

[Form 2 (to be reported to Committee on Countermeasures for Contaminated Water Treatment and to be disclosed to public)]

Technology Information	
Area	Area 1
Title	Accumulation of Contaminated Water (Storage Tanks, etc.)
Submitted by	PacTec
<p>1. Overview of Technologies (features, specification, functions, owners, etc.)</p> <p>PacTec have developed, designed, manufactured and tested a flexible bulk liquid containment, storage and transportation system that has the potential to be suitable to provide interim and/or long term storage of treated contaminated water with remaining tritium contamination. The system has been called the PacTank.</p> <p>The technology has been developed in the USA and successfully tested for rail impact and vibration. The flexible containment has been designed to provide a robust solution for the storage and transport of bulk liquids, with unique features to counteract internal flow movement together with a multi-layer construction. The system has been specifically designed to be compatible with standard intermodal containers. A key feature of the PacTank is the outer strapping system that reduces the energy exerted on the container, therefore reducing wave action and ensuring safe storage and transportation.</p> <div style="display: flex; justify-content: space-around;">   </div> <p>A PacTank within a standard 20' container can hold a maximum of 22.7m³ (6,000 gallons) of liquid. Other intermodal containers can also be used.</p> <div style="display: flex; justify-content: space-around;">   </div>	

We have carried out an initial radiological assessment against the IAEA regulations for the safe transport of radioactive material TS-R-1 (SSR-6), for the suitability of the PacTank to provide containment storage for Tritium contaminated water based on the information provided from the presentations at the recent workshop in the UK. This was a range between 1.0E+06 to 5E+06 Bq/L. We have used the worst case scenario in our assessment of 5E+06 Bq/L.

Based on this data, the Tritium contaminated water would be categorised as LSA-1 material, which would require the use of Industrial Packages Type 1 (IP-1). This is only an indicative assessment as further information would be required taking into consideration any other radioactive or hazardous contaminants that may be present.

The PacTank is a design certified IP-1 transport package under the IAEA regulations and therefore would be suitable for transport of the contaminated water. This aspect provides greater flexibility for the interim storage and subsequent transport requirements of the site.

Perceived benefits of the PacTank:

- Eliminates the need for new steel storage tanks for the storage of Tritium contaminated water.
- Containers are mobile and can be re-located if required.
- Reduced costs.
- Provides flexibility.
- Has the capability to provide secondary containment with the container.
- Can provide integral transport capability for off-shore / out to sea disposal.
- Containers may be stacked to reduce the space required.
- Suitable to be used with PacTec's containment berms to provide spill containment.

2. Notes (Please provide following information if possible.)

- Technology readiness level (including cases of application, not limited to nuclear industry, time line for application)

- Challenges

- Ramp up for manufacturing and supply
- Hire or purchase of containers

- Others (referential information on patent if any)

- Patents are pending

- Perceived Benefits –

- Not permanent fixture
- Decommissioning and disposal easier – container not contaminated
- Facilitates transport for disposal

【Areas of Technologies Requested】

- (1) Accumulation of contaminated water (Storage Tanks, etc.)
- (2) Treatment of contaminated water (Tritium, etc.)
- (3) Removal of radioactive materials from the seawater in the harbor
- (4) Management of contaminated water inside the buildings
- (5) Management measures to block groundwater from flowing into the site
- (6) Understanding the groundwater flow