

H. B. ROBINSON
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
SAFETY ANALYSIS REPORT

TABLE OF CONTENTS

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
1.0	<u>INTRODUCTION AND GENERAL DESCRIPTION OF INSTALLATION</u>	1.1-1
1.1	<u>INTRODUCTION</u>	1.1-1
1.2	<u>GENERAL DESCRIPTION OF INSTALLATION</u>	1.2-1
1.2.1	GENERAL DESCRIPTION	1.2-1
1.2.2	PRINCIPAL SITE CHARACTERISTICS	1.2-1
1.2.3	PRINCIPAL DESIGN CRITERIA	1.2-1
1.2.3.1	<u>Structural Features</u>	1.2-1
1.2.3.2	<u>Decay Heat Dissipation</u>	1.2-2
1.2.4	OPERATING AND FUEL HANDLING SYSTEMS	1.2-2
1.2.5	SAFETY FEATURES	1.2-2
1.2.6	RADIOACTIVE WASTE AND AUXILIARY SYSTEMS	1.2-2
1.3	<u>GENERAL SYSTEMS DESCRIPTIONS</u>	1.3-1
1.3.1	SYSTEMS DESCRIPTIONS	1.3-1
1.3.1.1	<u>Canister Design</u>	1.3-1
1.3.1.2	<u>Horizontal Storage Module</u>	1.3-1
1.3.1.3	<u>Transfer Cask</u>	1.3-1
1.3.1.4	<u>Transporter</u>	1.3-1
1.3.1.5	<u>Skid</u>	1.3-2
1.3.1.6	<u>Horizontal Hydraulic Ram</u>	1.3-2
1.3.1.7	<u>System Operation</u>	1.3-2
1.4	<u>IDENTIFICATION OF AGENTS AND CONTRACTORS</u>	1.4-1
1.5	<u>MATERIAL INCORPORATED BY REFERENCE</u>	1.5-1

H. B. ROBINSON
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
SAFETY ANALYSIS REPORT

TABLE OF CONTENTS (Continued)

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
2.0	<u>SITE CHARACTERISTICS</u>	2.1-1
2.1	<u>GEOGRAPHY AND DEMOGRAPHY</u>	2.1-1
2.1.1	SITE LOCATION	2.1-1
2.1.2	SITE DESCRIPTION	2.1-1
2.1.2.1	<u>Other Activities Within the Site Boundary</u>	2.1-1
2.1.2.2	<u>Boundaries for Establishing Effluent Release Limits</u>	2.1-1
2.1.3	POPULATION DISTRIBUTION AND TRENDS	2.1-1
2.1.3.1	<u>Population Within 10 Miles</u>	2.1-1
2.1.3.2	<u>Population Between 10 and 50 Miles</u>	2.1-1
2.1.3.3	<u>Transient Population</u>	2.1-1
2.1.4	USES OF NEARBY LAND AND WATERS	2.1-1
2.2	<u>NEARBY INDUSTRIAL, TRANSPORTATION, AND MILITARY FACILITIES</u>	2.2-1
2.3	<u>METEOROLOGY</u>	2.3-1
2.4	<u>SURFACE HYDROLOGY</u>	2.4-1
2.4.1	FLOODS	2.4-1
2.4.2	POTENTIAL DAM FAILURES	2.4-1
2.4.3	PROBABLE MAXIMUM SURGE AND SEICHE FLOODING	2.4-1
2.4.4	PROBABLE MAXIMUM TSUNAMI FLOODING	2.4-1
2.4.5	ICE FLOODING	2.4-1
2.4.6	FLOODING PROTECTION REQUIREMENTS	2.4-1
2.4.7	ENVIRONMENTAL ACCEPTANCE OF EFFLUENTS	2.4-1
2.5	<u>SUBSURFACE HYDROLOGY</u>	2.5-1

H. B. ROBINSON
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
SAFETY ANALYSIS REPORT

TABLE OF CONTENTS (Continued)

