



ABOUT US

Integral Engineering Group is a woman-owned small business (WOSB) owned and managed by engineers that focuses on offering best-in-class, multi-disciplinary engineering design services to the commercial chemical, specialty chemical, petrochemical, refining, nuclear, energy, and manufacturing industries.

NAICS CODES

- 541330 Engineering Services
- 541340 Drafting Services
- 541690 Other Technical Services
- 561320 Temporary Staffing

VENDOR CODES & DESIGNATIONS

- ❖ UEID: FDY2YZ7NCKE3
- ❖ DUNS: 116938967
- ❖ CAGE CODE: 883M9
- ❖ FACILITY CODE: 16606

CUSTOMERS

- ❖ BWX Technologies, Inc.
- ❖ Johnson Controls Federal Systems
- ❖ Tennessee Valley Authority (TVA)
- ❖ ExxonMobil Corporation
- ❖ BAE Systems Ordnance Systems
- ❖ Y-12 National Security Complex
- ❖ Pantex Plant
- ❖ Vacuum Technology, Inc.
- ❖ Air Force Global Strike Command
- ❖ Ultra Safe Nuclear Corporation

CAPABILITY STATEMENT

CORE COMPETENCIES

We work collaboratively with our clients to provide them excellence in a wide range of engineering services – utilizing chemical, electrical, mechanical, and structural engineers and technicians who are experts in their respective fields. We support our clients to solve a wide range of critical engineering problems.

- ❖ General
 - Process Design (Multi-Disciplinary) & Project Management
 - Engineering & Technical Staff Augmentation
- ❖ Chemical / Process
 - Process Information Development & Documentation
 - Process Hazard and Risk Analysis (PHA / QRA / PRA)
 - Integrated Safety Analysis (ISA)
 - Safety Instrumented System (SIS) Design & Implementation
 - Process & Instrumentation Diagram (P&ID) Development
 - Alarm Management & Rationalization
- ❖ Mechanical
 - Drafting & 3D Modeling / BIM / 3D Laser Scanning
 - Piping, Equipment, & Instrument Specification
 - Pressure Vessel & Machine Design
 - Relief Device Sizing
 - Piping Design, Layout, & Stress Analysis
 - Building Ventilation & HVAC Design
 - Fire Protection System Design & Evaluation
- ❖ Structural
 - Structural & Seismic Assessment
 - Equipment Support & Anchorage Design
 - Containment Structure Design
 - Access Platform, Stairway, & Ladder Specification
 - Industrial Building Design
 - Blast-Resistant Structure Design
- ❖ Electrical
 - Control System & Power Design
 - Arc Flash Studies & Mitigation

CERTIFICATIONS



CONTACT US

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Phone: (865) 268-4270

520 W Summit Hill Drive, Ste 901
Knoxville, Tennessee 37902

Website: www.iegroupllc.com
Email: info@iegroupllc.com





PERFORMANCE HISTORY



Nuclear Fuel Services (BWXT)

PoP: 03/2021 to Present
Value: \$750,000
Contact: Ken Givens
1205 Banner Hill Rd
Erwin, TN 37650
krgivens@bwxt.com

PROJECT: LICENSING AND DESIGN OF URANIUM METAL PURIFICATION AND CONVERSION SYSTEM

Providing ongoing engineering support for the licensing and design of a Uranium Metal (U-Metal) Purification and Conversion System for construction at the Nuclear Fuel Services (NFS) facility in Erwin, Tennessee. IEG is updating existing NFS site documentation to include new U-Metal process descriptions and accident scenario information. Relevant Hazard Analyses, Risk Assessments, and Accident Consequence Evaluations were performed to ensure impacts were well within regulatory limits and performance requirements of 10 CFR 70.61. Additionally, IEG is providing ongoing process engineering support by performing process calculations, documenting process information, specifying equipment and instrumentation controls, generating data sheets, creating IQ/OQ/PQ test plans, and providing input for system operating procedures. Mechanical HVAC resources were tasked with the specification and design of nuclear confinement ventilation and air conditioning systems in accordance with ASME AG-1 and DOE Handbook 1169 standards, performing HVAC load and air balance calculations for confinement areas, and development and markup of engineering package deliverables.



