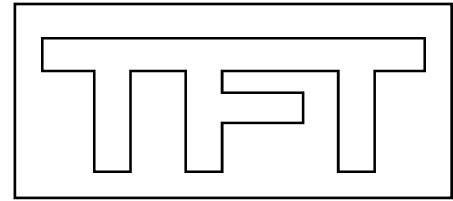


CASE HISTORY

CH-051



BIO-DUR 560 SEALS UNDERWATER SURFACES IN CONCRETE SPENT NUCLEAR FUEL STORAGE POOL

THE CHALLENGE: Spent or exhausted nuclear fuel is safely stored under forty feet of water in specially designed “fuel pools”. The water over the used fuel rods serves as an effective barrier to the intense radiation escaping them.

An aging spent fuel pool at a domestic USA nuclear power plant had to be prepared for decommissioning after many years of service. In order for this process to be safely accomplished, it was first necessary to fully encapsulate the radioactive isotopes that had escaped the submerged fuel rods and attached themselves to the walls of the pool. Failure to perform this task allows the possibility of radioactive isotopes becoming airborne and posing a health risk.

THE SOLUTION: Working closely with nuclear divers from Underwater Construction Corporation of Essex, Connecticut, TFT produced a version of BIO-DUR 560 that could be applied via pressure-rollers to allow underwater encapsulation of the pool before draining.

In addition to BIO-DUR 560, several variants of the BIO-DUR 561 formula have been tailored for specific applications with changes in viscosity and cure rates. BIO-DUR 561 is also available in a “Nuclear” version approved by EPRI as an underwater applicable coating suitable for Service Level 1 applications within the primary containment of nuclear plant.

Using specialized plural component equipment feeding a pressure roller, divers were able to have a continuous supply of properly mixed coating material at the touch of a trigger. Working under the nuclear conditions of a fuel pool demanded careful attention to the condition of the divers’ equipment because working time under water is precious and equipment reliability is critical.

The application equipment delivered proportioned and pressurized coating components through 100’ of heated hose to a high pressure mixing block assembly. Exiting from the mixing block was a 10’ insulated

“whip” hose which was comfortable for the diver to handle.

Applications were made from the waterline down to a depth of 10-15 feet as the water level was lowered. Using this system, the contaminated surfaces were never directly exposed to air.

The extensive experience of Underwater Construction Corporation took care of the operational aspects of this project while the reliability and “field-friendliness” of the BIO-DUR 560 assured optimum application rates.



RESULT: The coating cured to a “firm”, condition within 3 hrs and was fully hard and tightly adhered after 12 hours. The operation proceeded on schedule and has set the standard for similar future projects.

For more information regarding this project contact:

Jeff Longmore, Technical Director
Thin Film Technology, Inc.