

# TechCorr Rope Access Project Profiles



1 (877) 562 - 0912



info@techcorr.com



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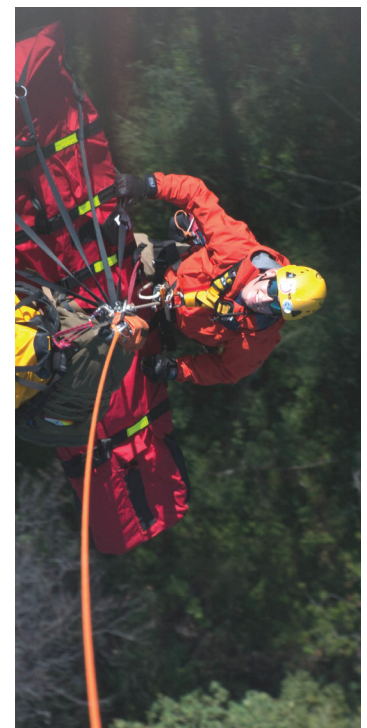
## Heli-portable Seismic Exploration in the Mountains

We employ mountain professionals that are cross-trained and certified in Industrial Rope Access techniques to provide preliminary project consultation, helicopter rescue utilizing Human External Cargo systems, and perform all project phases in hazardous vertical terrain.

Each project begins with our project managers performing an assessment of the terrain to formulate an access plan for the exploration project. The terrain is classified into three different access categories based on risk. A project safety plan is then assembled with clear delineation of areas where client work crews may need to be escorted by our mountain professionals, or in the higher risk locations, the project stages may need to be performed entirely by our rope access personnel.

Our Mountain Seismic specialists have experience performing all project stages, including surveying, line cutting, recording equipment installation, and guiding the drill crews and shooting crews through hazardous terrain. We are extremely well versed in anchoring the heli-portable drill rigs in challenging terrain, such as steep talus and shale slopes.

Clients also enjoy regulatory compliance with less environmental impact and expenditure using Helicopter Long Line Rescue (aka short-haul rescue) which is a feature of all projects for which we are deployed.





## Helicopter Long Line Rescue for Extra High Voltage Electrical Transmission Lines



Helicopter rescue for workers on Extra High Voltage Transmission lines provides the safest and fastest extraction method available.



Our rescue professionals have been deployed to provide rescue standby services for numerous BC Hydro projects along the rugged West Coast of British Columbia.



We are also well versed in training linemen on the Human External Cargo extraction techniques utilized on EHV transmission lines to self-rescue.



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## Sphere and Drum Internal Work

Accessing the inner diameter surface of a spherical pressure vessel presents a unique challenge to rope access teams due to the geometry of the vessel and the lack of available internal anchors.

TechCorr's methodology for rope access sphere internal work has been proven to save our clients time and money since 2011. Our technique can be rigged within half of a shift and places the workers where they need to be to perform the work on the same day they arrive.

We can use a similar system to perform work inside drums and silos. The only difference is that the geometry of the drums, silos, and other cylindrical objects simplifies the access and makes rope access even more efficient and economical.

This approach allows for all scopes of work to satisfy API 510 inspection requirements, including Visual Examination, Phased Array UT, Surface Eddy Current, AUT Corrosion Mapping, Hardness Testing, and any other NDT method deemed necessary by our experienced API 510 inspectors. This work positioning method is also suitable for performing weld repairs without the need for scaffold.



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## Heater Convection Section Tubing Inspections

By combining mechanical craft capabilities with our specialization in advanced service ultrasonics, TechCorr can deliver significant savings and reduced downtime by performing phased array and corrosion mapping UT inspections of the convection section tubing in heaters.

Scaffolding is completely avoided due to our Rope Access team's ability to remove and fly down the heater shroud covering the U-bends of the convection section tubing. We can also rig so that UT inspection crews can access vertical tubing along the walls of the furnace and inspect the bottom rows of the convection section tubing with particular emphasis on the air to refractory interface.

Additional rope access certified API and refractory inspectors can be added for a comprehensive and complete inspection of your heaters.



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## Refinery Compliance Programs/ Run and Maintain

The savings created by using rope access is so profound that many customers decide to keep an imbedded rope access crew on-site throughout the year to help manage their CML programs and to have those teams ready to deploy for all emergent work without delay.

Our imbedded rope access crews consist of IRATA rope access technicians carrying multiple NDT certifications (UT, PT, MT, and RT) paired with IRATA certified mechanical craft tradespeople indoctrinated into our Radiation Safety program. This composite crew structure makes our rope access teams unstoppable when it comes to performing the work that occurs daily within a refinery.



## Permasense Corrosion Monitoring Sensor Installations

Automated corrosion monitoring sensor networks can provide the informational link between corrosion rate fluctuations and process events correlated with that corrosion, allowing facilities to run their fixed equipment more efficiently.

