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ACCESSION NBR:8411190289 DOC.DATE: 84/11/09 NOTARIZED: NO DOCKET #
FACIL:50-389 St. Lucie Plant, Unit 2, Florida Power & Light Co. 05000389
AUTH.NAME AUTHOR AFFILIATION
WILLIAMS,J.W. Florida Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION
MILLER,J.R. Operating Reactors Branch 3

SUBJECT: Forwards addl info re safe loadpaths,testing of crane controls & special lifting devices,for review of response to NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants."

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FLORIDA POWER & LIGHT COMPANY

November 9, 1984
L-84-327

Office of Nuclear Reactor Regulation
Attention: Mr. James R. Miller, Chief
Operating Reactors Branch #3
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Miller:

Re: St. Lucie Unit 2
Docket No. 50-389
Control of Heavy Loads
License Condition 2.C.12

Technical evaluation report EGG-HS-6263 was provided with the NRC letters dated May 31, 1983 and June 17, 1983. This report provided the results of the NRC contractor's review of Florida Power & Light's response to NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants" for St. Lucie Unit 2.

Additional information concerning safe loadpaths, testing of crane controls and special lifting devices is provided in the attachment to this letter.

FPL has determined that St. Lucie Unit 2 now conforms to the guidelines of Section 5.1.1 of NUREG-0612 as required by License Condition 2.C.12 and as discussed in the contractor report and in telephone conversations with the staff and contractor reviewers.

Should you or your staff have any questions on this information, please contact us.

Very truly yours,

J. W. Williams, Jr.
Group Vice President
Nuclear Energy

JWW/PLP/js

cc: J. P. O'Reilly, Region II
Harold F. Reis, Esquire
PNS-LI-84-408-2

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ATTACHMENT

Re: St. Lucie Unit 2
Docket No. 50-389
Control of Heavy Loads
License Condition 2.C.12

Additional information in response to NRC letters dated May 31, 1983 and June 17, 1983.

TER Section 2.3.1 Recommendation

In those locations where safe loadpaths are not marked and the "Safe Load Area" concept is used, require an employee (rigger) to lead the heavy load over the path when handling is required.

FPL Response

As discussed in the telephone conference with the reviewers, FPL has prepared specific loadpaths for major loads which routinely take the same route or routes when carried. These paths are referenced in the applicable procedure, and are attached. In addition, FPL uses an individual to lead the heavy load over the path when handling is required.

TER Section 2.3.2 Recommendation

Acceptable commitments for compliance with Guideline 2 have been made.

FPL Response

No response is required.

TER Section 2.3.3 Recommendation

The exception that the operator will test the upper limit switch only when operating near it is unacceptable. Compliance requires this check each shift when the crane is used. Delete that part of the exception.

FPL Response

The St. Lucie Maintenance Crane Operation Training Program describes the daily testing that shall be performed to cranes before operation. The testing requirements for the cranes include the following:

> All upper limit switches shall be checked on hooks to be used without a load on the hook at the beginning of each work shift. Each motion shall be inched into its limit switch, or run in at low speeds, unless unique condition at shift change prohibits the testing (load already on hook).

Re: St. Lucie Unit 2
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Control of Heavy Loads
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TER Section 2.3.4 Recommendation

Conclude the discussions with suppliers, establish if there are any deficiencies, and provide suitable resolutions to NRC.

FPL Response

See Enclosure 2.

TER Section 2.3.5 Recommendation

Assure that no crane lifting speeds exceed 30 fpm and other operating conditions continue as stated. St. Lucie Plant, Unit 2 will meet the intent of Guideline 5.

FPL Response

As stated in our previous submittals and referenced in the TER:

1. Hoisting speeds at St. Lucie Plant Unit 2 do not exceed 30 fpm at rated loads.

2. The same program for not specifically designed lifting devices for St. Lucie Unit 1 has been extended to Unit 2.

3. The program for sling use and maintenance at St. Lucie Plant meets the requirements of ANSI B30.9.

4. The program in effect at St. Lucie Plant does require the rated capacity to be marked on the sling.

5. The maximum working load (rated capacity) marked on the sling will be based upon the static load multiplied by a safety factor of five as required by ANSI B30.9.

TER Section 2.3.6 Recommendation

The actions reported meet the requirement of Guideline 6.

FPL Response

No response required.

Re: St. Lucie Unit 2
Docket No. 50-389
Control of Heavy-Loads
License Condition 2.C.12

TER Section 2.3.7 Recommendation

The response given indicates that St. Lucie Plant Unit 2 is in compliance with Guideline 7.

FPL Response

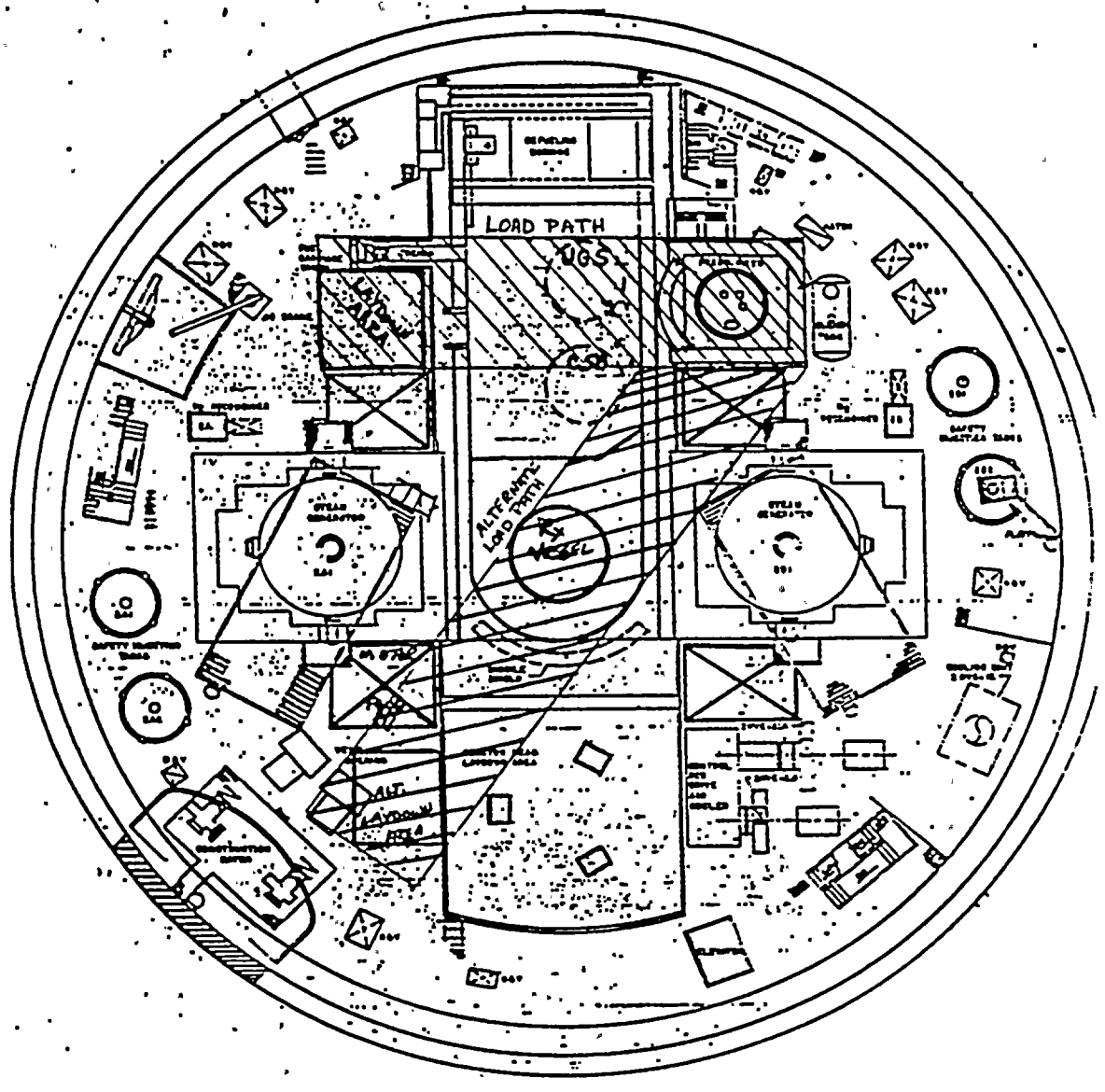
No response required.

