GPU NUCLEAR

Engineering
Safety/Environmental Determination and 50.59 Review
(Ref. EP-016)

SE No.	SE-000222-002
SE Rev. No.	1
Doc. Rev. No	

Unit Oyster Creek **Document No.** *(if applicable)* ____

Document/Activity Title: Core Plate Wedge Installation

Type of Activity *(modification, procedure, test, experiment, or document:*

1. Does this activity/document involve any potential non-nuclear environmental concern? ☐ Yes ☒ No

   To answer this question, review the Environmental Determination (ED) form. Any YES answer on the ED form requires an Environmental Impact Assessment by Environmental Controls, per 1000-ADM-4500.03. If in doubt, consult Environmental Affairs Department for assistance. If all answers are NO, further environmental review is not required. In any event, continue with Question 2, below.

2. Is this activity/document within the nuclear safety scope of Section 2.0 of this procedure? ☒ Yes ☐ No

   If the answer to question 2 is NO, stop here. This procedure is not applicable and no documentation is required. (If this activity/document is listed in Section IV of 1000-ADM-1291, review on a case-by-case basis to determine applicability). If the answer is YES, proceed to question 3.

3. Is this a new activity/document or a substantive revision to an activity/document? (See Exhibit 3, paragraph 3, this procedure for examples of non-substantive changes.) ☒ Yes ☐ No

   If the answer to question 3 is NO, stop here and complete the approval section below. This procedure is not applicable and no documentation is required. If the answer is YES, proceed to answer all remaining questions. These answers become the Safety/Environmental Determination and 50.59 Review.

4. Does this activity/document have the potential to adversely affect nuclear safety or safe plant operation? ☒ Yes ☐ No

5. Does this activity/document require revision of the system/component description in the FSAR or otherwise require revision of the Technical Specifications or any other part of the SAR? The SAR is defined in Exhibit 3. ☒ Yes ☐ No

6. Does this activity/document require revision of any procedural or operating description in the FSAR or otherwise require revision of the Technical Specifications or any other part of the SAR? ☐ Yes ☒ No

7. Are tests or experiments conducted which are not described in the FSAR, the Technical Specifications or any part of the SAR? ☐ Yes ☒ No

   NOTE: IF ANY OF THE ANSWERS TO QUESTIONS, 4, 5, 6 OR 7 ARE YES, PREPARE A WRITTEN SAFETY EVALUATION FORM.

   If the answers to 4, 5, 6, and 7 are NO, this precludes the occurrence of an Unreviewed Safety Question or Technical Specifications change. Provide a written statement in the space provided below (use back of sheet if necessary) to support the determination, and list the documents you checked.

   No, because N/A

   Documents checked: N/A

8. Are the design criteria as outlined in the TMI-1 SDD-T1-000 Div. I or OC-SDD-000 Div. I Plant Level Criteria affected by, or do they affect the activity/document? ☐ Yes ☒ No

   If YES, indicate how resolved: N/A

APPROVALS *(print name and sign)*

Engineer/Originator	B. Lipford, Key Technologies, Inc. [signature]	Date 8/14/98
Section Manager		Date
Responsible Technical Reviewer	S. D. LESHNOPF [signature: S. D. Leshnoff]	Date 8/18/98
Other Reviewer(s)		Date

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GPU NUCLEAR	**Engineering** Safety Evaluation (Ref. EP-016)	Page 2 of 16 SE No. SE-000222-002 SE Rev. No. 1

Unit: Oyster Creek **Document No. (if applicable)** ______ **Doc. Rev. No.** ______

Document/Activity Title: **Core Plate Wedge Installation**

Type of Activity **Modification**

(Modification, procedure, test, experiment, or document)

This Safety Evaluation provides the basis for determining whether this activity/document involves an Unreviewed Safety Question or impacts on nuclear safety.

Answer the following questions and provide reason(s) for each answer per Exhibit 7. A simple statement of conclusion in itself is not sufficient. The scope and depth of each reason should be commensurate with the safety significance and complexity of the proposed change.

1. Will implementation of the activity/document adversely affect nuclear safety or safe plant operations? ☐ Yes ☒ No

   The following questions comprise the 50.59 considerations and evaluation to determine if an Unreviewed Safety Question exists:

2. Is the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the Safety Analysis Report increased? ☐ Yes ☒ No

3. Is the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report created? ☐ Yes ☒ No

4. Is the margin of safety as defined in the basis for any Technical Specification reduced? ☐ Yes ☒ No

   If any answer above is "yes" an impact on nuclear safety or an Unreviewed Safety Question exists. If an adverse impact on nuclear safety exists revise or redesign. If an unreviewed safety question with no adverse impact on nuclear safety exists forward to Licensing with any additional documentation to support a request for NRC approval prior to implementing approval.

5. Specify whether or not any of the following are required, and if "yes" indicate how it was resolved.

	Yes	EDTTS/PFU/OTHER	No
a. Does the activity/document require an update to the FSAR?	☒	ETTS # 14456	☐

   Explain: The core plate wedges and their safety function should be described in Section 3.9.5 of FSAR.

	Yes	EDTTS/PFU/OTHER	No
b. Does the activity/document require a Technical Specification Amendment?	☐		☒

   Explain: No impact to technical specifications

		Yes	EDTTS/PFU/OTHER	No
c.	Does the activity/document require a revision to the Quality Classification List (QCL)?	☐		☒

Explain: No impact to quality classification list (QCL)

		Yes	EDTTS/PFU/OTHER	No
d.	Other: (If none, use N/A):	☐		☐

Explain: N/A

This form with the reasons for the answers, together with all applicable continuation sheets constitutes a written Safety Evaluation.

List of Effective Pages

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1	~~0~~ 1	11	0		
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4	0	14	0		
5	0	15	0		
6	0	16	0		
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8	0				
9	0				
10	0				

APPROVALS *(print name and sign)*

Engineer/Originator	B. Lipford, Key Technologies, Inc. [signature]	Date 8/14/98
Section Manager		Date
Responsible Technical Reviewer	S. D LESHNOFF [signature]	Date 8/18/98
Independent Safety Reviewer	R.T. ZAK [signature]	Date 8-18-98
Other Reviewer(s)		Date

1. Purpose

This Safety Evaluation discusses the installation of eight (8) core plate wedges at Oyster Creek. The wedges are to be installed in the annulus between the core plate and the shroud.