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
2.6	<u>GEOLOGY AND SEISMOLOGY</u>	2.6-1
2.6.1	ISFSI FOUNDATION	2.6-1
2.6.2	SLOPE STABILITY	2.6-1
2.7	<u>SUMMARY OF SITE CONDITIONS AFFECTING CONSTRUCTION AND OPERATING REQUIREMENTS</u>	2.7-1
3.0	<u>PRINCIPAL DESIGN CRITERIA</u>	3.1-1
3.1	<u>PURPOSE OF THE INSTALLATION</u>	3.1-1
3.1.1	MATERIAL TO BE STORED	3.1-1
3.1.1.1	<u>Physical Characteristics</u>	3.1-1
3.1.1.2	<u>Thermal Characteristics</u>	3.1-1
3.1.1.3	<u>Radiological Characteristics</u>	3.1-1
3.1.2	GENERAL OPERATING FUNCTIONS	3.1-1
3.1.2.1	<u>Overall Functions of the Facility</u>	3.1-1
3.1.2.2	<u>Handling and Transfer Equipment</u>	3.1-2
3.2	<u>STRUCTURAL AND MECHANICAL SAFETY CRITERIA</u>	3.2-1
3.2.1	TORNADO AND WIND LOADINGS	3.2-1
3.2.1.1	<u>Applicable Design Parameters</u>	3.2-1
3.2.1.2	<u>Determination of Forces on the Structures</u>	3.2-2
3.2.1.3	<u>Ability of Structures to Perform</u>	3.2-2
3.2.2	WATER LEVEL (FLOOD) DESIGN	3.2-2
3.2.3	SEISMIC DESIGN	3.2-2

H. B. ROBINSON
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
SAFETY ANALYSIS REPORT

TABLE OF CONTENTS (Continued)

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
3.2.3.1	<u>Input Criteria</u>	3.2-2
3.2.3.2	<u>Seismic-System Analysis</u>	3.2-2
3.2.4	SNOW AND ICE LOADS	3.2-3
3.2.5	COMBINED LOAD CRITERIA	3.2-3
3.3	<u>SAFETY PROTECTION SYSTEM</u>	3.3-1
3.3.1	GENERAL	3.3-1
3.3.2	PROTECTION BY MULTIPLE CONFINEMENT BARRIERS AND SYSTEMS	3.3-1
3.3.2.1	<u>Confinement Barriers and Systems</u>	3.3-1
3.3.2.2	<u>Ventilation - Offgas</u>	3.3-1
3.3.3	PROTECTION BY EQUIPMENT AND INSTRUMENTATION SELECTION	3.3-1
3.3.3.1	<u>Equipment</u>	3.3-1
3.3.3.2	<u>Instrumentation</u>	3.3-2
3.3.4	NUCLEAR CRITICALITY SAFETY	3.3-2
3.3.5	RADIOLOGICAL PROTECTION	3.3-2
3.3.5.1	<u>Access Control</u>	3.3-2
3.3.5.2	<u>Shielding</u>	3.3-2
3.3.5.3	<u>Radiological Alarm System</u>	3.3-2
3.3.6	FIRE AND EXPLOSIVE PROTECTION	3.3-3
3.3.6.1	<u>Fire Protection</u>	3.3-3
3.3.6.2	<u>Explosive Protection</u>	3.3-3
3.3.7	MATERIALS HANDLING AND STORAGE	3.3-3
3.3.7.1	<u>Irradiated Fuel Handling and Storage</u>	3.3-3
3.3.7.2	<u>Radioactive Waste Treatment</u>	3.3-3

H. B. ROBINSON
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
SAFETY ANALYSIS REPORT

TABLE OF CONTENTS (Continued)

