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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
 VARGA, S.A. Operating Reactors Branch 1

SUBJECT: Forwards addl info re schedular commitments for items in draft technical evaluation rept on control of heavy loads.

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 TITLE: Control of Heavy Loads Near Spent Fuel (USI A-36) Operating Reactor

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THE UNITED STATES OF AMERICA
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D. C. 20250

FOR INFORMATION OF THE PUBLIC:
The following is a list of the
lands owned by the United States
Department of the Interior,
Bureau of Land Management,
Washington, D. C. 20250,
which are available for sale
under the provisions of the
Federal Land Management
Policy Act of 1976 (90 Stat.
2647, 43 CFR 1.81(a)).

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Federal Land Management
Policy Act of 1976 (90 Stat.
2647, 43 CFR 1.81(a)).



August 10, 1982
L-82-346

Office of Nuclear Reactor Regulation
Attention: Mr. Steven A. Varga, Chief
Operating Reactors Branch #1
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Varga:

Re: Turkey Point Units 3 & 4
Docket Nos. 50-250 and 50-251
Control of Heavy Loads
Draft Technical Evaluation Report

We have reviewed the NRC letter dated May 10, 1982, which requested our understanding of the resolution of the items in the Draft Technical Evaluation Report (TER) on Control of Heavy Loads.

The attachment to this letter provides additional information on schedular commitments for the items in the TER. Because the review work for lifting rigs and crane design is being done by contractors, we have provided our best estimate for completion dates. We will notify you if these projected completion dates change.

Very truly yours,

Robert E. Uhrig
Vice President
Advanced Systems and Technology

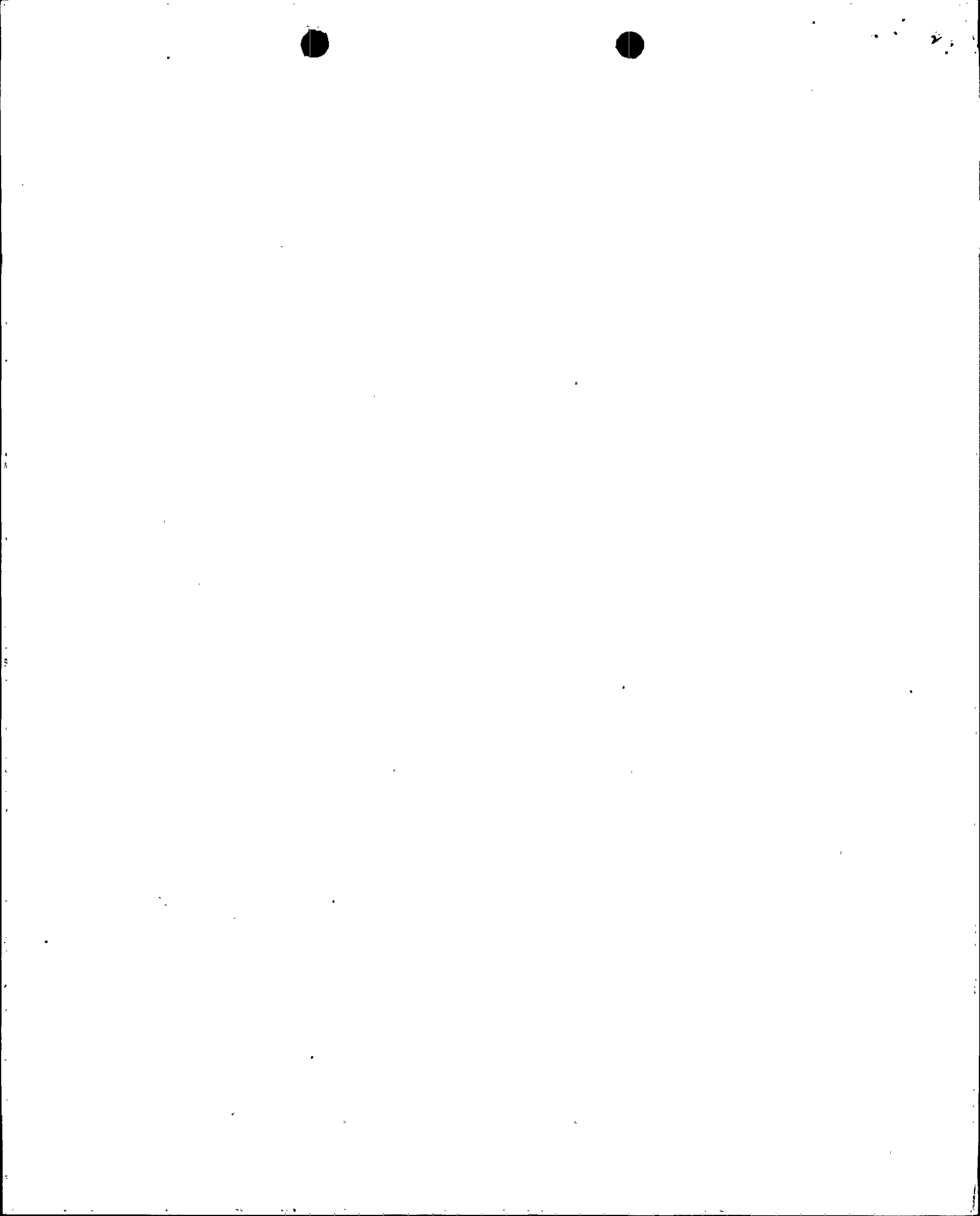
REU/PLP/mbd

Attachment

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

A033

8208170102 820810
PDR ADCK 05000250
PDR



ATTACHMENT

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

INTRODUCTION

On December 22, 1980, the NRC issued a generic letter to Florida Power & Light Company requesting that FP&L review provisions for handling and control of heavy loads at Turkey Point, evaluate these provisions with respect to the guidelines of NUREG-0612, and provide certain additional information to be used for a determination of conformance to these guidelines. On September 4, 1981, Florida Power & Light Company provided its response to this request. On December 29, 1981, Franklin Research Center (FRC) as a consultant for the NRC issued a draft Technical Evaluation Report (draft TER) on the FP&L response. This draft TER and a subsequent telephone conversation with the NRC and FRC indicated some areas where additional information would assist in their evaluation of the FP&L response. The intent of the following report is to clarify and supplement the initial response by FP&L.

