LONG ISLAND LIGHTING COMPANY
SHOREHAM NUCLEAR POWER STATION
P.O. BOX 618, NORTH COUNTRY ROAD • WADING RIVER, N.Y. 11792

December 29, 1982 SNRC-810

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Safety Evaluation Report Issue No. 8
Dynamic Qualification
Shoreham Nuclear Power Station - Unit 1
Docket No. 50-322

Reference: (1) Letter SNRC-796 LILCO (J.L. Smith) to NRC (H.R. Denton) dated 11/23/82

Dear Mr. Denton:

In the above referenced letter, LILCO stated that justifications for interim operation for SQRT equipment, whose qualification documentation would not be fully completed by fuel load, would be submitted by December, 1982. In accordance with that letter, please find enclosed ten (10) copies of justifications for interim operation for both NSSS and BOP equipment. This information is being submitted in order to facilitate the NRC's staff review and closeout of SER open issue number 8.

Attachment 1 is a complete listing, by specification and equipment mark number, of equipment for which justifications for interim operation have been provided. Justifications have not been provided for all outstanding equipment items since LILCO anticipates obtaining full qualification documentation for those items prior to fuel load.

A001
1/10

In accordance with R.L. Tedesco's letter to LILCO, dated January 23, 1981, four (4) copies of this submittal are being forwarded directly to Dr. Morris Reich at Brookhaven National Laboratory.

Very truly yours,

J. L. Smith
Manager, Special Projects
Shoreham Nuclear Power Station

WVB:jm
Enclosure

cc: J. Higgins
All parties
Dr. M. Reich (4)
J. F. Etzweiler

ATTACHMENT 1

JUSTIFICATIONS FOR INTERIM OPERATION

BOP Scope

SH1-475

1D21*PNL117A,B

SH1-492

1Z93*PCV010A,B
1T48*PCV143,A,B,C,D
1T48*PCV144A,B
1T48*PCV145A,B,C,D
1T48*PCV146A,B

NSSS Scope

SDV Solenoid Valve	1C11*SOV044
SDV Vent & Drain Valves	1C11*AOV081/82
HPCI Turbine	1E41*TU-002
Power Range Monitor Panel	1H11*PNL-608
In-Vessel Rack	1F16*RAK-09

INTERIM JUSTIFICATION

Mark No.	1D21*PNL 117A,B	Component Name	1E Cabinets
System Name	Radiation Monitoring	Vendor	Kaman Instrumentation
Spec. No.	SH1-475-1.1	Model No.	KE-CRC
		Quantity	2

EQUIPMENT REQUIREMENTS

Hot Standby ___ Cold Shutdown ___ Both ___ Neither X

Other X Operation/Post Accident

QUALIFICATION SUMMARY

The equipment is scheduled to be seismically tested in January 1983 at Acton Environmental Labs with final test reports due in April 1983.

COMPONENT SAFETY FUNCTION

Components in these cabinets are not used to achieve safe-shutdown nor to mitigate the consequences of an accident. Monitoring components located in these cabinets are used to estimate and evaluate the real or potential radioactive effluent releases and are Reg. Guide 1.97 (Rev. 2) monitors. Components for the High Range Area Radiation Monitors and the Post Accident Effluent Monitors are located on these cabinets.

Component Mark Number	Cabinet	Name
1D21*PNL 117A	A	
1D21*RIS 085A		Ratemeter
1D11*RIS 134A		Kerotic
1D11*RR 502		Recorder
1D11*E/S 117A		Power Supply(for Recorder)
1D11*E/S 117B		Power Supply(for Ratemeter)
		Isolation Module Digital (2)
		Isolation Module Analog (2)

Component Mark Number	Cabinet	Name
1D21*PNL 117B	B	
1D21*RIS 085B		Ratemeter
1D11*RIS 126A		Keric
1D11*RR 503		Recorder
1D11*E/S 117C		Power Supply (for Recorder)
1D11*E/S 117D		Power Supply (for Ratemeter)
		Isolation Module Digital (2)
		Isolation Module Analog (2)

FAILURE CONSEQUENCE ANALYSIS

Failure of a component in one channel would not affect the operation of other channels located within the cabinet. Each channel is mechanically isolated by barriers and electrically separated by being individually fused with Class 1E fuses. Independent component/channel fusing protects 1E power from damage in the event of short circuiting within the components.

