E R R A T A
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U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

South Texas Project Electric Generating Station
Units 1 & 2
Docket Nos. STN 50-498, STN 50-499
Revised Response to
NRC Generic Letter 88-017: "Loss of Decay Heat Removal"

Houston Lighting & Power Company (HL&P) has completed its evaluation of the subject Generic Letter received on October 20, 1988, and submits the attached revised response for Units 1 & 2 of the South Texas Project Electric Generating Station (STPEGS.) An initial response to Generic Letter 88-017 was submitted by letters dated December 9, 1988 ST-HL-AE-2877 and January 17, 1989 (ST-HL-AE-2936.) Change bars have been added to highlight the revision to the initial response.

HL&P is planning to conduct reduced Reactor Coolant System (RCS) inventory operations during the upcoming refueling outage for Unit 1. The expeditious actions and enhancements as described in Attachments 2 and 3 will be completed as described in Attachment 4.

The attached response details our commitments and actions to resolve the concerns of the Generic Letter.

If you should have any questions on this matter, please contact Mr. M. A. McBurnett at (512) 972-8530.

G. E. Vaughn
Vice President
Nuclear Operations

GEV/GCS/nl

Attachment: 1 Background
2 Expeditious Actions and Responses
3 Enhancements and Responses
4 Generic Letter 88-17 Hardware Changes

Figure 1: Reduced RCS Inventory Level Indication

cc:

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter	)	
	)	
Houston Lighting & Power	)	Docket No. 50-498
Company, et al.,	)	Docket No. 50-499
	)	
South Texas Project	)	
Units 1 & 2	)	

AFFIDAVIT

G. E. Vaughn being duly sworn, hereby deposes and says that he is Vice President, Nuclear Operations of Houston Lighting & Power Company; that he is duly authorized to sign and file with the Nuclear Regulatory Commission the attached response to NRC Generic Letter 88-017; is familiar with the content thereof; and that the matters set forth therein are true and correct to the best of his knowledge and belief.

G. E. Vaughn
Vice President
Nuclear Operations

Subscribed and sworn to before me, a Notary Public in and for The State of Texas this 2nd day of August, 1989.

SHARON DONAHY
Notary Public
STATE OF TEXAS
My Comm. Exp. Apr. 8, 1991

Sharon Donahy
Notary Public in and for the
State of Texas

NL.89.009.02

South Texas Project Electric Generating Station
Units 1 & 2
Docket Nos. STN 50-498, STN 50-499
Response to
NRC Generic Letter 88-017: "Loss of Decay Heat Removal"

Background

NRC Generic Letter 88-017 consolidates the industry experience on the hazards of loss of Residual Heat Removal (RHR), and stresses the necessity for immediate action in order to prevent loss of core cooling during reduced RCS inventory operations. The conditions under which the "expeditious actions" identified in the Generic Letter could apply at STPEGS during the first refueling outage (Reduced Reactor Coolant System (RCS) Operations) consist of the following:

a) irradiated fuel is in the reactor vessel, and

b) the reactor vessel water level is lower than 4.5 feet below the vessel flange. (A discussion on the selection of this water level is provided in the response to expeditious action 4.)

For the Unit 1 first refueling, South Texas Project plans to enter reduced RCS inventory operations for installation and removal of nozzle dams in all four Steam Generators. The hardware and procedural changes required to support this effort will be in effect prior to entering reduced RCS inventory operations. In addition, hardware changes associated with the programmed enhancements and their associated procedural changes which are not completed for the first refueling will be implemented by the end of the second refueling. Attachment 4 provides a summary of the hardware changes required to support the response to this generic letter. If the plans to enter reduced RCS inventory operations change, the schedule for implementing the responses to NRC Generic Letter 88-017 will be changed accordingly.

Prior to reduced RCS inventory operations on Unit 2, the hardware and procedural changes which are specified as expeditious action responses will be implemented. All hardware changes (both for expeditious actions and programmed enhancements) will be implemented on Unit 2 prior to the end of the first refueling outage.

