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# Purpose

## The purpose of this document is to define how to properly fill out a Calibration Plan to communicate the requirements for calibration.

# Scope

## This document is to be used when filling out a Calibration Plan for any of the following:

### A calibration is to be performed in the MTS Calibration and Metrology Laboratory.

### A force transducer outside of the capacity of the MTS Calibration and Metrology Laboratory is to be performed at a designated outside service provider.

# Definitions and Acronyms

## POND: Projects on Demand

# Graphic

## N/A

# Responsibilities

## Metrology

### Maintains this document

### Maintains the Calibration Plan form

## Project Engineering

### Uses this document to properly fill out a Calibration Plan

# Instruction

## Considerations

### Macros must be enabled to interact with the calibration plan form. If not already enabled on the workstation, click “Enable Content” at the prompt towards the top of the window.



### All cells that require user input are highlighted with a red, dashed line border (required user input fields). Once an entry is made, the border will disappear. If any cells remain with a red, dashed line border, that means the calibration plan is not yet complete.

### Do not enter any information in a location that is not a required user input field as it could negatively impact the functionality of the form. The only exception to this is the “Notes” section which is not formatted as a “required user input field”.

### Do not add/remove any rows, columns, or cells to/from the form as logic is built in referencing specific locations in the document that will be negatively impact the built-in functionality.

### If at any point, the user needs to start over with the form, either close and reload the file or click the “Reset form” button located on the calibration form.

### Unless otherwise specified in the drop-down menu options of the calibration plan form, the top most entry is typically the most common selection.

### There is a <Show/Hide Revision History> button located on the “Form Selection” tab that when clicked will show or hide the “Revision History” tab. This tab contains the details of each revision level.

### When filling out the WBS element field, make sure to only fill out the number of characters shown below so that the applicable POND folder can be found by the logic.

#### **Correct:** US3.003101

#### **Incorrect:** US3.003101.AER-10

## Instructions

### Open the calibration plan form at the link below:

#### [\\mspdata1\manufacturing\Masters\Metrology\Forms, Templates, & Tools\Metrology Templates, Logs, Lists, & Reviews\Cal Plan Form](file:///%5C%5Cmspdata1%5Cmanufacturing%5CMasters%5CMetrology%5CForms%2C%20Templates%2C%20%26%20Tools%5CMetrology%20Templates%2C%20Logs%2C%20Lists%2C%20%26%20Reviews%5CCal%20Plan%20Form)

### **Note:** The opening screen, “Form Selection”, is the launch point for selecting the calibration plan form for the equipment to be calibrated.

### In the drop-down menu, select the type of equipment to be calibrated.

### Click the <Create Form> button.

### **Note:** The unique calibration plan form based on the equipment selected will be made available.

### Start by filling out the header information of the calibration plan form.

#### Date

##### This is the date that the calibration plan was created.

#### Contact

##### This is the contact name of the individual that created the calibration plan.

#### WBS Element

##### This is the project number linked with this calibration.

##### Refer to **Section 6.1** for guidance on how to properly fill out the WBS element field for the logic to work properly.

#### Extension

##### This is the contact phone number for the creator of the calibration plan.

#### Customer Name

##### This is the name of the Customer/End User that the equipment is being calibrated for.

##### The Customer Name should be identical to the name as used in SAP, whenever possible.

### Fill out the unique calibration requirements for the equipment

#### If there are questions about the content of the calibration plan form, contact the Technician that works within the applicable calibration discipline or contact the Staff Metrologist.

### Any comments or extra information to be communicated to the Technician should be entered in the “Notes” Section.

### Once all required user input fields are filled out completely, do the following:

#### Click the <Save As PDF> button if the calibration plan is not for a single axis force transducer greater than 220kip (1000kN).

#### Click the <Save As PDF and E-mail to Vendor (Tovey)> button if the calibration is for a single axis force transducer greater than 220kip (1000 kN). See **Section 6.3.4** for further details.

### The logic for the <Save As PDF> button will look for the applicable POND folder based on the WBS element entered and take specific action depending on if a folder is found or not.

#### **Note:** The file name includes an increment value so that if the file is saved again and a duplicate file name is already found, it increases the increment value to save as a separate file.

