

Executive Summary

This proposal is a follow on to the project titled "Effects of Tensile Loading on Remaining Strength of Corroded Casing". The initial phase of this project was experimentally validated using casing specimens with manufactured pit-like defects. The criterion developed during this project was based on the API 579 Level II Assessment criteria, which accounts for axial loading on the casing and to hoop stress from pressure within the casing. It also showed that ASME B31-G and RSTRENG predicted failure pressure adequately if the axial loading on the casing are tensile but less than the yield strength of the material.

This project will:

- Transfer the technology developed in the first phase of the study to Baker Hughes, so they can assess the accuracy of their high-res MFL tool.
- Further validate the methodology for predicting the remaining strength of corroded casing, using defects that would fail under normal downhole operating conditions.
- Compare depths and failure pressures from a new generation of MFL casing inspection tool with metal loss depths and actual failure pressures.

We view the continued validation of the evaluation criterion developed in the previous project, as the main deliverable of this project. The purpose of any experiments and/or analysis is primarily to develop and validate this criterion.

This project will be completed in four tasks. They are:

- Task 1. Planning and preparation. This task will focus on writing the test plan and test matrix. It will include obtaining input from the project sponsors for the test matrix and designing test specimens.
- Task 2. Technical transfer and MFL logging. This task will focus on transferring the results of the previous phase of this project to Baker Hughes. The test specimens will be sent to Baker Hughes for high resolution MFL logging.
- Task 2. Testing. This task will focus on carrying out the test matrix. It includes a pretest checkout before each test, conducting the test, and reducing the data from each test.
- Task 4. Reporting and project management. This task includes interaction with the project sponsors, monthly letter status updates, writing the final report, formalizing the criteria algorithm, putting the data disk together, two trips to GSTC technology transfer meetings to report on the results of the project, and one trip to a review meeting with the project cost-share partners.