TABLE OF CONTENTS

Attachment A

NSSS SQRT SUMMARY

In response to the NRC request for information concerning equipment qualification for seismic and hydrodynamic loads on the Zimmer Nuclear Station, a thorough review was performed in order to assess the adequacy of the existing NSSS qualification based on the NRC Seismic Qualification Review Team (SQRT) requirements. These requirements include:

- IEEE 344 - 1975
- USNRC Regulatory Guide 1.92
- USNRC Regulatory Guide 1.100
- USNRC Standard Review Plan 3.9.2
- USNRC Standard Review Plan 3.10
- Zimmer unique building vibratory response to seismic and hydrodynamic loads.

Prior to the start of the SQRT evaluation, a list of all of the Zimmer nuclear safety related NSSS equipment was developed. This list included all safety related mechanical components, electrical, instrumentation, and control equipment, including valve actuators and other appurtenances of active pumps and valves. This list is depicted in Table 1 and includes the following information:

- Equipment description
- System in which the equipment is located
- Hot standby/cold shutdown requirements
- Location of the equipment
- Availability for inspection

- o Vendor/model number
- o Specification number.

Table 1 was prepared by reviewing several GE equipment lists and system drawings, and by contacting cognizant engineers at the plant site and at GE.

The qualification information is summarized in Table 2. Information on this table includes:

- o Specification number
- o Qualification method
- o Compliance to NRC SQRT criteria and justification
- o Plans for reevaluation/requalification

During the evaluation phase of the work, GE transmitted analytical results, test reports, and recirculation and mainstream piping loads. Sargent & Lundy (S&L), who is the architect engineer, provided building response spectra and balance of plant piping loads. In addition, instrument specifications and qualification documentation were received from several equipment vendors. The information which was received from GE, S&L, and the equipment vendors was reviewed in light of the current NRC SQRT requirements. Careful consideration was given to the effects of the high frequency loads and the multi-modal response of the equipment.

SQRT Summary Forms were completed for the equipment items. These forms contain information concerning the equipment function, dimensions, and location, as well as the results of tests and analyses which were performed.

The evaluation was divided into four (4) phases. During the first phase, the locally mounted racks and instruments were evaluated. The second phase of the work addressed the qualification of the

control room panels and instruments. The floor mounted mechanical equipment was evaluated in the next phase. Lastly, the pipe mounted mechanical equipment was evaluated.

The results of the evaluation are provided below. The percentages refer to the percent of the equipment in each category which met the current NRC SQRT requirements.

o	Locally mounted instruments	15%
o	Locally mounted racks	0%
o	Control room instruments	70%
o	Control room panels	40%
o	Floor mounted mechanical equipment	30%
o	Pipe mounted mechanical equipment	65%

It should be noted that the mechanical equipment which was found to be qualified will be reevaluated when the final GE T-Quencher and LOCA loads analyses are completed. The current qualification results for the mechanical equipment were reviewed by considering the methodology which was used to perform the analyses and tests. It was assumed that the same methodology will be used when performing the new loads (T-Quencher and LOCA) analyses since this methodology was found acceptable during the reevaluation. This will be verified during the final review.

In order to bring all of the nuclear safety related Zimmer equipment into compliance with the current NRC SQRT requirements, several requalification programs were developed and are in progress using state-of-the-art analytical and testing techniques. The locally mounted and control room instruments and panels have been qualified by multi-axial, multifrequency tests. Several of the small mechanical equipment items are also being qualified by test. These tests account for the effects of hydrodynamic and seismic loads on the equipment. The large mechanical equipment items have been qualified by complex modal analysis which use the

current hydrodynamic and seismic response spectra. Detailed qualification reports have been prepared for each analysis and test, and these reports have been submitted to Cincinnati Gas & Electric (CG&E) so that they may be included in an auditable file.

CG&E has developed plans for an SRV in-plant test program. The purpose is to provide actual measurements of pressure loads which are imposed on the suppression pool boundaries during SRV actuation and to verify that these measured pressure loads are conservative when compared to the T-Quencher design loads shown in the FSAR. Two additional objectives of the test are to verify the design adequacy of various submerged structures which are subjected to these SRV loads and to measure the suppression pool temperature distribution during an extended SRV discharge.

NOTES TO TABLE 1

1. Indicates whether the equipment is required for:

   a. Hot Shutdown

   b. Cold shutdown

   c. Both

   d. Neither

2. Gives building and elevation

3. Indicates yes or no as to whether the equipment is installed.

4. Refers to Design Specification, Purchased Part Drawing, or Assembly Drawing No.

5. Abbreviations:

   ADS = Automatic Depressurization System

   CRD HYD Control = Control Rod Drive Hydraulic System

   CRVICS = Containment & Reactor Vessel Isolation Control System

   ESF = Engineered Safety Features

   HPCS = High Pressure Core Spray System

   LDS = Leak Detection System

   LPCS = Low Pressure Core Spray System

   MSIV LCS = Main Steam Isolation Valves Leakage Control System

   NBS = Nuclear Boiler System

   NMS = Neutron Monitoring System

   PGCC = Power Generation Control Complex

   Process Rad/RPM = Process Radiation Monitoring System

   RCIC = Reactor Core Isolation Cooling System

   Reactor Recirc = Reactor Recirculation System

   RC&IS = Rod Control & Information System

NOTES TO TABLE 1

RHR = Residual Heat Removal System

RPS = Reactor Protection System

RPV = Reactor Pressure Vessel

RWCU = Reactor Water Clean Up

SLCS = Standby Liquid Control System

VB = Vertical Board

*** Indicates information to be provided upon completion of Reevaluation.

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
B21-D002 thru D009	NBS	Condensing Chamber	GE/136B2798G003	234A9901	Both	Reactor Bldg.	Yes
B21-F013		Safety/Relief Valve	Crosby/6R10-HB-BP	22A6441 21A9247	Both	Reactor Bldg. 561'9"	
B21-F022 & B21-F028		Main Steam Isolation Valve (MSIV) Actuator	Rockwell/ 24" x 20" x 24" Fig. 1612 JMMNTY	21A9257 385HA758	Cold Shutdown	Reactor Bldg. & Steam Tunnel 529' 2 7/8" Main Steam Lines (Supports are on 523' 4 3/4")	
B21-N015		Pressure Switch	Barksdale/B1T-M12SS	164C5359	Hot Shutdown	Turbine Bldg.	
B21-N020		Pressure Switch	Barksdale/B1T-M12SS	164C5359		Reactor Bldg. 546'0"	
B21-N023		Pressure Switch	Barksdale/B1T-M12SS	164C5359		Reactor Bldg. 546'0"	
B21-N024		Level Switch	Barton/288A	159C4384		Reactor Bldg. 546'0"	

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

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B21-N026	NBS	Level Ind. Switch	Barton/384	159C4383	Hot Shutdown	Reactor Bldg. 546'0"	Yes
B21-N027		Diff. Press. Xmtr.	Bailey/555	163C1183	Neither	Reactor Bldg. 546'0"	
B21-N031		Level Ind. Switch	Barton/288A	159C4384	Hot Shutdown	Reactor Bldg. 546'0"	
B21-N032		Diff. Press. Xmtr.	Bailey/555	163C1183	Neither	Reactor Bldg. 525'7"	
B21-N033		Diff. Press. Xmtr.	Bailey/555	163C1183	Neither	Reactor Bldg. 525'7"	
B21-N034		Diff. Press. Xmtr.	Bailey/555	163C1183	Neither	Reactor Bldg. 525'7"	
B21-N036		Level Ind. Switch	Yarway/4418C	159C4445	Hot Shutdown	Reactor Bldg. 546'0"	
B21-N037		Level Ind. Switch	Barton/288A	159C4384	Hot Shutdown	Reactor Bldg. 546'0"	
B21-N038		Level Ind. Switch	Barton/288A	159C4384	Hot Shutdown	Reactor Bldg. 546'0"	

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

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B21-N039	NBS	Pressure Switch	Barksdale/ BIT-M12SS	164C5359	Hot Shutdown	Reactor Bldg. 546'0"	Yes
B21-N044	↓	Level Switch	Barton/760	159C4383	↓	Reactor Bldg. 525'7"	↓
B21-N045		Pressure Switch	Barksdale/ BIT-M12SS	164C5359		Reactor Bldg. 546'0"	
B21-N047		Pressure Switch	Static-O-Ring/ 12-N-AA4-TT	145C3012		↓	
B21-N048		Pressure Switch	Static-O-Ring/ 12-N-AA5-TT	145C3012			
B21-N051		Press. Xmtr.	Bailey/556	163C1292	Neither		
B21-N056		Vacuum Switch	Barksdale DIT-H18SS	163C1855	Hot Shutdown	Turbine Bldg.	
B21-R004		Pressure Ind.	Robertshaw 713B	163C1184	Neither	Reactor Bldg. 546'0"	
B21-R005	↓	Diff. Press. Ind.	Barton/227	163C1181	Neither	Reactor Bldg. 525'7"	↓

