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INTRODUCTION

This report presents a description and specification of each crane and lifting device installed or planned for the Long Island Lighting Company Shoreham Nuclear Power Station - Unit 1. The discussion of each lifting device is presented in table format as suggested in the indicative sample of Figure 1 NUREG 0612, which provides guidelines for preparation of the report. The report specifically responds to NRC letters dated December 22, 1980, and February 3, 1981. The letters requested information dealing with handling heavy loads at Shoreham.

PURPOSE

This report is in response to NRC letters of December 22, 1980 and February 3, 1981 requesting information concerning the handling of heavy loads at Shoreham. Specifically, the reference letters requested information from operating plants via Enclosure 2 and from applicants for operating licenses via Enclosure 3. This response is intended to address items 2.2 and 2.3 of Enclosure 3 as required. Information required by paragraph 2.1 was submitted via SNRC-596, dated July 17, 1981.

2.2 SPECIFIC REQUIREMENTS FOR OVERHEAD HANDLING SYSTEMS OPERATING IN THE REACTOR BUILDING

2.2.1 Identify by name, type, capacity, and equipment designator, any cranes physically capable (i.e., ignoring interlocks, movable mechanical stops, or operating procedures) of carrying loads over spent fuel in the storage pool or in the reactor vessel.

RESPONSE: Name: Reactor Building Polar Crane - 1T31-CRN002
Type: Electric Overhead Traveling
Capacity: 125 ton - main hook
30 ton - auxiliary hook

2.2.2 Justify the exclusion of any cranes in this area from the above category by verifying that they are incapable of carrying heavy loads or are permanently prevented from movement of heavy loads over stored fuel or into any location where, following any failure, such load may drop into the reactor vessel or spent fuel storage pool.

RESPONSE: The following cranes are listed in Table 1 (see SNRC-596):

Channel Handling Boom (1F11-CRN074) - The capacity of the boom and hoist is 200 lb. It is not capable of carrying a heavy load.

Fuel Handling Jib Cranes (1T31-CRN008A and B) - These cranes are specifically designed to handle one fuel assembly plus handling tool and will not be used for any other function. They have a capacity of 1000 lb and are equipped with a load limiting device which will automatically stop hoisting on an overload signal of 1000 ±50 lb. They are not capable of carrying a heavy load.

Refueling Platform (1F15-CRN009) - This platform will be used for refueling operations. Fuel and other reactor components will be removed from the reactor core, transported to the fuel pool, and then returned to the reactor as required. Fuel and reactor components are at all times handled remotely underwater. The capacity of the refueling platform hoist is 1000 lb. It is not capable of carrying a heavy load.

RWCU Area Jib Crane (1T31-CRN089) - This crane is used for the maintenance/handling of reactor water cleanup system equipment. Its capacity is 2000 lb. It is capable of carrying a heavy load. However, it is permanently wall mounted at azimuth 270°, 63' from centerline of the reactor and has an 11' reach. A load failure could not possibly fall within the vicinity of the spent fuel storage pool or into the reactor vessel.

Reactor Building Polar Crane (1T31-CRN002: Auxiliary Hook) - This hook will be used during maintenance periods to handle miscellanecus loads and for moving items of equipment to and from the floor level at elevation 8'-0". The capacity of the auxiliary hoist is 30 tons. However, the auxiliary hoist will not be used to handle heavy loads in the vicinity of the spent fuel pool. This restriction will be accomplished by imposing operational limitations (i.e., developing load handling procedures, defining safe load paths), maintaining a training program for crane operators, and utilizing only qualified operators for all polar crane operations.

2.2.3 Identify any cranes listed in 2.2.1, above, which you have evaluated as having sufficient design features to make the likelihood of a load drop extremely small for all loads to be carried and the basis for this evaluation (i.e., complete compliance with NUREG 0612, Section 5.1.6 or partial compliance supplemented by suitable alternative or additional design features). For each crane so evaluated, provide the load-handling-system (i.e., crane load combination) information specified in Attachment 1.

RESPONSE: The information specified in Attachment 1 is presented as follows:

1. Reactor Building Polar Crane (1T31-CRN002: Main Hook) - The Shoreham Nuclear Power Station Reactor Building Polar Crane is manufactured by the Whiting Corporation and has a Design-Rated Load (DRL) of 125 tons and Maximum Critical Load (MCL) of 123 tons.

2. The Polar Crane is a top running type, dual load path, double girder electric overhead traveling crane. It will normally be used during maintenance and refueling operations. The main hoist incorporates a dual load path design. This is accomplished by use of a dual load path through the hoist gear train, the reeving system, and the hoist load block along with restraints at critical points to provide load retention and minimize uncontrolled motions of the load upon failure of any single hoist component.

FSAR Table 9.1.4-2 summarizes the polar crane design, fabrication, inspection, testing, and operation with respect to Branch Technical Position APCSB 9-1, "Overhead Handling Systems for Nuclear Power Plants."

3. The seismic information requested is contained in the FSAR Table 9.1.4-2, Paragraph 1.c.

4. The evaluation of the lifting devices is discussed in FSAR Table 9.1.4-2, Paragraph 3.

5. An evaluation of the interfacing lift points is also contained in FSAR Table 9.1.4-2, Paragraph 3.

2.2.4 For cranes identified in 2.2.1 above, not categorized according to 2.2.3, demonstrate that the criteria of NUREG 0612, Section 5.1, are satisfied. With respect to Criteria I through III, provide a discussion of your evaluation of crane operation in the spent fuel area and your determination of compliance.

RESPONSE: None.

2.3 SPECIFIC REQUIREMENTS FOR OVERHEAD HANDLING SYSTEMS OPERATING IN PLANT AREAS CONTAINING EQUIPMENT REQUIRED FOR REACTOR SHUTDOWN, DECAY HEAT REMOVAL, OR SPENT FUEL POOL COOLING.

2.3.1 Identify any cranes listed in 2.1.1, above, which you have evaluated as having sufficient design features to make the likelihood of a load drop extremely small for all loads to be carried and the basis for this evaluation (i.e., complete compliance with NUREG 0612, Section 5.1.6, or partial compliance supplemented by suitable alternative or additional design features). For each crane so evaluated, provide the load-handling-system (i.e., crane-load-combination) information specified in Attachment 1.

