



MTS SYSTEMS CORPORATION

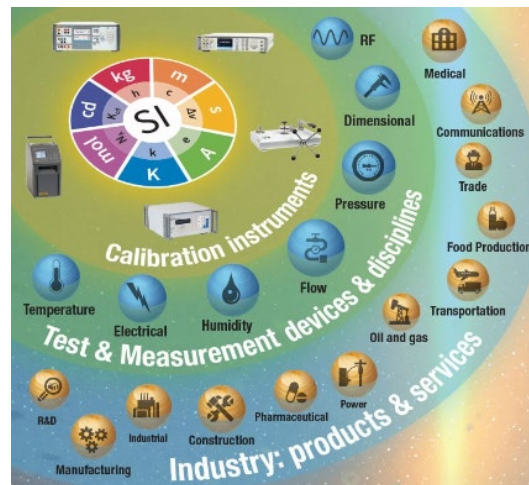


## Control, Recalibration and Escalation Process for Measurement and Test Equipment (M&TE)

be certain.

# Why do we Calibrate?

- » QMS MFG\_050 *Corporate Measurement and Test Equipment (M&TE) Asset Control and Identification*,
  - Clearly states the requirement to control M&TE.
  - If it measures it needs to be controlled with an MTS Metrology Asset Tag that reflects calibration status
    - Assessment is made by owner and Metrology to determine if calibration is needed
- » Why Calibrate?
  - Safety
  - Does the measurement really matter?
    - > Is data credibility and measurement traceability important?
    - > ISO/IEC 17025 requirement for those doing calibrations
    - > ISO 9001 requirement to have a documented procedure for calibrating all measuring devices



# Purpose of Metrology Control of M&TE



» Metrology Asset Control Tag- M&TE sticker that identifies whether calibration is needed.

» Calibration not required

- If the equipment is solely used for troubleshooting
- Measurement simply indicates the presence of something
- Not used for product evaluation or acceptance
- Does it really matter? Could it be off by 50%?

Such M&TE could include:

- Pressure gauge used to indicate that there is pressure
- Engineer caliper
- Power supply source

**MTS. Calibration Not Required**  
**Do Not Use for Product Testing**  
**20000**

» Periodic Verification Required

- Calibrated check standard is in place and process control methods are used

Such M&TE could include:

- Hardness Tester that uses certified hardness blocks throughout the range and is supported by procedure

**MTS. Periodic Verification Required**  
**Verify With Check Standard**  
**20000**

» One Time Verification

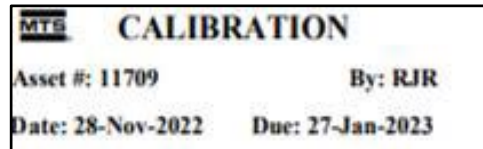
- Very low level of risk that anything will change after initial Verification

Examples include:

- Fixturing

**MTS. One Time Verification**  
**20000**

- » Ensure **active** M&TE utilized for the evaluation, manufacture, and/or test of MTS owned equipment, or manufactured products, is properly maintained and calibrated.
- » Ensures active M&TE is recalled.
  - Active M&TE will have a black on white sticker



- Inactive M&TE identification



- How often do we calibrate?
  - Calibration Intervals are based on risk level

**Risk Level = Likelihood and consequences of an out-of-tolerance**

Risk assessment matrix

		Likelihood				
		Very unlikely to happen	Unlikely to happen	Possibly could happen	Likely to happen	Very likely to happen
Impact	Catastrophic consequences	Moderate	Moderate	High	Critical	Critical
	Significant consequences	Low	Moderate	Moderate	High	Critical
	Moderate consequences	Low	Moderate	Moderate	Moderate	High
	Low consequences	Very Low	Low	Moderate	Moderate	Moderate
	Negligible consequences	Very Low	Very Low	Low	Low	Moderate

# Roles and Responsibilities (WI 604A Recalibration Process)



- Asset Owner
  - **Accountable-** Accountable for all M&TE used in assigned area of responsibility
    - Location, Calibration status, Appropriate use
  - **Action-** Ensures assets are returned for recalibration as scheduled
  - **Communication-**
    - Notifies the MTS M&CL when and why assets due for recalibration are unavailable.
    - Ensures temporary extensions of calibration interval are requested when appropriate.



- Manager or Business Unit Operations Manager of Asset Owner
  - Provides **oversight** and **ensures accountability** to process
  - **Doesn't get Overdue asset emails, ever**
  - Ensures that **all M&TE is controlled** with an MTS Metrology Asset number, per [QMS MFG 50, Corporate Measurement and Test Equipment \(M&TE\)- Asset Control and Identification](#).



