



INFRASTRUCTURE

MINING & METALS

NUCLEAR, SECURITY & ENVIRONMENTAL

OIL, GAS & CHEMICALS

Nuclear Safety Center of Excellence

Providing Expertise
to Government
Customers





Bechtel established the Nuclear Safety Center of Excellence (NSCE) to support current projects and to develop top talent for future challenges in the fields of nuclear safety and operations.

The NSCE builds upon Bechtel's legacy of outstanding nuclear safety performance on both commercial and government projects, capturing our world-class experience in licensing, nuclear safety, nuclear engineering, and operations. As the nuclear industry undergoes a transformation to align with evolving market and regulatory trends, our experts remain at the forefront of innovation, preparing us for the future of the nuclear industry and the challenges it may pose.

Bechtel has been a leading engineering, construction, and project management contractor for 120 years, achieving extraordinary results for our customers, delivering value, and executing a robust and diverse portfolio of work. The NSCE applies this expertise to our nuclear projects by harnessing our experience, capturing lessons learned, and providing qualified personnel to our projects to meet the needs of our customers.

At the NSCE, we have combined our government and commercial nuclear personnel to strengthen our ability to address technical and regulatory challenges on all nuclear projects. Bechtel invites you to explore our demonstrated solutions to complex nuclear projects and to utilize our extensive experience in all phases of our nuclear projects—enabling yours to be a success.



CHIP LAGDON | CHIEF ENGINEER, NUCLEAR OPERATIONS & SAFETY
BECHTEL NUCLEAR SAFETY CENTER OF EXCELLENCE

Our Capabilities

The NSCE leverages Bechtel's best practices, lessons learned, tools, and processes developed in our 60+ years of nuclear safety experience on government and commercial projects. Comprised of world-class engineers and technical specialists, the NSCE provides industry-leading expertise across a wide array of U.S. Department of Energy (DOE) and National Nuclear Security Administration (NNSA) projects.

The NSCE is capable of quickly deploying experienced specialists to address emergent nuclear safety issues identified by project teams or customers and assist with integrating nuclear safety into all phases of a project's lifecycle.

Our personnel understand the unique hazards of nuclear facilities and use cross-discipline approaches to develop innovative, flexible, and cost-effective safety measures to address these hazards.

The NSCE provides expertise in:

- Nuclear facility hazard evaluation
- Accident analysis
- Radiation protection
- Safety basis development

Our experts have extensive experience with processing and cleanup of legacy nuclear and hazardous waste and have delivered critical scientific and national security missions for the DOE and NNSA.



Hazard Analysis



Accident Analysis



Safety Basis Development



Radiation Protection



Criticality Safety

Our Experience

From the pioneering Experimental Breeder Reactor in 1951 through to the present, Bechtel has supported the DOE and its predecessor organizations on a wide variety of first-of-a-kind and highly complex nuclear projects and in managing and operating a number of the agency's production sites, national laboratories, and other facilities.

U.S. Nuclear Deterrent | Various Locations, U.S.

Y-12 National Security Complex and Pantex Plant

Bechtel leads a team that manages and operates the Y-12 National Security Complex (Y-12) in Oak Ridge, Tennessee and the Pantex Plant (Pantex) in Amarillo, Texas. Both sites are key in maintaining the safety, security, and effectiveness of the U.S. nuclear weapons stockpile and are core elements of a sustainable and robust national nuclear deterrent.

Y-12 is a principal manufacturing facility in the DOE weapons complex. Bechtel leads project work in an effort to reduce the size of the weapons complex and make it safer, more secure, and less costly, including:

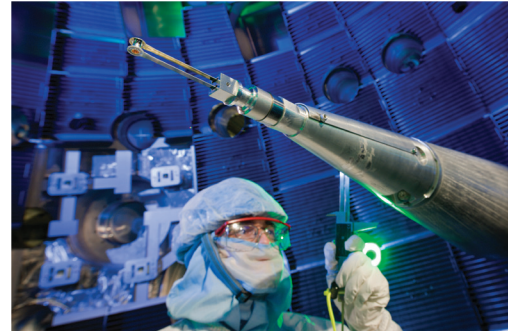
- Safely and securely storing uranium
- Processing and manufacturing special materials vital to national security
- Supplying highly enriched uranium for U.S. Navy nuclear powered aircraft carriers and submarines
- Conducting tests and training as well as decommissioning weapons to prevent the spread of weapons of mass destruction

Bechtel is the engineering, procurement, construction, and commissioning contractor at the Uranium Processing Facility (UPF), a state-of-the-art complex for enriched uranium operations that is one of the most complex design and construction projects attempted at Y-12. UPF is designed largely to replace aging, Cold War-era facilities with modern, safe, and efficient buildings and infrastructure.