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

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B33-C001	Reactor Recirc.	Recirc Pump	Bingham-Willamette/ 20x20x33 RV	21A9279 22A6404, 22A6016	Neither	Reactor Bldg. 530'3"	Yes
B33-F023		Recirc. Suction Valve	Anchor-Darling/ 94-13223	921D875E, 21A9280		Reactor Bldg. 526'1"	
B33-F060		Recirc. Control Valve	Hammel-Dahl/ V999L-26	21A3873		Reactor Bldg. 530'3"	
B33-F067		Recirc. Discharge Valve	Anchor-Darling/ 95-13225	921D875E, 21A9280		Reactor Bldg. 530'3"	
B33-N014		Diff. Pre.. Xmtr.	Rosemount/ 1151	163C1561	Hot Shutdown	Reactor Bldg. 503'6"	
B33-N015		Diff. Press. Xmtr.	Rosemount/ 1151	163C1561	Neither	Reactor Bldg. 503'6"	

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

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B33-N018A	Reactor Recirc.	Press Switch	Static-O-Ring/ 5N-AA3-SITT	145C3011	Hot Shutdown	Reactor Bldg. 475'6"	Yes
B33-N018B	↓	Press Switch	Barksdale/PIP-M340SS-V	159C4606	Hot Shutdown	Reactor Bldg. 475'6"	↓
B33-N023		Temp. Xmtr.	Rosemount/535E	159C4520	Neither	Reactor Bldg. 526'1"	
B33-N024		Diff. Press. Xmtr.	Rosemount/1151	163C1561	Hot Shutdown	Reactor Bldg. 503'6"	
B33-N035		Temp. Element	Pyco/117C34-85P40	117C3485	Neither	Reactor Bldg. 526'1"	

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

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C11-D001	CRD HYD Control	Hydraulic Control Unit	761E500G1	761E500G1	Hot Shutdown	Reactor Bldg. 554'2"	Yes
C11-F009		Solenoid Valve	Automatic Switch Company 832322	21A9317		Reactor Bldg. 554'2"	
C11-F010		Scram Discharge Vol. Vent Valve	Hammel-Dahl/ SN 71/2006/ 001-009	21A8657			
C11-F011		Scram Discharge Vol. Drain Valve	Hammel-Dahl/ SN 71/2006/ 001-025	21A1747			
C11-F012		Pressure Relief Valve	Crosby/3/4X1 JMAK Spec. B.	21A1749			
C11-N013		Level Switch	Magnetrol/ 5.0-751	159C4361			

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
C34-N008	Feedwater Control	Press Xmtr.	Bailey/556	163C1186	Neither	Reactor Bldg. 546'0"	Yes
C34-N017		Diff. Press Xmtr.	Statham (Gould) PD2000-0400	133D9404		Reactor Bldg. 546'0"	
C34-N003		Diff. Press Xmtr.	Rosemount/ 1151	163C1182		Reactor Bldg. 503'6"	
C34-N004		Diff. Press Xmtr.	Bailey/555	163C1183		Reactor Bldg. 546'0"	
C34-N005		Press XMTR	Bailey/556	163C1186		Reactor Bldg. 546'0"	

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
C41-A001	SLCS	SLC Storage Tank	GE	22A4011AC	Hot Shutdown	Reactor Bldg. 570'6"	Yes
C41-C001		SLC Pump	Union Pump Co., 2X3 TD-60	21A9342AK			
C41-C004		SLC Explosive Valve	CONAX/ 1832-159-01	21A9370			
C41-N003		Temp. Switch	FENWAL/ 22810	157C4629			
C41-N004		Diff. Press Xmtr.	Bailey/556	163C1186			
C41-N006		Temp Element	FENWAL/ 158B7072P7 (Thermowell Only)	158B7072PM			
C41-R003		Press. Ind.	Robertshaw/713B	163C1184			

SHEET ____ OF ____

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
C51-J004	NMS	Shear Valve	GE/886D393	886D393	Hot Shutdown	Reactor Bldg. 525'-7"	Yes
C51-J004		Solenoid Ball Valve	GE/112C2391	112C2391		Reactor Bldg. 525'-7"	
C51-K002		Voltage Preamp	GE/163C1263	163C12[illegible]		Reactor Bldg. 530'-1"	
C51-N002		IRM Detector	GE/112C3144	112C3144		Reactor Vessel	

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
C71-N002	RPS	Press Switch	Static-O-Ring 12N-AA4-TT	145C3012	Hot Shutdown	Reactor Bldg. 546'-0"	Yes
C71-N003	↓	↓	Barksdale/ B1T-M12SS	164C5359	Hot Shutdown	Turbine Bldg.	↓
C71-N004	↓	↓	Barton/288	158B7054	Neither	Reactor Bldg. 546'-0"	↓

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
D13-N003	Process Rad/RPM	Gamma Detector	GE/237X731	237X731	Hot Shutdown	Steam Tunnel	Yes
D13-N009	↓	Sens. & Conv.	GE/194X927	194X927	↓	Reactor Bldg. Vent.	↓
D13-N019	↓	Sens. & Conv.	GE/194X927	194X927	↓	Reactor Bldg. Vent.	↓

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
E12-B001	RHR	RHR Ht. Exchgr.	Delta Southern/ NA	21A9227AR	Both	513'-4" Reactor Bldg.	Yes
E12-C002		RHR Pump/Motor	Ingersol-Rand/ 27-APKD	21A9243CT 21A9222CF		Reactor Bldg. 475'6"	
E12-N004		Temp. Element	PYCO/ 117C3485P22	117C3485	Neither	Reactor Bldg.	
E12-N005		Thermocouple	PYCO/ 117C3485P22	117C3485		Reactor Bldg.	
E12-N008		Level XMTR	Barton 352/368	145C3156			
E12-N009		DP Ind. Switch	Barton 268	145C3009	Hot Shutdown		
E12-N010		DP Switch	Barton 289	145C3008		Reactor Bldg. 475'6"	
E12-N013		DP XMTR	Bailey 555	163C1183	Neither	Reactor Bldg.	
E12-N015		DP XMTR	Bailey 555	163C1183	Neither	Reactor Bldg. 475'6"	
E12-N016		Press. Switch	Static-O-Ring/ SN-AA3-SITT	145C3011	Hot Shutdown		

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

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E12-N018	RHR	Press. Switch	Robertshaw SP-222-C	163C1185	Neither	Reactor Bldg.	Yes
E12-N019		Press. Switch	Static-O-Ring/ 5N-AA3-SITT	145C3011	Hot Shutdown	Reactor Bldg. 475'6"	
E12-N022		Press. Switch	Robertshaw SP-222-C	163C1185	Neither	Reactor Bldg. 475'6"	
E12-N027		Temp. Element	PYCO/ 117C3485P22	11763485		Reactor Bldg.	
E12-N028		Press. XMTR	Bailey 556	163C1186		Reactor Bldg. 475'6"	
E12-N029		DP Switch	Barton 288	145C3009		Reactor Bldg. 475'6"	
E12-N031		Thermocouple	PYCO/ 117C3485P22	17C3485		Reactor Bldg.	
E12-N032		Press. Switch	Barksdale/ BIT-M12SS	164C5359		Reactor Bldg. 475'6"	
E12-N033		Press. Switch	Barksdale/ BIT-M12SS	164C5359		Reactor Bldg. 475'6"	
E12-R002		Press. Ind.	Robertshaw 713B	163C1184		Reactor Bldg. 475'6"	

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

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E21-C001	LPCS	LPCS Pump/Motor	Ingersol-Rand 27-APKD-5	21A9243CS 21A9222CJ	Hot Shutdown	Reactor Bldg. 475'6"	YES
E21-N001		Press. Switch	Barksdale/ PIH-M340SS-V	159C4606P002	Hot Shutdown	Reactor Bldg.	
E21-N003		DP XMTR	Bailey 555	163C1183P001	Neither	Reactor Bldg. 475'6"	
E21-N004		DP Switch	Barton 289	145C3008P011	Hot Shutdown		
E21-N005		Press. Switch	Robertshaw/ SP-222-C	163C1185P003	Neither		
E21-N006		DP Switch	Barton 288	14563009P012	Hot Shutdown		
E21-N009		Press. Switch	Barksdale/ PIH-M340SS-V	159C4606P002	Hot Shutdown		
E21-R001		Press. Ind.	Robertshaw/ 713B	163C1184P002	Neither		
E21-R002		Press. Ind.	Robertshaw/ 713B	163C1184P002	Neither		