The core plate wedges are being installed to address potential degraded conditions in the core plate assembly (as discussed in BWRVIP-25, Reference 2.3.4). Specifically, the wedges are being installed to provide redundant lateral support for the core plate assembly to ensure lateral alignment of the core plate and insertion of the control rod drives (CRDs). Lateral support for the core plate is normally provided by 36 hold-down bolts (as well as by alignment cams and jacking screws). Although no damage has been found or reported on these bolts, installation of the wedges will provide a fully redundant support mechanism for the core plate and eliminate GPUN's need to inspect the hold-down bolts (as required by BWRVIP-25, Reference 2.3.4).[1]

Lateral fuel loads (during a seismic event) are currently transmitted from the top of the core plate, through the hold-down bolts, down to the shroud lower ledge, and eventually to the reactor vessel. The wedge installation provides an alternate and fully redundant load path, such that loads are transmitted from the top of the core plate, through the wedges, and directly into the shroud. The wedge installation does not significantly alter the magnitude of the load, merely the local load path by which the loads are transmitted from the core plate to the shroud and vessel.

Additional details regarding the wedge design and installation are provided in References 2.2.1 and 2.3.7. The wedge design is shown on Figure 1-1 of Reference 2.3.2. The proposed installation locations of the wedges are shown on Figure 3-1 of Reference 2.3.2.

2. Systems Affected

2.1 Identification of Affected Systems/Components/Structures

The reactor internals will be affected by this modification (System # 222). Specific components and structures of the internals that will be affected are discussed below.

2.1.1 The core plate wedges are benign, steel components that will rest in the annulus space, between the top of the core plate and the shroud. The wedges provide a structural function only, allowing lateral loads from the core plate to be transmitted directly into the

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[1] Visual inspection of hold-down bolts requires inspections from both above and below the core plate, which would require extensive in-vessel operations. UT equipment for inspecting the bolts does not yet exist.

shroud. Components affected by this installation are limited to the following:

- The proposed core plate wedges,
- The core plate assembly,
- The shroud assembly locally around the wedge installation, and
- The shroud repair hardware.[2]

2.1.2 No other systems or components are affected by this proposed installation.

2.2 Drawings That Show Affected Systems/Components/Structures

2.2.1 GE drawing 105E1960, Reactor Modification Drawing.

2.2.2 GE drawing 706E230, Core Structure, Revision 3.

2.2.3 GE drawing 104R858, Reactor Arrangement and Assembly, Revision 7.

2.2.4 GE Drawing 117D3261, Clamp/Spacer Assembly, Rev. 0.

2.3 Documents That Describe Affected Systems/Components/Structures

2.3.1 Updated Final Safety Analysis Report, Update 10, 4/97, Section 3.9.5, Reactor Pressure Vessel Internals.

2.3.2 MPR 1957, "Design Submittal for Oyster Creek Core Plate Wedge Modification", Revision 0.

2.3.3 EPRI TR-108722, "Top Guide/Core Plate Repair Design Criteria (BWRVIP-50)," May 1998.

2.3.4 EPRI TR-107284, "BWR Core Plate Inspection and Flaw Evaluation Guidelines (BWRVIP-25)," December 1996.

2.3.5 (Not Used).

2.3.6 MPR Report 1566, "Oyster Creek Nuclear Generating Station, Core Shroud Repair, Design Report," October 1994, Revision 1 (Two Volumes).

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[2] The shroud repair hardware is not directly affected by the wedge installation. However, confirmatory structural analyses have been completed to confirm that the design loads on the repair hardware do not significantly change as a result of the wedge installation.

2.3.7 GENE Specification 24A5733, "Oyster Creek Core Plate Wedges Design Specification," Revision 1.

2.3.8 GE Parts List, PL 117D3261, Clamp/Spacer, Rev. 0.

3. Effects on Safety

3.1 Documents That Define Safety Functions of Affected Systems/Components/Structures

(See Documents listed in Section 2.3).

3.2 Description of Safety Functions of Affected Systems/Components/Structures

The reactor internals will be affected by this modification (System # 222). For the specific components and structures of the internals that are affected, a description of their safety functions are discussed below.

3.2.1 The safety functions of the core plate assembly are described in Reference 2.3.3 as listed below:

- The core plate provides lateral positioning for the bottom end of the fuel assemblies, the fuel support castings and top end of control rod guide tubes, thereby providing alignment for control rod insertion during normal operation.
- The core plate provides lateral support at the bottom end of the fuel assemblies, the fuel support castings and the top end of the control rod guide tubes for seismic loads.
- The core plate provides vertical support for two dozen fuel assemblies at peripheral locations.

3.2.2 The core plate also provides positioning and lateral support for the in-core instrumentation, but this function is not safety related. In addition, the core plate provides a boundary which prevents the reactor coolant flow from by-passing the fuel bundles. However, as discussed in BWRVIP-25 (Reference 2.3.4), this is not a safety related function.

3.2.3 The shroud and shroud repair hardware provide safety functions as described in Reference 2.3.6, including:

- Structural support for the fuel and associated internal components, and

- A pressure boundary which prevents reactor coolant flow from by-passing the fuel bundles.

3.3 Description of How Wedge Installation Will Not Adversely Affect Safety Functions

3.3.1 System Description/Performance/Design/Analyses

Each wedge assembly consists of one wedge, one base, one jack bolt, and two jack bolt retainer springs (as shown in References 2.2.4 and 2.3.8). The base of the wedge rests on the shroud lower ledge, with large gaps between the shroud and the core plate (such that the base cannot transmit radial loads). The wedge portion (above the base) sits at the top core plate elevation, machined to close tolerances to provide a tight fit between the top plate and the shroud (installation gaps of approximately .02 to .03 inches).[3] Thus, only the wedge portion will transmit loads between the top core plate and the shroud.

