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U. S. Nuclear Regulatory Commission  
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Subject: Submittal of Corrected Pages of Revision 4 of Application for Amendment No. 5 to the NUHOMS® Certificate of Compliance No. 1004 (TAC NO. L23343).

Reference: 1. Revision 4 of Application for Amendment No. 5 to the NUHOMS® Certificate of Compliance No. 1004, Submitted January 24, 2002.

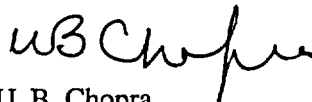
Dear Ms. Ross-Lee:

Enclosed herewith are 13 sets of corrected pages which address a pagination error in Chapter M.2 and a minor omission in updating page M.8-6 of Chapter M.8 of Reference 1. Also included herewith is a revised Table of Contents for Appendix M, Revision 4.

Please replace the affected pages of Reference 1 with the corrected pages enclosed herewith.

Should you or your staff require additional information to support review of this application, please do not hesitate to contact me at 510-744-6053.

Sincerely,



U. B. Chopra

Licensing Manager

Docket 72-1004

Enclosures: As Stated

NMSSO1

## ATTACHMENT C

### *List of Changed Appendix M Pages*

- *M.2-2*
- *M.2-2a (New Page)*
- *M.2-11*
- *M.2-12*
- *M.2-40 through M.2-42*
- *M.3.1-2*
- *M.3.1-2a (New Page)*
- *M.3.1-7*
- *M.4 (Entire Section)*
- *M.8-6*

## TABLE OF CONTENTS

	<u>Page</u>
M.1 General Discussion.....	M.1-1
M.1.1 Introduction.....	M.1-2
M.1.2 General Description of the NUHOMS®-32PT DSC.....	M.1-3
M.1.2.1 NUHOMS®-32PT DSC Characteristics.....	M.1-3
M.1.2.2 Operational Features .....	M.1-4
M.1.2.3 Cask Contents.....	M.1-5
M.1.3 Identification of Agents and Contractors.....	M.1-6
M.1.4 Generic Cask Arrays.....	M.1-7
M.1.5 Supplemental Data.....	M.1-8
M.1.6 References.....	M.1-9
M.2 Principal Design Criteria.....	M.2-1
M.2.1 Spent Fuel To Be Stored.....	M.2-2
M.2.1.1 General Operating Functions .....	M.2-3
M.2.2 Design Criteria for Environmental Conditions and Natural Phenomena .....	M.2-4
M.2.2.1 Tornado Wind and Tornado Missiles.....	M.2-4
M.2.2.2 Water Level (Flood) Design.....	M.2-4
M.2.2.3 Seismic Design.....	M.2-4
M.2.2.4 Snow and Ice Loading.....	M.2-4
M.2.2.5 Combined Load Criteria.....	M.2-4
M.2.3 Safety Protection Systems .....	M.2-8
M.2.3.1 General.....	M.2-8
M.2.3.2 Protection By Multiple Confinement Barriers and Systems .....	M.2-8
M.2.3.3 Protection By Equipment and Instrumentation Selection .....	M.2-8
M.2.3.4 Nuclear Criticality Safety.....	M.2-8
M.2.3.5 Radiological Protection.....	M.2-9
M.2.3.6 Fire and Explosion Protection.....	M.2-9
M.2.4 Decommissioning Considerations .....	M.2-10
M.2.5 Summary of NUHOMS®-32PT DSC Design Criteria.....	M.2-11
M.2.6 References.....	M.2-12
M.3 Structural Evaluation.....	M.3 .1-1
M.3.1 Structural Design .....	M.3 .1-1
M.3.1.1 Discussion .....	M.3 .1-1
M.3.1.2 Design Criteria .....	M.3 .1-3
M.3.2 Weights and Centers of Gravity .....	M.3 .2-1
M.3.3 Mechanical Properties of Materials .....	M.3 .3-1
M.3.3.1 Material Properties.....	M.3 .3-1
M.3.3.2 Materials Durability .....	M.3 .3-2
M.3.4 General Standards for Casks.....	M.3 .4-1
M.3.4.1 Chemical and Galvanic Reactions .....	M.3 .4-1
M.3.4.2 Positive Closure .....	M.3 .4-7
M.3.4.3 Lifting Devices.....	M.3 .4-7
M.3.4.4 Heat and Cold.....	M.3 .4-8

M.3.5	Fuel Rods .....	M.3.5-1
M.3.6	Structural Analysis (Normal and Off-Normal Operations) .....	M.3.6-1
	M.3.6.1 Normal Operation Structural Analysis .....	M.3.6-1
	M.3.6.2 Off-Normal Load Structural Analysis .....	M.3.6-10
M.3.7	Structural Analysis (Accidents) .....	M.3.7-1
	M.3.7.1 Reduced HSM Air Inlet and Outlet Shielding .....	M.3.7-1
	M.3.7.2 Tornado Winds/Tornado Missile .....	M.3.7-2
	M.3.7.3 Earthquake .....	M.3.7-2
	M.3.7.4 Flood .....	M.3.7-6
	M.3.7.5 Accidental Cask Drop .....	M.3.7-7
	M.3.7.6 Lightning .....	M.3.7-14
	M.3.7.7 Blockage of Air Inlet and Outlet Openings .....	M.3.7-14
	M.3.7.8 DSC Leakage .....	M.3.7-14
	M.3.7.9 Accident Pressurization of DSC .....	M.3.7-14
	M.3.7.10 Load Combinations .....	M.3.7-14
	M.3.7.11 Evaluation of Poison Rod Assemblies .....	M.3.7-16
M.3.8	References .....	M.3.8-1
M.4	Thermal Evaluation .....	M.4-1
M.4.1	Discussion .....	M.4-1
M.4.2	Summary of Thermal Properties of Materials .....	M.4-4
M.4.3	Specifications for Components .....	M.4-9
M.4.4	Thermal Evaluation for Normal Conditions of Storage (NCS) and Transfer (NCT) .....	M.4-10
	M.4.4.1 NUHOMS®-32PT DSC Thermal Models .....	M.4-10
	M.4.4.2 Maximum Temperatures .....	M.4-16
	M.4.4.3 Minimum Temperatures .....	M.4-17
	M.4.4.4 Maximum Internal Pressures .....	M.4-17
	M.4.4.5 Maximum Thermal Stresses .....	M.4-20
	M.4.4.6 Evaluation of Cask Performance for Normal Conditions .....	M.4-20
M.4.5	Thermal Evaluation for Off-Normal Conditions .....	M.4-21
	M.4.5.1 Off-Normal Maximum/Minimum Temperatures during Storage .....	M.4-22
	M.4.5.2 Off-Normal Maximum/Minimum Temperatures during Transfer .....	M.4-23
	M.4.5.3 Off-Normal Maximum and Minimum Temperatures During Storage/Transfer .....	M.4-23
	M.4.5.4 Off-Normal Maximum Internal Pressure During Storage/Transfer .....	M.4-24
	M.4.5.5 Maximum Thermal Stresses .....	M.4-24
	M.4.5.6 Evaluation of Cask Performance for Off-Normal Conditions .....	M.4-24
M.4.6	Thermal Evaluation for Accident Conditions .....	M.4-25
	M.4.6.1 Blocked Vent Accident Evaluation .....	M.4-25
	M.4.6.2 Transfer Accident Evaluation .....	M.4-26
	M.4.6.3 Hypothetical Fire Accident Evaluation .....	M.4-26
	M.4.6.4 Fuel Cladding and Basket Materials .....	M.4-27
	M.4.6.5 Maximum Internal Pressures .....	M.4-27
	M.4.6.6 Evaluation of Cask Performance During Accident Conditions .....	M.4-28

