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FACIL:50-250 Turkey Point Plant, Unit 3, Florida Power and Light C 05000250
50-251 Turkey Point Plant, Unit 4, Florida Power and Light C 05000251
AUTH.NAME AUTHOR AFFILIATION
UHRIG,R.E. Florida Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION
EISENHUT,D.G. Division of Licensing

SUBJECT: Forwards response to NRC 801222 request for implementation of interim actions re control of heavy loads. Justification for mods required to satisfy NRC guidance will be provided in final rept.

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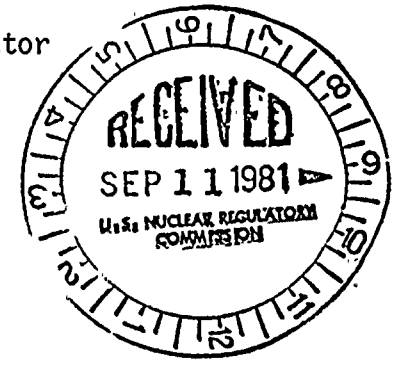
FLORIDA POWER & LIGHT COMPANY

September 4, 1981
L-81-382

Office of Nuclear Reactor Regulation
Attention: Mr. Darrell G. Eisenhut, Director
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555



Dear Mr. Eisenhut:

Re: Turkey Point Units 3 & 4
Docket No. 50-250 & 50-251
Control of Heavy Loads

Florida Power & Light Company has reviewed the NRC letter dated December 22, 1980, concerning the Control of Heavy Loads with respect to Turkey Point Units 3 & 4. A report of our actions in response to the request for implementation of interim actions is attached. In addition, a report containing the Section 2.1 information requested in the December 22 letter is also attached.

Florida Power & Light Company has agreed to implement those changes and modifications which we find critical as soon as possible. Further implementation awaits completion of our investigation and submission of our final report.

Upon submission of the final report, we will also provide justification for any changes or modifications that would be required to fully satisfy the guidelines of Enclosure 1 of the December 22, 1980 letter, which are felt inapplicable to Turkey Point.

It should also be noted that in the attached report of the Section 2.1 information regarding the Group I items in the listing of all Plant Load Handling Systems, no credit was taken for interlocks, technical specifications, operating procedures, structural analysis, or system redundancy. We are confident that this group will be greatly reduced, if not eliminated, when appropriate credit is given for these items.

Very truly yours,

Robert E. Uhrig
Vice President
Advanced Systems & Technology

REU/DAC/ah

Attachments

cc: J. P. O'Reilly, Director, Region II
Harold F. Reis, Esquire

A053
S1/1

ATTACHMENT

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Interim Actions for
Control of Heavy Loads

1. Safe load paths have been identified per the guidelines of Section 5.1.1(1) of NUREG 0612 in Administrative Procedure 0736, "Heavy Load Handling". This procedure has been drafted and will be reviewed by the Plant Nuclear Safety Committee and implemented prior to the upcoming unit 4 refueling outage.

2. Procedures have been developed to cover load handling operations for heavy loads that are or could be handled over or in proximity to irradiated fuels or safe shutdown equipment. Some of these procedures are now in effect. The remaining procedures will be implemented prior to the upcoming unit 4 refueling outage.

3. Crane operator qualification, training and conduct is addressed in Administrative Procedure 0736 and will be implemented prior to the next refueling outage. The requirements of ANSI Standard B 30.2.0-1976 and the recommendations of Nuclear Mutual Limited's Property Loss Prevention Standard on Cranes and Rigging (issued for trial use February 1980) are being reviewed to prepare a single policy for FP&L on crane operator requirements. We expect to resolve this issue in the near future and then revise AP 0736 as necessary to reflect the resolution. A description of the actions we intend to take on this item will be included with our final response on NUREG 0612.

   For the interim, however, a training program in accordance with ANSI B 30.2.0-1976 is being developed, and our standard company physical for new employees meets or exceeds the physical requirements of the ANSI standard. (Except for vision standards which are 20/40 in both eyes verses 20/30 in one eye and 20/50 in the other eye as prescribed in the ANSI standard).

   It is also our intention to exclude Nuclear Control Center Operators (NCCO) (and their operation of refueling equipment) from coverage by the NUREG 0612 requirements. It is our judgement that the qualification and training of the NCCO's meets or exceeds the NUREG 0612 requirements.

4. Turkey Point Units 3 and 4 has a program established for inspecting, testing and maintaining cranes. This program meets the requirements of Section 5.2.2(6) of NUREG 0612.

