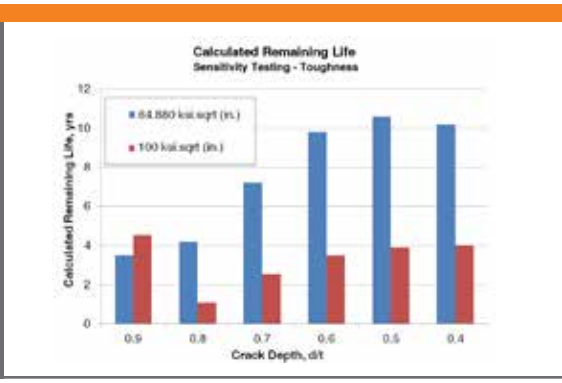
Quest Integrity™

CHALLENGE CONVENTION

PRESSURE CYCLE FATIGUE ANALYSIS

PACIFICA™



CAPABILITIES

Pacifica software performs pressure cycle fatigue analysis on crack flaws in pipelines based on the advanced API 579 Fracture Mechanics methodology. Fatigue growth analysis is performed using actual pressure data for real-time monitoring while hydraulic modeling determines true pressure loading at crack locations throughout the pipeline for accurate growth predictions. Pacifica also uses a database structure to store pressure data for future analysis.

With the support of Quest Integrity engineers, the analysis data guides prioritization of anomaly investigations, hydrotest and ILI re-inspection schedules, material property testing requirements and evaluation of the impact of operations on seam weld integrity.

BENEFITS

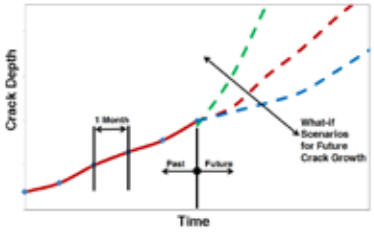
- Lowers operator risk
- Avoids unnecessary excavations
- Improves understanding of growth rates and material properties
- Provides more detailed analysis
- Evaluates operational changes

FEATURES

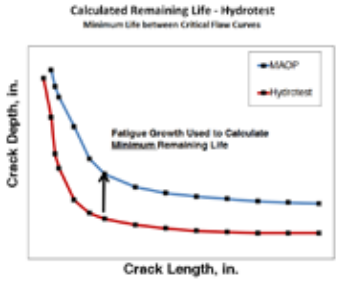
- Utilizes API 579 FAD diagram as well as traditional fracture models
- Calculates pressure cycling at flaw locations using a hydraulic model
- Performs remaining life analyses to determine re-inspection intervals
- Calibrates historical growth rates to current situation
- Applies to parametric analyses including: flaw size and location, toughness and material properties to account for data uncertainty
- Displays analysis results easily using built-in reporting templates

PIPELINE INTEGRITY ANALYSES

- Curves output for multiple real or hypothetical cracks
- Updates crack growth rate monthly, weekly or daily and evaluates multiple 'what if' operational scenarios

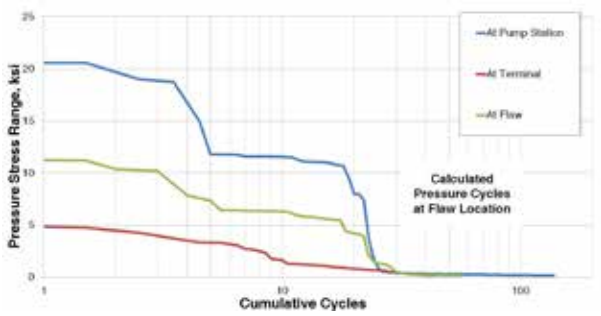


- Determines re-inspection intervals based on the shortest fatigue growth between critical flaw curves for complete pipeline systems



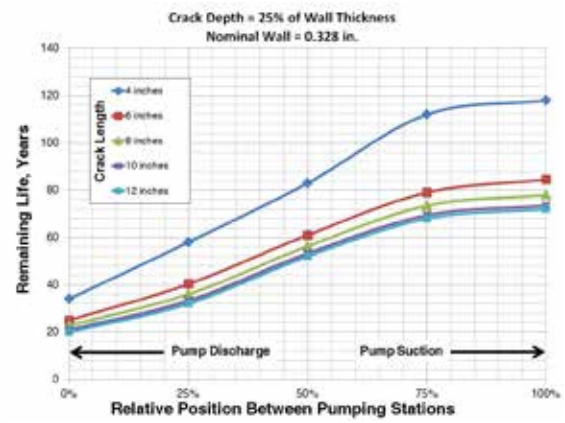
PRESSURE CYCLING AT FLAW LOCATIONS

- Exceedance diagram shows true pressure cycling at flaw locations



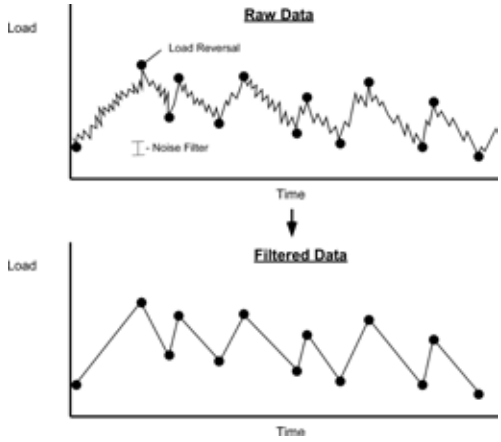
REMAINING LIFE VS. FLAW LOCATION

- Based on both crack size and the position in the pipeline



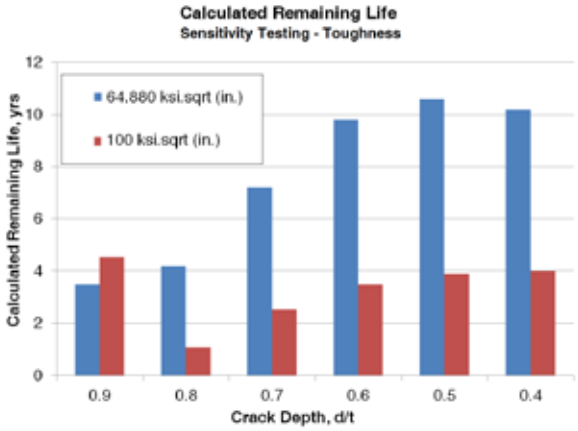
RAINFLOW CALCULATIONS

- Pre-processed pressure data to remove noise and identify true pressure cycles
- Analysis of cycles using the rainflow counting algorithm to determine the stress period of time



REMAINING LIFE ASSESSMENT

- Based on both annual pressure data and material properties



LICENSING AND HOSTING OPTIONS

Client Hosted

- Licenses for enterprise or per line
- Installs at the client site; pipeline information and SCADA data upload directly
- Performs analysis in real time
- Includes defined amount of support for installation

Quest Integrity Hosted

- Uploads client-provided pressure and flaw information
- Updates databases for future ILI runs or to evaluate operational conditions
- Completes remaining life estimation analysis and reporting by Quest Integrity engineers*

*Quest Integrity has extensive experience with fracture mechanics and pipeline metallurgy to provide industry leading fitness-for-service recommendations.