



Safety alert

29/11/2024

Scaffold crushed by thermally contracting pipelines

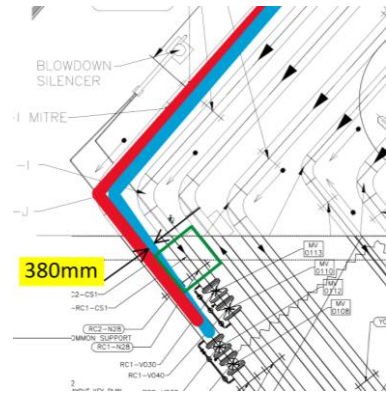
1. What happened?

A pre-shut scaffold was assembled between two steam pipelines (RC1 and RC2) in the steam field east of Te Mihi. The scaffold was constructed with a gap of approximately 300mm between the pipelines. However, this gap was insufficient to account for the total shrinkage when one of the pipelines was isolated early and allowed to cool. As a result, the lagging on both pipelines was damaged, a scaffold kick board snapped, and there was minor damage to a cable tray..



2. How did it happen?

When the Te Mihi IP Steam Pipelines are hot, they expand by approximately 185mm for every 100 meters of pipe. For YC1 and YC2, shown in the image to the left, the pipelines are anchored 220 meters to the northeast of the scaffold, depicted by the green box. When RC2 was isolated and allowed to cool, it shifted approximately 380mm, crushing the scaffold in the process. The shift in RC2s positions is indicated by the red and blue lines (red for the hot position and blue for the cold position).

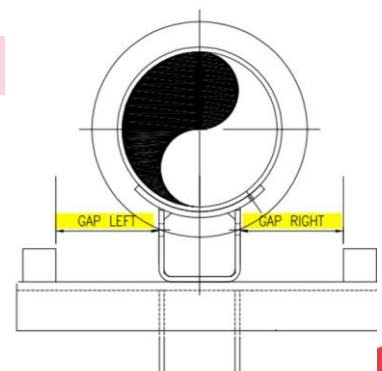


3. What did we learn?

When placing scaffolds around pipelines, it's important to account for pipeline movements. For every 100 meters of carbon steel pipeline, thermal expansion is approximately 120mm per 100 degrees difference. This increases to 170mm for 316 stainless steel or 1.2 meters for HDPE.

4. How can we improve?

A simple and efficient way to build scaffolds that accommodate pipeline movements is to take into account the pipe supports. By constructing the scaffold with a gap between it and the pipeline that matches the gap between the support shoe and the horizontal stop, you can ensure there is always sufficient space.



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