RESPONSE:: Refer to Response 2.2.3.

2.3.2 For any cranes identified in 2.1.1 not designated as single-failure-proof in 2.3-1, a comprehensive hazard evaluation should be provided which includes the following information:

RESPONSE: The information required to answer this response is contained in the matrix format suggested by Paragraph 2.3.2.a. As an introduction the assumptions and method of analysis used to develop the matrix follow:

ASSUMPTIONS

Credit has been taken for previous studies, as applicable, which analyzed the loss of shutdown equipment. These studies are:

Cable Separation Analysis Report - This report investigated the loss of cables, raceways, and all electrical equipment which were disabled by fire in conservatively large affected areas of the Secondary Containment. A determination was then made whether shutdown could be achieved using the remaining shutdown equipment of other unaffected areas. The presumption is that cables, raceways, and all affected electrical equipment rendered unavailable from a postulated load drop occurring in a segment, as defined in this report, is analogous to cables or raceways destroyed by fire due to the relatively large segment zones.

Cable Separation Analysis Report - Primary Containment - This analysis investigated, in a manner similar to the Cable Separation Analysis Report, the loss of cables, raceways, and electrical equipment. Wedge-shaped segments of 60 degrees were chosen, and after disabling equipment in the segment, a determination was made whether shutdown could be accomplished with the remaining equipment. Upon completion of the analysis of each area, the procedure is repeated with new 60-degree segments which are indexed 30 degrees from the previously analyzed segments. This indexing assures that no sensitive interface boundary exists. The presumption, as taken in the Cable Separation Analysis Report, is still taken that equipment destroyed by a postulated load drop is analogous to equipment rendered unavailable by fire.

Separation Analysis - Instrument Lines - This analysis was made to show that sufficient separation exists between redundant instrumentation necessary for shutdown in the Primary and Secondary Containment, such that a postulated event will not prevent plant safe shutdown. The same segment size and indexing used for the Primary Containment in the preceding Cable Separation Analysis applies for this separation analysis. Additionally, an investigation of the Secondary Containment is undertaken based upon a segment size of 45 degrees, indexed 22.5 degrees. Since there are distinct floor levels within the Secondary Containment, vertical boundaries are established for the Secondary Containment at each floor elevation. It was assumed that in a given area, the safety-related instrument lines and their connected shutdown sensors located in this area or other areas are assumed to fail. The analysis concluded shutdown can be accomplished in all cases.

Separation Analysis - Small Bore Piping - This analysis took the same approach and reached the same conclusions as the Separation Analysis - Instrument Lines.

Calculations have been used to determine the integrity of floor slabs, beams, and large bore piping when impacted by a postulated heavy load drop. These calculations are:

Missile-Barrier Interaction - This calculation presents data of the missile barrier test program carried out at the Illinois Institute of Technology Research Institute under the direction of Stone & Webster Engineering Corporation. Methods are presented for design of both local and overall structural effects of missile impact on reinforced concrete barriers. The method of design for local effects is intended to prevent the phenomenon of scabbing, which is caused by movement of a shear plug. The method for overall structural response uses a single mass, single degree of freedom model to conservatively predict the response of the barrier.

Heavy Load Impact on Beams, Cables and Plates - This is a generic calculation developed by Stone & Webster Engineering Corporation's Engineering Mechanics Division to assess the damage to piping and conduit from the impact of a postulated heavy load drop. The calculation approach is to equate plastic strain energy to the energy of an impacting heavy load. Both the case of energy absorption by plastic bending and membrane action were investigated. A graphical presentation provides a quantitative assessment of the maximum weight of a falling heavy load that can impact piping or conduit without it suffering loss of its function.

METHOD OF ANALYSIS

The following approach was taken for each lifting device to determine the effect of a postulated load drop:

1. Each impact area was visually sited, and piping and equipment targets below the lifting device and beneath the operating floor were identified. The positions of these targets were verified utilizing Shoreham composite drawings.

2. The effect and control of a postulated load drop associated with each lifting device was next accomplished. The process consisted of three phases:

   a. The systems configuration, use, and maintenance were determined through reference to Technical Specifications, System Descriptions, and Reports on Plant Maintainability. Through these sources it was determined whether system redundancy, system separation (as determined by the combined effects of the Cable Separation Analysis Report, Separation Analysis - Instrument Lines, Separation Analysis - Small Bore Piping and Large Bore Piping Walkdowns) or site specific considerations provided sufficient safeguards to mitigate the effects of a postulated load drop.

b. If the preceding analysis proved insufficient, calculations were performed to determine if damage would preclude system operation. Primarily this consisted of calculations which analyzed the ability of the system piping to withstand the postulated load drop, and development of alternative actions as required.

c. A structural analysis was performed as required to determine if a postulated load drop would cause scabbing or penetration of the operating floor, and subsequent effects on safety-related equipment on lower elevations.

3. The following matrix was developed to present the information requested by Paragraph 2.3.2. It details the location of the lifting device, impact area, and affected safety-related equipment. Control of the postulated load drop is based upon the Hazard Elimination Categories presented in Figure 1 of Paragraph 2.3.2, and is further explained by an added discussion section.

POLAR CRANE 1T31-CRN002

Location: Reactor Building, Secondary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				1. The design criteria for the polar crane is addressed in Table 9.1.4-2 of the FSAR and meets the requirements of ANSI B30.2-1976. Safe load paths are developed and diagrammed utilizing the most direct paths and minimum lift heights. Approved procedure for heavy loads carried by the polar crane are now in place. Crane operators are trained, qualified and conduct themselves in accordance with ANSI B30.2-1976.
Various components not exceeding 125-ton main hook capacity	Operating Floor 175'-9" and 40'-0"		d	2. The primary hook (125-ton capacity) of the polar crane is single-failure proof. The information concerning the design, fabrication, installation, and testing of the main hook to the criteria of NUREG-0554 is contained in Table 9.1.4-2 of the FSAR.
Various components not exceeding 30-ton auxiliary hook capacity				3. The auxiliary hook (30-ton capacity) is not single-failure proof. However, this hoist is provided with redundant hoist holding brakes, redundant upper travel limit switches, each on separate circuits, and two centrifugal overspeed switches. Inspection and testing procedures, maintenance standards and crane operator standards meet the criteria of ANSI B30.2-1976. All heavy load lifts, whether by the main or the auxiliary hooks, are covered by approved procedures.
				4. A hazard evaluation was conducted on the varied heavy loads capable of being raised by the auxiliary hook through the three hatchways.

