



United States Nuclear Regulatory Commission

Decommissioning Strategies Being Implemented in the USA

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Decommission

“To remove (as a facility) safely from service and reduce radioactivity to a level that permits:

- Release of the property for unrestricted use and termination of the license; or**
- Release of the property under restricted conditions and termination of the license”**



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License Termination Standards for Unrestricted Release (10 CFR 20.1402)

- **Total Effective Dose Equivalent (TEDE) 0.25 mSv/a and As Low As is Reasonably Achievable (ALARA)**
- **Average member of the critical group**
- **All pathways**
- **Period of performance - 1000 years**



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License Termination Standards for Restricted Release (10 CFR 20.1403)

- **0.25 mSv/a TEDE and ALARA, with institutional controls in effect**
- **Legally enforceable institutional controls**
- **If institutional controls fail, doses do not exceed 1 mSv/a, or 5 mSv/a, under specific circumstances**
- **Financial assurance - independent third party**
- **Licensee and NRC public input/outreach requirements**



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Reactor Decommissioning Options

- **DECON:** Equipment, structures, etc. removed or decontaminated to a level that permits unrestricted release
- **ENTOMB:** Plant is encased in a structurally long-lived substance to allow decay until levels permit unrestricted release
- **SAFSTOR:** Plant placed in a safe stable condition and maintained in that state until it is subsequently decontaminated to levels that permit unrestricted release



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Plant Status

- **SAFSTOR**

TMI 2, Dresden 1, Zion 1&2, Indian Point 1

Peach Bottom 1, La Crosse, Humboldt Bay, GE VBWR

- **DECON**

**Trojan, Rancho Seco, Yankee Rowe, Big Rock Point,
Fermi 1, Maine Yankee, Haddam Neck/CY, CVTR,
Millstone, Saxton, SONGS 1**



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Rationale for DECON

- **Concerns over access to waste disposal capacity**
- **Reduce potential future decommissioning costs**
- **Need for space to build ISFSI**



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Rationale for SAFSTOR

- **Co-location with operational unit**
- **Avoid need to build an ISFSI**
- **Staging decommissioning of several plants to use decommissioning expertise (multiple plant owner)**



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Other Issues

- **Difficulty arranging for institutional controls for restricted use option**
- **Inconsistencies between various NRC criteria**
- **Use of realistic post-cleanup exposure scenarios**
- **Financial assurance risks**