During installation of each wedge, the jack bolt is used to raise and engage the locking arm of the wedge on the existing shield angle attached to the shroud.[4] The jack bolt is rotated until the locking arm contacts the shield angle, and then is lightly torqued to ensure proper engagement. Once the locking arm is engaged, the jack bolt is turned slightly until the two locking springs engage in slots on the lock bolt. This ensures that the assembly cannot loosen and disengage during operation or accident conditions.

The wedges will be installed with long-handled tools from the refuel floor. The installation will not require any modifications or alterations to existing reactor internals. The wedges can also be removed in the future (for whatever reason) without damage to any reactor internals or the wedges themselves.

Structural analyses have been completed for all structural components associated with or affected by the wedges, including the wedges themselves, the core plate assembly, and the shroud

[3] In-reactor measurements will be taken at each proposed wedge site. The wedges will be marked accordingly and "final" machined for each installation site.
[4] The shield angles are existing structural angles, welded to the inside of the shroud to support shield plates at each recirculation line nozzle.

assembly and repair hardware. Analysis criteria, design loading conditions, and results are documented in Reference 2.3.2, and are consistent with current licensing requirements. A brief summary of this effort is provided below:

- Analysis of Wedge Hardware

  The load carrying capability of the wedges has been analyzed and is sufficient to maintain the lateral position of the core plate. Design stresses in the wedges are relatively low and are below allowable limits (per ASME, Section III, Subsection NG).

- Shroud Assembly (with intact and flawed welds)

  The loads on the shroud were evaluated for intact and flawed shroud conditions (consistent with current design basis requirements). The flawed conditions evaluated included the case with all circumferential and vertical welds in the H5/H6A shroud section assumed to be completely failed, and the cases were only the vertical welds in the H5/H6A were failed (i.e., circumferential welds intact).

  The shroud and shroud tie rod modification radial restraints are capable of transmitting the loads between the core plate wedges and reactor vessel. The stresses in the shroud resulting from the modification are within the stress allowables of Section III, Subsection NB of the ASME Boiler and Pressure Vessel Code.

- Core Plate Assembly

  Loads on the core plate were evaluated for intact shroud conditions, which result in the highest fuel shear loads being transmitted through the core plate structure.

  The core plate assembly is capable of transmitting design loads through the core plate and into the shroud. Calculated stresses within the core plate are below allowable limits (per ASME, Section III, Subsection NG). Margins against fatigue and buckling were also evaluated and found to be acceptable.

Additional design parameters and system performance issues have been evaluated as noted below:

- The impact on plant operations with the core plate wedges installed was evaluated. These evaluations showed that there would be no impact on plant operations. The parameters considered in the evaluation include core plate displacement and core by-pass flow. Section 6 of Reference 2.3.2 provides additional information on these evaluations.

- The proposed wedge modification is not included under the ASME Boiler and Pressure Vessel Code, Section XI, but is developed as an alternative to the requirements of the ASME code pursuant to 10CFR50.55a(a)(3). As such, this proposed modification is being submitted to the NRC for their approval.

- The modification satisfies the requirements specified in the design specification (Reference 2.3.7) and the criteria specified in BWRVIP-50, Top Guide/Core Plate Repair Design Criteria (Reference 2.3.3).

- Design features have been included to preclude loose parts. Dual retaining springs are used to ensure that the jack bolt does not loosen. The springs maintain the jack bolt position under the existing shield angle to preclude any loose parts from the wedge. Failure of the wedge assembly (which could result in a loose parts concern) is not considered likely due to:

  - Low/negligible operating stresses in the wedge components, and
  - Dual locking springs that ensure wedge retention and position.

- A postulated failure of a wedge assembly is not considered to have an adverse affect on plant operation or safety. The wedges are installed at the core plate periphery in a low-flow regime. Failure of a wedge during normal operation is expected to result in the wedge or its piece parts falling into the annulus between the core plate and shroud. This would not create safety or operating concerns for the reactor or other plant systems.

- The potential for flow induced vibration is not considered a concern for this design. The proposed wedges will be installed in the annulus between the shroud and core plate. Flow in this region is low and should not affect the wedge design.

- The proposed wedges are benign steel components, constrained by mechanical interference and locking devices. They are not considered susceptible to degradation from radiation.

- As discussed in Reference 2.3.2, confirmatory seismic analyses have been completed to quantify any changes in fuel loads and displacements that may result due to the wedge installation. Results of this work indicate that the changes to fuel loads and displacements are minimal and acceptable.

- The wedge installation has been evaluated for a design life up to 40 years, such that the modification will remain functional for the plant's remaining life. No maintenance is required or expected, although inspections at specified intervals will be performed to ensure the design's proper operation and integrity.

3.3.2 Quality Standards

The wedges are nuclear safety related components and the design, fabrication, installation and other related activities are controlled by a quality assurance program which satisfies 10CFR50 Appendix B to assure safe and reliable components. 10CFR21 (Reporting of Defects and Noncompliances) also applies.

3.3.3 Natural Phenomenon Protection

The wedges are installed within the reactor and are protected against natural phenomenon. Design loading conditions included consideration of seismic loads.

3.3.4 Materials/Fabrication/Compatibility

The wedges are fabricated entirely from Type 316 stainless steel and Alloy X-750. There is no welding required or allowed during fabrication or installation.

The Alloy X-750 (Ni-Cr-Fe) material is initially annealed at 1975 ± 25°F. After machining the material is air cool and age hardened (at 1300° ± 15° F) to increase its strength. The annealing and age hardening processes used are the same as those used on the improved jet pump beams and shroud repairs. IGA testing is performed or a minimum of 0.030 inches of material is removed after the last exposure to acid pickling or high temperature annealing. This material is certified to ASTM B635, Grade UNS N07750. Cobalt content is limited to a maximum of 0.10%. Alloy X-750 is resistant to IGSCC at the very low stress levels the components will experience during operation.

The Type 316 stainless steel material is certified to ASTM standards and has a carbon content less than 0.020%. The material was annealed at 2000 ± 100°F followed by quenching in circulating water to a temperature below 400°F, or other equivalent procedure. All material was tested for evidence of sensitization. IGA testing was performed or a minimum of 0.030 inches of material was removed after the last exposure to acid pickling or high temperature annealing.

