



Proposed Exemption Request for Use of Arkansas Nuclear One Decommissioning Trust Funds for Disposal of Major Radioactive Components

September 30, 2024



Agenda

Background

Long-Term Storage & Disposal Options

NRC Guidance and Planned Exemption Request

Schedule

01

Background

Background – Arkansas Nuclear One Unit 2 Reactor Vessel Closure Head Replacement

- Entergy is planning to replace ANO2 reactor vessel closure head (RVCH) in 2026 to support extended operations
- The replacement RVCH will be more resistant to Primary Water Stress Corrosion Cracking than the current RVCH, which is near the end of design life and susceptible to age-related degradation
- Existing on-site storage for major radioactive components is at capacity
 - ANO1 original RVCH is stored in a mausoleum
 - ANO1 and 2 original steam generators are also stored on-site

Unit One Components

- **Original Reactor Vessel Closure Head (ORVCH)**
 - One Babcock & Wilcox Reactor Vessel Closure Head (RVCH)
- **Original Steam Generators (2)**
 - Two Babcock & Wilcox once-through steam generators (SGs)



Unit Two Components

- **Original Steam Generators (2)**
 - Two Combustion Engineering SGs
 - Stored horizontally (end to end)



ANO2 RVCH Replacement

Entergy evaluated options that included construction of an additional mausoleum for the long-term storage of the ANO2 RVCH to allow radioactive decay prior to shipment offsite for disposal:

- A new stand-alone building
- Expansion of the existing ANO1 original steam generator storage facility



02

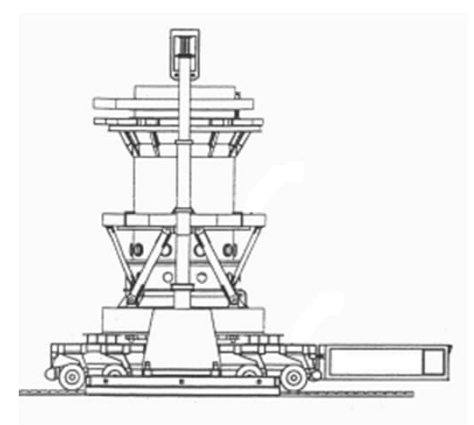
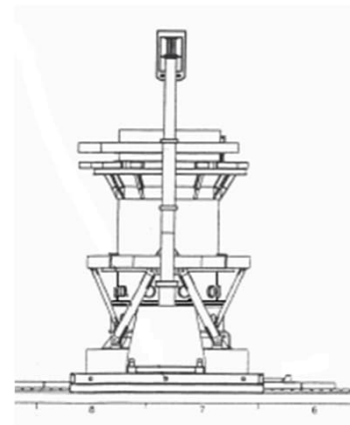
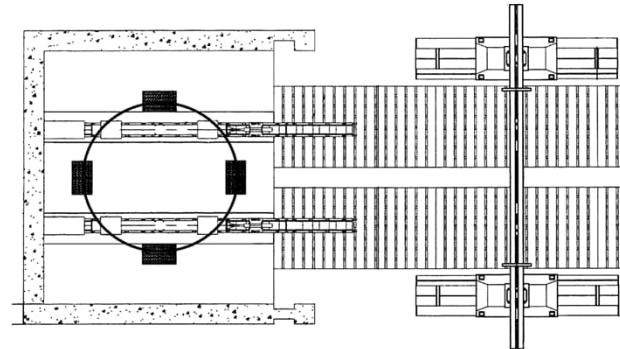
**Long Term Storage & Disposal
Plan**

Disposal Plan for Components in Long Term Storage

ANO1 Original RVCH

Transport RVCH to an offsite facility (Energy Solutions Memphis) using decommissioning funds, if approved (via barge)

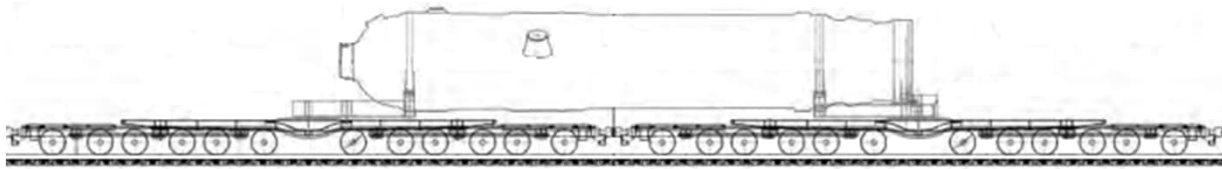
Upon arrival at offsite facility, the RVCH will be segmented, downsized and processed for disposal at the Clive, UT facility



Disposal Plan for Components in Long Term Storage

ANO1 Original Steam Generators (2)

- Transport the SGs directly to Energy Solutions burial facility in Clive, UT utilizing a bolstered railcar setup
- This will involve evaluation of (and potential upgrades to) the site rail spur and along the travel route to Utah



ANO2 Original RVCH (not within the scope of the proposed exemption request)

- The ANO1 RVCH will be relocated from its long-term storage location (mausoleum)
- The ANO2 RVCH that is replaced in 2026 will be transported to the mausoleum vacated by removal of the ANO1 RVCH.
- Dose rates on the ANO2 RVCH will be high when initially removed and must experience some radioactive decay before shipping offsite for disposal is considered

Disposal Options for Components in Long Term Storage

ANO2 Original Steam Generators

- The CE steam generators are too large to ship via rail and will be barged from ANO to Memphis, TN for segmentation and disposal.
- The steam drums will be removed, and the lower assemblies will be cut in half and packaged for shipment to Clive, UT for disposal.



