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AUTH.NAME AUTHOR AFFILIATION
DISE,D.P. Niagara Mohawk Power Corp.
RECIP.NAME RECIPIENT AFFILIATION
EISENHUT,D.G. Division of Licensing

SUBJECT: Submits response to NRC 820412 request for addl info re reactor decontamination,mitgation of worker radiation doses, removal & replacement of safe ends, & justification for resuming operation.

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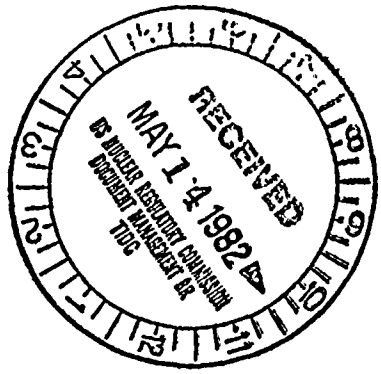
NIAGARA MOHAWK

NIAGARA MOHAWK POWER CORPORATION/300 ERIE BOULEVARD WEST, SYRACUSE, N.Y. 13202/TELEPHONE (315) 474-1511

May 11, 1982



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

Re: Nine Mile Point Unit 1
Docket No. 50-220
DPR-63

Dear Mr. Eisenhut:

Your letter of April 21, 1982 requested that Niagara Mohawk provide plans and schedules for 1) reactor decontamination, 2) mitigation of worker radiation doses, 3) removal and replacement of the safe ends, and 4) justification for resuming operation. This letter is in response to that request. The following is a discussion of each of these items:

1) Reactor Decontamination

Niagara Mohawk plans a two phase decontamination of the recirculation loops. The first phase (outlet nozzles to the pump discharge valves) was described in our letter of April 30, 1982. The second phase will address decontamination from the pump suction valves through the vessel inlet nozzles. In order to accomplish the phase II decontamination, an inflatable seal plug, which is being designed at this time, is planned to be utilized. The decontamination process to be used will be similar to that described in our April 30, 1982 letter. When the phase II seal plug design and all other details have been finalized, Niagara Mohawk will submit them for your review.

2) Mitigation of Worker Radiation Doses

Mitigation of radiation doses is provided by 1) effective decontamination, 2) maximum justifiable shielding and 3) overall ALARA control. The decontamination process described above, which is a prime mitigation tool, eliminates as much radiation source as is reasonably achievable. Shielding designs, both internal and external, were based upon providing at least equivalent shielding to that which was there from the water prior to cutting. All other specialty shielding (i.e, lead blankets over piping, etc.) will be reviewed to assure maximum efficiency. A team of Niagara Mohawk and contractor personnel have been assigned the responsibility of maintaining doses as low as reasonably achievable throughout the project. Sufficient workers will be trained and utilized to ensure that individual radiation doses will be minimized.

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3) Removal and Replacement of Safe Ends

In 1978, Niagara Mohawk realized the potential for intergranular stress corrosion cracking in the furnace sensitized safe ends. Therefore, a contingency project was developed for recirculation safe end replacement. That contingency project consisted of developing a replacement specification and draft procedures and the procurement of certain hardware. A portion of the software must now be updated to reflect new techniques, such as automatic welding. When the procedures have been finalized, they will be provided to the Nuclear Regulatory Commission for information.

The planned sequence for removal and replacement of the recirculation outlet nozzle safe ends is as follows:

1) Install shield curtains and nozzle shielding - Figure 1
2) Support the piping system
3) Make two cuts on the outlet elbow - Figure 2
4) Install internal nozzle shielding - Figure 3
5) Remove internal shielding
6) Install new elbow with safe end attached - Figure 4

Due to continued ALARA and/or technical considerations, there may be revisions to this sequence. For example, the safe end may be welded to the nozzle prior to installing the elbow, rather than welding the safe end to the elbow outside of the drywell.

The planned sequence for removal and replacement of the recirculation inlet nozzle safe ends is different than the outlet nozzle safe ends, due to geometry. Following is a list of that planned sequence.

1) Install external shielding - Figure 5
2) Cut and remove the inlet elbow - Figure 6
3) Install shield plug - Figure 7
4) Remove the spool piece - Figure 8
5) Install new spool piece - Figure 9
6) Remove the shield plug - Figure 10
7) Install a new elbow - Figure 11

As mentioned in the previous discussion of the outlet nozzle safe ends, this sequence is also subject to change due to ALARA and/or technical considerations.

4) Justification for Continued Operation

Furnace sensitized material cracking has been experienced throughout the industry since the early 1970's. At Nine Mile Point Unit 1, 24 of the original 34 furnace sensitized safe ends on the reactor vessel have been replaced. Unresolved safety issue A-42 has addressed intergranular stress corrosion cracking and determined that this does not create a significant safety hazard to the public. However, it is advantageous to minimize the effects on piping system and thus improve plant reliability.

All replacement recirculation material (i.e., safe end, elbows, and spool pieces) will be 316 nuclear grade stainless steel or equivalent. This material has proven to be the most resistant to intergranular stress corrosion cracking. Therefore, all five recirculation systems will be more crack resistant than originally constructed. This is consistent with NUREG 0313, Rev. 1.

In addition, the riser to elbow weld will be a heat sink weld. The procedure is currently being qualified.

Attached figure 12 shows the schedule plan for replacing these safe ends. As indicated, the first decision point is relative to decontamination, which was addressed in our letter of April 30, 1982.

Very truly yours,

NIAGARA MOHAWK POWER CORPORATION

D. P. Dise
Vice President Engineering

GJG:ja

State of New York)
ss:
County of Onondaga)

DONALD P. DISE, being duly sworn, says:

I am Vice President - Engineering of Niagara Mohawk Power Corporation. I have read the foregoing letter and the facts contained in the letter are true to the best of my knowledge, information and belief.

