



## Fall 2020, December Edition: Newsletter 03

### Localized Pitting Corrosion Model for ICDA Projects



Internal Corrosion Direct Assessment (ICDA) process is used to assess internal corrosion characteristics of non-piggable pipelines. The ICDA involves four steps; in Step 2, models are used to predict locations of water accumulation and internal corrosion rates.

Analysis of 5,000 internal corrosion failures of carbon steel pipelines has indicated that localized pitting is the primary mode of failure. Seventy five (75) years of field data has indicated that there is NO correlation between pitting corrosion rate and general corrosion rate. Therefore, internal corrosion models should predict localized pitting corrosion rate. Models that convert general corrosion rate to pitting corrosion rate will make the oil and gas pipeline owners and operators to take wrong decisions, and they should be avoided.

Integrated Flow, Internal Localized, MIC, and Solids (iFILMS<sup>R</sup>) software - developed based on analysis of 25 years of field data, 4 years of field tests, and 13 years of laboratory testing - predicts localized pitting corrosion rates of carbon steels both in sweet and sour environments. iFILMS<sup>R</sup> is being used by over 30 companies in Canada, Ecuador, India, Saudi Arabia, and The USA.

## Top Influencer of This Newsletter:

### Harvey Hack

#### My Story

I started my career doing marine corrosion research, electrochemistry and failure analysis in the Marine Corrosion Branch of the Naval Surface Warfare Center. After 25 years there they were moving so I got my current job at Northrop Grumman Undersea Systems, where I apply the corrosion knowledge that I gained while working for the Navy to Northrop Grumman-designed underwater hardware. I am now a Northrop Grumman Fellow, the highest technical position in the company.



#### My Style

I prefer to speak from a position of knowledge and will freely acknowledge when I don't know the answer. It is important to thank people and to openly admit mistakes. Honesty and friendliness define my style.

#### Pinnacle Moment

My pinnacle moment was at a NACE International conference in Salt Lake City where I presented the plenary lecture, received the T. J. Hull Award, and was selected to become President of NACE all in the same week. My feet never touched the ground for the entire week.

#### Greatest Contribution

I have no single greatest contribution. The body of research that I created and the advice that I have given define my greatest contributions.

#### Advice to Industry

Write a materials selection and corrosion control plan early in the lifecycle of any project and promulgate it to everyone involved with the project.