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
3.3.7.3	<u>Waste Storage Facilities</u>	3.3-4
3.3.8	INDUSTRIAL AND CHEMICAL SAFETY	3.3-4
3.4	<u>CLASSIFICATION OF STRUCTURES, COMPONENTS, AND SYSTEMS</u>	3.4-1
3.5	<u>DECOMMISSIONING CONSIDERATIONS</u>	3.5-1
4.0	<u>INSTALLATION DESIGN</u>	4.1-1
4.1	<u>SUMMARY DESCRIPTION</u>	4.1-1
4.1.1	LOCATION AND LAYOUT OF INSTALLATION	4.1-1
4.1.2	PRINCIPLE FEATURES	4.1-1
4.1.2.1	<u>Site Boundary</u>	4.1-1
4.1.2.2	<u>Controlled Area</u>	4.1-1
4.1.2.3	<u>Emergency Planning Zone</u>	4.1-1
4.1.2.4	<u>Site Utility Supplies and Systems</u>	4.1-1
4.1.2.5	<u>Storage Facilities</u>	4.1-1
4.1.2.6	<u>Stack</u>	4.1-1
4.2	<u>STORAGE STRUCTURES</u>	4.2-1
4.2.1	STRUCTURAL SPECIFICATIONS	4.2-1
4.2.1.1	<u>Design Basis</u>	4.2-1
4.2.1.2	<u>Construction, Fabrication, and Inspection</u>	4.2-1
4.2.2	INSTALLATION LAYOUT	4.2-1
4.2.2.1	<u>Building Plans</u>	4.2-1
4.2.2.2	<u>Confinement Features</u>	4.2-1
4.2.3	INDIVIDUAL UNIT DESCRIPTION	4.2-1

H. B. ROBINSON
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
SAFETY ANALYSIS REPORT

TABLE OF CONTENTS (Continued)

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
4.3	<u>AUXILIARY SYSTEMS</u>	4.3-1
4.3.1	VENTILATION AND OFFGAS SYSTEM	4.3-1
4.3.1.1	<u>Ventilation System</u>	4.3-1
4.3.1.2	<u>Offgas System</u>	4.3-1
4.3.2	ELECTRICAL SYSTEM	4.3-1
4.3.3	AIR SUPPLY SYSTEM	4.3-1
4.3.3.1	<u>Compressed Air</u>	4.3-1
4.3.3.2	<u>Breathing Air</u>	4.3-1
4.3.4	STEAM SUPPLY AND DISTRIBUTION SYSTEM	4.3-1
4.3.5	WATER SUPPLY SYSTEM	4.3-1
4.3.5.1	<u>Major Components and Operating Characteristics</u>	4.3-1
4.3.5.2	<u>Safety Consideration and Controls</u>	4.3-2
4.3.6	SEWAGE TREATMENT SYSTEM	4.3-2
4.3.6.1	<u>Sanitary Sewage</u>	4.3-2
4.3.6.2	<u>Chemical Sewage</u>	4.3-2
4.3.7	COMMUNICATIONS AND ALARM SYSTEM	4.3-2
4.3.8	FIRE PROTECTION SYSTEM	4.3-2
4.3.9	MAINTENANCE SYSTEMS	4.3-2
4.3.10	COLD CHEMICAL SYSTEMS	4.3-2
4.3.11	AIR SAMPLING SYSTEM	4.3-2
4.4	<u>DECONTAMINATION SYSTEMS</u>	4.4-1
4.5	<u>SHIPPING CASK REPAIR AND MAINTENANCE</u>	4.5-1
4.6	<u>CATHODIC PROTECTION</u>	4.6-1

H. B. ROBINSON
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
SAFETY ANALYSIS REPORT

TABLE OF CONTENTS (Continued)

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
4.7	<u>FUEL HANDLING OPERATION SYSTEM</u>	4.7-1
4.7.1	STRUCTURAL SPECIFICATIONS	4.7-1
4.7.2	INSTALLATION LAYOUT	4.7-1
4.7.2.1	<u>Building Plans</u>	4.7-1
4.7.2.2	<u>Confinement Features</u>	4.7-1
4.7.3	INDIVIDUAL UNIT DESCRIPTION	4.7-1
4.7.3.1	<u>Shipping Cask Preparation</u>	4.7-1
4.7.3.2	<u>Spent Fuel Loading</u>	4.7-1
4.7.3.3	<u>DSC Drying, Backfilling, and Sealing</u>	4.7-2
5.0	<u>OPERATION SYSTEMS</u>	5.1-1
5.1	<u>OPERATION DESCRIPTION</u>	5.1-1
5.1.1	NARRATIVE DESCRIPTION	5.1-1
5.1.1.1	<u>Preparation of the Transfer Cask and Canister</u>	5.1-1
5.1.1.2	<u>Fuel Loading</u>	5.1-1
5.1.1.3	<u>Cask Drying Process</u>	5.1-1
5.1.1.4	<u>DSC Sealing Operations</u>	5.1-2
5.1.1.5	<u>Transport of the Cask to the Horizontal Storage Module (HSM)</u>	5.1-2
5.1.1.6	<u>Loading of the Canister into the HSM</u>	5.1-2
5.1.1.7	<u>Monitoring Operations</u>	5.1-3
5.1.1.8	<u>Unloading the DSC from the HSM</u>	5.1-3
5.1.2	FLOW SHEET	5.1-4
5.1.3	IDENTIFICATION OF SUBJECTS FOR SAFETY ANALYSIS	5.1-4

