

Your Partner for Successful D&D

PROVEN PROGRAMS • EFFECTIVE TRANSITION • WORLD-CLASS PERFORMANCE





We understand the complexities, costs, and risks associated with all phases of decommissioning, and we can support our customers with services and options involving SAFESTOR, PROMPT DECON, or a combination/hybrid approach. We have achieved a high regulatory confidence and margin for task performance based upon our successful work activities and regulatory compliance during the Zion Nuclear Station D&D project.



*COUNTERCLOCKWISE FROM LEFT
Characterization activities at Zion Station*

Greater Than Class C (GTCC) waste containers arrive on site prior to waste operation activities

Dismantling smokestack at La Crosse Boiling Water Reactor

*OPPOSITE PAGE, TOP
Transferring a piece of RV internals segmentation equipment into U2 containment via heavy lift rail system at Zion*



Early planning reduces cost and risk. Upon plant shutdown, the operational mentality and focus need to quickly shift to a “decommissioning mode.” Early decisions and selected plant activities, if not planned properly during the early years of shutdown, can adversely impact the financial cost of decommissioning. EnergySolutions can help guide and shape the initial entry into decommissioning such that costs are optimized and the site is configured successfully for SAFESTOR and/or PROMPT DECON. Services include:

- Analysis of Decommissioning Trust Fund
- Selection of optimized SAFESTOR/PROMPT DECON scenarios
- Planning, Post-Shutdown Decommissioning Activities Report (PSDAR), and Decommissioning Cost Estimate/Updates
- Refinement of project controls, baseline activities, risk register
- Organizational transition/ cultural transformation
- Review/revisions to License Basis Documents, Safety Analysis Report, Tech Specs, License Conditions, Orders, and Exemptions
- Identification and implementation of program and procedure changes for Physical Security, Emergency Planning, ODCM, REMP, QA, and Fire Protection
- Identification of demolition and environmental permitting
- Historical Site Assessment/ Site Characterization
- MARSSIM and MARSAME program development
- Early radiation protection planning, including RVI, RAM-QC, GTCC considerations
- Strategies for Spent Fuel Pool Island and “Cold & Dark”
- Stored legacy waste removal and disposal
- Waste disposition analysis, including transport mode and disposal options
- Determination of final site end state and exposure compliance scenario



We are the leading low-level radioactive waste (LLRW) logistics, processing, and disposal company in the nation and have integrated those capabilities to present full spectrum D&D services.



Initial Site Activities

- License transfer and stewardship options
- Decommissioning planning, post-shutdown transition support, PSDAR
- Decommissioning cost estimates and updates
- SNF management and ISFSI site/dry cask selection
- Historical Site Assessment and site characterization

- RP/ALARA programs and MARSAME/MARSSIM expertise
- 10 CFR 50 Appendix B QA Program with graded QA requirements for D&D

Major D&D Activities

- Reactor Vessel (RV) and Reactor Vessel Internals (RVI) segmentation

- Hazardous, mixed, and radioactive waste containers; loading; transportation; and disposal
- Classification and management of Class A, B, C, and GTCC waste
- LLRW disposal site ownership, logistics, and disposition optimization
- Large component removal and disposal

- Demolition contracting and management

License Termination Activities

- Backfill material assessment, reuse of clean concrete, and excavation filling
- License Termination Plan (LTP), Final Status Surveys (FSS) and license termination
- Site restoration