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

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E22-C001	HPCS	HPCS Pump/Motor	Ingersol-Rand	21A9243CR 21A9222CX	Hot Shutdown	Reactor Bldg. 475'6"	YES
E22-F001		HPCS Suction Valve From CST	Anchor-Darling/ 94-13266	21A1739 21A1941	Hot Shutdown	Reactor Bldg.	
E22-F004		HPCS Injection Valve	Anchor-Darling/ 94-13330	21A1942 21A1740	Hot Shutdown		
E22-F010		HPCS Test Return Valve to CST	Anchor-Darling/ 1750-3	21A1939	Neither		
E22-F011		HPCS Test Return Valve to CST	Anchor-Darling/ 1750-3	21A1939			
E22-F012		HPCS Bypass Valve to Suppression Pool	Anchor-Darling/ 94-13329	21A1931			
E22-F015		HPCS Suction Valve from Suppression Pool	Anchor-Darling/ 94-13294	21A1941 21A1739 21A8657	Both		

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

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E22-F023	HPCS	HPCS Test Return Valve to Suppression Pool	Anchor Darling/ 15-1751-3	21A8657	Neither	Reactor Bldg.	YES
E22-N001		Level Switch	Magnetrol/ 3.5-751-1X-MPG-M14HY	159C4294	Both	Reactor Bldg.	
E22-N002		Level Switch	Magnetrol/ 3.5-751-1X-MPG-M14HY	159C4294	Both	Reactor Bldg.	
E22-N003		Press. Switch	Robertshaw SP-222-C	163C1185	Neither	Reactor Bldg. 475'6"	
E22-N004		Press. XMTR	Bailey 556	163C1186			
E22-N005		DP XMTR	Bailey 555	163C1183			
E22-N006		DP Switch	Barton 289	145C3008			
E22-N009		DP Ind. Switch	Barton 288	145C3009			
E22-N012		Press. Switch	Barksdale/ PIH-M340SS-V	159C4606			

SEISMIC QUALIFICATION REVIEW

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Zimmer Nuclear Safety Related
Equipment List

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E22-N013	HPCS	Press. Switch	Barton 288	145C3009	Neither	Reactor Bldg. 475'6"	YES
E22-R001	↓	Press. Ind.	Robertshaw/ 713B	163C1184	↓	↓	↓
E22-R002	↓	Press. Ind.	Robertshaw 713B	163C1184	↓	↓	↓

SEISMIC QUALIFICATION REVIEW

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Zimmer Nuclear Safety Related
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E31-N001	LDS	Thermocouple	PYCO/ 145C3224P1	145C3224P001	Hot Shutdown	Reactor Bldg.	YES
E31-N002		Thermocouple	PYCO/ 145C3224P1	145C3224P001			
E31-N003		Thermocouple	PYCO/ 145C3224P1	145C3224P001			
E31-N004		Thermocouple	PYCO/ 145C3224P1	145C3224P001			
E31-N005		Thermocouple	PYCO/ 14563224P1	145C3224P001			
E31-N006		Thermocouple	PYCO/ 145C3224P1	14563224P001			
E31-N007		DP Switch	Barton 288	145C3009P012		Reactor Bldg. 475'-6"	
E31-N008		DP Switch	Barton 288	145C3009P012		Reactor Bldg. 503'-6"	
		Damper	Republic	163C1054P001	Neither	Reactor Bldg.	
E31-N009		DP Switch	Barton 288	145C3009P012	Hot Shutdown	Reactor Bldg. 503'-6"	

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
E31-N010	LDS	DP Switch	Barton 288	145C3009	Hot Shutdown	Reactor Bldg. 503'-6"	YES
		Damper	Republic	163C1054	Neither	Reactor Bldg.	
E31-N011		DP Switch	Barton 288	145C3009	Hot Shutdown	Reactor Bldg. 503'-6"	
		Damper	Republic	163C1054	Neither	Reactor Bldg.	
E31-N012		DP Switch	Barton 288	145C63009	Hot Shutdown	Reactor Bldg. 475'-6"	
E31-N013		DP Switch	Barton 288	145C3009			
E31-N015		Flow XMTR	Bailey 555	163C1183		Reactor Bldg. 546'-0"	
E31-N018		Thermocouple	PYCO/ 145C3224P1	14563224			
E31-N022		Press. Switch	Barksdale/ PIH-M85SS-V	15464606		Reactor Bldg. 475'-6"	
E31-N024		Thermocouple	PYCO/ 145C3224P1	145C3224			
E31-N025		Thermocouple	PYCO/ 145C3224P1	145C3224			

SHEET ____ OF ____

SEISMIC QUALIFICATION REVIEW

Table I

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
E31-N026	LDS	Thermocouple	PYCO/ 145C3224P1	145C3224	Hot Shutdown	Reactor Bldg.	YES
E31-N027		Thermocouple	PYCO/ 145C3224P1	145C3224			
E31-N028		Thermocouple	PYCO/ 145C3224P1	145C3224			
E31-N029		Thermocouple	PYCO/ 145C3224P1	145C3224			
E31-N030		Thermocouple	PYCO/ 145C3224P1	145C3224			
E31-N031		Thermocouple	PYCO/ 145C3224P1	145C3224			
E31-N035		Flow Xmtr.	Bailey 555	16361183		Reactor Bldg. 546'-0"	
E31-N036		Flow Xmtr.	Bailey 555	16361183			

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER P&ID LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
E32-B001	MSIV LCS	MSIV-LCS Heater	GE/21A3581	22A4633	Neither	Reactor Bldg. Steam Tunnel 510'4"	Yes
E32-C001 E32-C002		MSIV-LCS Blower	GE/21A3762	21A3762		Reactor Bldg. 510'5"	
E32-N006		Flow Meter	Schutte & Koerting/ 20-9651-8550	169C8338		Reactor Bldg.	
E32-N050		Press. Xmtr.	Rosemount/1151	163C1564		Reactor Bldg. 546'0"	
E32-N051		Press. Xmtr.	Rosemount/1151	163C1564		Reactor Bldg. 503'6"	
E32-N053		Flow Xmtr.	Schutte & Koerting/ 91X-16-4-20	169C8339		Reactor Bldg. 503'6"	
E32-N054		Press. Xmtr.	Rosemount/1151	163C1564		Reactor Bldg. 503'6"	

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
E32-N055	MSIV-LCS	Press. Xmtr.	Rosemount/1151	163C1564	Neither	Reactor Bldg. 503'6"	Yes
E32-N056		Press. Xmtr.	Rosemount/1151			Reactor Bldg. 503'6"	
E32-N058		Press. Xmtr.	Rosemount/1151			Reactor Bldg. 546'0"	
E32-N059		Press. Xmtr.	Rosemount/1151			Reactor Bldg 503'6"	
E32-N060		Press. Xmtr.	Rosemount/1151			Reactor Bldg. 546'0"	
E32-N061		Press. Xmtr.	Rosemount/1151			Reactor Bldg. 503'6"	

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
E51-C001	RCIC	RCIC Pump	Bingham/4X6X9CP	21A9243BL	Hot Shutdown	Reactor Bldg. 475'6"	Yes
E51-C002		RCIC Turbine	Terry/GS-2	21A9201			
E51-N002		ΔP Switch	Barton/289	145C3008			
E51-N003		Flow Xmtr.	Rosemount/1151	163C1561			
E51-N004		Press Xmtr.	Bailey/556	163C1186	Neither		
E51-N005		Press Xmtr.	Bailey/556	163C1186	Neither		
E51-N006		Press Switch	Static-O-Ring/ 6N-AA21-VSITT	145C3011	Hot Shutdown		
E51-N007		Press Xmtr.	Bailey/556	163C1186	Neither		
E51-N008		Press Xmtr.	Bailey/556	163C1186	Neither		
E51-N009		Press Switch	Barksdale/ D2H-M80SS	145C3046	Hot Shutdown		
E51-N010		Level Switch	Magnetrol/ 5.0-751	159C4361	Neither	Reactor Bldg.	

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
E51-N012	RCIC	Press Switch	Barksdale/ D2H-M80SS	145C3046	Hot Shutdown	Reactor Bldg. 475'6"	Yes
E51-N021	↓	Press Switch	Barksdale/ D2H-M80SS	145C3046	Neither	↓	↓
E51-R001		Press Ind.	Robertshaw/ 713B	163C1184	↓		
E51-R002		Press Ind.	↓	↓			
E51-R003		Press Ind.					
E51-R004		Press Ind.					

