Decommissioning

Selection of Orano for the New Dry Cask Storage System

Presented by:
Tom Jones, Director – Strategic Initiatives
Topics

• Contractor Selection Announcement on April 6, 2022
• Background
• Selection Process
• Licensing Approach
• Key Takeaways and Next Steps
PG&E announced selection of Orano USA as our vendor to safely transfer the remaining spent fuel to the DC ISFSI after final unit shutdowns.

Scope includes:
- Engineering and licensing of Orano’s NUHOMS® system
- Design of a new dry storage facility for greater than Class C (GTCC) waste
- Fabrication of storage canisters
- Construction and installation of onsite concrete storage modules
- Pool-to-pad transfer operations
Background: Expedited Spent Fuel Transfer Benefits

- Spent fuel transfer is critical path for decommissioning

- Location of the fuel handling building prevents meaningful decommissioning until fuel is loaded and moved to the ISFSI
Background: Expedited Spent Fuel Transfer Benefits

• **Facilitates DCPP decommissioning**
  – Earlier Part 50 license termination

• **Cost Savings**
  – **10-year** cooling time –
    current DC ISFSI Technical Specifications
  – **7 years*** – proposed revision in 2018 based on preliminary vendor evaluations
  – **≤ 4 years*** – goal from CPUC decision in 2021

* Subject to NRC and other regulatory approvals
Background: Expedited Spent Fuel Transfer Benefits

• Achieves a mutual goal of safely unloading the spent fuel pools sooner
• Earlier deliverable of the decommissioning project
• Earlier dismantlement of site structures
• Earlier repurposing
• Lower costs for customers
Background: Process Overview

Public Input: ~2 yrs

- DCDEP Strategic Vision (2018-2020)
- CEC Collaboration on RFP Content (2019-2020)

Confidential Review: ~2 yr

- Prepare & Issue RFP (2022)
- Evaluate Proposals/Contract Discussions (2022)
- Award Contract (2022)
- Design & Prep Licensing Docs (2022)
- Submit License Amendment to NRC (~2022 / 2023)

Design and NRC Approval: ~3 yrs

- Safety & Technical Advisory Committee
- CEC Collaboration on Proposal Technical Review

We are here

- Review/Approve Licensing (~2024 / 2025)

- Public Comment Period

CEC: CA Energy Commission
CPUC: CA Public Utilities Commission
DCDEP: Diablo Canyon Decommissioning Engagement Panel
NRC: Nuclear Regulatory Commission
RFP: Request For Proposal

2018 NDCTP
CPUC Spent Fuel Mgmt. Workshop (2019-2020)

UCLA
Spent Fuel Storage Risk Assessment (2019-2020)

CEC Collaboration on RFP Content (2019-2020)

CEC Collaboration on Proposal Technical Review

Spent Fuel Storage Risk Assessment (2019-2020)
Key RFP inputs from Diablo Canyon Community Engagement Panel

- Safe spent fuel offload transfer to dry cask storage within 4 years after each unit shutdown (approved settlement agreement) (Strategic Vision IV.G.2.a)
- Robust design that meets DCPP-specific parameters:
  - Seismic (Strategic Vision IV.G.2.b)
  - High burn-up fuel, heat load, etc. (Strategic Vision IV.G.2.c)
  - 80-year design life (Strategic Vision IV.G.2.b)
  - DCPP marine environment (Strategic Vision IV.G.2.c)
- Ensure the system is easy to inspect in-place and is designed to reduce needs for aging management (Strategic Vision IV.G.2.d)
- Minimize dose to the workers and public (Strategic Vision IV.G.2.e)
- Subject to NRC and other required regulatory approvals

Real-time radiation monitoring will encompass existing and new systems (Strategic Vision IV.G.2.d)
Background: Request for Proposal

• Independent technical expertise
  – California Energy Commission (CEC) collaboration
    ✓ CEC reviewed the draft RFP technical requirements
    ✓ CEC also participated in the technical review of bidder proposals
  – B. John Garrick Risk Institute for the Risk Sciences at UCLA
    ✓ Conducted an independent risk assessment of spent fuel storage
    ✓ RFP included results from assessment
  – Convened expert advisory board to review selection process decision
    ✓ Former NRC and industry experts
Selection Process

- Used PG&E’s established competitive and confidential bid process
  - RFP development: 2 years
  - Public workshops
  - Industry conferences
  - Bidders had early awareness of pending RFP
  - Bidders prepared proposals: 3 months
  - PG&E selection process: 1.5 years