M.4.7	Thermal Evaluation for Loading/Unloading Conditions.....	M.4-29
M.4.7.1	Maximum Fuel Cladding Temperatures During Vacuum Drying .....	M.4-29
M.4.7.2	Evaluation of Thermal Cycling of Fuel Cladding During Vacuum Drying, Helium Backfilling and Transfer Operations ....	M.4-29
M.4.7.3	Reflooding Evaluation .....	M.4-30
M.4.8	Determination of Minimum Effective Fuel Conductivity .....	M.4-32
M.4.8.1	Determination of Bounding Effective Fuel Thermal Conductivity.....	M.4-32
M.4.8.2	Calculation of Fuel Effective Specific Heat and Density .....	M.4-35
M.4.9	Derivation of Effective Thermal Conductivity of Water Within the Neutron Shield of the OS197/OS197H Transfer Cask .....	M.4-37
M.4.10	References.....	M.4-43
M.4.11	Example Input Files.....	M.4-45
M.4.11.1	Example ANSYS Input File for Applying Heat Generation.....	M.4-45
M.4.11.2	Example ANSYS Input File for Solar Heat Flux Application.....	M.4-47
M.5	Shielding Evaluation .....	M.5-1
M.5.1	Discussion and Results .....	M.5-3
M.5.2	Source Specification .....	M.5-4
M.5.2.1	Gamma Source .....	M.5-5
M.5.2.2	Neutron Source Term .....	M.5-6
M.5.2.3	Axial Peaking.....	M.5-6
M.5.3	Model Specification.....	M.5-7
M.5.3.1	Material Densities .....	M.5-7
M.5.4	Shielding Evaluation.....	M.5-8
M.5.4.1	Computer Programs .....	M.5-8
M.5.4.2	Spatial Source Distribution .....	M.5-8
M.5.4.3	Cross Section Data .....	M.5-9
M.5.4.4	Flux-to-Dose-Rate Conversion .....	M.5-9
M.5.4.5	Methodology .....	M.5-9
M.5.4.6	Assumptions.....	M.5-10
M.5.4.7	Source Region Homogenization .....	M.5-12
M.5.4.8	HSM Dose Rates for the 125-Ton Configuration .....	M.5-13
M.5.4.9	HSM Models for the 100-Ton Configuration .....	M.5-14
M.5.4.10	Data Reduction and HSM Dose Rate Results for the 125-Ton Configuration .....	M.5-14
M.5.4.11	HSM Dose Rates for the 100-Ton Configuration .....	M.5-16
M.5.4.12	TC Dose Rates for the 125-Ton Configuration.....	M.5-16
M.5.4.13	Cask Dose Rates for 100-Ton Configuration.....	M.5-17
M.5.4.14	Supporting 3-D Analysis.....	M.5-18
M.5.5	Appendix.....	M.5-20
M.5.5.1	Sample SAS2H/ORIGEN-S Input File .....	M.5-20
M.5.5.2	Sample HSM DORT Model (RZ Roof Neutron Model) .....	M.5-22
M.5.5.3	Sample TC DORT Model (RZ Transfer Configuration).....	M.5-28
M.5.5.4	Sample MCNP Model .....	M.5-33
M.5.6	References.....	M.5-56

M.6	Criticality Evaluation .....	M.6-1
M.6.1	Discussion and Results .....	M.6-2
M.6.2	Package Fuel Loading.....	M.6-3
M.6.3	Model Specification.....	M.6-4
	M.6.3.1 Description of Computational Model .....	M.6-4
	M.6.3.2 Package Regional Densities .....	M.6-4
M.6.4	Criticality Calculations .....	M.6-6
	M.6.4.1 Computational Method .....	M.6-6
	M.6.4.2 Fuel Loading Optimization .....	M.6-8
	M.6.4.3 Criticality Results.....	M.6-11
M.6.5	Critical Benchmark Experiments.....	M.6-13
	M.6.5.1 Benchmark Experiments and Applicability .....	M.6-13
	M.6.5.2 Results of the Benchmark Calculations .....	M.6-14
M.6.6	Appendix.....	M.6-15
	M.6.6.1 References .....	M.6-15
	M.6.6.2 KENO Plots of Various Cases .....	M.6-16
	M.6.6.3 Example CSAS25 Input Files .....	M.6-16
	M.6.6.4 Design Basis Case CSAS25 Input Deck .....	M.6-25
M.7	Confinement.....	M.7-1
M.7.1	Confinement Boundary.....	M.7-2
	M.7.1.1 Confinement Vessel .....	M.7-2
	M.7.1.2 Confinement Penetrations .....	M.7-3
	M.7.1.3 Seals and Welds .....	M.7-3
	M.7.1.4 Closure .....	M.7-3
M.7.2	Requirements for Normal Conditions of Storage .....	M.7-4
	M.7.2.1 Release of Radioactive Material .....	M.7-4
	M.7.2.2 Pressurization of Confinement Vessel .....	M.7-4
M.7.3	Confinement Requirements for Hypothetical Accident Conditions.....	M.7-5
	M.7.3.1 Fission Gas Products .....	M.7-5
	M.7.3.2 Release of Contents.....	M.7-5
M.7.4	References.....	M.7-6
M.8	Operating Systems .....	M.8-1
M.8.1	Procedures for Loading the Cask.....	M.8-2
	M.8.1.1 Preparation of the TC and DSC .....	M.8-2
	M.8.1.2 DSC Fuel Loading.....	M.8-3
	M.8.1.3 DSC Drying and Backfilling .....	M.8-5
	M.8.1.4 DSC Sealing Operations .....	M.8-7
	M.8.1.5 TC Downending and Transport to ISFSI .....	M.8-8
	M.8.1.6 DSC Transfer to the HSM.....	M.8-8
	M.8.1.7 Monitoring Operations .....	M.8-10
M.8.2	Procedures for Unloading the Cask .....	M.8-14
	M.8.2.1 DSC Retrieval from the HSM .....	M.8-14
	M.8.2.2 Removal of Fuel from the DSC .....	M.8-14
M.8.3	Identification of Subjects for Safety Analysis.....	M.8-23
M.8.4	Fuel Handling Systems.....	M.8-23