- **Notification and scheduling calibration of assets:**
  - **Notification of calibrations due** is sent to owners and/or area Managers:
    - **Once a month** and will include all items due in the **next 6 weeks** (45 days).
    - **Weekly** for assets due in the next 1 week.
  - **On-site Calibration Due** list for on-site assets that **are due over the next 30 days**. On-site assets are a priority. Calibration Technician schedules and prioritizes on-site asset calibrations, minimizing production downtime and avoiding temporary extensions, unless necessary.
  - Return of M&TE will **be scheduled according to the calibration due date**



## ➤ M&TE Return Procedure

- **Returned to the Metrology and Calibration Lab** for recalibration on or before the calibration due date.
- M&TE return arrangements:
  - Upon receipt of the **45-day** Calibration Due notice, **arrangements are considered** to either deliver the asset to the M&CL or schedule an on-site calibration.
  - Upon receipt of the **1-week** Calibration Due Notice, assets are delivered to the M&CL within the 1-week window, ensuring that the asset does NOT become overdue for calibration. **This is LAST CALL!**
  - Upon receipt of the **Overdue Calibration Due** Notice, assets are **returned** to the M&CL **ASAP**.

# Current Assets Overdue- Weekly Notice



## Assets Overdue For calibration



Jaglall, DJ

To 🟡 Hirayama, Shuzo; 🟡 Uchiyama, Taka; 🟡 Niide, Takahiro; 🟡 Froseth, Conor; ⚪ Milbrett, Mark; ⚪ Villanova, Anthony; 🟢 Kottwitz, Mike; ⚪ Griffus, James; ⚪ Kiely, Connel; 🟢 Zachman, Stephen; 🟡 Mills, Justin; 🟡 Fischer, Brian; ⚪ Smith, Dean; 🟢 Gilomen, Mitchell; 🟢 Colburn, Daniel; 🟡 Enriquez, Enrique; ⚪ Jones, Michael; +2 others

Cc 🟢 Kreitlow, David; 🟢 Weyhing, Gregory; 🟡 Nolambur Ethiraj, Raj; ⚪ Muramatsu, Shinkichi; 🟡 Hager, Russell; 🟡 Lacin, Sinan; 🟢 Pawlicki, Justin; 🟡 Johnson, Kery; 🟢 Westermann, Marvin; 🟢 Schommer, Nick; 🟡 Wang, Yigang; ⚪ Balza, Brad; 🟢 Bowen, Robert; 🟢 Brodewolf, Douglas; 🟢 Sundberg, Daniel; 🟢 Bandy, Isaac

Overdue list.xls 50 KB	1 Week Overdue .xls 48 KB	2 week overdue list.xls 45 KB	3 week overdue.xls 42 KB
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Thank You,

*Darshan Jaglall*

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## Assets Overdue for Calibration Procedure

**If an asset, or satisfactory status update, has not been received by the calibration due date, the Calibration and Asset Coordinator, or Met/Team Administrator, will notify the business unit Manager and owner that the asset is overdue for recalibration by means of the Calibration Overdue Notice. Prompt action to deliver the asset to M&CL is expected.**

