

## 3H Evaporator

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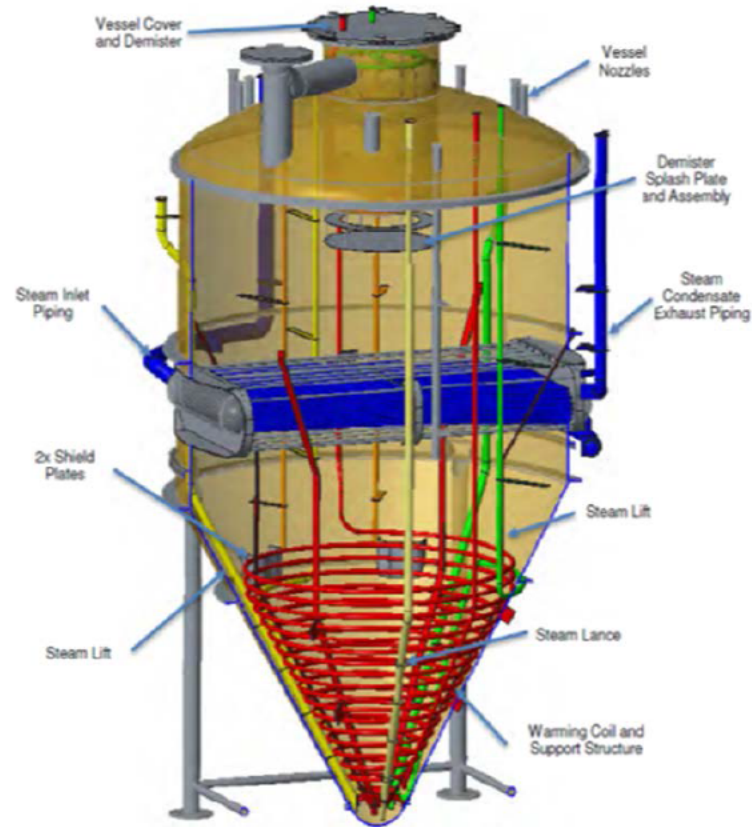
SRR-TFO-2017-00023 R.1

**To provide an update on the 3H evaporator and status of ongoing repairs**



## 3H Evaporator Background

- 3H is the largest evaporator on site
- Can create well over 1 million gallons of tank space gain in a year
- Essential for sludge batch preparation
- 3H Evaporator boils off water, creating space gain for the tank farms.
- Began Operations in 2000 and reached end of life in February 2016
- No spare 3H evaporator on site because of expected 30 yr. life
- Leaks identified in the bottom of the cone area



# 3H Evaporator



Original photo of 3H evaporator  
without insulation and cladding



Top View – 3H  
Evaporator Cell



U.S. DEPARTMENT OF  
**ENERGY**

*Savannah River Operations Office*

Liquid Waste Program Prime Contractor



**Savannah River  
Remediation**

220001 | 220002 | 220003 | 220004 | 220005 | 220006 | 220007 | 220008

# Leak Site Identification

## Leak Site Identification

- Robotics developed and deployed to minimize worker exposure



Base Brokk Robot



Kuka Robot Arm Mounted to Brokk



Robots Lowered Into Cell



Robots Removing Sheet Metal and Insulation



Sheet Metal and Insulation Removed From Pot



Cleaning



Leak Site at Bottom of Evaporator Pot



# Cause of 3H Failure and Repair Plans

## Cause

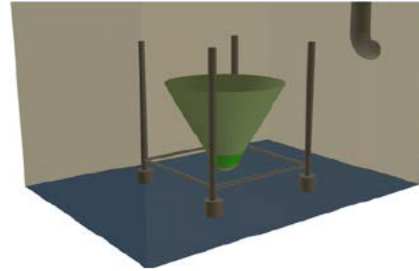
Steam lance caused erosion of very bottom of pot wall over time

## Path Forward/Repair

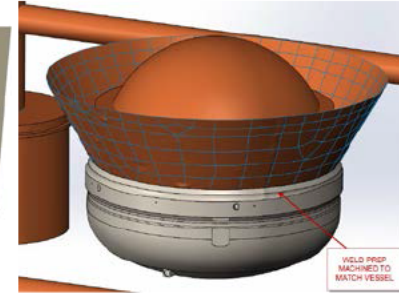
- Ultrasonic measurement of pot wall completed
- Laser 3-D imaging of the pot and cell completed
- Procurement and fabrication of delivery system and cap in progress
- Deploy and perform weld repairs with robots

## Contingency Plan

- Proposals received for fabrication of new evaporator vessel
- Decision to procure new vessel is dependent on repair success and funding



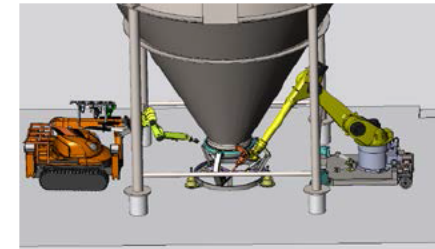
3D Laser Mapping of Evaporator



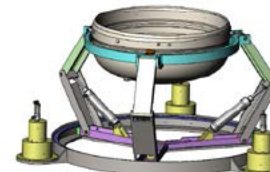
3-D Laser Mapping Results



Image of Weld Patch for Bottom Of Evaporator Cone



Concept Design of Robotic Welding System



Deployment Device

Questions?