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POLAR CRANE 1T31-CRN002

Location: Reactor Building, Secondary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
Hatchway centered vertically along SWEC Azimuths 26° to 52°	40'-0"		c	A. Hatchway at Azimuth 26°-52° This hatchway is centered over the receiving floor. It is apparent that a heavy load dropped from the upper terminus of the hatchway (elev 175'-9") will penetrate the floor. Structural calculations postulating a load drop of a 3' diameter blunt object show not more than 1500 lb. can be dropped from elev 175'-9" without penetration of the floor occurring. Evaluation of safety-related equipment damage is as follows:
		1G11-TK050B		Reactor Building Floor Drain Tank - not required for safe shutdown.
		1G41-6-WS-306-151-3		Fuel Pool Cooling and Cleanup System Cross-Connect Line - not required for safe shutdown.
		1P42*E117A & B		RBCLCW Booster Heat Exchangers - A single damaged heat exchanger can be cross connected to the undamaged heat exchanger. If both heat exchangers are damaged, their entire load can be transferred to 1P42*E011A and B. 1P42*E117A and B can be isolated by closing the following: Reactor Building Closed Loop Cooling Water Side 1P42-08V0148A and B (manual valves) RBCLCW Heat Exchanger Inlet Valves 1P42-10V0151A and B (manual valves) RBCLCW Heat Exchanger Outlet Valves. If the outlet valves are damaged three other valves can isolate the heat exchanger: 1P42-02V0044B (manual valves) 1P42-08V0152 (manual valves) 1T47-08V0042B (manual valves)

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POLAR CRANE 1T31-CRN002

Location: Reactor Building, Secondary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				Reactor Building Service Water Side 1P41-10V0048A and B RBSW Inlet Valves 1P41*MOV129A and B RBSW Outlet Valves. If the outlet valves are damaged the listed valves can isolate the heat exchanger: 1P41-10V0047A and B (manual valves)
		1P41-6-WS-306-151-3 1P41-6-WS-343-151-3		Emergency service water to spent fuel pool lines are isolated by locked-closed valves 1P41*MOV042A and B, and 1G41*MOV032A and B.
		1P41*MOV043 1P41-1-WS-344-158-3		Drain line for emergency service water to spent fuel pool - not required for safe shutdown.
		1P41*MOV033C&D 1P41-20-WS-249-158-3 1P41-20-WS-250-158-3 1P41-20-WS-316-301-2 1P41-20-WS-298-301-2		Ultimate cooling connection lines and valves isolated by locked-closed valves 1P41*MOV033A and B and check valve 1P41-VTC041. The ultimate cooling connection lines and valves are not required for safe shutdown.
Hoistway Area centered vertically along SWEC Azimuth 147°	8'-0"	None	c	B. Hatchway at Azimuth 147° No safety-related equipment at the base elevation that may be damaged by a postulated load drop.
Hoist Area centered along SWEC Azimuth 306°	8'-0"	None	c	C. Hatchway at Azimuth 306° Same as 4.B.

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POLAR CRANE 1T31-CRN002

Location: Reactor Building, Secondary Containment

Impact Area / Load	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
				5. A hazard evaluation was conducted on the 175'-9" operating floor for each worst case load drop, i.e., highest and heaviest combinations, for each representative thickness of concrete. Calculations have demonstrated that when assuming a conservative approach, a sufficient lift height will be obtained that can accommodate any lift within the capacity of the auxiliary hook.
Reactor pressure vessel insulation 4 tons	Operating Floor 175'-9" Centered on SWEC Azimuth 335°		e	A. 30-Inch Concrete Slab The reactor pressure vessel insulation is lifted off during each refueling operation. Calculations have shown that the insulation can be lifted to 8'-4" for the threshold height of scabbing and 18'-4" for the perforation threshold height. Operational procedures will insure the lift height is kept below 18'-4". For equipment struck by postulated concrete projectiles below the 175'-9" operating floor, the following analysis shows:
	Operating Floor 150'-9"	1R24*MG113B 1R24*MG112	c	Low Pressure Cooling Injection (LPCI) The LPCI motor-generator sets are contained within their own rooms and are protected from overhead scabbing.
		1T46*TCV059B 1T46*TCV060B 1T46*FE104B 1T46*FE105B 1T46*UC021B 1T46*UC022B		Reactor Building Standby Ventilation System (RBSVS) If one RBSVS is rendered inoperable the resultant actions will be in accordance with the Technical Specification Section 3.6.5.3

POLAR CRANE 1T31-CRN002

Location: Reactor Building, Secondary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				Control of safe shutdown can be maintained when postulating damage to electrical cabling, small bore piping, or instrument lines from an overhead scab by taking credit for alternative shutdown methods identified in the Cable Separation Analysis Report and both separation studies for segment 150-N8.
Stud Tensioners and Frame 6 tons	Operating Floor 175'-9" Centered on SWEC Azimuth 135°		e	B. 24-Inch Concrete Slab The stud tensioner (when carried in its normal configuration of tensioners below the frame) can be lifted to 11'-9" before scabbing occurs and 26'-7" before perforation occurs. Operational procedures will keep lift height below the perforation threshold. For equipment struck by postulated concrete projectiles below 175'-9" operating floor, the following analysis shows:
	Operating Floor 150'-9"	1G41-6-FC-10-152-3 1G41-6-FC-11-152-3 1G41-6-FC-38-152-3 1G41-8-FC-12-152-3 1G41-12-FC-79-152-3	c	Fuel Pool Cooling and Cleanup - not required for safe shutdown.
				Control of safe shutdown can be maintained when postulating damage to electrical cabling, small bore piping, or instrument lines from an overhead scab by taking credit from alternative shutdown methods identified in the Cable Separation Analysis Report and both separation studies for segments 150-03, 150-N3 and 150-N4.