Johnson Controls Federal Systems, Inc.

PoP: 01/2022 to Present
Value: \$15,000+
Contact: Bruce Fisackerly
3442 Starway Drive
Bartlett, TN 38135
bfsackerly@aec-inc.net

PROJECT: SUPPORT FRAME FOR Y-12 NATIONAL SECURITY COMPLEX CHILLER REPLACEMENT

Providing structural design, analysis, and construction documentation for the structural support frame of a replacement chiller over an existing chiller water basin. As part of an effort to increase efficiency and lower maintenance costs, many aged chillers at the Y-12 Complex in Oak Ridge, Tennessee are being replaced. IEG performed site visits to as-built the existing chiller basin. Using Autodesk Revit and RISA-3D, IEG is analyzing and optimizing the support frame for loads including seismic and wind in accordance with ASCE 7 and AISC 360. When drawings of existing infrastructure are unavailable, IEG is making conservative, verifiable assumptions to keep the project moving forward. Project deliverables include a detailed calculation report for the chiller frame and frame connections, design drawings, and construction specifications.

Jacobs



Jacobs Technology, Inc.

PoP: 05/2022 to Present
Value: TBD
Contact: Ray Alexander
125 Broadway Avenue
Oak Ridge, TN 37830
ray.alexander@jacobs.com

PROJECT: ARCHITECT / ENGINEERING DESIGN SERVICES BASIC ORDERING AGREEMENT (BOA)

Supporting Jacobs as a named subcontractor providing chemical/process engineering design services for ongoing and future projects at the Y-12 National Security Complex in Oak Ridge, Tennessee and the Pantex Plant in Amarillo, Texas. Additionally, IE Group supports Jacobs' BOA efforts with multi-disciplinary engineering personnel on a periodic basis.



PERFORMANCE HISTORY



Atkins Global Nuclear Secured

PoP: 01/2022 to Present
Value: \$700,000+
Contact: Glenn Diener
10330 Old Columbia Road
Columbia, MD 21046
glenn.diener@atkinsglobalns.com

PROJECT: ONGOING ENGINEERING DESIGN SUPPORT OF THE LITHIUM PROCESSING FACILITY (Y-12 COMPLEX)

Providing multi-disciplinary engineering support for the design of the Lithium Processing Facility at the Y-12 National Security Complex in Oak Ridge, Tennessee. Process engineering personnel provide design support by performing necessary process calculations, documenting process information, specifying equipment and instrumentation controls, generating data sheets, addressing customer comments, creating test plans, and providing input for system operating procedures. Mechanical engineering personnel provide design support of HVAC and plumbing systems, performing temperature, humidity control, utility load calculations, developing Airflow Diagrams, Ventilation & Instrumentation Diagrams, as well as ductwork and piping plans, and developing building management system (BMS) control philosophy, details, and Sequence of Operations. Piping engineering personnel develop, check, and approve isometric drawings for chemical processes and associated utility systems, perform pipe stress analyses using CAESAR II, and specify and purchase specialty piping equipment, including expansion joints and ram valves.



Nuclear Fuel Services (BWXT)

PoP: 12/2021 to Present
Value: \$13,700+
Contact: Jason Ward
1205 Banner Hill Rd
Erwin, TN 37650
jkwward@bwxt.com

PROJECT: ONGOING ENGINEERING SUPPORT OF VARIOUS ENGINEERING PROJECTS

Providing ongoing engineering support for various engineering projects at the Nuclear Fuel Services (NFS) facility in Erwin, Tennessee. Tasks to date include performing necessary pressure vessel relief calculations and relief device system design in compliance with API RP 520 Part I and API Standard 521.



