FIGURE 3. Software risk access report.

CHRISTOPHE BAETE is manager corrosion engineering at Elsyca nv, Wijgmaal, Belgium, email: info@elsyca.com. He is a subject matter expert in modeling and simulations of corrosion and CP, with 25+ years of experience in oil and gas, civil infrastructure, and research. He is a coauthor of AMPP 2022 paper no. 17962, presented in San Antonio, Texas, USA. He is a member of AMPP.

PAUL MURRAY C.E.T. is a corrosion/integrity advisor at Embridge Operational Services Canada Inc., Edmonton, Alberta, Canada. He has seven years of CP operating experience, and has a background in geographic information systems. He is a member of AMPP. _MP_

Monitoring and Risk-Based Inspection Strategies

Mechanistic models support pipeline operators in the decision-making process with respect to corrosion assessment and prevention. Pipeline integrity management requires corrosion growth rate calculations that currently must be derived from consecutive external corrosion direct assessments and ILI. The conventional approach is based on indirect measurements (potentials) and post-mortem (excavations, feature mapping) assessments limiting the operator's capabilities for proactive maintenance in a most cost-effective and timely way. Enbridge Pipeline Inc. has initiated an integrated external corrosion management program supported by mechanistic models. In a first step the as-is CP level and corrosion rate are calculated based on the latest survey data. Hot spots in the pipeline network are identified, which lead to a first intervention. This can be in the form of additional field inspections for model validation or the implementation of countermeasures that are elaborated in the model. Secondly, historical survey data are utilized to rerun the models and compute the seasonal (environmental) and system variations. For each simulation, the corrosion rate and metal loss are obtained. The time interval between the field data is multiplied by the corrosion rate and accumulated metal loss or corrosion growth rate is obtained. Based on the variations in corrosion rates, a more intelligent integrated inspection approach is obtained.

Disclaimer

Any information or data pertaining to Enbridge Employee Services Canada Inc., or its affiliates, contained in this article was provided to the authors with the express permission of Enbridge Employee Services Canada Inc., or its affiliates. However, this article is the work and opinion of the authors and is not to be interpreted as Enbridge Employee Services Canada Inc., or its affiliates' position or procedure regarding matters referred to in this article. Enbridge Employee Services Canada Inc. and its affiliates and their respective employees, officers, director, and agents shall not be liable for any claims for loss, damage, or costs of any kind whatsoever, arising from the errors, inaccuracies, or incompleteness of the information and data contained in this article or for any loss, damage, or costs that may arise from the use or interpretation of this article.