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REV	DATE	CHANGE	AUTHOR	REVIEWED
00	170305	Initial release	BMW	SCB
01	180319	Update ref to other procedures, title change, burr chemistry added	PPP	KAL
02	180716	Clarified surface maximum allowable surface removal	BMW	KAL
03	190313	Updates and clarifications	SDP	PPP

MMTF001a – General Field Testing Procedure

1. MMT's Job Site Requirements

Time to complete material verification of 1 joint: 3-5 hours

Pipeline Preparation: Sandblasted pipe outer diameter to SSPC-SP5 (NACE #1) for 2 foot length and all-around circumference. Site excavation should allow at least 18 inches of clearance below pipeline. Work area should be dry.

Testing Completed: Hardness, Strength, and Ductility (HSD) Testing, longitudinal seam determination, metallographic microstructure grain analysis, chemical analysis through burr samples, thickness mapping for informational purposes only, and magnetic particle analysis for informational purposes only.

2. Requested Information

We ask that the customer provide us with the following information prior to field work:

- **Safety**: PPE and safety training requirements
- **Site**: Address including GPS location and accessibility
- **Asset info**: Pipeline diameter, nominal wall thickness, location, pipe joint naming convention, seam location from ILI tool run (if available), year of installation (if available), and material grade (if available).

3. Safety and Personnel Training Requirements

All MMT personnel have completed the following:

- **Safety:** OSHA 10 Hour Construction Safety and Drug and Alcohol Testing
- **Testing:** All personnel are familiar with all MMT Procedures
- **Staff Level:** Personnel are qualified in accordance with proper MMT staff level training

4. MMT Testing Procedures

The overall MMT standard testing procedure is outlined in the steps below. For MMT procedures listed in the following steps, the latest revision of the document at the time the work is performed shall be used.

1. Conduct initial site inspection and pipe documentation in accordance with MMTF007 – Ultrasonic Thickness Measurements Procedure and MMTF008 – Magnetic Particle Testing Procedure. This step includes

locating the seam or verifying that the pipe is seamless using MMTF010 – Longitudinal Seam Location Procedure.

2. Calibrate the HSD equipment in accordance with MMTF009 – HSD Calibration Procedure.
3. Locate two 4 inch by 6 inch test areas with least external corrosion and no pipe wall anomalies. If an electric-resistance-welded (ERW) seam is identified, one of the test areas shall be centered over the seam. If possible, test areas should be located at least 90 degrees from each other in the circumferential direction. Each test area must meet initial pre-surface preparation UT wall thickness requirements in accordance with MMTF002 – Surface Preparation Procedure. If requirements are not met, permission is required from the operator or appropriate representative to potentially exceed material removal standards.
4. For each test area, buff away at least 0.005 inches of the surface to remove the decarburization layer, and polish the surface to 2000 grit in accordance with MMTF002 – Surface Preparation Procedure.
5. Conduct base metal and weld HSD tests in accordance with the HSD Testing Procedure. For ERW joints, one HSD test is performed over the longitudinal seam (test time ~ 14 min) and three tests are used for the base metal away from the seam (test time ~ 7 min each). For all other pipe joints, two tests are performed in two base metal areas that were prepared for testing, for a total of four base metal tests.
6. Remove HSD grooves that remain on surface by buffing in accordance with MMTF002 – Surface Preparation Procedure. Confirm the total wall thickness removed does not exceed 10% of the pipe nominal wall thickness and does not fall below the minimum wall thickness standards identified in MMTF002 – Surface Preparation Procedure unless prior permission was granted by the operator or appropriate representative.
7. Extract material for chemistry in accordance with MMTF005 – General Procedure to take Metal Burr Samples for Chemistry of Pipelines.
8. Perform metallographic analysis of the base metal microstructure in accordance with MMTF003 – Metallographic Grain Structure Procedure.
9. For ERW pipe joints, image and document the apparent heat-affected-zone surrounding the longitudinal seam in accordance with MMTF006 – OD Seam Etch Procedure.