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[3]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
F11-E001	Fuel Servicing	Fuel Prep Machine	General Electric/ 729E716	23A2551	Neither	Reactor Bldg. 627'9"	Yes
F11-E011	Fuel Servicing	Gen. Purpose Grapple	General Electric	148F478	Neither	Reactor Bldg.	Yes

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
F13-E008	RPV Service Tools	Dryer/ Separator Sling	General Electric 762E984	762E984	Neither	Reactor Bldg.	Yes
F13-E009	RPV Service Tools	RPV Head Strongback	General Electric/ 762E985	762E985	Neither	Reactor Bldg.	Yes

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
F14-E002	Reactor Servicing Equipment	Control Rod Grapple	General Electric/ 767E593	767E593	Neither	Reactor Bldg.	Yes

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
F15-E003	Refuel Equip.	Refuel Platform Equip.	General Electric/ 762E892	762E852	Neither	Reactor Bldg. 627'9"	Yes

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
F16-E002	Storage	Spent Fuel Storage Rack	GE/762E210	22A2553	Neither	596' Reactor Bldg.	Yes
F16-E004	↓	CR and Defective Fuel Storage Rack	GE/731E670	22A2554	↓	589' Reactor Bldg.	↓
F16-E006		In-Vessel Rack	GE/729E269	729E269G104		Reactor Bldg.	
F16-E007		New Fuel Storage Rack	GE/729E943	386HA625		Reactor Bldg.	
F16-E009		Defective Fuel Storage Container	GE/1172072	22A4325		589' Reactor Bldg.	

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
G33-N021	RUCU	Thermocouple	PYCO/ 117C3485	117C3485	Neither	Reactor Bldg.	Yes

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
H13-P601	ECCS	Reactor Core Cooling Bench-	GE/328X501TU	22A2702BC	Both	Auxiliary Bldg. Control Room 546'	Yes
H13-P603	Reactor Control	Reactor Control Benchboard	GE/328X503TU				
H13-P608	NMS	Power Range Neutron Monitoring Cabinet	GE/328X105TU		Hot Shutdown		
H13-P609	RPS	Reactor Protection System A Vertical Board	GE/328X509TU				
H13-P611	RPS	Reactor Protection System B	GE/328X512TU				
H13-P612	Feedwater and Re-circulation	Feedwater and Recirculation Instrument Panel	GE/328X512TU			Auxiliary Bldg. Auxiliary Equip. Rm. 521'0"	
H13-P613	NSSS Process Instrumen-tation	Nuclear Steam Supply Shut-off process instrument panel	GE/328X513TU			Auxiliary Bldg. Control Room 546'0"	

SHEET ___ OF ___

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
H13-P618	RHR	Division II Residual Heat Recovery Relay Vertical Board	GE/328X518TU	22A2702BC	Both	Auxiliary Bldg. Auxiliary Equip. Rm. 521'0"	Yes
H13-P621	RCIC	Reactor Core Isolation Cooling Relay Vertical Board	GE/328X521TU		Hot Shutdown		
H13-P622	NBS	Inboard Isolation Valve Relay Vertical Board	GE/328X522TU		Hot Shutdown		
H13-P623	NBS	Outboard Isolation Valve Relay Vertical Board	GE/328X523TU		Hot Shutdown		
H13-P625	HPCS	High Pressure Core Spray Relay Vertical Board	GE/328X525TU		Hot Shutdown		

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
H13-P628	ADS	Automatic Depressurization System Channel A Relay Vertical Board	GE/328X528TU	22A2702BC	Hot Shutdown	Auxiliary Bldg. Auxiliary Equipment Room 521'0"	Yes
H13-P629	LPCS	Division I Low Pressure Core Spray and RHR Relay Vertical Board	GE/328X529TU		Hot Shutdown		
H13-P631	ADS	Automatic Depressurization System Channel B Relay Vertical Board	GE/328X531TU		Hot Shutdown		
H13-P632	LDS	Division I Leak Detection Vertical Board	GE/323X532TU		Hot Shutdown	Auxiliary Bldg. Control Room 546'0"	
H13-P635	Radiation Monitoring	Division I Radiation Monitor Instrument Panel	GE/328X532TU		Hot Shutdown		

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
H13-P636	Radiation Monitoring	Division II Radiation Monitor Instrument Panel	GE/328X533TU	22A2702BC	Hot Shutdown	Auxiliary Bldg. Control Room 546'0"	Yes
H13-P642	LDS	Division II Leak Detection Vertical Board	GE/328X542TU		Hot Shutdown		
H13-P654	MSIV Leakage	Main Steam Isolation Valve Leakage Control Division II Vertical Board	GE/386X541TU		Neither	Auxiliary Bldg. Auxiliary Equipment Room 521'0"	
H13-P655	MSIV Leakage	Main Steam Isolation Valve Leakage Control Division I Vertical Board	GE/386X542TU		Neither		

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
H13-P865 T49-P865	FCS	Division I Flammability Control Vertical Board	GE/ 368X465TU	22A2702BC	Neither	Auxiliary Bldg. Auxiliary Equip. Room 521'0"	Yes
H13-P866 T49-P866	FCS	Division II Flammability Control Vertical Board	GE/ 368X465TU		Neither	Auxiliary Bldg. Auxiliary Equip. Room 521'0"	

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
H22-P001	LPCS	LPCS Inst. Panel	GE/368X262TU	22A2702BC	Hot Shutdown	Reactor Building 475'6"	Yes
H22-P002	RWCU	Reactor Water Cleanup Inst. Panel	GE/368X263TU		Neither	Reactor Building 546'0"	
H22-P004	RPS	Reactor Vessel Level & Pressure Inst. Panel A	GE/368X264TU		Hot Shutdown	Reactor Building 546'0"	
H22-P005	RPS	Reactor Vessel Level & Pressure Inst. Panel C	GE/368X265TU		Hot Shutdown	Reactor Building 546'0"	
H22-P006	Recirc	Recirc Pump A Inst. Panel	GE/368X266TU		Neither	Reactor Building 503'6"	
H22-P009	Recirc	Jet Pump Inst. Panel B	GE/368X267TU		Neither	Reactor Building 527'7"	
H22-P010	Recirc	Jet Pump Inst. Panel A	GE/368X268TU		Hot Shutdown	Reactor Building 527'7"	

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
H22-P015	RPS	Main Steam Flow Inst. Panel A	GE/368X270TU	22A2702BC	Hot Shutdown	Reactor Building 503'6"	Yes
H22-P017	RCIC	RCIC Inst. Panel A	GE/368X272TU		Hot Shutdown	Reactor Building 975'6"	
H22-P018	RHR	Division I RHR Inst. Panel	GE/368X273TU		Cold Shutdown	Reactor Building 475'6"	
H22-P021	RHR	Division II RHR Inst. Panel	GE/368X274TU		Cold Shutdown	Reactor Building 475'6"	
H22-P022	Recirc	Recirc Pump B Inst. Panel	GE/368X235TU		Neither	Reactor Building 503'6"	
H22-P024	HPCS	HPCS Inst. Panel	GE/368X276TU		Hot Shutdown	Reactor Building 475'6"	
H22-P025	RPS	Main Steam Flow Inst. Panel C	GE/368X277TU		Hot Shutdown	Reactor Building 503'6"	

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
H22-P026	RPS	Reactor Vessel Level Pressure Inst. Panel D	GE/368X278TV	22A2702BC	Hot Shutdown	Reactor Bldg. 546'0"	Yes
H22-P027	RPS	Reactor Vessel Level Pressure Inst. Panel B	GE/368X279TV			Reactor Bldg. 546'0"	
H22-P029	RCIC	RCIC Inst. Panel B	GE/368X280TV			Reactor Bldg. 478'6"	
H22-P030	Neutron Monitoring	IRM & SRM Preamplifier Cabinet	GE/328X530TV			Reactor Bldg. 530'1"	
H22-P031	Neutron Monitoring	IRM & SRM Preamplifier Cabinet	GE/328X530TV			Reactor Bldg. 530'1"	
H22-P032	Neutron Monitoring	IRM Preamplifier Cabinet	GE/328X530TV			Reactor Bldg. 530'1"	

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
H22-P033	Neutron Monitoring	IRM & SRM Preamplifier Cabinet	GE/328X530TV	22A7702BC	Hot Shutdown	Reactor Bldg. 530'1"	Yes
H22-P041	RPS	Main Steam Flow Inst. Panel D	GE/368X361TV			Reactor Bldg. 503'6"	
H22-P073	Leak Detection	MSIV Leakage Control Local Panel Div. I	GE/386X334			Reactor Bldg. 503'6"	
H22-P074	Leak Detection	MSIV Leakage Control Local Panel Div. II	GE/386X335			Reactor Bldg. 503'6"	

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
T49-D001	FCS	Flammability Control Unit	GE	22A3084	Neither	Reactor Bldg. 593'6"	Yes
T49-D001		Strip Heaters	W.B. Driver Co./Core Cooling 29905	22A3084		Reactor Bldg. 593'6"	
T49-D001		SCR Control Cabinet	CTI/	22A3084		Reactor Bldg. 593'6"	
T49-F002 F004 F005		Gate Valve Control Unit	Henry VOGT/ 1343315	22A3084		Reactor Bldg. 593'6"	
T49-F002 F004 F005		Motor (Valve Operator)	Limitorque SB000	22A3084		Reactor Bldg. 593'6"	
T49-K001		Temp. Xmtr. Control Unit	Rosemount/ 535E	163C1917		Reactor Bldg.	
T49-N002		Press Xmtr.	Rosemount/ 1151	163C1558		Reactor Bldg.	