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POLAR CRANE 1T31-CRN002

Location: Reactor Building, Secondary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
Head Stud Rack	Operating Floor 175'-9"		e	C. 18-inch Concrete Slab The 18" slab has the ability to withstand a drop of 10' by the head stud rack. The rack storage position is currently over a 9" slab; however, a new storage area for the rack on the 18" slab floor has been designated.
1.5 Tons	Centered on SWEC Azimuth 230°			For equipment struck by postulated concrete projectiles below 175'-9" operating floor, the following analysis shows:
	Operating Floor 150'-9"	1G33-P020 1G33-TK008 1G33-4-C-1-151-4 1G33-4-SY-15-151-4		Reactor Water Cleanup (used for water clarification) - not required for safe shutdown

Control of safe shutdown can be maintained when postulating damage to electrical cabling, small bore piping, or instrument lines from an overhead slab by taking credit for alternative shutdown methods identified in the Cable Separation Analysis Report and both separation studies for segment 150-05.

6. The following hazard evaluation was conducted on three unique lifts which do not represent a general model of the normal maintenance lifts analyzed in the previous section. They were selected based on the special material or unusual shape being lifted.

POLAR CRANE 1T31-CRN002

Location: Reactor Building, Secondary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
Flux Monitor Shipping Crate 2.5 Tons	Operating Floor 175'-9" Wall Mount 181'-0"		e	A. The flux monitor shipping crate is mounted on the inner wall of the Reactor Building approximately 15' above the operating floor. This unit is removed from its storage position and placed on a 30" section of the floor. If the flux monitor shipping crate is dropped from the 15' elevation, standard evaluations show perforation of the floor will occur. However, the standard evaluations do not consider the structural I-beams below the floor which support the floor. With the inclusion of these beams, a drop of 19.3' can be sustained. For equipment struck by postulated concrete projectiles below 175'-9" operating floor, the following analysis shows: Low Pressure Cooling Injections (LPCI) The LPCI motor-generator sets are contained within their own rooms and would therefore be protected if the overhead was scabbed.
	Operating Floor 150'-9"	1R24*MG113B 1R24*MG112		
		1T46*TCV059B 1T46*TCV060B 1T46*FE104B 1T46*FE105B 1T46*UC021B 1T46*UC022B		Reactor Building Standby Ventilation System (RBSVS) If one RBSVS train is rendered inoperable the resultant actions will be in accordance with Technical Specification 3.6.5.3. Control of safe shutdown can be maintained when postulating damage to electrical cabling, small bore piping, or instrument lines from an overhead scab by taking credit for alternative shutdown methods identified in the Cable Separation Analysis Report and both separation analysis for segments 150-N7, 150-N8 and 150-07.

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POLAR CRANE 1T31-CRN002

Location: Reactor Building, Secondary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
New Fuel Shipping Crates 1.35 Tons (ea)	Operating Floor 175'-9" SWEC Azimuth 320°-40°			B. The new fuel shipping crates are lifted three at a time from the Reactor Building receiving bay to elev 175'-9" and placed down on a 30" floor slab. The crates are then individually picked up, the fuel bundles are removed and properly stored, and the empty crates are placed in storage on the opposite side of the Reactor Building. During these operations the new fuel shipping crate, when full, should not be lifted above 10' to prevent a drop capable of penetration. For equipment struck by postulated concrete projectiles below the 175'-9" operating floor, the following analysis shows:
	Operating Floor 150'-9"	1R24*MG111 1R24*MG112 1R24*MG113A 1R24*MG113B		Low Pressure Cooling Injection (LPCI) Equipment is contained within its own area and would therefore be protected if the overhead was scabbed.
		1T46*TCV059A 1T46*TCV060A 1T46*TCV059B 1T46*TCV060B 1T46*FE104A 1T46*FE105A 1T46*FE104B 1T46*FE105B 1T46-UC021A 1T46-UC022A 1T46-UC021B 1T46-UC022B		Reactor Building Standby Ventilation System (RBSVS) If one RBSVS is rendered inoperable the resultant actions will be in accordance with Technical Specification 3.6.5.3.

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POLAR CRANE 1T31-CRN002

Location: Reactor Building, Secondary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				Control of safe shutdown can be maintained when postulating damage to electrical cabling, small bore piping, or instrument lines from an overhead scab by taking credit for alternative shutdown methods identified in the Cable Separation Report and both separation studies for segments 150-N8, 150-N1, 150-07, 150-08, and 150-01
Radiation Shield 12.5 Tons	Operating Floor 175'-9" Storage in base of dryer and separator storage pool SWEC Azimuth 305° (in storage) 90° (in use)		c	C. This radiation shield is used during refueling operations only. It is lifted out of the dryer and separator storage pool and positioned in the place of the refueling canal plugs which have been removed. This shield is made of lead and therefore would absorb most of the energy of a drop in crushing the shield. Since the main hook cannot get to the shield, it is recommended that when moving the shield, double slings be used. Control of safe shutdown can be maintained when postulating damage to electrical cabling, small bore piping, or instrument lines from an overhead scab by taking credit for alternative shutdown methods identified in the Cable Separation Analysis Report and both separation analysis for segments 112-07 and 112-02, as well as primary segments N6, N2, 05, 06, and 01 which are transversed during movement of the shield.

7.

A. LILCO is taking further action through investigating the feasibility of acquiring single-failure-proof capability for the auxiliary hoist. This evaluation is being pursued to determine the maximum operational capability with the least procedural restraints.

B. Additionally, to provide further defense in-depth, LILCO has reduced the auxiliary hoist rating from 30 tons to 15 tons and instituted procedures that all lifts be double slung.

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REACTOR BUILDING RECEIVING AREA CRANE: 1T31-CRN019

Location: Reactor Building, Secondary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
Receiving Building Floor Elev 40'; SWEC Azimuth 0°-45° Various parts and components not exceeding the 1.5-ton crane capacity	Operating Floor 40'-0" Monorail 67'-2"	None	e	Although this crane does not carry or pass over safety-related equipment required for safe shutdown, it does carry a load which could potentially damage safety-related equipment if penetration of the floor occurred during a postulated drop. Calculations have demonstrated that a full capacity load (1.5 tons) raised to the maximum lift height (25'-5") will not penetrate or scab the receiving floor if dropped.