Fabrication processes are controlled to minimize surface work hardening. Where a process results in significant work hardening, the hardened material has been removed. Cleaning and cleanliness, and shipping and handling are strictly controlled to assure uncontaminated components are installed. Welding for any reason is prohibited.

Material forgings are ultrasonically examined. All accessible final surfaces are liquid penetrant examined. All NDE personnel are certified.

3.3.5 Installation

Strict care will be taken to minimize the potential for loose parts within the RPV. Parts and tooling are to be logged and controlled per plant tool control procedures prior to installation in the vessel. Tooling will be checked for loose parts prior to installation and verified still intact upon removal. Protective covers shall be located over core support plate openings as required as a loose parts precaution.

Strict care will be taken to protect plant components during installation. Personnel are, or will be, trained on the installation techniques necessary to protect reactor components (using full-scale mockups). All lifting and handling equipment is designed in accordance with NUREG-0612 requirements for Special Lifting Devices and is load tested at 300% of the loads being lifted. Certifications are maintained in the Project Quality Assurance file.

Strict care will be taken to assure the safety of all personnel. All personnel working in hazardous locations will be under constant surveillance by other personnel. Radiation control practices will be used to reduce exposure to workers to levels which are as low as reasonably achievable (ALARA). Care will be taken to keep contamination of all articles which must enter and leave contaminated zones to a minimum.

Visual exams will be completed prior to installation of the wedges to confirm the following:

- That each installation site is free of obstructions and debris, and
- That the core plate (top plate) and shroud are intact and structurally sound.

Since the wedge design imparts localized loads and stresses into the core plate and shroud, the inspections of the core plate and shroud will be limited to the immediate area around each installation site. The shroud and core plate will not be examined in their entirety.

As part of the premodification inspections, in-reactor measurements will be taken to determine the as-built gaps between the core plate and the shroud. These measurements will be used to determine the final wedge dimensions, specific to each installation site.[5] Each wedge will be labeled and designated to a specific installation location. The final installation gap between the wedges, core plate and shroud will be approximately .02 to .03 inches.

3.3.6 Inspections Prior to RPV Reassembly

Prior to vessel reassembly, visual inspections will be performed to verify the installation of each wedge. Specifically, inspections will confirm that:

- Each wedge is properly located, oriented and positioned,
- The retainer springs are properly engaged on the jacking bolt,
- The interference fit with the shielding support angles has been properly established, and
- All miscellaneous installation tooling and support equipment/hardware have been removed from the vessel (a foreign material exclusion program will be used to monitor materials in the vessel).

Procedures will be used to ensure that all inspection activities are properly completed.

3.3.7 Other Potential Safety Issues

Due to the nature of this modification, other potential safety issues do not apply, including:

- Fire protection,
- Environmental qualification,
- Missile protection,
- High energy line pipe breaks or internal flooding,

[5] The gap at each installation site is expected to differ slightly. The wedges were procured in "rough" machined form. The as-built gap information is to be used to "final" machine each wedge to fit at its designated site. The measurement equipment will be qualified and traceable to NIST.

- Electrical separation,
- Electrical isolation,
- Electrical loading impact on emergency diesel generators and safety buses,
- Single failure criteria,
- Separation criteria,
- Containment isolation, and
- Water infringement due to water type fire suppression systems.

3.4 The installation of the core plate wedges will not affect the margin of safety as defined in the UFSAR. The core plate wedge modification provides a fully redundant means to support and maintain the lateral position of the core plate assembly. It does not detract or lessen any existing structural support already provided for the core plate (e.g., the hold-down bolts). The core plate wedge design requirements are consistent with the existing UFSAR and calculated stresses are below allowable limits (per ASME, Section III, Subsections NB and NG). Thus, margins of safety are not reduced or adversely affected.

3.5 Nuclear safety of safe plant operations will not be adversely affected by the installation of the core plate wedges. No design allowable or licensed acceptance limit for the plant will be exceeded or changed as a result of this modification, nor will any safety analysis referenced in the UFSAR be changed. Additionally, the wedges are benign steel components that will in no way affect safe plant operations.

3.6 The installation of the core plate wedges will not increase the probability of occurrence or the consequences of an accident previously analyzed. The core plate wedges are being installed as a proactive measure to address future potential that some core plate structural components might degrade, and to eliminate the need for inspections that would be difficult to perform. The core plate wedges are installed between the core plate and shroud and are positively locked into position. They have no moving parts and provide a redundant load path for the lateral loads. As such, the wedges provide additional assurance that lateral core plate displacements will be limited to acceptable values. Therefore, the wedge installation will not increase the probability of an accident to occur, nor the consequences of an accident, if one does occur.

3.7 Installation of the core plate wedges will not increase the probability of occurrence or consequences of a malfunction of equipment important to safety previously evaluated in the SAR. The core plate wedges are static (non-moving) components installed between the core plate and the shroud. Their installation provides a redundant load path for lateral loads. The core plate wedges are designed and constructed as safety related components. They will interface with other components important to safety, including the core plate assembly, the shroud, and the shroud repair hardware. Structural analyses, displacement evaluations, and by-pass leakage analyses have been completed, which demonstrate that all safety components that interface with the wedges will not be adversely affected. As a result, the wedge installation will not adversely impact equipment important to safety.

3.8 The installation of the core plate wedges does not create a possibility for an accident or malfunction of a different type than previously identified in the SAR. The core plate wedges were designed such that they meet all applicable UFSAR criteria. The core plate wedges provide an additional load path for lateral constraint of the core plate. The wedges are fabricated from stress corrosion resistant material and have low applied stresses during normal operation. There is no welding in the construction or installation of the wedges. All parts are locked in place by means of mechanical devices. Installation and inspection procedures will ensure proper installation of the wedges. As such, the possibility of a different type of accident or malfunction is not created. Functions of other safety related systems are not affected.

3.9 The installation of the core plate wedges will not decrease the margin of safety as defined in the bases of any Technical Specification. The Technical Specifications and their bases do not address or discuss the core plate or wedges and are not affected by the installation of the wedges. No safety analysis referenced in the bases will change. No design allowable or licensed acceptance limit for the plant will be exceeded as a result of this modification.