5. A review of crane operations over the core has been conducted and these operations are addressed in AP 0736. Some revisions are expected to be made as a result of the final response to the NUREG.

TURKEY POINT UNITS 3 & 4

RESPONSE TO NRC REQUEST FOR ADDITIONAL

INFORMATION ON CONTROL OF HEAVY LOADS

(SECTION 2.1)

TABLE OF CONTENTS

I. Introduction

On December 22, 1980 the NRC issued a generic letter on the subject of control of heavy loads. The letter requests Florida Power and Light Company to review the controls for handling heavy loads at Turkey Point Units No. 3 & 4 and to determine the extent to which the NRC guidelines published in NUREG 0612 are met. The letter further requests that a report be submitted in two parts addressing general and specific requirements respectively for overhead handling systems. Part one of the report is submitted here. Sections II thru VII provides the information requested by Section 2.1 of Enclosure 3 of the NRC generic letter. Section VIII provides a summary.

II. Identification of Plant Load Handling Systems

Section 2.1.1 and 2.1.2 of Enclosure 3 of the NRC December 22, 1980 letter request a review of plant arrangements to identify all heavy load handling systems. It also requests a determination of those load handling systems from which a load drop could damage irradiated fuel or safety-related systems.

A heavy load as defined in NUREG 0612 is a load whose weight is greater than the combined weight of a single spent fuel assembly and its handling tool. A spent fuel assembly and the spent fuel handling tool weighs 1,430 and 330 pounds respectively for Turkey Point Units No. 3 & 4. Therefore a heavy load for Turkey Point is considered equal to or greater than 1,760 pounds.

A complete listing of heavy load handling systems has been prepared for Turkey Point Units No. 3 & 4. Each of these systems was visually inspected in the field where possible or reviewed on the drawings and classified into Groups I and II as follows:

> Group I - Heavy load handling systems from which a load drop could conceivably result in damage to irradiated fuel or systems required for plant shutdown or decay heat removal taking no credit for interlocks, technical specifications, operating procedures, detailed structural analysis or system redundancy.
>
> Group II - Heavy load handling systems excluded from Group I based upon a determination by inspection that there is sufficient physical separation from any load-impact point and any safety related component.

Table 1 in Appendix A provides this listing and classification.

III. Safe Load Paths

Sections 2.3(a) and (b) of Enclosure 3 of the NRC generic letter request drawings or sketches identifying safe load paths and a discussion of measures taken to ensure that operators remain within these areas.

Safe load paths areas have been defined as requested for the following Group I load handling systems:

1. Two Turbine Gantry Cranes (Units 1 & 2 and Units 3 & 4).

2. Two Reactor Polar Cranes (Unit 3 and Unit 4).

3. Spent Fuel Cask Handling Crane (serves both Units No. 3 & 4).

4. Intake Structure Bridge Crane (serves both Units No. 3 & 4).

The handling of loads weighing over 1,760 pounds shall be confined to the safe load path areas. The exception to this will be the areas above the Auxiliary Building roof and the switchgear room in the Turbine Building where heavier loads may be handled. An analysis will be performed for a load drop in these areas as to part of the requirements for the second part of FPL's response to the NRC generic letter.

The Turkey Point Plant maintenance procedure 0736, "Heavy Load Handling When Using the Polar Crane, Cask Crane, Intake Area Crane and Turbine Gantry Cranes," defines the safe load carrying areas and requires the operators to remain within those areas. Any deviation from the safe load area requires prior written approval from the Maintenance Superintendent. The written approval will provide instructions for inspections and acceptance criteria before moving the load, steps and proper sequence to be followed, a load path and other special precautions. Unless safety concerns are raised in the preparation of our final report on this subject, these safe load path restrictions will not apply during cold and refueling shutdown except over irradiated fuel and over the reactor vessel.

This procedure has been prepared as part of the interim actions required in the NRC December 22, 1980 generic letter. Final review of this procedure is underway and approval is expected in the near future. Once approved, operators will be indoctrinated to its requirements with full implementation expected prior to the Unit No. 4 refueling scheduled for December, 1981.

Safe load path areas have not been defined for all load handling systems listed in Group I of Table 1. A listing of these systems and the reason that safe load paths are not required follows:

1. Reactor Cavity Manipulator Crane

2. Fuel Transfer Machine

3. Spent Fuel Bridge Crane

These devices are used during refueling operations and do not handle loads weighing more than one spent fuel assembly with a handling tool. The consequences of a fuel handing accident has been evaluated in the FSAR and offsite doses were determined to be within acceptable limits. Also the operation of this equipment is described in detail in the Technical Specifications and the FASR.

