Your reliable engineering firm partner in the challenging world of radioactive materials

NQA-1 compliant

SDVOSB: Service-Disabled Veteran-Owned Small Business

A solid track record of critical mission work in the DOE market

Bench strength including engineering design, inspection and testing services

ENCORUS® GROUP

encorus.com

A unique package of benefits

NQA-1 compliant

At a basic level, being ASME NQA-1 compliant means that Encorus Group meets the requirements needed to qualify for working in nuclear facilities. Going deeper, our NQA-1 program shows Encorus' strong commitment to safety and quality assurance. You can have confidence that Encorus will be your reliable partner for working in nuclear facilities.

SDVOSB – (Service-Disabled Veteran-Owned Small Business)

Encorus is certified as an SDVOSB, at both the New York State and federal levels. We can help you meet set-aside contract requirements on state or federal contracts. Many subcontracting firms that are certified for set-aside programs are small. Some of them struggle to meet the staffing and paperwork requirements of government contracts. Encorus is of a size and bench strength to be a strong partner, able to contribute extensively to your project – with an NQA-1 program as a hard-to-find added extra.

A track record of critical mission work in the DOE market

You want a partner who understands your world and has credibility with clients, regulators and other stakeholders. Encorus Group has been working in the DOE marketplace since 1996 and its founders began their careers at the West Valley Demonstration Project. Since then, Encorus Group has worked either directly for the DOE or through prime contractors at facilities across the country. Read on to learn more about how Encorus has met the needs of facilities in this nuclear sector.

Bench strength to meet a wide range of needs

You need a partner with the depth of skills and services to be a strong asset to your projects. Encorus Group (formerly called RJR Engineering) is a professional engineering, testing and inspection services firm, founded in 1996. Today, with over 60 full-time employees, Encorus Group has licensed Professional Engineers in all major disciplines, field personnel to support our established and accredited civil materials testing laboratory, and a knowledgeable team of API, CWI and NBIC certified mechanical integrity inspectors.

Services and capabilities

Engineering/Architectural Services

Encorus Group's design team includes multi-state licensed Professional Engineers, junior engineers, drafters, architectural support staff and administrative personnel. The group spans many disciplines, including structural, mechanical, electrical, civil, environmental, fire protection engineering, litigation support for forensic engineering services and architecture. This allows us the breadth of experience typically found only in larger firms. Encorus also has an audited and widely accepted ASME NQA-1 Quality Assurance Program in place.

Civil Materials & Non-Destructive Examination Services

Encorus Group operates an accredited civil materials testing laboratory. This division provides field inspection of concrete, masonry, soils, asphalt, structural steel, and other construction related materials, as well as the associated laboratory testing required to meet rigorous specifications and standards. Non-destructive testing services include welding inspections, ultrasonic, magnetic particle, liquid penetrant, and radiographic testing. Our field and laboratory technicians and inspectors are trained and certified to a variety of standards including ASNT SNT-TC-1A, ASNT Level III, ACI, CWI, and NICET.

Inspection Services

Encorus provides a complete range of services, including field inspections, data evaluation, detailed reporting, fitness for service evaluations and development of repair procedures as necessary. Our staff is certified in a variety of disciplines including API 510 pressure vessel inspection, API 653 Storage Tank inspection, API 570 Process Piping inspection, and includes Certified Welding Inspectors, Steel Tank Institute SP001 inspectors, and ASNT-SNT-TC-1A and NBIC qualified inspectors.

Meet the Team

Thomas Gilmartin, PE
Director of Engineering Design
tgilmartin@encorus.com

Tom brought his 25 years of experience to the firm in 2014 and is an Electrical Engineer licensed in 12 states, as well as Ontario and Alberta, Canada. Tom is a graduate of RPI and oversees the Encorus Group's design operations. He is a Project Management Professional (PMP) and has led projects for the Veterans Administration, the Waste Isolation Pilot Plant in Carlsbad, NM, and a number of industrial manufacturers.