2.1 GENERAL GUIDELINES

2.1.2 Safe Load Paths (Guideline 1, NUREG 0612, Article 5.1.1(1))

a. FRC Conclusions and Recommendations

Turkey Point Units 3 and 4 partially comply with Guideline 1. In order to comply with this guideline, the Licensee should perform the following:

1. Define safe load paths where practical. The use of exclusion areas should be limited to miscellaneous maintenance areas and lifts where the designation of individual load paths is impractical.
2. Verify that heavy loads and their safeload paths have been identified in the plant procedure for controlling heavy loads.
3. Verify that the selection of load paths considers the location of structural members and beams.
4. Verify that safe load paths have been clearly marked on floors or structures.
5. Verify that deviations from load paths require written alternatives approved by the plant's safety review committee (or equivalent).

b. FPL Position

The safe load path areas as defined in the initial response to the NRC generic letter have been revised in a subsequent response to NRC addressing the specific requirements of NUREG-0612. These safe load path areas and restricted zones were developed by the FPL Power Plant Engineering Department. Copies of these safe load path drawings are attached. These drawings indicate certain areas where the handling of loads greater than 1760 pounds is restricted. In some areas the handling of loads greater than 5 tons is restricted. The bases for these restrictions are the different capabilities of the structures in the area to withstand a dropped load and the potential for damage to irradiated fuel and safe shutdown equipment.

Florida Power & Light Company does not concur that marking the safe load paths on the floors or structures is a practical or necessary means of informing the operator of the safe areas. The sketches which are readily available to the operator at the hoist controls, are easy to understand and serve the same purpose as floor markings. Also, floor markings can be obstructed by equipment and are not feasible in certain areas (e.g. the refueling pool).

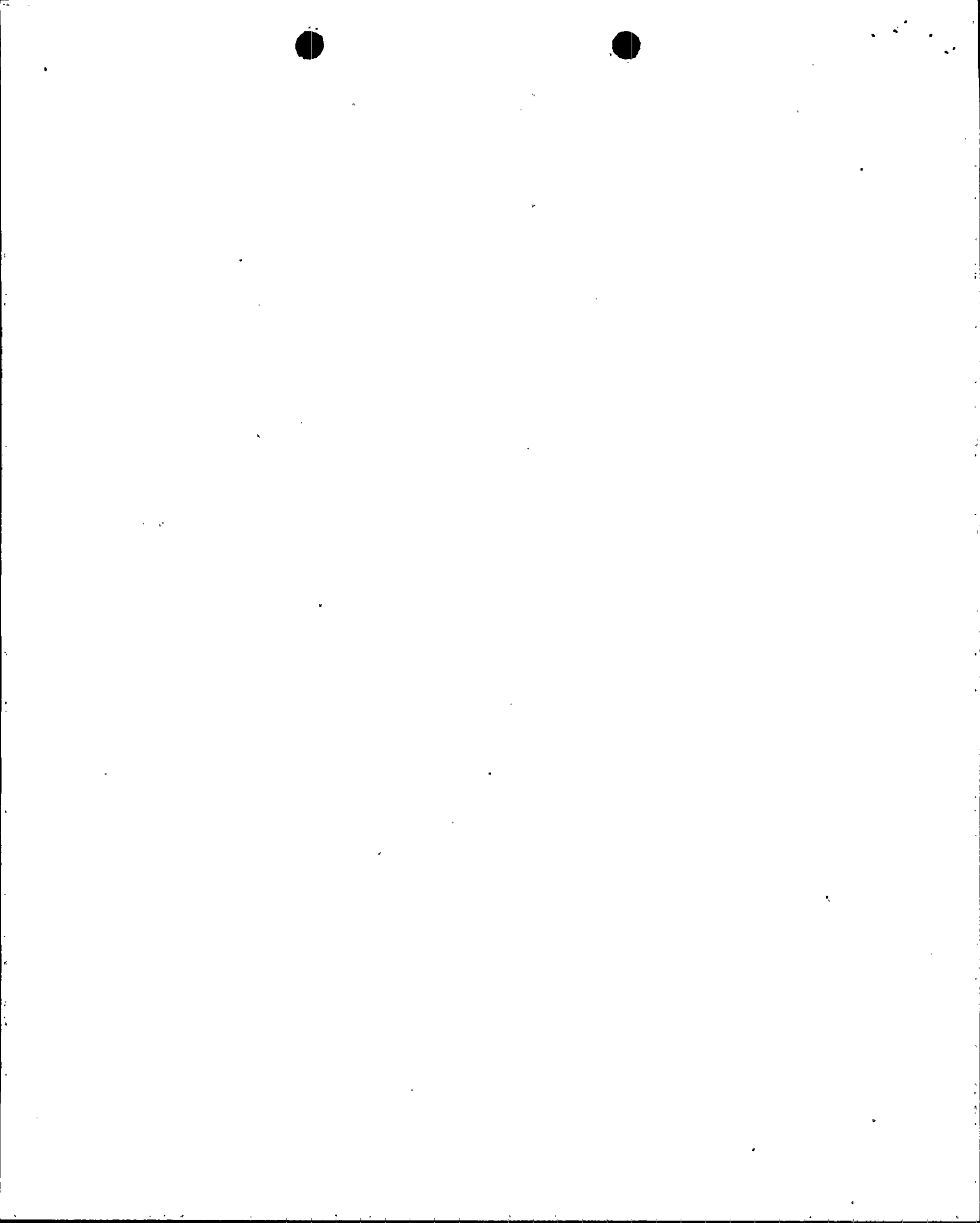
The plant Maintenance Procedure 0736 "Heavy Load Handling" requires written alternatives for deviations from the safe load paths. These alternatives are approved by the Maintenance Superintendent. The Plant Nuclear Safety Review Committee (PNSC) approved this procedure and has delegated this authority to the Maintenance Superintendent. The Maintenance Superintendent is a member of the PNSC and is responsible for all maintenance activities at the nuclear power plant. It is our judgment that the individual filling this senior maintenance position can determine when a safe load path variation requires full review by the PNSC, and as a member of that group he would bring the situation to the attention of that group. The NRC reviewer found this position acceptable during our phone conference.

2.1.3 Load Handling Procedure (Guideline 2 NUREG-0612, Article 5.1.1(2))

a. FRC Conclusions and Recommendations

FPL partially complies with Guideline 2. The following is required for full compliance.

1. identify all loads which are or could be (i.e., without credit for interlocks, technical specifications, operating procedures or detailed structure analysis) carried in the vicinity of irradiated fuel or safe shutdown equipment.