H. B. ROBINSON
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
SAFETY ANALYSIS REPORT

TABLE OF CONTENTS (Cont'd)

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
5.1.3.1	<u>Criticality Prevention</u>	5.1-4
5.1.3.2	<u>Chemical Safety</u>	5.1-4
5.1.3.3	<u>Operation Shutdown Modes</u>	5.1-4
5.1.3.4	<u>Instrumentation</u>	5.1-4
5.1.3.5	<u>Maintenance Techniques</u>	5.1-4
5.2	<u>FUEL HANDLING SYSTEMS</u>	5.2-1
5.2.1	SPENT FUEL HANDLING AND TRANSFER	5.2-1
5.2.1.1	<u>Functional Description</u>	5.2-1
5.2.1.2	<u>Safety Features</u>	5.2-2
5.2.2	SPENT FUEL STORAGE	5.2-2
5.2.2.1	<u>Safety Features</u>	5.2-2
5.3	<u>OTHER OPERATING SYSTEM</u>	5.3-1
5.3.1	OPERATING SYSTEM	5.3-1
5.3.2	COMPONENTS/EQUIPMENT SPARES	5.3-1
5.4	<u>OPERATION SUPPORT SYSTEM</u>	5.4-1
5.5	<u>CONTROL ROOM AND/OR CONTROL AREAS</u>	5.5-1
5.6	<u>ANALYTICAL SAMPLING</u>	5.6-1
6.0	<u>WASTE CONFINEMENT AND MANAGEMENT</u>	6.1-1
6.1	<u>WASTE SOURCES</u>	6.1-1
6.2	<u>OFFGAS TREATMENT AND VENTILATION</u>	6.2-1
6.3	<u>LIQUID WASTE TREATMENT AND RETENTION</u>	6.3-1
6.4	<u>SOLID WASTES</u>	6.4-1
6.5	<u>RADIOLOGICAL IMPACT OF NORMAL OPERATIONS-SUMMARY</u>	6.5-1
7.0	<u>RADIATION PROTECTION</u>	
7.1-1		
7.1	<u>ENSURING THAT OCCUPATIONAL RADIATION EXPOSURES</u>	

H. B. ROBINSON
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
SAFETY ANALYSIS REPORT

TABLE OF CONTENTS (Continued)

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
	<u>ARE ALARA</u>	7.1-1
7.1.1	POLICY CONSIDERATIONS	7.1-1
7.1.2	DESIGN CONSIDERATION	
7.1-1		
7.1.3	OPERATIONAL CONSIDERATION	7.1-2
7.2	<u>RADIATION PROTECTION</u>	
7.2-1		
7.2.1	CHARACTERIZATION OF SOURCES	7.2-1
7.2.2	AIRBORNE SOURCES	7.2-1
7.3	<u>RADIATION PROTECTION DESIGN FEATURES</u>	7.3-1
7.3.1	INSTALLATION DESIGN FEATURES	7.3-1
7.3.2	SHIELDING	7.3-1
7.3.2.1	<u>Radiation Shielding Design Features</u>	7.3-1
7.3.2.2	<u>Shielding Analysis</u>	7.3-1
7.3.3	VENTILATION	7.3-3
7.3.4	RADIATION MONITORING INSTRUMENTATION	7.3-3
7.4	<u>ESTIMATED ONSITE COLLECTIVE DOSE ASSESSMENT</u>	7.4-1
7.4.1	OPERATIONAL DOSE ASSESSMENT	7.4-1
7.4.2	STORAGE TERM DOSE ASSESSMENT	7.4-1
7.5	<u>HEALTH PHYSICS PROGRAM</u>	7.5-1
7.5.1	ORGANIZATION	7.5-1
7.5.2	EQUIPMENT, INSTRUMENTATION, AND FACILITIES	
7.5-1		
7.5.3	PROCEDURES	7.5-1
7.6	<u>ESTIMATED OFFSITE COLLECTIVE DOSE ASSESSMENT</u>	7.6-1
7.6.1	EFFLUENT AND ENVIRONMENTAL MONITORING PROGRAM	7.6-1
7.6.2	ANALYSIS OF MULTIPLE CONTRIBUTION	7.6-1
7.6.3	ESTIMATED DOSE EQUIVALENTS	7.6-1

