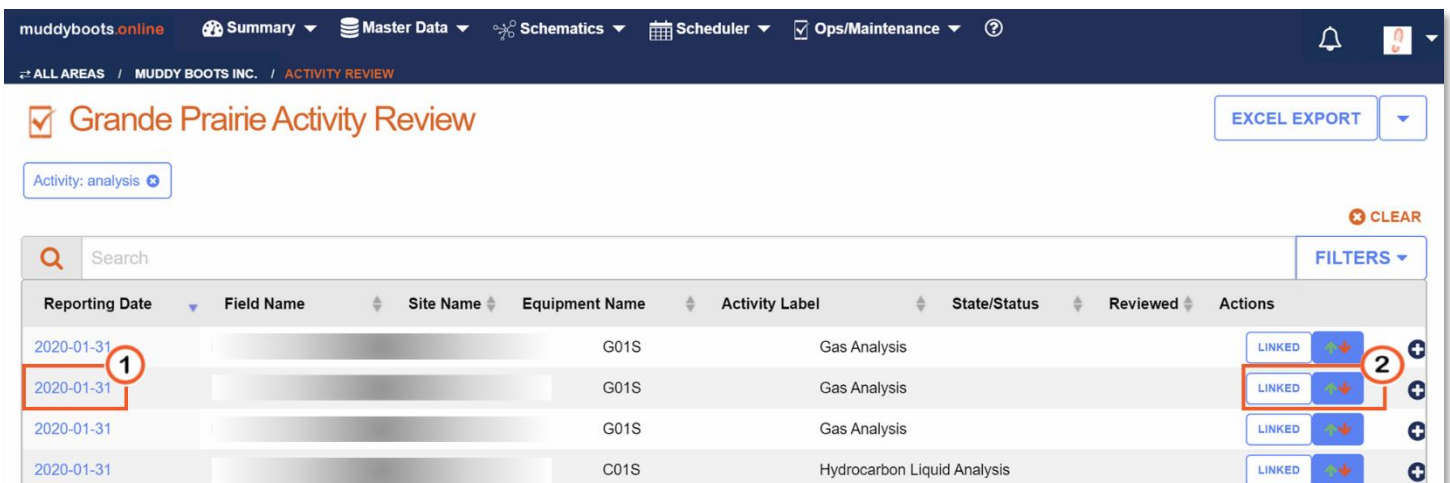
Note: The rules for an activity do not need to encompass all recorded elements, and can be left as reference data only


Note: Rules can be edited at anytime, however, any Activity Report previously brought into the system will reflect the rules as they stood when the Activity was initially created was loaded. These can be referenced by viewing previously created activities

Activity Review: Analysis





- ① All analyses, without errors or matched utilizing the **Unmatched Rows** table, will now appear in the Activity Review data table. Activity Review can be selected through the Ops/Maintenance dropdown