3.10 The installation of the core plate wedges will not violate any plant Technical Specification or licensing requirement or regulations. The Technical Specifications and their bases are not affected by the installation of the wedges. No safety analyses referenced in the bases will change, nor will any design allowable or licensed acceptance limit, or requirement/commitment be altered or exceed as a result of this modification. The core plate wedges are designed and constructed as safety related components.

3.11 The installation of the core plate wedges will not involve a radiological concern. The core plate wedges are benign steel components installed in the annulus between the core plate and the shroud. They are constrained by mechanical interference and mechanical locking devices. The design is not considered susceptible to radiation degradation.

3.12 The installation of the core plate wedges will require a change to the UFSAR. The core plate wedges and their safety function will be described in Section 3.9.5 of the UFSAR (Reference 2.3.1).

4.0 Conclusion

The core plate wedges are being installed to address potential degraded conditions of core plate components which could affect core plate lateral alignment and CRD insertion. As summarized in this safety evaluation, the proposed wedges:

- Satisfy all design requirements as specified in the UFSAR and other applicable documents,

- Are consistent with plant licensing bases and ensure that the core plate will be maintained in an acceptable lateral position (for CRD insertion),

- Satisfy all operational and safety functions, even if the existing core plate lateral restraint components degrade (i.e., alignment cams, hold-down bolts, or jacking screws), and

- Maintain the safety margin and functional capability of the core plate and shroud (i.e., to withstand the localized wedge loading conditions).

As a result of the above, it has been demonstrated that the proposed core plate wedge installation:

1) Does not reduce the margin of safety as defined in the SAR or in the bases of any Technical Specification,
2) Will not increase the probability of occurrence or the consequences of:

    - An accident previously evaluated in the SAR,
    - A malfunction of equipment important to safety, or
    - An accident or malfunction not previously identified,

3) Will not violate the plant technical specifications or other licensing requirements or regulations, and
4) Will not involve radiological safety concerns.

As a result, installation of the core plate wedges does not involve an unreviewed safety question and will not adversely affect nuclear safety or safe plant operations.

GPU NUCLEAR

DOCUMENT NO.
SE-000222-002

TITLE **Core Plate Wedge Installation**

REV	SUMMARY OF CHANGE	APPROVAL	DATE
1	• Revised Section 3.3.5 regarding installation of fuel cell covers. The revision was made to be consistent with the vendor's installation specification (GENE Document 24A5735). • Also, added "Summary of Change" page and made minor editorial changes. The changes made in this revision do not affect the conclusions made within this safety evaluation.	[signature] S. D. Leshnoff (RTR) [signature] ISR	9-7-98 9/11/98 9-11-98

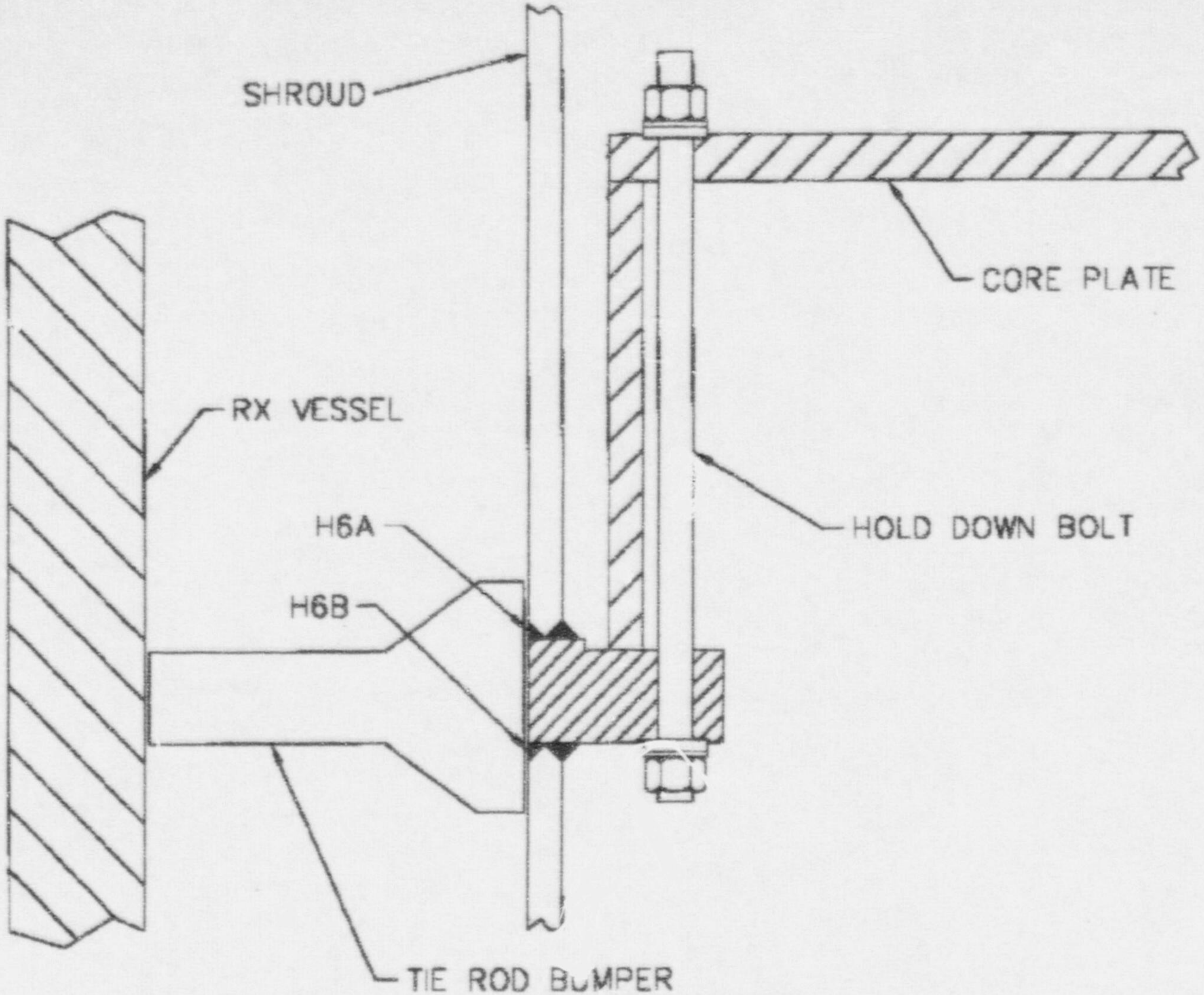

FIGURE 1
CORE PLATE CONFIGURATION
(WITHOUT WEDGES)