ST. LUCIE PLANT
GENERAL MAINTENANCE PROCEDURE NO. M-0021, REVISION 4
LIFTING OF THE PRESSURIZER MISSILE SHIELD

APPENDIX A

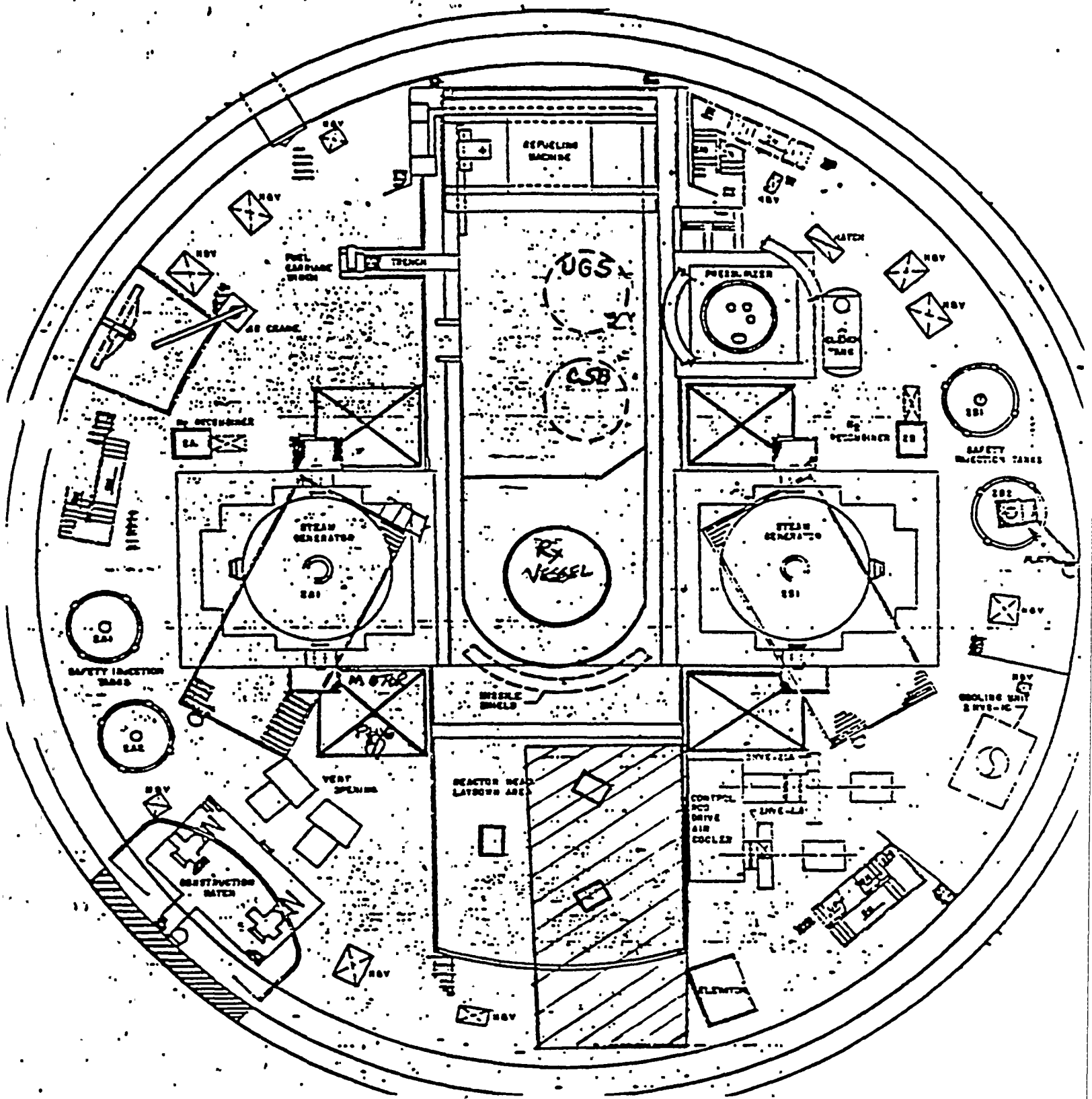
FIGURE 1

62' ELEVATION - PRESSURIZER MISSILE SHIELD (LOAD PATH)



ST. LUCIE UNIT 2
GENERAL MAINTENANCE PROCEDURE NO. 2-M-0036, REVISION 3
REACTOR VESSEL MAINTENANCE - SEQUENCE OF OPERATIONS