Donald P. Dise

Sworn to before me on
this 11 day of May 1982

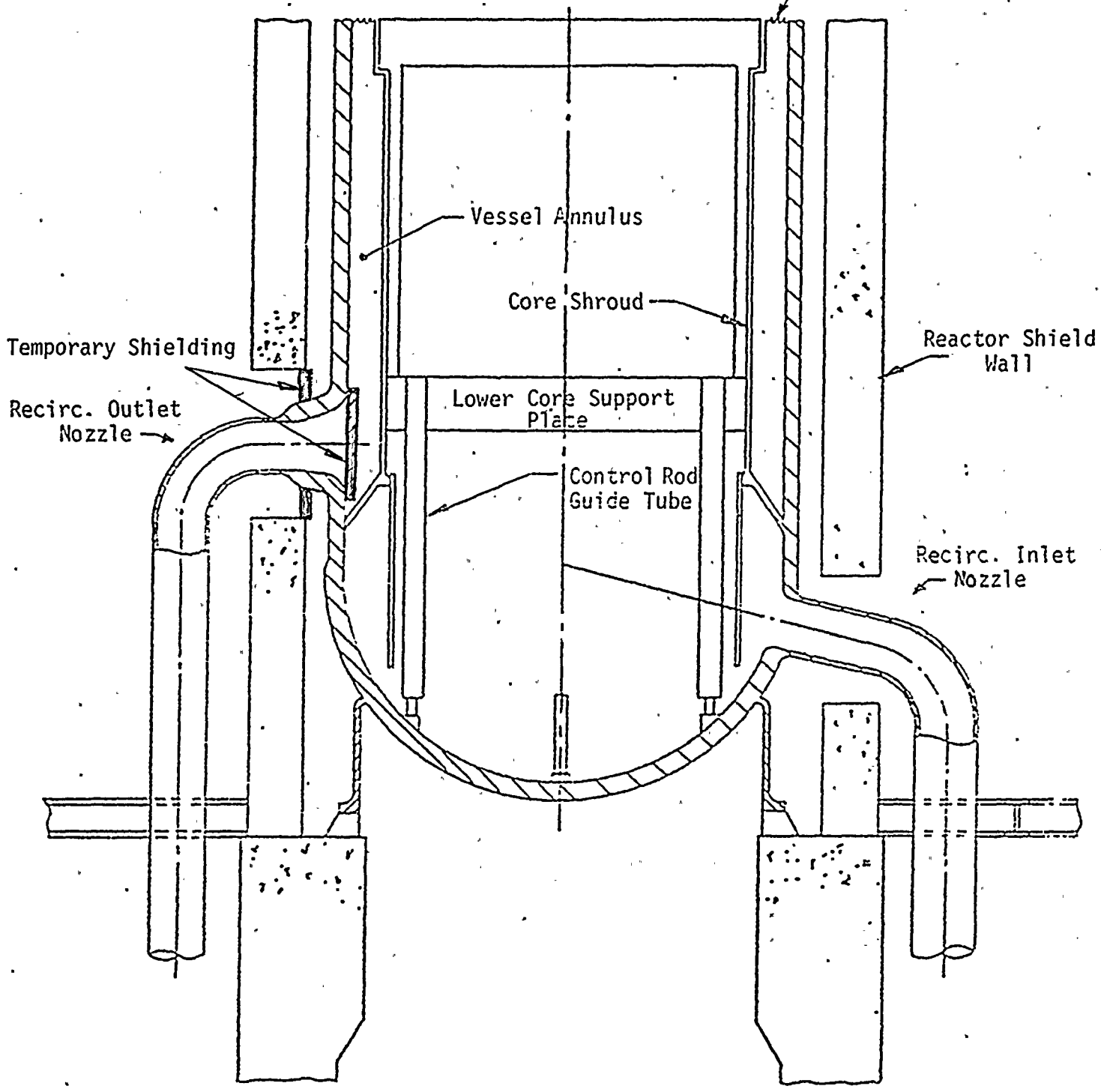
Cynthia A. Petta
Notary Public

CYNTHIA A. PETTA
Notary Public in the State of New York
Qualified in Onondaga Co. No. 4682225
My Commission Expires March 30, 19 84

OUTLET

Figure 1

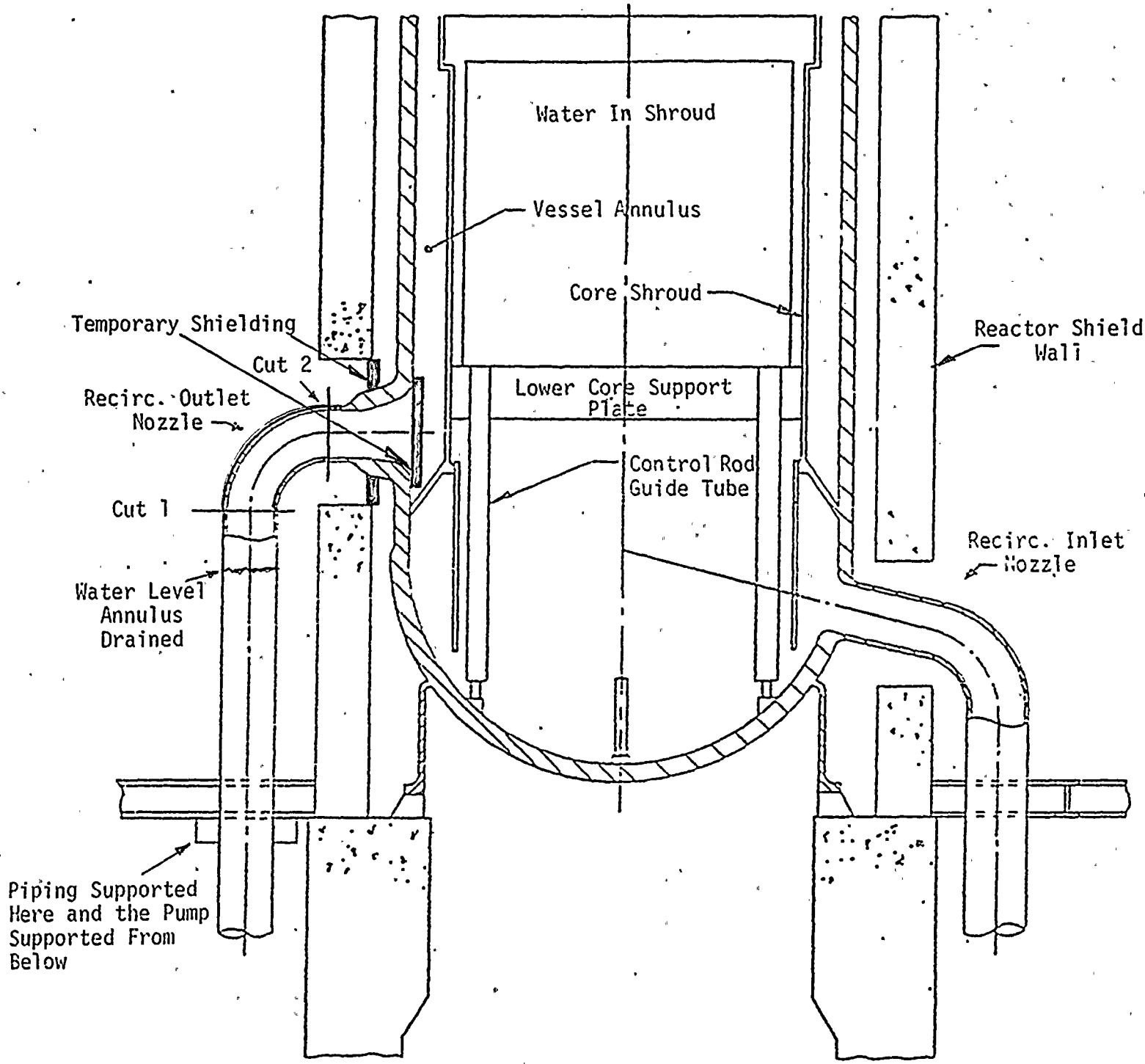
Install Shield Curtains & Nozzle Shielding



Note: If decontamination is accomplished, it will be prior to this step. The decontamination will consist of either stagnant decontamination to just below the nozzles or up through the nozzle by using a seal plug in the annulus.