Our Rope Access Team has been delivering the simplest and most streamlined approach to installing Permasense Corrosion Monitoring Sensor networks since 2016. We deploy teams capable of performing all project stages, including:



Thermal Insulation System Removal



UT wall thickness data collection to satisfy client in-service welding approval processes



Base metal surface preparation for in-service stud welding



ASME Section IX compliant stud welding (for WT210- model sensors)



Sensor installation and network troubleshooting



Re-application of thermal insulation systems in a manner that will not affect sensor accuracy

Because these projects are performed by our Rope Access Team, entire sensor networks can be installed quickly without the need to build a single scaffold.



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## Permasense Corrosion Monitoring Sensor Installations

For any given budget, deploying rope access teams to a CUI project will result in more inspection data and less expenditure on scaffolding. Efficiency within the program leads to higher percentages of the affected piping circuits and fixed equipment being screened for CUI, and more money to mitigate the problems once they are found.

Efficiency is further compounded by our Multi-Discipline and Craft rope access crew composition, allowing for the project to progress through multiple stages without the typical downtime that exists between project craft and contractor transitions.

Our Rope Access Team flows seamlessly through the following project stages, with the best results often occurring through full ownership and accountability of the project:



Scope of work assembly and project management with our multi-certified senior API Inspectors



Rapid Detection of potential CUI through Open Vision Real Time Radiography, Moisture Detection Imaging, Guided Wave Ultrasonics, and Pulsed Eddy Current



Thermal Insulation System removal to support Guided Wave UT, and to follow up CUI detection findings with visual and UT inspection



Mitigation of existing corrosion networks with surface preparation and corrosion barrier application



If needed, composite and welded repairs of heavily corroded piping and fixed equipment



Re-application of Thermal Insulation Systems



Comprehensive reporting according to client preference





## Corrosion Under Pipe Supports and Touchpoint Corrosion

Corrosion Under Pipe Supports and Touchpoint corrosion is easily detected by our rope access crews by utilizing GUL, EMAT and Phased Array Short Range Ultrasonic (PASRUT) Techniques.

Once Corrosion Under Pipe Supports has been identified, our rope access crews can work with client or TechCorr Engineering teams to develop suitable Abrasive Task Certificates and Lifting Plans so that the affected piping can be lifted to allow for additional detailed inspections and corrosion network mitigation and repairs.

Our rope access personnel have lifted piping as large as 60 inches in diameter without the use of cranes.



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## HF Alkylation Units and Residual Elements Programs

With frequent updates to the API Recommended Practice 751, responsible ownership of Hydrofluoric Acid Alkylation units continues to remain a moving target for mechanical integrity teams.






Checking for localized, preferential corrosion brought on by high/low residual elements remains a major challenge for refinery owners, as this damage mechanism is driving special emphasis inspections of %100 of HFA unit components.

The latest, 5th edition of the API RP 751 moves away from the two distinct Acid Handling Processes in favor of 5 different Corrosion Zones.

Our API Inspectors are well versed in these recent changes, as well as the management of %100 component inspection projects seeking to identify the localized and preferential corrosion created by low RE content.



Our Rope Access team has completed many of these projects utilizing a multi-discipline approach that includes:

-  Weld location of insulated piping using Open Vision Radiography to scan %100 of each circuit.
-  Digital Profile Radiography of all welds on piping 8 inches in diameter or less
-  Insulation removal and inspection of larger diameter piping circumferential welds using Phased Array and Time-of-Flight Diffraction simultaneously on a single axis scanner
-  Positive Material Identification of each component within the system with the latest XRF technology capable of detecting low concentrations of residual and contaminant elements
-  Re-application of thermal insulation systems

Anytime %100 of anything needs to be inspected, you'll need to build a lot of scaffold, or save some time and money by using TechCorr's Rope Access Division.



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## Flare Tip Replacement and Piping Demo's

Our Team has completed several flare projects that have consistently delivered savings greater than %50 and were completed in half the time when compared to conventional access methods. Some projects delivered savings in excess of %75 in 3/1 of the time.

These projects typically consist of the following:

-  **Flare tip removal and replacement**
-  **Abandoned piping demolition**
-  **Visual and UT Inspection of the flare and supporting structure**
-  **Lead abatement and coating application of the flare and supporting structure**





## Bridge Inspection and Maintenance

TechCorr's Rope Access Division is particularly well suited for the Inspection and Maintenance of cable stayed bridges. We frequently deploy teams to perform Magnetic Flux Leakage (MFL) inspections of the cable stays and then apply protective coatings and/or wraps to the cable stays to enhance the lifespan management of the infrastructure asset.

Our strategic partnership with Dywidag allows us to apply what we believe to be the best solution to our aging infrastructure with their innovative Cable Skin, which is a two stage butyl rubber wrap that delivers profound savings and increased longevity over traditional coatings systems.



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