Dana Pezzimenti, PE
Vice President, COO
dpezzimenti@encorus.com

Dana joined the firm in 2001 and is a Mechanical Engineer licensed in multiple states across the country. A graduate of the State University of New York at Buffalo, Dana oversees the Encorus Group's mechanical engineering team as well as all firm operations. He has led projects for the West Valley Demonstration Project, the Waste Isolation Pilot Plant in Carlsbad, NM, and a number of manufacturers and fabricators.

Richard Meigs, PE
Senior Design Engineer
rmeigs@encorus.com

Rick is a mechanical engineer with extensive experience in the nuclear arena. Prior to the Encorus Group, Mr. Meigs was an engineer at the West Valley Demonstration Project for 15 years. At West Valley, he was the design authority for melter operations and was also in charge of remote tooling. Mr. Meigs also has extensive experience at WIPP supporting past projects including SVS Fan design and startup, SVS control strategy, and Safety PLC systems. Mr. Meigs holds a number of U.S. Patents.

John Allan
Senior Fire Engineer
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John is a Fire Protection Engineer with over 45 years of experience. He is highly qualified with Department of Energy Orders and Standards for the development of fire hazard analysis reports, facility assessments, and transitional fire analysis for decommissioning projects. A specialist in preparing detailed step-by-step operating, testing, and period maintenance procedures for complex fire suppression and detection systems, he utilizes the principals of Integrated Safety Management to ensure that each facility he works at is made as safe as possible.

Keith Taylor
Director of Mechanical Integrity
ktaylor@encorus.com

Keith graduated from Clarkson University with a degree in mechanical engineering and has extensive experience with asset integrity evaluations, non-destructive testing and regulatory compliance. He has a background in helping clients to add value, increase reliability, and reduce costs of operation. Mr. Taylor holds API-510, 570 & 653 inspector certifications, is an AWS Certified Welding Inspector and is trained in Six Sigma and Reliability Centered Maintenance methodologies. Keith has helped clients across the country find practical, cost effective solutions to asset integrity problems.

James Handzlik
Director of Non-Destructive Testing
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Jim brings over 30 years of experience to the position. With a degree in Applied Science in Civil Engineering from Erie Community College, Jim's career has focused on civil and NDE inspections. He has led several large projects in the nuclear industry, including the National Enrichment Facility in Eunice, New Mexico, the Hanford Nuclear Reservation, Savannah River Protection Project, Waste Treatment Plant for Bechtel and the Department of Energy. Jim also led the quality control process for two new nuclear builds in South Carolina and Georgia at the Lake Charles, Louisiana Fabrication Facility for CB&I.

Creating a ventilation solution that meets regulatory and technical needs at the Waste Isolation Pilot Plant

Project Location

Waste Isolation Pilot Plant
Carlsbad, NM

Project Objective

The WIPP facility was constructed for disposal of defense-generated TRU waste from DOE sites around the country. TRU waste consists of clothing, tools, rags, residues, debris, soil and other items contaminated with small amounts of plutonium and other man-made radioactive elements. The waste is permanently disposed of in rooms mined in an underground salt bed layer over 2000 feet from the surface. The mine tunnels cover an area of almost a square mile.

The WIPP mine was originally ventilated by large fans pulling air through the mine and exhausting it out directly. In 2014, the DOE increased the criteria for air exhausted from the WIPP mine, meaning that all exhausted air must be filtered before it is released to the environment.

In order for operations to take place in the mine, a certain amount of air must be moving through the mine at all times. Because of the new filtering requirements, the existing fans could not move enough air to allow operations to take place. A decision was made to add a Supplemental Ventilation System to push more air through the filters, allowing increased operations.

Unique Project Features

To increase air flow, a booster fan was planned for installation down in the mine between the intake and exhaust. This Supplemental ventilation system would need to move a sufficient volume of air for operations to take place, while at the same time meeting all the DOE regulations and requirements.

Encorus Group Solution

To meet this need, Encorus designed a system of a fan, silencers and a damper to boost the flow of air through the mine tunnels. The Encorus system was designed as a fully automated solution.

The 150HP, VFD-driven, 6-foot diameter vane axial fan is installed 2300 feet below ground in a mine tunnel. It is controlled with an Allen-Bradley ControlLogix PLC and PanelView HMI. Operation of the fan is quite simple, as the operator simply enters a setpoint in cubic feet per minute and the system will control the fan speed and damper to provide the requested air flow.

