

Metallurgy for Industries

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A Monthly News Letter

August, 2013

Volume 09

Third party inspection

A challenge to get material from open market.

There are many techniques and tests evolved to ensure that correct material is procured as per the required specification. Since 1973, TCR has witnessed the entire inspection scenario, its evolution and progress in India.

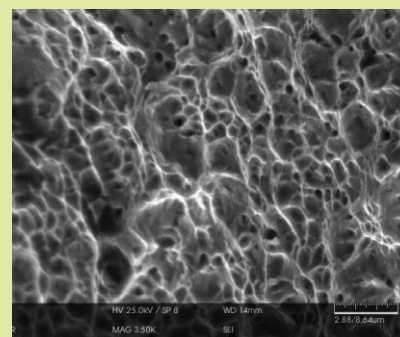
The aim of this article is to elicit awareness in industry that include end users, vendors and third party inspection agencies, by highlighting the common mistakes, which are often committed. The intention is to remove the anomaly between inspection and subsequent misrepresentation of samples submitted for testing, as part of a third party inspection activity.

The quality control of metals and metal fabrication is achieved by systematic approach of third party inspection as per guide lines of various national and international specification. The purpose of third party inspection is to ensure that the client gets the intended product by an objective appraisal. This procedure comprises of quality plans, stage wise inspection and final quality checks followed by final verification by third party agencies.

The blunders can occur due to either lack of knowledge or with commercial intonations. In general the metal trade industry is in the hands of business community who is oblivious of safety and its consequences. Following few incidents will highlight some of the malpractices deployed.

- 1) Witness of PMI and sampling of large plates – corners of plate are made of different material. So it is erroneous to carry out PMI at corners before sending samples from centre for testing.

Microstructure of the Month



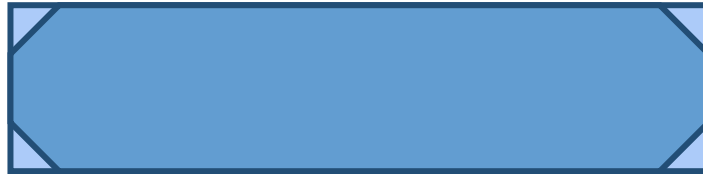
Magnification:3500X

MOC: A 312 TP 316L

Component:

Observation: SEM image shows ductile nature of fracture surface with elongated dimples in the direction of maximum stress.

Useful hints: Scanning Electron Microscopy is useful tool in Fractography to identify the subtle features that reveal the nature of the fracture. Fracture surface provides the necessary evidences that can trace back to the reason of failure and the state of the stress at time of failure.



- 2) Samples for the inspection sometimes are cut by gas /plasma cutting. They in hot condition are put into water whereby a change in material characteristics is brought about at the edges, and then inspector puts his stamp. It is more appropriate to stamp the sample prior to cutting and mark the edges that have been gas cut.
- 3) Procurement of pipe - Correct schedule of pipe which is welded is seen only at the ends, whereas central portion is of different schedule/thickness – UT thickness gauging is meant to establish the correct thickness of the pipe throughout the section.



- 4) Two pieces of pipe are welded to make a full length. Hydro test can find it out.
- 5) Often SS pipes/fittings are hammered at ends to meet the correct specification requirement of thickness. Ultrasonic thickness measurement is to be carried out - essentially for fittings at extrados.
- 6) In order to avoid the solution annealing of the entire plate/pipe or bar, the Austenitic stainless steel samples (300 series stainless steels) are solution annealed after stamping and before submitting them to laboratory. This can be figured out by careful visual examination of samples. Edges of samples appear somewhat different due to effect of heating and pickling. Assiduous examination of stamp will indicate surrounding darkness. It is recommended to mark the stamp with highlighter and side by place rubber stamp on cello tape. While procuring costly items their condition shall be verified by In situ metallography on actual material. This sort of microstructure examination will ensure the correct heat treated condition.
- 7) Used pipe with hole is stuffed with grease. Normal probe ultrasonic testing will not reveal the presence of hole. Angle probe testing along with careful visual examination after cleaning the surface can detect such irregularities.

Amidst such uncertainties/irregularities, third party inspection is indeed a challenging task

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