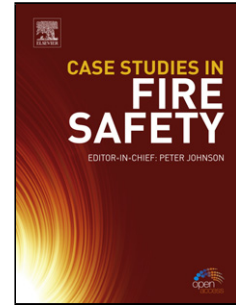


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# Identifying Phases in Protective Scale Formed During High Temperature Corrosion

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## Highlights for Corrosion Science paper

- Oxidized species from high temperature corrosion during refining were identified.
- Phase identification by micro-XRD retained spatial information and phase layout.
- Troilite content and continuous magnetite layers are key for proper passivation.
- Mössbauer complimented XRD data by identifying additional nanocrystalline phases.

## **ABSTRACT:**

Identification of the layout of phases produced on silicon-containing steel exposed to heavy cuts of crude oil during high temperature refining service provides an indication of the inherent passivation available from the overall system and is a gauge of long term reliability. By characterizing the corrosion scale on a pipe corroding at negligible rates, we have identified the

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