03

NRC Guidance and Planned Exemption Request

NRC Guidance and Planned Exemption Request

Entergy's exemption request will seek approval to use ANO1 DTF (up to \$14.5M) to dispose of the ANO1 RVCH and SGs and to use the ANO2 DTF (up to \$14.5M) to dispose of the ANO2 SGs, all while ANO1 and ANO2 continue licensed operation

Interim staff guidance on the use of the decommissioning trust fund during operations for major radioactive component disposal (REFS-ISG-2024-01) was issued August 5, 2024

- Provides guidance for staff review of exemption requests for use of DTF to dispose of MRCs during operations

Information to Support Staff Review

The ISG contains several elements licensees may consider including in an exemption request to support staff review:

- *A licensee demonstrates the requirements for specific exemptions in 10 CFR 50.12(a)(1) are met;*
 - Planned response: request will show how it is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security (early removal and disposal of source term from the site)
- *A licensee identifies and the NRC confirms that a large projected surplus in DTF reserves compared with the site-specific cost estimate for a facility;*
 - Planned response: request will include a cash flow analysis for both ANO1 and ANO2 using DECON scenario and site-specific cost estimate that shows a projected surplus of ~\$630M for ANO1 and ~\$311M for ANO2 (DTF balances as of June 30, 2024)
 - Assumptions: 1) license termination fees only; 2) withdraw \$14.5M from each DTF in 2025; 3) ANO1 license expires 2034 and ANO2 license expires 2038

Information to Support Staff Review (cont'd)

- *A licensee identifies the site-specific cost estimate for decommissioning includes the cost of the expense for which a withdrawal is requested;*
 - Planned response: request will identify that the ANO1/2 cost estimates include RVCH and SG disposal costs
- *A licensee provides evidence that funds in the comingled DTF were collected or set aside for specific decommissioning activity(ies) identified in the decommissioning cost estimates;*
 - Planned response: request will demonstrate that the DCE specifically included costs for the disposal of the RVCH and SGs, and the Arkansas Public Service Commission has approved funding for those costs

Information to Support Staff Review (cont'd)

- *A licensee demonstrates that the time period, estimated before the permanent cessation of operations and commencement of major radiological decommissioning activities will begin, is sufficiently long to provide for the accumulation of funds in the DTF;*
 - Planned response: cash flow analysis conservatively assumes ANO1/2 operating licenses expire at end of current licenses (2034/2038) and sites transition to DECON decommissioning scenario following permanent cessation of operations
- *A licensee demonstrates that the current and projected DTF amounts required for decommissioning provide adequate assurance that funds will be available throughout the decommissioning period;*
 - Planned response: request will demonstrate that ANO1/2 DTF amounts are adequate

Information to Support Staff Review (cont'd)

- *A licensee fully explains its DTF structure, for example, are there existing subaccounts, or are funds for different decommissioning activities comingled in one account;*
 - Planned response: request will fully explain the ANO1/2 DTF structures (each fund is comingled – no subaccounts)
- *A licensee provides evidence that funds in the comingled DTF were collected or set aside for specific decommissioning activity(ies) identified in the decommissioning funding plans submitted as required to the NRC;*
 - Planned response: request will demonstrate that ANO1/2 funds were collected for the RVCH and SG disposal – using evidence filed with Arkansas PSC

Information to Support Staff Review (cont'd)

- *Decommissioning funding assurance (DFA) history demonstrates that over many years the projected DTF has had significant excess funding;*
 - Planned response: request will demonstrate history of ANO1/2 DTF overfunding with reference to previous 10 CFR 50.75(f)(1) filings
- *A licensee provides a cost-benefit analysis on the planned activity (see also 10 CFR 50.12(a)(1)(iii));*
 - Planned response: request will include a cost-benefit analysis (cost of constructing additional RVCH on-site storage space is projected to be ~\$2.2M)

Information to Support Staff Review (cont'd)

- *A licensee provides a current financial health narrative;*
 - Planned response: request will include current narrative by referring to other regulatory filings (e.g., SEC 10-K)
- *A licensee of a rate-regulated utility identifies rate collection mechanisms available to obtain additional funds when a shortfall in the DTF occurs;*
 - Planned response: request will include description of available rate collection mechanisms
- *A licensee of a merchant plant (i.e. not a rate-regulated utility or not an “electric utility”) provides existing and potential funding mechanisms that are or could be made available (for example, parent company guarantee, parent company support agreement, or cash injection) to cover future shortfalls in a DTF.*
 - Planned response: not applicable

04 Schedule

Schedule

Submit exemption request – November 2024

Request NRC approval by – August 2025

ANO2 RVCH replacement – Spring 2026



Questions?