In the event of failure of the High Range Area Radiation Monitors, samples of the containment atmosphere can be obtained using the Post Accident Sampling System and analyzed to estimate extent of core damage. In the event of failure of the Post Accident Effluent Monitors' components located in the 1E cabinets, local indication and/or grab samples with analysis can be used to estimate releases.

JUSTIFICATION SUMMARY

The seismic failure of the components on these cabinets would not degrade the safety function of any other component required for safe-shutdown or for LOCA mitigation and would not mislead the operator. In addition, the Post Accident Sampling System can be used in assessing the extent of core damage and local indication and/or grab samples can be used for radiation release assessment.

Based on these considerations, interim plant operation is justified.

EQUIPMENT JUSTIFICATION

SQRT

Mark No. 1Z93*PCV010A,B

System Name Post Accident Monitoring

Spec. No. 492-1.1

Component Name Press Control Valve

Vendor Circle Seal

Model No. NCRR20-9020

Quantity 2

EQUIPMENT REQUIREMENTS

Hot Standby __ Cold Shutdown __ Both X __ Neither __

Other X __ (Post Accident Monitoring)

QUALIFICATION SUMMARY

These Circle Seal pressure control valves are being seismically tested at Wyle Laboratories. The testing is expected to be complete and the test report and documentation issued by February, 1983.

COMPONENT SAFETY FUNCTION

These pressure control valves regulate the pressure of nitrogen gas to the suppression pool level measuring bubbler system, 1Z93*LT012A, B (range: - 90" to normal water level to + 6"). The bubbler system measures level by measuring the hydrostatic pressure at the open end of a submerged tube. A constant nitrogen supply pressure to the bubbler and differential pressure transmitter is required.

FAILURE CONSEQUENCE ANALYSIS

These components employ spring-held diaphragms to regulate the pressure at a pre-set amount, which is determined by an adjustable spring tension. The postulated failure modes due to seismic load include spring failure and/or diaphragm rupture.

If the spring failed or the diaphragm ruptured, the valve would lose its ability to regulate and would fail open. If this happened, the system would see the full supply pressure of 100-145 psig instead of the normal pressure of 60 psig. This would cause a zero shift in the level transmitter, but would not over pressure other components or piping in the loop.

In the event that 1Z93*LT012A, B are impaired or disabled, diverse Class IE level instrumentation (1Z93*LT001A,B) can be used as a backup (range: - 36" to normal water level to + 60"). This range is not as low as that of 1Z93*LT012A,B but the suppression pool level is not expected to fall below - 36" so the effect would be minimal. These components have been installed to Category I requirements so they will not experience an external failure that would jeopardize other equipment.

The PVC is self-contained, with no electrical connections so the failure of this valve would not affect any Class IE electrical equipment.

JUSTIFICATION SUMMARY

As indicated in the Failure Consequence Analysis, diverse methods for measuring suppression pool level exist, which could be used in the unlikely event of failure of 1Z93*LT012A,B caused by failure of 1Z98*PCV010A,B.

It has been shown in the failure consequence analysis above, that component failure would not affect any Class IE equipment. Hence interim plant operation is justified.

EQUIPMENT JUSTIFICATION
SQRT

Mark No. 1T48*PCV 143A,B,C,D

Component Name Pressure Control Valves

System Name Pri. Contain. Atmos. Cntrl.

