INTRODUCTION
Fitness for Service (FFS) is an engineering practice to assess the pressure equipment with damage or defect. FFS is often performed on in-service equipment to clearly understand the condition of the asset and determine a course of future actions. API 579/ASME FFS is an industry recognized code used for FFS assessment.

Metal loss resulted due to either corrosion, erosion and mechanical damage is common type of defect that often require FFS assessment. If the metal loss is locally concentrated, API 579 Part 5 for Local Metal Loss and API 579 Part 6 for Pitting Corrosion is used for the assessment.

ABSTRACT:
Two commonly assessed defects, Local Metal Loss (API 579 Part 5) and Pitting Corrosion (API 579 Part 6) are compared in this report. Pitting with higher grade and intensity or larger pit diameter are often classified as Local Metal Loss and maybe assessed using API 579 Part 5. Acceptance criteria of API 579 Part 5 and Part 6 Level 1 assessments are plotted and analyzed for their sensitivity and standard deviation for assessment on small and large NPS pipe.

John Doe
University of ABC
B.Sc Mechanical Engineering
john.doe@abcUni.ca

Jane Doe
University of ABC
B.Sc Chemical Engineering
jd2000@abcUni.ca

DISCUSSION
Standard deviation between Part 5 and Part 6 were calculated for all effective pitting diameters, as restricted in Part 6 by RSF = 0.90.

<table>
<thead>
<tr>
<th>NPS</th>
<th>Standard Deviation (σ)</th>
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<tbody>
<tr>
<td></td>
<td>Mean</td>
</tr>
<tr>
<td>NPS 4</td>
<td>17.6</td>
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<tr>
<td>NPS 24</td>
<td>26.9</td>
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</table>

Table 1. Standard Deviation between API 579 Part 5 and Part 6 Assessment of NPS 4 and NPS 24 pipe

For both NPS 4 and NPS 24, higher standard deviation is observed at the smaller longitudinal length of metal loss or pit diameter. The slope of Part 5 plot is steeper, reaching 90% of the maximum possible wall thickness at 10mm of the corrosion length for both NPS 4 and NPS 24 pipe. The slope of Part 5 plot reaches 90% of the maximum possible wall thickness at 300mm of the longitudinal defect length for NPS 24 pipe.

At the larger longitudinal length of metal loss or pit diameter, the standard deviation decreases, and both plots extents toward the minimum required wall thickness for the given MAWP. However, Part 5 plot of NPS 4 pipe does not reach 90% of the maximum possible wall thickness. The behaviour of the slope indicates that the pipes of smaller diameter are less tolerable to metal loss than pipes of larger diameter.

The average standard deviation is greater for the pipes of smaller NPS. Thus, when assessing pipe of small NPS, defect types must be explicitly distinguished to gain accurate assessment results.

CONCLUSIONS
The results conclude that Part 6 Level 1 Assessment for pitting corrosion yields more conservative result than Part 5 Level 1 Assessment for both small and larger NPS piping. High standard deviation between Part 5 and Part 6 Level 1 Assessment was observed for defects of smaller longitudinal dimension. The pipes of smaller NPS were found to have higher average standard deviation between Part 5 and Part 6 Assessment.

REFERENCES

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