H. B. ROBINSON
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
SAFETY ANALYSIS REPORT

TABLE OF CONTENTS (Cont'd)

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
8.0	<u>ANALYSIS OF DESIGN EVENTS</u>	8.0-1
8.1	<u>NORMAL AND OFF-NORMAL OPERATIONS</u>	8.1-1
8.1.1	NORMAL OPERATION ANALYSIS	8.1-1
8.1.2	OFF-NORMAL OPERATION ANALYSIS	8.1-3
8.1.2.1	<u>Transport</u>	8.1-3
8.1.2.2	<u>Air Flow Blockage</u>	8.1-3
8.1.3	RADIOLOGICAL IMPACT FROM OFF-NORMAL OPERATIONS	8.1-3
8.2	<u>ACCIDENT ANALYSIS</u>	8.2-1
8.2.1	LOSS OF AIR OUTLET SHIELDING	8.2-1
8.2.2	TORNADO/TORNADO GENERATED MISSILE	8.2-1
8.2.3	EARTHQUAKE	8.2-2
8.2.3.1	<u>Accident Analysis</u>	8.2-2
8.2.3.2	<u>Accident Dose Calculation</u>	8.2-2
8.2.4	DROP ACCIDENT	8.2-3
8.2.4.1	<u>Postulated Cause of Events</u>	8.2-3
8.2.4.2	<u>Drop Accident Analysis</u>	8.2-3
8.2.5	LIGHTNING	8.2-6
8.2.5.1	<u>Postulated Cause of Events</u>	8.2-6
8.2.5.2	<u>Analysis of Effects and Consequences</u>	8.2-6
8.2.6	BLOCKAGE OF AIR INLETS AND OUTLETS	8.2-6
8.2.7	ACCIDENT PRESSURIZATION OF DSC	8.2-6
8.2.8	FIRE	8.2-7
8.2.9	DRY STORAGE CANISTER LEAKAGE	8.2-7
8.2.10	LOAD COMBINATION	8.2-7
8.3	<u>FOUNDATION DESIGN</u>	8.3-1
8.4	<u>DSC INSTRUMENTATION PENETRATION DESIGN</u>	8.4-1

H. B. ROBINSON
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
SAFETY ANALYSIS REPORT

TABLE OF CONTENTS (Cont'd)

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
8.5	<u>TRAIN DERAILMENT</u>	8.5-1
9.0	<u>CONDUCT OF OPERATIONS</u>	9.1-1
9.1	<u>ORGANIZATIONAL STRUCTURE</u>	
9.1-1		
9.1.1	CORPORATE ORGANIZATION	9.1-1
9.1.1.1	<u>Corporate Functions, Responsibilities, and Authorities</u>	9.1-1
9.1.1.2	<u>Applicant's In-House Organization</u>	9.1-1
9.1.1.3	<u>Interrelationships with Contractors and Suppliers</u>	9.1-1
9.1.1.4	<u>Applicant's Technical Staff</u>	9.1-1
9.1.2	OPERATING ORGANIZATION, MANAGEMENT, AND ADMINISTRATIVE CONTROLS SYSTEM	9.1-1
9.1.2.1	<u>Onsite Organization</u>	9.1-1
9.1.3	PERSONNEL QUALIFICATION REQUIREMENTS	9.1-2
9.1.3.1	<u>Minimum Qualification Requirements</u>	9.1-2
9.1.4	LIAISON WITH OUTSIDE ORGANIZATIONS	9.1-2
9.2	<u>PRE-OPERATIONAL TESTING AND OPERATION</u>	9.2-1
9.2.1	ADMINISTRATIVE PROCEDURES FOR CONDUCTING TEST PROGRAM	9.2-1
9.2.2	CP&L TEST PROGRAM DESCRIPTION	9.2-1
9.2.3	TEST DISCUSSION	9.2-1
9.2.3.1	<u>Physical Facilities Testing (Thermal Testing of HSM and DSC)</u>	9.2-1
9.2.3.2	<u>Operations Testing (Handling Rests)</u>	9.2-1
9.3	<u>TRAINING PROGRAM</u>	9.3-1
9.3.1	PLANT STAFF TRAINING PROGRAM	9.3-1
9.3.2	REPLACEMENT AND RETRAINING PROGRAM	9.3-1
9.4	<u>NORMAL OPERATIONS</u>	9.4-1
9.4.1	PROCEDURES	9.4-1
9.4.2	RECORDS	9.4-1