Vendor Circle Seal

Spec. No. 492-1.2

Model No. NCRR20-9020

Quantity 4

EQUIPMENT REQUIREMENTS

Hot Standby __ Cold Shutdown __ Both __ Neither X

Other X __ (Post Accident Monitoring)

QUALIFICATION SUMMARY

These Circle Seal pressure control valves are being seismically tested at Wyle Laboratories. The testing is expected to be complete and the test report and documentation issued by February, 1983.

COMPONENT SAFETY FUNCTION

These pressure control valves regulate hydrogen reagent gas pressure at 25 psig from the 2400 psig hydrogen reagent gas bottle to the H_2/O_2 analyzer panels 1T48*PNL 068A,B & 1T48*PNL 069A,B. The analyzer system is required for LOCA mitigation and for compliance with Reg. Guide 1.97.

FAILURE CONSEQUENCE ANALYSIS

These PCV's employ a spring-held diaphragm to regulate the pressure at a preset amount, which is determined by adjustable spring tension. There is a relief valve on the outlet side of each valve integrally mounted on the PCV.

Possible post-seismic failure modes include a spring failure or diaphragm rupture, a stuck open relief valve, and/or a relief valve that failed to open.

If the spring failed or the diaphragm ruptured, the PCV would lose it's ability to regulate and could fail open allowing full supply pressure through the valve. If the relief valve is operating correctly, this pressure would be vented, preventing damage to the downstream piping or the analyzer panels. However, if the relief valve failed to open due to seismically-induced damage, the downstream piping and the panels would be exposed to gas pressures of 2400 psig, potentially damaging them.

If the relief valve stuck open, the hydrogen gas would vent to the surrounding area, instead of going to the analyzers. The area surrounding these PCV's is sufficiently vented, assuring that the escaping hydrogen gas could not accumulate to an explosive concentration.

Any of these failure scenarios could cause the analyzers to malfunction or fail entirely. In the event that all analyzers are affected, the capability exists to obtain and analyze grab samples of the containment atmosphere, with the post-accident sampling system.

There are no electrical connections to these PCV's, so their failure would not affect any Class IE equipment other than the analyzers, or any Class IE power supplies.

These items are installed to Category I requirements, so they will not experience an external failure that would jeopardize other equipment.

JUSTIFICATION SUMMARY

If a failure of these components disabled the H_2/O_2 analyzing system, grab sample capability would still exist. Failure would not affect any other IE systems or power supplies. Category I installation will prevent any external failure and resultant damage to other equipment. Ventilation is sufficient in the area of these valves so that gross leakage of hydrogen would not reach explosive levels. Hence, interim plant operation is justified.

EQUIPMENT JUSTIFICATION
SQRT

Mark No.	1T48*PCV144A,B	Component Name	Press Control Valve
System Name	Pri.Contain. Atmos. Cntrl.	Vendor	Circle Seal
Spec. No.	492-1.3	Model No.	NCRR20-9020
		Quantity	2

EQUIPMENT REQUIREMENTS

Hot Standby___ Cold Shutdown ___ Both ___ Neither _X_

Other (Post Accident Monitoring)

QUALIFICATION SUMMARY

These Circle Seal pressure control valves are being seismically tested at Wyle Laboratories. The testing is expected to be complete and the test report and documentation issued by February, 1983.

COMPONENT SAFETY FUNCTION

These pressure control valves regulate hydrogen calibration gas pressure at 25 psig from the 1100 psig hydrogen calibration gas bottles to the H_2/O_2 analyzer panels, 1T48*PNL 068A,B & 1T48*PNL 069A,B. The analyzer system is required for LOCA mitigation and for compliance with Reg. Guide 1.97.

FAILURE CONSEQUENCE ANALYSIS

These PCV's employ a spring-held diaphragm to regulate the pressure at a pre-set amount, which is determined by adjustable spring tension. There is a relief valve on the outlet side of each valve integrally mounted on the PCV.

Possible post-seismic failure modes include a spring failure or diaphragm rupture, a stuck open relief valve, and/or a relief valve that failed to open.