OUTLET

Figure 2
Support Piping & Removal of Elbow

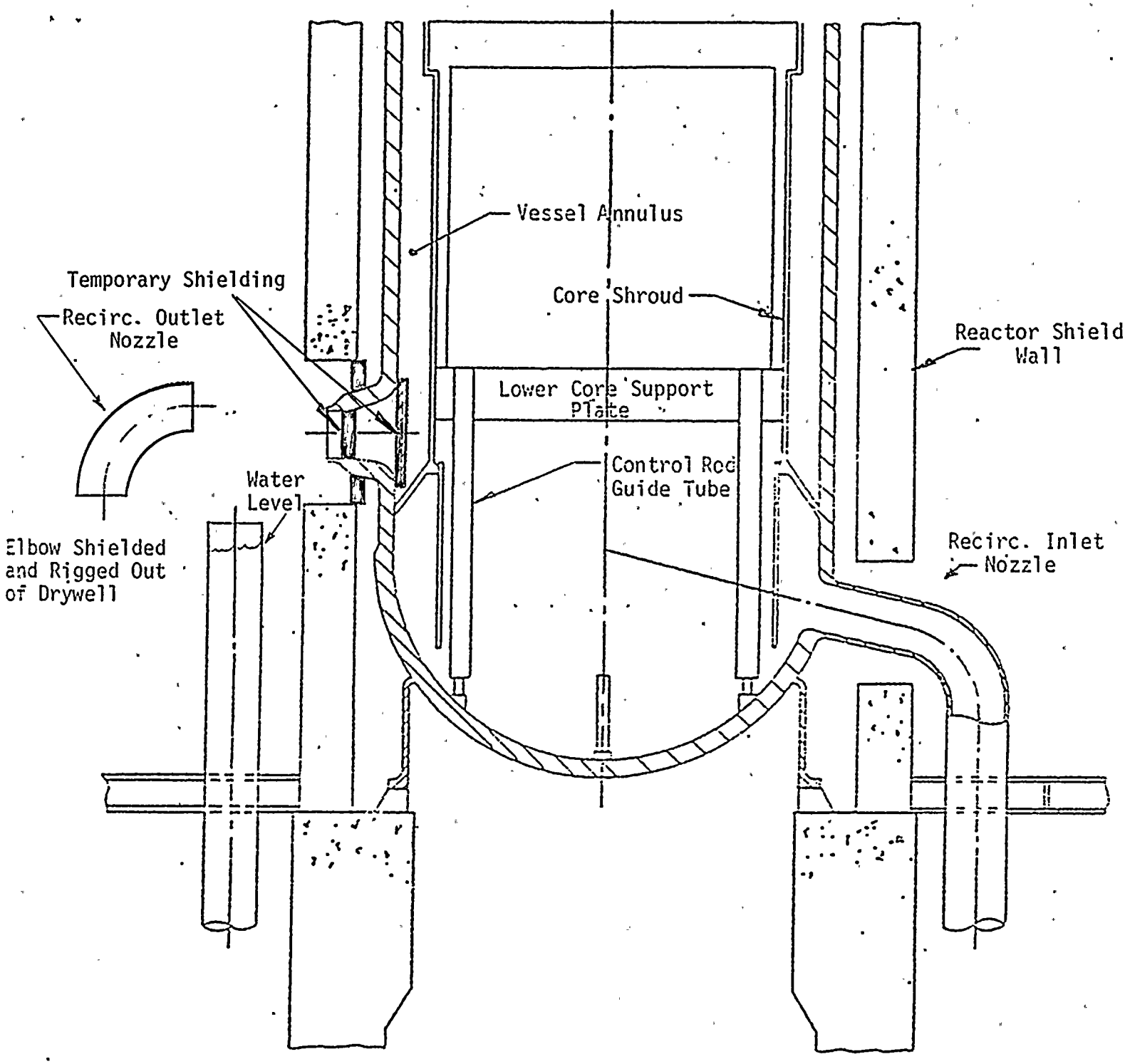


Note: Cut 1 approximately 2 inches below the elbow to riser weld. Cut 2 is to be on the safe end side of the inconel weld.

