Integrated Safe Field Monitoring Solution

Author block: M.A. Alghamdi, Saudi Aramco

Abstract

Objectives/Scope: Having massive scattered producing field resulted in operating and maintaining challenges. Thus, introduction of Integrated Field Monitoring solutions based on digital smart model between hybrid corrosion statistical model and wireless pressure transmitters will enhance process safety.

Methods, Procedures, Process: Hybrid corrosion statistical model is using various advanced methods of regression analysis that attempts to identify the risk locations along the pipeline based on mechanistic corrosion modeling, hydraulic simulation, water wetting model, pre-developed risk matrix and operations data history which revealed from the wells monthly testing. Also, the model provides different level of risk categories within the pipe segments that can afford focusing criteria to perform the required inspection. Data is been collected periodically to update risk classification where the module reached to confidence level of almost 80% through field validation stage Furthermore, the module have been integrated with pressure transmitters in the incoming lines by capitalizing on the facilities wireless infrastructure in order to develop the integrated field monitoring solution. This new solution which has been launched will provide the field operations and key personnel with online monitoring mechanism which will be able to detects any abnormality beyond the desired operating pressure.

Results, Observations, Conclusions: This innovative solution capable to predict the growth of the corrosion which will have significant positive impact on our environment by preventing potential leaks leading to process safety events as well as production loss. Moreover, it will help forecasting the inspection requirements while optimizing the scope magnitude. In addition, this solution does not only afford safety and environmental controls but also by optimizing test holes requirements, resulting in significant cost avoidances.

Novel/Additive Information: .