
24PT4-DSC Amendments
to
C of Cs 1029 and 9302



Purpose

- **Present new 24PT4-DSC for storage and transportation of CE 16 x 16 fuel**
 - Storage: Advanced NUHOMS[®] System AHSM (Advanced Horizontal Storage Module), preliminary C of C 1029
 - On-Site Transfer: OS197 Cask and associated transfer and auxiliary equipment, C of C 1004
 - Transportation: MP197 Cask, Docket 71-9302



Meeting Agenda

- Status of Advanced NUHOMS® System Applications
- New Payload for Advanced NUHOMS® System
- Differences between 24PT1-DSC and 24PT4-DSC
- SONGS 2/3 Requirements for Spent Fuel Storage in the 24PT4-DSC
- Summary of 24PT4-DSC Amendments
- Validation of Thermal Analysis Methodology (Proprietary)



Status of Advanced NUHOMS® System Licensing - Storage

- **10 CFR 72, General License (C of C 1029), AHSM and 24PT1-DSC:**
 - Federal Register notice issued for public comment 2/11/02
 - C of C expected September 2002
- **Amendment to C of C 1029 for 24PT4-DSC to be submitted by 1/31/03**



Status of Advanced NUHOMS® System Licensing - Transportation

- **10 CFR 71, MP187 cask with 24PT1-DSC payload (C of C 9255)**
 - C of C Revision 6 issued 11/16/01, incorporating the 24PT1-DSC payload
- **Transportation License for 24PT4-DSC**
 - New payload for MP197 cask, Docket 71-9302
 - C of C 9302 scheduled to be issued 5/17/02
 - Amendment to C of C 9302 to be submitted by 1/31/03



Status of Advanced NUHOMS® System Fabrication

- **Notification to NRC for fabrication of 24PT1-DSCs issued 10/17/01 in accordance with 10 CFR 72.232(d)**
- **24PT1-DSC fabrication in progress**
- **AHSM fabrication notification to be issued by 3/31/02**
- **Transfer cask (OS197) and support equipment fabrication in progress under C of C 1004**



New Advanced NUHOMS® System Payload

- **New 24PT4-DSC to accommodate CE 16 x 16 fuel**
- **Same AHSM, OS197 on-site transfer cask and support equipment design accommodates 24PT4-DSC**