4. Fuel Pool Bulkhead Monorail

Due to the physical configuration of the monorail, load handling is restricted to one path. A special procedure for the handling of the fuel pool bulkhead by this monorail will be prepared however, to minimize the potential of a load drop.

5. Charging Pump Monorails

6. Safety Injection Pump Monorails

The monorails servicing these safety related pumps span across more than one pump. The Technical Specifications require that a sufficient number of pumps needed to safely shut down the plant must be operable if a pump is to be taken out of service for maintenance. However, it is conceivable that a part of the pump being serviced could be carried across the operating pump and be dropped. This is highly unlikely since there is sufficient laydown area adjacent to the pumps and access for removal of parts. The pump maintenance procedures will be revised however, to specifically forbid the handling of loads over the operating pumps if the operating pump is required for plant safe shutdown.

7. Main Steam Platform Monorails

These monorails are used to remove safety related valves. However, these valves can only be removed when the plant is shut down and their safety related function not required. These monorails handle no other heavy loads.

IV. Special Procedures

Section 2.1.3 (c) of Enclosure 3 of the NRC generic letter requests that heavy loads listed in Table 3-1 of NUREG 0612 be tabulated along with the load weight, designated lifting device and special handling procedure. These are significant heavy loads which are periodically handled in the vicinity of irradiated fuel in the reactor core or spent fuel pool.

Table 1 in the Appendix of the report provides this tabulation and lists the special procedures which follow the guidelines of NUREG 0612, Section 5.1.1 (2) for the handling of these loads. A special procedure for the handling of the fuel pool bulkhead is being prepared and will be implemented prior to the Unit No. 4 refueling outage scheduled for December, 1981.

V. Lifting Devices (slings and special rigging)

Section 2.1.3 (d) of Enclosure 3 of the NRC generic letter requests that lifting devices comply with ANSI B30.9-1971 or ANSI N14.6-1978 as applicable.

The program for sling use and maintenance at Turkey Point Units No. 3 & 4 meets the requirements of ANSI B30.9. Nuclear shipping containers meet the requirements of ANSI N14.6.

VI. Crane Inspection, Testing and Maintenance

Section 2.1.3 (e) of Enclosure 3 of the NRC generic letter requests verification that ANSI B30.2-1976 Chapter 2-2 has been invoked with respect to crane inspection, testing and maintenance.

The Turkey Point Units No. 3 & 4 plants have an established program for inspection, testing and maintaining cranes. The requirements of ANSI B30.2-1976 and the recommendations of Nuclear Mutual Limited's Property Loss Prevention Standard on Cranes and Rigging (issued for trial use in February, 1980) are being reviewed to develop a single policy on crane inspection, testing and maintenance. We expect to resolve this issue by the end of August and prepare and implement a revision to the existing procedure before the end of this year.

VII. Crane Design

Section 2.1.3 (f) of Enclosure 3 of the NRC generic letter requests verification that crane design complies with the guidelines of the Crane Manufacturers Association of America Specification 70 "Specifications for Electric Overhead Traveling Cranes" (CMAA #70 and Chapter 2-1 of ANSI B30.2-1976 "Overhead and Gantry Cranes."

The overhead traveling bridge cranes listed in Table 1 of this report are designed to the Electric Overhead Crane Institute Specification 61. "Specifications for Electric Overhead Traveling Cranes" (EOCI #61) and the applicable ANSI safety standards in effect at the time of the manufacture of the cranes. These specifications and standards are the predecessors of CMAA #70 and ANSI B30.2-1976 now in effect and are similar.

The primary difference between the EOCI #61 and CMAA #70 specifications are changes in the design of bridge girders. These changes reflected in the CMAA #70 specification allow the use of higher allowable stresses for the better grade materials available today and also provide new design formulas. These changes are a result of advancements in the state of the art of girder structural design, allowing the use of lighter, more efficient structures and do not increase the conservativeness of the design from the older EOCI #61 specification.

VIII. Summary

This report documents the first phase of Florida Power and Light Company's review of the controls for the handling of heavy loads at the Turkey Point Units No. 3 and 4 plant as requested by the NRC generic letter dated 12-22-80. The second phase of our review is underway and a report is scheduled to be submitted by the end of October. This report will provide the specific information requested in sections 2.2, 2.3 and 2.4 of the NRC generic letter.