Responses on each of the eight expeditious actions and six enhancements identified in the Generic Letter are provided as a final response as follows:

Attachment 2 - Expeditious Actions and Responses
Attachment 3 - Enhancements and Responses
Attachment 4 - Generic Letter 88-17 Hardware Changes
Figure 1 - Reduced RCS Inventory Level Indication

Expeditious Actions and Responses

Actions and Responses are provided as follows:

Action 1) Discuss the Diablo Canyon event, related events, lessons learned, and implications with appropriate plant personnel. Provide training shortly before entering a reduced inventory condition.

Response: To refresh personnel on the potential hazards and difficulties of reduced RCS inventory operations, Plant Operations shift personnel in the affected unit will be trained prior to entry into a reduced RCS inventory condition. A prerequisite has been added to the reduced RCS inventory operations procedure to complete this training prior to assuming the first shift assignment during reduced RCS inventory operations. As a minimum, the training will consist of a lesson plan with the following elements:

a) a discussion of the Diablo Canyon loss of RHR event, related events, lessons learned, and implications for the operator;

b) a discussion of the South Texas Project Electric Generating Station modifications for enhanced temperature and level indication, including operational considerations;

c) a review of the "Loss of RHR" (OPOP04-RH-0001) off-normal procedure with specific emphasis on procedure changes since the last revision;

d) the training conducted prior to commencing reduced RCS Inventory Operations will also include a discussion of the necessity for analyzing the expected system response for a planned RCS perturbation, so that quick and effective counter measures can be taken if decay heat removal ability is affected.

Action 2) Implement procedures and administrative controls that reasonably assure that containment closure will be achieved prior to the time at which a core uncovery could result from a loss of RHR, coupled with an inability to initiate alternate cooling or addition of water to the RCS inventory. Containment closure procedures should include consideration of potential steam and radioactive material release from the RCS should closure activities extend into the time boiling takes place within the RCS. These procedures and administrative controls should be active and in use:

a) prior to entering a reduced RCS inventory condition for Nuclear Steam Supply System (NSSS) supplied by Combustion Engineering or Westinghouse, and

b) prior to entering an RCS condition wherein the water level is lower than four inches below the top of the flow area of the hot legs at the junction of the hot legs to the RV for NSSS supplied by Babcock and Wilcox, and should apply whenever operating in those conditions. If such procedures and administrative controls are not operational, then either do not enter the applicable condition or maintain a closed containment.

Response: Prior to authorizing work start for an activity which involves a containment penetration, the following approval steps must be performed (as specified in OPGP03-ZO-0035 "Reduced RCS Inventory Operations"):

1) A written plan must be developed which specifies both the method of restoration and the individual responsible for the proposed breach.

2) The work scope must be reviewed by the Mid-Loop Coordinator (a dedicated licensed operator available on site 24 hours a day), who tracks each proposed breach in a manual log. As part of the review, the Mid-Loop Coordinator will verify that the time required for restoration is less than the time required to reach the boiling point in the RCS. (Time to boiling will be based on South Texas Project specific data contained in the Westinghouse Owner's Group study.)

3) The Shift Supervisor must concur with the Mid-Loop Coordinator's recommendation, and then approve the work to start.

In the event that the Shift Supervisor decides that containment closure is required, the responsible individual specified for each active containment breach will be contacted. Where a containment breach will be more than one shift, a responsible individual is identified for each day and each time period to close the breach. All containment breaches will be restored as specified in their respective written plans, and progress of restoration will be tracked by the Mid-Loop Coordinator.

The administrative controls described above will be in effect prior to entering Reduced RCS Inventory Operations.

The "Loss of RHR" (OPOP04-RH-0001) off normal procedure includes actions to be taken in the event that boiling in the core starts prior to completing containment closure activities.

Action 3) Provide at least two independent, continuous temperature indications that are representative of the core exit conditions whenever the RCS is in a mid-loop condition and the reactor vessel head is in place. Temperature indications should be periodically checked and recorded by an operator or automatically and continuously monitored and alarmed. Temperature monitoring should be performed either:

a) by an operator in the control room (CR), or

b) from a location outside of the containment building with provision for providing immediate temperature values to an operator in the CR if significant changes occur. Observations should be recorded at an interval no greater than 15 minutes during normal conditions.

