39f "Risk Based Administration for Gas Processing Plants through the Implementation of a Risk Based Inspection Program"

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With the scope of implementing a Risk Management Program, that allows the plant owner to keep an acceptable control of the security level during the operation of the facility, a study was made to be able to evaluate the level of risk of each fixed equipment (pipeline circuits, tanks, heat exchangers, columns, pressure vessels, etc.) that make up a Process Gas Facility. The risk asessment was made using as a reference the methodology described in American Petroleum Institute- RP 580 in combination with the methodology developed by the Corporación Mexicana de Investigación en Materiales, SA de CV - COMIMSA. This methodology consists of the calculation of the frequence of failure of each equipment, like a direct function of the damage mechanisms that can attack each equipment. On the other side of the equation, the economic consequences were evaluated in terms of personnel damage due to fire, explosion and toxicity, environmental damage and production losses. Each equipment was ranked on the basis of its level of financial risk in $/year. The risk asessment and the Inspection Plan evaluation were made using the software HARMI (Tool for Risk Analisys, Maintenance and Inspection), developed by COMIMSA. Applying a traditional inspection plan, a value for the financial risk will be $ 4'242,976.55 per year. Applying the Risk Based Plan, as a result of the application of the proposed methodology , values for the financial risk of $ 967.377,38 per year are expected. Therefore the cost-risk benefit is considered of around 77% in terms of the increase in the security due to the risk reduction. They were identified like failure mechanisms probable to occur given the conditions of the installation, Thinning or Internal Corrosion, External Damage, Corrosion Under Isolation and Stress Corrosion Cracking. The new frequencies of inspection, are defined with a frewuency of 1 to 5 years. Compared with the traditional period of every 3 years. The framework of this paper, is to show the advantages of the implementation of risk analysis techniques, in benefit of the security of the facilities.