Postgraduate Certificate in Pipeline Integrity Management

Pipeline Failure Analysis and Investigation

Abnormal Pipeline Behavior (APB): Any deviation from the normal operating conditions of a pipeline, such as a pressure drop, temperature change, or leak, which could indicate a potential failure.

Corrosion: The deterioration of a pipe's wall due to chemical reactions with its environment, which can lead to leaks and failures. There are two main types: uniform corrosion, which affects the entire pipe uniformly, and localized corrosion, which affects specific areas of the pipe.

Direct Assessment (DA): A method used to evaluate the integrity of a pipeline by directly examining the pipe and its surrounding environment. It includes In-Line Inspection (ILI) and Direct Examination (DE).

Direct Examination (DE): A type of Direct Assessment (DA) that involves physically exposing a section of the pipeline and directly examining it for damage or corrosion.

Engineering Critical Assessment (ECA): A method used to evaluate the integrity of a pipeline by assessing the remaining strength of a damaged or corroded section of the pipe.

Excavation: The process of digging up a section of a pipeline for the purpose of inspection, maintenance, or repair.

Failure: The inability of a pipeline to perform its intended function, usually due to damage, corrosion, or other forms of degradation.

Failure Analysis: The process of determining the cause of a pipeline failure, which includes identifying the type and extent of damage, determining the underlying mechanisms, and evaluating the effectiveness of any previous repairs.

Hydrostatic Test: A test used to evaluate the integrity of a pipeline by filling it with water and applying pressure to detect leaks or other forms of damage.

Integrity Management Program (IMP): A comprehensive plan for ensuring the safe and reliable operation of a pipeline, which includes regular inspections, maintenance, and repairs.

In-Line Inspection (ILI): A type of Direct Assessment (DA) that involves using specialized equipment to inspect the inside of a pipeline for damage or corrosion.

Leak Detection: The process of identifying and locating leaks in a pipeline, which can be done through various methods such as pressure drop analysis, acoustic detection, and vapor sensing.

Material Verification: The process of confirming that the materials used in a pipeline meet the required specifications and standards.

Maximum Allowable Operating Pressure (MAOP): The maximum pressure at which a pipeline can operate without posing a risk to public safety or the environment.

Pipeline Integrity Management System (PIMS): A system used to manage the integrity of a pipeline, which includes data management, risk assessment, and maintenance planning.

Preventive Maintenance: Regular maintenance activities aimed at preventing damage or degradation to a pipeline.

Repair: The process of fixing a damaged or corroded section of a pipeline, which can include welding, coating, or replacing the affected section.

Risk Assessment: The process of evaluating the likelihood and consequences of a pipeline failure, which is used to prioritize maintenance and repair activities.

Smart Pig: A device used in In-Line Inspection (ILI) to detect and measure various forms of damage or corrosion in a pipeline.

Stress Corrosion Cracking (SCC): A type of corrosion that occurs when a pipeline is subjected to both tensile stress and a corrosive environment, leading to the formation of cracks.

Threat Assessment: The process of identifying and evaluating potential threats to a pipeline, such as excavation damage or third-party interference.

Verification: The process of confirming that a pipeline meets the required safety and operational standards, which can include inspections, tests, and audits.