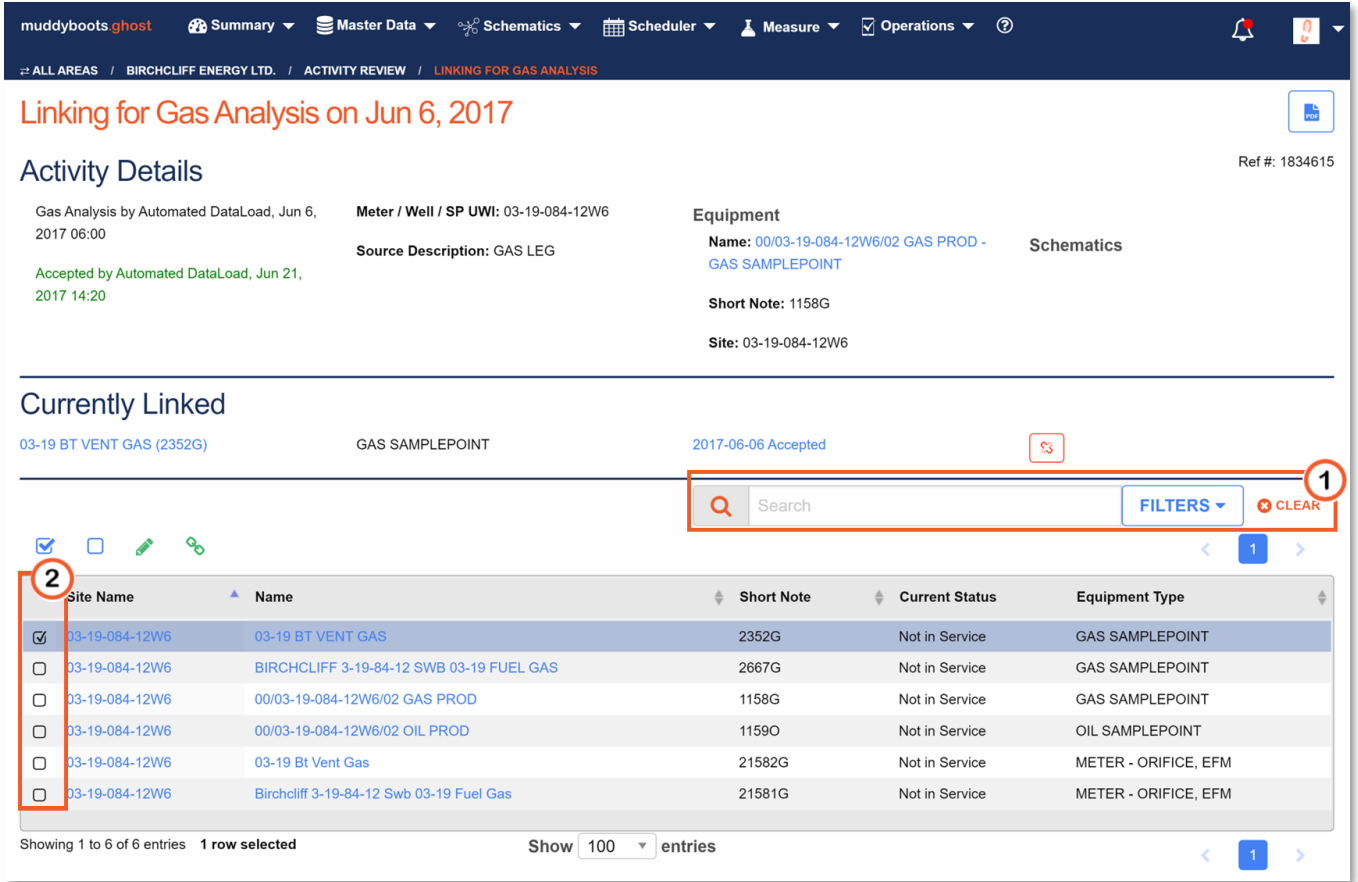


- ① Click the hyperlink to view the analysis
- ② Click the review button:  to review the analysis (accept, reject, or reference)
- ② Analysis can be linked to equipment within the MBO system. Once linked, the analysis information will be displayed on the linked piece or pieces of equipment as well as the matched SAMPLEPOINT.
 - The **NOT LINKED** button Indicates there are no linked pieces of equipment for this analysis. Click the **NOT LINKED** button to open the linking window
 - The **LINKED** button Indicates the analysis has been linked to equipment. Tapping the **LINKED** button allows the equipment link to be updated, removed, or the addition of multiple equipment links

Subsections for Linking and Validations (Accepting / Rejecting / Reference Only):




(a) Activity Review: Linking

When the  /  button has been selected, a linking page will open:




The screenshot shows the 'Linking for Gas Analysis on Jun 6, 2017' page. It includes a navigation bar with 'Summary', 'Master Data', 'Schematics', 'Scheduler', 'Measure', and 'Operations'. The breadcrumb trail is 'ALL AREAS / BIRCHCLIFF ENERGY LTD. / ACTIVITY REVIEW / LINKING FOR GAS ANALYSIS'. The page title is 'Linking for Gas Analysis on Jun 6, 2017'. The 'Activity Details' section shows 'Gas Analysis by Automated DataLoad, Jun 6, 2017 06:00' and 'Accepted by Automated DataLoad, Jun 21, 2017 14:20'. The 'Meter / Well / SP UWI' is '03-19-084-12W6' and the 'Source Description' is 'GAS LEG'. The 'Equipment' section shows 'Name: 00/03-19-084-12W6/02 GAS PROD - GAS SAMPLEPOINT', 'Short Note: 1158G', and 'Site: 03-19-084-12W6'. The 'Currently Linked' section shows '03-19 BT VENT GAS (2352G)' linked to 'GAS SAMPLEPOINT' on '2017-06-06 Accepted'. A table of 'Currently Linked' assets is shown with columns for Site Name, Name, Short Note, Current Status, and Equipment Type. The first row is selected. A search bar and filters are visible at the top right of the table.

| Site Name | Name | Short Note | Current Status | Equipment Type |
|-------------------------------------|---|------------|----------------|----------------------|
| <input checked="" type="checkbox"/> | 03-19-084-12W6 03-19 BT VENT GAS | 2352G | Not in Service | GAS SAMPLEPOINT |
| <input type="checkbox"/> | 03-19-084-12W6 BIRCHCLIFF 3-19-84-12 SWB 03-19 FUEL GAS | 2667G | Not in Service | GAS SAMPLEPOINT |
| <input type="checkbox"/> | 03-19-084-12W6 00/03-19-084-12W6/02 GAS PROD | 1158G | Not in Service | GAS SAMPLEPOINT |
| <input type="checkbox"/> | 03-19-084-12W6 00/03-19-084-12W6/02 OIL PROD | 11590 | Not in Service | OIL SAMPLEPOINT |
| <input type="checkbox"/> | 03-19-084-12W6 03-19 Bt Vent Gas | 21582G | Not in Service | METER - ORIFICE, EFM |
| <input type="checkbox"/> | 03-19-084-12W6 Birchcliff 3-19-84-12 Swb 03-19 Fuel Gas | 21581G | Not in Service | METER - ORIFICE, EFM |

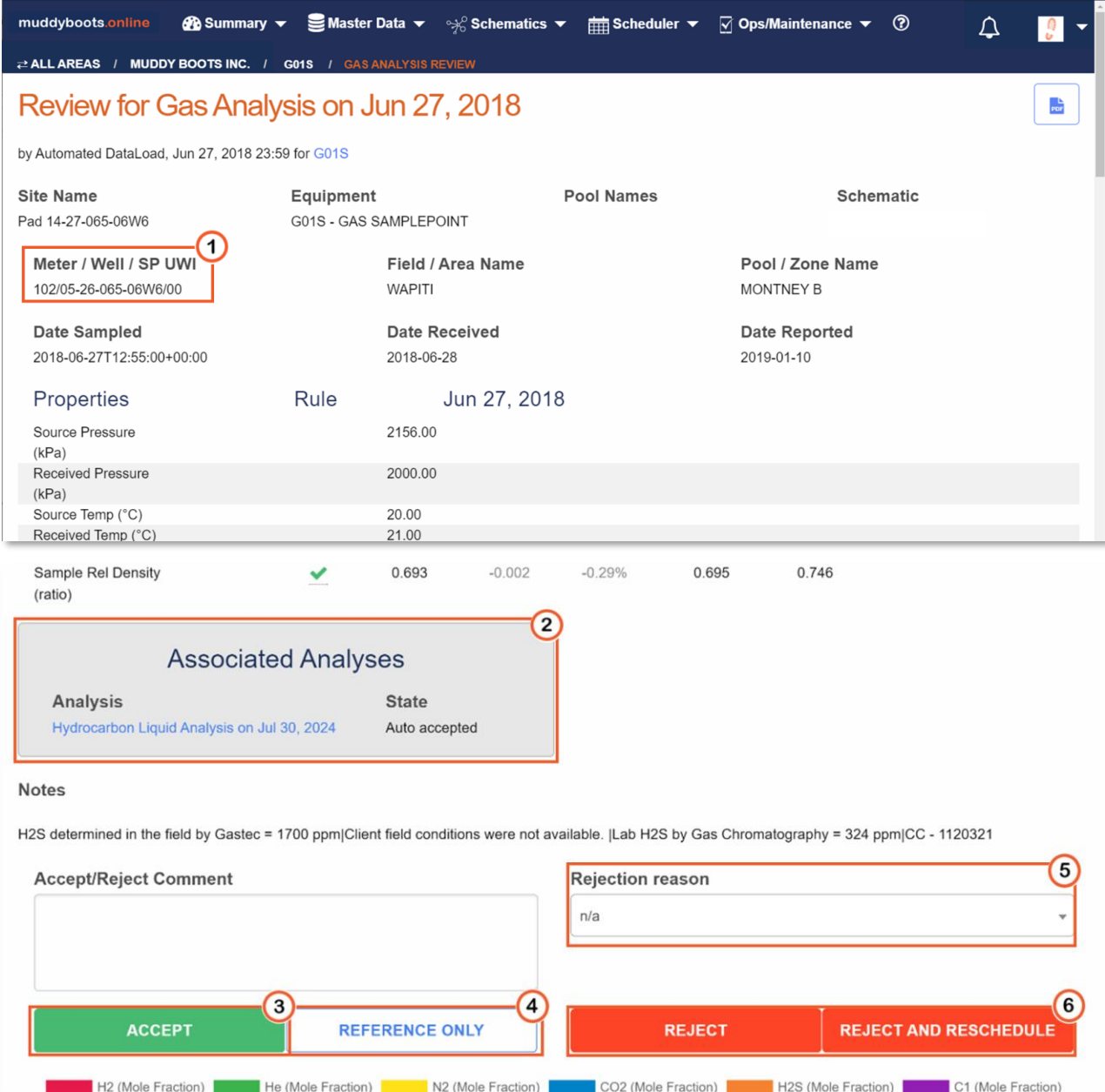
- **1** Use the search filters to find the appropriate equipment to link the analyses to
 - Typically Wellheads and Meters
- **2** Select all applicable equipment for the analysis using the available checkboxes and click  to link the analyses to the applicable equipment.
- Currently Linked on Historically linked assets will appear above the data table if any exist, these can be linked () on unlinked () using the buttons presented on the righthand side.