Response: Core exit temperature instrumentation is provided in the STPEGS design to meet the requirements of NUREG-0737, Item II.F.2, and RG 1.97. This parameter is displayed in the Control Room on the Qualified Display Processing System (QDPS) and on Control Room analog recorders. The core exit temperature instrumentation is accurate over the range of concern for Reduced RCS Inventory Operation. This system is described in detail in the STPEGS FSAR, Sections 7.5.6 and 7A.II.F.2. Display of core exit temperature is also available in the Control Room on the Emergency Response Facilities Data Acquisition and Display System (ERFDADS) which is described in detail in FSAR Section 7.5.7.

The presently installed core exit temperature instrumentation will be used to comply with the requirement of two independent, continuously displayed temperature indications. The QDPS or ERFDADS displays of core exit temperature will be continuously available whenever the RCS is in a mid-loop condition and the reactor vessel head is in place. A minimum of five core exit thermocouples per train will be available as input to the QDPS or ERFDADS computer systems whenever the RCS is in a reduced RCS inventory operation and the reactor vessel head is in place. A permanent temperature recorder showing representative high temperature will provide an alarm if the core exit temperature exceeds a prescribed setpoint. Plant procedures will require core exit temperature display, thermocouples, and alarm availability as a prerequisite condition to enter reduced RCS inventory operation.

Action 4) Provide at least two independent, continuous RCS water level indications whenever the RCS is in a reduced inventory condition. Water level indications should be periodically checked and recorded by an operator or automatically and continuously monitored and alarmed. Water level monitoring should be capable of being performed either:

a) by an operator in the CR, or

b) from a location other than the CR with provision for providing immediate water level values to an operator in the CR if significant changes occur. Observations should be recorded at an interval no greater than 15 minutes during normal conditions.

Response: Reactor vessel water level indication is provided in the STPEGS design to meet the requirements of NUREG-0737, Item II.F.2, and RG 1.97. This parameter is displayed in the Control Room on QDPS and on analog recorders. This system is described in detail in the STPEGS FSAR, Sections 7.5.6 and 7A.II.F.2. Display of reactor vessel water level is also available in the Control Room on ERFDADS which is described in detail in FSAR Section 7.5.7.

As described in the FSAR, the redundant reactor vessel water level (RVWL) sensors are discrete point sensors. Figure 1 provides a drawing of the vessel level indication for reduced RCS inventory operation. Reactor vessel plenum sensors are of particular importance in reduced RCS inventory operation. Point #2 is located 2 inches above the vessel flange. Point #3 is located at an elevation which is 4 1/2 feet below the reactor vessel flange and 1 1/2 feet above the top of the hot leg piping. Point #4 is located at the elevation of the top of the hot leg piping. Point #5 is located at the elevation of the hot leg piping center line. Point #4 corresponds to the top of the hot leg narrow range instrument described below.

During the draindown operation for the first Unit 1 refueling outage when the reactor vessel level reaches the discrete point 4 1/2 ft below the flange, STPEGS procedures will require that prerequisites are met for entry into reduced RCS inventory operation. The RVWL System is a reliable system for indication of entry into reduced RCS inventory operation. The RVWL system is not affected by pressure differences in the RCS system. A sight-glass or tygon hose level indication is affected by pressure differences in the RCS. Therefore, the RVWL discrete point of 4 1/2 ft below the flange was chosen over a sight-glass or tygon level indication point.

For the first refueling outage a tygon hose will be used as a backup level indication during drain-down. Prior to the second refueling outage for Unit 1 and the first refueling outage for Unit 2 the tygon hose will be replaced with a sight-glass backup level indication for drain-down of the RCS. The tygon hose (and permanent sight-glass) will be located in a stairwell outside of the biological shield wall. The stairwell will be permanently marked with appropriate levels. (This is already complete in Unit 2.) Additionally, it should be noted that the STPEGS design of the hot leg location relative to the steam generator nozzles allows reduced RCS inventory operation at levels 8 to 11 inches above the middle of the hot legs. This allows the necessary evolutions to be performed at higher water levels when compared to other plant designs without spilling water into an open steam generator nozzle.

Promptly after shutdown, for the first refueling and prior to reduced RCS inventory operations, the following modification will be installed and tested. Narrow range level instruments will be added to the RCS hot leg loops A and C. These loops have existing top entry primary sample connections which are available for the upper level taps. These loops also have 8" Safety Injection (SI/hot leg) lines which connect to the 29" RCS hot legs at a 90 degree angle to the hot leg vertical. This places the SI hot leg nozzles 14 1/2 inches above the bottom of the RCS hot leg. The SI lines have drain connections which are available for the lower level tap.