H. B. ROBINSON
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
SAFETY ANALYSIS REPORT

TABLE OF CONTENTS (Cont'd)

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
9.5	<u>EMERGENCY PLANNING</u>	9.5-1
9.6	<u>DECOMMISSIONING PLAN</u>	9.6-1
9.7	<u>LICENSE RENEWAL ACTIVITIES</u>	9.7-1
9.7.1	AGING MANAGEMENT PROGRAMS	9.7-1
9.7.1.1	<u>ISFSI Aging Management Program</u>	9.7-1
9.7.1.2	<u>Transfer Cask Aging Management Program</u>	9.7-1
9.7.2	TIME-LIMITED AGING ANALYSIS	9.7-1
9.7.2.1	<u>DSC Shell Cracking Due to Fatigue</u>	9.7-1
9.7.2.2	<u>DSC Penetration Assembly Epoxylite Seal Change in Material Properties Due to Ionizing Radiation</u>	9.7-1
9.7.2.3	<u>DSC Poison Plate Depletion of Boron</u>	9.7-1
9.7.2.4	<u>5% Boron-Polyethylene Front Access Cover Plate Cracking and Change in 9.7-2 Material Properties Due to Ionizing Radiation</u>	
10.0	<u>OPERATING CONTROLS AND LIMITS</u>	10.0-1
10.1	<u>FUEL SPECIFICATIONS</u>	10.1-1
10.2	<u>LIMITS FOR THE SURFACE DOSE RATE OF THE HSM WHILE THE DSC IS IN STORAGE</u>	10.2-1
10.3	<u>LIMITS FOR THE MAXIMUM AIR TEMPERATURE RISE AFTER STORAGE</u>	10.3-1
10.4	<u>SURVEILLANCE OF THE HSM AIR INLETS</u>	10.4-1
11.0	<u>QUALITY ASSURANCE</u>	11.0-1
11.1	<u>CORPORATE QUALITY ASSURANCE</u>	11.1-1
11.2	<u>H. B. ROBINSON QUALITY ASSURANCE PROGRAM</u>	11.2-1
11.3	<u>NUTECH QUALITY ASSURANCE</u>	11.3-1