Boston Government Services

PoP: 06/2021 to 08/2021
Value: \$7,700
Contact: Chris Dean
105 Mitchell Road,
Suite 201
Oak Ridge, TN 37830
cdean@bgs-llc.com

PROJECT: LICENSING STUDY AND CONCEPTUAL FACILITY ENGINEERING FOR A PILOT NUCLEAR FUEL FABRICATION FACILITY

Provided structural engineering consulting services for a pilot nuclear fuel fabrication facility. IEG performed a code compliance review and permitting study to determine facility structural requirements under NUREG-1520, DOE STD-1020, and International Building Code. The client was considering purchasing an existing facility to utilize as the pilot plant facility. IEG assessed the facility for structural regulation compliance and made recommendations and cost estimates for necessary infrastructure upgrades. IEG provided specific insight on the classification of the structure, natural phenomena hazards (seismic, wind, tornado, and flooding), and performed preliminary analysis on the foundation, building slab, superstructure, and building envelope.



PERFORMANCE HISTORY



Boston Government Services

PoP: 05/2021 to 06/2021
Value: \$3,200
Contact: Chris Dean
105 Mitchell Road,
Suite 201
Oak Ridge, TN 37830
cdean@bgs-llc.com

PROJECT: SEISMIC REVIEW OF CHILLER EQUIPMENT SEISMIC QUALIFICATION TEST PLAN AND RESULTS

Performed an independent review of the seismic qualification test plans and the qualification test plan results for replacement chillers and associated mechanical and electrical equipment at TVA's Watts Bar nuclear power plant. The replacement chillers were safety class equipment that had to be seismically qualified per IEEE 344. IEG reviewed the seismic qualification test plans and provided comments and input of critical test parameters. Additionally, IEG briefed the client with an interpretation of the seismic qualification test plan results and provided a summary of evaluation gaps between the test plan and results received. IEG's contributions to the seismic qualification test plans and interpretation of test plan results were found valuable by the client and the test plan engineers.



Nuclear Fuel Services (BWXT)

PoP: 10/2020 to 11/2020
Value: \$27,000
Contact: Mike Anderson
1205 Banner Hill Rd
Erwin, TN 37650
mwanderson@bwxt.com

PROJECT: PROCESS HAZARD ANALYSIS OF THE APL PROCESS

Provided process hazard analysis (PHA) and semi-quantitative risk assessment (QRA) using layers of protection analysis (LOPA) services of the Advanced Product Line (APL) process for NFS at their facility in Erwin, Tennessee as part of NFS's effort to satisfy contract requirements to their customer (Knolls Atomic Power Laboratory [KAPL] and U.S. DoE, Naval Reactors Program). Project deliverables included a preliminary design analysis report summarizing the findings of the analysis and a list of recommendations with technical basis justification. Additionally, facility siting and human factors was analyzed for the process and summarized. The analysis met all requirements as stated in paragraph (e) of OSHA's process safety management (PSM) regulation, 29 CFR 1910.119 and part 68.67 of EPA's risk management program (RMP) regulation, 40 CFR 68.



Process & Safety Solutions, LLC

PoP: 04/2020 to 06/2020
Value: \$8,000
Contact: Ric Hartung
2734 Sunrise Blvd
Suite 309
Pearland, TX 77584
ric.hartung@pssolutions.com

PROJECT: PRESSURE RELIEF DEVICE EVALUATION OF EXISTING RELIEF DEVICES

Performed an evaluation of existing pressure relief devices for Process & Safety Solutions, LLC (PSS) as part of its contract requirements with the XTO Energy Hawkins Gas Plant, a subsidiary of ExxonMobil. The required size and capacity of each relief device was calculated using API RP 520 Part I and API Standard 521. After analyzing all overpressure scenarios for each relief device to determine the controlling case, the required relief capacity and the actual relief capacity of each relief device was compared. Deliverables included a report summarizing all relief calculations and a list of recommendations for any devices found to be undersized for its service, along with technical basis justification.

PERFORMANCE HISTORY



Process & Safety Solutions, LLC

PoP: 10/2018 to 01/2019
Value: \$19,800
Contact: Ric Hartung
2734 Sunrise Blvd
Suite 309
Pearland, TX 77584
ric.hartung@pssolutions.com

PROJECT: INDEPENDENT REVIEW AND VERIFICATION OF P&ID REDLINE IMPLEMENTATION

Provided independent review services for Process & Safety Solutions, LLC (PSS) as part of its contract requirements with KMCO, LLC, a specialty chemical manufacturer. Project tasks included review and verification of all process and instrumentation drawing (P&ID) redlines from in-field walk downs of multiple processes had been accurately and completely implemented into the associated CAD P&ID files. Also verified that drawing connections and equipment naming conventions were in compliance with client requirements, standards, and specifications.

