Highlight: DEMO plant concept related to tritium handling in the primary coolant system is developed.

1. T permeation into coolant
   - Blanket pathways
   - Divertor pathway

   T permeation into coolant was estimated to be as low as 5.7 gT/day = 2.5% of produced T.

2. T extraction from coolant
   - T permeation 5.7 gT/day
   - Management of T concentration in the coolant is viable by applying an existing water detritiation system (WDS) of CANDU.
   - Primary coolant loop
   - 94 kg/h
   - Bypass
   - WDS
   - 5.7 gT/day T removal

3. Confinement of T at LOCA
   - Combination of “cooling water vault” and “suppression pool” is effective to mitigate T environmental release due to a large scale ex-vessel LOCA.
   - Early public dose: as low as 1.8 mSv < 50 mSv of no evacuation limit

- In-vessel components
- Primary coolant loops
- Suppression pool for T confinement concept