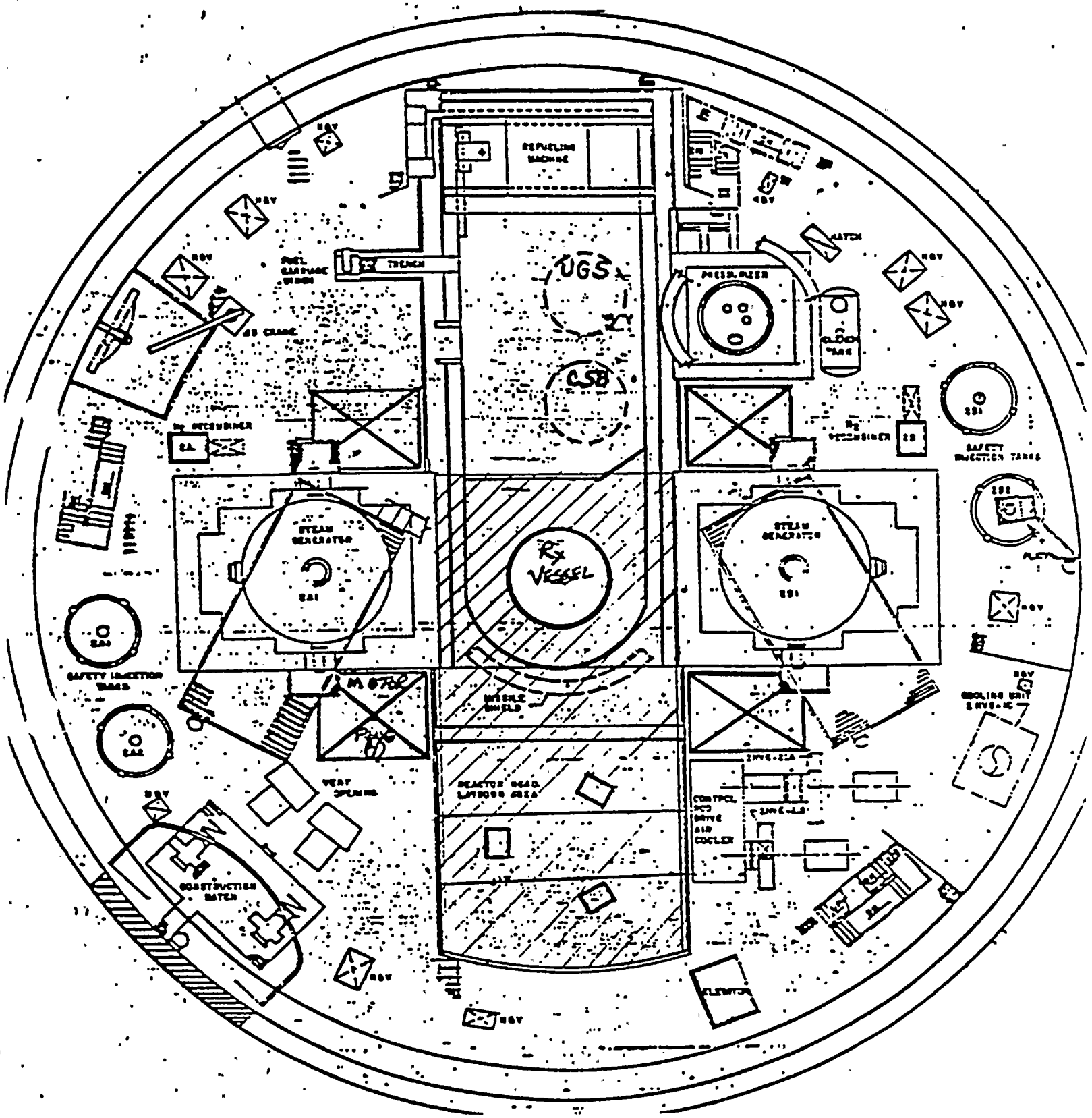
APPENDIX A - FIGURE 10
62' ELEVATION CEDM UPPER HVAC DUCT WORK
(LOAD PATH)



2

ST. LUCIE UNIT 2
GENERAL MAINTENANCE PROCEDURE NO. 2-M-0036, REVISION 3
REACTOR VESSEL MAINTENANCE - SEQUENCE OF OPERATIONS

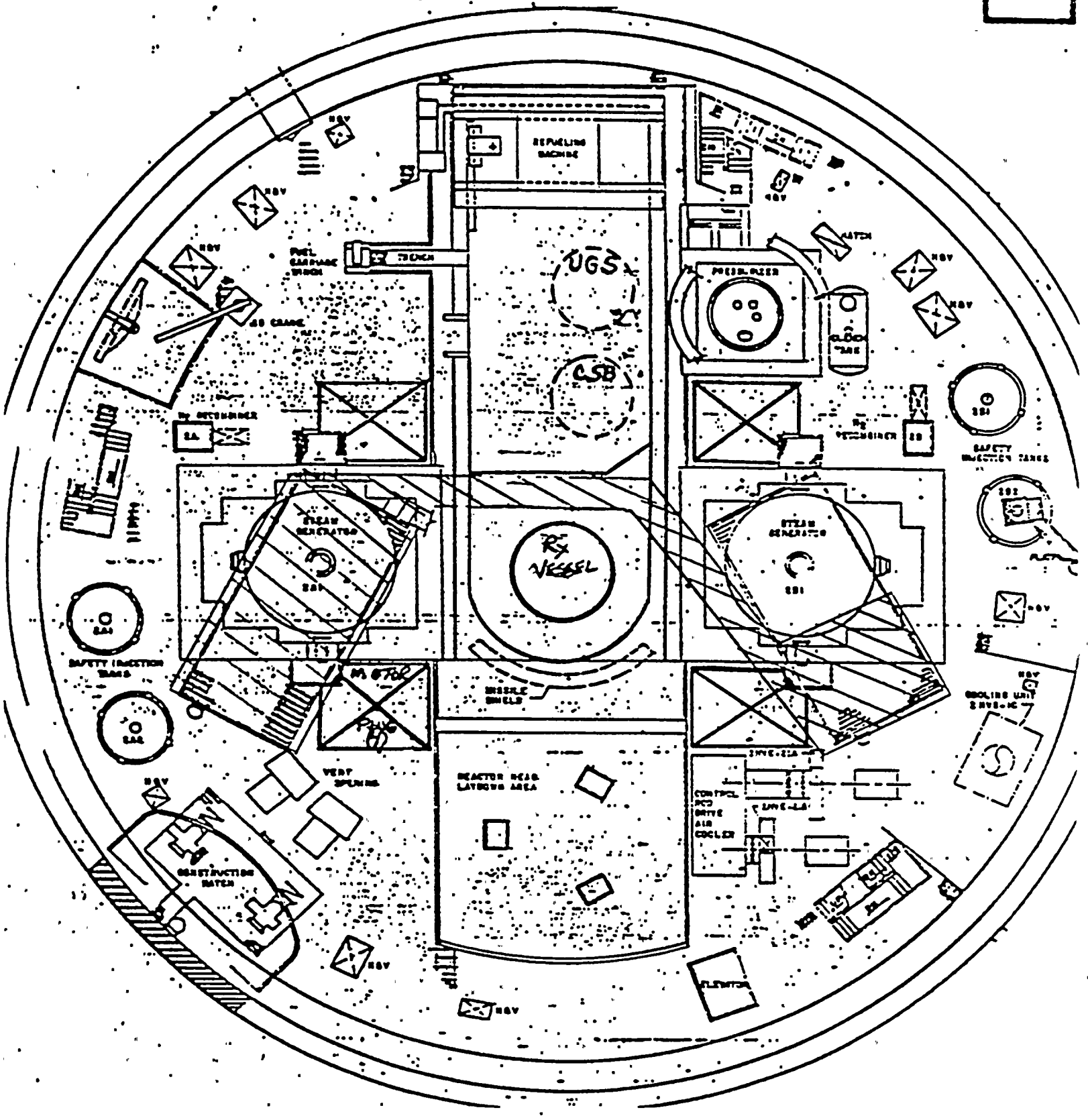
APPENDIX A - FIGURE 11
62' ELEVATION REACTOR MISSILE SHIELDS AND REACTOR COOLING SHROUDS
(LOAD PATH)