IX. References

1. NUREG-0612 - "Control of Heavy Loads at Nuclear Power Plants"

2. NRC Generic Letter - "Control of Heavy Loads" dated December 22, 1980.

3. Enclosure 3 of Generic Letter - "Request for Additional Information on Control of Heavy Loads"

4. ANSI B30.2-1976 - "Overhead and Gantry Cranes"

5. ANSI B30.9 - 1971 - "Slings"

6. ANSI N14.6 - 1978 - "Standard for Special Lifting Devices for Shipping Containers Weighing 10,000 pounds (4500 kg) or More for Nuclear Materials."

7. Crane Manufacturers Association of America (CMAA) Specification 70 - "Specifications for Electric Overhead Traveling Cranes"

8. Electric Overhead Crane Institute (EOCI) Specification 61 - "Specifications for Electric Overhead Traveling Cranes."

Plant Maintenance Procedures

0736 - "Heavy Load Handling When Using the Polar Crane, Cask Crane, Intake Area Crane or Turbine Gantry Cranes"

1407.1 - "Reactor Vessel-Removal of Missile Shield"

1407.8 - "Reactor Vessel-Removal of Vessel Head"

1407.9 - "Reactor Vessel-Removal of Upper Internals"

1407.10 - "Reactor Vessel-Installing Upper Internals"

1407.11 - "Reactor Vessel-Installation of Vessel Head"

1407.18 - "Reactor Vessel-Installation of Missile Shield"

16000.1 - "Limits and Precautions for Handling Fuel Assemblies"

16100 - "Fuel Transfer System-Normal Operation"

16200 - "Manipulator Crane-Operating Instructions"

16300 - "Spent Fuel Pit Bridge Crane Operating Instructions"

16702.2 - "Spent Fuel Transfer"

16900.4 - "Spent Fuel Assembly Handling Tool-Operating Instructions"

APPENDIX A

TABLES

TABLE I - LISTING OF PLANT OVERHEAD LOAD HANDLING SYSTEMS

	NAME	LOCATION	RATED CAPACITY (TONS)	GROUP
1.	Laundry room bridge crane (1) (formerly drumming station)	Reactor Auxiliary Bldg. El. 18.00 Units No. 3 & 4	5	II
2.	Hot machine shop bridge crane (1)	" " " "	2	II
3.	Charging pump monorails (4 for Unit 3, 2 for Unit 4)	" " " "	5	I
4.	Safety injection pump monorails (6)	" " " "	5	I
5.	Containment spray pump monorails (2 ea. Unit)	" " " "	2	II
6.	1A, 1B, 2A & 2B Feedwater heater monorails (4 ea. Unit)	Turbine Generator Bldg. El. 18.00 Units No. 3 & 4	5	II
7.	Lube oil reservoir monorail (1)	Turbine Generator Bldg. El. 18.00 Unit No. 3	7	II
8.	Turbine plant cooling water pump monorails (2 ea. Unit)	Turbine Generator Bldg. El. 18.00 Units No. 3 & 4	3	II
9.	5A & 5B Feedwater heater valve monorails (2)	Turbine Generator Bldg. El. 42.0 Unit No. 3	1	II
10.	5A & 5B Feedwater heater monorail (1)	Turbine Generator Bldg. El. 42.0 Unit No. 4	1	II
11.	Turbine Bldg. davits (1 ea. Unit)	Turbine Generator Bldg. El. 42.0 Units No. 3 & 4	1	II
12.	Main steam platform monorails (4 for Unit 3, 5 for Unit 4)	" " " "	1	I
13.	Units 1 & 2 Turbine Gantry Crane (1)	Turbine Generator Bldg. El. 42.0 Units No. 1,2,3 & 4	70/15	I
14.	Units 3 & 4 Turbine Gantry Crane (1)	Turbine Generator Bldg. El. 42.0 Units No. 3 & 4	145/35	I
15.	Reactor Polar Crane (1 ea. unit)	Reactor Bldg., Units No. 3 & 4	135/35	I
16.	Reactor Cavity Manipulator crane (1 ea. Unit)	" " " "	1	I
17.	Fuel transfer machine (1 ea. Unit)	Reactor Bldg./Fuel Handling Bldg. Units No. 3 & 4	1	I
18.	Spent fuel bridge crane (1 ea. Unit)	Fuel Handling Bldg.-Units No. 3 & 4	1	I
19.	Fuel pool bulkhead monorail (1 ea. Unit)	" " " "	3	I

