



NDA's Dounreay Site, Scotland, United Kingdom

Bulk from
2002-2012

Cesium removal from Na coolant of PFR and Na/K coolant of DFR with CsTreat. Sodium and sodium-potassium coolant of fast reactors was transformed into sodium or sodium potassium chloride solution with multiple molar salt concentration. CsTreat was found to be efficient in removal of cesium even in this high salt concentration.

Nuclear site: Dounreay Site
Location: Dounreay, Thurso, Caithness, Scotland, UK
Surrounding water environment: North Sea
Customer: Dounreay Site Restoration Ltd
Project duration: Bulk NaK from DFR Sept 2007 - April 2012
Bulk Na from PFR 2002 - 2007

DESCRIPTION OF THE PROJECT

One of the biggest hazards on the Dounreay site were coolants of those fast reactors. After intensive studies of treatment systems Dounreay site selected a method where coolant is transformed to chloride solution and highly selective ion exchange is used for cesium decontamination. CsTreat was found to be efficient in cesium removal.

RESULTS

First 1500 tons of Na coolant from Prototype Fast Reactor (PFR) was treated. After that 57 tons of Na/K coolant from Dounreay Fast Reactor was treated. Both coolants were transformed to saltwater and treated with CsTreat. After Na/K coolant's treatment Scottish environmental authorities stated that they were very happy for the results. The system was licensed to give at least decontamination factor (DF) of 1000, but it gave DF up to four million!