Nuclear Power Plant Buried and Underground Piping Systems

- Integrated Solution Set Addressing the Industry Initiative on Buried Piping Integrity and the Guideline for the Management of Underground Piping and Tank Integrity NEI 09-14 (Rev 1)

- Direct Assessment Ultrasonic Based NDE Technology

- LifeQuest™ Piping Fitness-for-Service Software Solution
Nuclear Power Plant Piping Systems

HYDRA™ INTELLIGENT PIGGING TECHNOLOGY

Features & Capabilities

Inspects 100% of internal and external pipe surfaces
- Bi-directionality allows for launch/retrieval from same location
- 48-240 ultrasonic transducers ensure 100% inspection coverage
- 3” – 16” diameter piping
- Inspects piping from a few feet long to several miles in length
- Easily navigates:
  - Fittings (e.g. tees, wyes)
  - Short radius bends (e.g. 45°, 90°, 180°)
  - Valves (e.g. ball, gate and others which do not obstruct center bore of pipe)
  - Branched connections

Benefits

Ensure piping integrity
- Identify degradation before radioactive materials are released into the environment
- Maintain public and regulatory confidence

Satisfy NEI 09-14 (Rev 1) inspection requirements
- Determine condition assessment of buried piping containing radioactive material by June 30, 2013
- Determine condition assessment of underground piping containing radioactive material by June 30, 2014
- Determine condition assessment of non-safety related piping

Maximize condition assessment of internal and external piping surfaces
- Full volumetric ultrasonic inspection approach supports ‘Reasonable Assurance’ initiative requirements
- Optimize aging management program for license renewal in compliance with GALL AMP XI.M41 requirements

Minimize operational and safety risk
- Identify areas of degradation to ensure precise excavation locations and significantly reduce risk to external pipe coatings, the pipe itself and adjacent piping
- Inspect the entire pipe length faster and more accurately than with other methodologies

Cost effective
- Cost effective in comparison to alternatives
- Localized excavations can cost $100K - +$1MM, depending upon location within the facility

Foreign Material Exclusion

Foreign Material Exclusion (FME) is an important factor in the nuclear industry, thus Quest Integrity has spent considerable time ensuring FME considerations are included in our tool designs.

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Applications

Buried or inaccessible piping in nuclear power facilities
- Service water
- Condensate
- Fire protection
- Diesel fuel oil
- Potable water
- Floor and equipment drains
- Waste water piping
- Auxiliary/emergency piping
- Hydrogen supply piping
- Safety related piping
- Not run-to-failure piping
- Radioactive piping and environmentally sensitive piping
- Lube oil
- Raw water
- Chemical
- Gas
- Other piping systems

Solutions

Detection and sizing of:
- Corrosion
- Corrosion under insulation (CUI)
- Erosion
- Soil environment corrosion due to coating failure
- Pitting
- Mechanical wear
- Deformation (e.g. dents, ovality, bulging, swelling)

Fitness-for-service per ASME FFS-1 / API-579 standards
- LifeQuest software applications focused on each asset type
- Calculates corrosion rates
- Utilizes 100% of HYDRA inspection data
- Provides future inspection frequency recommendations
We are a global leader in the development and delivery of asset integrity and reliability management services and solutions for our clients. Our solutions consist of technology-enabled, advanced inspection and engineering assessment services and products that help companies in the refining and chemical, pipeline, syngas and power industries reduce operational and safety risks, improve operational planning and increase profitability. Quest Integrity Group, a Team Industrial Services company, is built on a foundation of leading edge science and technology that has innovated and shaped industries for over forty years.

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