UPF and the adjacent Highly Enriched Uranium Materials Facility (HEUMF)—also designed and built by Bechtel and the central storage facility for the U.S. HEU stockpile—are designated as the U.S. Uranium Center of Excellence.

The Pantex Plant is the nation's only assembly, disassembly, and integrated explosives manufacturing facility supporting the nuclear weapons stockpile. Bechtel ensures the plant carries out its mission to ensure the safety, security, and reliability of the U.S. nuclear stockpile:

- Performing nuclear weapons life-extension programs
- Dismantling and disposing of retired weapons systems
- Surveilling active weapons systems and plutonium pits



Bechtel has performed extensive nuclear safety work at Y-12 for decades — currently we manage and operate the site and are the prime contractor to design, build, and commission UPF.

From top to bottom: An aerial view of Y-12; and a view inside the National Ignition Facility at LLNL—a key facility for stockpile stewardship.

Los Alamos National Lab

For more than a decade, Bechtel worked in partnership with the University of California to manage and operate Los Alamos National Laboratory (LANL), a premier U.S. facility for national security and scientific research. LANL addresses issues such as plutonium production, stockpile stewardship, energy security, climate change, terrorism, and nuclear weapons proliferation. Focus areas include space exploration, geophysics, materials science, supercomputing, medicine, and nanotechnology.

Bechtel also designed and built the Radiological Laboratory Utility Office Building at the lab, which analyzes plutonium and other materials in support of national security missions.

Lawrence Livermore National Lab

Bechtel leads the team that manages and operates Lawrence Livermore National Laboratory (LLNL), which has a broad global security mission, continuing stockpile stewardship responsibilities, and the historical nuclear weapons mission.

The lab's capabilities encompass nuclear science and technology, high-performance computing, advanced lasers and diagnostics, micro and nanotechnology, and remote sensing with special focus on areas vital to the U.S. national interest: biosecurity, defense, counterterrorism, energy, weapons, and nonproliferation.

Many premier U.S. nuclear research facilities, such as the National Ignition Facility, are run by the lab.

Hanford Waste Treatment Plant | Richland, WA



Bechtel leads the team designing, constructing, and commissioning the DOE's Hanford Waste Treatment Plant (WTP) in Washington state, the world's largest and most sophisticated radioactive waste treatment plant.

This one-of-a-kind complex will immobilize 56 million gallons of liquid and semisolid nuclear and chemical waste, a legacy of World War II and Cold War nuclear weapons production.

At the world's largest radioactive waste treatment plant, Bechtel works collaboratively with DOE personnel to avoid rework and meet contract milestones.

Bechtel works constantly to maintain stringent nuclear safety and quality standards at WTP. We conduct facility hazard evaluations, accident analyses, radiation protections, and safety basis documentation, as well as criticality analyses, safety evaluations, shielding analyses, and ALARA assessments.

In close collaboration with the customer, Bechtel overcame regulatory challenges at WTP and successfully developed the Documented Safety Analysis (DSA) and Technical Safety Requirements (TSR) for the Low-Activity Waste (LAW) Facility on a DOE-requested accelerated schedule.

The DSA and TSR are required prerequisites for DOE authorization of nuclear facility operations. To meet the prerequisites, Bechtel applied a revised DOE method for hazards/accident analysis and functional classification of safety controls. This involved an increased focus on chemical hazards to ensure consistency with updated DOE national standards.

To apply the revised method to WTP processes, Bechtel developed safety strategy summary documents and a technical evaluation process to eliminate rework. This has enabled WTP to avoid redesign, reprocurement, and equipment replacement—minimizing extensive cost and schedule impacts.

To support the acceleration, Bechtel developed detailed metrics for tracking the development progress of the DSA and TSR. Senior management reviewed progress weekly and resolved emerging technical issues proactively, further minimizing schedule impact. Joint Bechtel-DOE teams rapidly evaluated issues and recommended low-impact solutions to achieve regulatory compliance.

Demonstrating successful collaboration, the DSA and TSR were approved in one year, approximately three months ahead of schedule.