OUTLET

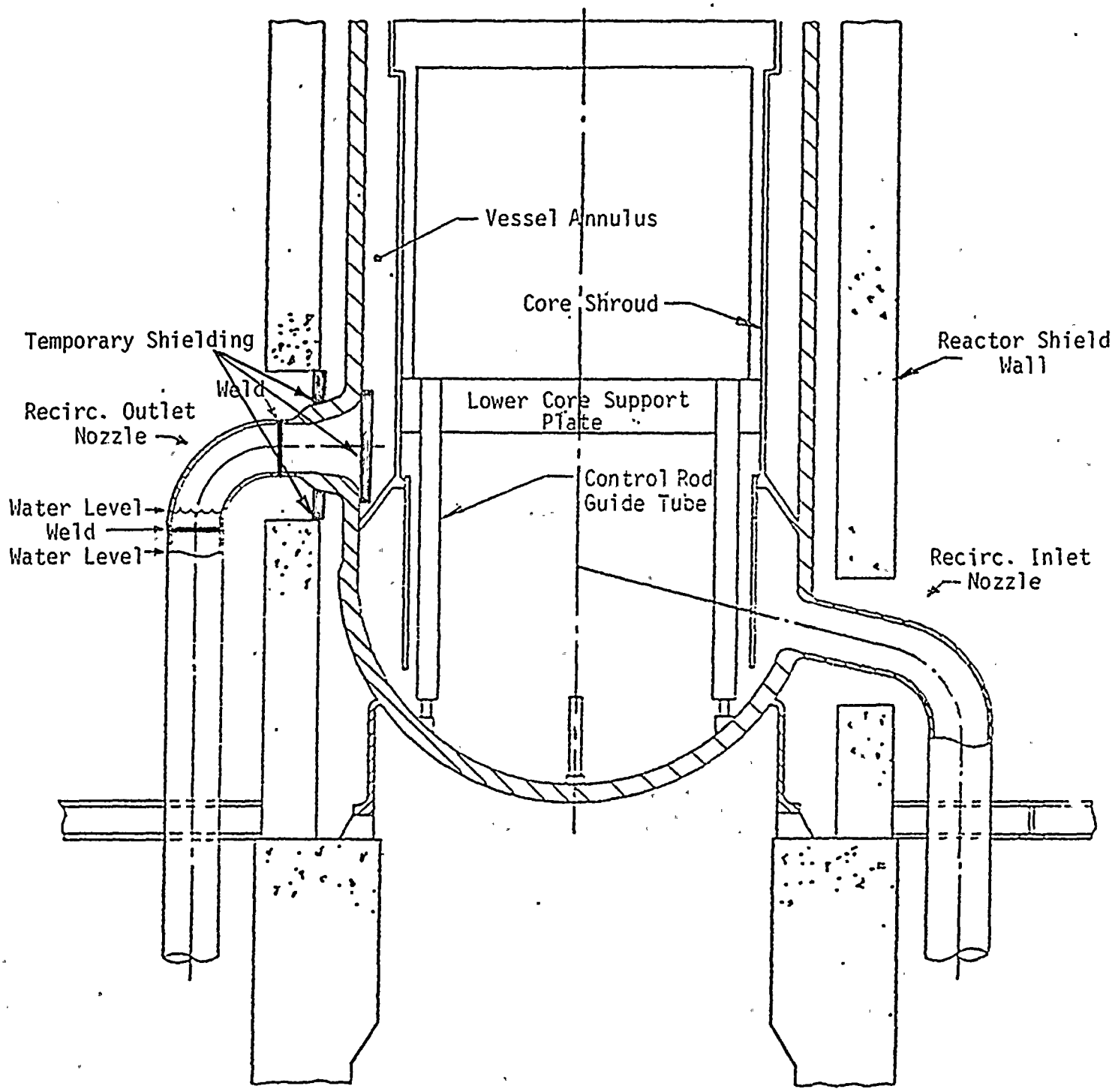
Figure 3

Remove Elbow & Install Shielding



Note: After the elbow is removed, the riser and nozzle will be weld prepared. The ID and OD of the nozzle must be etched to determine the inconnel to nozzle interface. Niagara Mohawk has specified that 3/16" of inconnel must remain so code requirements are not violated.

OUTLET
Figure 4
Remove Inner Shielding
Replace Elbow & Safe End

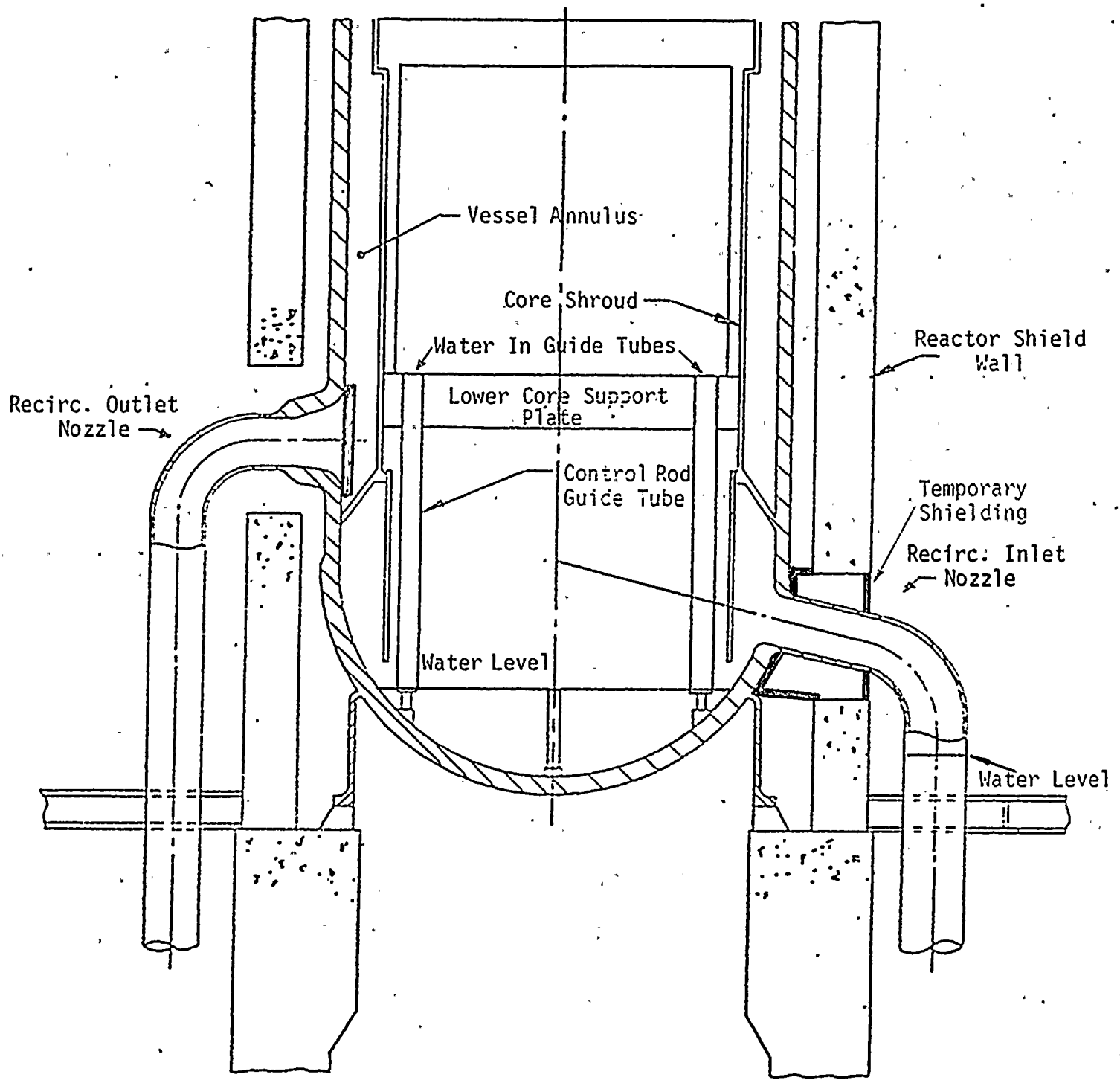


Note: Prior to installation, a template is made to the final size of the safe end. The safe end is then welded to the elbow prior to installation. The elbow to riser weld is planned to be a heat sink weld.