LES
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1-9-98.0

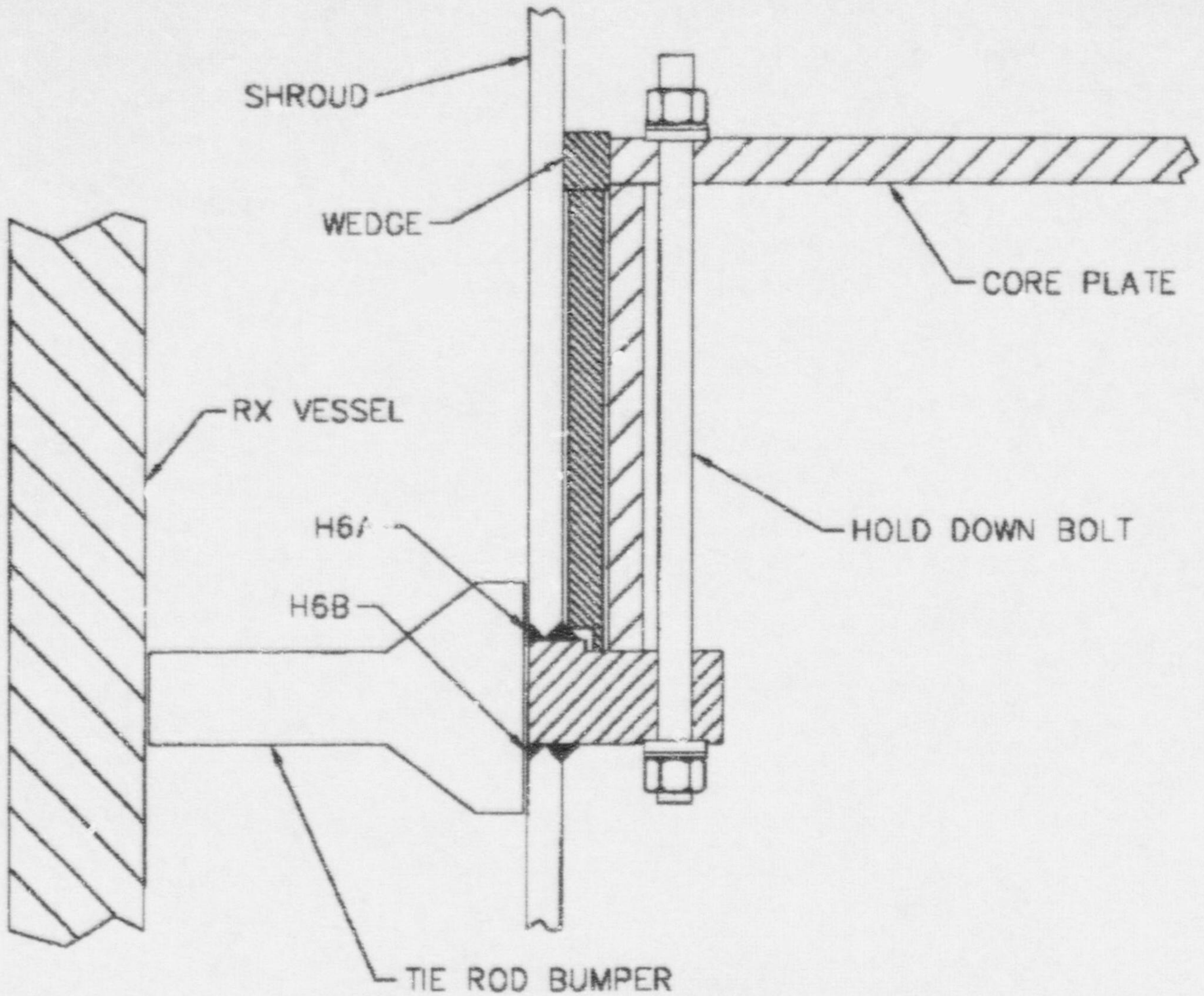

FIGURE 3
CORE PLATE CONFIGURATION
(WITH WEDGES)

