OVERVIEW
This two-day course is ideal for engineers who work in the pipeline industry and are faced with the technical and regulatory challenges associated with the seam weld crack threat. It is imperative for pipeline engineers to be armed with state-of-the-art knowledge and tools.

The instructor is Dr. Ted Anderson, who is a well-known expert in fracture mechanics with many years of experience in the oil & gas industry. The attendees will receive a grounding in fundamental concepts of fracture mechanics, but with a focus on practical applications of this technology to the pipeline crack threat.

INSTRUCTOR
Dr. Ted Anderson is the author of a best-selling book on fracture mechanics, which has been adopted as a required text in over 150 universities. He recently returned to independent consulting after serving as Senior VP of Technology Development for Team Inc. and the Chief Technology Officer for Quest Integrity. He founded a consulting and software company in 1995, which was acquired by Quest Integrity in 2007. He holds a Ph.D. in Metallurgy from the Colorado School of Mines.

COURSE OUTLINE
• Introduction and Overview
  o Cracks, notches and metal loss.
  o Driving force versus resistance (toughness).
• Linear Elastic Fracture Mechanics (LEFM)
  o Stress intensity factor (K)
  o Limitations of LEFM
• Elastic-Plastic Fracture Mechanics
  o Crack tip opening displacement (CTOD)
  o J-Integral
  o Fracture toughness testing.
  o Relationship between Charpy energy and fracture toughness.
• Pipeline Fracture Models
  o Log-Secant
  o CorLAS
  o API 579 failure assessment diagram (FAD)
  o PRCI MAT-8
  o Strengths and weaknesses of various models.
• Pressure Cycle Fatigue Analysis
  o The Paris equation.
  o Rainflow cycle counting
  o Equivalent cycles and the Cyclic Index
  o Computing re-assessment intervals based on hydrotest results or ILI data.
• Special Topics
  o Probabilistic analysis.
  o Optimizing hydrostatic test pressures.
• In-Class Exercises with Excel VBA Application
  o Burst pressure calculations
  o Rainflow analysis
  o Pressure cycle fatigue analysis

COURSE MATERIALS
All attendees will receive the following items:
• PDF files containing the PowerPoint slides.
• An Excel-VBA application that performs burst pressure calculations, rainflow analysis, and pressure cycle fatigue analysis.

VENUE AND LOGISTICS
This event will be held at the offices of Dynamic Risk USA, which is located at 10001 Woodloch Forest Drive, The Woodlands, Texas. This location is 20 miles north of Houston Intercontinental Airport. Class will begin at 8 am and will end at approximately 4 pm on each day. Lunch will be provided on both days.

COST
The total cost for the two-day event is $1,695 per person. Members of Young Pipeline Professionals (YPP) will receive a $200 discount.

REGISTRATION
To register for this event, or if you have questions, email us at Admin@FractureMechanics.com. Please indicate whether you will be paying by credit card or by company purchase order. If the former, you will receive an email from Square with a link to a secure web page, where you can enter your credit card info.