ST. LUCIE UNIT 2
GENERAL MAINTENANCE PROCEDURE NO. 2-M-0036, REVISION 3
REACTOR VESSEL MAINTENANCE - SEQUENCE OF OPERATIONS

2

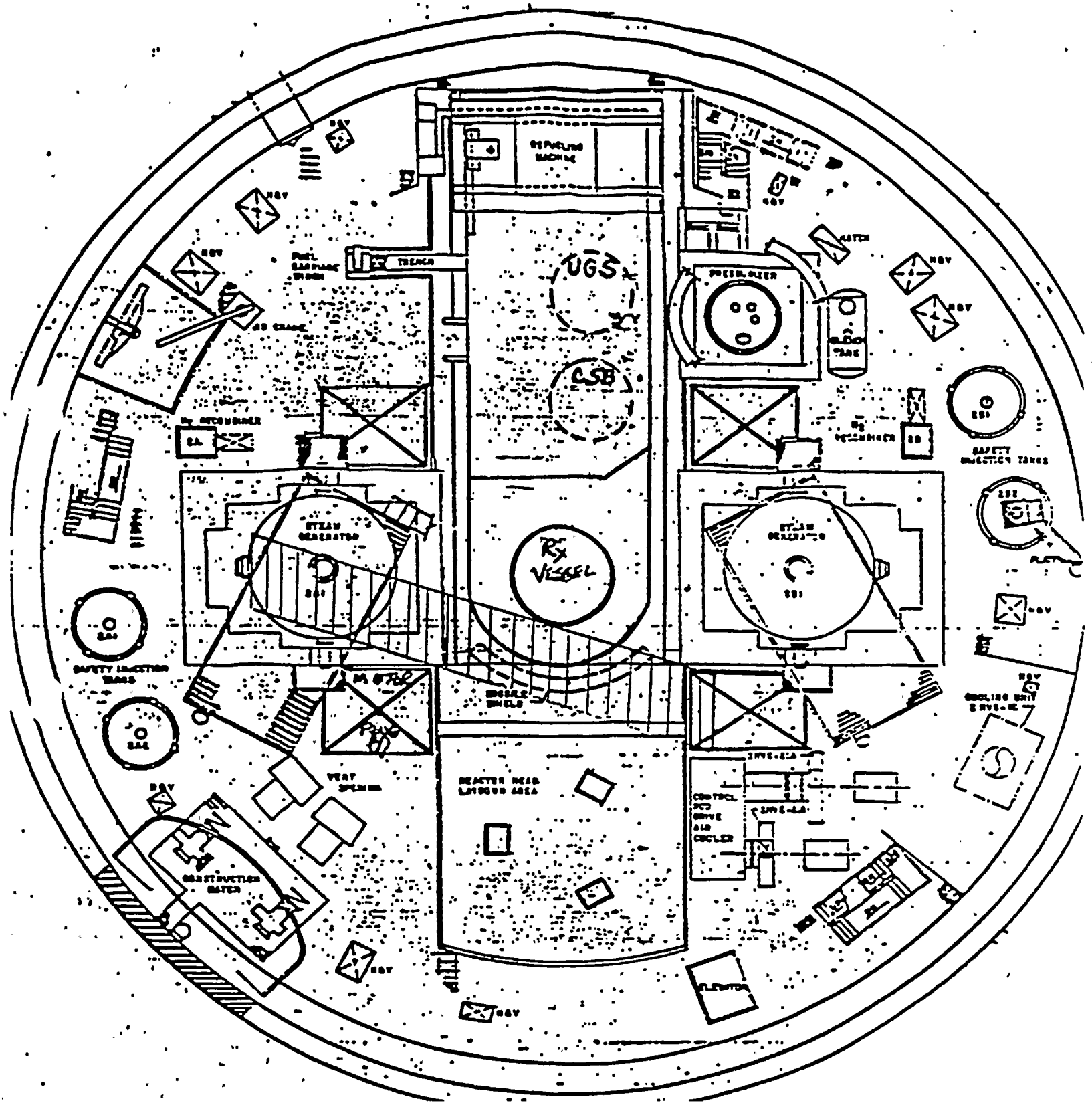
APPENDIX A - FIGURE 12
62' ELEVATION REACTOR NEUTRON STREAMING SHIELD
(LOAD PATH)



ST. LUCIE UNIT 2
GENERAL MAINTENANCE PROCEDURE NO. 2-M-0036, REVISION 3
REACTOR VESSEL MAINTENANCE - SEQUENCE OF OPERATIONS