Since the fan is drawing air from the surface, its flow characteristics change as the surface air temperature changes through the seasons. In winter, the system automatically holds the fan at low speed and regulates the flow with the damper. In the summertime, the damper opens fully and the flow is controlled with the fan speed.

Due to the secure nature of the facility, the project was subject to NQA-1 quality assurance requirements. This meant the design and manufacture of the fan faced a daunting list of requirements for reliability, testing and permitting.

With all the stringent requirements, designing and building the fan took about one year. Review by various regulatory agencies took another year after that, and then it took a third year to install and start up the fan. So, due to the justifiably intense nature of the review process, this was a three-year project. Given Encorus Group's experience working within the exacting process required by regulators for projects that involve radioactive materials, this permitting process was familiar ground for the firm's team.

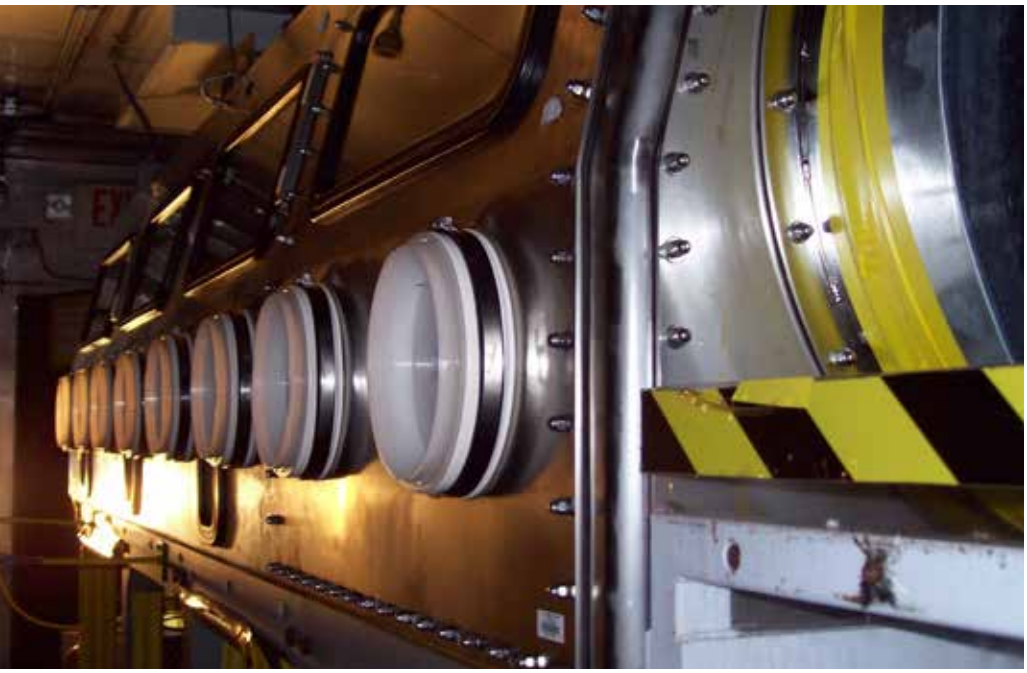
One of the challenges was a need to interlock the operation of this fan with the surface-based ventilation system to ensure that air is always moving in the proper direction through the various shafts and tunnels of the mine. Encorus procured a verified Cisco network switch to allow network communications between the SVS fan and the WIPP operation SCADA system.

The fan is now in operation, helping to meet the DOE's requirements while also facilitating operation of this nuclear waste disposal facility.

Teaming Arrangements

- Twin City Clarage built the fan in their Pulaski, Tennessee facility.
- Rockwell Allen-Bradley provided the controllers and HMI
- Emerson Rosemount provided the bulk of the instruments.

A better way to sort transuranic waste at the Waste Isolation Pilot Plant



Project Location

Waste Isolation Pilot Plant
Carlsbad, NM

Project Objective

The Waste Isolation Pilot Plant in Carlsbad, New Mexico is intended as a permanent home for byproducts from nuclear weapons production, nuclear waste and power production – such as protective gear, tools, residue, debris and other items. These transuranic (TRU) materials have been contaminated with small amounts of radioactive materials, particularly plutonium, and must be stored deep underground where their radioactivity will not pose a threat to human health or the environment.