2. prepare procedures containing the information identified in Guideline 2 for those loads not identified in 2.1.3.a above (i.e., Reference 4, Table 2).

b. FPL Position

Florida Power & Light Company's Power Plant Engineering Department has analyzed the potential consequences of load drops in the vicinity of irradiated fuel and safe shutdown equipment. The analysis has enveloped all possible configurations, sizes and weights of potential dropped loads. The safeload path areas and restricted zones have been developed as a result of this analysis and consider the capabilities of the structures beneath the load. The plant Maintenance Procedure 0736 "Heavy Load Handling" requires the operators to confine the loads within these areas. Compliance with this procedure assures compliance with Guideline 2.

A complete listing of loads which could be carried in these areas is not practical. Almost every plant component within the reach of each crane would have to be listed. Since Engineering's analysis envelopes all loads such a listing is not necessary.

A listing of significant heavy loads which are periodically handled in the vicinity of irradiated fuel has been prepared along with the procedures used for handling of these loads and is given in Table 2 of the FPL report (3).

2.1.4 Crane Operator Training (Guideline 3, NUREG 0612, Article 5.1.1(3))

a. FRC Conclusions & Recommendations

Conclusions and recommendations covering Guideline 3 must be deferred until a comprehensive response is received. The Licensee should ensure that the response addresses operator selection and conduct as well as training.

b. FPL Position

The final response to NUREG-0612 Request for Information (4) was submitted on November 12, 1981. This report states that:

"A training program in accordance with ANSI B30.2-1976 has been developed and our standard company physical for new employees meets or exceeds the physical requirements of the ANSI standard. Some minor exceptions to the ANSI standard have been taken and are listed in the attachment at the end of this report. These training programs and procedures will be available at the site for review."

The exceptions to ANSI B30.2-1976 are also listed at the end of this report.

2.1.5 Special Lifting Devices (Guideline 4, NUREG-0612, Article 5.1.1(4))

a. FRC Conclusions and Recommendations

Insufficient information has been provided to allow a determination of compliance with respect to Guideline 4. The Licensee should provide an evaluation concerning compliance with ANSI 14.6 for all special lifting devices (e.g., reactor vessel head and internal lifting rigs, fuel cask lifting device). Further, in performing their evaluation, the Licensee should address the imposition of static and dynamic loads when assessing design stresses.

b. FPL Position

We have contracted with our NSSS vendor to review the design of the reactor vessel internals and head lifting rigs, load cell, load cell linkage and reactor coolant pump motor lifting rig, to determine the acceptability of these components to the criteria of ANSI 14.6 - 1978 as supplemented by NUREG 0612, section 5.11.4. We expect to receive the results of these evaluations by the end of September 1982.

2.1.6 Lifting Devices (Not Specially Designed) (Guideline 5.f NUREG-0612, Article 5:1.1(5))

a. FRC Conclusions & Recommendations

FPL partially complies with Guideline 5. The Licensee selection and marking of slings should be evaluated.

b. FPL Position

The program for sling use and maintenance at Turkey Point Units 3 and 4 meets the requirements of ANSI B30.9. The ANSI standard requires a 5:1 safety factor for sling strength based upon the breaking strength of the sling divided by the rated capacity. According to the standard, the sling is selected based upon the weight of the load; i.e. the rated capacity should be greater than the actual load weight. There is no requirement for consideration of a "dynamic load factor" and it is presumed that sufficient margin is present from the 5:1 safety factor.

FP&L does not feel that it is practical in the field to account for a dynamic load factor or that such a factor is necessary. Presumably if such a factor was a real safety concern the universally accepted ANSI standard would require one. In any event, the hoisting speeds at Turkey Point are relatively slow and any contribution from a dynamic effect would not be significant. Also, any critical lifts (e.g. reactor head lift, reactor missile shield, etc.) are always done at very slow speeds.



Superimposing a dynamic load factor in addition to the 5:1 existing safety factor for the slings would not be consistent with other safety factors used in crane design. For example, the hoisting rope requires on a 5:1 safety factor with no dynamic contribution. (Crane Manufacturers Association of America, Specification #70, Section 4.2).

The rated capacity is marked on the slings. These slings are inspected yearly by an outside contractor, and worn slings are replaced. New slings are tagged with their capacity prior to receipt by FPL.

2.1.7 Cranes (Inspection, Testing and Maintenance (Guideline 6, NUREG-0612, Article 5.1.1(6)))

a. FRC Conclusions and Recommendation

FPL will comply with Guideline 6. Associated procedures should be readily available for NRC staff review when completed.

b. FPL Position

The Turkey Point crane inspection, testing and maintenance program complies with the requirements of ANSI B30.2-1976 with the exception that tests and inspections are performed prior to use where it is not practical to meet that frequencies of ANSI B30.2 for periodic inspection and test, or where frequency of crane use is less than the specified inspection and test frequency (e.g. the polar crane is used every 12 to 18 months during refueling operations and is generally not accessible during power operation).

2.1.8 Crane Design (Guideline 7, NUREG-0612, Article 5.1.1(7))

a. FRC Conclusion

Turkey Point Units 3 and 4 comply with Guideline 7, to a substantial degree, on the basis of compliance with EOCI-61 criteria. However, insufficient information has been made available to verify that the following CMAA-70 requirements have been satisfied for cranes subject to this review. The licensee should make this information available or provide suitable justification for concluding that the requirements of CMAA-70 have been satisfied by equivalent means.

1. Hoist lifting speeds do not exceed 30 feet per minute;
2. Nonsymmetrical girder sections were not used in crane construction.
3. Any longitudinal stiffeners in use conform to the requirements of CMAA-70, and allowable h/t ratios in box girders using these stiffeners do not exceed ratios specified in CMAA-70.

4. Girders with b/c ratios in excess of 38 were not used.
5. Fatigue failure was considered in crane design and the number of design loading cycles at or near rated load is less than 20,000 cycles.
6. Maximum crane load weight, plus the weight of the bottom block, divided by the number of parts of rope does not exceed 205 of the manufacturer's published breaking strength.
7. Drum design calculations were based on the combination of crushing and bending loads.
8. Drum groove depth and pitch conform to the recommendations of CMAA-70.
9. Gear horsepower ratings were based on design allowables and calculation methodology equivalent to the incorporated in CMAA-70.
10. A cab-control, cab-on trolley configuration was not used.
11. Mechanical load brakes or hoist holding brakes with torque ratings of approximately 125% of the hoist motor torque were used.
12. Crane operation under load near the end of bridge or trolley travel is not allowed or is compensated for by bumpers and stops which satisfy the intent of CMAA-70.
13. Any static control systems in use conform to the requirements of CMAA-70.
14. Controllers in use are the spring-return or momentary-contact pushbutton type or are equipped with a device which disconnects all motors on power failure and will not permit restart until controller handle is brought to the OFF position.

b. FPL Position

We are reviewing the comments of the reviewers concerning crane design. We expect to provide a response to this item by the end of September, 1982.