Sellafield Pile Fuel Cladding Silo | Sellafield, UK

Bechtel leads a joint venture working to address Europe's third highest nuclear hazard: the Pile Fuel Cladding Silo (PFCS) at Sellafield Nuclear Site in northwest England.

Our team designed, fabricated, and is installing silo doors and waste retrieval and handling modules for PFCS. The project, part of a UK Nuclear Decommissioning Authority program to decommission nuclear storage facilities dating to the early 1950s, has three phases:

1. Mobilization and project familiarization
2. Design, specifications, procurement packages, and safety-case support
3. Procurement, manufacture, works testing, construction, installation, and commissioning

Commissioned for use in 1952, PFCS received and safely stored radioactive cladding until the silo became full in 1964. The Sellafield nuclear legacy includes the origins of the UK nuclear weapons program, spent nuclear fuel from the UK and abroad, reactor decommissioning, reprocessing facilities, and waste stores.

Decommissioning at the site will continue beyond the year 2100.

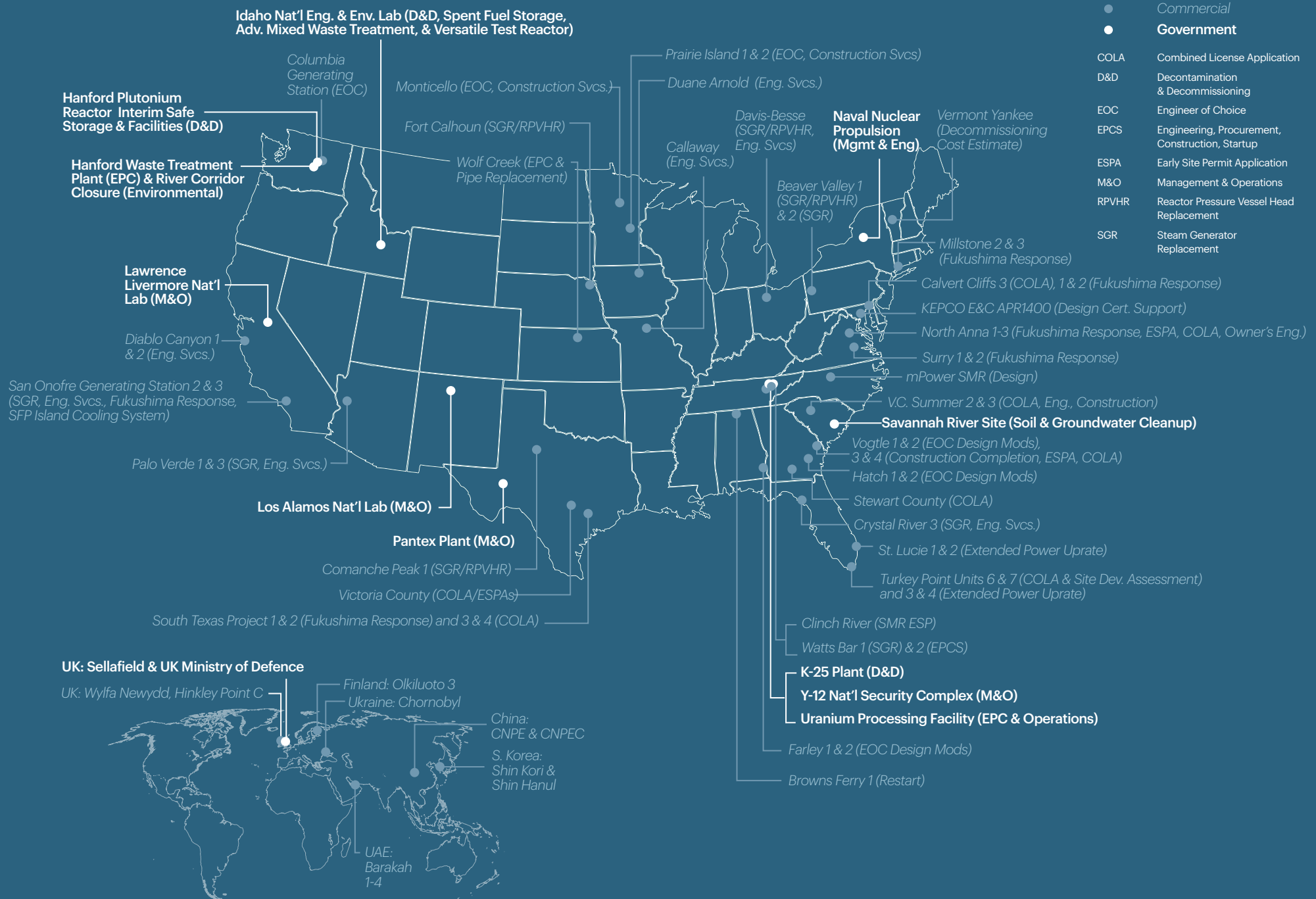
Our team has been recognized for outstanding performance at PFCS, including increasing lifecycle savings. We collaborated with our client and established a joint design review team to simplify the design and employ innovative approaches, resulting in £312M of cost savings and four years of schedule acceleration.