# Group Owner List and Escalation- Up 1 level/week



	A	B	C	D
1	<b>Group - Owner/Escalation List for M&amp;TE Calibration</b>			
2		Issue 1 Week Overdue List	Issue 2 Week Overdue List	Issue 3 Week or Greater Overdue List
3	<b>Group/Department</b>	<b>Owner/Supervisor</b>	<b>Owner's Manager or Supervisor</b>	<b>BU Ops Manager</b>
4	<b>A • G CELL</b>	Brad Balza	Charles Elliot	Raj Nolambur
5	<b>ACUMEN/LANDMARK/EMA/LEMA/CRANI</b>	Nick Schommer	Jamie Rau	Raj Nolambur
6	<b>ACTUATOR CELL</b>	Russell Hager	Jason Gibson	Raj Nolambur
7	<b>ACTUATOR ENGINEERING (Formerly HMF)</b>	Tyler Kuhlmann	Tyler Kuhlmann	Marv Westermann
8	<b>AERO</b>	Adam Law	Mitch Gilomen	Sylvia Nasla
9	<b>CALIBRATION LAB</b>	Dave Kreitlow	Dave Kreitlow	Raj Nolambur
10	<b>CS-SERVICE TOOLS</b>	Zach Daniel	Doug BrodWolf	Greg Weyhing
11	<b>CUSTOM ELECTRONIC ASSEMBLY</b>	Carl Van Dervoort	Russell Hager	Charles Elliot
12	<b>E2M (Rebuild)</b>	Jason Willet	Jeff Costello	Derek Landon
13	<b>EM</b>	Nick Schommer	Jamie Rau	Raj Nolambur
14	<b>EPS (Electric Power Systems)</b>	Bob Buffin	Isaac Bandy	Darragh Murphy
15	<b>ERF (Electronic Repair Facility)</b>	Freddy Silva	Jeff Costello	Derek Landon
16	<b>EXTENS MACHINE</b>	Brad Balza	Charles Elliot	Raj Nolambur
17	<b>EXTENSOMETER OP</b>	Russell Hager	Charles Elliot	Raj Nolambur
18	<b>GRV</b>	Mitch Gilomen	Mitch Gilomen	Sylvia Nasla
19	<b>HYD POWER UNITS- EP</b>	Ashlyn Steer	TBD	Jason Gibson
20	<b>MAINTENANCE</b>	Andrew Parent/Bruce Sense	Randy Stelten	Dennis Daley
21	<b>MANUFACTURING DEVELOPMENT</b>	Wes Marquette	Raj Nolambur	Raj Nolambur
22	<b>MECH ASSY</b>	Nick Schommer	Jamie Rau	Raj Nolambur
23	<b>METROLOGY</b>	Dave Kreitlow	Dave Kreitlow	Raj Nolambur
24	<b>MECHANICAL INSPECTION</b>	James Griffus	Justin Pawlicki	Raj Nolambur
25	<b>MODEL SHOP</b>	Andrew Roberson	Brad Balza	Charles Elliot
26	<b>MOTORSPORTS-E</b>	Chris Loechler	Isaac Bandy	Marv Westermann
27	<b>MOTORSPORTS-M</b>	Doug Stuyvenberg	Doug Stuyvenberg	Marv Westermann
28	<b>MACHINIST (MS-)</b>	Brad Balza	Charles Elliot	Raj Nolambur
29	<b>NA SERVICE EAST</b>	Doug BrodWolf	Greg Weyhing	Sylvia Nasla
30	<b>NA SERVICE GREAT LAKES</b>	Sinan Lacin	Greg Weyhing	Sylvia Nasla
31	<b>NA SERVICE SOUTH</b>	Jim Gilbert	Greg Weyhing	Sylvia Nasla
32	<b>NA SERVICE WEST</b>	Robert Bowen	Greg Weyhing	Sylvia Nasla
33	<b>MTD ENGINEERING</b>	Tyler Kuhlmann	Tyler Kuhlmann	Marv Westermann
34	<b>MTS CHECKOUT</b>	Nick Schommer	Jamie Rau	Raj Nolambur
35	<b>MTS-Mack</b>	Dean Smith	Yigang Wang	Brandon McDonald
36	<b>NCR</b>	John Davis	John Davis	Scott Shipley
37	<b>PAINT SHOP/PLASMA</b>	Dan Colburn	Jamie Rau	Raj Nolambur
38	<b>PPG</b>	Dean Smith	Yigang Wang	Brandon McDonald
39	<b>PPG-SW</b>	Jason Cordes	Brandon McDonald	Raj Nolambur
40	<b>QUALITY ENGINEERING</b>	Justin Pawlicki	Scott Luedke	Raj Nolambur
41	<b>R&amp;D ENGINEERING</b>	Bob Buffin	Isaac Bandy	Marv Westermann
42	<b>SERVICE R&amp;D</b>	Kevin Thurmes	Wessel Delpport	Greg Weyhing
43	<b>SHIPPING</b>	Keri Johnson	Keri Johnson	Raj Nolambur
44	<b>SLF (Standard Load Frames)</b>	Nick Schommer	Jamie Rau	Raj Nolambur
45	<b>SOFTWARE TEST</b>	Unknown	Jason Cordes	Brandon McDonald
46	<b>SPD</b>	Tyler Kuhlmann	Tyler Kuhlmann	Marv Westermann
47	<b>STANDARD ELECTRONICS</b>	Carl Van Dervoort	Russell Hager	Charles Elliot
48	<b>STOCK ROOM</b>	Nate Blanchard	Derek Landon	Raj Nolambur
49	<b>STRAIN GAGE LAB</b>	Russell Hager	Charles Elliot	Raj Nolambur
50	<b>SYSTEM SOFTWARE</b>	Jason Cordes	Brandon McDonald	Marv Westermann
51	<b>TECH SUPPORT/TRAINING</b>	Jeff Breece	Jeff Breece	Sylvia Nasla
52	<b>TOOL CRIB</b>	Nate Blanchard	Derek Landon	Raj Nolambur
53	<b>TRANSDUCER ENG</b>	Riley Rogotzke	David Chua	Marv Westermann
54	<b>VDD-TOMCZYK</b>	Tomczyk	Open	Marv Westermann

- » Who's backing up when someone is out
  - Provide a back-up name



- Transfer ownership by communicating to Metrology and Calibration Laboratory

## ➤ Use of assets beyond the calibration due date

❖ Use of assets beyond the calibration due date is not acceptable.