2.2 INTERIM PROTECTION MEASURES

2.2.1 Technical Specifications (Interim Protection Measure 1 NUREG-0612, Article 5.3(1))

a. FRC Conclusions & Recommendations

The Licensee made no statements or conclusions regarding this interim protection measure.

b. FPL Position

This interim measure was not included in the NRC letter dated December 22, 1980 (Control of Heavy Loads)

2.2.3 Special Reviews for Heavy Loads Over the Core (Interim Protection Measure 6 NUREG-0612, Article 5.3.(6))

a. FRC Conclusions & Recommendations

Insufficient information has been provided for Turkey Point Units 3 and 4 to evaluate compliance with interim Protection Measure 6. The intent of this interim measure was to provide, on the basis of a one-time detailed inspection, assurance of a high degree of load handling system reliability during the period when certain hardware-associated guidelines (Guidelines 4, 5, and 7) were being evaluated. A general review of crane operations to establish procedure improvements may not meet the intent of this interim measure. In order to allow a finding of compliance, the Licensee should provide sufficient information for FRC to verify that the extent of this review was comparable to that identified for this interim protection measure.

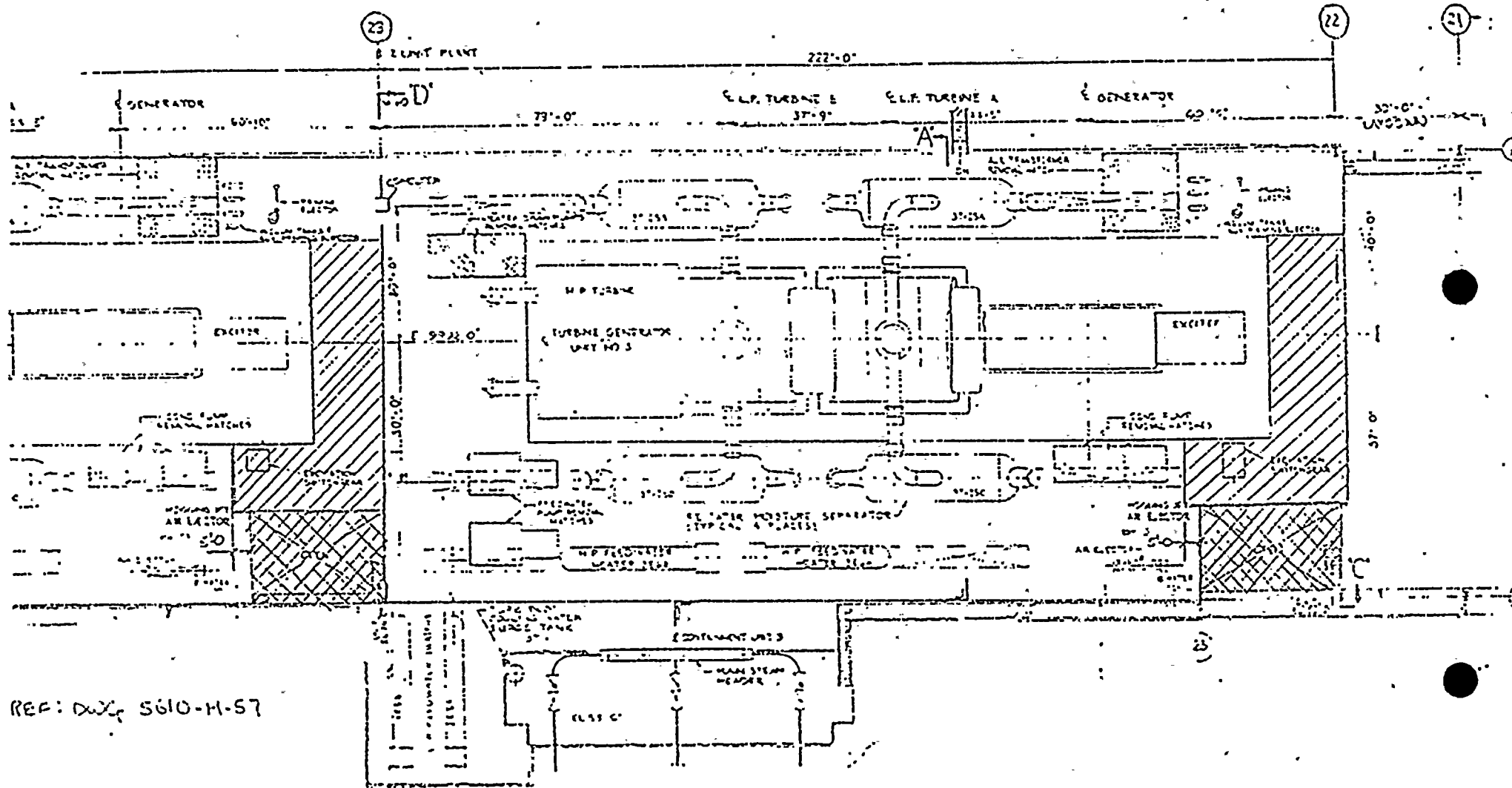
- b. There was no request for a written response to this Interim Action item in the December 22, 1980 NRC letter. We did however, provide a brief response saying that the requested review had been conducted and that operations over the core were addressed in the plant maintenance procedure.



REFERENCES

1. NUREG-0612 "Control of Heavy Loads at Nuclear Power Plants", NRC, July 1980
2. NRC Letter to all Licensees
Subject: Control of Heavy Loads, December 22, 1980
3. R.E. Uhrig (FPL) letter to D.G. Eisenhut (NRC)
Subject: Control of Heavy Loads, Turkey Point Units 3 & 4
4. R.E. Uhrig (FPL) letter to D.G. Eisenhut (NRC)
Subject: Control of Heavy Loads (L-81-473), November 12, 1981
5. Draft Technical Evaluation Report
Control of Heavy Loads, Turkey Point Units 3 & 4
FRC, December 29, 1981