SEISMIC QUALIFICATION REVIEW

Table 1

Zimmer Nuclear Safety Related
Equipment List

MASTER PARTS LIST NUMBER	SYSTEM[5]	EQUIPMENT OR COMPONENT	VENDOR AND MODEL NUMBER	SPECIFICATION[4] NUMBER	EQUIPMENT[1] REQUIRED FOR	LOCATION OF[2] EQUIPMENT	AVAILABLE[3] FOR INSPECTION
T49-N004	FCS	Flow Ind. Switch	Barton/288	145C3009	Neither	Reactor Bldg.	Yes
T49-N005	↓	Flow Ind. Switch	Barton/288	145C3009	↓	↓	↓
T49-N006		Flow Xmtr.	Rosemount/1151	163C1561			
T49-N007		Flow Xmtr.	Rosemount/1151	163C1561			

NOTES TO TABLE 2

1. Indicates the general standard used, i.e., IEEE 344-1975 or IEEE 344-1971, and any modifications, additions or exceptions.

2. If qualified by test, describes whether it was single or multi-frequency test or whether input was single or multi-axis. If qualified by analysis, describes whether static or dynamic, single or multi-axis analysis was used; provides natural frequencies of equipment.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER: 234A9901

EQUIPMENT/COMPONENT: MPL No. B21-D002-9
Condensing Chamber

QUALIFICATION METHOD:

a. Company/Report Number/Date:

General Electric Co. Report 234A9901. Sargent & Lundy Report EMD-022516

b. Qualification by: X Analysis: ____ Test

c. Qualification Information[1,2]:

Static Analysis - GE allowable moment calculations Dynamic Analysis - S&L applied moment calculations

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ No

b. Reason for Conclusion:

Actual bending moments from dynamic analysis within allowable bending moments.

c. Plans for Reevaluation/Requalification:

The condensing chamber is qualified to SQRT requirements pending results of instrument line analysis using T-Quencher plus LOCA (CO) loads.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER: 21A9247

EQUIPMENT/COMPONENT: B21-F013
Safety Relief Valve

QUALIFICATION METHOD:

a. Company/Report Number/Date:
Wyle Labs 43445-2
GE Piping analysis 122A5686, thru 22A5690

b. Qualification by: __X__ Analysis: __X__ Test

c. Qualification Information[1,2]:

Multi Frequency
Multi Axis
Frequency range 1 Hz to 40 Hz
Min HZPA-4.7g Min. VZPA-3,2g
Input g level S/S 12g, F/13 12g V-6g
Operability demonstrated during and following each SSE.
Dynamic analysis
Resonance search 1-40 Hz
Resonant frequency-S/S 21 Hz F/B 21 Hz V-O

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: __X__ Yes; ____ No

b. Reason for Conclusion:

Multi-Axis Multi-Frequency Testing performed. TRS enveloped RRS Operability demonstrated during test.

c. Plans for Reevaluation/Requalification:

Valve meets SQRT requirements pending results of GE Main steam piping analyses using T-Quencher plus LOCA (CO) loads.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

21A9257
385HA758

QUALIFICATION METHOD: Test: Actuator only, GE, NEDE 24122-2. Analysis as part of piping analysis.

a. Company/Report Number/Date:
GE 22A5686, 22A5687, 22A5688
22A5689, 22A5690

b. Qualification by: X Analysis: X Test

c. Qualification Information[1,2]:

Test: Multi-frequency and Multi-axis, random motion
No. of Qualification Tests: 2SSE
Frequency Range: 1 to 64 Hz TRS enveloped RRS using multi-frequency test. Test results showed that actuator always closed on signal. Yoke tube lubrication was recommended.

Analysis: Dynamic, response spectrum.
Resonance Search 1-35 Hz.

EQUIPMENT/COMPONENT:

MPL No. B21-F022 and B21-F028
Main Steam Isolation Valve and Actuator

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ___ No

b. Reason for Conclusion:
ACTUATOR: Multi-axis multi-frequency test performed. TRS enveloped RRS. Operability demonstrated. VALVE: Dynamic analysis performed.

c. Plans for Reevaluation/Requalification:
The main steam isolation valve is qualified to SQRT requirements pending completion of the General Electric main steam piping analysis using T-Quencher plus LOCA (CO) loads.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER: 21A9279
22A6404, 22A6016

EQUIPMENT/COMPONENT: MPL No. B33-C001 Recirculation Pump

QUALIFICATION METHOD:

a. Company/Report Number/Date:
Motor: GE-Large Motor & Gen. Department
Pump: GE-NEBG Both filed in NEBG DRF #206B33C001LP

b. Qualification by: X Analysis: ____ Test

c. Qualification Information[1,2]:
Static Analysis: Motor = 4.2g horiz., 3.6g vergical pump = 3.3g horiz., 1.5g vertical
Recirc. Piping Analysis: Time history and Response Spectrum

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ No

b. Reason for Conclusion:
Pump effects included in dynamic piping analysis

c. Plans for Reevaluation/Requalification:
The recirculation pump is qualified pending a review of the piping analysis using the Seismic + T-Quencher Loads.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER: 921D875E
21A9280

EQUIPMENT/COMPONENT: MPL No. B33-F023 Recirculation Pump Suction Valve

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Darling Valve, GE VPF #3134-4-5

b. Qualification by: __X__ Analysis: _____ Test

c. Qualification Information[1,2]:

Static Analysis: (1.5g horiz., 0.5g vert.) performed by vendor.
Dynamic Analysis: Response spectrum on piping.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: __X__ Yes; ____ No

b. Reason for Conclusion:

Required accelerations determined from dynamic analysis of piping. Frequency calculations performed to support static analysis method.

c. Plans for Reevaluation/Requalification:

The recirculation pump suction valve is qualified to SQRT requirements pending analysis using T-Quencher plus LOCA (CO) loads.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER: 21A3873

EQUIPMENT/COMPONENT: MPL No. B33-F060 Recirculation Flow Control Ball Valve

QUALIFICATION METHOD:

a. Company/Report Number/Date:

GE, O.I. Ford, FCV Design, M/C 755 and 22A5681, 22A5682, 22A5683

b. Qualification by: X Analysis: ____ Test

c. Qualification Information[1,2]:

Dynamic Analysis: Response Spectrum (Piping) Analysis showed stud, holding "topworks" to body good for 6gV, 9gH.
Natural Frequencies S/S 114 Hz

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ No

b. Reason for Conclusion:

Required accelerations determined from dynamic analysis of piping. Frequency calculations performed to support static analysis method.

c. Plans for Reevaluation/Requalification:

The recirculation flow control valve is qualified to SQRT requirements pending the results of the General Electric recirculation piping analysis using T-Quencher plus LOCA (CO) loads.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

GE/761E500G1

EQUIPMENT/COMPONENT: C11-D001

Hydraulic Control Unit

QUALIFICATION METHOD: Test

a. Company/Report Number/Date:

Wyle #53540

(GE Document No. 384HA183

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Multi Frequency
Single Axis (three directions)
Frequency range 1.1-38Hz horizontal
1.2-100Hz vertical
g-level test at h_1-14, h_2-11, V-18
g-level required h_1-1.8, h_2-1.2, V-2.8
Natural Frequencies:
Horizontal - 2Hz (E-W) F/B
2.75Hz (N-S) S/S
Vertical - 10Hz

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ No

b. Reason for Conclusion:

Multifrequency testing operability demonstrated. Analysis performed to account for high frequency loads.

c. Plans for Reevaluation/Requalification:

None

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

21A9317
832322

EQUIPMENT/COMPONENT: Cl'-F009
Solenoid Valve

QUALIFICATION METHOD:

a. Company/Report Number/Date:
None

b. Qualification by: ____ Analysis: ____ Test

c. Qualification Information[1,2]: None

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

1. No test data or report available
2. No seismic analysis available

c. Plans for Reevaluation/Requalification:

1. Valve should be tested to SQRT requirements.
2. Vendor recommends replacing with NP8323A22E, NP series have been through testing to IEEE 344-1975.
3. Testing plans underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMB' :
GE21A8657 SN71/26 6/001-00[illegible]
8660
8658
1750

EQUIPMENT/COMPONENT: C11-F010
Scram discharge vol. vent valve

QUALIFICATION METHOD: Static Analysis

a. Company/Report Number/Date:

Hammel-Dahl #406

b. Qualification by: X Analysis: ____ Test

c. Qualification Information[1,2]:
Static analysis

1. Fundamental frequency was 125Hz, thus valve is rigid.
2. Seismic acceleration used was 6.0g horizontal and vertical for valve analysis.
3. Valve has large stress margins.
4. Actuator analysis was done separately and used 1.5g horizontal and 14g vertical.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

No deflections were calculated, thus operability not demonstrated.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

EQUIPMENT/COMPONENT: C11-F011

Scram Discharge Vol. Drain Valve
71/2006/001-025

QUALIFICATION METHOD:

a. Company/Report Number/Date:

None

b. Qualification by:_____Analysis:_____Test

c. Qualification Information[1,2]: None

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:____Yes;_X_No

b. Reason for Conclusion:

1. No qualification records available
2. No stress report available
3. No test report available

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:
GE21A1749

EQUIPMENT/COMPONENT: C11-F012
Pressure Relief Valve
3/4 X 1 JMAK Spec. B.

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Franklin Institute F-C3541

b. Qualification by: ____ Analysis: __X__ Test

c. Qualification Information[1,2]:

Sinusoidal, single axis, testing performed
Dwells performed at 5, 12, 23, 30Hz
Tested to 6g's
Leakage test performed.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; ____ No

b. Reason for Conclusion:

Valve operability not demonstrated during or after test.

Resonance search indicated that valve is flexible. Multi-frequency, multi-axis testing should be performed.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

22A4011AC Design Spec.

EQUIPMENT/COMPONENT: C41-A001

Standby Liquid Control
Storage tank

QUALIFICATION METHOD:

a. Company/Report Number/Date:

GE: RA543;22A4068

b. Qualification by: X Analysis: ____ Test

c. Qualification Information[1,2]:

Dynamic analysis - First mode only, higher modes not considered important for overall tank loads. Frequency range considered was 0-60 Hz.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ No

b. Reason for Conclusion:

Dynamic analysis performed.

Natural frequencies calculated and significant modes considered in the analysis.

c. Plans for Reevaluation/Requalification:

Evaluation to T-Quencher loads is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:
21A9342AK

EQUIPMENT/COMPONENT: C41-C001
Standby Liquid Control Pump

QUALIFICATION METHOD: Test and Analysis

a. Company/Report Number/Date:

Union Pump Co. 430-16 Rev. 3, GE DRFC41-21
Approved Engineering 5430-6958
Test Lab

b. Qualification by: X Analysis: X Test

c. Qualification Information[1,2]:

Natural frequency search performed between 10 and 80 Hz on motor.
Motor was tested using sinusoidal input of 2.0g's.
Pump was analyzed statically to 1.75g's.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ___ Yes; X No

b. Reason for Conclusion:

Pump resonance frequencies not determined.
Pump operability not clearly established.
Motor resonant frequency search did not include 1 to 10 Hz region.

c. Plans for Reevaluation/Requalification:

Coupled dynamic analysis of pump/motor assembly to be performed.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER: 21A9370

EQUIPMENT/COMPONENT: MPL No. C41-C004 SLC Explosive Valve

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Southwest Research Institute
Project No. 02-4681-301
December 14, 1976

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Resonance search performed. Supplemental stress analyses performed. Sinusoidal testing done to 6.5g's (horizontal) and 4.5g's (vertical).

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ No

b. Reason for Conclusion:

No natural frequencies discovered in range of interest. Allowable stresses satisfied. Operability verified.

c. Plans for Reevaluation/Requalification:

None.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

136B1302C002 Assembly
117C2484P002 Outline

EQUIPMENT/COMPONENT:

C51-J004 TIP System Shear Valve

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Ogden Technology Laboratories, Inc.
70865 GE VPF No. 886D393

b. Qualification by: ____ Analysis: __X__ Test

c. Qualification Information[1,2]:

Single frequency, single axis
frequency range 30 Hz. Resonance search 5 to 1000 Hz
two units were test fired and leak tested with 10g/30Hz
input applied.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: __X__ Yes; ____ No

b. Reason for Conclusion:

1. No resonances below 60 Hz
2. Input acceleration was well above peak and ZPA values in RRS
3. Valve operability was demonstrated during test.

c. Plans for Reevaluation/Requalification:

None.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

136B1302G002 Assembly
117C2484P002 Outline

QUALIFICATION METHOD: Test

a. Company/Report Number/Date:

GE - 225A6603 Rev. 0 and Addendum B of 994-75-019 Rev. 2 (a GE Sensor Products Eng. Memo) Covering Modified Valve GE VPF No. 112C2391

b. Qualification by: ____ Analysis: __X__ Test

c. Qualification Information[1,2]:

Single axis sine sweep frequency range 2 to 33 Hz, Valve was subjected to a 25g sine input at 33 Hz without malfunction during original qualification tests.

EQUIPMENT/COMPONENT:

C51-J004 TIP System Ball Valve

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: __X__ Yes; ____ No

b. Reason for Conclusion:

1. No resonances below 33 Hz
2. Operability verified
3. Additional test performed at 25g, 33 Hz demonstrated satisfactory operability

c. Plans for Reevaluation/Requalification:

None.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:
21A9227AR

EQUIPMENT/COMPONENT: E12-B001
RHR Heat Exchanger

QUALIFICATION METHOD:

a. Company/Report Number/Date:

GE DRF No. E12-12
November 1977

b. Qualification by: X Analysis: ____ Test

c. Qualification Information[1,2]:

Dynamic analysis performed. Response spectrum techniques used. Seismic and hydrodynamic loads were considered.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ No

b. Reason for Conclusion:

Dynamic analysis performed. Seismic and hydrodynamic loads considered. Allowable stresses satisfied.

c. Plans for Reevaluation/Requalification:

Being reanalyzed using T-Quencher and LOCA loads information.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:
21A9243CT
21A9222CF

EQUIPMENT/COMPONENT:
E12-C002 RHR Pump & Motor

QUALIFICATION METHOD:

a. Company/Report Number/Date:
NUTECH/CGE-04-016
April 30, 1981

b. Qualification by: X Analysis: ____ Test

c. Qualification Information[1,2]:
Coupled dynamic analysis using normal mode superposition performed on pump and motor assembly. Input response spectrum enveloped absolute sum of SSE, SRV line chugging and condensation oscillation. Operability assessment performed.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ No

b. Reason for Conclusion:
Dynamic analysis performed. Seismic and hydrodynamic loads considered. Operability assessment performed.

c. Plans for Reevaluation/Requalification:

None.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

21A9243CS
21A9222CJ

EQUIPMENT/COMPONENT:

E21-C001 LPCS Pump/Motor

QUALIFICATION METHOD:

a. Company/Report Number/Date:

NUTECH/CGE-04-016
April 30, 1981

b. Qualification by: X Analysis: ____ Test

c. Qualification Information[1,2]:

Coupled dynamic analysis using normal mode superposition performed on pump/motor assembly. Input response spectrum enveloped absolute sum of SSE, SRV line chugging and condensation oscillation. Operability assessment performed.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ No

b. Reason for Conclusion:
Dynamic analysis performed. Seismic and hydrodynamic loads considered. Operability assessment performed.

c. Plans for Reevaluation/Requalification:

None

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

21A9243CR
21A9222CX

EQUIPMENT/COMPONENT:

E22-C001 HPCS Pump/Motor

QUALIFICATION METHOD:

a. Company/Report Number/Date:

NUTECH/CGE-04-016
April 30, 1981

b. Qualification by: X Analysis: ____ Test

c. Qualification Information[1,2]:
Coupled dynamic analysis using normal mode superposition performed on pump motor assembly. Input response spectrum includes SSE, SRV chugging and condensation oscillation. Operability assessment performed.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ No

b. Reason for Conclusion:

Dynamic analysis performed. Seismic and hydrodynamic loads considered. Operability assessment performed.

c. Plans for Reevaluation/Requalification:

None.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

21A1739
21A1941

EQUIPMENT/COMPONENT: E22-F001

HPCS Suction Valve from CST

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Darling Valve & Mfg. Co.
VPF-3173-104-3

b. Qualification by: X Analysis ____ Test

c. Qualification Information[1,2]:

Static Analysis
Seismic and operating loads considered.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

Natural frequencies not calculated.
Response spectra not used.
Operability not evaluated.

c. Plans for Reevaluation/Requalification:

Reanalysis by Anchor-Darling in progress.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

21A1942
21A1740

EQUIPMENT/COMPONENT:

E22-F004 M. O. Gate Valve

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Darling Valve & Mfg. Co.
VPF-3173-209-3

b. Qualification by: X Analysis: ____ Test

c. Qualification Information[1,2]:

Static Analysis performed.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:
Natural frequencies not calculated
Operability not demonstrated

c. Plans for Reevaluation/Requalification:

Requalification by analysis is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:
21A1939

EQUIPMENT/COMPONENT: E22-F010
HPCS Test Return Valve to CST.