M.8.5	Other Operating Systems.....	M.8-23
M.8.6	Operation Support System.....	M.8-23
M.8.7	Control Room and/or Control Areas.....	M.8-23
M.8.8	Analytical Sampling.....	M.8-23
M.8.9	References.....	M.8-24
M.9	Acceptance Tests and Maintenance Program .....	M.9-1
M.9.1	Acceptance Tests .....	M.9-1
M.9.1.1	Visual Inspection.....	M.9-1
M.9.1.2	Structural Tests.....	M.9-1
M.9.1.3	Leak Tests .....	M.9-1
M.9.1.4	Component Tests.....	M.9-1
M.9.1.5	Shielding Integrity Tests .....	M.9-2
M.9.1.6	Thermal Acceptance Tests .....	M.9-2
M.9.1.7	Poison Acceptance .....	M.9-2
M.9.2	Maintenance Program.....	M.9-10
M.9.3	References.....	M.9-11
M.10	Radiation Protection.....	M.10-1
M.10.1	Occupational Exposure.....	M.10-1
M.10.2	Off-Site Dose Calculations.....	M.10-2
M.10.2.1	Activity Calculations.....	M.10-4
M.10.2.2	Dose Rates.....	M.10-4
M.10.3	References.....	M.10-6
M.11	Accident Analyses.....	M.11-1
M.11.1	Off-Normal Operations.....	M.11-2
M.11.1.1	Off-Normal Transfer Loads .....	M.11-2
M.11.1.2	Extreme Temperatures .....	M.11-2
M.11.1.3	Off-Normal Releases of Radionuclides .....	M.11-3
M.11.1.4	Radiological Impact from Off-Normal Operations.....	M.11-4
M.11.2	Postulated Accidents.....	M.11-5
M.11.2.1	Reduced HSM Air Inlet and Outlet Shielding .....	M.11-5
M.11.2.2	Earthquake.....	M.11-5
M.11.2.3	Extreme Wind and Tornado Missiles.....	M.11-6
M.11.2.4	Flood .....	M.11-7
M.11.2.5	Accidental TC Drop .....	M.11-7
M.11.2.6	Lightning.....	M.11-8
M.11.2.7	Blockage of Air Inlet and Outlet Openings.....	M.11-8
M.11.2.8	DSC Leakage .....	M.11-9
M.11.2.9	Accident Pressurization of DSC.....	M.11-9
M.11.2.10	Fire and Explosion .....	M.11-10
M.11.3	References.....	M.11-12
M.12	Conditions for Cask Use - Operating Controls and Limits or Technical Specifications .....	M.12-1

M.13    Quality Assurance .....M.13-1

M.14    Decommissioning.....M.14-1



## LIST OF TABLES

	<u>Page</u>
Table M.1-1	Nominal Dimensions and Weight of the NUHOMS®-32PT DSC .....M.1-10
Table M.2-1	Intact PWR Fuel Assembly Characteristics .....M.2-13
Table M.2-2	PWR Fuel Assembly Design Characteristics .....M.2-14
Table M.2-3	Initial Enrichment and Number of PRAs for Various Fuel Assembly Types.M.2-15
Table M.2-4	Poison Rod Assembly (PRA) Description .....M.2-16
Table M.2-5	PWR Fuel Qualification Table for 1.2 kW per Assembly for the NUHOMS®-32PT DSC (Fuel w/o BPRAs).....M.2-17
Table M.2-6	PWR Fuel Qualification Table for 0.87 kW per Assembly for the NUHOMS®-32PT DSC (Fuel w/o BPRAs).....M.2-18
Table M.2-7	PWR Fuel Qualification Table for 0.7 kW per Assembly for the NUHOMS®-32PT DSC (Fuel w/o BPRAs).....M.2-19
Table M.2-8	PWR Fuel Qualification Table for 0.63 kW per Assembly for the NUHOMS®-32PT DSC (Fuel w/o BPRAs).....M.2-20
Table M.2-9	PWR Fuel Qualification Table for 0.6 kW per Assembly for the NUHOMS®-32PT DSC (Fuel w/o BPRAs).....M.2-21
Table M.2-10	PWR Fuel Qualification Table for 1.2 kW per Assembly for the NUHOMS®-32PT DSC (Fuel w/ BPRAs).....M.2-22
Table M.2-11	PWR Fuel Qualification Table for 0.87 kW per Assembly for the NUHOMS®-32PT DSC (Fuel w/ BPRAs).....M.2-23
Table M.2-12	PWR Fuel Qualification Table for 0.7 kW per Assembly for the NUHOMS®-32PT DSC (Fuel w/ BPRAs).....M.2-24
Table M.2-13	PWR Fuel Qualification Table for 0.63 kW per Assembly for the NUHOMS®-32PT DSC (Fuel w/ BPRAs).....M.2-25
Table M.2-14	PWR Fuel Qualification Table for 0.6 kW per Assembly for the NUHOMS®-32PT DSC (Fuel w/ BPRAs).....M.2-26
Table M.2-15	Summary of 32PT-DSC Load Combinations .....M.2-27
Table M.2-16	Summary of Stress Criteria for Subsection NB Pressure Boundary Components.....M.2-31
Table M.2-17	Summary of Stress Criteria for Subsection NG Components.....M.2-32
Table M.2-18	Classification of NUHOMS®-32PT DSC Components .....M.2-33
Table M.2-19	Additional Design Criteria for NUHOMS®-32PT DSC .....M.2-34
Table M.2-20	Summary of NUHOMS®-32PT Component Design Loadings <sup>(1)</sup> .....M.2-35
Table M.3.1-1	Alternatives to the ASME Code for the NUHOMS®-32PT DSC Confinement Boundary .....M.3.1-5
Table M.3.1-2	Alternatives to the ASME Code Exceptions for the NUHOMS®-32PT DSC Basket Assembly .....M.3.1-7
Table M.3.2-1	Summary of the NUHOMS®-32PT System Component Nominal Weights..M.3.2-2
Table M.3.3-1	ASME Code Materials Data For SA-240 Type 304 Stainless Steel .....M.3.3-3
Table M.3.3-2	Materials Data For ASTM A36 Steel.....M.3.3-4
Table M.3.3-3	ASME Code Materials Data For SA-240 Type XM-19 Stainless Steel .....M.3.3-5
Table M.3.3-4	ASME Code Properties for 6061 Aluminum.....M.3.3-6
Table M.3.3-5	Analysis Properties for Aluminum Transition Rails.....M.3.3-7
Table M.3.3-6	Additional Material Properties.....M.3.3-8