APPENDIX A - FIGURE 13

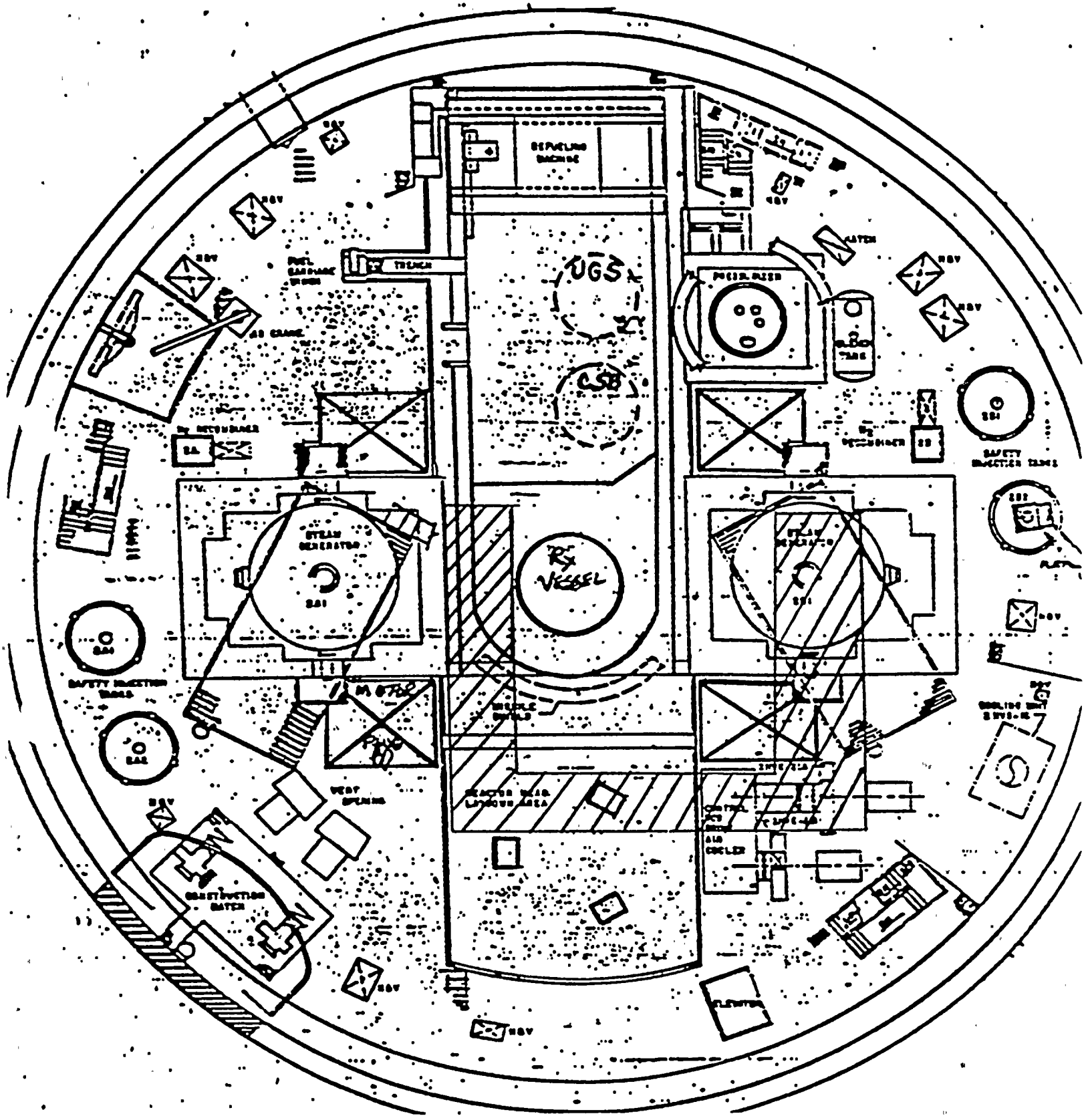
62' ELEVATION REMOVAL WALL
As Referenced in Section 9.3.4
(LOAD PATH)



2

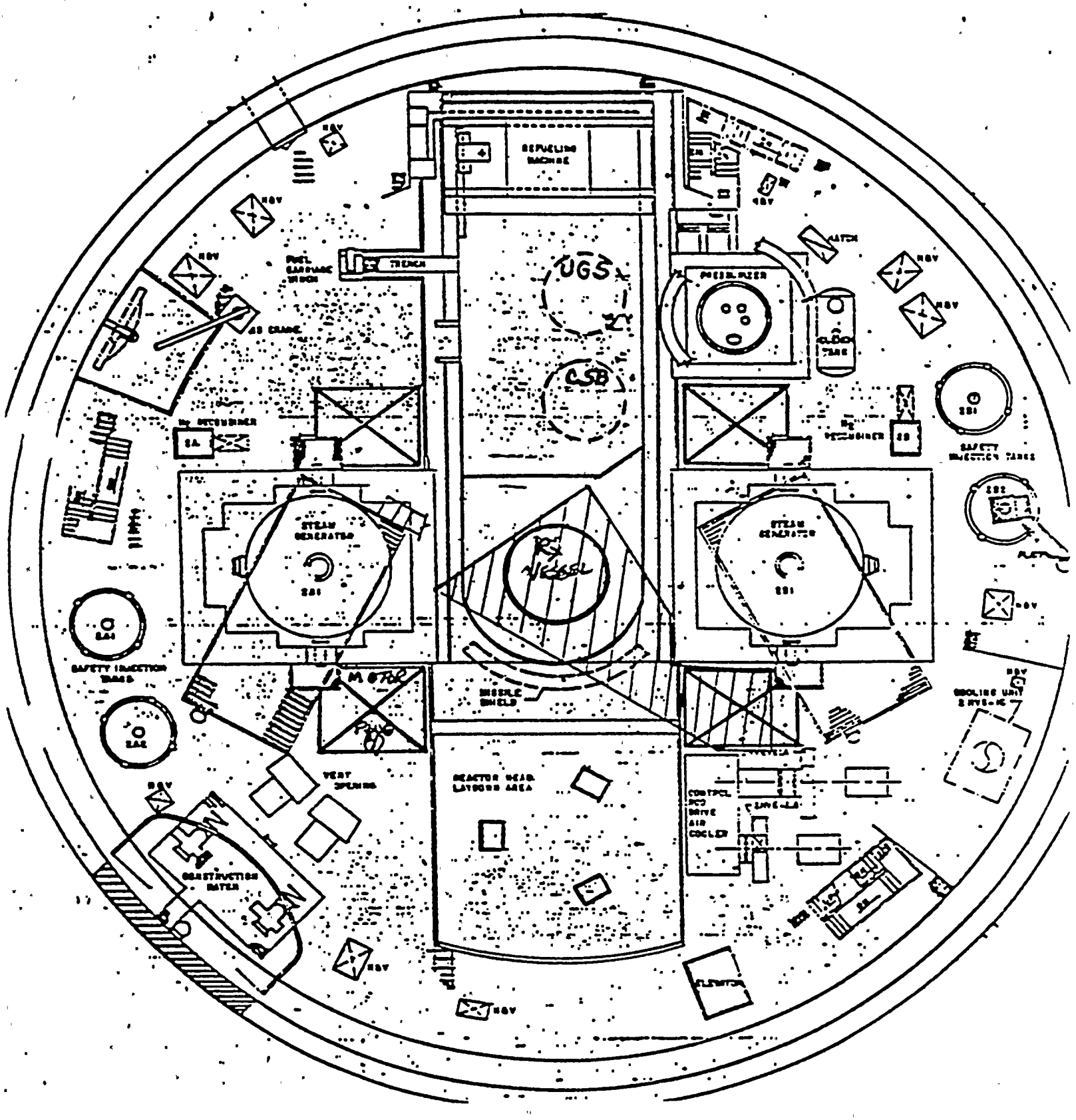
ST. LUCIE UNIT 2
GENERAL MAINTENANCE PROCEDURE NO. 2-M-0036, REVISION 3
REACTOR VESSEL MAINTENANCE - SEQUENCE OF OPERATIONS