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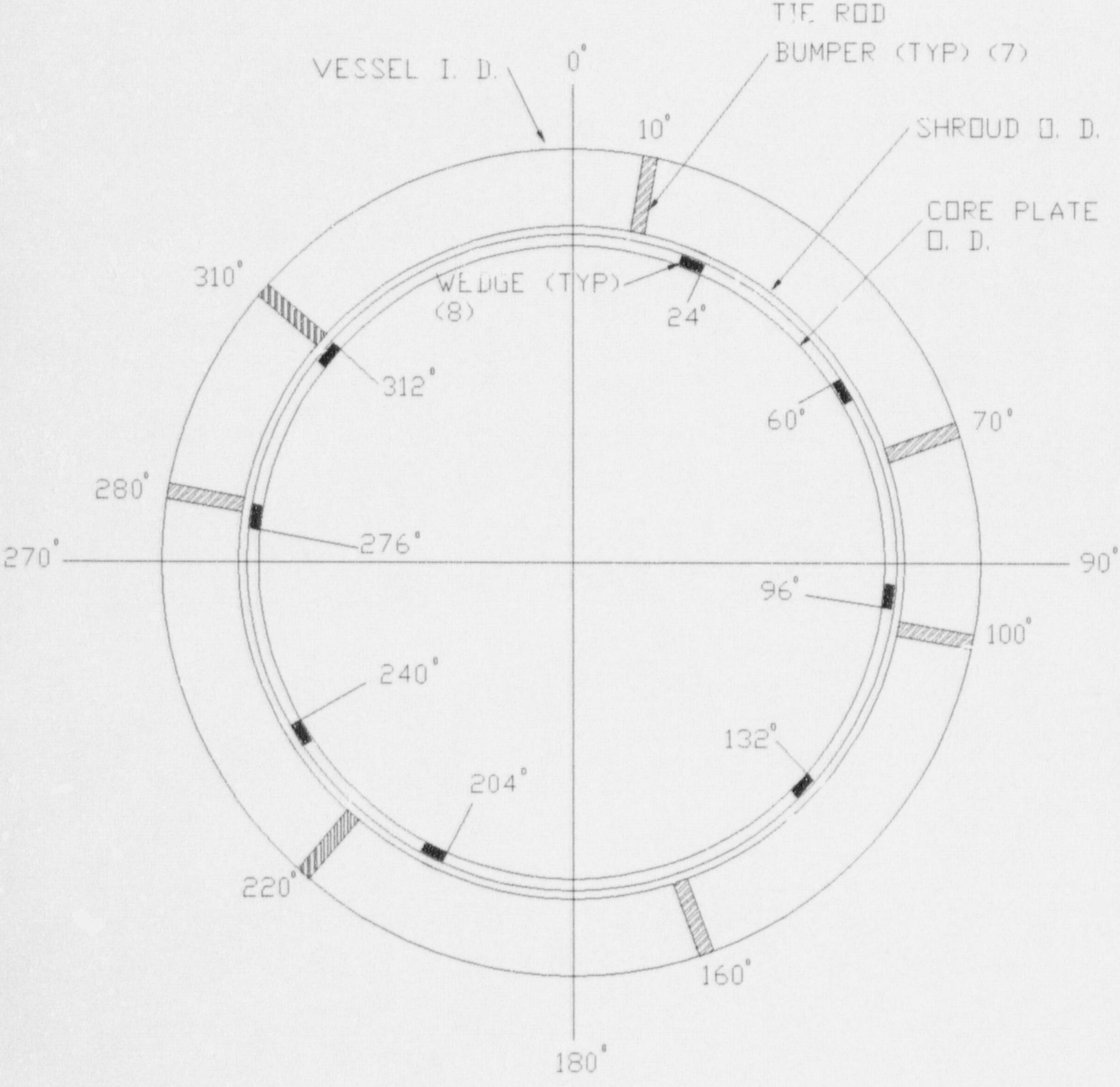
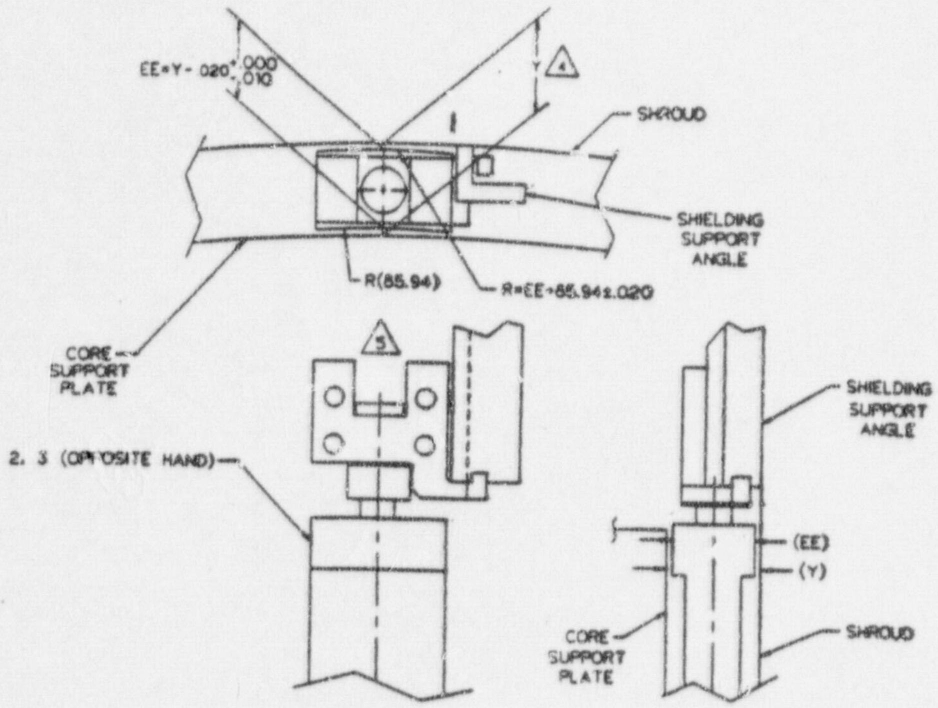
1-9-98,0