QUALIFICATION METHOD:

a. Company/Report Number/Date:

b. Qualification by: X Analysis: ____ Test

c. Qualification Information[1,2]:
Static analysis performed.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

Natural frequencies not calculated
Operability not demonstrated

c. Plans for Reevaluation/Requalification:
Requalification by analysis is underway

SHEET ____ Of ____

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

21A1737

QUALIFICATION METHOD:

a. Company/Report Number/Date:

b. Qualification by: X Analysis: ____ Test

c. Qualification Information[1,2]:

Static analysis performed.

EQUIPMENT/COMPONENT:

E22-F011 HPCS Test Return Valve to CST.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

Natural frequencies not calculated
Operability not demonstrated

c. Plans for Reevaluation/Requalification:
Requalification by analysis is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:
21A1931

EQUIPMENT/COMPONENT:
E22-F012 HPCS Bypass Valve to Suppression Pool.

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Darling Valve & Mfg. Co.
VPF 3173-316-2 Rev. 2 7119179

b. Qualification by: X Analysis: ____ Test

c. Qualification Information[1,2]:
Static Analysis

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:
Natural frequencies not calculated
Operability not evaluated.

c. Plans for Reevaluation/Requalification:
Requalification by analysis is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

21A1941

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Darling Valve & Mfg. Co.
VPF-3173-200-2

b. Qualification by: X Analysis: ____ Test

c. Qualification Information[1,2]:

Static Analysis

EQUIPMENT/COMPONENT:

E22-F015 HPCS Suction Valve from Suppression pool.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

Natural frequencies not determined
Operability not evaluated

c. Plans for Reevaluation/Requalification:

Requalification by analysis is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

21A8657

EQUIPMENT/COMPONENT:

E22-F023 HPCS Test Return Valve to Suppression Pool

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Anchor Valve Co. 25-1715 Rev A

b. Qualification by: x Analysis: ____ Test

c. Qualification Information[1,2]:

Static
Used operating and seismic loads
Natural frequency calculated
(original in error)

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; x No

b. Reason for Conclusion:

Operability not evaluated.

c. Plans for Reevaluation/Requalification:

Requalification by analysis is underway

SHEET ____ Of ____

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

22A4633

EQUIPMENT/COMPONENT:

E32-B001 MSIV LCS Heater

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Approved Engineering Test Laboratories
Report No. 5430-7186

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Frequency search performed.
Single frequency, single axis excitation utilized (3-35 Hz).
Operability was demonstrated.
Resonant frequency was identified at 88 Hz, and stress analysis was performed.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ___ No

b. Reason for Conclusion:

Actual stresses were less than allowables.

c. Plans for Reevaluation/Requalification:

None

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:
21A3762

EQUIPMENT/COMPONENT:
E32-C001 MSIV LCS Blower
E32-C002

QUALIFICATION METHOD:

a. Company/Report Number/Date:
Approved Engineering Test Laboratories

b. Qualification by:____Analysis:_X__Test

c. Qualification Information[1,2]:

Frequency search done below 33 Hz.
Single frequency multi-axial excitation utilized (0-.33 Hz).
Operability was demonstrated.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:____Yes;_X__No

b. Reason for Conclusion:

Resonance search and sine testing was not performed beyond 33 Hz.

c. Plans for Reevaluation/Requalification:

Requalification by analysis is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

21A9243

EQUIPMENT/COMPONENT:

E51-C001 RCIC Pump

QUALIFICATION METHOD:

a. Company/Report Number/Date:
GE Report No. 4060-52-2

b. Qualification by: __x__ Analysis: _____ Test

c. Qualification Information[1,2]:

1. Natural frequency calculated.
2. Seismic and hydrodynamic loads were combined using absolute sum.
3. .14g was used in vertical directions.
4. Pump analyzed is not RCIC pump but results are claimed to be applicable due to similarity. Similarity study is not referenced.
5. The RCIC pump has been analyzed to 1.5g horizontal and .14g vertical for SSE (vertical component not large enough to meet RRS).

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; _X_ No

b. Reason for Conclusion:

g values used in analysis in the vertical direction were not high enough. .14g was used, 1.275g is required. Operability was not demonstrated.

c. Plans for Reevaluation/Requalification:

Requalification by analysis is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:
21A9201

EQUIPMENT/COMPONENT: E51-C002 RCIC Turbine Terry Turbine Co., GS-1

QUALIFICATION METHOD:

a. Company/Report Number/Date:
Wyle Report No. 58030 April 8, 1978

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Multi-axial, multi-frequency test performed. Resonance search performed to 35Hz. TRS enveloped RRS.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:
Operability was not demonstrated. Resonance search was not performed beyond 35 Hz.

c. Plans for Reevaluation/Requalification:

Adequate dynamic test performed on GS-2 model. Similarity study is in progress to qualify GS-1 model.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

22A2551

EQUIPMENT/COMPONENT:

F11-E001 Fuel Prep. Machine

QUALIFICATION METHOD:

a. Company/Report Number/Date:
General Electric Report No. F00-01

b. Qualification by: X Analysis: ____ Test

c. Qualification Information[1,2]:

1. Equipment was analyzed dynamically using SAP4 program. 1.296 to 67.494 Hz frequency range and 16 modes considered.
2. Analysis used ABS method of load combination.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ No

b. Reason for Conclusion:
Equipment not analyzed to sufficiently high g levels.

c. Plans for Reevaluation/Requalification:
Requalification by analysis is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

148F478G001

EQUIPMENT/COMPONENT:

F11-E011 General Purpose Grapple

QUALIFICATION METHOD:

a. Company/Report Number/Date:

GE DRF 139-F11-E011K, Suppl.

b. Qualification by: X Analysis: ____ Test

c. Qualification Information[1,2]:

Equipment supported from wire rope and used only during refueling. Effects of vibratory loads considered small because:

1) Extremely low functional frequency.
2) No hydrodynamic loads exist during refueling.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ No

b. Reason for Conclusion:

Hydrodynamic loads do not exist during plant shutdown. No significant application of seismic loads due to extremely low frequency of suspended equipment.

c. Plans for Reevaluation/Requalification:

None.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

762E984

EQUIPMENT/COMPONENT:

F13-E008 Dryer/Separator Sling

QUALIFICATION METHOD:

a. Company/Report Number/Date:

GE DRF F13-9

b. Qualification by: X Analysis: ____ Test

c. Qualification Information[1,2]:

Equipment supported from wire rope and used only during refueling. Effects of vibratory loads considered small because:

1) Extremely low fundamental frequency.
2) No hydrodynamic loads exist during refueling.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ___ No

b. Reason for Conclusion:

Hydrodynamic loads do not exist during plant shutdown. No significant application of seismic loads due to extremely low frequency of suspended equipment.

c. Plans for Reevaluation/Requalification:

None.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

762E985

QUALIFICATION METHOD:

a. Company/Report Number/Date:

GE DRF F13-11

b. Qualification by:_____Analysis:_____Test

c. Qualification Information[1,2]:

Equipment supported from wire rope and used only during refueling. Effects of vibratory loads considered small because:

1) Extremely low functional frequency.
2) No hydrodynamic loads exist during refueling.