Note: Once linked, subsequent analyses reports will automatically link to the same assets as the previous analyses record where matching details are provided on the report.





(b) Activity Review: Accept / Reject

Once the  (review button) has been selected, the Review process is initiated, and the current analysis being reviewed will be displayed. The current analysis being reviewed, the previously recorded analyses for trending, and Activity Rules (Automatic Acceptance of Analysis if this has been enabled) can now be compared.

Note: The analysis the user see are in the MBO format, all data imported is from the laboratory. The details provided by the muddyboots application are details from the SAMPLEPOINT: Site Name, Equipment, Pool, and Schematic.



The screenshot shows the 'Review for Gas Analysis on Jun 27, 2018' page. It includes a navigation bar with 'Summary', 'Master Data', 'Schematics', 'Scheduler', and 'Ops/Maintenance'. The breadcrumb trail is 'ALL AREAS / MUDDY BOOTS INC. / G01S / GAS ANALYSIS REVIEW'. The main content area displays analysis details for 'G01S' at 'Pad 14-27-065-06W6'. A table shows properties like Source Pressure (2156.00 kPa) and Received Pressure (2000.00 kPa). Below this is a table of gas concentrations: Sample Rel Density (0.693), H2 (Mole Fraction) (-0.002), He (Mole Fraction) (-0.29%), N2 (Mole Fraction) (0.695), CO2 (Mole Fraction) (0.746), H2S (Mole Fraction), and C1 (Mole Fraction). An 'Associated Analyses' section shows a recent analysis on Jul 30, 2024, which was 'Auto accepted'. A 'Notes' section contains text about H2S determination. At the bottom, there are input fields for 'Accept/Reject Comment' and 'Rejection reason', and four buttons: 'ACCEPT', 'REFERENCE ONLY', 'REJECT', and 'REJECT AND RESCHEDULE'. A legend at the very bottom identifies the gas colors: H2 (red), He (green), N2 (yellow), CO2 (blue), H2S (orange), and C1 (purple).

- ① Analysis details will be visible on this page, highlighted is the Meter / Well / SP UWI information which will help with linking in the following subsection.
- ② Associated Analysis panel displays any associated analyses that have a corresponding Activity date and are linked to the same wellhead. The status of the associated analysis will also be displayed.
- ③ After reviewing the analysis details, clicking  will create a historical record and these data points will be utilized in data trends, as well as for Activity Rules (if applicable)
- ④ If the analysis is not to be accepted, but the data needs to be kept for historical reporting purposes,  should be selected as this keeps the record, but does not include the data in trends or for rules
- ⑤ A *Rejection reason* should be selected to note the issues with the analysis, these canned notes are setup by your muddyboots representative.
- ⑥ Where an activity report is deemed unacceptable There are 2 options available for managing the Report rejection
 -  deletes the record from the trend calculations, while retaining the information in the muddyboots database. This allows for the resubmission by the laboratory of an amended report.
Note: If the functionality is being utilized and has been enabled, rejecting the analyses will also reschedule a sample to be taken.
 - 
 - Deletes the record from the trend calculations, while retaining the information in the muddyboots database.
 - Opens the scheduler for scheduling an ad-hoc item to be completed due to the failed report. Please review the scheduling Quickstart for more information on scheduling

Viewing Analysis on Schematics


Once an analysis has been linked to a wellhead or other applicable equipment, it can now be viewed on the muddyboots schematics, provided the equipment is present on a schematic.

Note: The analysis will also be available to view on the sample point that it has been loaded to when viewing the schematic.

Navigate to a schematic to view all the available analyses for each piece of equipment:

The screenshot displays a schematic for 'Pad 09-33-068-08W6 - Verified, Prod Month Mar 2020'. A pop-up window titled '100/16-27-068-08W6/00 WELLHEAD - GAS - FLOWING' is open, showing 'Recent Activity (Show All)'. A red box labeled '2' highlights a 'Gas Analysis' entry with a timestamp of '2018-12-13 23:59'. The analysis details include: 'Analysis Lab: MAJOR LABORATORY SERVICES', 'PROVIDER', 'Meter / Well / SP UWI: 100/16-27-068-08W6/00', and 'Pool / Zone Name: MONTNEY C'. Below the details are 'UPSTREAM' and 'DOWNSTREAM' buttons. In the background schematic, a red box labeled '1' highlights a wellhead icon.