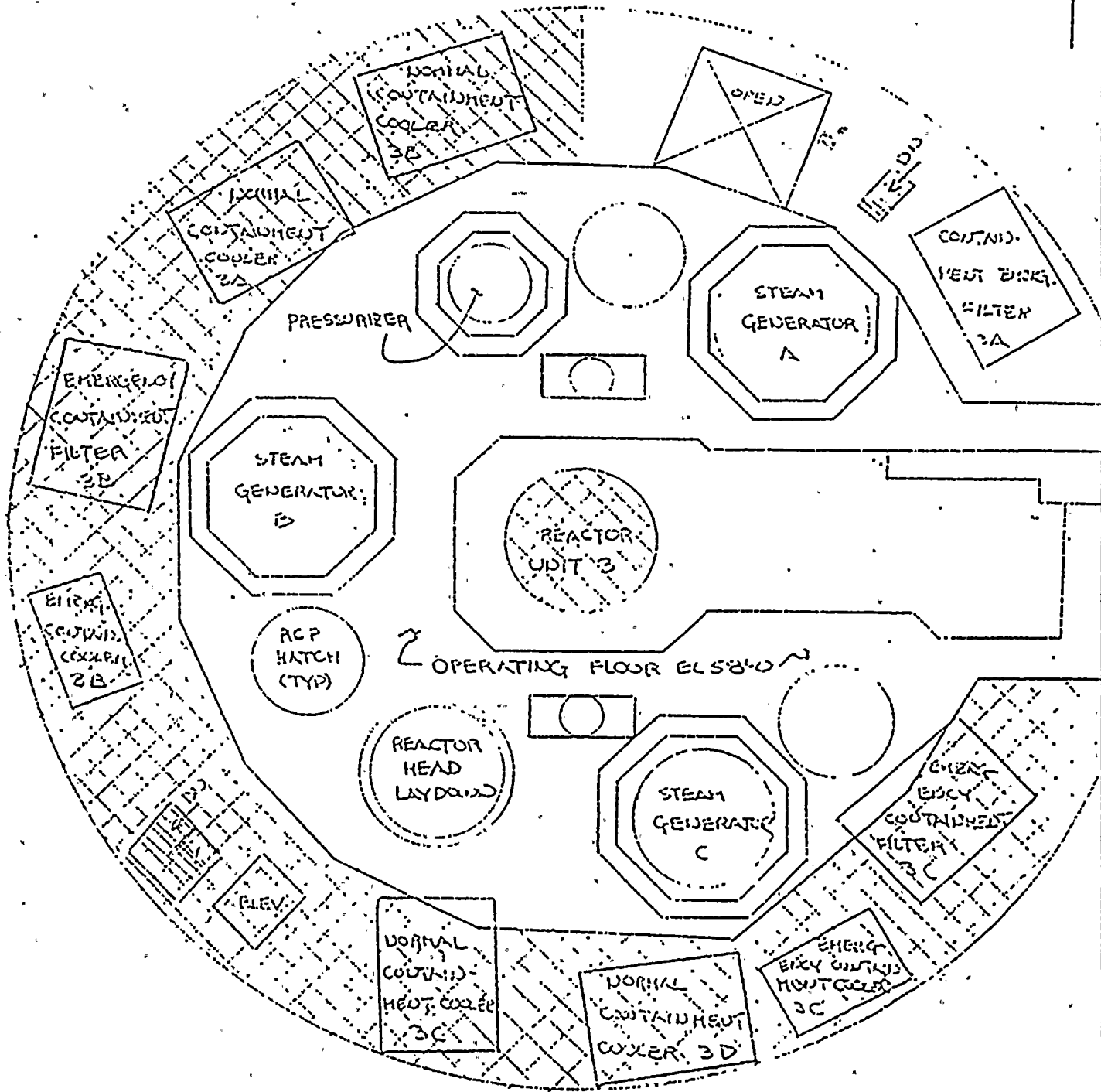
ATTACHMENTS


1. Safe Load Paths (as revised in final response)
2. Exceptions to ANSI B30.2-1976 for Crane Operator Training



LEGEND:  RESTRICTED AREA FOR HANDLING OF LOADS GREATER THAN 5 TONS
 RESTRICTED AREA FOR HANDLING OF LOADS GREATER THAN 1760^{##}

REF: DWG 5610-H-57



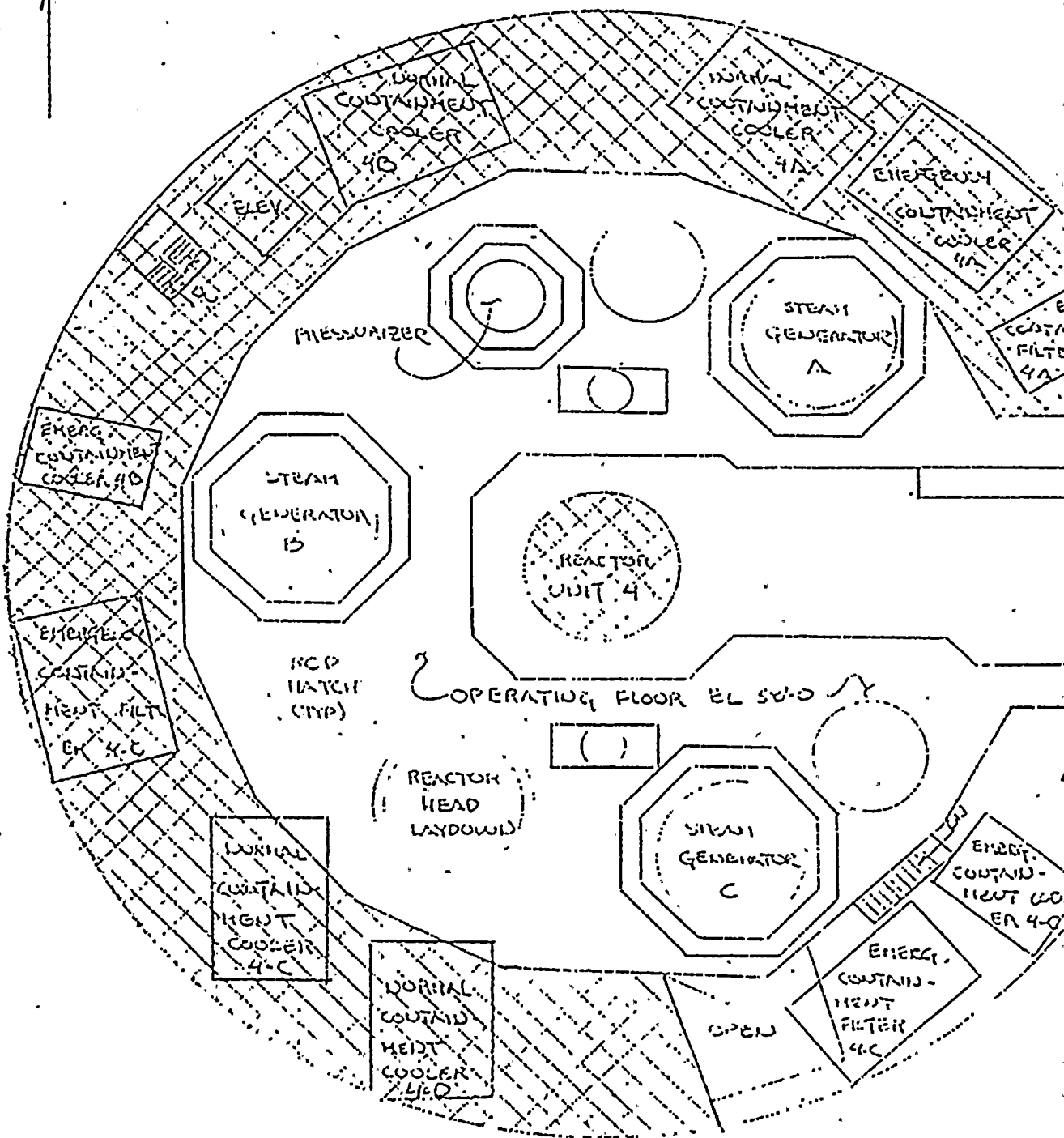
LEGEND:  RESTRICTED AREA FOR HANDLING OF LOADS > 1760