- PG&E evaluated and scored each of the bidder proposals
  - Public safety and technical capabilities: 40%
  - Safety (industrial and occupational): 15%
  - Commercial terms (long-term capability): 20%
  - Pricing: 20%
  - Supply chain responsibility and sustainability: 5%

- Consisted of an experienced, cross-functional bid evaluation team
  - Engineering and geosciences; licensing
  - Fuels and dry cask storage/transfer
  - Material handling and transportation
  - Sourcing
  - Project Controls
  - Finance
Selection Process: Orano Experience in the US

Green = EOS Sites
Light Green = Future EOS Sites
Yellow = NUHOMS Sites
Blue = Metal Cask
Selection Process: Orano International Experience

Yellow = NUHOMS Sites
Blue = Metal Cask
Light Blue = Future Metal Cask

Includes customers for TN Americas, Orano NPS (France), and TN Tokyo.

Some sites are denoted with diamonds for better clarity
Key reasons why Orano was awarded the contract

- Orano is the industry leader in horizontal dry cask storage systems with a proven track record throughout the U.S.
- The proposed system is currently licensed by the NRC. The system is subject to further NRC safety reviews as Orano looks to enhance the system’s capabilities.
- Provides a safe and technically robust dry cask storage system that meets site-specific requirements.
- Satisfies community stakeholder and independent technical reviewers’ feedback.
- Proposed design allows for transfer of all spent fuel from the spent fuel pools to the DC ISFSI **23 months** after Unit 2 shutdown (dependent upon NRC approval of enhanced thermal capabilities).
• The DC ISFSI is a **site-specific** NRC license

• Orano’s NUHOMS® Extended Optimized Storage (EOS) System is licensed by the NRC for **general** use under NRC Docket 72-1042
  – General licensed systems are designed and licensed for a variety of locations and conditions
  – This means many sites can use the system under the single general license

• Like many other sites, PG&E plans to use Orano’s system via their **general license**

• Like the below sites, the DC ISFSI will have both site-specific and **general licenses**:
  – North Anna
  – Surry
  – Robinson
  – Oconee
ISFSIs with General and Site-Specific Systems

Site-Specific Licensed Casks

North Anna – Virginia (Dominion Energy)

General Licensed Casks

Surry – Virginia (Dominion Energy)
# U.S. ISFSIs With Multiple Storage Vendors

<table>
<thead>
<tr>
<th>Number</th>
<th>Facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Arkansas Nuclear One</td>
</tr>
<tr>
<td>2</td>
<td>Calvert Cliffs</td>
</tr>
<tr>
<td>3</td>
<td>McGuire</td>
</tr>
<tr>
<td>4</td>
<td>Ginna</td>
</tr>
<tr>
<td>5</td>
<td>Kewaunee</td>
</tr>
<tr>
<td>6</td>
<td>Limerick</td>
</tr>
<tr>
<td>7</td>
<td>Nine Mile Point</td>
</tr>
<tr>
<td>8</td>
<td>Oyster Creek</td>
</tr>
<tr>
<td>9</td>
<td>Palisades</td>
</tr>
<tr>
<td>10</td>
<td>Peach Bottom</td>
</tr>
<tr>
<td>11</td>
<td>Point Beach</td>
</tr>
<tr>
<td>12</td>
<td>Robinson</td>
</tr>
<tr>
<td>13</td>
<td>SONGS</td>
</tr>
<tr>
<td>14</td>
<td>Surry</td>
</tr>
<tr>
<td>15</td>
<td>Susquehanna</td>
</tr>
</tbody>
</table>
Key Takeaways and Next Steps

• PG&E selected Orano to safely transfer its remaining spent fuel from DCPP operations to onsite interim dry storage
  – Supports fulfilling PG&E’s commitment to move spent fuel safely and prudently from wet to dry storage following the cessation of operations at DCPP in 2025

• PG&E used a competitive bid process
  – Stakeholder input was incorporated throughout the selection process
  – Independent technical reviewers’ input was incorporated into the RFP and selection process

• Next Steps
  – PG&E will continue to solicit feedback from stakeholders over the coming months through DCDEP meetings, information sessions, and tours
  – NRC licensing activities will commence later in 2022
Thank You

Tom Jones
Director – Strategic Initiatives
Tom.Jones@pge.com