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RECIRCULATION PUMP MOTOR: 1T31-CRN037

Location: Reactor Building, Primary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
SWEC Azimuth 315°-135° Recirculation Pump Motor - 1B31-P001A or B (42,400 lb)	Operating Floor 76' - 4-1/2" Monorail 92' - 5-1/2"	1E11-20"-WR-202-901A-1	c	1. Plant is in cold shutdown mode allowing access to primary containment and maintenance (removal) of recirculation pump motor. Piping associated directly with the recirculation pump is not required for maintaining safe shutdown. 2. Control of safe shutdown can be maintained when postulating damage from a recirculation pump motor dropped in Cable Separation Analysis Report and both separation analysis studies for segments 01, 02, and 06, by taking credit for alternative shutdown methods identified in these three analyses. 3. Line 1E11-20"-WR-202-901A-1 is part of Reactor Heat Removal (RHR) system piping utilized in the shutdown cooling mode. This segment of piping is in the common suction line for both the RHR cooling loops. The recirculation pump motor removal path transverses the pipe. A break of this pipe segment from a postulated motor drop would incapacitate the RHR cooling mode. The affected segment of piping can be isolated by closing valves 1E11*MOV048 and 047. The system configuration to accommodate the loss of RHR cooling is contained in FSAR Section 212.28. Required operator action involves opening an ADS valve and establishing a closed cooling loop utilizing core spray taking suction from the suppression pool and discharging through the ADS valve. (Another emergency core cooling system in accordance with Technical Specification Section 3/4.5.2, is to have available at least one operable LPCI pump and a flow path capable of taking a suction from the suppression chamber and transferring the water to the reactor).

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RECIRCULATION PUMP MOTOR TRANSFER HOIST: 1T31-CRN045

Location: Reactor Building, Primary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
SWEC Azimuth 169° Recirculation Pump Motor 1B31-P001A or B (42,400 lb)	Operating Floor 76-4 1/2" Monorail 92'-5 1/2"	None	c	1. Plant is in cold shutdown mode allowing access to primary containment and maintenance (removal) of recirculation pump motor. Piping associated directly with the recirculation pump is not required for maintaining cold shutdown. 2. Control of safe shutdown can be maintained when postulating damage from a recirculation pump motor drop by analysis/comparison to the Cable Separation Analysis Report and both separation analysis studies for segment 06, by taking credit for alternative shutdown methods identified in these three reports.

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EQUIPMENT HATCH TUNNEL HOIST AND TROLLEY: 1T31-CRN079A AND B, EQUIPMENT HATCH MONORAIL: 1T31-CRN080, EQUIPMENT HATCH TUNNEL TROLLEY: 1T31-CRN081

Location: Reactor Building, Secondary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
SWEC Azimuth 315°-360°, Elev 78'-7" Drywell Equipment Hatch, no mark number (18,500 lb) Shield Blocks, no mark number (19,000 lb)	1T31-CRN079 A and B Operating Floor 76'-3" Monorail 87'-8" 1T31-CRN080 Operating Floor 76'-3" Monorail 88'-3" 1T31-CRN081 Operating Floor 78'-7" Monorail 106'6"	None	e	Although this lifting system does not carry or pass over safety-related equipment required for safe shutdown, it does carry a load which could potentially damage safety-related equipment if penetration of the floor occurred during a postulated drop. Calculations have demonstrated that the shield blocks can be dropped from a height of 18'-3" above the operating floor and the equipment hatch can be dropped from a height of 4'-0" without scabbing of the floor occurring. Both these calculated heights are below the working clearances required for lifting the loads to their respective storage positions. Operating procedures shall be established to ensure the above limits are not exceeded.

PERSONNEL HATCH HOIST AND TROLLEY: 1T31-CRN084

Location: Reactor Building, Primary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
SWEC Azimuth 105°-135° Varied components found within the primary containment not exceeding the 2-ton hoist capacity	Operating Floor 76'-0" Monorail 89'-5"	None	c	1. Primary containment is accessible for maintenance only during shutdown. During this period the relief valve discharge lines (1B21-10-SLP-202, 203, and 204), which are transversed by the trolley, are not in use and are not required for maintaining safe shutdown. 2. Control of safe shutdown can be maintained when postulating damage from a heavy load drop in Cable Separation Analysis Report and both separation analysis studies for segment 02 by taking credit for alternate shutdown methods identified in these three analyses.

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MAIN STEAM TROLLEYS - SECONDARY: 1T31-CRN090A, B, C, D

Location Reactor Building, Secondary Containment (Main Steam Tunnel)

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
SWEC Azimuth 135°-225°, Main Steam Tunnel Outer Main Steam Isolation Valves 1B21*AOV082A, B, C, D (10,000 lb)	Operating Floor 85'-6" Monorail 96'-5"	1E51*MOV035 1E51-WR-5-901B-2 1E51-WR-20-901B-1	C	1. Plant must be in cold shutdown mode to allow access to the main steam tunnel for maintenance of the outer main steam isolation valves (MSIV) and the reactor feedwater valves. All piping associated with the outer MSIVs or the reactor feedwater valves is not required for maintaining safe shutdown. 2. Piping within the main steam tunnel which may be damaged by a postulated load drop is as follows:

Component Weights:

Pneumatic Cylinder/ Spring Assembly: 2,000 lb
Disk and Seat Assembly: 1,200 lb
Cover: 1,500 lb
Operator: 2,030 lb

Reactor Feedwater Valves

1B21*MOV035A,B (9,600 lb)
1B21*AOV036A,B (3,050 lb)

Line	Reason Not Required For Maintaining Safe Shutdown
1G11-6"-DRW-55-151-4 1G11-4"-CRW-11-151-4 1G11-4"-CRW-91-151-4	Equipment and Floor Drains System
1G33-4"-WD-24-901B-1 1G33-4"-WD-28-901B-1 1G33-4"-WD-36-151-4 1G33-4"-WR-79-151-4	Reactor Water Cleanup System (Utilized only for Water Clarification)
1G41-4"-FC-26-152-4 1G41-4"-FC-27-152-4 1G41-4"-FC-57-152-4	Fuel Pool Cleanup System (Utilized only for Water Clarification)
1E51*MOV035 1E51-WR-5-901B-2 1E51-WR-20-901B-1	Reactor Core Isolation Cooling System (RCIC) required to initiate safe shutdown, but piping exposed to a postulated load drop is not required to maintain safe shutdown. A load drop during power operation when E51 system may be used is not postulated due to an inaccessibility of steam tunnel area.