The 12" Residual Heat Removal (RHR) suction lines are on the opposite side of the RCS pipe in proximity to the hot leg SI injection nozzle and connect to the RCS piping at 45 degrees below the horizontal. This arrangement will provide an 18" level range from the top of the RCS hot leg pipe (+14-1/2") to 3-1/2" below the centerline of the RCS hot leg piping. This measurement location is in that portion of the hot leg piping of most concern for level control (see Figure 1.)

The taps described above on the RCS hot legs A and C will be used to connect two local sight-glasses (1 per loop) and differential pressure level transmitters (1 per loop) for remote indications and an alarm in the Control Room.

TV Cameras will be provided for monitoring RCS level as indicated by sight-glass and/or Tygon tube levels as ALARA considerations require.

Action 5) Implement procedures and administrative controls that generally avoid operations that deliberately or knowingly lead to perturbations to the RCS and/or to systems that are necessary to maintain the RCS in a stable and controlled condition while the RCS is in a reduced inventory condition.

If operations that could perturb the RCS or systems supporting the RCS must be conducted while in a reduced inventory condition, then additional measures should be taken to assure that the RCS will remain in a stable and controlled condition. Such additional measures include both prevention of a loss of DHR and enhanced monitoring requirements to ensure timely response to a loss of RHR should such a loss occur.

Response: RCS perturbations will be controlled and limited by the Plant Operating Procedure controlling reduced RCS inventory operations. Examples of the type of controls which are in this procedure are: limitations on surveillances, maintenance work, and lineups on the RHR system and its supporting systems. The Mid Loop Coordinator and the Shift Supervisor will review maintenance work activities and surveillances to ensure RCS perturbations are avoided. Electrical power to RHR and its support systems will be maintained by careful selection of outage times and implementation method. Instrument air work activities will be minimized to ensure instrument air availability will be maintained. Calibration work on all associated instrumentation will be minimized to ensure that the operator is constantly updated on system parameters. The computer support systems (ERFDADS/QDPS) will be maintained as necessary to provide the temperature and level indications as listed above.

For the first refueling outage on Unit 1, current plans include a temporary modification to provide RHR pump motor current indication for the Control Room operator and a permanent modification to provide motor current at a later date. Also a temporary modification to remove the RHR Auto Closure Interlock is planned on Unit 1 for refueling outage one. (See Attachment 4.)

Action 6) Provide at least two available or operable means of adding inventory to the RCS that are in addition to pumps that are a part of the normal DHR systems. These should include at least one high pressure injection pump. The water addition rate capable of being provided by each of the means should be at least sufficient to keep the core covered. Procedures for use of these systems during loss of DHR events should be provided. The path of water addition must be specified to assure the flow does not bypass the reactor vessel before exiting any opening in the RCS.

Response: The STPEGS design utilizes only dedicated RHR pumps for decay heat removal. Separate pumps are utilized for low head injection and high head injection. At least two separate means of water inventory addition will be available at all times. Inventory addition instructions have been developed to specify the addition methods which are prerequisite to reduced RCS inventory operations. Instructions for the use of either two Low Head Safety Injection pumps or a Low Head Safety Injection Pump and a Centrifugal Charging pump have been developed to provide controlled level recovery. Additional instructions have been added to ensure that the flow path will not bypass the reactor vessel. Administrative Controls have been established to ensure that the necessary pumps are operable during reduced RCS inventory operations.

Action 7) Implement procedures and administrative controls that reasonably assure that all hot legs are not blocked simultaneously by nozzle dams unless a vent path is provided that is large enough to prevent pressurization of the upper plenum of the Reactor Vessel (RV).

Response: Steam Generator nozzle dam and primary manway installation and removal sequence will be controlled to provide adequate vent capability of the RCS hot leg by use of a Maintenance Department procedure.

Action 8) (Applicable to NSSSs with loop stop valves) Implement procedures and administrative controls that reasonably assure that all hot legs are not blocked simultaneously by closed stop valves unless a vent path is provided that is large enough to prevent pressurization of the RV upper plenum or unless the RCS configuration prevents RV water loss if RV pressurization should occur. Closing cold legs by nozzle dams does not meet this condition.