- ① Double click on a piece of equipment to open the details and activities pane.
- ② Click on the analysis hyperlink to view in detail.

Note: To view all details and information for the equipment click: 

Note: To view all previously recorded activities associated with the equipment click: [\(Show All\)](#)

Optional Analysis Features

(a) Generating Measure Exports

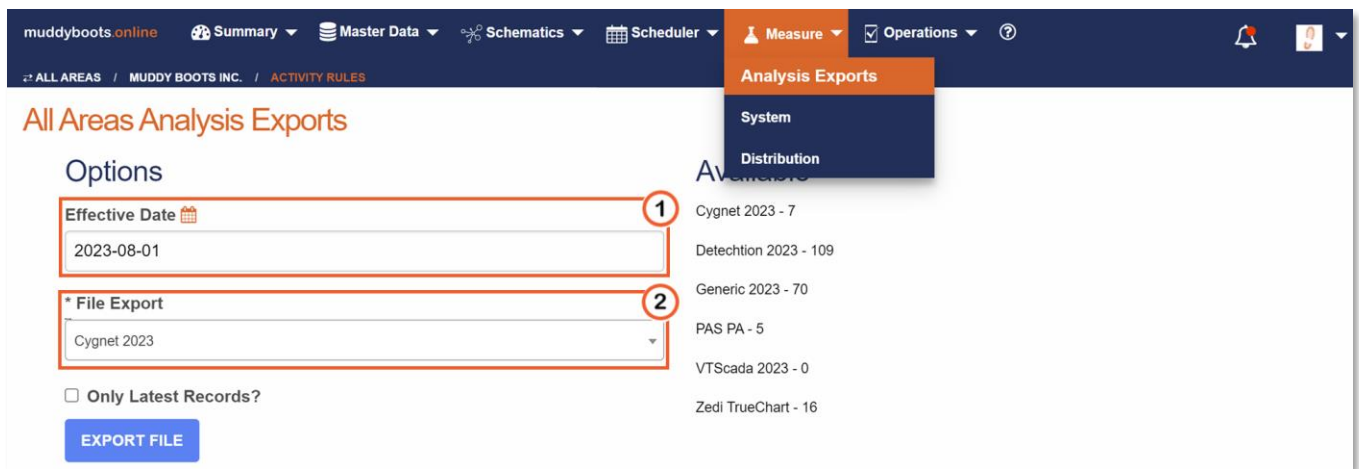
Measure Exports can be broken into 2 categories: System and Distribution List exports

- System Exports: Outbound Scada and PA Systems
- Distribution Lists: External Groups requiring zipped reports from MBO

(i) System Exports

System Export records used for SCADA, PA, and other external systems are generated when the following conditions have been met:

1. Analyses Data has landed in Muddyboots
2. Landed Analyses data has been 'Accepted'
3. Accepted Analyses have been linked to meters, wells, or other equipment that have Third Party System Cross References created for these systems



- Navigate to your Dashboard (Typically set as your homepage on initial training)
- Select the appropriate Export System to move to the export page.
- The system selected from the dashboard will be the pre-selected File Export on the Analysis Exports: System page
- **1** Select the Effective Date for the Export being generated.
- **2** Select the File Export desired (may pre-selected as noted above if navigating from Dashboard)
- Select the following options as applicable.
 - Only Latest Records
 - Mark as Exported (Requires the system Security role: Analysis – Exports)
- Click **EXPORT FILE**
 - Your file will now be processing and you can leave this page
- All background files will land in **My Downloads** as found under your personal dropdown.

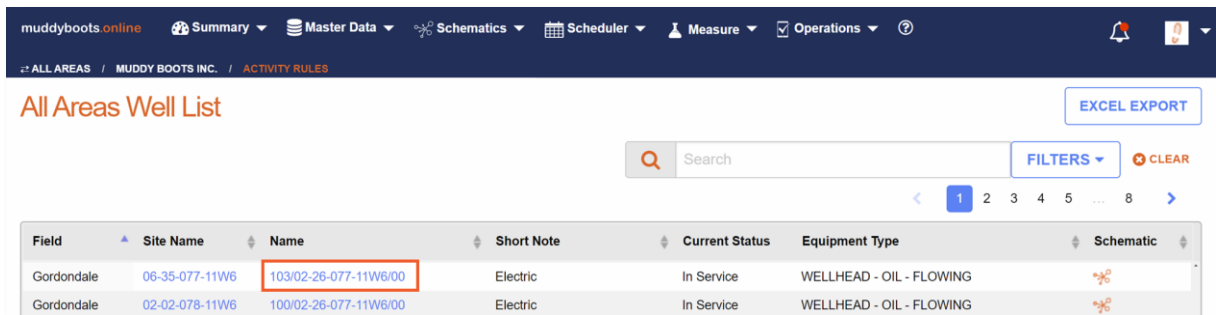
(b) Creating Recombined Gas Analyses

Requirements for generating a recombined gas analysis in Muddyboots:

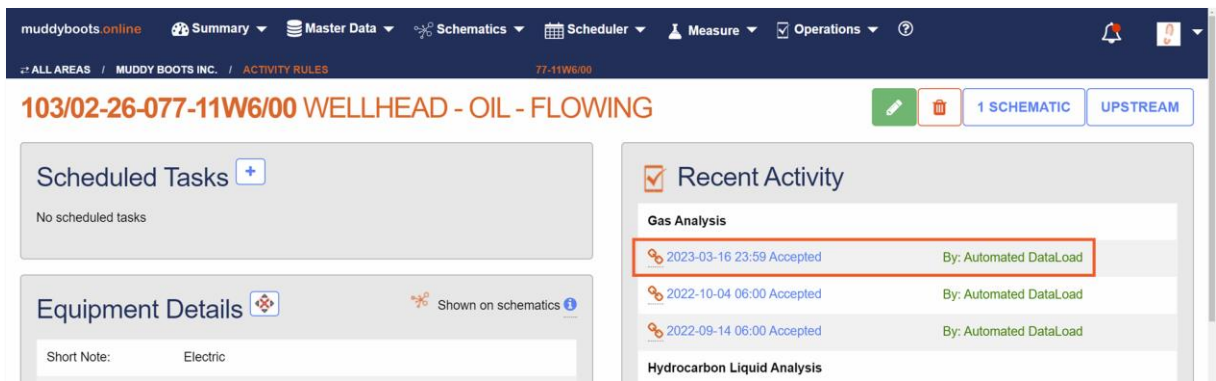
1. Available Gas and HCL Analysis reports must exist for the same sampling date
2. Gas and HCL Analysis reports must be 'Accepted'
3. Both Gas and HCL Analysis reports must be linked to the same Wellhead
4. User generating the Recombined Gas Analysis must have the following Security Roles: **Operations** and **Measure – Analysis**