Original
January 1983

MAIN STEAM ISOLATION VALVE TROLLEYS: 1T31-CRN094A, B, C, AND D - TROLLEY
1T31-CRN095A, B, C, AND D - HOIST

Location: Reactor Building, Primary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
SWEC Azimuth 90°-240°, Elev 76'-4 1/2"	Operating Floor 76'-4 1/2"	1B21-10"-SLP-208-301-3	c	1. Plant is in cold shutdown mode allowing access to primary containment for maintenance (and/or removal) of the inner main steam isolation valves. The inner MSIVs and associated piping are not required for maintaining safe shutdown.
	Monorail 95'-0"	1B21-10"-SLP-209-301-3		
Inner Main Steam Isolation Valves 1B21*AOV081A, B, C, D (9,300 lb)		1B21-10"-SLP-205-301-3		2. Piping within the primary containment which may be damaged by a load drop are as follows:
		1B21-18"-WFP-29-1501-1		1B21-10"-SLP-208-301-3, 1B21-10"-SLP-209-301-3, 1B21-10"-SLP-205-301-3: SRV discharge piping - not required to maintain safe shutdown.
Component Weights				1B21-18"-WFP-29-1501-1, 1B21-18"-WFP-30-1501-1: Feedwater piping - not required to maintain safe shutdown
Pneumatic Cylinder/Spring Assembly 2,000 lb		1B21-18"-WFP-30-1501-1		
Disk and Stem Assembly 1,200 lb		1B31*P001A		1B31-P001A: Reactor Recirculation System - reactor coolant recirculation pump operation is not required when access to MSIVs is available.
Cover (Bolted to Body) 1,500 lb				
Operator 2,030 lb				
				3. Control of safe shutdown can be maintained when postulating damage from a MSIV component drop by taking credit for alternative shutdown methods identified in the Cable Separation Analysis Report and both separation analysis studies for segments 02, 03, 04, N3, or N4.

Original
January 1983

MAIN STEAM SAFETY RELIEF VALVE: 1T31-CRN091, 1T31-CRN092A AND B

Location: Reactor Building, Primary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
SWEC Azimuth 205°-305° 55°-155° Main Steam Safety Relief Valves 1B21*RV-092A through H, J through L (1,100 lb)	Operating Floor 97'-0" Monorail 111'-6"	1B21-10"-SLP-207-301-3 1E11-4"-WR-285 901A-1 1E11*MOV054 1E21-10"-WR-17-901A-1 1E21-10"-WR-37-901A-1	c	1. Piping within impact area which may be struck by a postulated drop: 1B21-10"-SLP-207-301-3 SRV discharge piping - Not required to maintain safe shutdown 1E11-4"-WR-285-901A-1 Residual Heat Removal System head spray inlet line. Calculation has demonstrated a postulated load drop will not cause a line break or loss of functional ability. Additionally, this is not required to maintain safe shutdown. 1E11*MOV054 Containment isolation valve on 1E11-4"-WR-285-901A-1 - Possible failure of this valve would necessitate isolation of the preceding line by closing 1E11* MOV053. The loss of this line will not degrade the RHR System function. 1E21-10"-WR-17-901A-1 1E21-10"-WR-37-901A-1 Core Spray System - Each line is part of separate loops of the Core Spray System. Calculations have demonstrated a postulated load drop will not damage this piping. 2. Control of safe shutdown can be demonstrated when postulating damage from MSRV drop by taking credit for alternative shutdown methods identified in Cable Separation Analysis Report and both separation analysis studies for segments 01, 02, 04, 05, 06, N2, N5, or N6.

Original
January 1983

MOTOR GENERATOR HOIST - 040: 1X39-CRN040
MOTOR GENERATOR HOIST - 042A: 1X39-CRN041

Location: Motor Generator Room

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
Motor Generator Room centerline to both motor generator sets.	Operating Floor 20'-6" Monorail 32'-6"	None	c	The motor generator sets are not safety-related equipment and are not required to initiate or maintain safe shutdown.
Reactor Recirculation Pump Motor Generator Sets - 1B31-MG001A and B				
Component Weights				
Motor - 30,300 lb				
Stator - 18,870				
Rotor - 8,530				
End Shields - 2,900				
Generator - 35,440 lb				
Stator - 19,700				
Rotor - 11,740				
End Shields - 4,000				
Brushless Exciter - 2,000 lb				
Stator - 900				
Rotor - 1,100				

DIESEL GENERATOR HOIST AND TROLLEY: 1X31-CRN104

Location: Diesel Generator Rooms

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
Diesel Generator Room centerline over each diesel generator	Operating Floor 22'-6" Monorail 42'-9"	Generator 1R43* G101,102, and 103 Diesel Engine 1R43*ENG101,102, and 103	b	All three diesel generators do not have to be operational according to the cold shutdown conditions contained in the Technical Specification when proceeding to or in safe shutdown. The loss of a diesel generator from a postulated load drop could occur when maintenance was being performed on a particular engine. When in cold shutdown or when proceeding to shutdown in accordance with the Technical Specification 3/4.8.1, the damage to the diesel generator system would be limited to that unit which is being serviced due to physical separation of the diesels. If the number of diesel engines are available as defined by the Technical Specifications, safe shutdown will be achieved or maintained.
Generator 1R43*G101,102, and 103 (varied components of the generator not exceeding the 2-ton hoist capacity)				
Diesel Engine 1R43*ENG101,102, and 103 (varied components of the diesel engines not exceeding the 2-ton hoist capacity)				

Original
January 1983

DIESEL GENERATOR HOIST AND TROLLEY: 1X31-CRN105

Location: Diesel Generator Rooms

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
Diesel Generator Room centerline over each diesel generator	Operating Floor 22'-6" Monorail 42'-9"	Generator 1R43* G101,102, and 103; Diesel Engine 1R43*ENG 101, 102, and 103	b	See discussion for Diesel Generator Hoist and Trolley 1X31-CRN104.
Generator 1R43*G101,102, and 103 (varied components of the generator not exceeding the 15-ton hoist capacity)				
Diesel Engine 1R43*ENG101,102, and 103 (varied components of the diesel engines not exceeding the 15-ton hoist capacity)				