Table M.3.4-1	Summary of Thermal Stress Results - 32PT Basket with Steel Transition Rails.....	M.3.4-13
Table M.3.4-2	Summary of Thermal Stress Results - 32PT Basket with Aluminum Transition Rails.....	M.3.4-14
Table M.3.6-1	NUHOMS® Normal Operating Loading Identification .....	M.3.6-13
Table M.3.6-2	Maximum NUHOMS®-32PT DSC Shell Assembly Stresses for Normal and Off-Normal Loads .....	M.3.6-14
Table M.3.6-3	NUHOMS®-32PT Basket Model Components, Element Types and Materials.....	M.3.6-16
Table M.3.6-4	Material Properties Used in Normal Condition 32PT Basket Analyses .....	M.3.6-17
Table M.3.6-5	Summary of Results for 32PT Basket Assembly Deadweight Analyses.....	M.3.6-18
Table M.3.6-6	Summary of Results for 32PT Basket Assembly On-Site Handling (2.0g Loads).....	M.3.6-19
Table M.3.6-7	32PT Basket Analyses Used to Determine On-Site Handling Loads .....	M.3.6-20
Table M.3.6-8	NUHOMS® Off-Normal Operating Loading Identification .....	M.3.6-21
Table M.3.7-1	Maximum NUHOMS®-32PT DSC Stresses for Drop Accident Loads.....	M.3.7-17
Table M.3.7-2	List of Drop Condition ANSYS Stress Analyses of the 32PT Basket Assembly.....	M.3.7-18
Table M.3.7-3	Summary of Material Properties for Drop Accident Analyses of the 32PT Basket Assembly.....	M.3.7-19
Table M.3.7-4	32PT Basket, Enveloping Stress Results - 75g Side Drops .....	M.3.7-20
Table M.3.7-5	32PT Basket, Enveloping Stress Results - 60g Part 71 End Drop .....	M.3.7-21
Table M.3.7-6	Drop Condition ANSYS Stability Analyses for the 32PT Basket Assembly.....	M.3.7-22
Table M.3.7-7	Summary of 32PT Basket Stability Analysis -- Side Drops .....	M.3.7-23
Table M.3.7-8	NUHOMS®-32PT DSC Enveloping Load Combination Results for Normal and Off-Normal Loads.....	M.3.7-24
Table M.3.7-9	NUHOMS®-32PT DSC Enveloping Load Combination Results for Accident Loads.....	M.3.7-25
Table M.3.7-10	NUHOMS®-32PT DSC Enveloping Load Combination Results for Accident Loads.....	M.3.7-26
Table M.3.7-11	DSC Enveloping Load Combination Table Notes.....	M.3.7-27
Table M.4-1	Fuel Cladding Long-Term Storage Temperatures .....	M.4-49
Table M.4-2	Fuel Cladding Short-Term Normal Condition Maximum Temperatures .....	M.4-50
Table M.4-3	DSC Basket Assembly Maximum Normal Operating Component Temperatures; Configuration 1 .....	M.4-51
Table M.4-4	DSC Basket Assembly Maximum Normal Operating Component Temperatures; Configuration 2 .....	M.4-52
Table M.4-5	DSC Basket Assembly Maximum Normal Operating Component Temperatures; Configuration 3 .....	M.4-53
Table M.4-6	32PT DSC Initial Helium Fill Molar Quantities .....	M.4-54
Table M.4-7	32PT DSC Maximum Normal Operating Condition Pressures .....	M.4-55
Table M.4-8	Off-Normal Event Fuel Cladding Maximum Temperatures.....	M.4-56
Table M.4-9	Off-Normal Event DSC Basket Assembly Maximum Component Temperatures; Configuration 1 .....	M.4-57
Table M.4-10	Off-Normal Event DSC Basket Assembly Maximum Component Temperatures; Configuration 2 .....	M.4-58

Table M.4-11	Off-Normal Event DSC Basket Assembly Maximum Component Temperatures; Configuration 3 .....	M.4-59
Table M.4-12	32PT DSC Maximum Off-Normal Operating Condition Pressures .....	M.4-60
Table M.4-13	Accident Fuel Cladding Maximum Temperatures .....	M.4-61
Table M.4-14	DSC Basket Assembly Maximum Accident Condition Component Temperatures;.....	M.4-62
Table M.4-15	32PT DSC Maximum Accident Condition Pressures .....	M.4-63
Table M.4-16	Maximum Component Temperatures for the Hypothetical Fire Accident Case for the NUHOMS®-32PT DSC in the TC .....	M.4-64
Table M.4-17	Vacuum Drying Fuel Cladding Maximum Temperatures .....	M.4-65
Table M.4-18	DSC Basket Assembly Maximum Component Temperatures During Vacuum Drying at 33 hours <sup>(2)</sup> .....	M.4-66
Table M.5-1	PWR Fuel Assembly Design Characteristics <sup>(3)</sup> .....	M.5-57
Table M.5-2	Burnable Poison Rod Assembly Weight Data .....	M.5-58
Table M.5-3	Dose Rates Due to the 32 PWR Fuel Assemblies with BPRAs.....	M.5-59
Table M.5-4	Summary of HSM Dose Rates .....	M.5-60
Table M.5-5	Summary of Onsite TC Dose Rates (Maximum <sup>(1)</sup> ).....	M.5-61
Table M.5-6	PWR Fuel Assembly Materials Weights.....	M.5-62
Table M.5-7	Elemental Composition of LWR Fuel-Assembly Structural Materials .....	M.5-63
Table M.5-8	Flux Correct Factors By Assembly Region .....	M.5-64
Table M.5-9	Gamma Source Term for 41 GWd/MTU, 3.1 wt. % U-235 and 5-Year Cooled Fuel .....	M.5-65
Table M.5-10	Gamma Source Term for 30 GWd/MTU, 2.5 wt. % U-235 and 8-Year Cooled Fuel .....	M.5-66
Table M.5-11	Gamma Source Term for 45 GWd/MTU, 3.3 wt. % U-235 and 23-Year Cooled Fuel .....	M.5-67
Table M.5-12	Design-Basis BPRA Source Terms.....	M.5-68
Table M.5-13	Inner/Outer Heat Load Zone Region Volumes .....	M.5-69
Table M.5-14	Total Neutron Source Summary.....	M.5-70
Table M.5-15	Source Term Peaking Summary.....	M.5-71
Table M.5-16	Shielding Material Densities.....	M.5-72
Table M.5-17	Neutron Source for 45 GWd/MTU 3.3 wt. % U-235 16 Year Cooled Fuel ...	M.5-74
Table M.5-18	Gamma Source Term for 45 GWd/MTU, 3.3 wt. % U-235 and 16-Year Cooled Fuel .....	M.5-75
Table M.5-19	Explicit Model Material Densities .....	M.5-76
Table M.5-20	Smeared Model Material Densities .....	M.5-77
Table M.5-21	Stainless Steel, Aluminum and Air Material Densities.....	M.5-78
Table M.5-22	MCNP Explicit and Smeared Model Results.....	M.5-79
Table M.5-23	HSM Accident Dose Rates.....	M.5-80
Table M.5-24	3-D vs 2-D Comparison for 100-Ton Configuration .....	M.5-81
Table M.5-25	Comparison of Calculated Versus Measured Dose Rates for DSC 45 .....	M.5-82
Table M.5-26	Comparison of Calculated Versus Measured Dose Rates for DSC 46 .....	M.5-83
Table M.6-1	Maximum Initial Enrichment For Each Configuration.....	M.6-30
Table M.6-2	Authorized Contents for NUHOMS®-32PT System.....	M.6-31
Table M.6-3	Parameters For PWR Assemblies <sup>(3)</sup> .....	M.6-32
Table M.6-4	Poison Rod Assembly (PRA) Description .....	M.6-33

Table M.6-5	Material Property Data .....	M.6-34
Table M.6-6	Most Reactive Fuel Type .....	M.6-35
Table M.6-7	Transition Rail Material Evaluation Results .....	M.6-36
Table M.6-8	Fuel Clad OD Evaluation Results .....	M.6-37
Table M.6-9	Poison/Aluminum and Aluminum Plate Thickness Evaluation Results .....	M.6-38
Table M.6-10	Basket Grid Structure Plate/Tube Thickness Evaluation Results .....	M.6-39
Table M.6-11	Fuel Compartment Width Evaluation Results.....	M.6-40
Table M.6-12	Assembly-to-Assembly Pitch Evaluation .....	M.6-41
Table M.6-13	WE 17x17 Class Assembly without BPRAs Results.....	M.6-42
Table M.6-14	WE 17x17 Class Assembly with BPRAs Results .....	M.6-43
Table M.6-15	B&W 15x15 Class Assembly without BPRAs Results.....	M.6-44
Table M.6-16	B&W 15x15 Class Assembly with BPRAs Results.....	M.6-45
Table M.6-17	CE 15x15 Class Assembly without BPRAs Results.....	M.6-46
Table M.6-18	WE 15x15 Class Assembly without BPRAs Results.....	M.6-47
Table M.6-19	CE 14x14 Class Assembly without BPRAs Results.....	M.6-48
Table M.6-20	WE 14x14 Class Assembly without BPRAs Results.....	M.6-49
Table M.6-21	Criticality Results.....	M.6-50
Table M.6-22	Benchmarking Results .....	M.6-51
Table M.6-23	USL-1 Results .....	M.6-55
Table M.6-24	USL Determination for Criticality Analysis .....	M.6-56
Table M.10-1	Occupational Exposure Summary (125-ton configuration) .....	M.10-7
Table M.10-2	Occupational Exposure Summary (100-ton configuration) .....	M.10-8
Table M.10-3	Total Annual Exposure .....	M.10-9
Table M.10-4	HSM Gamma-Ray Spectrum Calculation Results .....	M.10-10
Table M.10-5	HSM Neutron Spectrum Calculations.....	M.10-11
Table M.10-6	Summary of ISFSI Surface Activities.....	M.10-12
Table M.10-7	MCNP Front Detector Dose Rates for 2x10 Array .....	M.10-13
Table M.10-8	MCNP Back Detector Dose Rates for the Two 1x10 Arrays.....	M.10-14
Table M.10-9	MCNP Side Detector Dose Rates .....	M.10-15
Table M.11-1	Comparison of Total Dose Rates for HSM with and without Adjacent HSM Shielding Effects .....	M.11-13
Table M.11-2	TC Bounding Accident Dose Rate Results .....	M.11-14