BAE SYSTEMS

BAE Systems, Ordnance Systems Inc.

PoP: 04/2020 to 11/2020
Value: \$113,143
Contact: Bryan Long
4509 West Stone Drive
Kingsport, TN 37660
bryan.long@baesystems.com

PROJECT: HAZARD ANALYSES OF THE WAARP AND ANSOL TANK FARM PROCESSES

Provided process hazard analysis (PHA) and semi-quantitative risk assessment (QRA) using layers of protection analysis (LOPA) services of the Weak Acetic Acid Recovery (WAARP) Tank Farm and the Ammonium Nitrate Solution (ANSol) Tank Farm for BAE Systems, OSI at the Holston Army Ammunition Plant in Kingsport, Tennessee as part of BAE's contract deliverables package to their customer (U.S. Department of Defense). Project deliverables included preliminary and final design analysis reports summarizing the findings of each analysis and a list of recommendations with technical basis justification. Additionally, facility siting and human factors was analyzed for each process and summarized. The analyses met all requirements as stated in paragraph (e) of OSHA's process safety management (PSM) regulation, 29 CFR 1910.119 and part 68.67 of EPA's risk management program (RMP) regulation, 40 CFR 68.



Nuclear Fuel Services (BWXT)

PoP: 06/2020 to 07/2020
Value: \$19,000
Contact: Mike Anderson
1205 Banner Hill Rd
Erwin, TN 37650
mwanderson@bwxt.com

PROJECT: PROCESS HAZARD ANALYSIS OF AREA 300 THROUGH AREA 500 PROCESSES

Provided process hazard analysis (PHA) and semi-quantitative risk assessment (QRA) using layers of protection analysis (LOPA) services of Area 300 through Area 500 processes for NFS at their facility in Erwin, Tennessee as part of NFS's modernization efforts to satisfy contract requirements to their customer (U.S. Department of Energy, Naval Reactors Program). Project deliverables included a preliminary design analysis report summarizing the findings of the analysis and a list of recommendations with technical basis justification. Additionally, facility siting and human factors was analyzed for the process and summarized. The analysis met all requirements as stated in paragraph (e) of OSHA's process safety management (PSM) regulation, 29 CFR 1910.119 and part 68.67 of EPA's risk management program (RMP) regulation, 40 CFR 68.



PERFORMANCE HISTORY



Vacuum Technology, Inc.

PoP: 04/2022 to Present
Value: \$5,400
Contact: Jason Alfrey
1003 Alvin Weinberg Drive
Oak Ridge, TN 37830
jalfrey@vacuumtechnology.com

PROJECT: STRUCTURAL ANALYSIS OF VACUUM PUMP EQUIPMENT FRAME

Performed seismic analysis to provide an analytical basis and demonstrate code compliance for the ITER CryoGuard Vacuum Pump Station (VPS) frame. The VPS provides a critical function to the ITER Fusion Reactor and therefore the frame must be analyzed and qualified under the design code of record. The VPS frame was evaluated for member utilizations using RISA-3D, a linear finite element analysis (FEA) software. Connection utilization was evaluated using hand calculation methods. Once completed, a calculation report will be submitted along with an engineering memo stating the frame's compliance with AISC 360.