Response: Since the South Texas Project Reactor Coolant System has no loop stop valves, no action will be required on this expeditious action.

Enhancements and Responses

The following responses to each of the six programmed enhancements identified in the Generic Letter are provided:

Enhancement 1) Instrumentation

Provide reliable indication of parameters that describe the state of the RCS and the performance of systems normally used to cool the RCS for both normal and accident conditions. At a minimum, provide the following in the CR:

(a) two independent RCS level indications

(b) at least two independent temperature measurements representative of the core exit whenever the RV head is located on top of the RV (We suggest that temperature indications be provided at all times.)

(c) the capability of continuously monitoring DHR system performance whenever a DHR system is being used for cooling the RCS

(d) visible and audible indications of abnormal conditions in temperature, level, and DHR system performance

Response: The existing core exit temperature indications described in the expeditious action response for RCS temperature are considered adequate for this mode of operation. Additionally, RV plenum outlet temperature indication is available via the ERFDADS from the RVWL system parameters. The ERFDADS computer displays the unheated junction thermocouples at the discrete sensor points used for RV level indication.

Long term plans for reduced RCS inventory operation level indication are as described in expeditious action 4 of Attachment 2 with the exception that the tygon tubing will be replaced by a permanent sight-glass. (see Figure 1.)

The two narrow range hot leg level instruments described in the expeditious action response will be permanently wired to display and alarm instrumentation in the control room. The level transmitters and sight-glasses will be connected to the hot leg taps and calibrated prior to entering reduced inventory operation. When not in use for level indication, these instrument sensing lines will be isolated from the RCS loops.

The existing RHR instrumentation includes: heat exchanger inlet and outlet temperature, RHR pump discharge pressure and pump discharge flow. RHR pump motor current indication does not exist in the present design. RHR pump motor current indication will be added on control room displays to provide the control room operators with indication and alarm of the approach to inadequate pump suction conditions. For the first refueling for Unit One, a temporary modification will be installed to provide current indication to the operator.

A new integrated RHR performance display will be developed for the reduced inventory mode of operation. This ERFDADS display will contain the RHR parameters described above as well as RV level, hot leg levels and core exit temperatures. The RHR pump motor current will not be displayed on this display since the computer scan rate is not sufficient to allow detection of rapidly changing motor current.

The new displays and control board modifications will be accomplished within the Control Room Design Review Program.

Enhancement 2) Procedures

Develop and implement procedures that cover reduced inventory operation and that provide an adequate basis for entry into a reduced inventory condition. These include:

(a) procedures that cover normal operation of the NSSS, the containment, and supporting systems under conditions for which cooling would normally be provided by DHR systems.

(b) procedures that cover emergency, abnormal, off-normal, or the equivalent operation of the NSSS, the containment, and supporting systems if an off-normal condition occurs while operating under conditions for which cooling would normally be provided by DHR systems.

(c) administrative controls that support and supplement the procedures in items (a), (b), and all other actions identified in this communication, as appropriate.

Response: Procedural control will be established as follows:

As described in the expeditious action response, a Plant Operating Procedure has been developed which will provide overall guidance on the prerequisites for entry, operation, and exit from reduced RCS inventory conditions. Required actions and precautions are also delineated in this procedure. Procedures which cover normal operations during decay heat removal by RHR have been reviewed to ensure compatibility with the above procedure and proper sequencing such that a smooth transition to reduced inventory operations can be accomplished.

The "Loss of RHR" off-normal procedure provides instructions and actions for the recovery from a loss of decay heat removal, including back up sources and their priority.

A closed containment will be verified prior to entry into reduced RCS inventory operations. During reduced RCS inventory operation containment breaches will be tracked as described in the expeditious action response.

In addition, administrative controls that support the procedures listed above have been reviewed to provide a smooth transition to reduced RCS inventory operations.

Enhancement 3) Equipment

(a) Assure that adequate operating, operable, and/or available equipment of high reliability is provided for cooling the RCS and for avoiding a loss of RCS cooling.

(b) Maintain sufficient existing equipment in an operable or available status so as to mitigate loss of DHR or loss of RCS inventory should they occur. This should include at least one high pressure injection pump and one other system. The water addition rate capable of being provided by each equipment item should be at least sufficient to keep the core covered.