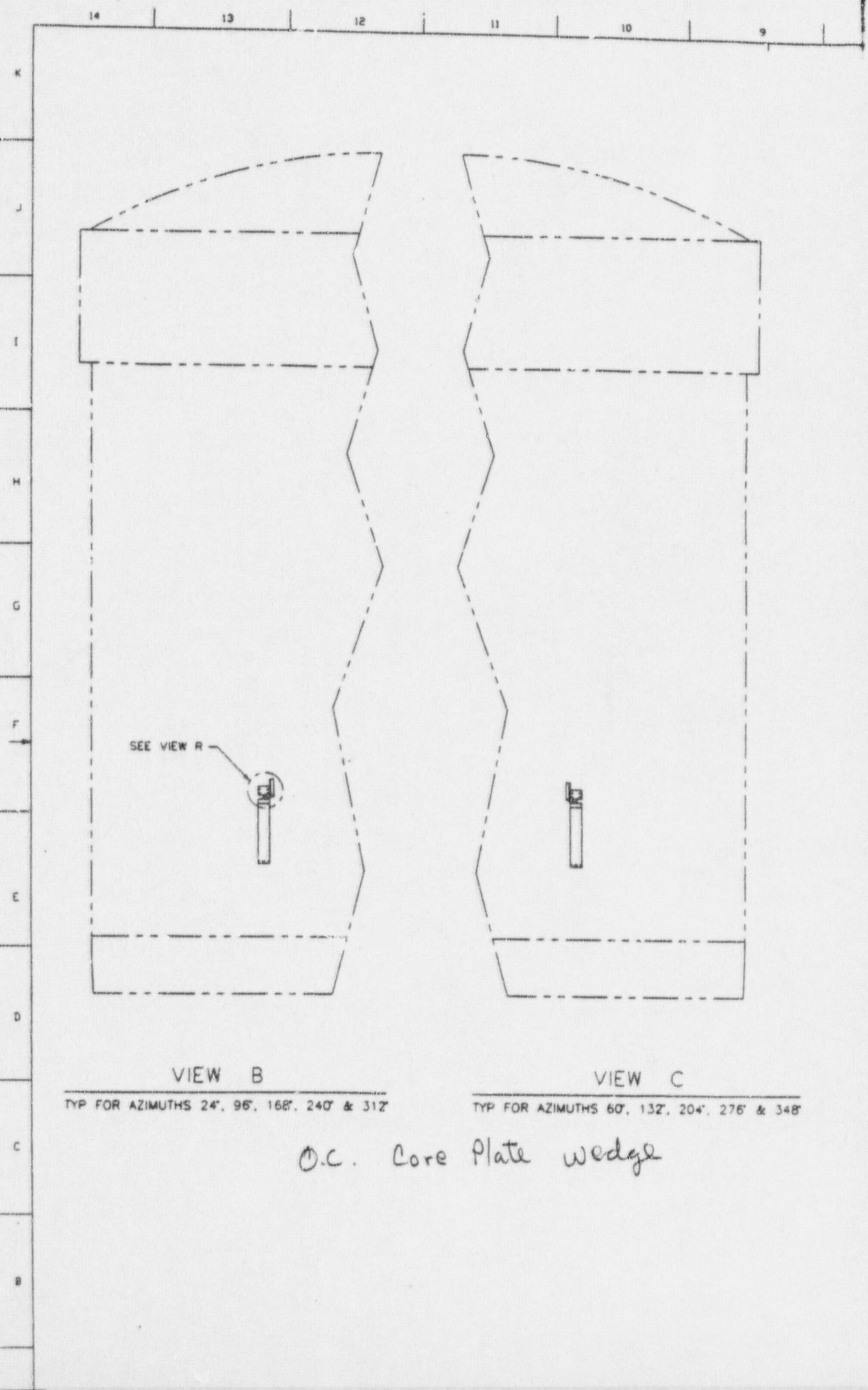
O. C. CORE PLATE WEDGES
LOCATIONS



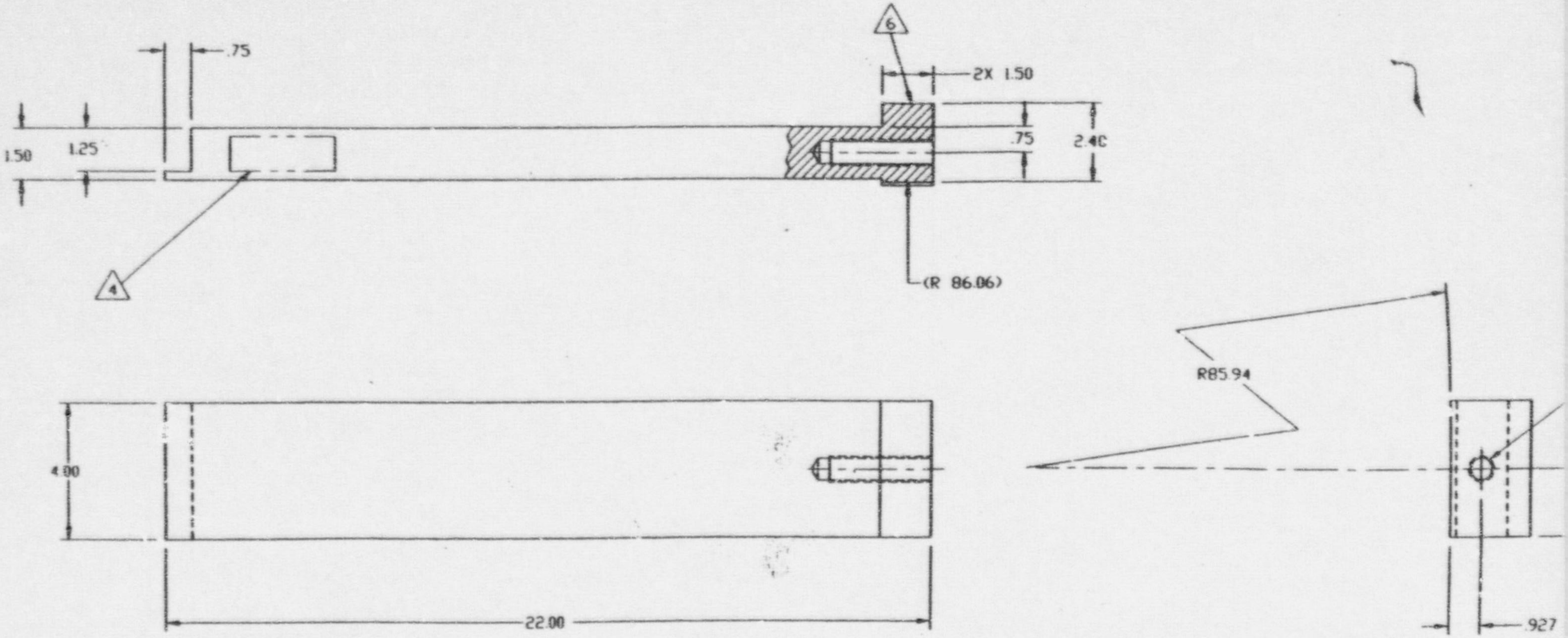
VIEW R

	AZIMUTH	ITEM # -	VIEW R	AS MEASURED Y	EE=Y-.020 +.000/-.010	AS MACHINED EE	SERIAL #
1	24°	2	VIEW R				
2	30°	3	VIEW R				
3	96°	2	VIEW R				
4	132°	3	VIEW R				
	~~168°~~	~~2~~	~~VIEW R~~				
5	204°	3	VIEW R				
6	240°	2	VIEW R				
7	276°	3	VIEW R				
8	312°	2	VIEW R				
	~~348°~~	~~3~~	~~VIEW R~~				

OC CORE PLATE WEDGE



O.C. Core Plate wedge



(1) MATL: ASTM A182 F316 OR ASTM A479 OR A240 TP316

O.C

CORE PLATE

WEDGE

OVERSIZE

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