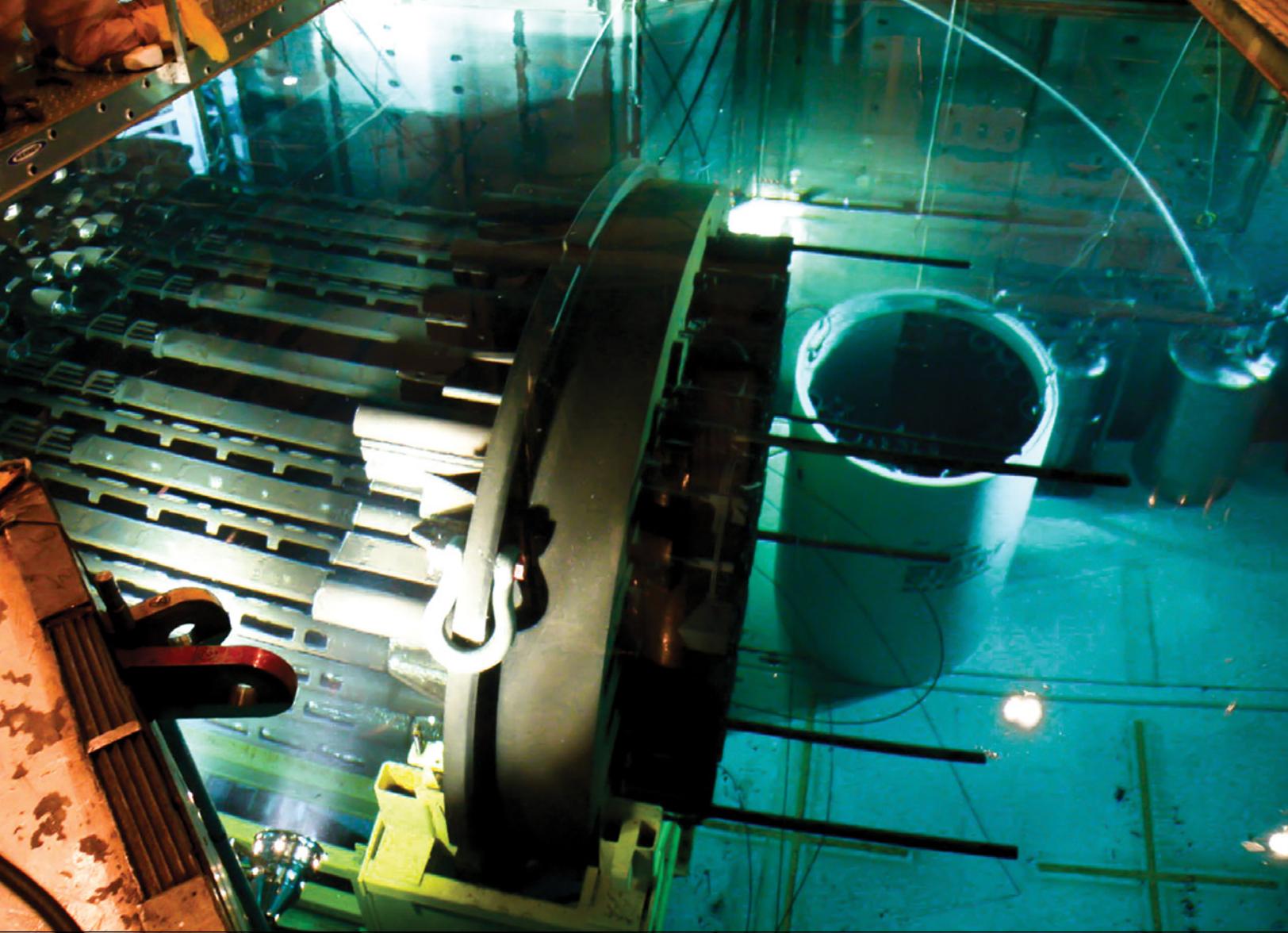


COUNTER-CLOCKWISE FROM LEFT: EnergySolutions operates various casks for the transport of highly irradiated components and other material

Laying down rebar for heavy haul path apron between two ISFSI pads

Reactor cavity preparations before Major D&D Activities proceed

OPPOSITE PAGE: RVI segmentation



Uniquely integrated turnkey services: Our personnel; equipment; and logistics, processing, and disposal capabilities enable us to provide the right level of services to our clients to resolve any size decommissioning challenge.

Subject Matter Experts

- Project Management
- Project Controls/Scheduling
- Decommissioning Cost Estimation
- Spent Nuclear Fuel
- Waste Management
- QA/QC
- Radiation Protection
- Site Characterization
- Reactor Vessel Segmentation
- Regulatory Affairs
- Engineering

Over-the-road Trucks, Tractors, Vans, Trailers, and Tankers

Railcars, Gondolas, Cargo Containers, and Intermodals

- Over 1,000 rail cars
- Over 2,500 bulk waste containers

90% of all NRC/DOT Licensed Transport Casks in the U.S.

- DOT Type A
- IP-II Shipping Casks
- NRC Type B Casks (10-160B, 8-120B, 3-60B)

Spent Nuclear Fuel Cask Designs (BWR/PWR)

Permanent Transload Facilities (MA, NJ, TN, NV)

LLRW Processing Facilities

- Bear Creek Operations (TN)
- Gallaher Road Operations (TN)
- Erwin Resin Solutions (TN)
- Memphis Operations (TN)
- Barnwell Processing/Disposal (SC)
- Clive Disposal Facility (UT)
- Walker Operations Facility (Canada)

We have achieved performance confidence with the NRC and other federal, state, and local regulators and stakeholders through our excellent project and safety performance at Zion Station.

Project Highlights

- Licensee 10CFR50 Appendix B Program implementation
- Quarterly “Zion Community Advisory Panel” (ZCAP) meetings
- Disposal of 22,390 Curies of Class B & C waste
- Transfer of 2,226 spent fuel assemblies to 61 dry storage casks at the ISFSI within 366 days
- Packaging and transfer of 460,000 Ci of Greater-Than-Class-C (GTCC) to four dry storage casks at the ISFSI
- Segmentation of two reactor vessels and associated internals
- Off-site removal and disposal of all large components

We are currently on track and setting records for:

- Completion of D&D within eight years
- Low-cost, high performance for the largest 2-unit site D&D in the U.S. to date
- Largest and fastest dry cask storage campaign in U.S. history
- Final project dose 40% less than original dose estimate



ABOVE: Final preparations continue for containment demolition expected to occur in January 2018

TOP OF PAGE: Lessons learned resulted in steam generators being removed twice as quickly from the Unit 2 reactor (3 months) as Unit 1 (6 months)

WATERMARKED IMAGE: ISFSI at Zion

OPPOSITE PAGE, TOP: San Onofre Generating Station



SONGS D&D

We have formed a joint venture with AECOM to decommission the San Onofre Nuclear Generating Station (SONGS), located south of Los Angeles, California. Unit 1 commenced operation in 1968 and has been dismantled. Units 2 and 3 permanently ceased operations in June 2013. The project, one of the largest commercial nuclear plant decommissioning projects to date in the United States, is projected to take ten years to complete.

New and Ongoing Decommissioning Projects



February 2017

SEFOR Test Reactor

We are working with the University of Arkansas to decommission the deactivated experimental fast breeder reactor that was shut down in 1974 and sits on university property southwest of Fayetteville, Arkansas. The project is expected to take two years to complete.



August 2017 - only containment remains



La Crosse Boiling Water Reactor

In 2016, we took operational control of the La Crosse Boiling Water Reactor in Genoa, Wisconsin, allowing us—as the Part 50 licensee — to continue expedited decommissioning activities at the plant. We had previously removed, transported, and disposed of the plant's reactor pressure vessels. The project will be completed in 2018.

PHOTO ABOVE: Demolition of turbine building



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