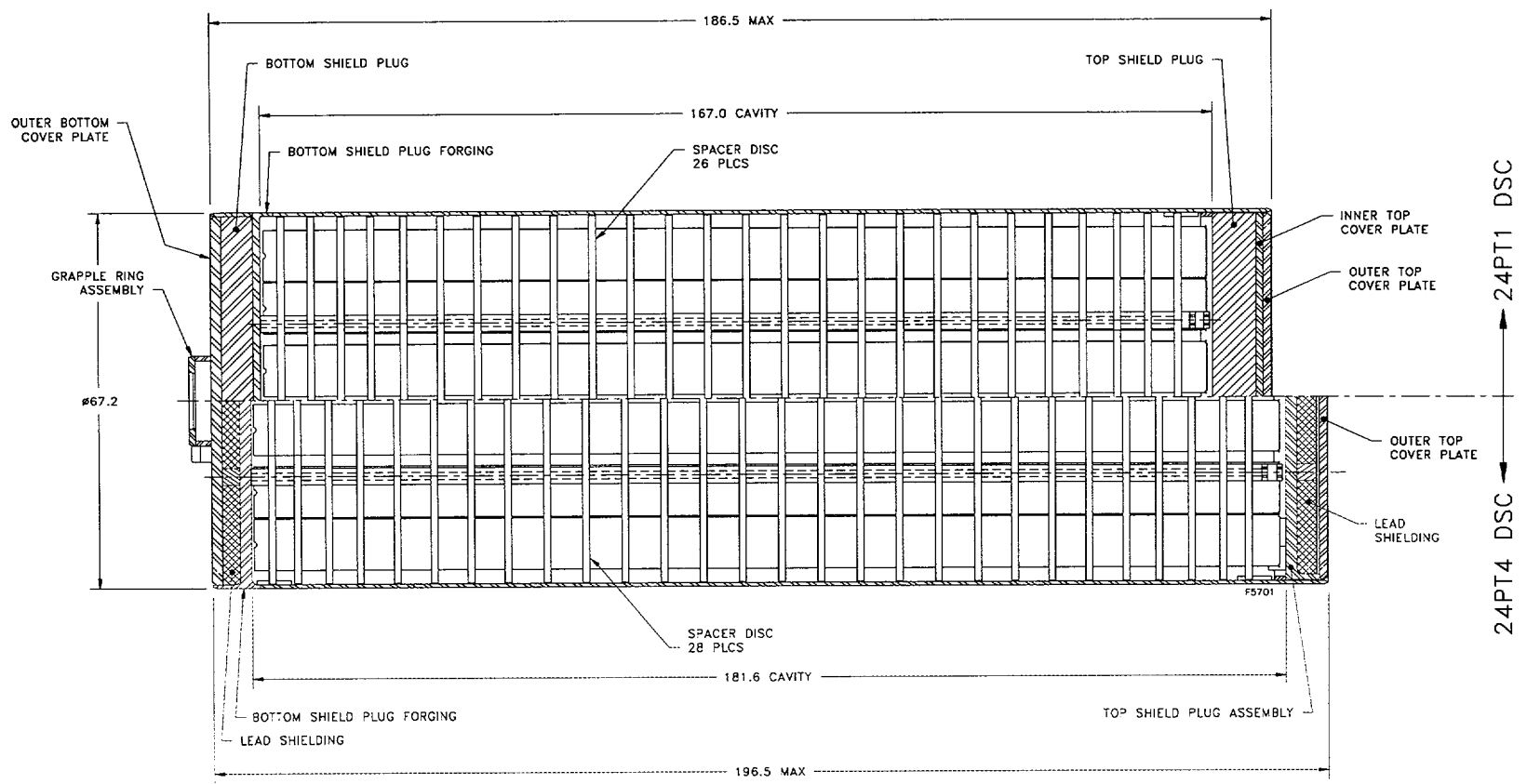


Differences between 24PT4-DSC and 24PT1-DSC

Parameter		24PT1-DSC		24PT4-DSC
Payload	Fuel Type	WE 14 x 14 (UO ₂)	WE 14 x 14 (MOX)	CE 16 x 16 (UO ₂)
	Cladding Material	Stainless Steel	Zircaloy-4	Zircaloy-4
	Maximum Enrichment	4.05 weight % U ²³⁵	3.31 weight % fissile Pu	4.85 weight %
	Maximum Heat Load per DSC	14 kW	13.706 kW	24 kW
Length		186.5"		196.5"
Number of Spacer Discs		26		28
Fuel Spacers Required		Yes		No
Shield Plugs		Carbon Steel (Electroless Nickel Coated)		Lead (Stainless Steel Encased)
Spacer Disc Material		SA-537, Cl. 2; Carbon Steel (Electroless Nickel Coated)		SA-533, Gr. B, Cl. 1 (Code Case N-499-1); Carbon Steel (Electroless Nickel Coated)
Neutron Absorber Boron Loading		.025 g/cm ² B10		0.025 g/cm ² B10 & 0.068 g/cm ² B10



Comparison of Configurations



Analysis Methodology - Structural

- **Same methodology for structural analysis as 24PT1-DSC**
- **No impact on AHSM or transfer cask structural analyses, including seismic analysis**



Analysis Methodology - Criticality

- **Same methodology for criticality analysis as 24PT1-DSC**
- **Bounding cladding thickness used in all criticality analyses**
- **Poison plates explicitly modeled**



Analysis Methodology - Shielding

- **3-D shielding analysis used for calculating AHSM, transfer cask and offsite dose rates**
- **Analysis performed using MCNP code**
- **MCNP 3-D analysis/methodology used to model a loaded NUHOMS® System and validated against measured data for the same system**