But not all of the waste showing up at the WIPP facility belongs there. Along with the low-level radioactive waste are materials that may carry their own types of dangers. Some are prohibited for shipment to WIPP, such as materials that are ignitable, corrosive, reactive, liquid, or in pressurized containers such as spray cans. These prohibited items must be removed from the waste before it is re-packaged for acceptance at WIPP.

Separating the WIPP-compatible waste from the non-compatible is not as simple as the automated production lines used to sort recyclable household waste. Rather, each 55-gallon drum or other container arriving at the WIPP must be sorted through by hand. That is, provided the "hands" in question are safely isolated from the radioactivity in the materials they are sorting.

As a future resource for WIPP, Encorus was asked to carry out a project to design modifications and decontamination plans for the refurbishment of a radioactive waste sorting and packing system known as the TRU Sorting System-1 (TSS-1). The TSS-1 was utilized at Department of Energy installations to repackage contact handled transuranic waste.

Unique Project Features

Because of the secure nature of the facility and the need to manage the risks associated with handling radioactive materials, this project was subject to ASME NQA-1 quality assurance requirements.

Encorus Group Solution

The TSS-1 is an integrated stand-alone system designed to visually examine TRU waste. It allowed the handling, sorting, and repackaging of 55 gallon drums of TRU waste using a multi port glovebox and supporting equipment. All components were designed to fit within two standard ISO containers for ease of transport storage.

This system was engineered to provide an efficient and controlled work flow within a small space, with an emphasis placed on maintaining operator safety, environmental safety, and radiological containment. This was achieved through the physical separation of the glovebox, as well as through a sophisticated HEPA filtered ventilation control system using a custom designed programmable logic controller (PLC) with touch screen operator interfaces.

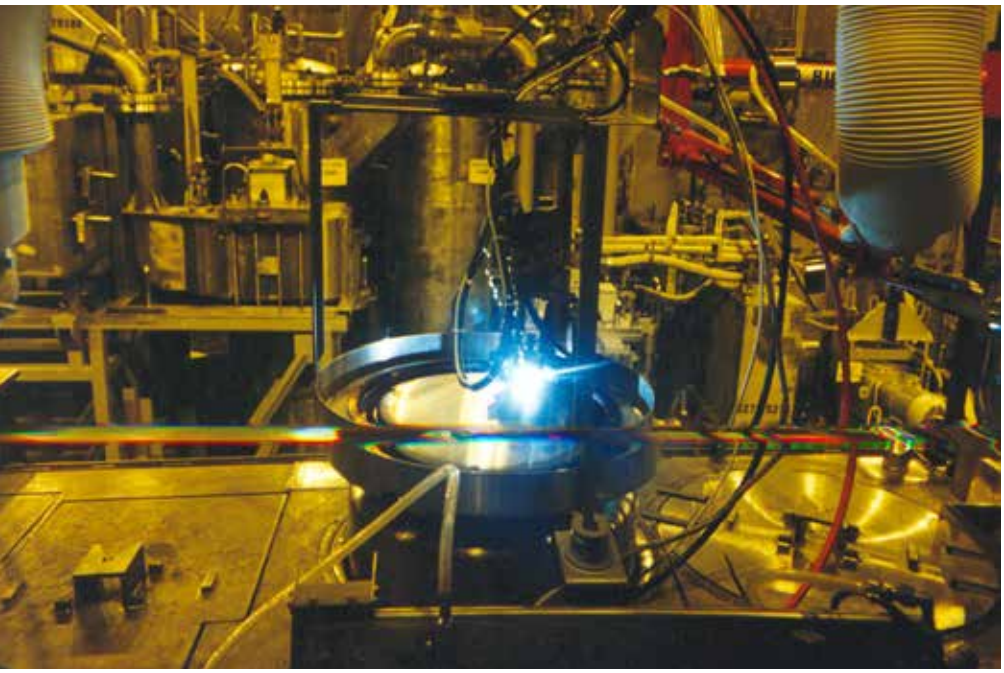
All TSS-1 control system functions were designed to occur automatically with minimal operator interaction and used a single mode failure redundancy design philosophy for all critical components. A carefully designed sequence of pressure differentials and airflows helped ensure radiological material was kept safely away from operators and the environment. There was also an automatically activated UPS back-up power system to provide a controlled shut down and egress sequence in the event of a system failure.

