

Spallation Neutron Source Interstitial Shielding Blocks

MCE built 2.4 million pounds of carbon steel shielding for the Spallation Neutron Source facility in Oak Ridge, Tennessee.

The scope of equipment and support to be provided includes:

- Fabricate and machine complete 20 lower shielding blocks
- Fabricate and machine complete 20 upper shielding blocks
- Paint all 40 blocks
- Deliver the 35,000 – 80,000 lb blocks to the Spallation Neutron Source site.

The Spallation Neutron Source project is a government-sponsored laboratory that is designed to generate high-energy neutrons for research applications.

At the center of this \$1.8 billion dollar facility is a mercury target. After commissioning of the lab, this target location will become extremely radioactive, and hence the core vessel requires a large amount of shielding to protect the lab users and the environment.

To allow access to the target, the core vessel and the shielding has 18 ports for experiments. The need for these ports, along with an on-site lifting capacity of 50 tons, led to the shielding being designed in pie-shaped sections.

Blocks are created by laminating 5-inch pieces of steel plate into sections as much as 12 feet tall. Each section weights between 35,000 and 80,000 lb and is machined to exacting tolerances for the shielding size. After complete assembly, the block is dimensionally inspected with a laser tracker, painted, and packaged for rail shipment from Washington to Tennessee.



UT-Battelle