

PIPELINE INTERNATIONAL SERVICES

CALTROP offers a broad range of consulting, engineering, inspection and testing services focused specifically on pipelines. CALTROP provides comprehensive services to meet regulatory, insurance, industry and environmental protection requirements. CALTROP has proven consulting experience providing advice for risk management, best industry practices and governmental regulation compliance mandates. Our engineers and inspectors have a solid reputation for providing accurate and state-of-the-art materials integrity solutions for the pipeline industry. We are knowledgeable of the latest standards and regulations, ensuring a proactive approach to compliance. We assist utilities and operators in both Construction Supervision and In-service Evaluations in support of mechanical integrity and maintenance programs for both transmission and distribution lines, in addition to supporting the necessities of industrial facility piping systems.

CONSTRUCTION SUPERVISION

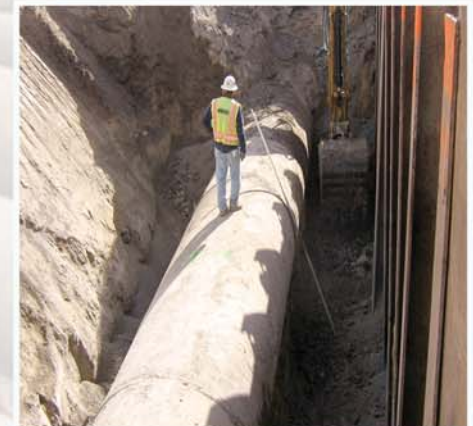
CALTROP's international construction supervision services include third party quality assurance activities for welding inspection, Nondestructive Testing (NDT), materials engineering and construction management during new installations and repair or replacement activities. Our staff includes experts with extensive experience in confirming adherence to welding procedures and compliance with approved inspection and test plans for the pipeline industry. Our engineers and inspectors have extensive experience evaluating the integrity of pipelines throughout all stages and life cycles, including design, fabrication, installation, maintenance and repair. Our international construction inspection, engineering and consulting services for the pipeline industry include:

- Fabrication shop inspections for weld quality and dimensional verifications
- Materials engineering for selection and substitution recommendations
- Verification of adherence to approved procedures during installations
- Construction management and supervision of pipeline installations
- Technical audits of construction projects and repair operations
- Weld quality verification through NDT
- Weld procedure preparation and implementation
- Repair procedure development and verification

CALTROP®

IN-SERVICE EVALUATIONS

CALTROP's International Pipeline Services Group provides specialized inspection techniques and technologies for a full range of buried and above ground pipeline systems. CALTROP's engineering experts present cost-effective solutions to critical pipeline maintenance and repair issues. CALTROP's life assessment services answer fundamental questions regarding equipment longevity that allow proactive repair and replacement planning. Our International Pipeline Services Group supplies pipeline integrity experts to perform assessments of complete systems and individual components by employing a variety of NDT techniques such as External Corrosion Direct Assessments (ECDA). ECDA's are conducted as a follow-up inspection to Internal Line Inspections (ILI). They are used to comply with regulations that require pipeline operators to gather definitive information regarding the extent and types of damage in the piping system after initial defect locations are detected by ILIs. Our pipeline integrity technicians have the qualifications and tools to complete any integrity function including soil and topography examinations necessary to comply with local regulations and laws. The In-Service Inspection services also include integrity surveys and condition evaluations using NDT methods in support of both routine maintenance programs and condition assessments in response to emergency situations.



NONDESTRUCTIVE TESTING SERVICES

CALTROP utilizes both conventional and advanced NDT methods and techniques to test and evaluate pipelines during new construction, and for maintenance surveys. CALTROP specializes in the proper application of a variety of advanced NDT techniques to accurately monitor discontinuities over successive inspection intervals, calculate growth rates of discontinuities, and plan repair or replacement activities. Our NDT services for the pipeline industry include:

Conventional NDT Services

- Remote and direct visual testing
- Positive material identification
- Liquid dye penetrant testing
- Ground penetrating radar
- Magnetic particle testing
- Radiographic testing
- Hydrostatic testing
- Ultrasonic testing
- Infrared testing
- Leak detection

Advanced NDT Services

- Time of flight diffraction Testing
- Phased array ultrasonic testing
- Guided wave testing
- Digital radiography

INSPECTION DATA MANAGEMENT

CALTROP's pipeline construction and integrity survey reports are completed in the field using our cloud-based electronic reporting systems that enable s immediate real-time dissemination of test data, inspection observations and photographs from our inspection teams in the field through the use of tablet computers. CALTROP's reports are customized to meet our clients' particular needs to document the results of third party quality assurance inspections during constructions, and in condition surveys for in-service evaluations.

ENGINEERING AND CONSULTING SERVICES

Our specialized engineering and consulting services for the pipeline industry also include:

- Forensic investigations and metallurgical failure analysis or Root Cause Analysis
- Regulatory Compliance Services (49 CFR DOT 192 and DOT 195)
- Project management and supervision of pipeline integrity programs
- Pipeline bridge component inspection and rehabilitation
- Pipeline integrity and fit for purpose evaluations
- Air to soil interface inspections and rehabilitation
- Corrosion studies and corrosion scale analysis
- Litigation support and expert testimony
- Air, water and oil contaminant analysis
- Strain gauging and stress analysis
- Metallographic examination
- Fire damage assessment
- Finite element analysis
- Fracture mechanics
- Chemical analysis
- Hardness testing



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