TABLE I - LISTING OF PLANT OVERHEAD LOAD HANDLING SYSTEMS

	NAME	LOCATION	RATED CAPACITY (TONS)	GROUP
20.	New fuel bridge crane (1 ea. Unit)	Fuel Handling Bldg.-Units No. 3 & 4	4	II
21.	New fuel monorail (1 ea. Unit)	" " " "	1	II
22.	New fuel elevator (1 ea. Unit)	" " " "	1	II
23.	Spent fuel cask crane (1)	Above Units No. 3 & 4 Fuel Handling Bldg. and Reactor Auxiliary Bldg. services both Units.	105/15	I
24.	Intake structure bridge crane (1)	Intake structure - Units No. 3 & 4	25	I
25.	Intake structure trash rake monorail (1)	" " "	6	II
26.	Radwaste building bridge crane (1)	Radwaste Bldg. - Units 3 & 4	25/2	II
27.	Diesel generator A & B monorails (2 ea. generator)	Diesel Generator Bldg. - Units No. 3 & 4	1	II

GROUP I - Overhead Handling Systems From Which a load drop may result in damage to systems required for plant shutdown or decay heat removal. (no credit taken for interlocks, technical spec's, operating procedures, detailed structural analysis or system redundancy.)

GROUP II - Overhead Handling Systems excluded from Category I based upon a determination by inspection that no heavy load drop can result in damage to any system orcomponent required for plant shutdown or decay heat removal. (i.e. sufficient physical separation).