Generating a Recombined Gas Analysis:

1. Navigate to the Well List

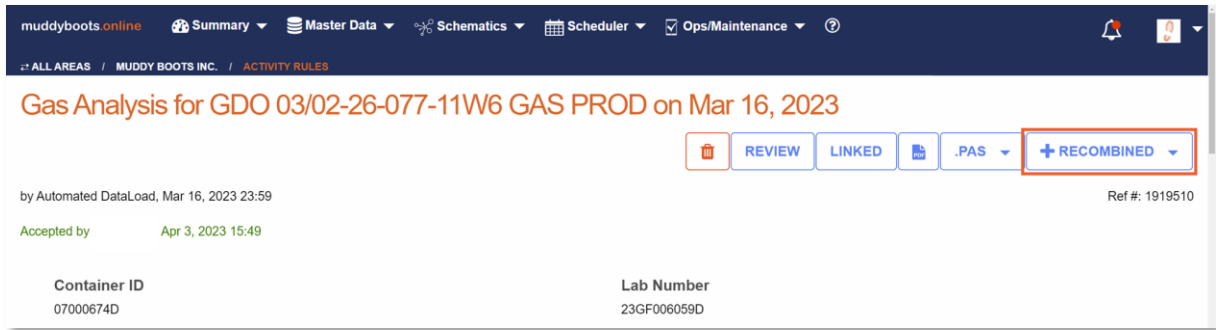


2. Use the Search Box to find the desired Wellhead
3. Click on the desired Well Name to view the equipment

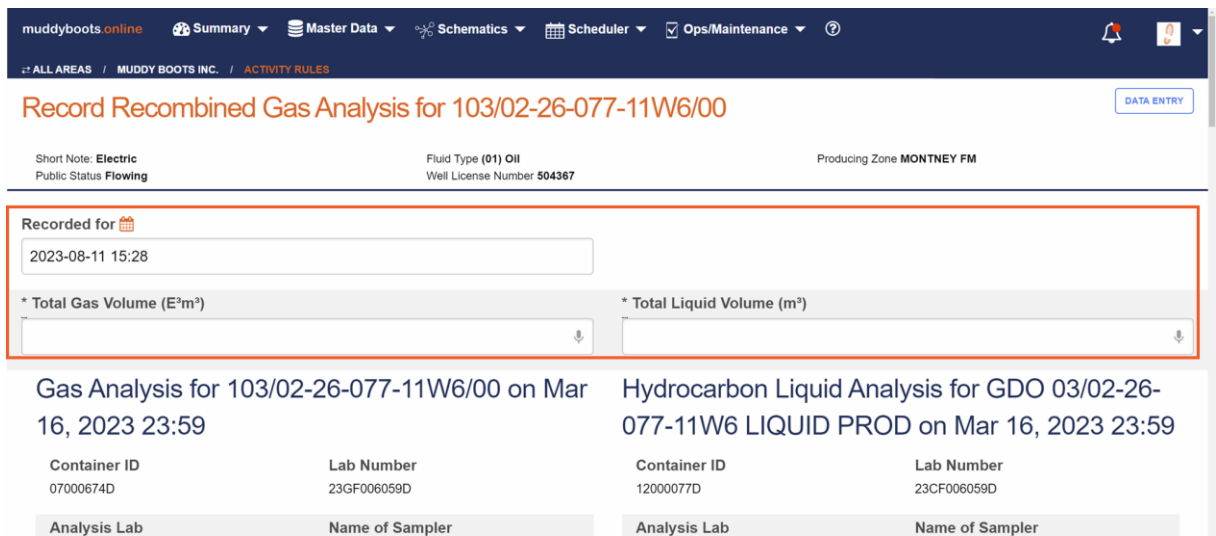


4. Select the Desired Gas or HCL Analysis

Note: The Green Text indicates the report has been Accepted; Red Text = Rejected; Black Text = Not yet reviewed



5. Click + RECOMBINED to initiate the recombined analysis



6. Update / Enter the following values:
 - a. **Recorded for:** Typically the first date of the month
 - b. **Total Gas Volume**
 - c. **Total Liquid Volume**
7. Review the associated Gas and HCL reports to be used for the Recombined
8. Add any additional Notes
9. Click RECORD

(c) AER D017 Density Exemption Exports

Density Exemption Overview

Muddyboots provides an export for gas and liquid analyses to determine if the following criteria are met:

1. Three consecutive Analyses have a Relative Density within 1.0% of the average and
2. The three consecutive Analyses must not be taken within 90 days of one another.

Note: The report also includes the current analysis sampling schedule applied to the Samplepoint for reference. This will be blank for those not utilizing the scheduling functions within Muddyboots.

Note: This export does not provide insight into additional criteria that may be required to qualify for a density exemption. Determining a Density Exempt qualification status should be completed by a SME (Subject Matter Expert).

Density Exemption Process

Exporting a Density Exemption Report

- a. Navigate to the Reports page within Muddyboots.
 - i. Add any applicable search criteria to the data table and set your hierarchy to the appropriate level.
- b. Click **Detailed Excel Export** and choose **Density Exemption**. An export will be generated.