Safe load path is outside of cross-hatched areas.

FIGURE 2a - SAFE LOAD PATH
REACTOR POLAR CRANE UNIT 3



11



LEGEND:  RESTRICTED AREA FOR HANDLING OF LOADS >

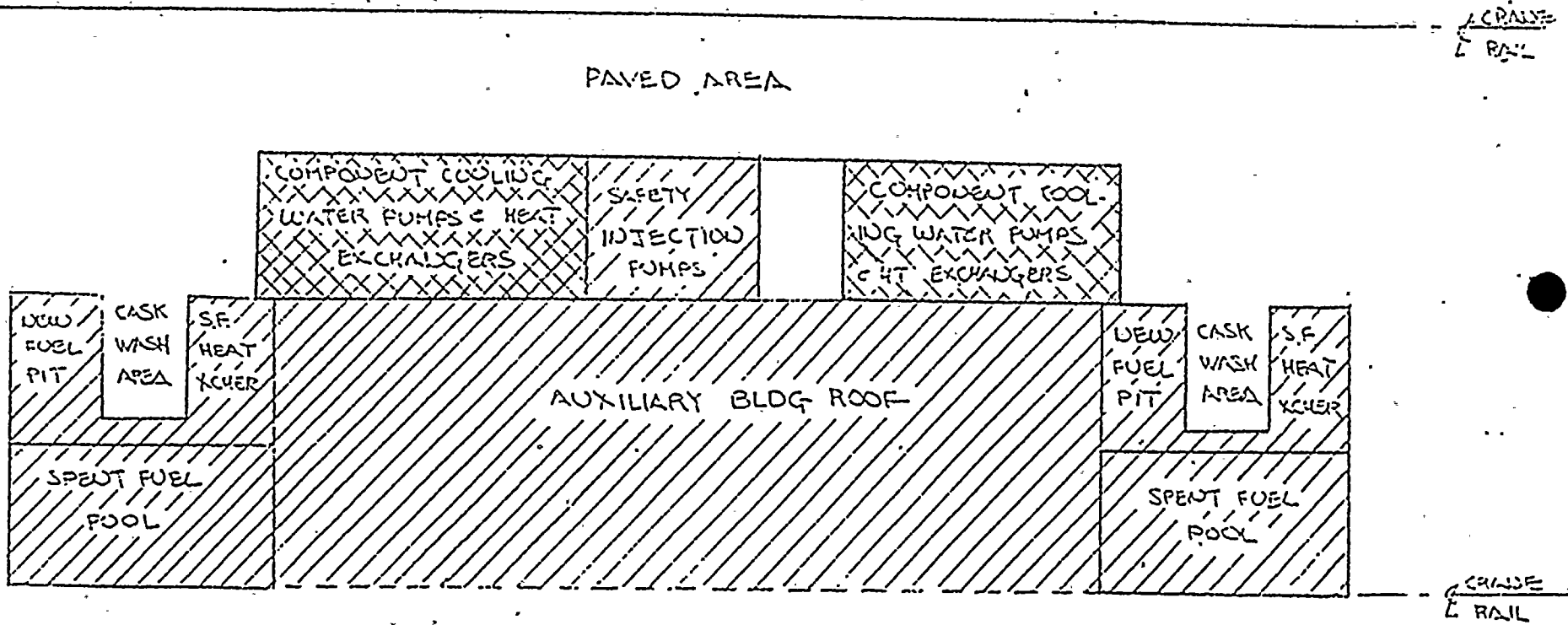
Safe load path is outside of cross-hatched areas.


