Characterization of Contaminated Stacks at Nuclear Facilities

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Problem Description

1. The limited literature information regarding to stacks decommissioning process
2. The stacks located at Oak Ridge National Laboratory are within an active complex office
3. The physical difference in material and dimension of each stack

Stack Description

The design is driven by two major factors:

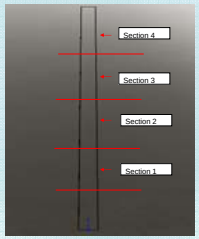
- Structural characteristic
- Discharge characteristic
- Brick Stacks
- Steel stacks
- Reinforced plastic stacks
- Reinforced concrete stacks

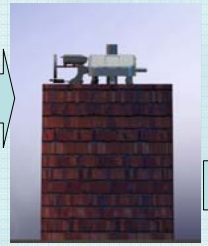
Posterior work:

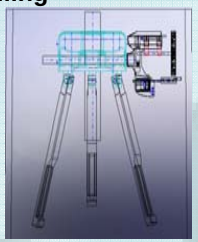
1. Stress analysis is needed to calculate the dimensions of different components and type of material
2. This includes the type and capacity of the actuators and stepper motors, sensors and controllers
3. Estimation of Cost:

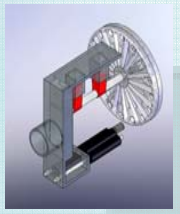
An estimated cost is approximated based on the experience of previous prototypes developed at ORNL.

Characterization Process









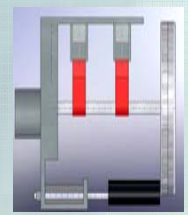
Stack Is divided in four section of samples

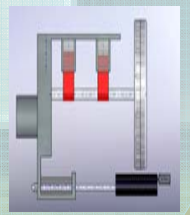
The Mechanism is deployed into the stack

The devise is secured and ready for operations

Each section is divided in four quadrants in which scan contamination is done, wall sampling and core drilling

Several steps are required to execute the core drilling process to avoid cross contamination and to protect all the samples previously taken at each section





Conclusions:

- A well organized characterization plan lays out the path for the whole dismantling process
- The more data and information available the better the decommissioning planning will become.
- The dismantling process of nuclear stacks varies according to several factors such as levels of contamination, physical conditions and location.
- Every nuclear plant uses stacks and they will be eventually summated to a dismantling process.
- It has not been done an automated technology that handles the difficult task of characterizing of nuclear stacks.

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