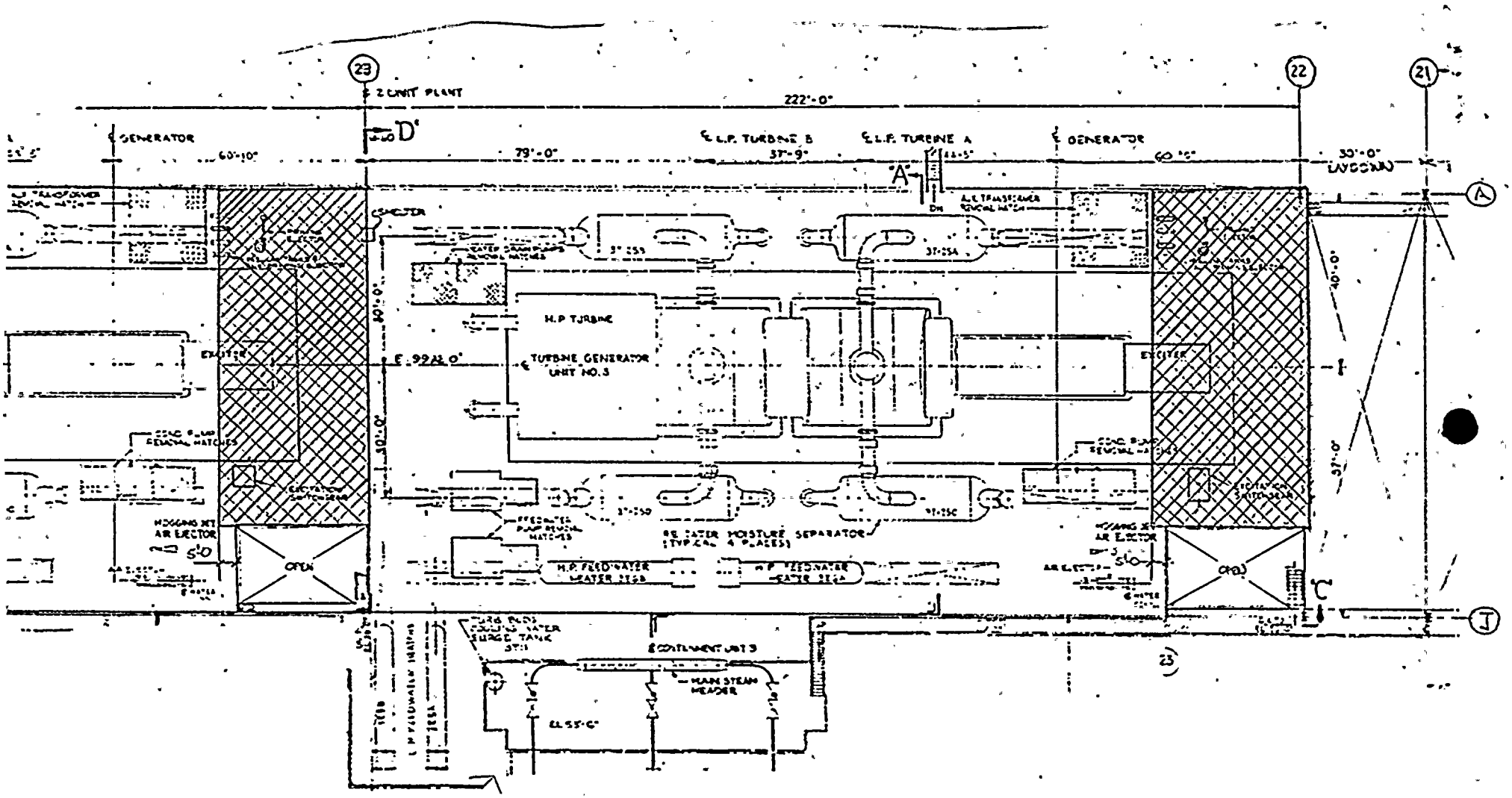
TABLE 2

LISTING OF LOADS PERIODICALLY HANDLED
IN THE VICINITY OF IRRADIATED FUEL

LOAD IDENTIFICATION	LOAD WEIGHT (lbs)	DESIGNATED LIFTING DEVICE	PROCEDURE
Spent Fuel Shipping Cask	50,000	Fuel Cask Crane-Special Lifting Device	16702.2
Fuel Pool Bulkhead	3,000	Fuel Pool Bulkhead Monorail	Being Prepared
Reactor Missile Shields	120,000	Polar Crane-Special 6 Leg Lifting Sling	1407.1 1407.18
Pressurizer Missile Shield	51,300	Polar Crane-Special 6 Leg Lifting Sling	0736
Polar Crane Load Block-Main/Aux.	12,000/3,300	Polar Crane	0736
Reactor Vessel Head	115,000	Polar Crane/Head Lift Rig	1407.8 1407.11
Upper Internals	84,000	Polar Crane-Reactor Internals Lift Rig	1407.9 1407.10
Fuel Cask Crane Load Block-Main	9,500	Fuel Cask Crane	0736
New and Spent Fuel Elements	1,760	Fuel Transfer Machine Spent Fuel Handling Machine Manipulator Crane	16100 16300 16900.4 16200