All of this ensured that the system would operate within the design parameters required to maintain TRU waste contamination levels "As Low As Reasonably Achievable" (ALARA) during various operating and emergency conditions.

Encorus also provided a design for a Continuous Air Monitoring (CAM) system and a fire protection system that activates automatically when needed.

After completing design activities, Encorus developed an operating manual showing the client how to safely and effectively use the new TSS-1 device.

Bringing back old technology – the best way to meet a need at West Valley Demonstration Project



Project Location

West Valley
Demonstration Project
West Valley, NY

Project Objective

Early in the nuclear age, in the 1960s, a nuclear site at West Valley, NY was used for a project to reprocess spent nuclear fuel from power plants and purify it for further use. The methodology tried at the time was uneconomical and the project abandoned. Highly radioactive residual waste was processed into a stable glass form and sealed in small two foot diameter canisters. The canisters were ultimately placed in larger sealed hundred-ton containers constructed of steel, lead and concrete, and stored safely away.

However, one 24" diameter canister was left partly filled and unsealed, in case more waste had to be disposed of. Wanting to clear up the site, the Department of Energy (DOE) required the site operators to find a way to weld up the canister to seal away the radioactive material in it.

While this might sound simple, the justifiably demanding standards required for nuclear materials had to be complied with. The seal weld would have to be done in a highly specific way, and the soundness of every step documented right down to the voltage used by the welder, so that it could be demonstrated that safe measures had been taken and the weld good.

Developing a new procedure and equipment for welding the single canister, and having that methodology accepted by the DOE's regulators, would have been significant in cost and time.

Unique Project Features

However, there was a solution available – to apply the procedures and equipment that had been used previously, which still met DOE requirements, when the other canisters were welded and sealed.

The problem was that this work had been done 25 years ago, using the information technology available at the time – specifically, the once-dominant, but now defunct Microsoft Disc Operating System, or DOS. The records of each step taken, including every weld, had been stored in meticulous detail on paper tape, cards and boards. Virtually none of the equipment had been touched for a quarter-century, but the records had suffered some disorganization in the meantime.

Encorus Group Solution

Encorus Group was able to make this work. Partly, this came through understanding the DOE requirements that would apply to the project, and how difficult it would be to build up an acceptable procedure from a standing start. Encorus saw that it would be faster and less costly–in the long run–to use the counter-intuitive approach of dusting off the early-1990s technology and pressing it back into service.

In many projects related to nuclear energy and radioactive materials, getting approvals is at least half the effort, and in this case, it made sense to go with already-approved methodologies, even given the age of the equipment and records.

Encorus had the bench strength and skill to make this happen – through experience with meeting the exacting requirements of the ASME's NQA-1 standard, and then having the ability and the patience to work with 25-year-old systems to produce a workable result. This included applying current technology in some cases, such as new signal generators, to provide the data required to meet NQA-1 standards.

The result was that the canister was successfully welded in a way that met DOE's requirements, and it has been safely stored on the West Valley Demonstration Project property.

Nuclear Quality Assurance (NQA-1) Compliance

Encorus Group performs work to its established ASME NQA-1 Quality Assurance Program. Our program was established in 2005 and has continually evolved to better meet the intent of our work, the needs of our clients, and generally to improve its effectiveness. The current Encorus Group Quality Assurance Program is organized to address requirements of NQA-1 2008, including the NQA-1 2009 addendum, as applicable to our work.

The QA Program identifies a set of implementing procedures for each of the sections of the QA Manual applicable to the services we provide. All Encorus personnel are indoctrinated and trained in the proper use of the program and perform work methods required to the procedures identified in the QA Manual to address and implement each of the 18 requirements of NQA-1.