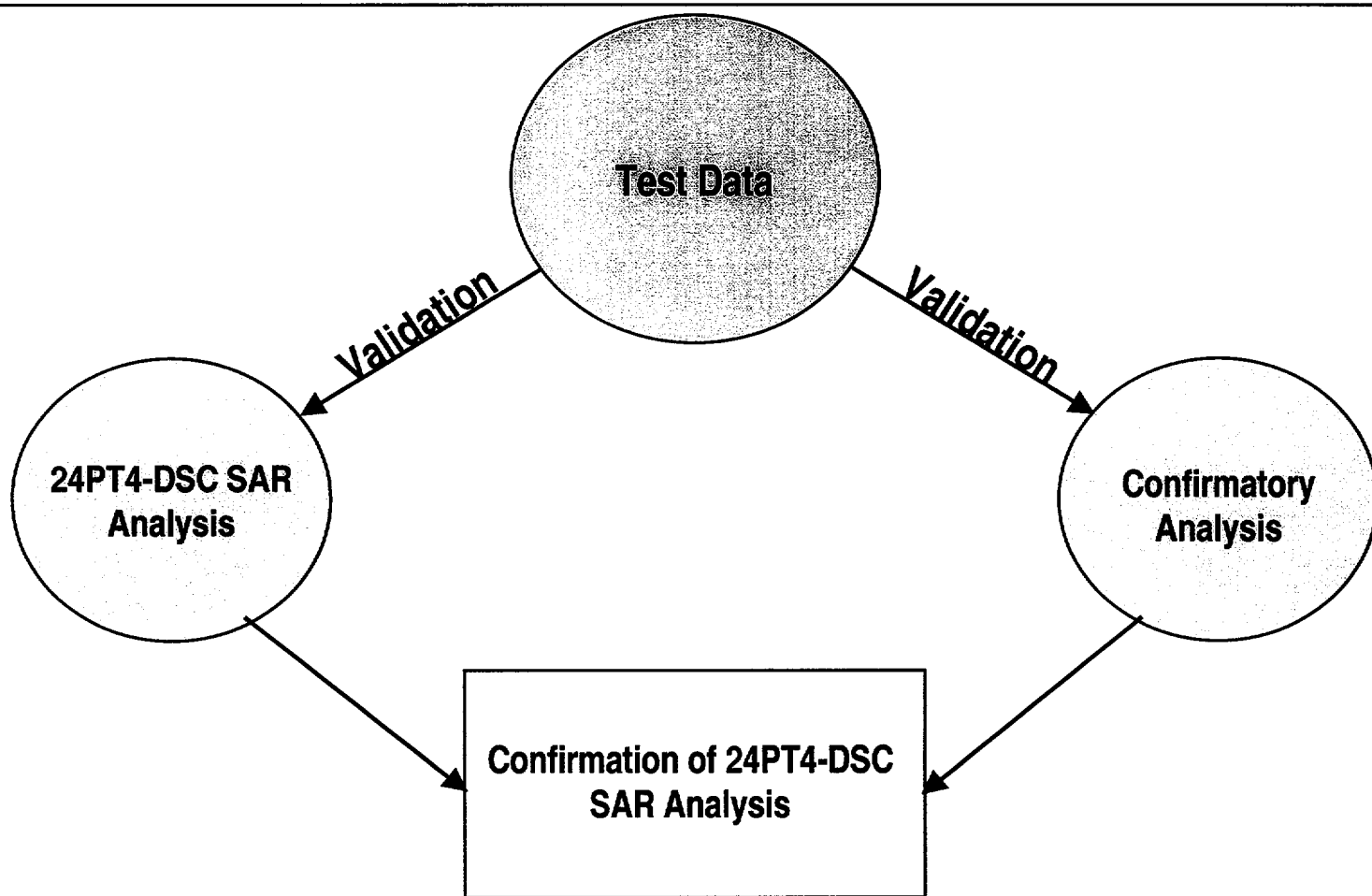


Analysis Methodology - Thermal

- **No impact on AHSM / OS197 cask thermal analyses, 24 kW DSC used**
- **24PT4-DSC thermal analysis uses ANSYS code, 3-D model**
- **Methodology validated against measured data**
- **Additionally, methodology validated by alternate confirmatory analysis**



Thermal Analysis Methodology Validation



Overview of Thermal Analyses

- **SAR thermal analysis methodology is validated against test data and confirmatory analysis methodology**
- **Results demonstrate the conservatism of the SAR analysis methodology used for the 24PT4-DSC thermal evaluations**
- **Peak clad temperature is accurately predicted**
- **Basket component temperatures are conservatively predicted**



SONGS 2/3 Requirements for Spent Fuel Storage in the 24PT4-DSC



SONGS ISFSI

- **Purpose**

- Store Unit 1 fuel (24PT1-DSC)
 - Empty Unit 1 SFP for decommissioning
 - Remove Unit 1 fuel from Units 2&3 SFPs to allow Units 2&3 operations
- Store Units 2&3 fuel (24PT4-DSC)
 - Allow operations of Units 2&3 through end of license (2022)

- **Location**

- Within San Onofre Unit 1

SONGS ISFSI

Schedule

- Preliminary SER for C of C 1029 Amendment - January 2004
- C of C 1029 Amendment by direct rulemaking - September 2004
- C of C 9302 Amendment - by September 2004
- First use - February 2006
- Full core offload capability lost in 2007

SONGS ISFSI

Schedule - Early Campaigns (24PT1-DSC)

