

EPC Industry

CASE STUDY

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Key Facts

Sector	EPC Industry
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Category	Investigation of NG Lateral at Hydrogen Plant
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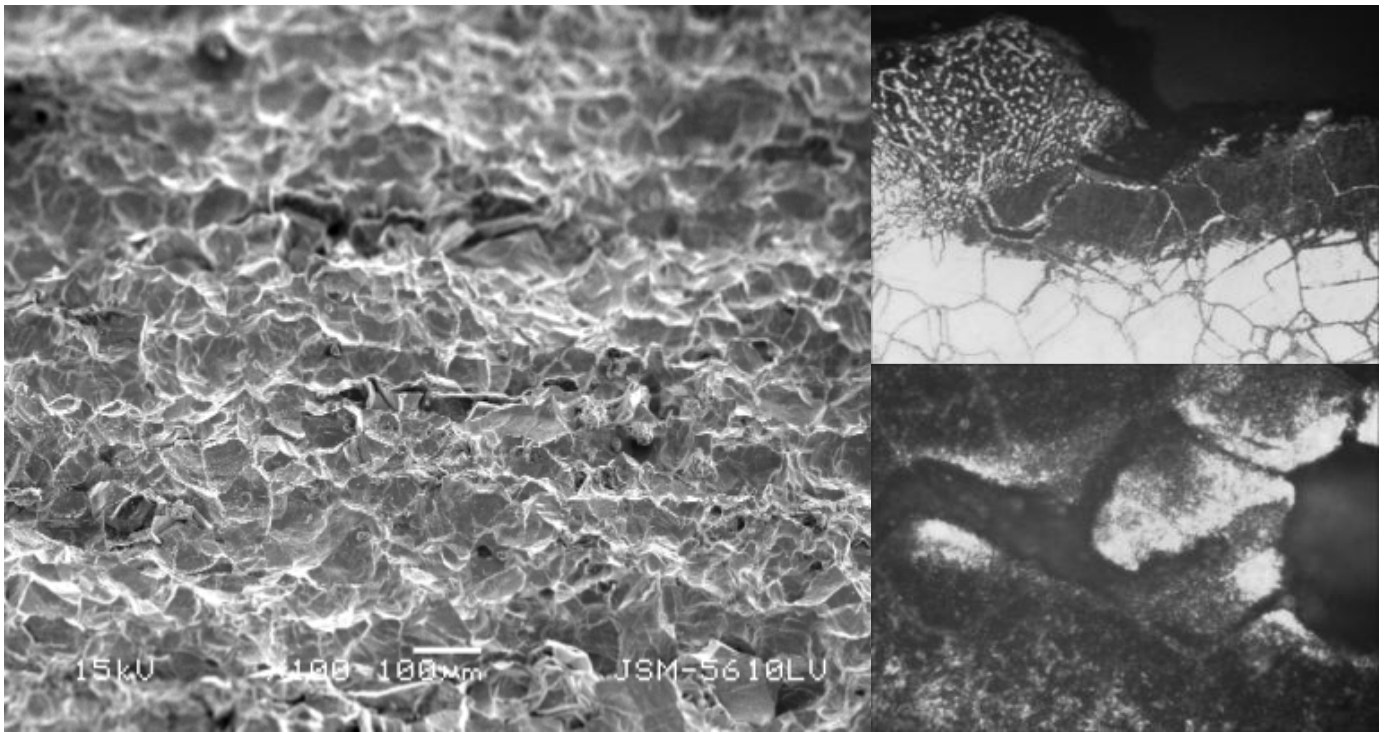
Problem

- A pipe-cap weld joint of SP-779, a steam NG lateral failed prematurely after 3 years of service in Hydrogen plant.
- The material of construction used for end cap is SA-403 WPW304H 6" sch 40S and for piping is SA-312 TP304H 6" x Sch. 40S and 4" x sch 40S.



Diagnosis

- The premature failure of the cap weld joint of the lateral is due to combined effect of Polythonic stress corrosion cracking and sigma phase formation in the dead zone of mixture.
- On ID surface of the cap which is the dead zone, steam has condensed along the previously accumulated and un-purged sulphur.



Solution/Recommendations

- Recommended to review the design to avoid steam saturation in dead zone and avoid carburization along with materials selection. Use of alloy steel or stabilized grade stainless steel may be explored.
- The source of sulphur ingress should be found out. Possibilities of sulphur carry over through feed or through steam, need careful chemical analysis.
- All SS structure in the steam circuit may be evaluated for Sigma phase formation by insitu metallography for taking correct judgment on timely replacement.

Contact Us

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