(c) Provide adequate equipment for personnel communications that involve activities related to the RCS or systems necessary to maintain the RCS in a stable and controlled condition.

Response:

Since the RHR system, Low Head Safety Injection (LHSI) system, and the Centrifugal Charging Pumps are all safety related and powered by 1E power sources, these systems provide a very high degree of reliability already. Technical Specifications do not require that the RHR Auto Closure Interlock be operable during reduced RCS inventory operation. A temporary modification will be installed to inhibit the Auto Closure Interlock during reduced inventory operation. Permanent deletion of the RHR Auto Closure Interlock is being evaluated. Present Technical Specification requirements for the availability of RHR and Chemical and Volume Control System (CVCS) pumps combined with administrative requirements for the availability of LHSI pumps will ensure that an adequate and reliable inventory addition and decay heat removal capacity remains continuously available during reduced RCS inventory operations.

Communications via the plant public address system, hand held radio, and sound powered phone circuits are available for control of evolutions. Appropriate use of these means of communications will ensure Control Room personnel are fully appraised of the status of the RCS.

Enhancement 4) Analyses

Conduct analyses to supplement existing information and develop a basis for procedures, instrumentation installation and response, and equipment/NSSS interactions and response. The analyses should encompass thermodynamic and physical (configuration) states to which the hardware can be subjected and should provide sufficient depth that the basis is developed. Emphasis should be placed upon obtaining a complete understanding of NSSS behavior under nonpower operation.

Response: WCAP 11916 (developed by the Westinghouse Owner's Group) provides the analysis which was used to develop procedures and an understanding of RCS behavior under loss of RHR during reduced inventory conditions. In addition, Westinghouse has performed a plant specific analysis for operation at reduced RHR pump flowrates to increase the margin to vortex formation during reduced inventory operations. The South Texas Project design allows draining of the primary side of the Steam Generator to a level below the top of the RCS hot leg piping for manway removal and nozzle dam installation. The steam generator tubes can be drained without draining the hot legs to the middle of the hot leg piping. This will allow operation with sufficient margin prior to air entrainment and provide a longer period of time for operator recovery from inadvertent inventory losses before vortexing occurs. The Westinghouse Owner's Group report WCAP-12111 (RCS Level Gradients) has also been reviewed to gain an understanding of potential level variations between the RCS hot leg at the RHR pump suction piping and other points in the RCS. This data was used to establish a minimum requirement for various flowrates, and to establish procedural action levels and alarm setpoints.

Enhancement 5) Technical Specifications

Technical specifications that restrict or limit the safety benefit of the actions identified in this letter should be identified and appropriate changes should be submitted.

Response: As indicated in the above responses, a Technical Specification change is being evaluated to delete the Auto Closure Interlock.

Enhancement 6) RCS perturbations

Item (5) of the expeditious actions should be reexamined and operations refined as necessary to reasonably minimize the likelihood of loss of DHR.

Response: As part of the continuing review of industry and plant problems with reduced RCS inventory operations, and as a result of procedural reviews and upgrades, further instructions will be provided to operations to limit the frequency and severity of RCS perturbations.

Generic Letter 88-17 Hardware Changes

Expeditious Action	Description of Hardware Change	Unit 1 Schedule	Unit 2 Schedule
1	None	NA	NA
2	None	NA	NA
3	Core exit temperature recorder and alarm	Note 1	Note 1
4	a. Hot leg narrow range level indication, level transmitter tubing, alarm window and level recorder	Note 1	Note 1
	b. Hot leg narrow range sight-glass, tubing and valves	Note 1	Note 1
	c. Tygon hose, level indication markings for drain-down level indication	Note 1	Note 1
	d. Permanent sight-glass (in lieu of tygon) for drain-down level indication	RF02*	RF01
5	a. RHR pump motor current indication, temporary modification	Note 1	N/A
	b. RHR Auto Closure Interlock, temporary Modification	Note 1	Note 1
6	None	NA	NA
7	None	NA	NA
8	NA	NA	NA

Note 1: Prior to the first reduced RCS inventory operation.