#### **Note:** The logic will indicate the file name and path in the pop-ups that follow the PDF creation

#### If the logic finds a POND folder that matches the WBS element, a PDF version of the form will be saved in the POND/Calibration Plan folder with a file name defined by the logic

#### If the logic does not find a POND folder that matches the WBS element, a PDF version of the form will be saved to the user’s desktop. It is critical that the PDF be moved to the applicable POND folder when/if it exists.

## Logic Buttons on Form

###

#### This button is used to save the completed calibration plan form in the required PDF format.

###

#### This button is used to reset the open calibration form to the blank configuration. Alternatively, the calibration plan form file can be closed and reopened to achieve a similar result.

###

#### This button is used to provide feedback or ask questions directly to Calibration and Metrology support personnel.

###

#### **Note:** This button is only available on the calibration plan form for “Force (Single Axis)”.

#### **Note:** Logic is built into the form that will check for a compatible transducer before attaching the completed calibration plan form to the e-mail. If a transducer is selected that is not applicable, an error message will display on the screen.

#### This button is used when creating a calibration plan form for a force transducer that has a capacity exceeding that of the capability of the Calibration and Metrology Laboratory. After saving the form as a PDF, it is critical that the PDF be attached to the logic generated e-mail addressed to the external calibration service provider communicating the calibration requirements.

###

#### This button is used to close the current calibration form that is open and return to the original form selection view.

### A picture containing text  Description automatically generated

#### This button is used to show/hide the revision history tab

## Appendix

### Conditioner based calibrations versus mV/V sensitivity calibrations.

#### Conditioner based calibrations utilize MTS controller electronics.

#### Conditioner based calibrations are performed with specific MTS controller electronics and a sensor file is created.

#### mV/V sensitivity calibrations are utilized for calibrations that do not require a calibration linked to the electronics.

#### mV/V sensitivity calibrations are performed with stand-alone transducers not directly linked or used with MTS controller electronics.

### Conditioner Model

#### The most common DUC to select is a 494.16 or 494.26.

#### The 494.21 DUC is typically used for multi-range Elastomer calibrations only.

### Conditioner Configuration (8-Wire vs 6-Wire vs 4-Wire)

#### What options are available to the user are calibration discipline specific (e.g. not every discipline will offer 4-Wire).

#### The 8-Wire configuration is the standard and most recommended configuration.

#### The 4-Wire configuration is typically used with AC-Mode transducers such as LVDTs.

### Options

#### Select a non-TEDS or TEDS option depending on what connector the transducer has or, in the case of Extensometers, if a TEDS dongle is required.

### Calibration Range Maximum

#### This is defined as the full scale value required for the calibration.

#### This can be but is not always the full scale capacity of the transducer.

### Preload Requirements

#### The intent of this requirement is to replicate, during calibration, how the transducer is fixtured on the machine.

# Associated Quality Records

|  |  |
| --- | --- |
| **Required Record** | **QMS Web Location** |
| Completed Calibration Plan | POND |

#

# Reference Forms / Templates / Documents

|  |  |
| --- | --- |
| **Form / Template / Document Title** | **QMS Web Location** |
| Calibration Plan Form | Calibration Plan QMS |

# Current Revision Training Requirements

|  |  |  |  |
| --- | --- | --- | --- |
| **LMS Course Number** | **Read &** **Test** | **Read &** **Acknowledge** | **Functions or groups that require this training** |
|  |  | X | Project Engineering |

# Revision History & Approval

|  |
| --- |
| **Revision History** |
| **Rev** | **Description of Change** | **Author** | **Effective Date** |
| B | Added POND to definition section. Added information to the “Considerations” section about how to properly fill out the WBS element field. Added information to the “Instructions” section about how to properly convert the completed form to PDF. Added information to the “Logic Buttons on Form” section about additional buttons added. | JMP |  |
| A | Implemented | JMP | 11/8/2021 |

|  |
| --- |
| **Required Approvers for Current Revision** |
| **Name**  | **Function** | **SharePoint Approval** |
| Dave Kreitlow | Calibration and Metrology Manager |  |