Optional Items: Updating a Samplepoint to note that density exemption criteria is met

- a. Navigate to the Samplepoint Equipment in Muddyboots
- b. Edit the Samplepoint equipment and check 'AER Density Exempt'
 - i. This will remove the Samplepoint from future Density Exemption Exports
- c. Edit the schedule if applicable with an end date. When saving choose: *Update this and future Tasks*
- d. Add any Notes to the Samplepoint as desired

Reference: Directive 017: Measurement Requirements for Oil and Gas Operations (March 2022) 8-15

Licensees are not required to update the well gas and condensate analyses if three consecutive calculated and recombined RD determinations conducted at the specified sample frequency or no more than once per year are all within ± 1.0 per cent of the average of the three RDs (see example 8.1). Specifically, the RDs would be those of the gas plus gas equivalent of the recombined liquid condensate. After the well has fallen below the critical lift velocity as determined using the Turner Correlation calculation described in section 7.4.1.1, one final gas and condensate analysis must be obtained.

(d) Generating AER .pas Export files

Requirements for Generating AER .pas Exports

There are no limits on who can generate Exports, however there is control on whom can modify the wellheads to update any incorrect well details that may be required to successfully submit a .pas file.

Requirements to update Wellhead Equipment details in Muddyboots:

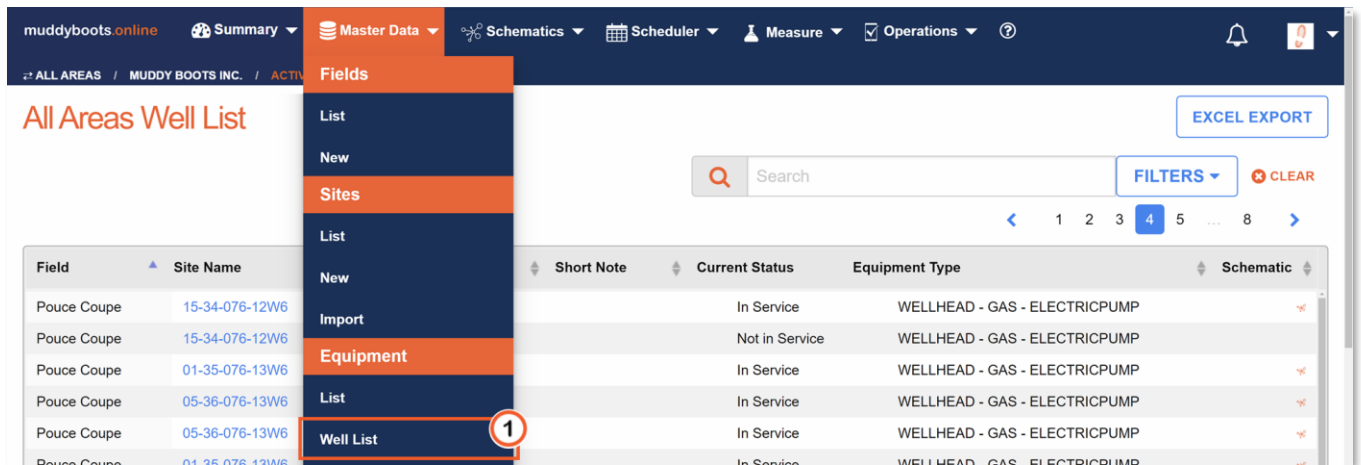
- User must have the following Security Role: **Site admin**

Wellhead Equipment Detail Requirements on Wellhead:

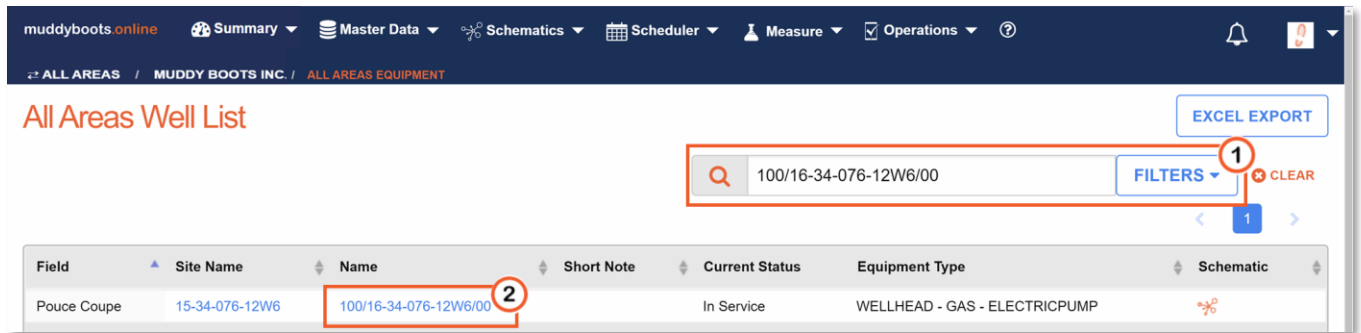
- Fluid Type
 - (01) Oil, (02) Gas, (06) Water, or (17) Crude Bitumen
- Interval Top KB (m)
- Interval Base KB (m)
- License Number
- Producing Zone
- Drilling Leg
 - Note: If not populated, 01 will be assumed. AER Submission requirement note:

| | |
|---|--|
| Must be 01, 02, 03...09 (Cannot be 0 or NULL) | Drilling Leg (Event or Occurrence). Together with the UWI, this is to help define the bottom of the specific drill hole. |
|---|--|