If the spring failed or the diaphragm ruptured, the PCV would lose its ability to regulate and could fail open allowing full supply pressure through the valve. If the relief valve is operating correctly, this pressure would be vented, preventing damage to the downstream piping or the analyzer panels. However, if the relief valve failed to open due to

seismically-induced damage, the downstream piping and the panels would be exposed to gas pressures of 1100 psig, potentially damaging them.

If the relief valve stuck open, the hydrogen calibration gas would vent to the surrounding area, instead of going to the analyzers. The area surrounding these PCV's is sufficiently vented assuring that the escaping hydrogen gas could not accumulate to an explosive concentration.

Any of these failure scenarios could cause the analyzers to malfunction or fail entirely. In the event that all analyzers are affected, the capability exists to obtain and analyze grab samples of the containment atmosphere, with the post-accident sampling system.

There are no electrical connections to these PCV's, so their failure would not affect any Class 1E equipment other than the analyzers, or any Class 1E power supplies.

These items are installed to Category I requirements, so they will not experience an external failure that would jeopardize other equipment .

JUSTIFICATION SUMMARY

If a failure of these components disabled the H_2/O_2 analyzing system, grab sample capability would still exist. Failure would not affect any other Class 1E systems or power supplies. Category I installation will prevent any external failures and resultant damage to other equipment. Ventilation is sufficient in the area of these valves so that gross leakage of hydrogen would not reach explosive levels. Hence, interim plant operation is justified.

EQUIPMENT JUSTIFICATION
SQRT

Mark No.	1T48*PCV145A,B,C,D	Component Name	Press. Control Valve
System Name	Pri. Contain. Atmos Cntrl.	Vendor	Circle Seal
Spec. No.	492-1.4	Model No.	NCRR20-9020
		Quantity	4

EQUIPMENT REQUIREMENTS

Hot Standby____ Cold Shutdown ____ Both____ Neither_X__

Other (Post Accident Monitoring)

QUALIFICATION SUMMARY

These Circle Seal pressure control valves are being seismically tested at Wyle Laboratories. The testing is expected to be complete and the test report and documentation issued by February 1983.

COMPONENT SAFETY FUNCTION

These pressure control valves regulate reagent gas pressure at 25 psig from the 2200 psig oxygen reagent gas bottles to the H_2/O_2 analyzer system which is required for LOCA mitigation and for compliance with Reg. Guide 1.97.

FAILURE CONSEQUENCE ANALYSIS

These PCV's employ a spring-held diaphragm to regulate the pressure at a pre-set amount, which is determined by adjustable spring tension. There is a relief valve on the outlet side of each valve integrally mounted on the PCV.

Possible post-seismic failure modes include a spring failure or diaphragm rupture, a stuck open relief valve, and/or a relief valve that failed to open.

If the spring failed or the diaphragm ruptured, the PCV would lose its ability to regulate, and could fail open allowing full supply pressure through the valve. If the relief valve is operating correctly, this pressure would be vented, preventing damage to the downstream piping or the analyzer panels. However, if the relief valve failed to open due to

seismically-induced damage, the downstream piping and the panels would be exposed to gas pressures of 2200 psig, potentially damaging them. If the relief valve stuck open, the oxygen reagent gas would vent to the surrounding area, instead of going to the analyzers.

Any of these failure scenarios could cause the analyzers to malfunction or fail entirely. In the event that all analyzers are affected, the capability exists to obtain and analyze grab samples of the containment atmosphere, with the post-accident sampling system.

There are no electrical connections to these PCV's, so their failure would not affect any Class 1E equipment other than the analyzers, or any Class 1E power supply.

These items are installed to Category I requirements, so they will not experience an external failure that would jeopardize other equipment.

JUSTIFICATION SUMMARY

If a failure of these components disabled the H_2/O_2 analyzing system, grab sample capability would still exist. Failure would not affect any other Class 1E systems or power supplies. Category I installation will prevent any external failure and resultant damage to other equipment. Hence, interim plant operation is justified.