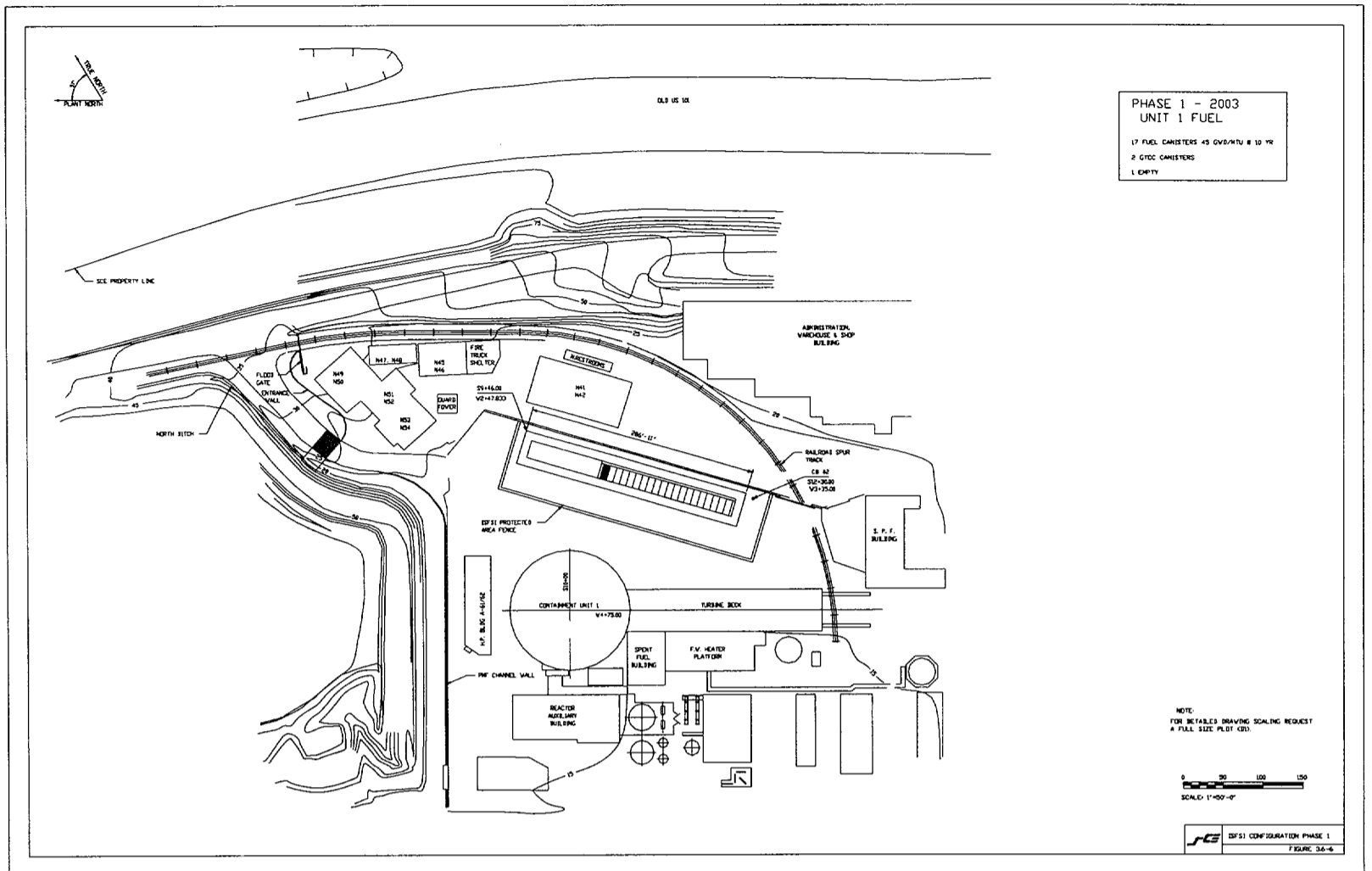
- **Aug - Dec 2003** : 5 canisters from Unit 3
 - Unit 1 fuel
- **Apr - Sep 2004** : 9 canisters from Unit 1
 - Unit 1 fuel
- **Mar - May 2005** : 3 canisters from Unit 2
 - Unit 1 fuel