APPENDIX A - FIGURE 14
62' ELEVATION REACTOR CABLE TRAY & SUPPORT STEEL
(LOAD PATH)



ST. LUCIE UNIT 2
GENERAL MAINTENANCE PROCEDURE NO. 2-M-0036, REVISION 3
REACTOR VESSEL MAINTENANCE - SEQUENCE OF OPERATIONS

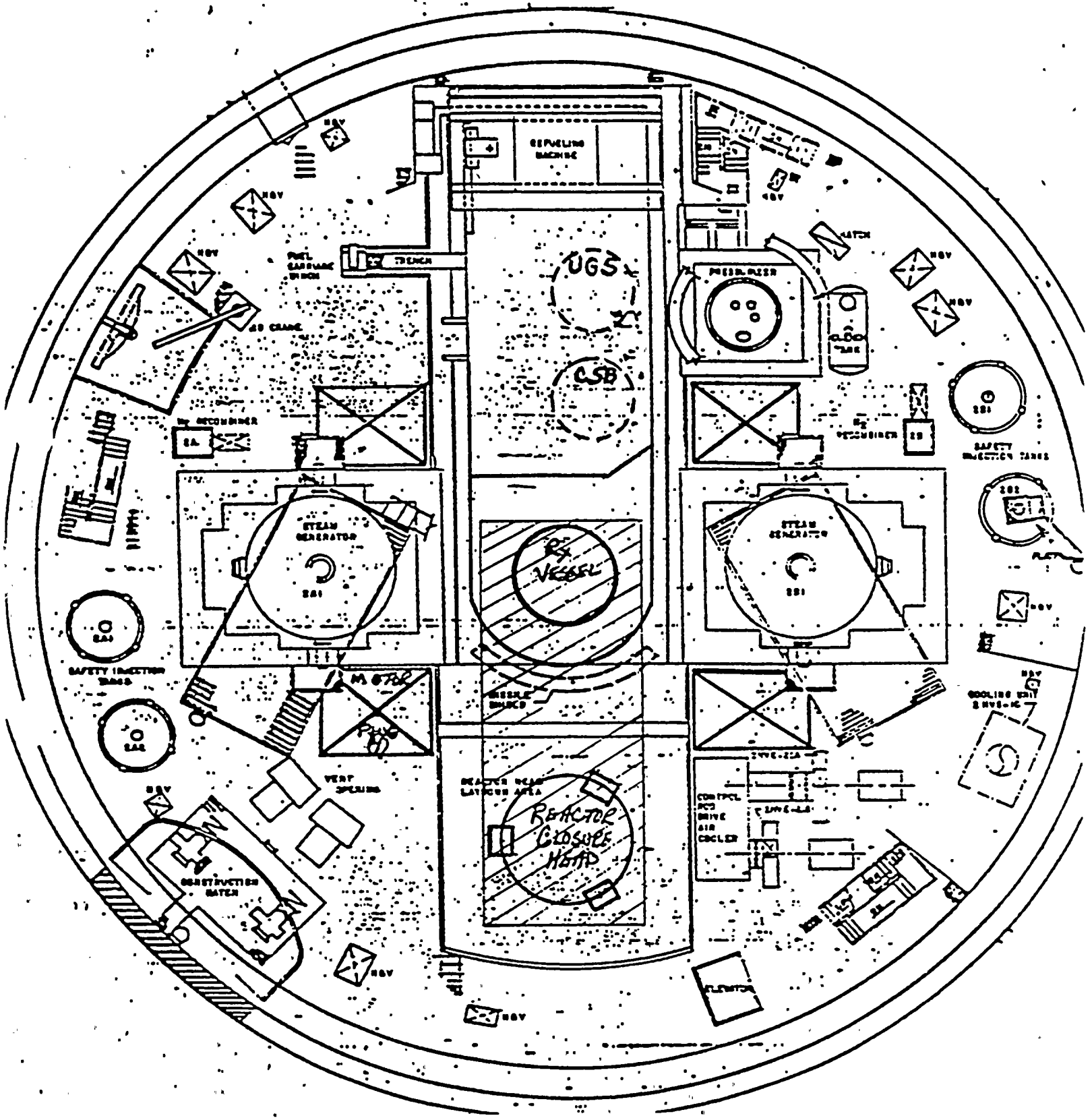
APPENDIX A - FIGURE 15
62' ELEVATION CEDM LOWER HVAC DUCT WORK
(LOAD PATH)



ST. LUCIE UNIT 2
GENERAL MAINTENANCE PROCEDURE NO. 2-M-0036, REVISION 3
REACTOR VESSEL MAINTENANCE - SEQUENCE OF OPERATIONS