Global Laser Enrichment, LLC

PoP: 11/2022 to Present
Value: \$50,000
Contact: Stephen Long
PO Box 780
Wilmington, NC 28401
stephen.long@gle-us.com

PROJECT: TEST LOOP INTEGRATED SAFETY ANALYSIS

Providing engineering services to review the Test Loop ISA in accordance with GLE and GNF-A plans and procedures and revising the ISA baseline documents to encompass the new equipment and processes being implemented in the Test Loop, located at GLE's facility in Wilmington, NC. Additional scope includes development of Quantitative Risk Assessments (QRAs), calculations (as needed), revised or new Criticality Safety Analysis (CSAs), IROFS Boundary Definition Packages (BDP), ISA Summary revision inputs, and recommended SNM-1097 License Amendment inputs to support the new equipment. Project Tasks include:

- PHA Review to validate and revise, as necessary, the PHA for the Test Loop ISA. The review will also identify the core unacceptable risk accident sequences that need to be carried forward in a Quantitative Risk Analysis (QRA).
- QRA Development for each accident sequence, including conduct of a Quantitative Risk Analysis and review of the existing Fire Hazards Analysis for any necessary modifications.
- ISA Summary and IROFS Boundary Package Development based on results of PHA and QRA work performed.



Merrick & Company

PoP: 03/2022 to Present
Value: \$200,000
Contact: Brian Drane
1093 Commerce Park Drive
Suite 200
Oak Ridge, TN 37830
brian.drane@merrick.com

PROJECT: ONGOING ENGINEERING DESIGN SUPPORT OF THE LITHIUM PROCESSING FACILITY (Y-12 COMPLEX)

Providing multi-disciplinary engineering support for the design of the Lithium Processing Facility at the Y-12 National Security Complex in Oak Ridge, Tennessee. Structural engineers provide ongoing seismic analysis support of various equipment related to the design of the Y-12 Lithium Processing Facility. Mechanical engineers provide ongoing mechanical specification development and SME review of all mechanical drawings.



PERFORMANCE HISTORY



Hicks & Ingle Corporation

PoP: 11/2022
Value: \$2,525
Contact: Travis Tucker
8909 Joe Daniels Road
Knoxville, TN 37931

PROJECT: DEVELOPMENT OF FABRICATION DRAWINGS FOR THE BUILDING 9201-05 UTILITY ISOLATION AND REROUTE PROJECT (Y-12 COMPLEX)

Developed fabrication drawings to support the Building 9201-05 Utility Isolation and Reroute Project using field-verified measurements for fourteen (14) beams and angle clip details included within the provided engineering package. The drawings were developed using Autodesk Advance Steel and AutoCAD. IEG received this emergent scope of work in anticipation of a planned outage at the Y-12 Complex and produced the final deliverables within three days of initial receipt.



Pro2Serve, Inc.

PoP: 08/2022 to 09/2022
Value: \$37,044
Contact: Jeff Alcorn, PE
110 Bethel Valley Road
Oak Ridge, TN 37830
alcornj@p2s.com

PROJECT: STRUCTURAL EVALUATION OF THE B1134 HOIST SYSTEM

IEG was contracted to perform a structural evaluation of an existing superstructure at the Minot Air Force Base in Minot, ND to ensure the building structure was adequate for the loads imposed by the proposed new monorail system. A site investigation was conducted to observe the structural conditions and the configuration of the hoist installation. The building's loads were calculated in accordance with ASCE 7 and UFC 3-301-01. The steel roof member capacities were evaluated in accordance with AISC360. The building's structural roof members were analyzed using RISA CALC and the High Bay roof trusses were modeled and analyzed using RISA-3D. As a result of the evaluation, IEG structural engineers made several recommendations to the Base in order to provide code compliance for non-compliant connections that were found in the existing hoist monorail system.



United Cleanup Oak Ridge, LLC (UCOR)

PoP: 07/2021 to 09/2022
Value: \$90,000
Contact: Dylan Allen
701 Scarboro Road
Oak Ridge, TN 37830
dylan.allen@orcc.doe.gov

PROJECT: ONGOING STRUCTURAL ENGINEERING DESIGN SUPPORT

Provided significant structural support for various UCOR projects, including:

- Impact Analysis of the MSRE Continuous Purge System platform (ORNL), using STAAD.Pro.
- Design of the Replacement 7966 Filter House (ORNL), using RISA 3D.
- Preliminary Structural Analysis of the existing DARA Facility (Y-12), using RISA 3D.
- Biology Complex D&D Critical Lift Evaluations (Y-12), using hand calculations.
- Development of Shower Trailer Grading Plans (Y-12), using Autodesk Civil 3D.