SONGS ISFSI

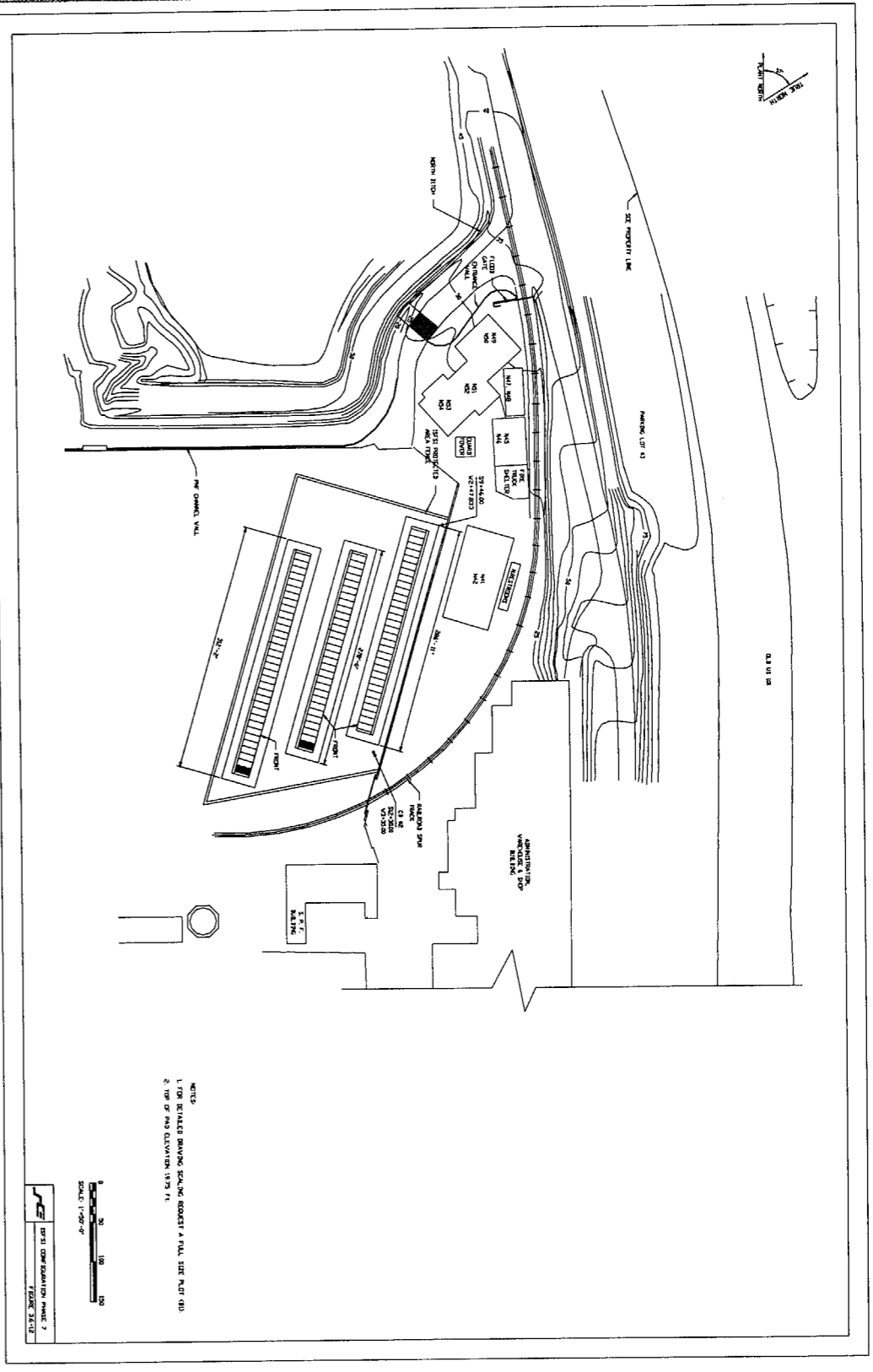
Schedule - Early Campaigns (24PT4-DSC)

- **Feb - May 2006** : 6 canisters from Unit 2
 - Unit 2 fuel
- **Nov - Feb 2006/2007** : 6 canisters from Unit 3
 - Unit 3 fuel

SONGS ISFSI - 2003



SONGS ISFSI - 2022



Summary of 24PT4-DSC Amendments

- **24PT4-DSC to accommodate CE 16 x 16 fuel payload**
- **3-D shielding analysis used and validated against measured data**
- **SAR thermal analysis methodology validated against test data**
- **Additionally, SAR thermal analysis methodology validated by alternate confirmatory analysis**



Summary of 24PT4-DSC Amendments (continued)

- **Submit amendments to C of C 1029 and 9302 by 1/31/03**
- **NRC review of RAI responses/issue preliminary C of C 1029 amendment by 1/04**
- **NRC issues C of C amendments incorporating 24PT4-DSC by 9/04**
- **SONGS 2/3 fuel load by 2/06**

