

Used Fuel Disposition Campaign

Interim Storage Mock-Up Discussion

**David Enos and Charles Bryan
Sandia National Laboratories**

UFD Working Group Meeting

June 5th, 2014

SAND2014-15020 PE

- **Considerable work has been done on 304SS to demonstrate that it is susceptible to chloride induced stress corrosion cracking**
- **Work of particular relevance to interim storage relies on bend bars to provide the stress state**
 - Is this representative?
 - What can these tell us and what are their limitations?
- **Recall – SCC requires three things**
 - Environment (EPRI work, etc.)
 - Susceptible material – Mockup (sensitization)
 - Stress – Mockup (weld residual stress)

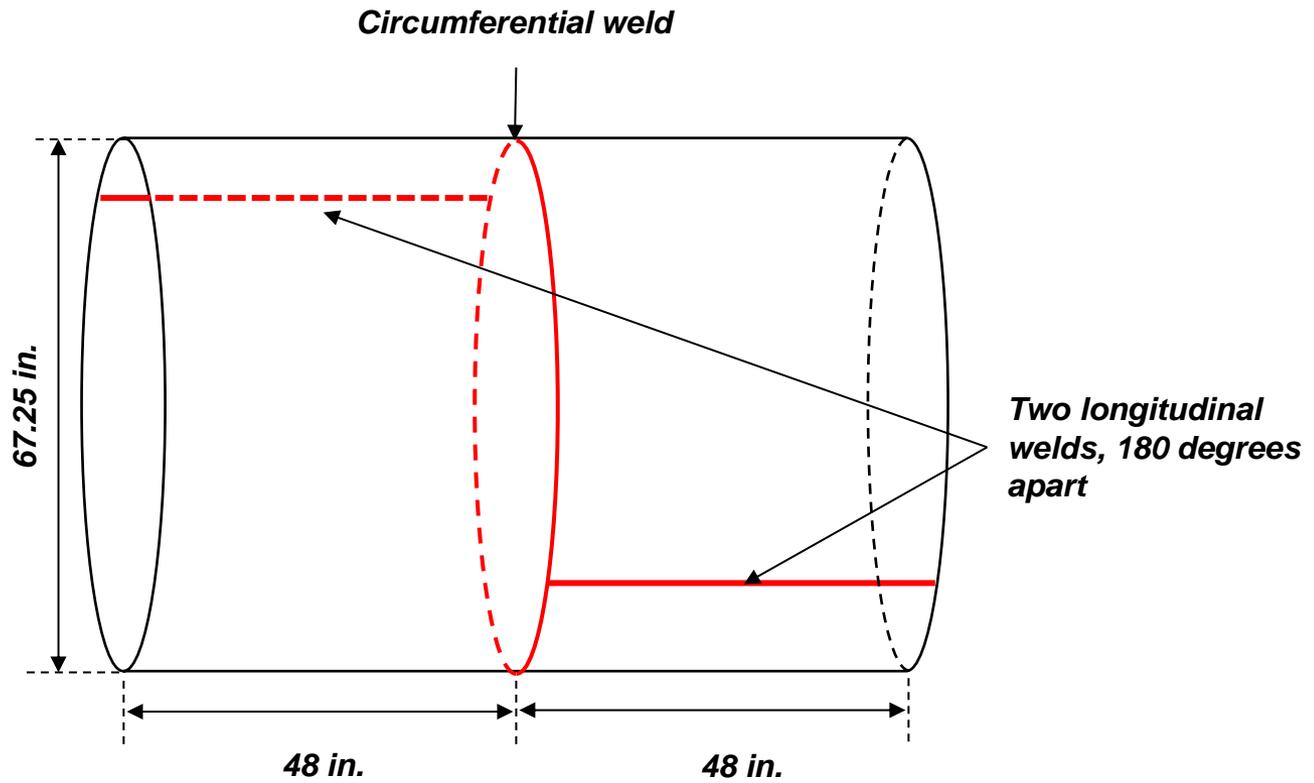
Goals for a Mock Container

- **Want to replicate fielded structures in order to assess the susceptibility stress corrosion cracking initiation and propagation**
- **Welding parameters, joint designs, etc. are all held proprietary by the vendors**
- **NEUP program (R. Ballinger) approached three vendors last year and received quotes from each of them.**
- **We attempted to do the same with varying degrees of success**
 - NAC – still waiting...
 - Holtec – no response.
 - Areva-TN - Ranor