APPENDIX B

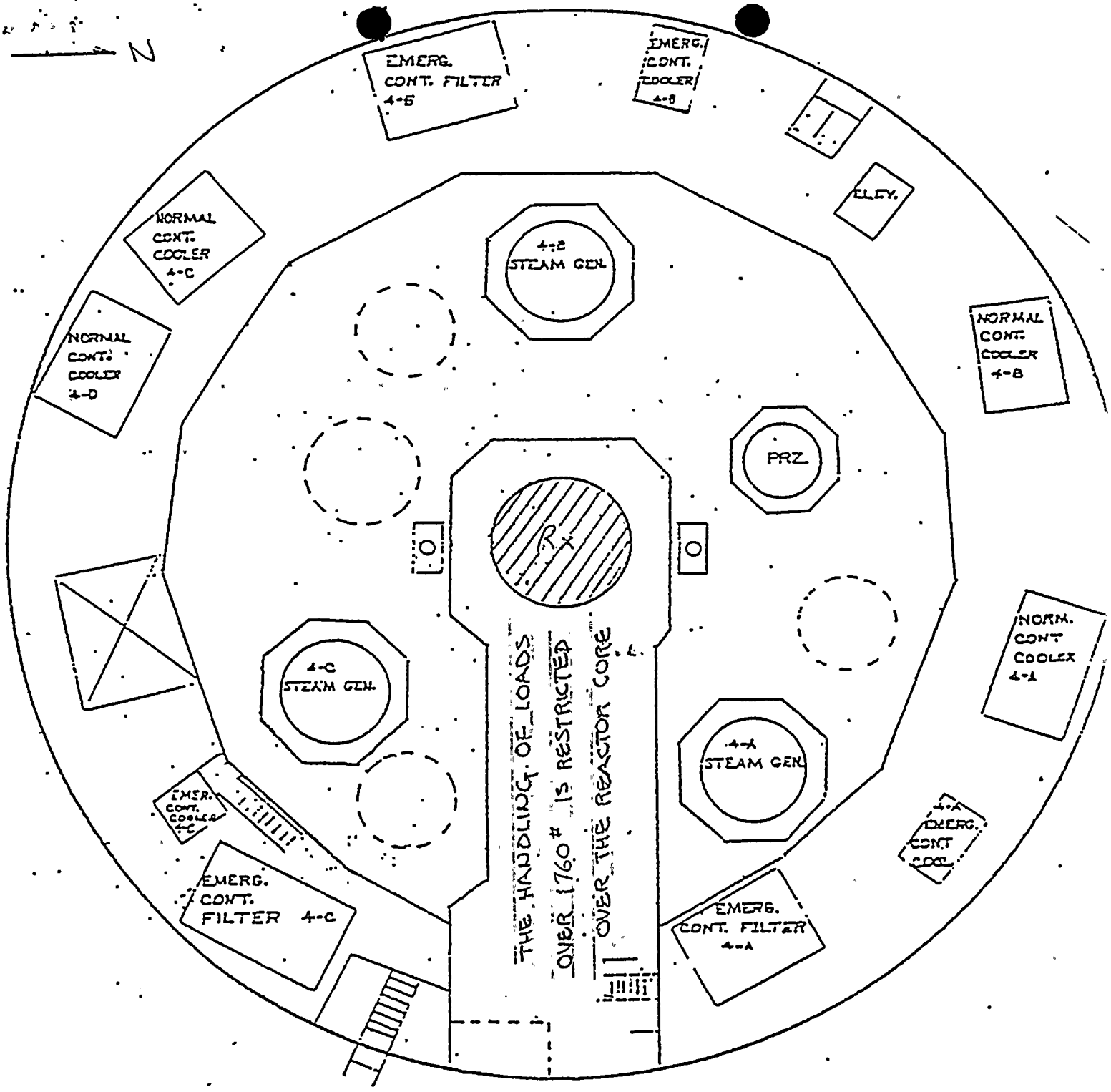
SAFE LOAD PATHS



LEGEND: ▨ RESTRICTED AREA FOR HANDLING OF LOADS GREATER THAN 5 TONS

Safe load path is outside of cross-hatched areas.

SKETCH 1 - TURBINE GANTRY CRANES
SAFE LOAD PATHS FOR LOADS GREATER THAN 5 TONS

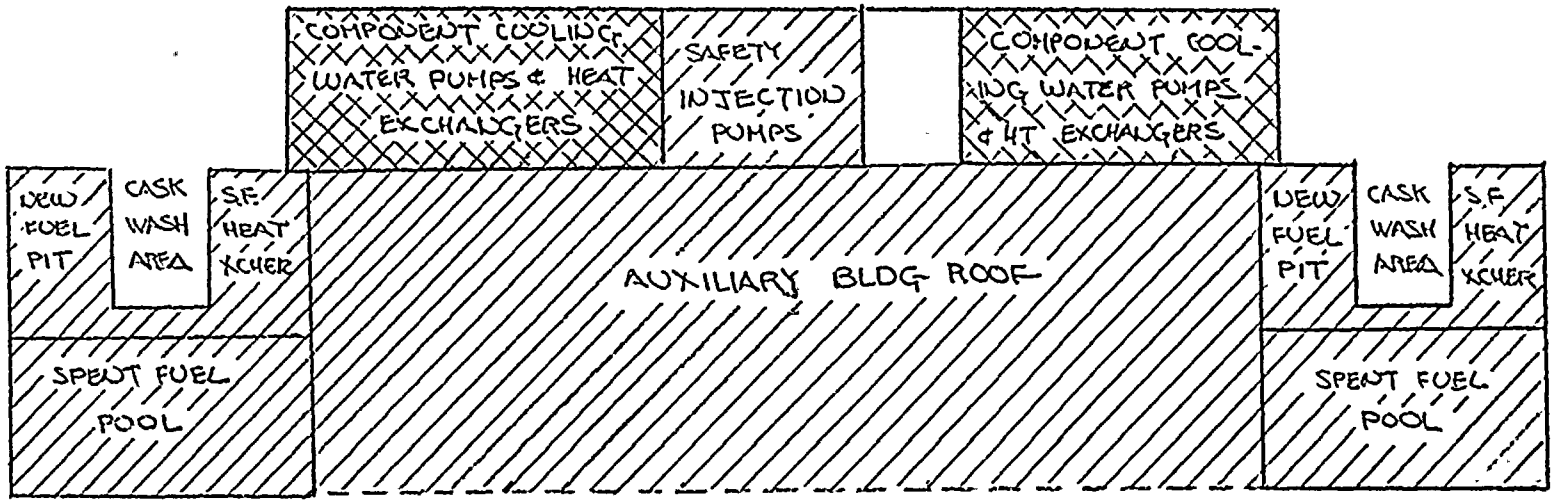


Safe load path is outside of cross-hatched areas.