EQUIPMENT JUSTIFICATION
SQRT

Mark No.	1T48*PCV146A,B	Component Name	Press Control Valve
System Name	Pri. Contain.Atoms.Cntrl.	Vendor	Circle Seal
Spec. No.	492-1.5	Model No.	NCRR 20-9020
		Quantity	2

EQUIPMENT REQUIREMENTS

Hot Standby___ Cold Shutdown___ Both ___ Neither X

Other (Post Accident Monitoring)

QUALIFICATION SUMMARY

These Circle Seal pressure control valves are being seismically tested at Wyle Laboratories. The testing is expected to be complete and the test report and documentation issued by February 1983.

COMPONENT SAFETY FUNCTION

These pressure control valves regulate oxygen gas pressure at 25 psig from the 2200 psig oxygen calibration gas bottles to the H_2/O_2 analyzer panels, 1T48* PNL 068A,B and 1T48*PNL 069A,B. The analyzer system is required for LOCA mitigation and for compliance with Reg. Guide 1.97.

FAILURE CONSEQUENCE ANALYSIS

These PCV's employ a spring-held diaphragm to regulate pressure at a pre-set amount, which is determined by adjustable spring tension. There is a relief valve on the outlet side of each valve integrally mounted on the PCV.

Possible post-seismic failure modes include a spring failure or diaphragm rupture, a stuck open relief valve, and/or a relief valve that failed to open.

If the spring failed or the diaphragm ruptured, the PCV would lose its ability to regulate, and would fail open allowing full supply pressure through the valve. If the relief valve is operating correctly, this pressure would be vented, preventing damage to the downstream piping or

the analyzer panels. However, if the relief valve failed to open due to seismically-induced damage the downstream piping and the panels would be exposed to gas pressures of 2200 psig, potentially damaging them. If the relief valve stuck open, the oxygen gas would vent to the surrounding area instead of going to the analyzers.

Any of these failure scenarios could cause the analyzers to malfunction or fail entirely. In the event that all analyzers are affected, the capability exists to obtain and analyze grab samples of the containment atmosphere, with the post-accident sampling system.

There are no electrical connections to these PCV's, so their failure would not affect any Class 1E equipment other than the analyzers, or any Class 1E power supplies.

These items are installed to Category I requirements, so they will not experience an external failure that would jeopardize other equipment.

JUSTIFICATION SUMMARY

If a failure of these components disabled the H_2/O_2 analyzing system, grab sample capability would still exist. Failure would not affect any other Class 1E systems or power supplies. Category I installation will prevent external failure and resultant damage to other equipment. Hence, interim plant operation is justified.

JUSTIFICATION FOR INTERIM OPERATION

NAME: SDV Solenoid Valve

MPL/MARK NO.: C11-F009/1C11*SOV044

SAFETY FUNCTION:

To open, permitting air to vent from the air supply header, thereby closing the CRD vent and drain valves.

FAILURE MODES:

Fail Open (deenergized)	X
Fail Closed (energized)	
Loss of Power	X
Loss of Air	
Loss of Pressure Integrity	
Loss of Structural Integrity	
Distortion of Mounting	

An evaluation of the solenoid valve, and the control rod drive hydraulic control system in which it is used, shows that the only credible failures which affect this normally closed valve's safety functions are "fail open" and "loss of power". Other failures are judged by General Electric to not be credible under worst case dynamic loading conditions, or are subordinate to "fail open".

FAILURE EFFECT:

A. Effect on Primary Use

Valve fails open, and hence safe, on loss of power, permitting air to vent from the air supply header. This closes the SDV vent and drain valves.

B. Secondary Effect

Water accumulation in the SDV instrument volume.