FIGURE 2b - SAFE LOAD PA
REACTOR POLAR CRANE UNIT




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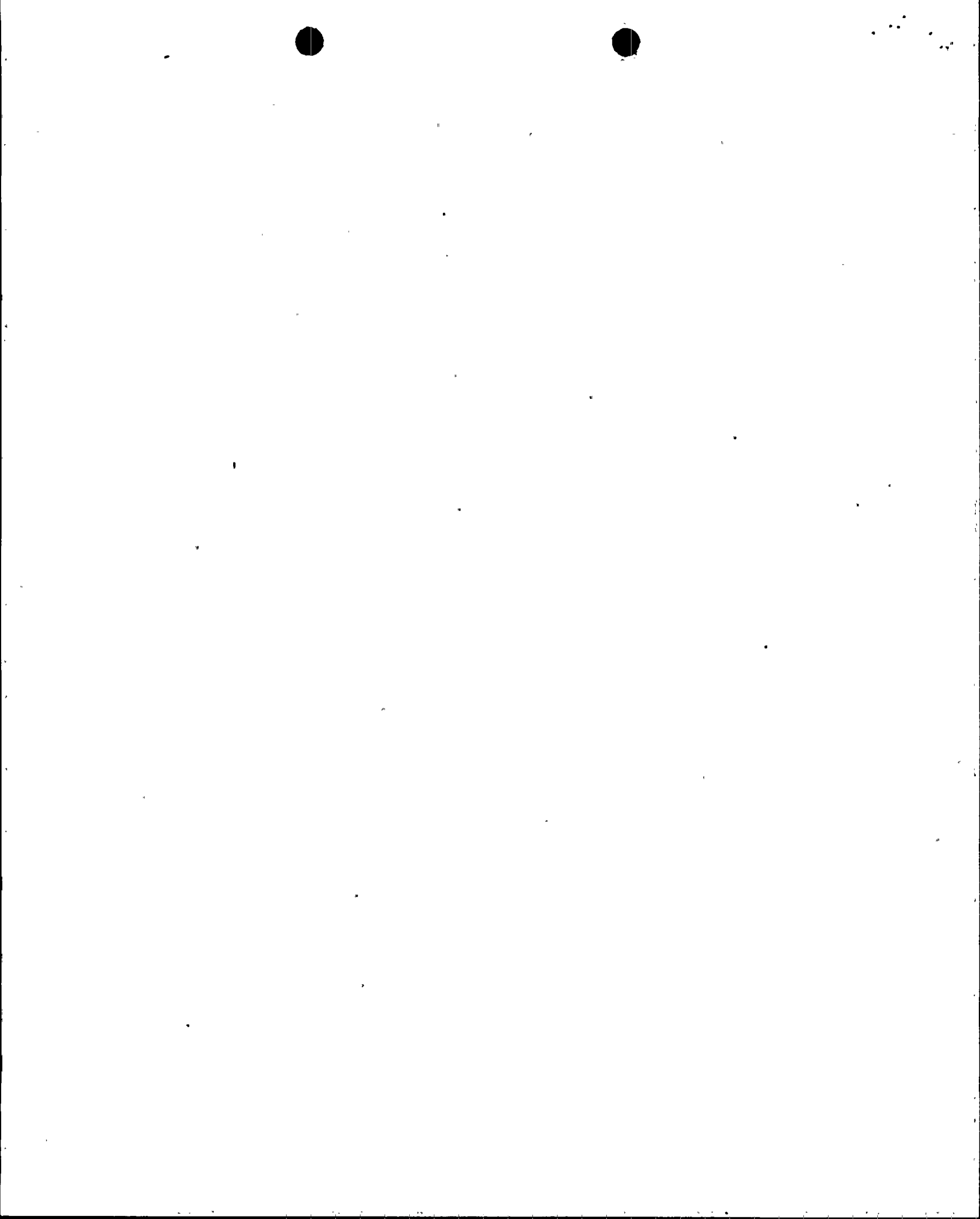