Original
January 1983

CONTROL ROD DRIVE REPAIR AREA JIB: 1T31-CRN048

Location: Reactor Building, Secondary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
SWEC Azimuth 5°-25°, Elev 78'-7" SWEC Azimuth 25°-50° Elev 40'-0" Varied components of the Control Rod Drive system not exceeding the 1.5-ton jib capacity.	Operating Floors 78'-7", 40'-0" Crane 98'-10"	None	e	Although this jib crane does not carry loads passing over safety-related equipment required for safe shutdown, it does carry a load which could potentially damage safety-related equipment if penetration of the floor occurred during a postulated load drop. Calculations have demonstrated that a full capacity load (1.5 tons) raised to the maximum lift height for each elevation, 20'-3" for 78'-3" and 58'-10" for 40'-0" will not penetrate or scab the floors if dropped.

Original
January 1983

CONTROL ROD DRIVE PUMP HOIST AND TROLLEY: 1T31-CRN078

Location: Reactor Building, Secondary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
SWEC Azimuth 160°-240°, Elev 40'-0" Control rod drive water pump 1C11-P017A and B (5700 lb) **Component Weights** CRD pump - 1540 lb Motor - 2260 lb Gears - 650 lb Baseplate - 1250 lb	Operating Floor 40'- 0" Monorail 51'-0"	None	c	1. The control rod drive water pumps are not required for initiating or maintaining safe shutdown. Maintenance may be performed on one pump while the plant is in operation or shutdown. A postulated load drop will not affect the plant safe shutdown capability by taking credit for alternative shutdown methods identified in the Cable Separation Analysis Report and both separation analysis studies for segments 040-N4, 040-N5, and 040-04. 2. When maintenance, i.e., removal, is performed on the Reactor Recirculation MG set fluid coupling cooler circulation pumps (1P42-P002A or B) the pump and motor are disconnected from each other at the coupling. The weight of either component is 650 lb, which is less than the determined weight for a heavy load.
Reactor Recirc. MG set fluid coupling circ. pump 1P42-P002A and B **Component Weights** Motor - 650 lb Pump - 650 lb				

Original
January 1983

95' EQUIPMENT HOIST AND TROLLEY: 1T31-CRN093

Location: Reactor Building, Secondary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
SWEC Azimuth 225°-235° Elev 112'-9" Various equipment being transferred between Elev 95'-3" and 112'-9" not exceeding the 1-ton hoist capacity	Operating Floor 112'-9", Monorail 119'-3"	None	c	Lifts by this hoist and trolley do not occur over any equipment or piping required for achieving and maintaining safe shutdown. Any possible damage to cable, small bore piping, or instrument lines will not affect safe shutdown by taking credit for alternative shutdown methods identified in the Cable Separation Analysis Report and both separation analysis studies for segment 112-N6.

Original
January 1983

REACTOR WATER CLEANUP SYSTEM HEAT EXCHANGER TROLLEY AND HOIST: 1T31-CRN10C

Location: Reactor Building, Secondary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
SWEC Azimuth 225°-310°, Elev 126'-9" RWCU regenerative heat exchanger 1G33-E027A, B, and C and non-regenerative heat exchanger E014A and B (varied components of the heat exchangers not exceeding the 6-ton hoist capacity)	Operating Floor 126'-9" Monorail 144'-0"	None	c	The RWCU heat exchangers and associated piping are not required to achieve or maintain safe shutdown. Any possible damage to cable by a postulated load drop will not affect safe shutdown, since credit is taken for Cable Separation Analysis Report and both separation analysis studies for segments 112-06, 112-07, and 112-N7.

HIGH PRESSURE COOLANT INJECTION (HPCI) SYSTEM HOIST AND TROLLEY: 1T31-CRN085

Location: Reactor Building, Secondary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load SWEC Azimuth 150°-210° Elev 8'-0" HPCI Turbine 1E41*TU002 HPCI Pump and Booster 1E41*P016 Weights - Various components of the HPCI turbine, pump and booster not exceeding the 4-ton hoist and trolley capacity.	Operating Floor 8'-0" Monorail 21'-11"	HPCI Turbine 1E41*TU002 HPCI Pump and Booster 1E41*P016	c	The HPCI System can be incapacitated only by a postulated load drop from 1T31-CRN085 since no other monorail system passes over the HPCI. A load drop would occur during maintenance or repair, and to have the HPCI out of service, provisions of the Technical Specifications Section 3/4.5.1 must be met. If cabling is damaged, safe shutdown can be achieved by taking credit for Cable Separation Analysis Report and both separation analysis studies for segments 008-N4 or 008-N5.

Original
January 1983

REACTOR CORE ISOLATION COOLING SYSTEM HOIST AND TROLLEY: 1T31-CRN086

Location: Reactor Building, Secondary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
SWEC Azimuth 210°-235° Elev 8'-0" Reactor Core Isolation Cooling Turbine 1E51*TU 005 and Pump 1E51*P015 **Component Weights** Turbine - 3000 lb U.H. Turbine Case - 625 lb Rotor - 325 lb Trip & Throttle Valve - 400 lb Base - 900 lb Pump - 2920 lb Base - 3720 lb	Operating Floor 8'-0" Monorail 19'-4"	Reactor Core Isolation Cooling Turbine 1E51*TU 005 Reactor Core Isolation Cooling Pump 1E51*P015	c	The Reactor Core Isolation Cooling Turbine and Pump can be incapacitated only by a postulated load drop from 1T31-CRN086, which is installed for servicing the RCIC system. Since no other monorail system carrying a heavy load passes over this equipment, the postulated load drop could occur only during maintenance, and to take the RCIC system out of service, provisions of the Technical Specifications must be met. With the RCIC not operable, the High Pressure Cooling Injection (HPCI) System must be operable. Further, safe shutdown can be achieved if cabling is damaged by the analysis done in Cable Separation Analysis Report and both separation analysis studies for segment 008-05.