SKETCH 2 - REACTOR POLAR CRANE
SAFE LOAD PATHS FOR LOADS GREATER THAN 1760#

N

ROAD

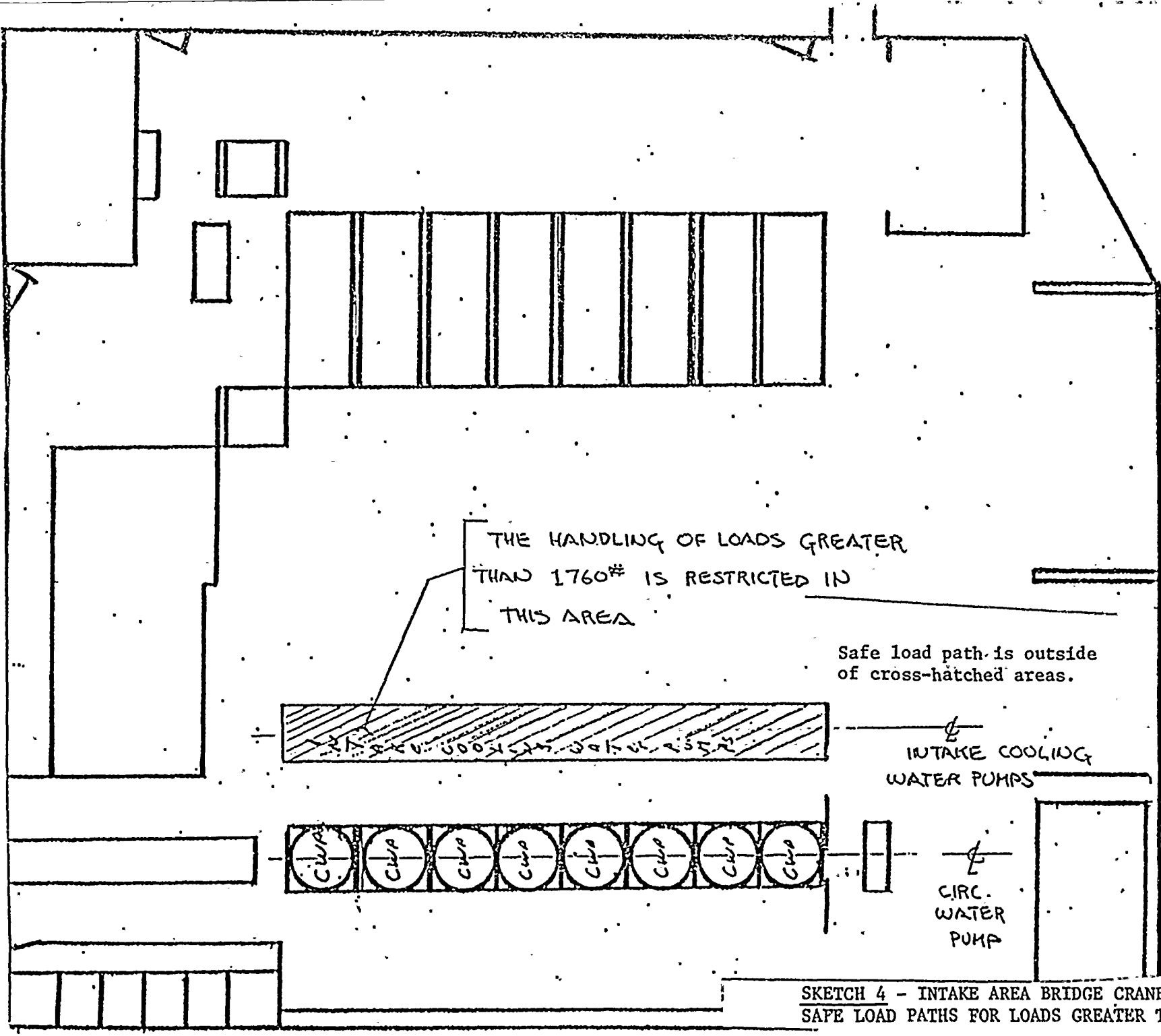


LEGEND: RESTRICTED AREA FOR HANDLING OF LOADS GREATER THAN 5 TONS

RESTRICTED AREA FOR HANDLING OF LOADS GREATER THAN 1760 #

Safe load path is outside of cross-hatched areas.

SKETCH 3 - SPENT FUEL CASK HANDLING CRANE
SAFE LOAD PATHS FOR LOADS GREATER THAN 5 TONS
(EXCEPT AS NOTED OVER COMPONENT COOLING AREA GRATING)



SKETCH 4 - INTAKE AREA BRIDGE CRANE
SAFE LOAD PATHS FOR LOADS GREATER THAN 1760#