LEGEND:  RESTRICTED AREA FOR HANDLING OF LOADS GREATER THAN 5 TONS

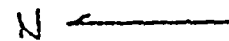
 RESTRICTED AREA FOR HANDLING OF LOADS GREATER THAN 1760 #

Safe load path is outside

FIGURE 3 - SAFE LOAD PATH



REF: DWG 5610-M-61

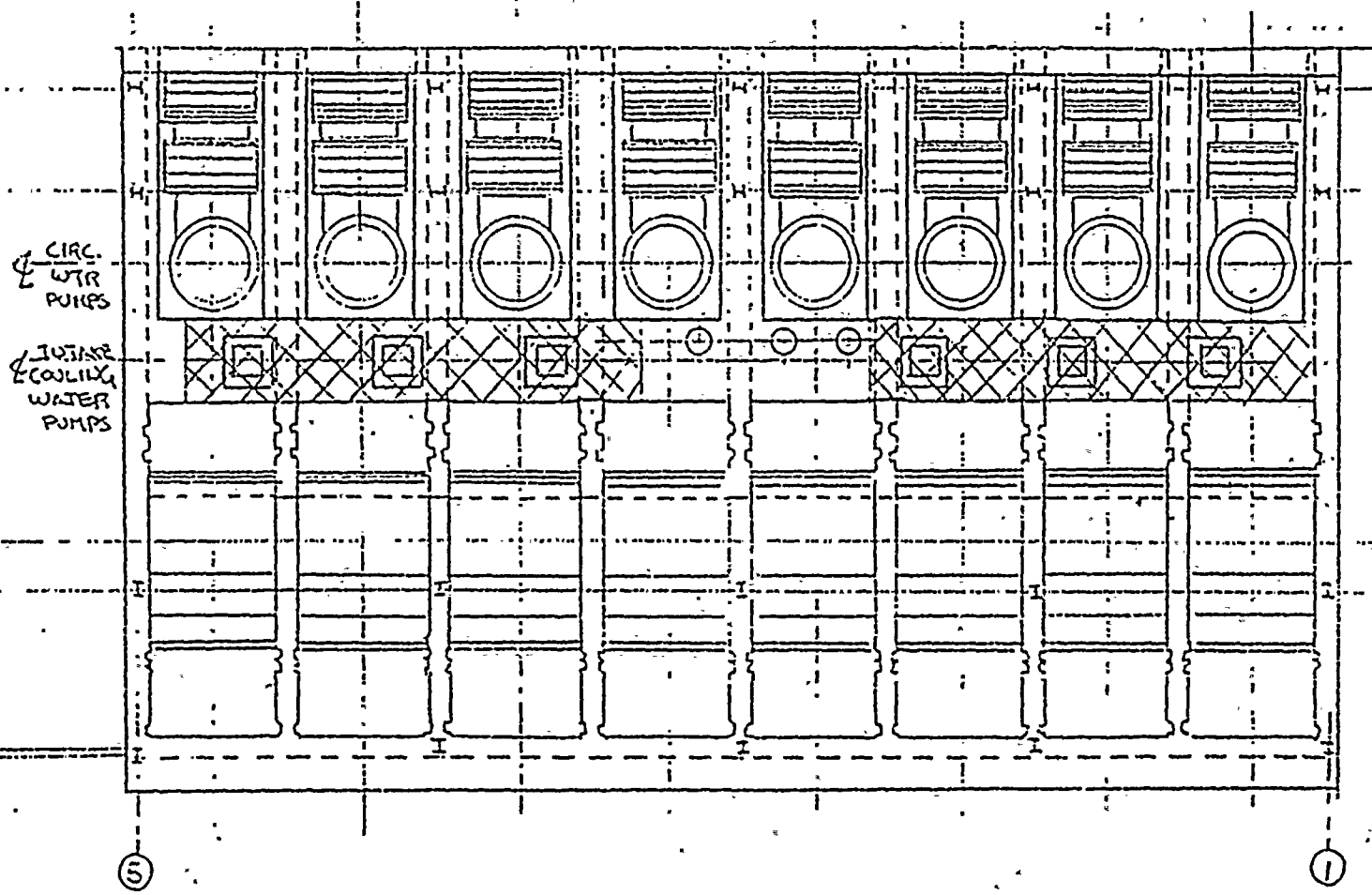


BY
DATE

DATE

REVISIONS

PROJECT




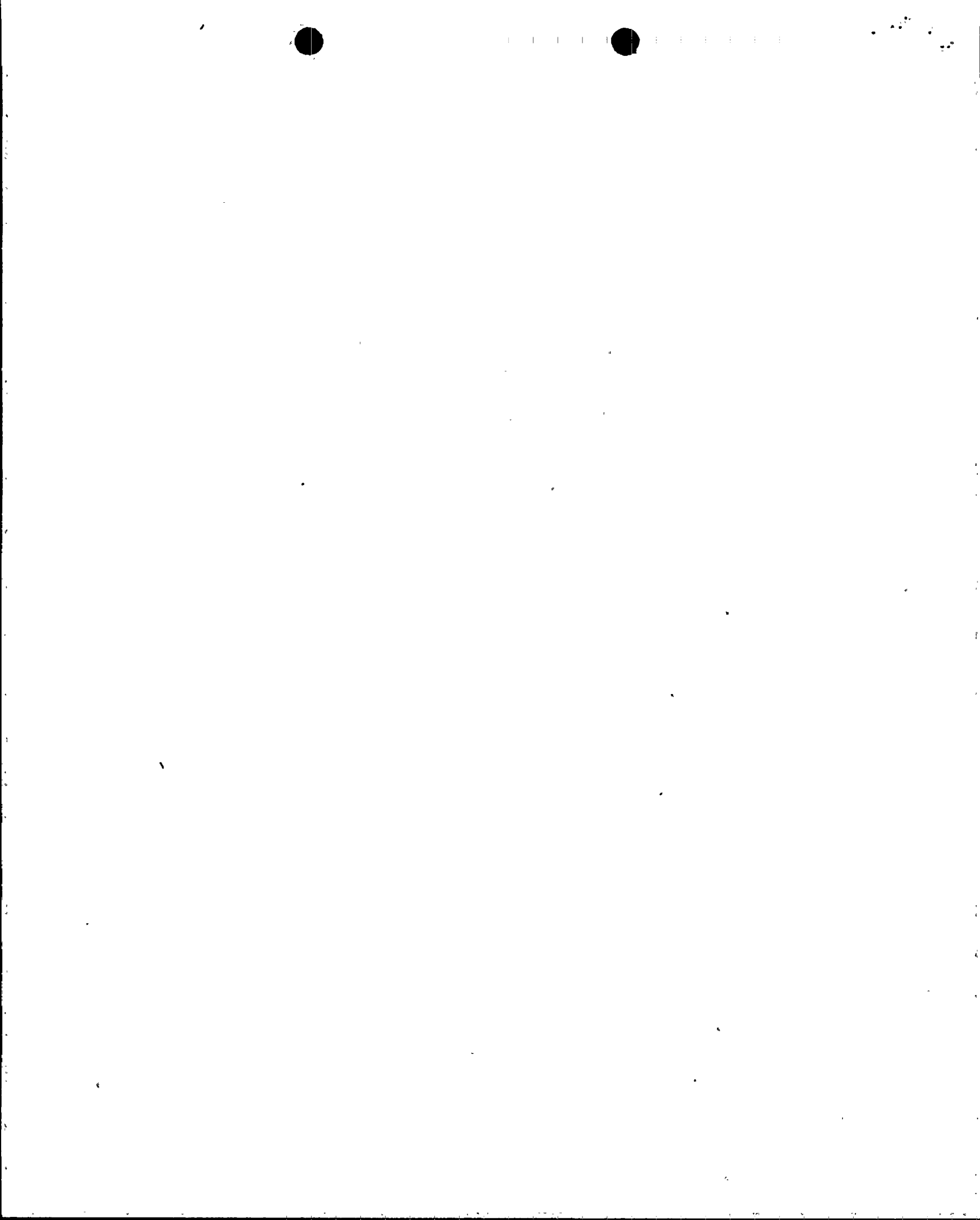
LEGEND:  RESTRICTED AREA FOR HANDLING OF LOADS GREATER THAN 1760

FIGURE 4 - SAFE LOAD PATH



ATTACHMENT

Re: Turkey Point Units No. 3 and No. 4
Interim Actions for Control of Heavy Loads

The NRC letter dated December 22, 1980 (subject: Control of Heavy Loads) requested implementation of interim actions for the training, qualification, and conduct of crane operators. Florida Power & Light will implement, at Turkey Point Unit No. 3 and 4, Section 2-3.1 (Qualifications for and conduct of Operators) of Chapter 2-3 of ANSI Standard B 30.2-1975 with the following exceptions to the referenced paragraphs:

Paragraph 2-3.1.2. We will require an eye test of 20/40 in both eyes for new employees.

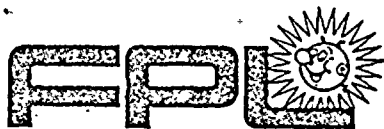
Paragraph 2-3.1.7.f, g and h. Because of the power requirements of the crane motor heaters, we will meet the intent of these requirements by using the crane dead man switch instead of the main line disconnect devices.

Paragraph 2-3.1.7. We will test those controls necessary for the crane operations to be conducted.

Paragraph 2-3.1.7.n. Safety during maintenance work on cranes will be in accordance with the plant clearance procedure.

The remainder of Chapter 2-3 of the ANSI Standard (i.e.: Handling the Load, Attaching the Load, Moving the Load, Hoist Limit Device, Signals, Miscellaneous) will be met in a general manner in procedures or in crane operator training with the following exception:

Paragraph 2-3.2.4.a. At shift change, we will try out the upper limit device under no load unless a load is hanging from the hook at shift change or unless no crane operation in the area of the upper limit is anticipated.



FLORIDA POWER & LIGHT COMPANY

INTER-OFFICE CORRESPONDENCE

RECEIVED

AUG 6 1982

Nuclear Licensing

TO	R.E. Uhrig	LOCATION	Nuclear Energy
		DATE	AUG 5 1982
FROM	J.W. Williams, Jr.	COPIES TO	R.J. Acosta
			D.W. Jones
SUBJECT:	TURKEY POINT UNITS 3 & 4		C.S. Kent
	CONTROL OF HEAVY LOADS		H.N. Paduano/910.27 TP
	<u>DRAFT TER</u>		H.E. Yaeger/J.K. Hays
			J.A. Yespica
			PNS-LI-82-237

The subject information is attached for your review and forwarding to the NRC. The attachment was prepared in accordance with the requirements of QP 2.13 for a submittal not requiring an affidavit.

Except for the following, the attachment is fully responsive to the NRC requirements or differences are clearly noted in the attached: None

The information in the attachment, except for a few minor items, was provided by EPP.

J.W. Williams, Jr.

PLP/mbd

Attachment



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A series of vertical tick marks or a scale-like indicator along the top edge of the page.