## LIST OF FIGURES

	<u>Page</u>
Figure M.1-1	NUHOMS®-32PT DSC Components.....M.1-11
Figure M.1-2	Poison Rod Assemblies (PRAs).....M.1-12
Figure M.2-1	Heat Load Zoning Configuration 1 .....M.2-37
Figure M.2-2	Heat Load Zoning Configuration 2 .....M.2-38
Figure M.2-3	Heat Load Zoning Configuration 3 .....M.2-39
Figure M.2-4	Required PRA Locations for Configurations with Four PRAs.....M.2-40
Figure M.2-5	Required PRA Locations for Configurations with Eight PRAs.....M.2-41
Figure M.2-6	Required PRA Locations for Configurations with Sixteen PRAs .....M.2-42
Figure M.3-1	32PT-DSC Pressure and Confinement Boundaries.....M.3.1-8
Figure M.3.4-1	Potential Versus pH Diagram for Aluminum-Water System.....M.3.4-15
Figure M.3.4-2	32PT Basket with Steel Transition Rails, Temperatures and Stress Intensities, -40°F in Cask .....M.3.4-16
Figure M.3.4-3	32PT Basket with Steel Transition Rails, Temperatures and Stress Intensities, 117°F in Cask .....M.3.4-17
Figure M.3.4-4	32PT Basket with Aluminum Transition Rails, Temperatures and Stress Intensities, -40°F in Cask .....M.3.4-18
Figure M.3.4-5	32PT Basket with Aluminum Transition Rails, Temperatures and Stress Intensities, 117°F in Cask .....M.3.4-19
Figure M.3.6-1	32PT Basket Model with Steel Transition Rails.....M.3.6-22
Figure M.3.6-2	32PT Basket Model with Steel Transition Rails.....M.3.6-23
Figure M.3.6-3	32PT Basket Model with Aluminum Transition Rails.....M.3.6-24
Figure M.3.6-4	32PT Basket Model with Aluminum Transition Rails.....M.3.6-25
Figure M.3.6-5	Location and Numbering of Stress Cuts for 32PT Basket Analyses .....M.3.6-26
Figure M.3.6-6	Deadweight Stress Intensity, 32PT Basket with Steel Transition Rails (Support Rails at $\pm 18.5^\circ$ ).....M.3.6-27
Figure M.3.6-7	Deadweight + Thermal Stress Intensity, 32PT Basket with Steel Transition Rails (Support Rails at $\pm 18.5^\circ$ ) .....M.3.6-28
Figure M.3.6-8	Deadweight Stress Intensity, 32PT Basket with Steel Transition Rails (Support Rails at $\pm 30^\circ$ ).....M.3.6-29
Figure M.3.6-9	Deadweight + Thermal Stress Intensity, 32PT Basket with Steel Transition Rails (Support Rails at $\pm 30^\circ$ ) .....M.3.6-30
Figure M.3.6-10	Deadweight Stress Intensity, 32PT Basket with Aluminum Transition Rails (Support Rails at $\pm 18.5^\circ$ ) .....M.3.6-31
Figure M.3.6-11	Deadweight + Thermal Stress Intensity, 32PT Basket with Aluminum Transition Rails (Support Rails at $\pm 18.5^\circ$ ).....M.3.6-32
Figure M.3.6-12	Deadweight Stress Intensity, 32PT Basket with Aluminum Transition Rails (Support Rails at $\pm 30^\circ$ ) .....M.3.6-33
Figure M.3.6-13	Deadweight + Thermal Stress Intensity, 32PT Basket with Aluminum Transition Rails (Support Rails at $\pm 30^\circ$ ).....M.3.6-34
Figure M.3.7-1	DSC Lift-Off Evaluation.....M.3.7-28
Figure M.3.7-2	0° Side Drop Stress Intensity, 32PT Basket with Steel Transition Rails (Support Rails at $\pm 18.5^\circ$ ).....M.3.7-29

Figure M.3.7-3	0° Side Drop Stress Intensity, 32PT Basket with Aluminum Transition Rails (Support Rails at $\pm 18.5^\circ$ ) .....	M.3.7-30
Figure M.3.7-4	45° Side Drop Stress Intensity, 32PT Basket with Steel Transition Rails (Support Rails at $\pm 18.5^\circ$ ).....	M.3.7-31
Figure M.3.7-5	45° Side Drop Stress Intensity, 32PT Basket with Aluminum Transition Rails (Support Rails at $\pm 18.5^\circ$ ) .....	M.3.7-32
Figure M.3.7-6	Displaced Shape at 113g, LS-DYNA Confirmatory Stability Analysis for 0° Side Drop with Steel Transition Rails (Support Rails at $\pm 18.5^\circ$ ) .....	M.3.7-33
Figure M.3.7-7	Displacement Time History, LS-DYNA Confirmatory Stability Analysis for 0° Side Drop with Steel Transition Rails .....	M.3.7-34
Figure M.3.7-8	Displaced Shape at 124g, LS-DYNA Confirmatory Stability Analysis for 180° Side Drop with Steel Transition Rails .....	M.3.7-35
Figure M.3.7-9	Displacement Time History, LS-DYNA Confirmatory Stability Analysis for 180° Side Drop with Steel Transition Rails .....	M.3.7-36
Figure M.4-1	Heat Load Zoning Configuration 1, Maximum Decay Heat for Various Assemblies .....	M.4-67
Figure M.4-2	Heat Load Zoning Configuration 2, Maximum Decay Heat for Various Assemblies .....	M.4-68
Figure M.4-3	Heat Load Zoning Configuration 3, Maximum Decay Heat for Various Assemblies .....	M.4-69
Figure M.4-4	Axial Heat Profile for PWR Fuel .....	M.4-70
Figure M.4-5	32PT-DSC Thermal ANSYS Model, Isometric View .....	M.4-71
Figure M.4-6	32PT DSC Thermal ANSYS Model, Cross-Section View .....	M.4-72
Figure M.4-7	Thermal Model of DSC in HSM .....	M.4-73
Figure M.4-8	Thermal Model of TC .....	M.4-74
Figure M.4-9	Results for 100°F Storage Case With Heat Load Zoning Configuration 3.....	M.4-75
Figure M.4-10	Results for 100°F Transfer Case With Heat Load Zoning Configuration 3 ...	M.4-76
Figure M.4-11	Results for 117°F Storage Case With Heat Load Zoning Configuration 3.....	M.4-77
Figure M.4-12	Results for 117°F Transfer Case With Heat Load Zoning Configuration 3 ...	M.4-78
Figure M.4-13	Results for Blocked Vent Case With Heat Load Zoning Configuration 3 at 40 Hours .....	M.4-79
Figure M.4-14	NUHOMS®-32PT DSC and TC Temperature Response to 15 Minute Fire Accident Conditions.....	M.4-80
Figure M.4-15	Time-History Profile of the Maximum Fuel Cladding Temperature during Blocked Vent Case, Configuration #3 .....	M.4-81
Figure M.4-16	Maximum Fuel Temperature during Vacuum Drying with Heat Load Zoning Configuration 3 .....	M.4-82
Figure M.4-17	Temperature Distribution from Bottom to Top of DSC at Cross-Section with Highest Temperatures, 70°F HSM Storage Case (Configuration 3).....	M.4-83
Figure M.4-18	Finite Element Model of B&W 15x15 Fuel Assembly.....	M.4-84
Figure M.4-19	Fuel Axial Effective Conductivity .....	M.4-85
Figure M.4-20	Fuel Transverse Effective Conductivity in Helium .....	M.4-86
Figure M.4-21	Fuel Transverse Effective Conductivity in Vacuum.....	M.4-87
Figure M.5-1	Explicit MCNP Model – Radial View .....	M.5-84
Figure M.5-2	Explicit MCNP Model – Axial View.....	M.5-85