INLET

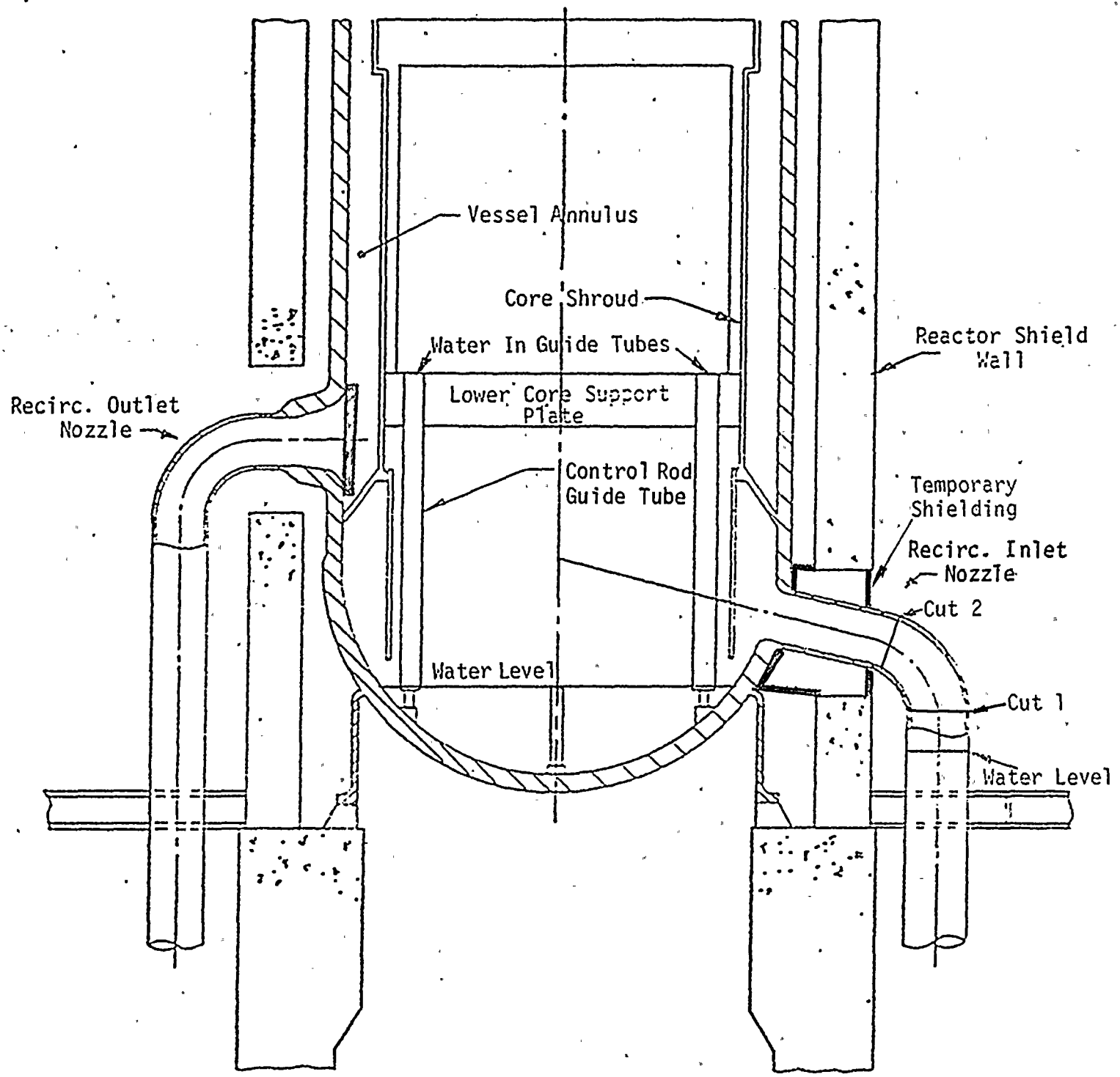
Figure 5

Install Shielding



Note: Constant flow through CRD, thus keeping the guide tubes filled. Constant drain through one CRD stub tube.