- **Wall material:** 304 SS
- **Wall thickness, overall diameter, weld joint geometry:** standard geometry for NUHOMS 24P
- **Welds:**
 - Specific design not specified by manufacturer.
 - Welds to be full penetration and inspected per ASME B&PVC Section III, Division 1, Subsection NB (full radiographic inspection)
 - Double-V joint design
 - Weld procedure: Submerged Arc

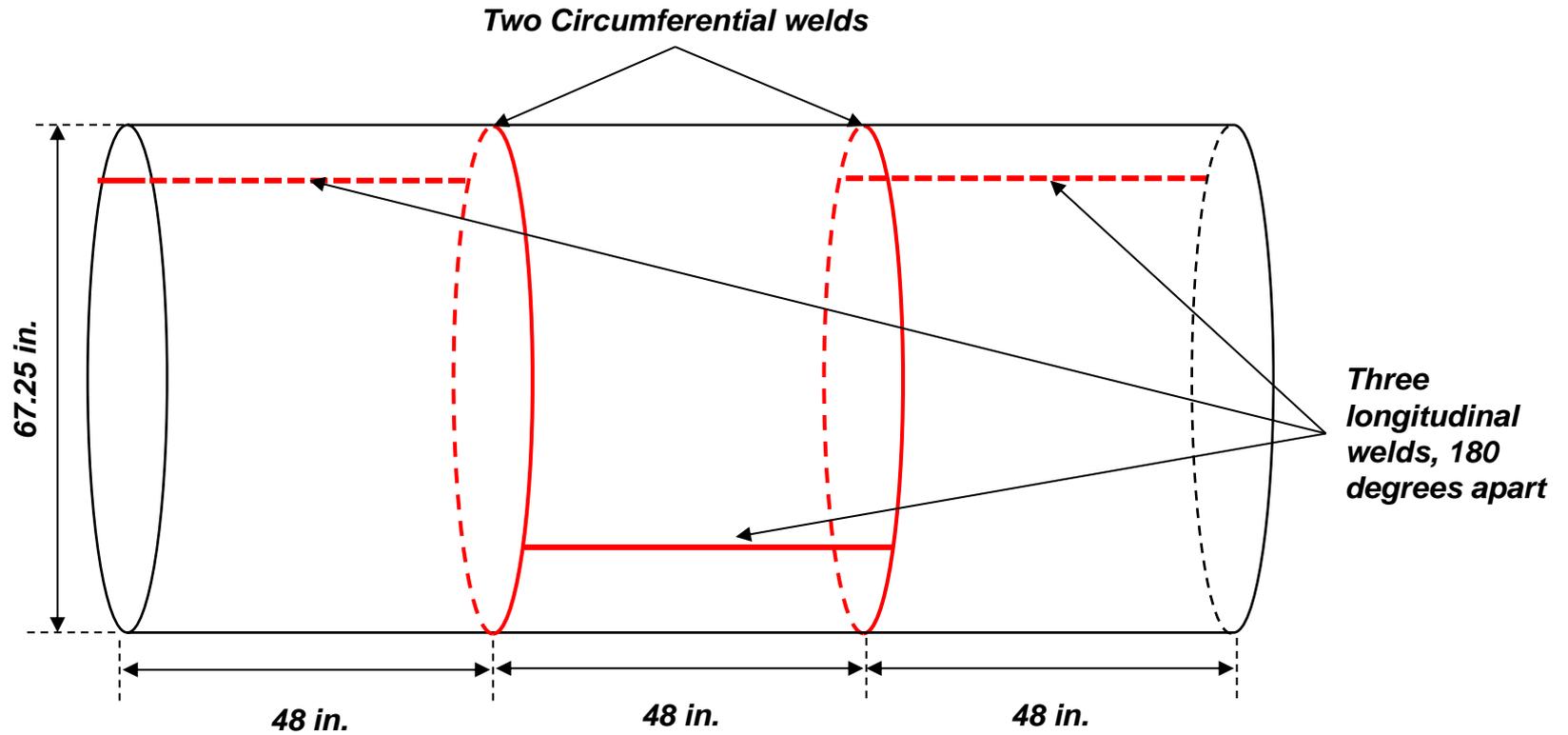
**Used
Fuel
Disposition**

Mock-Up Design



**Used
Fuel
Disposition**

Mock-Up Design



- **Comments on the design – anything we should add/remove?**
 - Baseplate?
 - Simulated repairs?
 - Stress mitigation?
 - Others?

- **What do we want to measure?**
 - Weld residual stress state
 - Extent of sensitization

- **What samples do we want to make?**
 - Subdividing the mock-up will impact the stress state – need to determine how much
 - Sample geometry that we need?