H. B. ROBINSON
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
SAFETY ANALYSIS REPORT

LIST OF TABLES

<u>TABLE</u>	<u>TITLE</u>	<u>PAGE</u>
1.1-1	ACRONYMS	1.1-2
1.1-2	ABBREVIATIONS	1.1-3
1.2-1	DESIGN PARAMETERS FOR THE HBR ISFSI	1.2-3
1.2-2	SUMMARY OF ISFSI FUEL HANDLING OPERATIONS	1.2-4
1.2-3	PRIMARY DESIGN PARAMETERS FOR THE ISFSI OPERATING SYSTEMS	1.2-5
1.3-1	MAJOR SYSTEMS, SUBSYSTEMS, AND COMPONENTS OF THE H. B. ROBINSON ISFSI	1.3-5
3.1-1	PHYSICAL CHARACTERISTICS OF PWR FUEL ASSEMBLIES BASED ON NOMINAL DESIGN	3.1-4
3.1-2	ACCEPTABLE RADIOLOGICAL CRITERIA FOR STORAGE OF MATERIAL IN THE HBR ISFSI	3.1-5
3.3-1	H. B. ROBINSON ISFSI IMPORTANT TO SAFETY (SAFETY RELATED) FEATURES	3.3-5
3.3-2	RADIOACTIVITY CONFINEMENT BARRIERS AND SYSTEM OF THE ISFSI	3.3-6
5.2-1	TRANSFER SYSTEM COMPONENT DESCRIPTION	5.2-3
7.3-1	DSC END SHIELDING MATERIAL THICKNESSES	7.3-4
7.3-2	SHIELDING ANALYSIS RESULTS	7.3-5
7.4-1	SUMMARY OF ESTIMATED ONSITE DOSES DURING FUEL HANDLING OPERATIONS	7.4-2
7.4-2	ESTIMATED ANNUAL ONSITE DOSES DURING STORAGE PHASE	7.4-4
8.1-1	DRY SHIELDED CANISTER AND HORIZONTAL STORAGE MODULE COMPONENT WEIGHTS	8.1-4
8.1-2	MAXIMUM DRY STORAGE CANISTER SHELL STRESSES FOR NORMAL OPERATING LOADS	8.1-5
8.2-1	MAXIMUM DSC STRESSES FOR 8-FOOT BOTTOM END DROP ACCIDENT	8.2-8

H. B. ROBINSON
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
SAFETY ANALYSIS REPORT

LIST OF TABLES (Continued)

<u>TABLE</u>	<u>TITLE</u>	<u>PAGE</u>
8.2-2	DSC ENVELOPING LOAD COMBINATION	8.2-9
8.3-1	FOUNDATION BEARING STRESS	8.3-3
8.3-2	FOUNDATION SLAB-MAXIMUM BENDING MOMENTS	8.3-4
8.3-3	FOUNDATION ANCHOR LOADS	8.3-6
10.1-1	ACCEPTABLE RADIOLOGICAL CRITERIA FOR STORAGE OF MATERIAL IN THE HBR ISFSI	10.1-2

H. B. ROBINSON
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
SAFETY ANALYSIS REPORT

LIST OF FIGURES

<u>FIGURE</u>	<u>TITLE</u>
1.1-1	Primary Components of the ISFSI
1.1-2	Plot Plan
1.2-1	Horizontal Storage Module
1.3-1	Dry Shielded Canister and Internal Basket
1.3-2	HSM Air Flow Diagram
1.3-3	Skid Features
1.3-4	Hydraulic Ram
1.3-5	Primary Canister Handling Operations
4.2-1 Sh. 1	Dry Shielded Canister
4.2-1 Sh. 2	Dry Shielded Canister
4.2-2	Horizontal Storage Module
4.5-1	General Arrangement - HBR2 Fuel Handling Building
5.1-1	Cask Extension for GE IF-300 Cask
5.1-2	Cask Liner for GE IF-300 Cask
5.1-3 Sh. 1	Handling Operations Flow Sheet
5.1-3 Sh. 2	Handling Operations Flow Sheet
5.1-3 Sh. 3	Handling Operations Flow Sheet
5.1-3 Sh. 4	Handling Operations Flow Sheet
5.2-1	Hydraulic Ram System
5.2-2	DSC Grappling System
5.4-1	DSC Instrument Locations
7.3-1	Location of Reported Dose Rates (Table 7.3-2)
7.4-1	Annual Dose (mrem/yr) from 3 HSMs (Assuming 2080 hours/yr)
7.4-2	Dose Rate vs. Distance from Surface of HSM (Assuming 3 Modules)
7.4-3	Radiation Zone Map of Module Surface Dose Rates

H. B. ROBINSON
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
SAFETY ANALYSIS REPORT

LIST OF FIGURES

<u>FIGURE</u>	<u>TITLE</u>
7.6-1	Annual Offsite Dose (mrem per year) from 3 HSMs (Based on 24 hrs/day, 365 days/yr)
8.2-1	Cask Drop Height Criteria
8.2-2	Cask Deceleration vs. Time, 8-foot Drop
8.2-3	DSC Bottom Region ANSYS Model
8.2-4	DSC Top Region ANSYS Model
8.3-1	Mat Foundation STARDYNE Model
8.3-2	Foundation Uplift Model
8.4-1	Penetration Model for Horizontal Drop Analysis