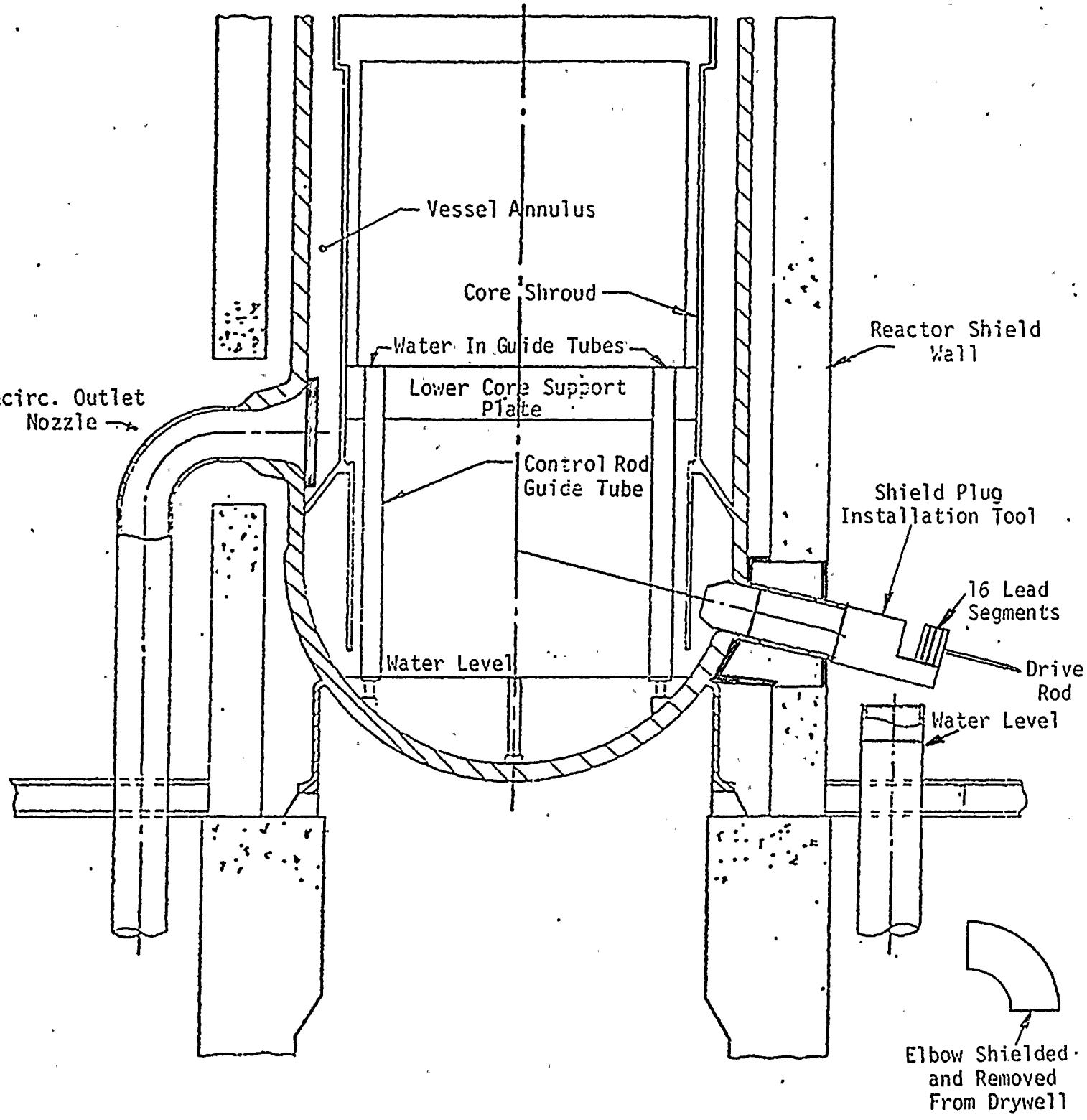
INLET
Figure 6
Cut Elbow



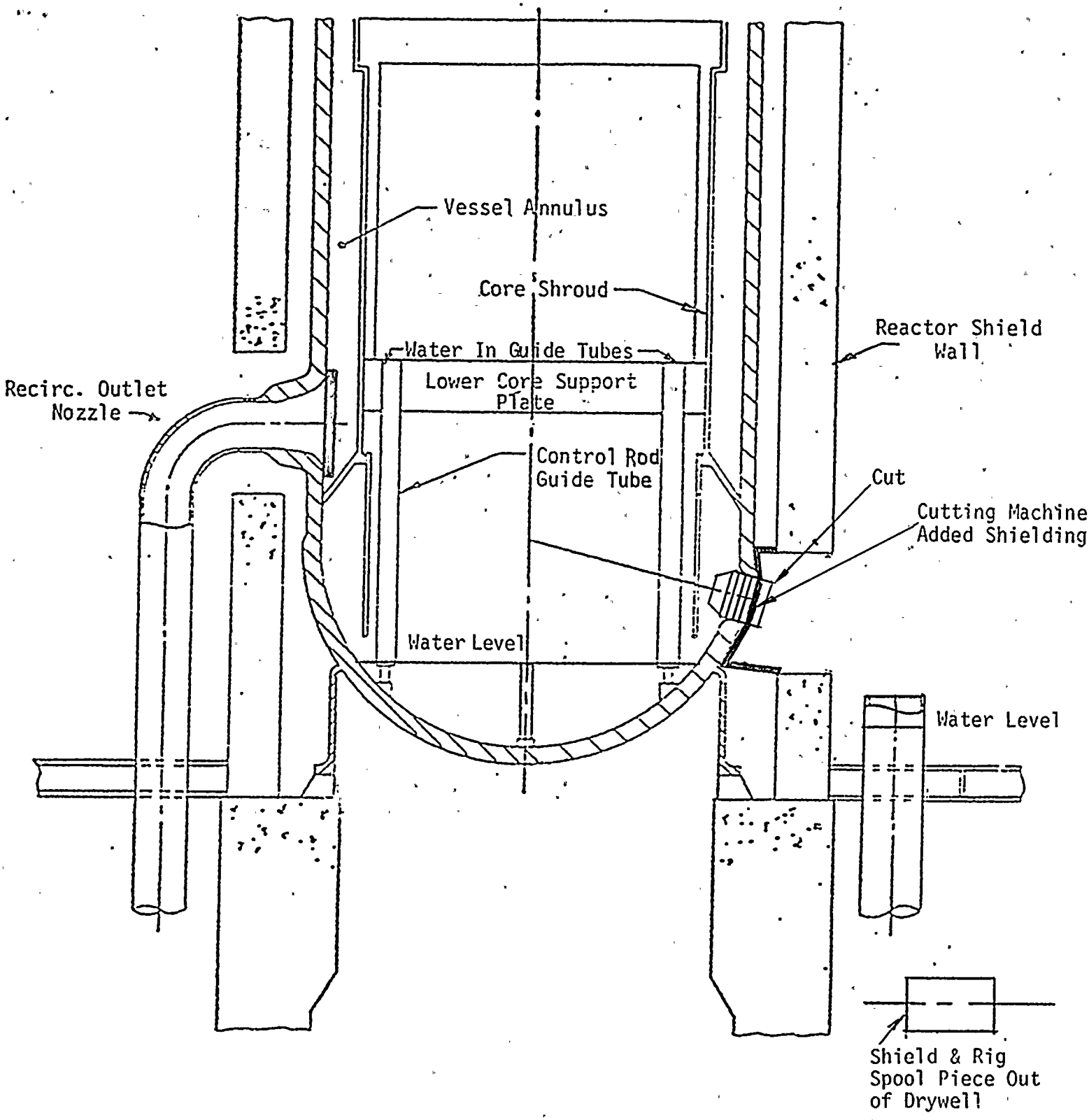
Note: Riser to elbow cut is to be approximately 2" below the weld.