The Encorus Group's QA Program has been audited and accepted numerous times for use throughout DOE sites. Within the past 18 months, we have been audited by prime contractors and subcontractors for services provided at WIPP and the West Valley Demonstration Project (WVDP). We have successfully been audited multiple times in the past in conjunction with performance of work at each of these sites; our program has continually been found to meet the requirements of NQA-1 through our innovative methods and procedures.

Most recent audits include:

March 07, 2016
Nuclear Waste Partnership LLP (NWP) Quality Assurance (QA)

April 28, 2016
Frederick Machine Repair, Inc.

December 7, 2017
Nuclear Waste Partnership LLP (NWP) Quality Assurance (QA)

May 16, 2019
Mirion Technologies (Conax Nuclear)

September 17, 2019
Critical Applications Alliance

Our QA & Safety Team

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Partial List of Services

Engineering Design

Structural Engineering
- New Building Design
- Existing Structure Analysis/ Renovations
- Foundation Design
- Seismic and Wind Analysis
- Non-Building/Equipment Support Design

Mechanical Engineering
- Machinery Redesign and Improvements
- HVAC Design
- Stress Analysis of Equipment
- Finite Element Analysis (FEA)
- Piping Design
- Pressure Vessel and Tank Design

Electrical Engineering
- Control Systems (Hardwired, PLC, HMI)
- Service Entrance and Building Services
- Raceway Systems
- Ground Grid Systems
- Protective Device Coordination Studies
- PLC and HMI Software Programming

Fire Protection Engineering
- Lightning Protection Assessments
- Wildland Fire Assessments
- Custom Fire Detection Design
- Special Hazards Suppression System Design
- Glovebox, Hot Cell, and Lab Hood Fire Suppression Design

Hoisting and Rigging Design
- Construction Support
- Safety and Training
- Rigging Component Design

Forensic Engineering
- Expert Witness/Litigation Support
- Code Compliance
- Risk Avoidance Evaluations

Architecture
- Planning and Design
- Building Assessments
- Construction Administration
- Design-Build Support
- Exterior Envelope Surveys
- Roof Assessment and Design

Civil Engineering
- Civil/Site Design
- Stormwater Management
- Drainage Design
- Trail Design
- Infrastructure/Utilities Design

Civil Materials Testing

Field Testing/Inspections
- Concrete Field Inspections
- Floor Flatness Testing
- In-Place Density Testing
- Fireproofing/Fire Stopping Inspections
- Certified Welding Inspections
- ICC Special Inspections
- Asphalt Field Testing
- Wood Framing Inspections
- EIFS Inspections
- Masonry Inspection
- Ground Penetrating Radar
- Dynamic Cone Penetrometer Testing

Laboratory Testing
- Compressive Strength Testing
- Concrete Mix Design Verifications
- Grain Size Analysis
- Atterberg Limits Testing
- Hydrometer Analysis
- Asphalt Testing
- USCS Soils Classification
- Specific Gravity Testing
- Standard/Modified Proctors
- pH/Organic Testing
- Permeability Testing

Non-Destructive Examinations

- Ultra Sonic Shearwave/Thickness Testing
- Magnetic Particle Testing
- Liquid Penetrant Testing
- Visual (CWI) Testing
- Radiographic Testing
- Positive Materials Identification
- Hardness Testing
- Bolt Torque Testing
- Leak Testing
- Anchor Bolt Pull Testing
- NACE Coating Inspections
- Welder Qualification Testing: PQR, WPS, WPQ

Mechanical Integrity Inspections

- NBIC Inspections
- API 510/570/653 Inspections
- Steel Tank Institute SP001 Inspections
- Pennsylvania DEP Tank Inspections
- NACE Coatings Inspections/ Specifications
- Certified Welding Inspector (CWI)
- Repair Procedure Development
- API Risk Based Inspection Programs
- Fitness for Service/Failure Analysis
- Vendor Surveillance
- NYS DEC Chemical Bulk Storage Inspections
- NYS DEC Petroleum Bulk Storage
- EPA Spill Prevention Control/ Countermeasure Plans
- Fabrication QA/QC-Vessels, Piping, Tanks, FRP
- P+ID Field Walkdowns and Verification
- Pressure Relief and Vent System Design Basis
- Inspection Management Services – Program Development/ Turnaround Planning

Let's discuss your next DOE project.

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