



## CASE STUDY

### PSC Conquers Crowded Site

Keeps Cranes Safely Moving and Supplies Flowing



# CASE STUDY: PSC Conquers Crowded Site

Skilful rigging and handling during a refueling outage requires precise timing, vigilant crews and flexible transport. PSC delivered all that and more to Entergy's Waterford 3 Nuclear Plant. During a recent maintenance effort, Waterford project managers repeatedly turned to PSC to move heavy components. PSC's proficient schedule adherence and efficient rigging inside the reactor building saved Entergy money and kept projects progressing.

For more than 30 days, PSC's crews — comprised of crane operators, crane coordinators, riggers, pipefitters, electricians, millwrights and a site containment manager — worked 24/7 to meet the ambitious schedule. "PSC has 30 years of experience working inside nuclear power plants," said Christopher E. Cox, P.E., vice president of PSC. "Our seasoned crews of highly skilled craftsmen were well prepared to meet, even exceed, the expectations of plant management."

Using the company's fleet of innovative heavy lift and transport equipment, PSC supported the removal and installation of a new refueling machine and a large reactor cooling pump motor. PSC also performed all of the rigging and handling of components necessary to safely and efficiently refuel the reactor vessel.

To facilitate rigging, PSC temporarily installed two knuckle boom cranes to maneuver supplies and tools, including stud de-tensioning equipment, radiation shielding and temporary electrical panels, through the 20-foot diameter equipment hatch. Once the supplies were inside, PSC crane operators hoisted them into position using the knuckle boom cranes and onsite polar crane.



## Every Lift Carefully Coordinated

With three cranes operating inside the crowded containment building, coordination was critical. “Our crane coordinators watched every crane movement,” reported Tommy Morrison, project director for PSC. “They continuously communicated with operators via radio headsets to ensure that the crane booms never touched.”

This precise control proved critical when PSC crews moved the new 7,000-lb. Westinghouse fuel handling machine and trolley. PSC used its Self-Propelled Modular Transporters (SPMTs) to transfer the delicate machine first to the site’s protected area and then through the equipment hatch. The SPMT’s maneuverability made transport possible despite the fact that a column blocked the hatch.

Getting the unwieldy component through the hatch also required skillful rigging. PSC’s crane operators had to upend and transverse the fuel handling machine, which was more than 30 feet long. “This maneuver required a synchronized lift,” explained Morrison. “As we moved the machine through the equipment hatch, we had to keep raising it, while simultaneously keeping the tail end neutral so it wouldn’t come into contact with the top of the hatch.”

## SPMT Speeds Crane Erection and Teardown

PSC’s ability to safely and efficiently maneuver an unwieldy component around obstacles caught the attention of other Waterford project managers. As a result, PSC was asked to support the erection and teardown of a 600-ton crane used to replace the reactor coolant pump motor. Again, PSC’s SPMT proved perfect for the job.

PSC used the SPMT to transport the crane counterweights, mats and winch to the work location. Normally, a truck pulling a flatbed trailer would transport the 15,000-lb. counterweights, two at a time. The 600-ton crane required eight counterweights. Due to the site’s congested travel path and security checkpoints, it would have taken 12 hours for the truck to position the required counterweights. Instead, with a hauling capacity of 67.5 tons, PSC’s SPMT could carry four counterweights each trip.

“Our SPMT carried double the load. Plus, the SPMT’s compact size made it much easier to maneuver, which enabled us to offload it in just 30 minutes,” Morrison said. Its use also reduced manpower needs, as only the SPMT operator and one rigger were required for this task.

“*We reduced crane rental time by two to three days for each large crane.*”

Tommy Morrison, PSC Project Director

The quick assembly meant the cranes could begin work sooner, critical to maintaining schedules, while rapid tear down saved money at completion. PSC disassembled the crane and removed it in just over three hours. The success of this project led Waterford project managers to ask PSC to disassemble and remove a 400-ton crane that was being used in another location.

“By using PSC’s onsite fleet of innovative heavy lift and transport equipment, we were able to shorten set up and tear down time, which reduced crane rental by two to three days for each large crane,” Morrison said. PSC’s efficiency saved Entergy tens of thousands of dollars in crane rental costs.

The utility tapped PSC’s onsite expertise for additional out-of-scope services. Crews also helped rig and move a large electrical motor offsite, while PSC’s millwrights augmented Waterford’s mechanical maintenance tasks.

“PSC’s safe work history and schedule adherence on prior projects, fostered confidence in its work. Waterford trusted us to do the job without extra oversight,” Morrison said. “PSC efficiently managed the rigging schedule that was defined prior to the outage. As a result, Waterford site managers were able to focus on other critical path and emergent outage work.”

## FOR THIS PROJECT, PSC PROVIDED:

**Heavy Lift & Transport Equipment:** PSC delivered its SPMTs (two three-line trailers with power packs) and one knuckle boom crane to complete rigging and handling during the refueling outage.

**SPMT:** PSC’s SPMT skillfully maneuvered the crowded worksite to transport the fuel-handling machine and trolley; crane counterweights, mats and winch.

**Skilled Craft:** PSC’s crew installed and operated the knuckle boom cranes, operated the SPMT, pre-staged materials in the correct orientation, coordinated every lift, scheduled polar crane use and rigged supplies inside the containment building. Our experienced team completed work with no schedule slips while also performing numerous requests for out-of-scope services.