Figure M.5-3	Explicit MCNP Model – Radial View .....	M.5-86
Figure M.5-4	HSM Roof Model Geometry (125-Ton Configuration).....	M.5-87
Figure M.5-5	HSM Floor Model Geometry (125-Ton Configuration).....	M.5-88
Figure M.5-6	HSM Side Model Geometry (125-Ton Configuration).....	M.5-89
Figure M.5-7	HSM Top Model Geometry(125- and 100-Ton Configuration) .....	M.5-90
Figure M.5-8	HSM Roof Model Geometry (100-Ton Configuration).....	M.5-91
Figure M.5-9	HSM Front Wall Dose Rate Distribution (125-Ton Configuration).....	M.5-92
Figure M.5-10	Geometry for Front Wall Average Dose Rate Calculation .....	M.5-93
Figure M.5-11	HSM Back Wall Dose Rate Distribution (125-Ton Configuration) .....	M.5-94
Figure M.5-12	HSM Roof Dose Rate Distribution Perpendicular to DSC Axis(125-Ton Configuration).....	M.5-95
Figure M.5-13	HSM Roof Dose Rate Distribution Parallel to DSC Axis(125-Ton Configuration).....	M.5-96
Figure M.5-14	Surface Average Calculation Geometry.....	M.5-97
Figure M.5-15	HSM Front Wall Dose Rate Distribution (100-Ton Configuration).....	M.5-98
Figure M.5-16	HSM Back Wall Dose Rate Distribution (100-Ton Configuration) .....	M.5-99
Figure M.5-17	HSM Roof Dose Rate Distribution Perpendicular to DSC Axis (100-Ton Configuration) .....	M.5-100
Figure M.5-18	HSM Roof Dose Rate Distribution Parallel to DSC Axis (100-Ton Configuration).....	M.5-101
Figure M.5-19	Cask Model Geometry (125-Ton Configuration) .....	M.5-102
Figure M.5-20	Dose Rate Distribution Along Cask Side During Onsite Transfer (125-Ton Configuration).....	M.5-103
Figure M.5-21	Cask Top-End Dose Rates During Decontamination (125-Ton Configuration).....	M.5-104
Figure M.5-22	Cask Top-End Dose Rates During Inner Cover Welding (125-Ton Configuration).....	M.5-105
Figure M.5-23	Cask Top-End Dose Rates During Outer Cover Welding (125-Ton Configuratio .....	M.5-106
Figure M.5-24	Cask Model Geometry (100-Ton Configuration) .....	M.5-107
Figure M.5-25	Dose Rate Distribution Along Cask Side During Onsite Transfer (100-Ton Configuration).....	M.5-108
Figure M.5-26	Cask Top-End Dose Rates During Decontamination (100-Ton Configuration).....	M.5-109
Figure M.5-27	Cask Top-End Dose Rates During Inner Cover Welding (100-Ton Configuration).....	M.5-110
Figure M.5-28	Cask Top-End Dose Rates During Outer Cover Welding (100-Ton Configuration).....	M.5-111
Figure M.5-29	MCNP Model – Cut along axial centerline of the DSC (100-Ton Configuration).....	M.5-112
Figure M.5-30	MCNP Model – Cut through the centerline of the DSC (100-Ton Configuration).....	M.5-113
Figure M.6-1	NUHOMS®-32PT DSC Cross Section .....	M.6-57
Figure M.6-2	Required PRA Locations for Configurations with Four PRAs.....	M.6-58
Figure M.6-3	Required PRA Locations for Configurations with Eight PRAs.....	M.6-59
Figure M.6-4	Required PRA Locations for Configurations with Sixteen PRAs .....	M.6-60

Figure M.6-5	KENO V.a units and Radial Cross Sections of the Model.....	M.6-61
Figure M.6-6	WE 17x17 Class Assembly.....	M.6-79
Figure M.6-7	CE 16x16 Class Assembly .....	M.6-80
Figure M.6-8	B&W 15x15 Class Assembly.....	M.6-81
Figure M.6-9	CE 15x15 Class Assembly .....	M.6-82
Figure M.6-10	WE 15x15 Class Assembly.....	M.6-83
Figure M.6-11	CE 14x14 Class Assembly .....	M.6-84
Figure M.6-12	WE 14x14 Class Assembly.....	M.6-85
Figure M.8-1	NUHOMS® System Loading Operations Flow Chart.....	M.8-11
Figure M.8-2	NUHOMS® System Retrieval Operations Flow Chart .....	M.8-20
Figure M.10-1	Annual Exposure from the ISFSI as a Function of Distance .....	M.10-16
Figure M.11-1	TC Bounding Accident Dose Rate Distribution.....	M.11-15



g/cm<sup>2</sup>. The criticality analysis is based on 90% credit or 0.0063 g/cm<sup>2</sup> of B10. The use of 90% credit is allowed because poison material coupons are to be tested via neutron transmission plus statistical analysis of the neutron transmission results.

For calculating the maximum internal pressure in the NUHOMS<sup>®</sup>-32PT DSC, it is assumed that 1% of the fuel rods are damaged for normal conditions, up to 10% of the fuel rods are damaged for off normal conditions, and 100% of the fuel rods will be damaged following a design basis accident event. A minimum of 100% of the fill gas and 30% of the fission gases (e.g., H-3, Kr and Xe) within the ruptured fuel rods are assumed to be available for release into the DSC cavity, consistent with NUREG-1536 [2.1].

The maximum design basis internal pressures for the NUHOMS<sup>®</sup>-32PT DSC are 15, 20 and 105 psig for normal, off-normal and accident conditions of storage, respectively.