INLET

Figure 7
Remove Elbow & Install Shield Plug

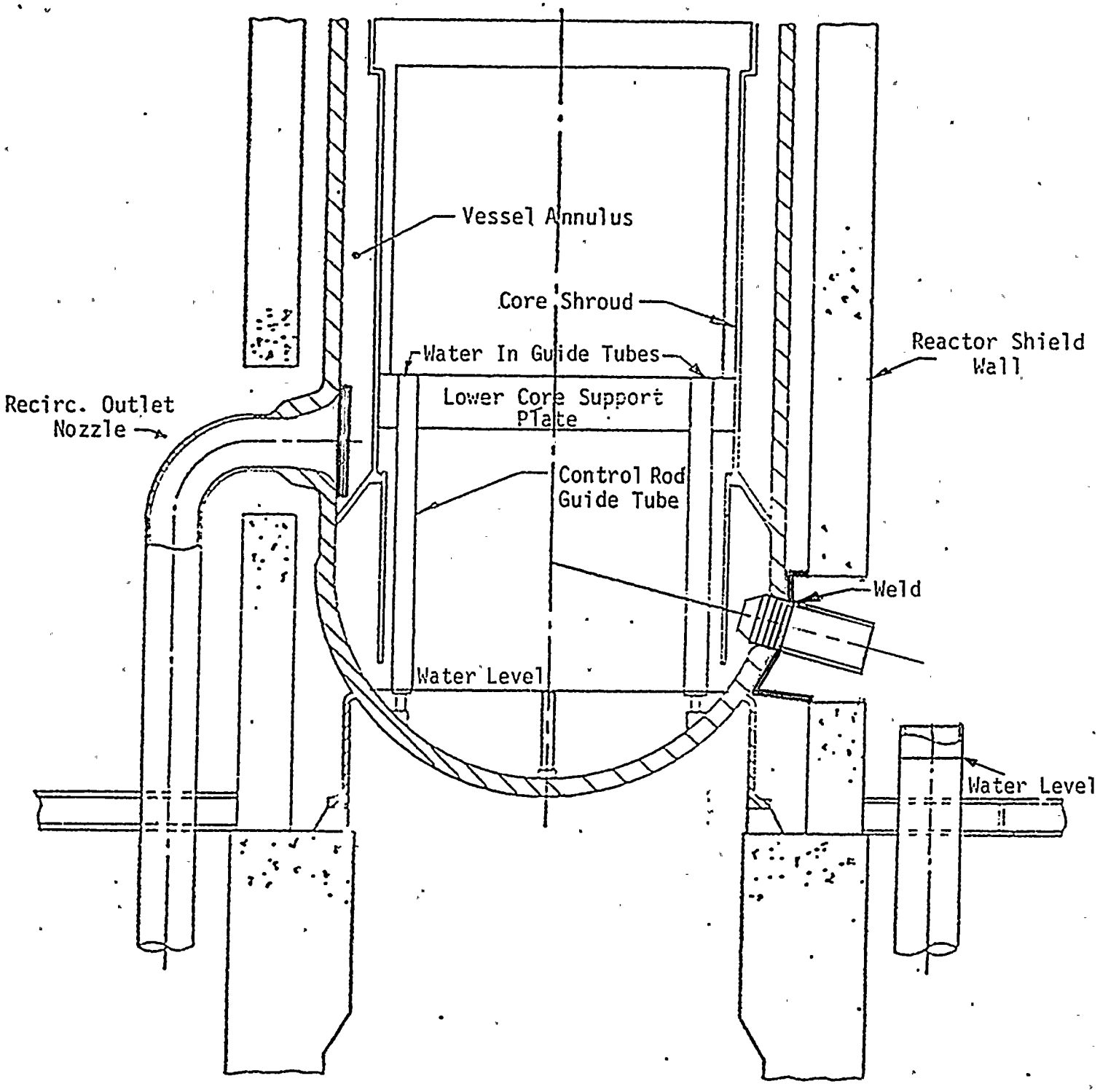


INLET
Figure 8
Remove Spool Piece



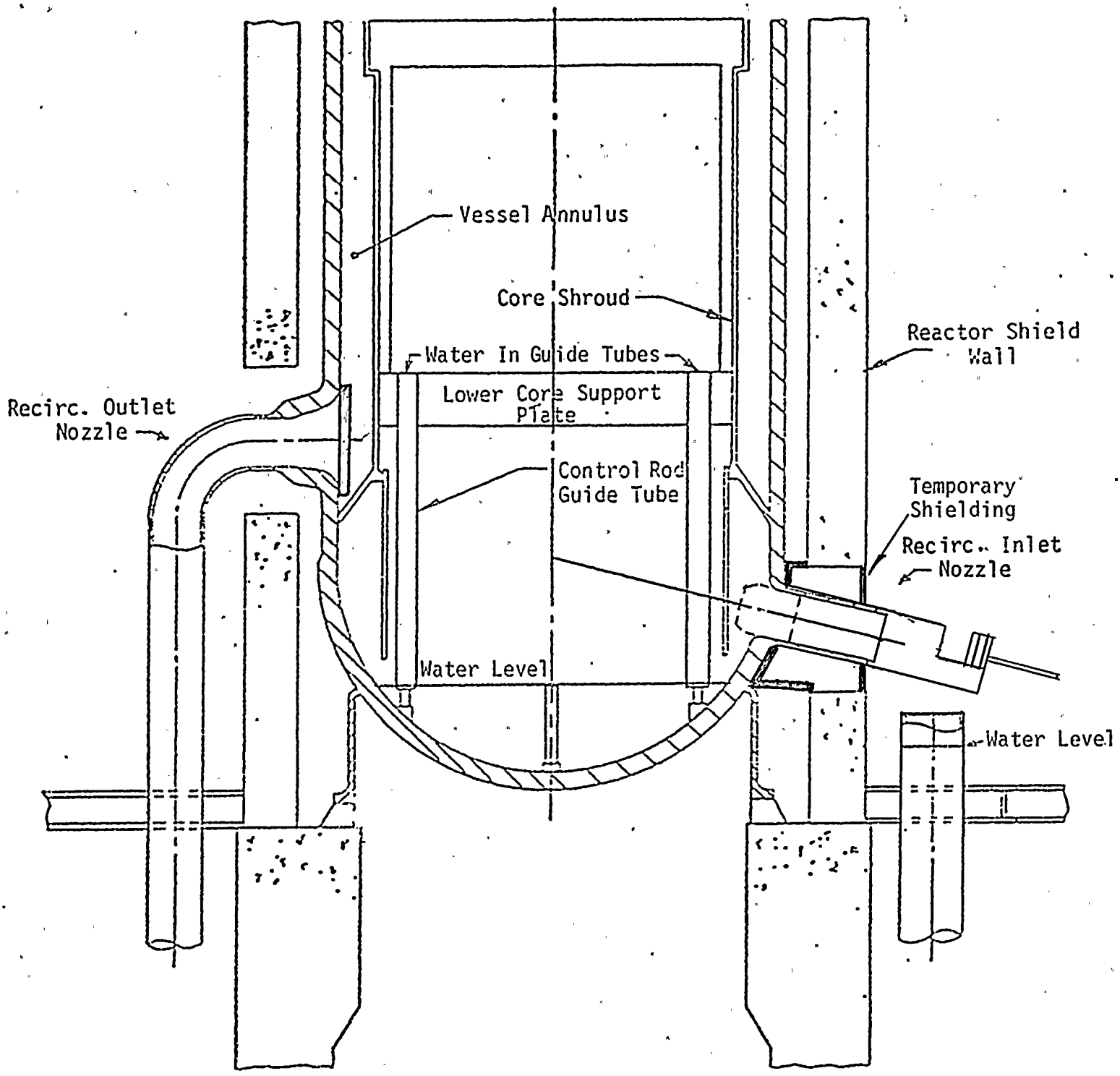
Note: Inlet nozzle is prepared the same as the outlet nozzle to assure code compliance.