By building competencies, performing as promised, broadening scope, creating value, and deepening our client relationships, Bechtel is working to ensure our **nuclear capabilities** are supporting the future of the nuclear industry. At Sellafield, our change of strategy resulted in £312M of **reduced cost** and four years of **schedule savings**.

Top to bottom: Sellafield doors nearing completion; and construction personnel conducting a quality assessment at WTP.

Project Experience



Our People

Bechtel staff are industry-recognized leaders who use proven best practices, systems, tools, and processes to deliver for our customers. Our nuclear safety experts have performed on a wide range of projects, including decommissioning, waste management, and remediation of nuclear facilities; nuclear waste treatment and disposal facilities; facilities for U.S. and allied nuclear materials; and stewardship of the nuclear deterrent.



Chip Lagdon | Chief Engineer, Nuclear Operations & Safety

- ✓ 35+ years of experience in the nuclear industry
- ✓ DOE & commercial expertise in nuclear licensing & operations, including NRC and Naval Reactors-certified

Chip Lagdon has unparalleled nuclear expertise across the commercial and government sectors. He is a highly adept leader who previously served as the DOE's Chief of Nuclear Safety for Environmental Management, Nuclear Energy, and Science, where he oversaw Operational Readiness Reviews, Accident Investigations, and Construction Project Reviews. Chip also worked as a Naval Reactors certified reactor shift test engineer, a NRC-licensed senior reactor operator, and a senior licensing engineer at various commercial facilities. Chip has past experience as a Chief Nuclear Officer.



Dennis Klein | Nuclear Safety Engineering Manager

- ✓ 40+ years of DOE & commercial nuclear experience
- ✓ Performed & managed design & regulatory work on DOE-regulated projects

Dennis Klein has extensive experience managing hazard analyses, accident analyses, controls selection, safety basis development, safety basis maintenance, criticality safety and radiation protection. He previously served in several key leadership roles, including as the Integrated Safety Management System Coordinator for the Hanford Site Environmental Restoration Project; Nuclear Safety Manager at WTP; and Nuclear Discipline Functional Manager for all nuclear engineering work performed by Bechtel.



Robert (R.T.) Brock | Nuclear Safety Engineering Manager

- ✓ 30+ years of experience management & operation of nuclear facilities in the DOE complex at six major sites
- ✓ Held senior management positions within DOE & NNSA

R.T. Brock has developed and implemented programs to define and manage nuclear safety contractual requirements and mechanisms used to achieve compliance; improve the formal conduct of engineering processes and support for nuclear facilities; and resolve complex technical issues in coordination with DOE reviewers.



Michael Greutman | Nuclear Safety Manager

- ✓ 26+ years of experience providing technical & management support for nuclear & non-nuclear facility safety analyses
- ✓ Developed nuclear safety programs for DOE sites & facilities

Michael Greutman has in-depth experience providing technical and management support in the development of nuclear safety programs for DOE and its contractors as well as the development and implementation of assessment programs for nuclear operations. He has been responsible for developing and managing safety basis, nuclear criticality safety, and unreviewed safety question programs.



Karl Waltzer | Senior Nuclear Safety Technical Advisor

- ✓ 40+ years of nuclear industry experience on DOE & commercial nuclear projects
- ✓ Served at National Nuclear Security Administration

Karl Waltzer currently serves as the Waste Treatment Plant Project senior technical advisor for nuclear safety. Prior to joining Bechtel, Karl held roles as Deputy Manager for the NNSA Production Office as well as Senior Technical Advisor and Nuclear Safety Manager at the Pantex Plant, where he obtained a wide breadth of experience in management, start up, and operations for DOE nuclear facilities.



Contact Us

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