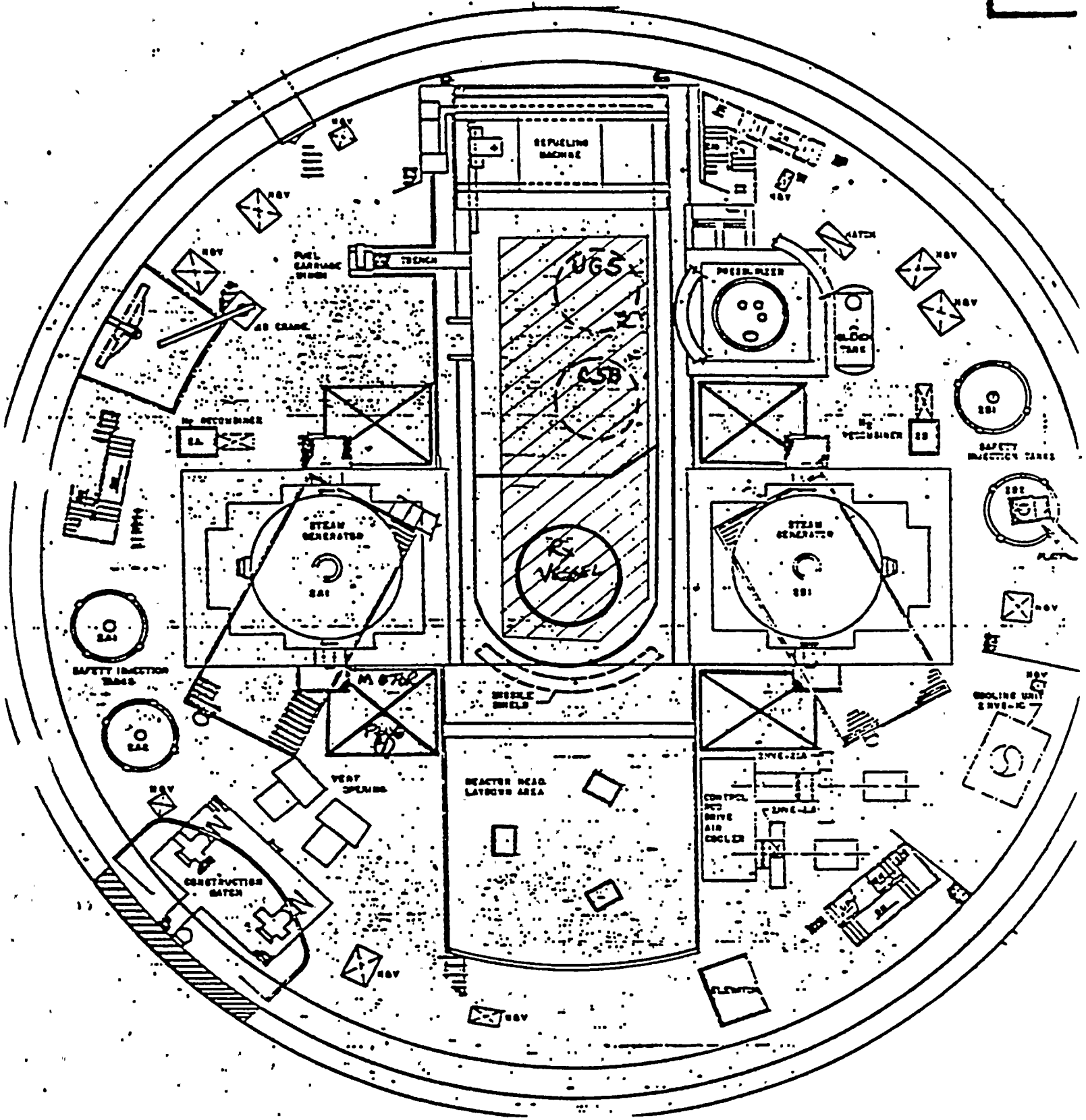
2

APPENDIX A - FIGURE 1b
62' ELEVATION REACTOR CLOSURE HEAD AND REACTOR VESSEL HEAD SHIELDING
(LOAD PATH)



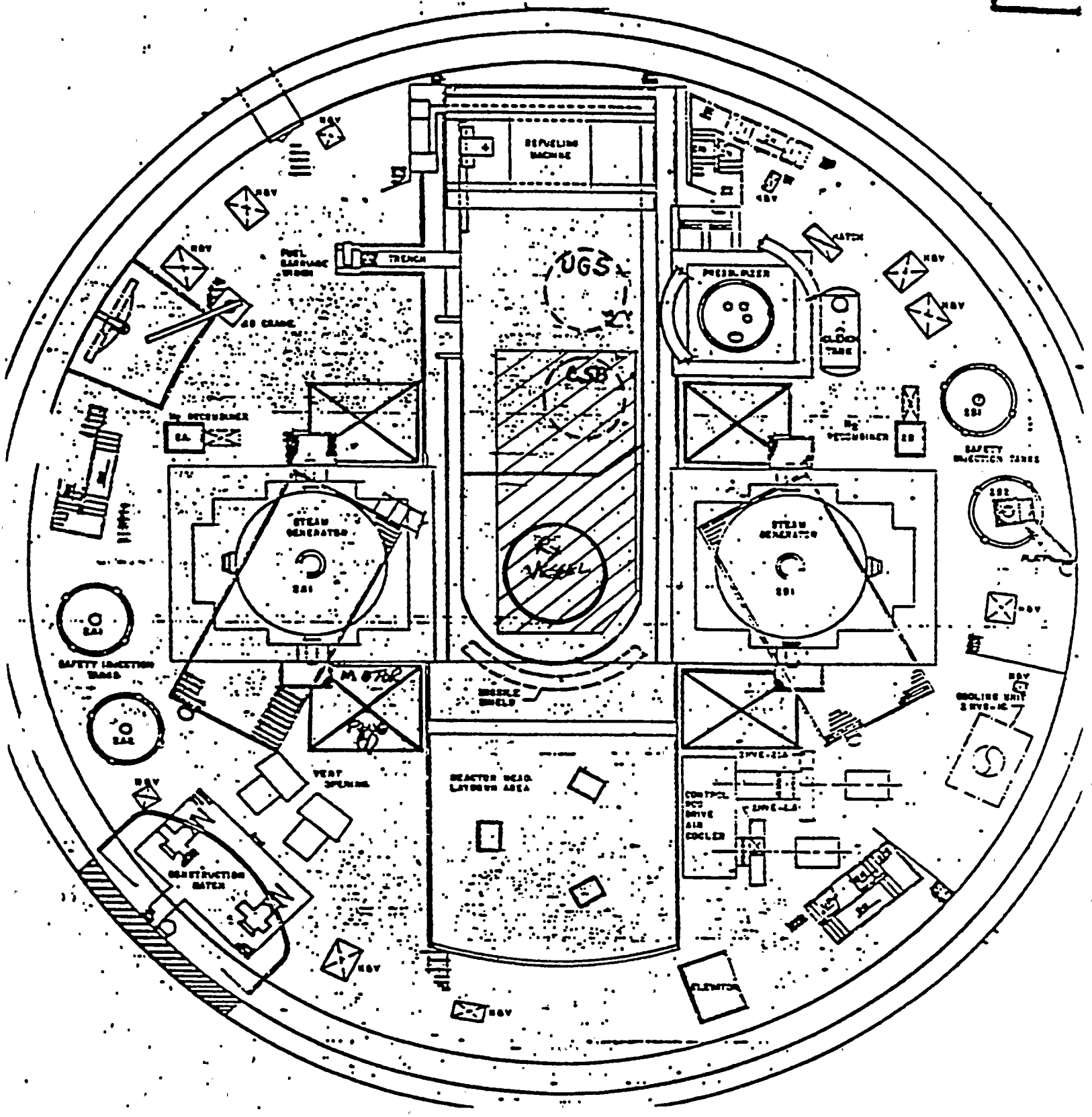
ST. LUCIE UNIT 2
GENERAL MAINTENANCE PROCEDURE NO. 2-M-0036, REVISION 3
REACTOR VESSEL MAINTENANCE - SEQUENCE OF OPERATIONS

APPENDIX A - FIGURE 17
62' ELEVATION REACTOR UPPER GUIDE STRUCTURE AND UPPER GUIDE STRUCTURE LIFT RIG
(LOAD PATH)



ST. LUCIE UNIT 2
GENERAL MAINTENANCE PROCEDURE NO. 2-M-0036, REVISION 3
REACTOR VESSEL MAINTENANCE - SEQUENCE OF OPERATIONS

APPENDIX A - FIGURE 18
62' ELEVATION REACTOR CORE SUPPORT BARREL
(LOAD PATH)



ENCLOSURE 2

Re: St. Lucie Unit 2
Docket No. 50-389
Control of Heavy Loads
License Condition 2.C.12

ANSI N14.6 provides guidelines for special lifting devices for shipping containers weighing 10,000 pounds or more for nuclear materials. The guidelines in this standard were recommended for adoption for the special lifting devices in NUREG 0612.