Original
January 1983

REACTOR BUILDING CLOSED LOOP COOLING WATER (RBCLCW) TROLLEY: 1T31-CRN083A AND B

Location: Reactor Building, Secondary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
SWEC Azimuth 135°-215°, Elev 150'-9" RBCLCW Pump 1P42*P005A,B,C	Operating Floor 150'- 9" Monorail 166'-5"	1P42*P005A,B,C	c	The RBCLCW consists of two independent loops both capable of cooling essential equipment. During an accident condition or shutdown, one loop can be supplied cooling water by a single pump. If during maintenance (removal) one RBCLCW pump component is dropped on an operating pump, thus disabling it, the pump can be secured. To conduct this maintenance procedure, two RBCLCW pumps must be available.
Component Weights Pump - 827 lb Motor - 1,350 lb Bedplate - 606 lb				No other safety-related equipment, piping, or cable is exposed in the impact area, nor is penetration or scabbing of the floor possible.

Original
January 1983

STANDBY LIQUID CONTRCL PUMP HOIST: 1T31-CRN082A AND B

Location: Reactor Building, Secondary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
SWEC Azimuth 135°-180°, Elev 112'-9" Standby Liquid Control Pump 1C41*P024A and B	Operating Floor 112'-9", Monorail 125'-4"	1C41*P024A and B	C	The standby liquid control pump can be incapacitated only by a postulated load drop from 1T31-CRN082A and B, which is installed to service this same equipment. Since no other system carrying a heavy load passes over it, this postulated load drop would occur only during planned maintenance or unscheduled repair, and provisions of the Technical Specifications, Section 3/4.1.5, would govern the actions required. Scabbing of the operating floor is not possible.

Component Weights

Pump and Coupling - 2219 lb
Motor - 550 lb

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REACTOR WATER CLEANUP SYSTEM AREA JIB CRANE: 1T31-CRN089

Location: Reactor Building, Secondary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
SWEC Azimuth 250°-290° Elev 175' Various components of the RWCU System not exceeding the crane's 1-ton capacity	Operating Floor 178'-9" Jib Boom 185'-3"	None	c	The RWCU system components beneath the plugs are not required to initiate or maintain safe shutdown. There is no safety-related piping or cabling located beneath the travel area of the jib.

Original
January 1983

TIP CASK HOIST AND TROLLEY: 1T31-CRN088

Location: Reactor Building, Secondary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
SWEC Azimuth Elev 76'-7" Traversing In-core Probe (TIP) System Cask 1C51-CSK003 Weight - 1375 lb	Operating Floor 76'-7", Operating Platform 83'-10", Monorail 92'-6"	None	c	There is no safety-related equipment, piping, or cabling transversed by 1T31-CRN088, nor is the floor capable of being scabbed.

Original
January 1983

CONTROL ROD DRIVE LEVELING TRAY HOIST: 1T31-CRN087

Location: Reactor Building, Primary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
SWEC Azimuth 0°-30°, Elev 63' Control Rod Drive Leveling Tray, Track, and Drive Unit (no mark number, 2735 lb)	Operating Floor 76'-0" Lifting Padeye 96'-0"	None	c	This heavy load passes over no large bore piping or major equipment and is used only when in cold shutdown condition. Any possible damage to cabling will not affect safe shutdown by taking credit for the alternative shutdown methods identified in the Cable Separation Analysis Report and both separation analysis studies for segment N1.
Component Weights Cart - 200 lb Track - 960 lb CRD Unit - 450 lb				

Original
January 1983

SCREENWELL BRIDGE CRANE: 1U31-CRN116

Location: Top of Screenwell

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
Top of Screenwell Trash Cart 1N71-TRC001 **Component Weights** Trash Cart 3400 lb Trash Rake 2800 lb Machinery Platform w/Drive 3000 lb Cable Reel 200 lb Control Panel 300 lb Superstructure 10,000 lb	Operating Floor 20'-6" Runway Rail 40'-0"	None	c	A postulated load drop will not interfere with or interrupt the operation of any safe shutdown required equipment.

Original
January 1983

SCREENWELL HOISTS AND TROLLEYS: 1U31-CRN120 A and B

Location

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
Screenwash pumps 1N71-P217 A and B				The subject trolleys have not been installed in the screenwell building. Maintenance procedures provide for removal of the screenwash pumps and motors through removal plugs in the screenwell building roof.

Original
January 1983

CRD PUMP SUCTION FILTER TROLLEY: 1T31-CRN099

Location: Reactor Building, Secondary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				Monorail has been removed by E&DCR 14105D.

Original
January 1983

480 V MOTOR GENERATOR TROLLEYS: NO EQUIPMENT MARK NUMBER (LPCI)

Location: Reactor Building, Secondary Containment

Impact Area	Elevation	Safety-Related Equipment	Hazard Elimination Category	Discussion
Load				
1R24-MG111,112: SWEC Azimuth 335°-25° Elev 150'-9"	1R24-MG111, 112 Operating Floor 150'-9"	None	c	The motor generator as a component of the LPCI system is governed by Technical Specification 3/4.5.1 and will not be exposed to a postulated load drop except during removal for repair. Calculations have shown a drop of the generator at elevation 161'-0" to the operating floor at 150'-0" will be contained by the structural steel beneath the concrete floor. Scabbing of the floor will occur, but there is no safety-related equipment that can be struck by concrete projectiles on the elevation below 150'-0".
1R24-MG113, A, B: SWEC Azimuth 335°-25° Elev 161'-0" Secondary (1R24-MG 113A&B)	Monorail 159'-0"			
	1R24-MG113A, B Operating Floor 161'-0"			
480 V Motor Generator 1R24*MG111,112, 113A and B	Monorail 169'-0"			Any damage to cables, small bore piping, or instrument lines can be accommodated by taking credit for alternate shutdown methods proposed in the Cable Separation Analysis Report and both separation analysis studies for segments 150-N1, 150-N8, or 150-08. To further ensure a safe lowering of the motor generator from 161'-0" to 150'-0", two hoists will be used. Both hoists will be individually capable of holding the 5,000 lb weight of the generator.
Component Weights				
Generator - 5000 lb Motor - 1100 lb				

Original
January 1983