### M.2.5 Summary of NUHOMS®-32PT DSC Design Criteria

The additional principal design criteria for the NUHOMS®-32PT DSC are presented in Table M.2-19. The NUHOMS®-32PT DSC is designed to store 32 intact standard PWR fuel assemblies with or without BPRAs with assembly average burnup, initial enrichment and cooling time as described in Table M.2-1. The maximum total heat generation rate of the stored fuel is limited to 1.2 kW per fuel assembly and 24 kW per NUHOMS®-32PT DSC in order to keep the maximum fuel cladding temperature below the limit [2.7] necessary to ensure cladding integrity. The fuel cladding integrity is assured by the NUHOMS®-32PT DSC and basket design which limits fuel cladding temperature and maintains a nonoxidizing environment in the cask cavity as described in Section M.4.

The NUHOMS®-32PT DSC (shell and closure) is designed and fabricated as a Class 1 component in accordance with the rules of the ASME Boiler and Pressure Vessel Code, Section III, Subsection NB, and the alternative provisions to the ASME Code as described in Table M.3.1-1.

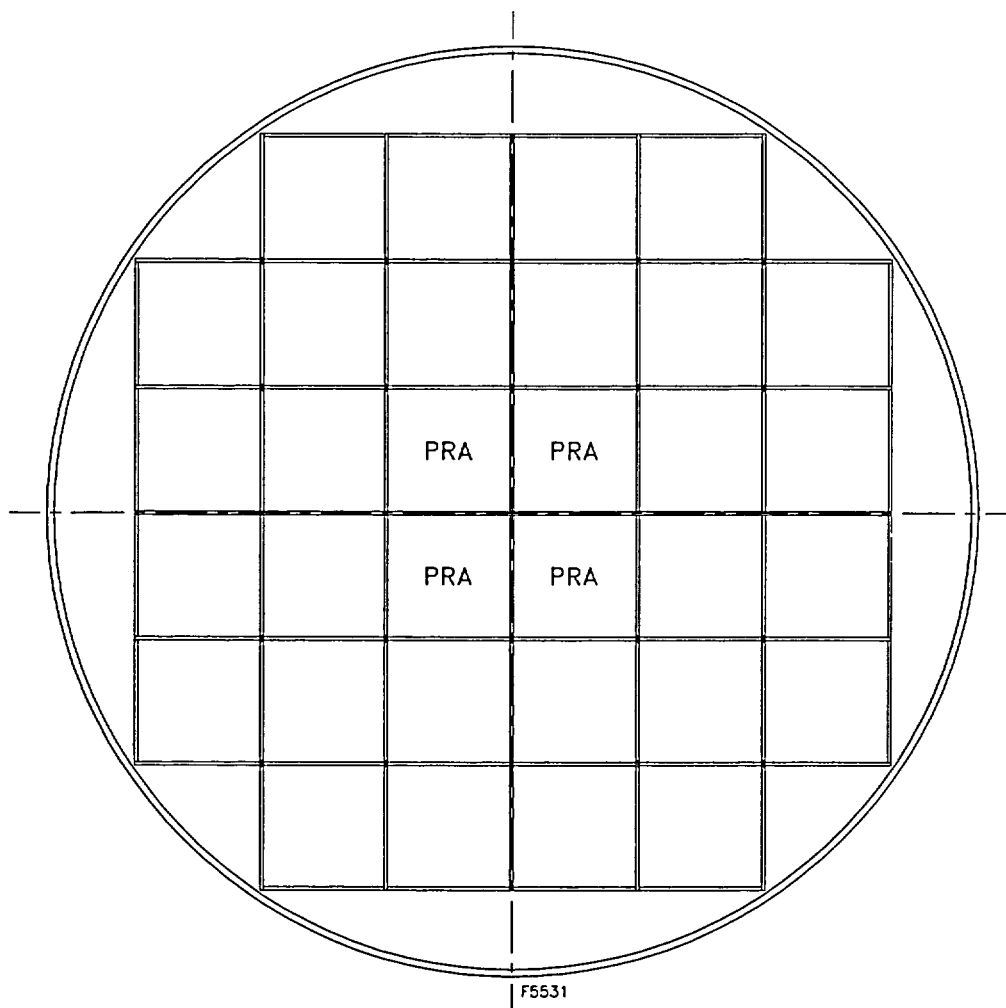
The NUHOMS®-32PT DSC is designed to maintain a subcritical configuration during loading, handling, storage and accident conditions. A combination of fixed neutron absorbers, soluble boron in the pool and favorable geometry are employed to maintain the upper subcritical limit of 0.9411. The fixed neutron absorbers are in the form of borated metallic plates and PRAs which are inserted in the guide tubes of certain assemblies in the basket. The basket is designed and fabricated in accordance with the rules of the ASME Boiler and Pressure Vessel Code, Section III, Subsection NG, Article NG-3200 and the alternative provisions to the ASME Code as described in Table M.3.1-1.

The NUHOMS®-32PT DSC design, fabrication and testing are covered by TN's Quality Assurance Program, which conforms to the criteria in Subpart G of 10CFR72.

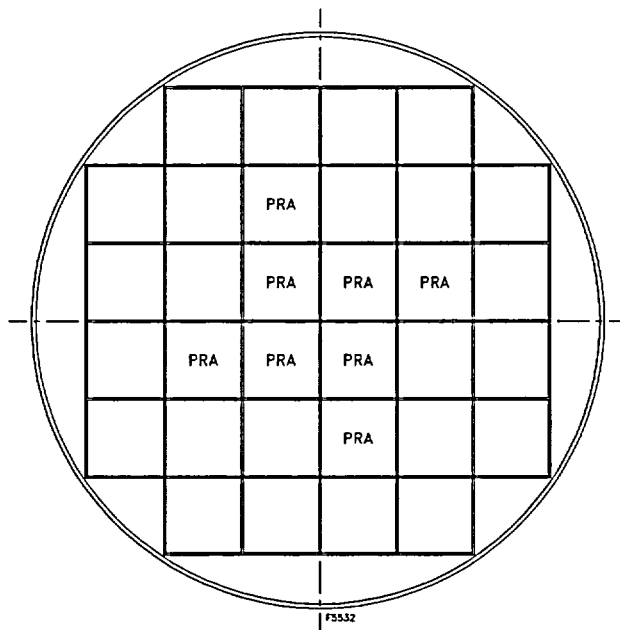
The NUHOMS®-32PT DSC is designed to withstand the effects of severe environmental conditions and natural phenomena such as earthquakes, tornadoes, lightning and floods. Section M.11 describes the NUHOMS®-32PT DSC behavior under these accident conditions.