St. Lucie Unit 2 complies with this standard except for the general cases listed below and the device specific cases provided in the attachment. We have determined that the exceptions noted are acceptable and do not affect the capability of the special lifting devices to safely lift the designated loads.

Section 5.1.3

Verifying by scheduled periodic testing that the special lifting device continues to meet its performance criteria and continues to be capable of reliable and safe performance of its functions, and providing a system that indicates the date of expiration of the validity of the test.

Response:

This testing will be performed in accordance with Section 5.3.1(2).

Section 5.1.6

Maintaining a full record of the history of the special lifting device or component, including documentation of required testing, all uses of the device, any incidents in which the device or any of its parts may have been loaded beyond the loads for which it was qualified, damage, distortion, replacement, repair, alterations, and inspections.

Response:

The records of special lifting devices will be maintained in the plant work order files.

Section 5.3.1

Each special lifting device shall be subjected annually (period not to exceed 14 months) to either of the following:

(1) A load test equal to 150% of the maximum load to which the device is to be subjected. After sustaining the test load for a period not less than 10 minutes, critical areas, including major load-bearing welds, shall be subjected to visual inspection for defects, and all components shall be inspected for permanent deformation.

(2) In cases where surface cleanliness and conditions permit, the load testing may be omitted, and dimensional testing, visual inspection, and nondestructive testing of major load-carrying welds and critical areas in accordance with 5.5 of this standard shall suffice. If the device has not been used for a period exceeding one year, this testing shall not be required. However, in this event, the test shall be applied before returning the device to service.

Response:

In part (2), dimensional testing is not applicable to these lifting devices.

Section 5.3.7

Special lifting devices shall be visually inspected by maintenance or other non-operating personnel at intervals not to exceed 3 months in length for indications of damage or deformation.

Response:

In that maintenance personnel are the prime users of this equipment, quality control personnel will perform this inspection. The test interval will comply with Section 5.3.1(2) due to inaccessability during power operation.

SUMMARY OF NONCOMPLIANCE TO NUREG 0612 - GUIDELINE #4 FOR THE ST. LUCIE UNIT NO. 2 REACTOR VESSEL CLOSURE HEAD LIFT RIG WITH ANSI - N14.6 - 1978

In the following listing, the number on the left identifies the specific section of ANSI N14.6 -1978. To the right of the section number is a brief description of the contents of the section. The first paragraph below the description states the area of nonconformance, and the second paragraph provides a justification for finding the nonconformance acceptable.

3.1.2 Identification of critical components and definition of critical characteristics:

The design specification does not distinguish the critical components.

The critical components are identified in the purchase order.

3.3.5 Retainers fitted for load carrying components which may become inadvertently disengaged:

The lifting shackle pin (pc. 115-13) does not have a cotter pin.

The lifting shackle pin is secured with recessed nuts on both ends. When applying load to these nuts, a spring action results which prevents the nuts from coming loose. Though not specifically called out the recessed nuts should meet the intention of the section.

5.1.4 Provisions for establishing operating procedures:

The instruction manual for the lift rig (C-E Book #71172) does not address maintenance procedures.

Due to the nature of the equipment, it is unlikely to require maintenance.

5.1.5.2 Suitable Markings:

The lift rig does not have a nameplate which lists the load limits.

Since this lift rig is designed and used only for one specific application, a nameplate is not considered necessary.

5.2.1 Load test to 150% and appropriate inspections prior to initial use:

The lift rig was not load tested to 150% of the rated capacity.

The lift rig was load tested to 125% of the rated capacity, which was considered a good test standard at the time the lift rig was fabricated. the structural evaluation of the lift rig demonstrates the lift train components satisfy the allowable stress limits outlined in ANSI N14.6 - 1978. Although retesting to 150% could be accomplished without creating any stress in component parts beyound the allowable limits, it is recommended the lift rig not be 150% load tested. Overstressing in certain local areas of the lift rig or reactor vessel head may occur due to attachment of additional weight necessary to perform a load test. Testing of the lift rig in containment is undesirable because it would require the use of the closure head as part of the lift weight.

SUMMARY OF NONCOMPLIANCE TO NUREG 0612 - GUIDELINE #4 FOR THE ST. LUCIE UNIT NO. 2 UPPER GUIDE STRUCTURE AND CORE SUPPORT BARREL LIFT RIGS WITH ANSI - N14.6 - 1978.

In the following listing, the number on the left identifies the specific section of ANSI N14.6 -1978. To the right of the section number is a brief description of the contents of the section. The first paragraph below the description states the area of non-conformance, and the second paragraph provides a justification for finding the nonconformance acceptable.

3.2.1 Use of stress design factors of 3 for minimum yield and 5 for ultimate:

Areas of nonconformance are summarized in the following tables.

Upper Guide Structure Lift Rig

	Component	Actual Stress	3 x Actual Stress	S_{yield} @ 100°F
A.	Spreader Beam	11,600 psi Bending	34,000 psi	30,000 psi
B.	Column Plate	14,500 psi Bending	43,500 psi	30,000 psi

Core Support Barrel Lift Rig

	Component	Actual Stress	3 x Actual Stress	S_{yield} @ 100°F
A.	Spreader Beam	10,030 psi Bending	30,100 psi	30,000 psi
B.	Column Plate	10,714 psi Bending	32,143 psi	30,000 psi

All nonconforming stresses are less than 1/2 of the yeild stress, which meets the design requirements in effect at the time of fabrication (1976).

5.2.1 Load test to 150% and appropriate inspections prior to initial use:

The lift rig was not load tested to 150% of the rated capacity.

Both lift rigs were load tested to 125% of operating load prior to use, which was considered a good test standard at the time the lift rig was fabricated. Following the load test all structural welds were liquid penetrant inspected prior to shipment. The 125% load test is considered to be adequate to insure the integrity of the equipment provided non-destrucitve testing of structural welds and visual inspection criteria are employed prior to each use.