

Bruce Power Nuclear Generating Facility

Tiverton, Ontario

Secondary Containment Membrane

Problem

The joint venture partnership of Acres, Sargent, Lundy, & Fox was responsible for the restart of units 3 & 4 of the Bruce "A" Nuclear Generating Facility. Part of this project included the restoration of a secondary containment dyke around two 40'-0" diameter storage tanks. The twenty-five year old tanks are used to store #2 Fuel Oil for a Standby Generator. Testing revealed that the existing dyke area was sub-standard and may, in the event of a major spill, pose a serious environmental risk.



Completed secondary containment membrane

ASLF were looking for a liner system that would: a) contain any potential leaks that may occur; b) allow for easy detection of leaks; and c) allow for clean-up of any leaks or spills.

Solution

The project was awarded to Inscan Contractors based on their previous experience in nuclear facilities and a proposal that, although not the least expensive, met all of the needs of the client. Inscan's scope of work included regrading the containment areas and earthen berms, installation of concrete drainage sumps, installation of a secondary containment membrane around the tanks, and application of an FRP leak-detection membrane inside the tanks.

The material chosen for the secondary containment membrane was CSL Silicones' Si-COAT 549 RSM, which consists of a pure organosiloxane resin applied to a geosynthetic backer cloth. This system has outstanding chemical & UV resistance, and excellent stability in extreme temperatures. Thus, no overburden is required, allowing ease of membrane inspection and spill clean-up.

A Deltaliner FRP membrane system was applied to the floor of the tanks. This system consists of semi-rigid FRP panels (precut to fit the tank) which are laminated on site and sealed to the tank shell to form a primary containment liner within the tank. The membrane is

tested for leaks by drawing a vacuum on the interstitial airspace between the membrane and the tank floor (which now acts as secondary containment). Once in operation, any liquid which has leaked past the Deltaliner membrane into the airspace will be forced, under pressure head, to an inspection port on the exterior of the tank for easy detection.

Bruce Power can now take comfort in the fact that they have a multi-faceted line-of-defence against leaks both within the tanks and in the surrounding dyke area.



Concrete sump and pedestrian walkway

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