DISCUSSION AND CONCLUSION:

The SDV solenoid valve is designed to fail safe on loss of power facilitating closure of the vent and drain valves. This is considered to be the only credible failure mode which the solenoid valve can experience. Any water accumulation in the SDV instrument volume will be detected by level switches mounted on the instrument volume. If the level exceeds a predetermined setpoint, the reactor will scram automatically.

Therefore, interim operation with this valve does not pose a safety hazard.

JUSTIFICATION FOR INTERIM OPERATION

NAME: SDV Vent and Drain Valves

MPL/MARK No.: C11-F010/F011/1C11*AOV081/82

SAFETY FUNCTION:

To close, isolating the scram discharge volume from the radwaste drain system.

FAILURE MODES:

Fail Open	____
Fail Closed	X
Loss of Power	____
Loss of Air	X
Loss of Pressure Integrity	____
Loss of Structural Integrity	____
Distortion of Mounting	____

These valves are air operated. Therefore, "loss of power" does not apply. "Loss of air" causes the valves to close, subordinating this failure mode to "fail closed". Other failure modes identified which could cause the valve to fail open have been evaluated and judged by General Electric to be not credible under worst case dynamic loading conditions.

FAILURE EFFECT:

A. Effect on Primary Use
If the valves fail closed, there will be SDV water accumulation.

B. Secondary Effect
None

DISCUSSION AND CONCLUSION:

The SDV vent and drain valves are designed to fail safe on loss of air which is considered to be the only credible failure mode. Any water accumulation in the SDV instrument volume will be detected by level switches mounted on the instrument volume. If the level exceeds a predetermined setpoint, the reactor will scram automatically.

Therefore interim plant operation with the SDV valves not fully qualified is justified.

JUSTIFICATION FOR INTERIM OPERATION

NAME: HPCI Turbine

MPL/Mark No.: E41-C002/1E41*TU-002

SAFETY FUNCTION:

To supply high pressure emergency cooling water to the reactor pressure vessel, in order to maintain reactor core temperatures within specification limits.

FAILURE MODES:

Fail Open	____
Fail Closed	____
Loss of Power	X
Loss of Air	____
Loss of Pressure Integrity	X
Loss of Structural Integrity	X
Distortion of Mounting	X

"Fail open or closed", and "loss of air" are failure modes which are not, by their nature, applicable to this high pressure steam turbine. The remaining failure modes, however, are credible under worst case dynamic loading conditions.

FAILURE EFFECT:

A. Effect on Primary Use

Failures could cause flow rate of emergency cooling water to be less than required to maintain reactor core temperatures within specification limits.

B. Secondary Effect

None

DISCUSSION AND CONCLUSION:

A HPCI turbine, similar to the Shoreham turbine, has just recently been subjected to a dynamic test which envelopes Shoreham requirements. Preliminary indications are that the turbine performed within

RWH:lm:im/13U-24
12/1/82

specification limits both during and after the dynamic events. These preliminary indications will be confirmed by post test analysis and reporting of the test data.

Based on the above test, interim operation of the HPCI turbine poses no safety hazard at the Shoreham Plant. In addition, in the unlikely event of failure of the HPCI Turbine, alternate ECCS systems (e.g. ADS, RHR, Core Spray) are available and would safely shut down the reactor.

RWH:lm:im/13U-25
12/1/82

JUSTIFICATION FOR INTERIM OPERATION

NAME: Power Range Monitor Panel

MPL/MARK NO.: H11-P608/1H11*PNL-608

SAFETY FUNCTION:

Provide information on power level of reactor for monitoring and control purposes. Initiate rod block or scram signals when required.

FAILURE MODES:

Fail Open	X
Fail Closed	X
Loss of Power	X
Loss of Air	
Loss of Pressure Integrity	
Loss of Structural Integrity	X
Distortion of Mounting	X

The PRM panel does not use air or pressure retaining parts. However, all other failure modes listed are credible under worst case dynamic loading conditions.

