API SC 16
Issue with UOE/JCOE Pipe for Marine Drilling Risers

It has been recently been brought to SC5’s attention via BP that the API TR 5C3 collapse equations are unconservative for line pipe manufactured by the UOE or JCOE process (cold expanded pipe as per API 5L). The amount of under prediction on the collapse performance rating is 20 – 25%. Reference Work Item 2416 in SC5.
Documents in Play

**API TR 5C3** – Technical Report on Equations and Calculations or Casing, Tubing, and Line Pipe Used as Casing or Tubing; and Performance Properties Tables for Casing and Tubing

**API 5CT** – Specification for Casing and Tubing

**API 5L** – Specification for Line Pipe

**API 16F** – Marine Drilling Riser Equipment

**API 16Q** – Design, Selection, Operation and Maintenance of Marine Drilling Riser Systems


**DNVGL-ST-F101** – Submarine Pipeline Systems
UOE / JCOE Pipe

- Line pipe which has been formed into a “U” then made round (“O”) then cold expanded (“E”) with no heat treatment. JCOE rolls the ends into a “J” first then “C” then “O” then “E”.

- It has been determined that the collapse equations in API TR 5C3 which API 16Q points to for collapse equations are 20 – 25% unconservative for typical marine drilling risers D/t ratios.
83 collapse tests of UOE

- Predominantly 65 and 70 ksi specified minimum yield strength
- Excludes heat treated or coated pipe

Ref: Craig Stewart (BP)
Path Forward

- API TR 5C3 will not take on the multi-year effort to develop new collapse equations for UOE/JCOE pipe and will add an addendum to TR 5C3 stating that if UOE/JCOE pipe (cold expanded pipe as per API 5L) is being used that the user should go to API RP 1111 or DNV-OS-F101 for collapse performance properties.