### M.2.6 References

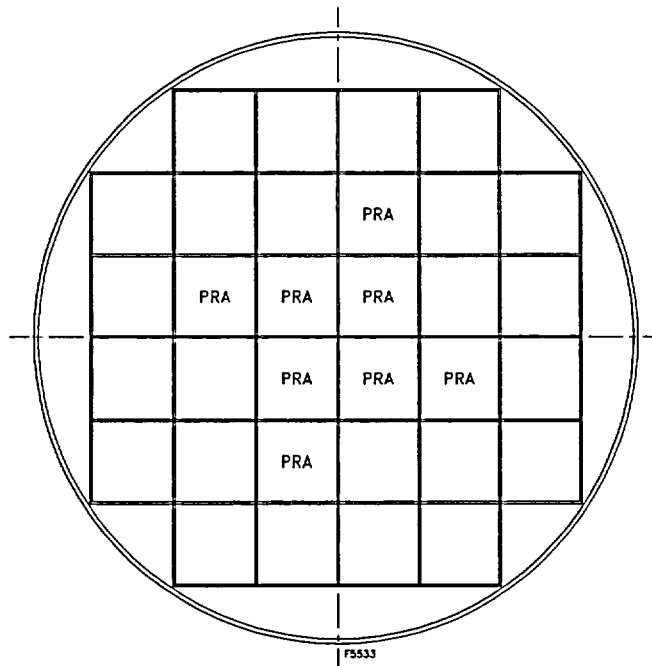
- 2.1 NUREG-1536, "Standard Review Plan for Dry Cask Storage Systems," 1997.
- 2.2 American Society of Mechanical Engineers, ASME Boiler And Pressure Vessel Code, Section III, Division 1 - Subsections NB, NG and NF, 1998 edition including 2000 Addenda.
- 2.3 Young, W.C., "Roark's Formulas for Stress and Strain," 6<sup>th</sup> Edition, McGraw-Hill Book Company, New York, 1989.
- 2.4 ANSI N14.5-1997, "Leakage Tests on Packages for Shipment," February 1998.
- 2.5 Deleted.
- 2.6 Deleted.
- 2.7 Interim Staff Guidance No. 11, Revision 2, "Cladding Considerations for the Transportation and storage of Spent Fuel", dated July 30, 2002.



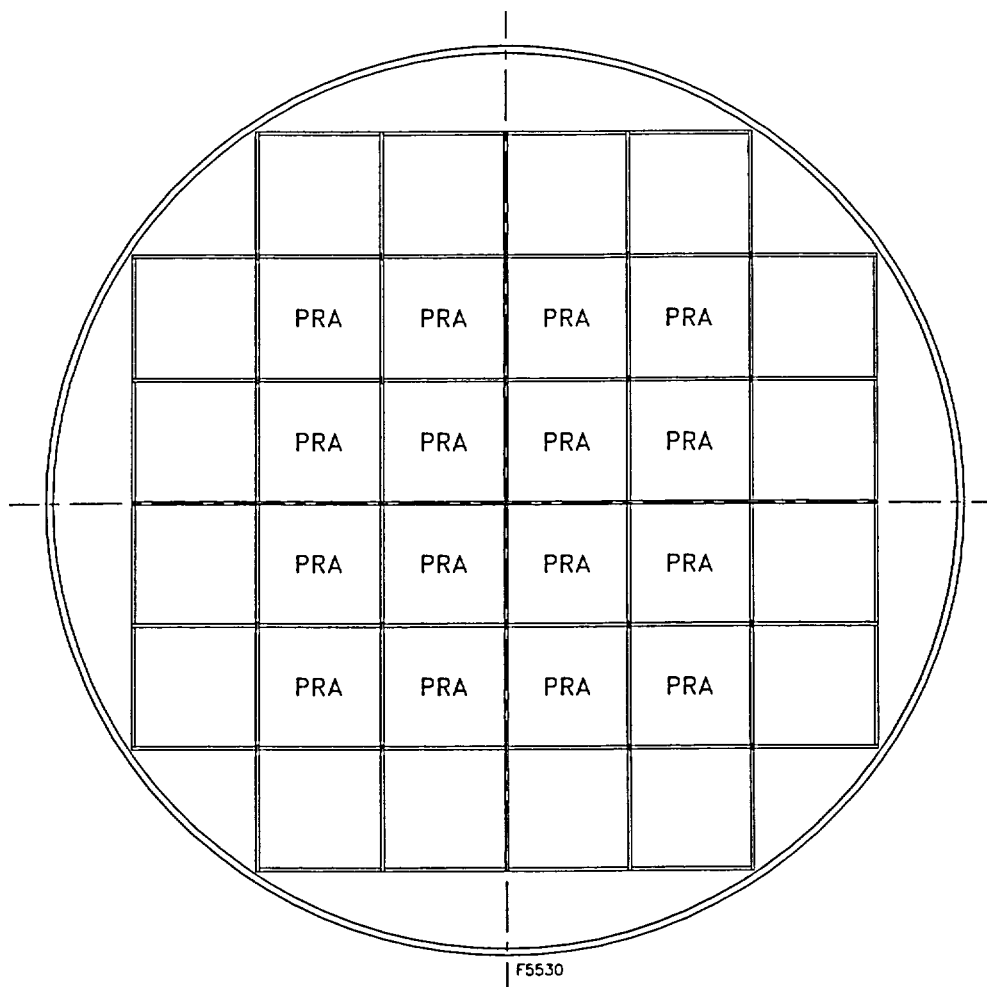
**Figure M.2-4**  
**Required PRA Locations for Configurations with Four PRAs**



OR



**Figure M.2-5**  
**Required PRA Locations for Configurations with Eight PRAs**



**Figure M.2-6**  
**Required PRA Locations for Configurations with Sixteen PRAs**

cutting/welding operations. Verify that the measured hydrogen concentration does not exceed a safety limit of 2.4% [8.4]. If this limit is exceeded, stop all welding operations and purge the DSC cavity with 2-3 psig helium (or any other inert medium) via the 1/4 inch tygon tubing to reduce the hydrogen concentration safely below the 2.4% limit.

12. Perform dye penetrant weld examination of the inner top cover plate weld in accordance with the Technical Specification 1.2.5 requirements.
13. Connect the VDS to the DSC siphon and vent ports.
14. Install temporary shielding to minimize personnel exposure throughout the subsequent welding operations as required.
15. Engage the compressed air, nitrogen or helium supply and open the valve on the vent port and allow compressed gas to force the water from the DSC cavity through the siphon port.
16. Once the water stops flowing from the DSC, close the DSC siphon port and disengage the gas source.
17. Connect the hose from the vent port and the siphon port to the intake of the vacuum pump. Connect a hose from the discharge side of the VDS to the plant's radioactive waste system or spent fuel pool. Connect the VDS to a helium source.
18. Open the valve on the suction side of the pump, start the VDS and draw a vacuum on the DSC cavity. The cavity pressure should be reduced in steps of approximately 100 mm Hg, 50 mm Hg, 25 mm Hg, 15 mm Hg, 10 mm Hg, 5 mm Hg, and 3 mm Hg. After pumping down to each level, the pump is valved off and the cavity pressure monitored. The cavity pressure will rise as water and other volatiles in the cavity evaporate. When the cavity pressure stabilizes, the pump is valved in to complete the vacuum drying process. It may be necessary to repeat some steps, depending on the rate and extent of the pressure increase. Vacuum drying is complete when the pressure stabilizes for a minimum of 30 minutes at 3 mm Hg or less as specified in Technical Specification 1.2.2.

**Caution:** The vacuum drying step for 32PT DSC must meet the time duration limits of Technical Specification 1.2.17a.

19. Open the valve to the vent port and allow the helium to flow into the DSC cavity.
20. Pressurize the DSC with helium to about 24 psia not to exceed 34 psia.
21. Helium leak test the inner top cover plate weld for leakage in accordance with ANSI N14.5 to a sensitivity of  $1 \times 10^{-5}$  atm cm<sup>3</sup>/sec.
22. If a leak is found, repair the weld, repressurize the DSC and repeat the helium leak test.
23. Once no leaks are detected, depressurize the DSC cavity by releasing the helium through the VDS to the plant's spent fuel pool or radioactive waste system.