

## VISUAL NDT (CCTV, LASER & LIDAR)

### Aging Infrastructure Challenges

- Detecting where leaks and problem areas are occurring
- Pipelines may have unknown structural or hydraulic deterioration that negatively impacts pipeline operations
- Increasing customer and community expectations for service continuity and environmental stewardship

### Service Solution Overview

PICA offers high definition (HD) CCTV, Laser and LiDAR visual inspection tools to document profile, feature and deformation defects that could be leading indicators of potential pipeline integrity issues for the pipeline as a whole. Visual inspection can be a stand alone service or combined with Advanced NDT (RFT) and Standard NDT (NFT) inspection services.



### Proactive Asset Management

- Save money with targeted repairs versus full replacement
- Identification of locations where there is a high probability of corrosion and potential blockages that impact flow
- Avoid negative consequences with customers and communities

PICA's visual inspection tools can be deployed in de-watered/drained and cleaned:

- Cast iron pipe
- Ductile iron pipe
- Steel pipe
- Reinforced Concrete pipe (RCP)
- Reinforced concrete cylinder pipe (RCCP) or Bar-wrapped pipe (BWP)
- Prestressed concrete cylinder pipe (PCCP)
- AC and plastic pipe

Pipeline service applications include:

- Water
- Wastewater
- Raw water
- Oil & Gas



## HD CCTV

- Provides a detailed mapping of the internal condition of pipelines, including missing liner (mid-span and at joints), cracked liner, joint condition, past repairs, tie-ins and internal deposits
- Full hemispherical imaging with optional 360° capability, up to 18 megapixels, for comprehensive high-resolution imaging. Features and defects are labeled after the inspection using specialized software
- Video files with pan, tilt and zoom (PTZ) capability enable the user to virtually look around inside the pipe

## Laser

- Delivers accurate information about the internal profile (ovality) of a pipeline
- Verifies liner condition, identifies internal corrosion pitting and measures dents and stress-related deformation
- Projects a red laser ring on the interior wall of the pipe. Measurements are recorded, interpreted by specialized software and a measurement report is generated

## LiDAR

- Produces accurate three-dimensional information of the pipe interior
- Documents linear integrity when numerous lining cracks and/or spalling of cement mortar liner are present
- PICA's LiDAR system uses Laser Triangulation Ranging and collects 4,000 data points per second

## SERVICE & DEPLOYMENT OPTIONS

HD CCTV, Laser and LiDAR are used to inspect the interior of dewatered (out-of-service) pipelines of any material. Select visual inspection tools can be deployed in pipes with inner diameters down to 6 inches, and other service solutions are available for sizes up 108 inches (12.7 cm to 274.3 cm). Visual inspection tools can be used on their own but are often used in combination with Standard NDT (NFT) and Advanced NDT (RFT) to validate inspection results and to document current pipeline conditions that can later be compared to future inspection results and observations.



Deployment options and tool types include:

- Tethered/winched
- Crawler mounted
- Skid-mounted
- Standard NDT tool mounted
- Advanced NDT tool mounted