PERFORMANCE HISTORY



Nuclear Fuel Services (BWXT)

PoP: 07/2022 to Present
Value: TBD
Contact: Jason Ward
1205 Banner Hill Rd
Erwin, TN 37650
jkwward@bwxt.com

PROJECT: ENGINEERING STAFF AUGMENTATION

Providing ongoing engineering support for various capital projects at the Nuclear Fuel Services (NFS) facility in Erwin, Tennessee. IEG is providing ongoing process engineering support by performing process calculations, documenting process information, specifying equipment and instrumentation controls, generating data sheets, creating IQ/OQ/PQ test plans, and providing input for system operating procedures.



Merrick & Company

PoP: 06/2022 to 12/2022
Value: \$23,700
Contact: Brian Drane
1093 Commerce Park Drive
Suite 200
Oak Ridge, TN 37830
brian.drane@merrick.com

PROJECT: B9215 CRITICALITY ACCIDENT ALARM SYSTEM (CAAS) CONCEPTUAL DESIGN (Y-12 COMPLEX)

Developed a preliminary design for the infrastructure necessary to support a new Mirion CAAS-3S system at the 9215 Complex at the Y-12 National Security Complex to be used to develop a detailed project cost estimate. Specifically, IEG provided Seismic Qualification Utility Group (SQUG) certified personnel to perform evaluations throughout the 9215 Complex wherever CAAS horns, strobes, probes, and raceway systems are to be installed. The evaluation included existing equipment and utilities for II over I (seismic) interactions using SQUG methodology and provided recommended resolutions for inadequate utilities for the CAAS System in the 9215 Complex at Y-12.

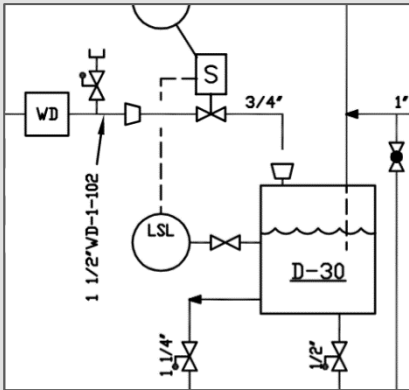
Additionally, the SQUG evaluation:

- Identified existing utilities, equipment, and other components where supports or anchorage could be degraded or was already non-conforming and thereby posed a threat of causing consequential damage to portions of the CAAS-3S system during seismic events.
- Identified and conceptualized portions of the CAAS-3S system where installation of Consequential Damage Protection was recommended.
- Developed rehabilitation floor and roof plan drawings that identified and located where rehabilitation of supports or anchorages utilities, equipment, or other components were required or otherwise recommended and identified the specific areas of the facility where SQUG evaluation of utilities and equipment was performed.



Scan for Past Performance

How Can Integral Engineering Group Help YOU?



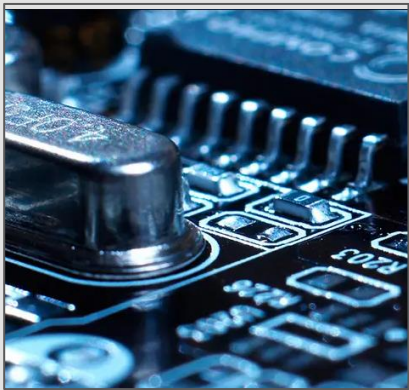
Process Engineering



Mechanical Engineering



Structural Engineering



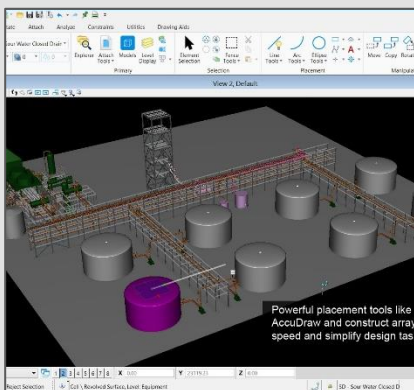
Electrical Engineering



Instrumentation and Controls



Piping Engineering



Drafting & 3D Modeling



Training



Staff Augmentation