FAILURE EFFECT:

A. Effect on Primary Use

Loss of electrical power would automatically scram the reactor. Other failures could cause erroneous reactor power level readings leading to automatic or manual control actions different than desired. An erroneously high reactor power reading is fail-safe since the control system will take action to lower power. An erroneously low power reading could lead to control system commands to increase power. However, in this instance there are single failure proof backup systems which will automatically scram the reactor. In particular, should reactor power increase to excessively high levels, scram will automatically occur on high reactor pressure. As a last resort, the main steam radiation monitors will automatically scram the reactor should they detect high radiation levels which might result from fuel damage caused by an excessive power excursion. Because of built-in redundancy and electrical safeguards, the chances of an erroneous power level reading are low.

RWH:lm:im/13U-22
12/1/82

B. Secondary Effect

None

DISCUSSION AND CONCLUSION:

The power range monitoring panel has been successfully qualified to IEEE 344-1971 standards. During testing, the panel was subjected to a resonance search followed by single axis, single frequency vibration over a range of 1-33 Hz. Six runs were made, two in each direction at different table accelerations. These six runs were comprised of front-to-back at 0.6g and 1.8g, side-to-side at 0.6g and 1.8g, and vertical at 0.4g and 1.2g.
The test data indicate more than one resonance exists in each of the three orthogonal axes. However, since the resonance frequencies are widely spaced, and the second resonance in each axis is at or close to the ZPA frequency rather than in a region of response amplification, the probability of multi-mode excitation is low and single frequency testing is acceptable.

IEEE 344-1975 requires the equivalent of 5 OBE tests followed by one SSE test. Although random motion OBE/SSEs were not performed in the P608 test, it might be possible to take credit for the ZPA input frequency sweeps since single frequency tests generally provide more severe test response than multi-frequency tests. However, it would be necessary to verify that the test duration was at least equal to the "strong motion portion" of the SSE in order to account for vibration build-up. No data on test duration can be found in the P608 test report and so it appears that the 1975 requirements cannot be verified, even though the test duration was most likely greater than required.

Because of the lack of confirmatory data on test duration, and also because of an anomalous power supply failure due to a mechanical arm which physically impacted the power supply midway through the test, a retest of the H11-P608 panel to IEEE 344-1975 standards is planned. (The mechanical arm has been redesigned).

The testing performed to date demonstrates that the power range monitoring panel has a high level of seismic capabilities. Therefore, interim plant operation with the power range monitoring panel not fully qualified to the IEEE 344-1975 standards is justified.

RWH:lm:im/13U-23
12/1/82

JUSTIFICATION FOR INTERIM OPERATION

NAME: In-Vessel Rack

MPL/MARK NO.: F16-E006 /1F16*RAK-09

SAFETY FUNCTION:

Support fuel bundles inside reactor during refueling.

FAILURE MODES:

Fail Open.	____
Fail Closed	____
Loss of Power	____
Loss of Air	____
Loss of Pressure Integrity	____
Loss of Structural Integrity	X
Distortion of Mounting	X

The in-vessel rack is a passive frame type structure. It does not open, close, use power and air, or retain pressure. The only failure modes that are credible under worst case dynamic loadings are loss of structural integrity and distortion of mounting.

FAILURE EFFECT:

A. Effect on Primary Use

Loss of structural integrity, or distortion of mounting, could permit up to four fuel bundles to fall down upon the top of the reactor core during refueling.

B. Secondary Effect

None

DISCUSSION AND CONCLUSION:

The in-vessel rack is used during refueling only, as a convenient in-vessel parking place for fuel bundles. It is not used during the initial fuel loading. Ample time is available before the first refueling outage to perform the required nonlinear analysis to qualify the Shoreham in-vessel rack to the SQRT criteria. Even if it is not qualified by the first refueling outage, refueling could proceed without the use of this rack.

Therefore, interim operation before the in-vessel rack is qualified poses no safety hazard.

RWH:lm:im/13U-9
12/1/82