INLET
Figure 9
Install Spool Piece



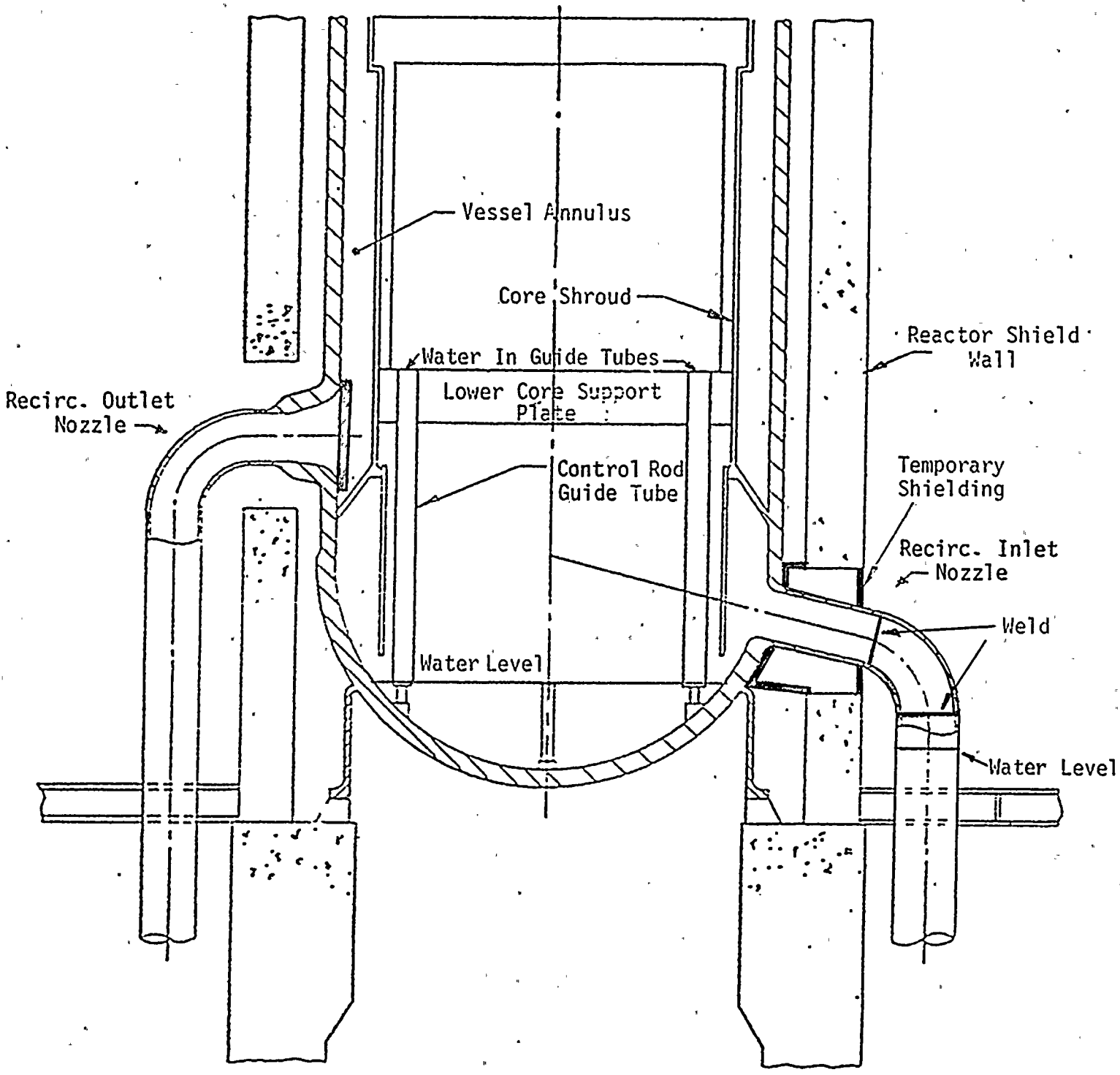
Note: A template will be made to the final size of the safe end. The safe end will then be welded to the spool piece prior to installation on vessel.

INLET
Figure 10
Remove Shield Plug



Note: Plug installation tool and plug will then be removed from the general area.

INLET
Figure 11
Install New Elbow



Note: The elbow will be fitted prior to removal of the shield plug. The riser to elbow weld will be a heat sink weld.

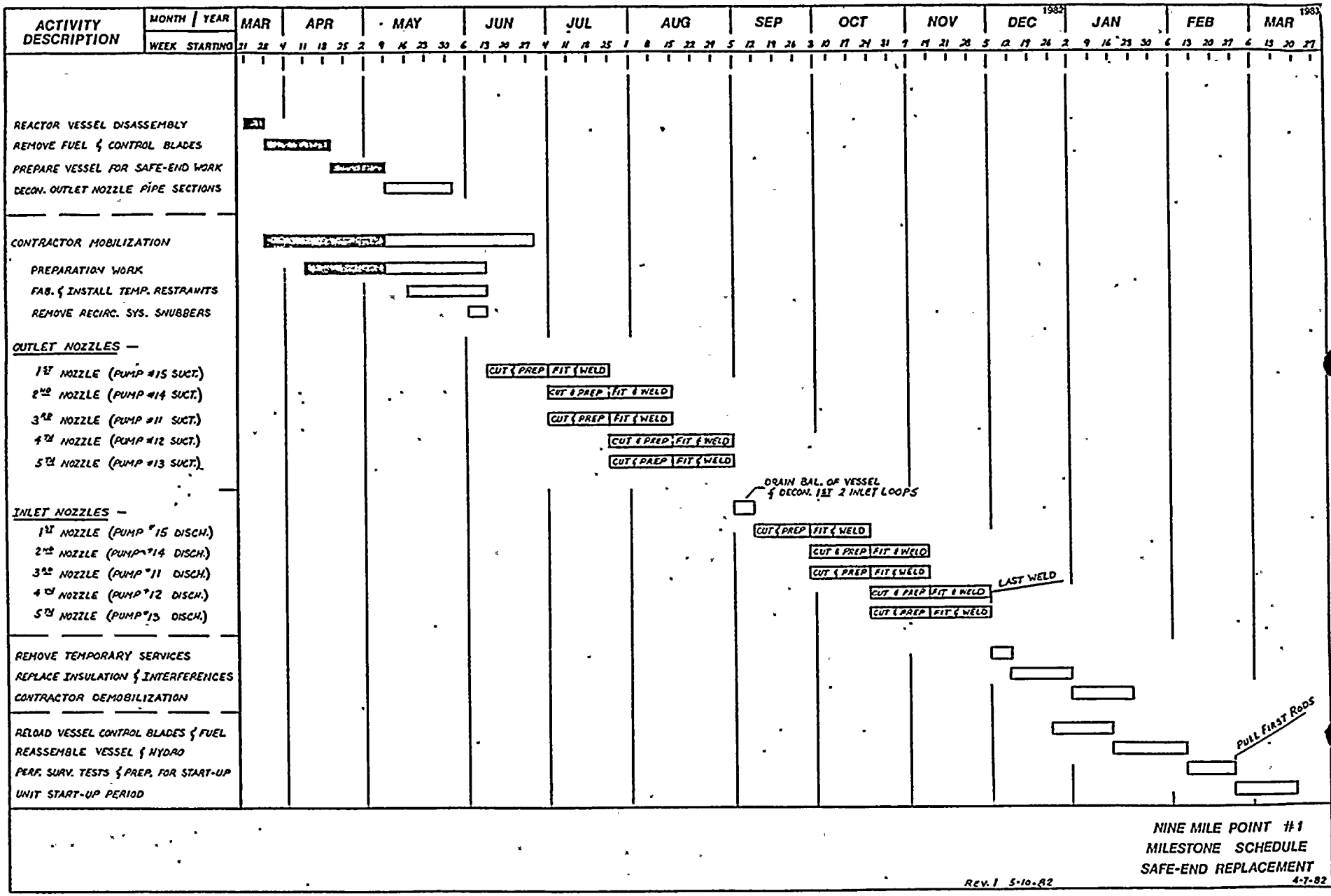


FIGURE 12
Schedule Plan