

Improper Filler Material causing Failed Hydrotest

MIC Quality Alert

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Title of Event:

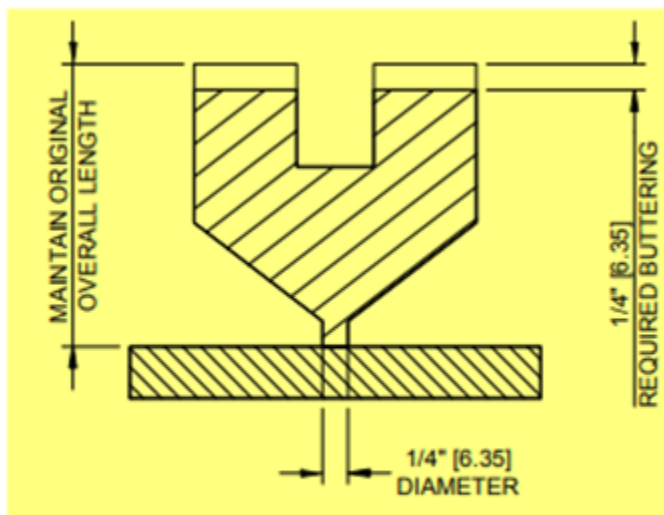
Steam Sample Nozzle welded with the improper filler material.

What Happened:

Prior to completing a weld to a piece of equipment, there were concerns over the material to be welded. A decision was made to inspect the material with a Positive Material Identification (PMI) process before selecting the welding procedure.

During pressuring for hydrostatic testing, the weld was discovered to have a leak. After further review, it was determined to have been welded with the incorrect filler metal.

Graphic/File 1:



NOTE #36
ILLUSTRATION

Graphic/File 2:

36) STEAM SAMPLE NOZZLE INSERTION DEPTH INTO THE PIPE IS CRITICAL. IN ORDER TO AVOID A DISSIMILAR FIELD WELD, THE UPPER FACE OF THE NOZZLE BOSS (NORMALLY MADE OF THE SAME MATERIAL AS THE STEAM PIPING) SHALL BE "BUTTERED" WITH A GTAW PROCESS USING NICKEL BASE (INCO 82 OR EQUAL FILLER METAL, MEETING AWS CLASSIFICATION ERNiCr-3, PER ASME SECTION II PART C, SFA 5.14) IN THE SHOP TO MATCH THE NOZZLE. SELLER MUST NOT CHANGE THE BOSS HEIGHT DUE TO ADDITION OF "BUTTERING" MATERIAL. THE FABRICATOR SHALL FIRST MACHINE THE BOSS TO ALLOW THE REQUIRED THICKNESS OF "BUTTERING," THEN MACHINE THE "BUTTERED" SURFACE FLAT TO RESTORE THE BOSS TO ITS ORIGINAL HEIGHT. WELD PROCESS SHALL BE DESCRIBED IN A WPS APPROVED BY BUYER.

Findings:

PMI incorrectly concluded the material was carbon steel and not overlaid with INCO 82 as per the drawing V17527-PIND-0001, therefore, the weld was made using 309 filler material and not ERNiCr-3 as per the supplied and approved weld procedure. After further investigation, it was determined that the test surface was prepped utilizing a tiger paw (sanding disk) saturated with carbon steel that when used to prep for the inspection left carbon steel material on the surface of the INCO 82 overlay. This condition masked the PMI gun's ability to properly identify the INCO 82 overlay that was detailed on the vendor drawings.

At the time the discussion was held to review the requirements for welding, the drawings detailing the material requirements were not available to the inspector or foreman, and those that were used did not have sufficient level of detail to show the requirements of the dissimilar metals. The drawing available in the field did not reference the General Notes drawings that showed the overlay of the dissimilar materials.

There was not a sufficient work package that included all applicable requirements, and there was no RFI submitted to clarify the process for joining these two materials. Work proceeded assuming the material identified by the PMI process was correct.

Site Solution / Immediate Solution:

The Steam Sample Nozzle and improper weld material was removed taking care not to remove the INCO 82 overlay from the face of the vendor provided fitting. Visual and Dye Penetrant (PT) testing of the prep was performed prior to welding utilizing the approved VOGT drawing and approved welding procedure. The final welds were visually examined by QC personnel and inspected with PT by 3rd party personnel prior to performing the hydrostatic test.

Corrective and/or Preventive Action:

Work packages are excellent tools to ensure we are identifying the requirements and communicating these to the field. Prior to the beginning of any new or critical installation, Work Packages must be reviewed by the responsible supervisor to determine if any questions are needed to be escalated to the responsible design engineer. The review will include verification of all drawings and/or associated work instructions to ensure they are available to all personnel involved in the work process. During installation, any concerns or questions arising from the provided drawings require a stop work by the supervisor or individual conducting the work until the proper technical authorities are contacted and any correspondence completed and documented to ensure the installation will meet the design requirements (e.g., RFI processes.)

If you have any questions, always exercise your stop work authority. In line with our Quality belief, always ensure you know your work and do it right. As supervisors, always empower your teams with as much information as possible to ensure their success. #Quality #PeopleMatter

CE&I Market Sector:

Industrial

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Business Process:

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Was a Document Created/Modified in Response to the Alert or Lesson Learned?:

No

Who to contact for additional details?:

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