

WELLBORE TUBULARS: RELIABILITY BASED DESIGN & ASSESSMENT

APPROACH AND BENEFITS

Reliability based design and assessment (RBDA) methods are used to make design and operational decisions that meet specified target reliability levels. The benefits of these methods include:

- High, consistent and demonstrable safety levels;
- Integration of design, construction and operational decisions to reach optimal life-cycle cost solutions;
- Identification of key parameters that influence the system reliability; and
- Ability to address unconventional and HPHT well designs using premium connections and high strength and/or high corrosion resistant materials.



METHODOLOGIES AND STANDARDS

C-FER previously pioneered the development and application of a RBDA methodology for oil and gas pipelines. More recently, we have been adapting the RBDA methodology to well design, installation and operation to facilitate use by operating companies to ensure the integrity of downhole tubulars and completion components that may be subjected to severe loading and/or environmental conditions.

APPLICATIONS

- Design and construction of complex wells, especially those involving severe loading conditions and high failure consequences;
- Developing plans to deal with changes that occur in practice relative to original design inputs or assumptions;
- Establishing product design and QA/QC requirements to meet performance reliability targets; and
- Identifying monitoring and inspection requirements for effective integrity management.

Finite element analysis of a premium connection