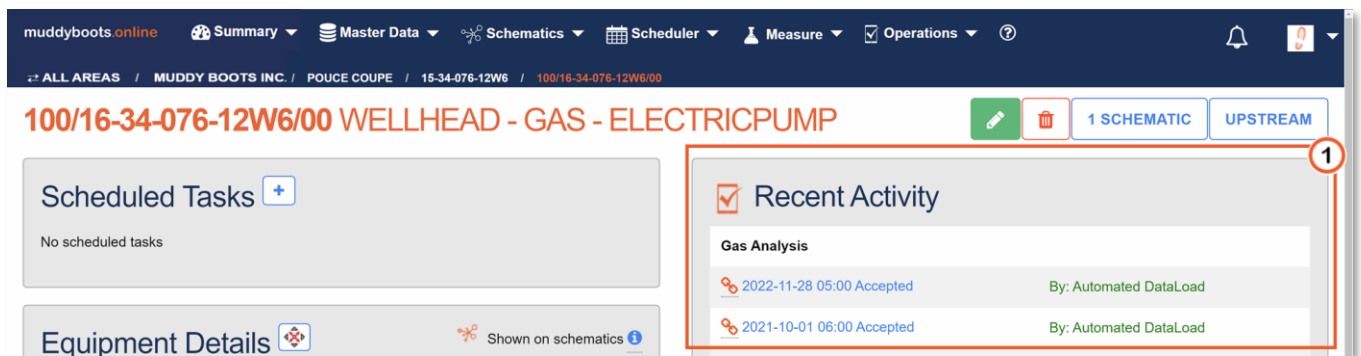
Generating AER .pas Exports



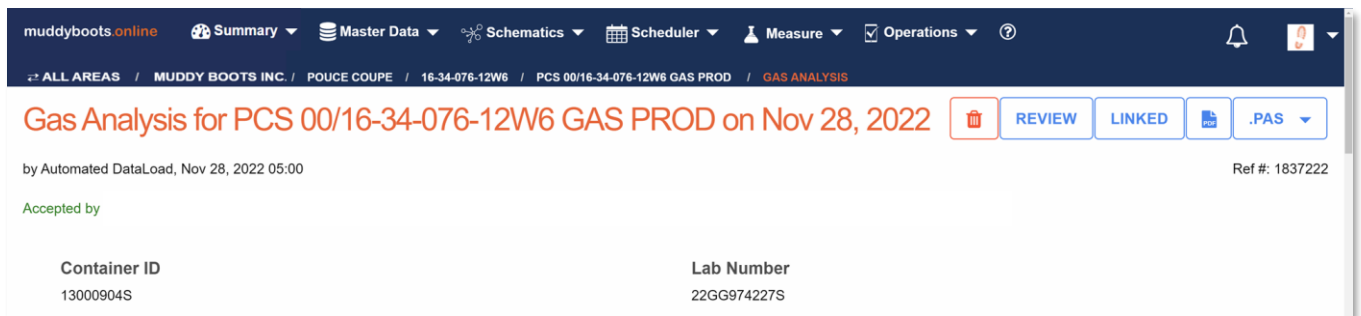
- **1** Navigate to the Well List



- ① Use the Search Box to find the desired Wellhead.
- ② Click on the desired Well Name to view the equipment.



- ① Select the Desired Gas, Oil, or Water Analysis
Note: The Green Text indicates the report has been Accepted; Red Text = Rejected; Black Text = Not yet reviewed




- Click **.PAS** to initiate the **.pas** Export
 - Select the associated Wellhead to be used for the **.pas** file and the download will commence.
- A zip file containing both the Analysis pdf and the **.pas** file of the desired analysis will be delivered in your browser.

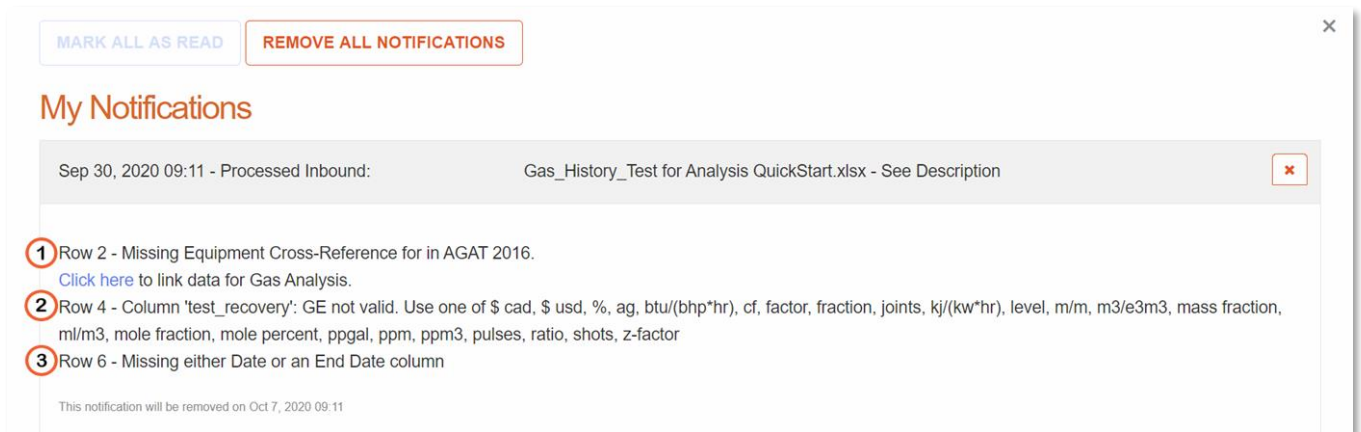
Possible Errors and Solutions with Lab Imported Analyses

Processed Inbound analyses from third party systems (i.e., Laboratory Service Providers) may have erroneous data that will not be accepted by muddyboots. A number of these error types are covered below.

Note: For any other inbound error, please contact a muddyboots representative.

(a) Errors with Display Messages

Import errors are displayed in the notification window and can be viewed any time by clicking the  icon in the top righthand corner of the application