❖ If a conflict is foreseen, a calibration due date temporary extension, per the M&CL [WI 604B](#), *Calibration Intervals*, may be feasible.

## ➤ Keep on looking

➤ Bring it up during stand-ups

➤ If after a period of time, 1 month maximum, asset cannot be located, contact Calibration and Asset Coordinator and have asset status' as **Lost**.



» Drive to zero objectives!

# Lost Asset Report- Monthly Email



**From:** Jaglall, DJ <[darshan.jaglall@mts.com](mailto:darshan.jaglall@mts.com)>

**Sent:** Friday, June 30, 2023 8:47 AM

**To:** Roberson, Andrew <[andrew.roberson@mts.com](mailto:andrew.roberson@mts.com)>; Froseth, Conor <[conor.froseth@mts.com](mailto:conor.froseth@mts.com)>; Milbrett, Mark <[Mark.Milbrett@mts.com](mailto:Mark.Milbrett@mts.com)>; Mailloux, Timothy <[Tim.Mailloux@mts.com](mailto:Tim.Mailloux@mts.com)>; Daniel, Zach

**Cc:** Kreitlow, David <[Dave.Kreitlow@mts.com](mailto:Dave.Kreitlow@mts.com)>; Weyhing, Gregory <[greg.veyhing@mts.com](mailto:greg.veyhing@mts.com)>; Elliott, Charles <[charles.elliott@mts.com](mailto:charles.elliott@mts.com)>; Hager, Russell <[Russell.Hager@mts.com](mailto:Russell.Hager@mts.com)>; Schommer, Nick

**Subject:** Lost Asset List

All,

Please check the lost asset report, if any of the items on the list have been found please ring them to Metrology to be inspected, calibrated and or repaired.

Thank You,

*Darshan Jaglall*

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# Attachment- Lost assets for last 12 months



## Assets lost in the past year

Actuator Cell						
Asset #	Description	Manufacturer	ModelNumber	SerialNumber	Disposition	Disposition Date
27276	Pressure Transducer	MTS SYSTEMS CORPORATION	660.23A-02	324148	Lost	06-Jul-2022
21791	PRESSURE TRANSDUCER	MTS	660.22A-01	272646	Lost	26-Jul-2022
T1207	TORQUE WRENCH	SNAP-ON	QJR3250A	04910016189	Lost	23-Jun-2023
3 Asset for 'Actuator Cell'						
CS-SERVICE TOOLS						
Asset #	Description	Manufacturer	ModelNumber	SerialNumber	Disposition	Disposition Date
19963	DIGITAL MULTIMETER	FLUKE	189	NONE	Lost	06-Jan-2023
24578	Load Cell	TOVEY ENGINEERING	CS10M-5KN-B380	109182A	Lost	06-Jan-2023
24571	Load Cell	TOVEY ENGINEERING	CS10M-10KN-B380	113104A	Lost	06-Jan-2023
24581	Load Cell	TOVEY ENGINEERING	CS10M-2.5KN-B380	113262A	Lost	06-Jan-2023
23692	Load Cell	TOVEY ENGINEERING	CS10M-5KN-B380	113079A	Lost	06-Jan-2023
24572	Load Cell	TOVEY ENGINEERING	CS10M-10KN-B380	113105A	Lost	06-Jan-2023
16805	BRIDGE SIMULATOR	INTERFACE, INC	CX-0220-1	1328	Lost	06-Jan-2023
20280	BRIDGE SIMULATOR	INTERFACE, INC	CX-0440-1	1514	Lost	06-Jan-2023
16963	mV/V INDICATOR	INTERFACE, INC	9840	90000	Lost	06-Jan-2023
26929	TEMPERATURE & HUMIDITY METER	ROTRONIC	HL-20D	20403739	Lost	06-Feb-2023
24069	DENT SENSOR INTERFACE	MTS SYSTEMS CORPORATION	100-314-883	NONE	Lost	14-Apr-2023
24064	CURRENT PROBE	DENT	CT-R16-A4-U	06161637	Lost	14-Apr-2023
24046	CURRENT PROBE	DENT	CT-R16-A4-U	06161682	Lost	14-Apr-2023



# Interesting Fact...

- » Calibration can be traced back to ancient Egypt during the building of the pyramids.



- » The Royal Egyptian Cubit (a measuring device) was made of granite (master).
- » Wooden transfer standards were generated from the master for the construction workers to use.



- » These transfer standards were to be checked against the master at every new moon to ensure that they had not changed in size. The verification of the working cubit against the master was a calibration.
- » The month recall requirement was a calibration interval.

This process works much the same today, except for one significant difference.

*Failure by the Egyptian construction workers to perform the monthly calibration was punishable by death.*

**MTS program doesn't look so bad in that light!**