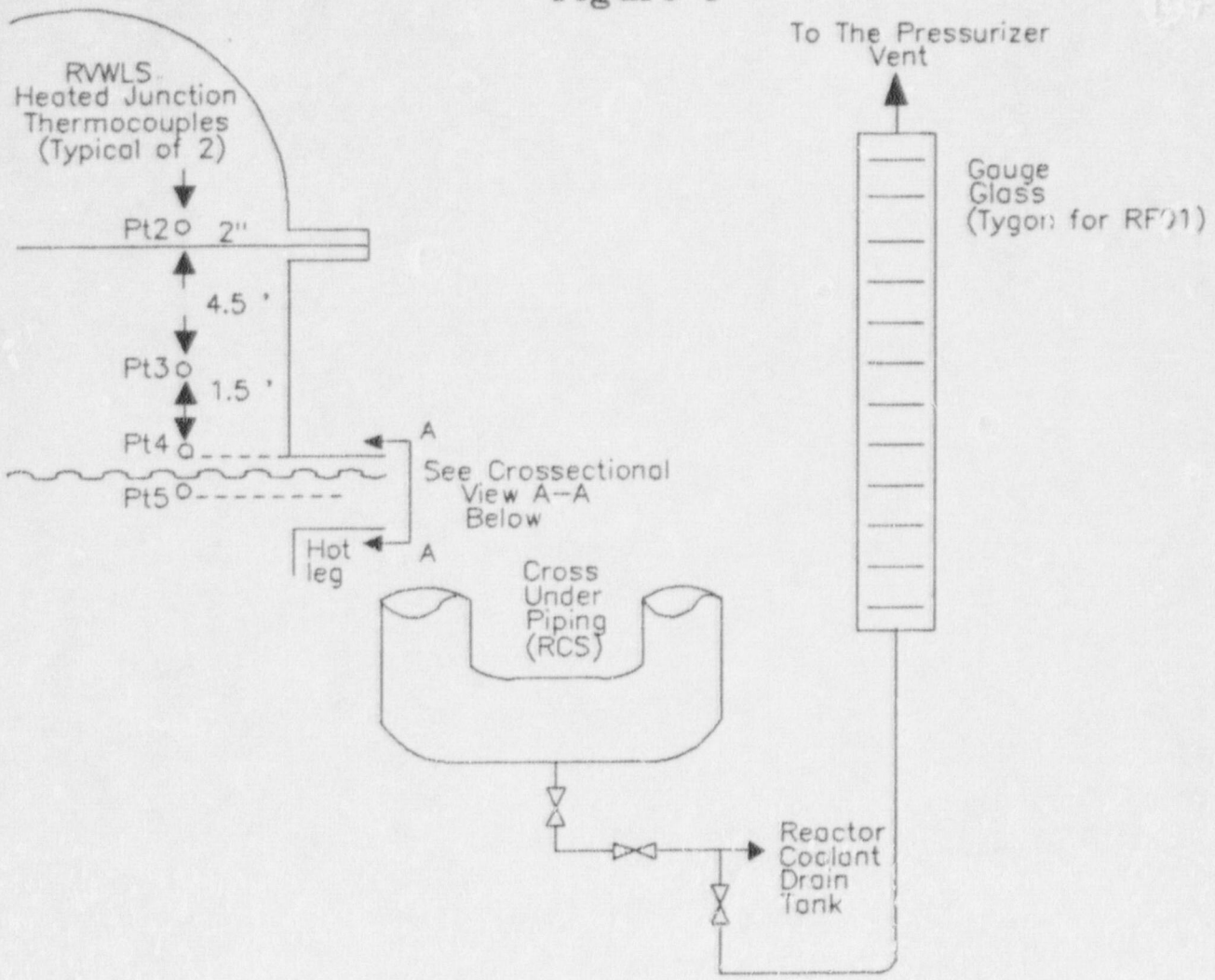
* Refueling Outage 2

Enhancements	Description of Hardware Change	Unit 1 Schedule	Unit 2 Schedule
1	a. Narrow Range Hot Leg Level Instruments	Note 1	Note 1
	b. Permanent RHR Pump Motor Current Indication	RF02	RF01
	c. Integrated RHR Performance Display	RF02	RF01
2	None	NA	NA
3	None	NA	NA
4	None	NA	NA
5	None	NA	NA
6	None	NA	NA

Note 1: Prior to the first reduced RCS inventory operation.

Reduced RCS Inventory Level Indication

Figure 1



Crossectional View A-A

(Hot Leg Narrow Range Level Indication)
(Typical of 2)