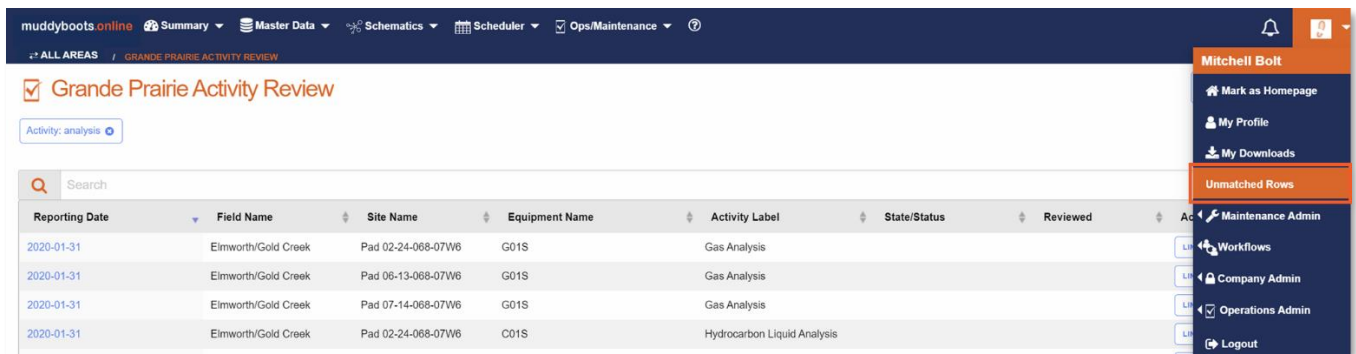


- **1 3** Empty Data Columns: For columns missing data in the import files, a note will be present to indicate which data row and column is incorrect or missing. Contact a muddyboots representative for the full error report and contact a laboratory services provider to fix the import and resubmit.
- **2** Incorrect Units: For columns with incorrect unit types, the correct and available units will be presented. This error typically occurs due to text being entered into this data location. Contact a muddyboots representative for the full error report and contact a laboratory services provider to fix the import and resubmit.

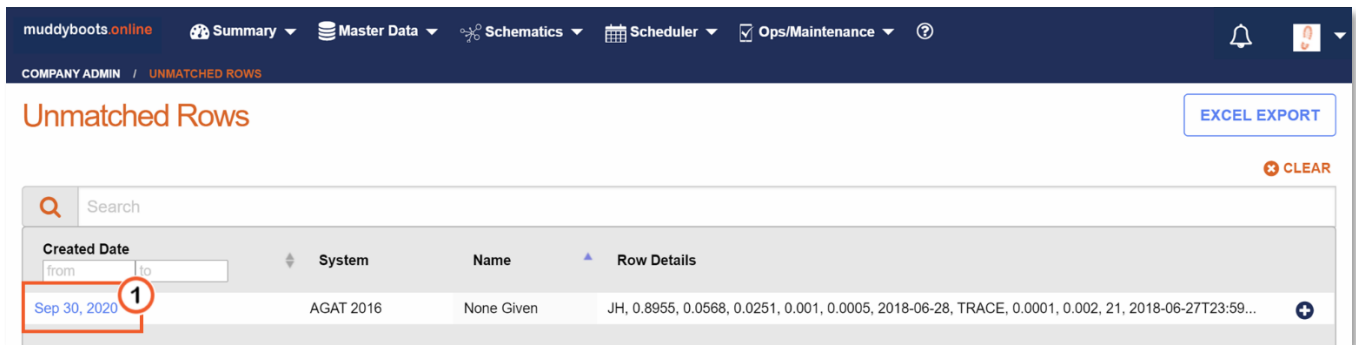
(b) Errors without Display Messages / Unmatched Rows

Incorrect File Format - No Analysis Received: If expected analyses do not arrive in the MBO system, an incorrect analysis file format may have been submitted to the server. This will not result in errors visible to the users.

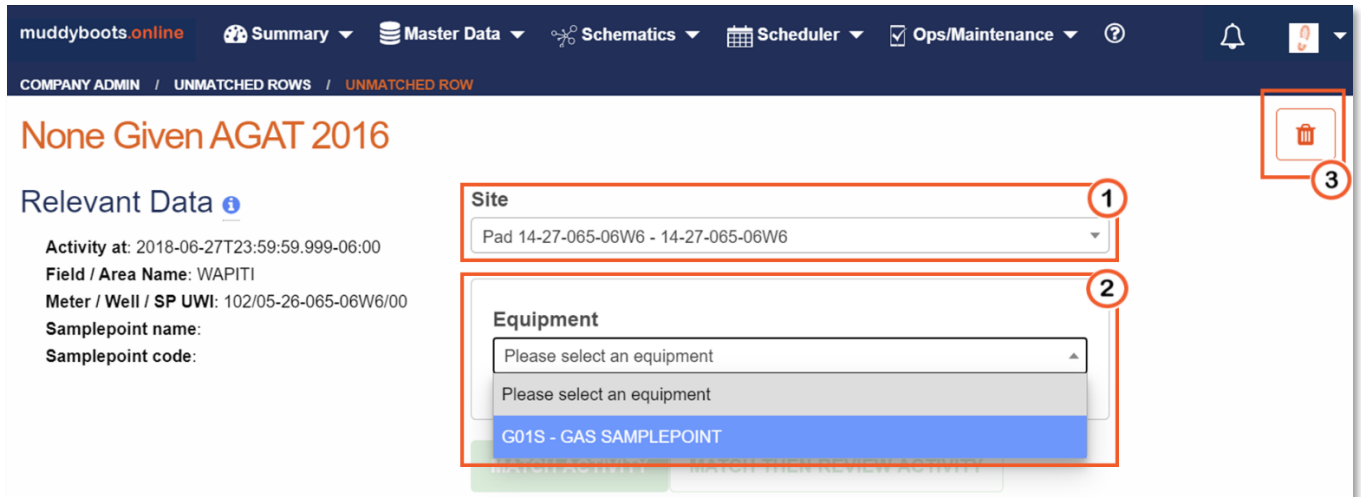
- ‘Unmatched Rows’: Unmatched Rows do not display an error message and are imports that have been loaded into the system but do not have a viable cross reference. Muddyboots contains an Unmatched Rows tool to link 3rd party imports to the correct SAMPLEPOINT location even if a cross reference has not been established. To Access the full list of **Unmatched Rows**, select Unmatched Rows from the personal dropdown in the top right corner.




Note: Unmatched Rows will be unavailable if none exist



- ① Click the hyperlink of the Analysis that requires review to navigate to the analysis matching menu.



- ① Select the applicable site (surface location) the analysis belongs to
- ② Select the applicable SAMPLEPOINT to match the analysis
- Once the Site and Equipment have been selected, click **MATCH ACTIVITY** to finalize the match or **MATCH THEN REVIEW ACTIVITY** to finalize the match and advance to reviewing the analysis
- ③ The  button can be used to delete the analysis if required due to incorrect information (i.e. well UWI, company, field, etc.) it can be deleted at this point. It can also be deleted/rejected upon final review after matching.