EQUIPMENT/COMPONENT:

F13-E009 RPV Head Strongback

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: _X_ Yes; ____ No

b. Reason for Conclusion:

Hydrodynamic loads do not exist during plant shutdown. No significant application of seismic loads due to extremely low frequency of suspended equipment.

c. Plans for Reevaluation/Requalification:

None.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

767E593G001

EQUIPMENT/COMPONENT:

F14-E002 Control Rod Grapple

QUALIFICATION METHOD:

a. Company/Report Number/Date:

GE DRF No. 139-F14-E002K, Suppl.

b. Qualification by:_____Analysis:_____Test

c. Qualification Information[1,2]:

Equipment supported from wire rope and used only during refueling. Effects of vibratory loads considered small because:

1) Extremely low functional frequency.
2) No hydrodynamic loads exist during refueling.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ___ No

b. Reason for Conclusion:

Hydrodynamic loads do not exist during plant shutdown. No significant application of seismic loads due to extremely low frequency of suspended equipment.

c. Plans for Reevaluation/Requalification:

None.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:
762E852

EQUIPMENT/COMPONENT:
F15-E003 Refuel Platform Equipment

QUALIFICATION METHOD:

a. Company/Report Number/Date:
General Electric Report No. 138-F15E003 N*9

b. Qualification by: X Analysis: ____ Test

c. Qualification Information[1,2]:

1. Dynamic Analysis using SAP4 Program.
2. Appropriate floor RRS were used (seismic and hydrodynamic).
3. Frequency evaluation covered range >60 Hz, however the dynamic analysis did not include all modes from 33 to 60 Hz.
4. Loads were combined by both ABS and SRSS methods.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

Reanalysis needed using T-Quencher loads and SAP4 model to include all 36 modes below 60 Hz.

c. Plans for Reevaluation/Requalification:

Requalification by analysis is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:
22A2553

EQUIPMENT/COMPONENT: F16-E002 Spent Fuel Storage Rack

QUALIFICATION METHOD:

a. Company/Report Number/Date:

GE DRF F16-10

b. Qualification by: X Analysis: ____ Test

c. Qualification Information[1,2]:

Static Analyses performed.
Seismic, Hydrodynamic loads considered.
RRS used
Resonant frequencies calculated.
ABS Load Combination used.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ No

b. Reason for Conclusion:

Static analysis supported by frequency calculations. Response spectra used which account for hydrodynamic loads. Stress within allowable values.

c. Plans for Reevaluation/Requalification:

Since racks are being replaced with high density design, revised analysis is being performed in accordance with SQRT requirements

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:
22A2554

EQUIPMENT/COMPONENT: F16-E004 Control Rod & Defective Fuel Storage Rack

QUALIFICATION METHOD:

a. Company/Report Number/Date:

GE DRF-F16-3 4/15/77

b. Qualification by: ____ Analysis: ____ Test

c. Qualification Information[1,2]:

Seismic coefficient used.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

Additional effort required to suggest static analysis and to include hydrodynamic loads.

c. Plans for Reevaluation/Requalification:

Additional evaluation using T-Quencher and revised CO loads underway.

SHEET ____ Of ____

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

22A2549

EQUIPMENT/COMPONENT: F16-E006

In-vessel rack

QUALIFICATION METHOD:

a. Company/Report Number/Date:

NUTECH Report No. CGE-03-126
September 1980

b. Qualification by: X Analysis: ____ Test

c. Qualification Information[1,2]:

Detailed finite element dynamic analysis performed. Seismic loads were considered. Stress analyses were performed.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

Dynamic analysis performed. Seismic loads considered. Actual stresses were less than the allowables.

c. Plans for Reevaluation/Requalification:

None

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

386HA625

EQUIPMENT/COMPONENT: F16-E007 New Fuel Storage Rack

QUALIFICATION METHOD:

a. Company/Report Number/Date:

NUTECH Report No. CGE-03-146
December 1980

b. Qualification by: X Analysis: ____ Test

c. Qualification Information[1,2]:

Detailed finite element analysis, response spectrum envelopes the absolute sum combination of SSE, SRV and CO response spectra. Stress analysis performed.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ No

b. Reason for Conclusion:

Dynamic analysis performed. Seismic and hydrodynamic loads considered. Calculated stresses less than allowable stresses.

c. Plans for Reevaluation/Requalification:

None.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

22A4324

EQUIPMENT/COMPONENT: F16-E009
Defective Fuel Storage Container

QUALIFICATION METHOD:

a. Company/Report Number/Date:

GE Report No. 139-F16-E009-K
October 13, 1979.

b. Qualification by: X Analysis: ____ Test

c. Qualification Information[1,2]:

Static analysis performed.
Seismic loads considered.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

Resonance calculations not performed.
Hydrodynamic loads not considered.

c. Plans for Reevaluation/Requalification:

Evaluation of equipment to T-Quencher loads is in progress.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:
22A3084

EQUIPMENT/COMPONENT:
T49-D001 Flammability Control Unit

QUALIFICATION METHOD:

a. Company/Report Number/Date:

GE Report No. T49-10
March 16, 1979

b. Qualification by: X Analysis: ____ Test

c. Qualification Information[1,2]:

Response spectrum analysis implemented calculation includes calculation of resonant frequencies, modal shapes and participation factors, element accelerations and stresses.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

Actual stresses exceeded allowables in the support saddle for the blower.

c. Plans for Reevaluation/Requalification:

Equipment is being reanalyzed to T-Quencher loads.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

22A3084

EQUIPMENT/COMPONENT:

T-49-D001 Strip Heaters

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Wyle Report No. 58432-2
August 3, 1979

b. Qualification by:____ Analysis: X Test

c. Qualification Information[1,2]:

Frequency search performed.
Multi-axial, Multi-frequency excitation used.
TRS envelopes preliminary T-Quencher RRS.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ___ No

b. Reason for Conclusion:

Test accelerations exceeded required accelerations. Operability was demonstrated.

c. Plans for Reevaluation/Requalification:

Reevaluation to new loads is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:
22A3084

EQUIPMENT/COMPONENT:
T49-D001 SCR Control Cabinet

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Wyle Report No. 58432
July 25, 1979

b. Qualification by:____Analysis:_X__Test

c. Qualification Information[1,2]:

Multi-axial, Multi-frequency testing performed.
Resonant frequency search conducted.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:_X_Yes;____No

b. Reason for Conclusion:

TRS envelopes RRS. Operability was demonstrated.

c. Plans for Reevaluation/Requalification:

None

SHEET____Of____

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

22A3084

EQUIPMENT/COMPONENT:

T-49-F002, F004, F005
Gate Valve Control Unit and Valve Operator

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Wyle Report No. 58432-1
July 31, 1979

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Frequency search performed.
Test fixture resembles field mounting.
Multi-axial, multi-frequency excitation used.
TRS envelopes preliminary T-Quencher RRS.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ No

b. Reason for Conclusion:

Test accelerations exceeded required accelerations and moment.

Operability demonstrated.

c. Plans for Reevaluation/Requalification:

None

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

159C4383

EQUIPMENT/COMPONENT: B-21-N024

Barton 384
Level Ind. Switch

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Wyle Laboratories, Report No. 53314
January 5, 1973

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Resonance search was performed to 500 Hz. Sinedwell testing performed at 33 Hz to 5.0g's.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

Operability was not demonstrated.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

159C4445

EQUIPMENT/COMPONENT: B21-N036

Yarway 4418C
Level Ind. Switch

QUALIFICATION METHOD:

a. Company/Report Number/Date:

None.

b. Qualification by:_____Analysis:_____Test

c. Qualification Information[1,2]:

None.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:____Yes; X No

b. Reason for Conclusion:

Qualification information was not available.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

159C4383

EQUIPMENT/COMPONENT: B21-N044

Barton 760
Level Switch

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Wyle Laboratories, Report No. 53314
January 5, 1973

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Resonance search was performed to 500 Hz. Sine dwell testing performed at 33 Hz to 5.0g's.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

Operability was not demonstrated.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

163C1855

EQUIPMENT/COMPONENT: B21-N056

Barksdale
DIT-H18SS
Vacuum Switch

QUALIFICATION METHOD:

a. Company/Report Number/Date:

None.

b. Qualification by:_____Analysis:_____Test

c. Qualification Information[1,2]:

None.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:____Yes; X No

b. Reason for Conclusion:

Qualification information was not available.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

163C1181

QUALIFICATION METHOD:

a. Company/Report Number/Date:

None.

b. Qualification by:_____Analysis:_____Test

c. Qualification Information[1,2]:

None.

EQUIPMENT/COMPONENT: B-21-R005

Barton 227
ΔP Ind.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:____Yes; X No

b. Reason for Conclusion:

Qualification information was not available.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

STATHAM (GOULD)
PD2000-400

EQUIPMENT/COMPONENT: C34 N017

ΔP XMTR

QUALIFICATION METHOD:

a. Company/Report Number/Date:

None.

b. Qualification by: ____ Analysis: ____ Test

c. Qualification Information[1,2]:

None.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

Qualification information is not available.

c. Plans for Reevaluation/Requalification:

To be replaced with qualified component.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

Fenwal 22810

EQUIPMENT/COMPONENT:

C41-N003 Temp Switch

QUALIFICATION METHOD:

a. Company/Report Number/Date:

None

b. Qualification by: ____ Analysis: ____ Test

c. Qualification Information[1,2]:

None

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

Qualification Information is not available

c. Plans for Reevaluation/Requalification:

Requalification by analysis is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:
158B7072

EQUIPMENT/COMPONENT: C41-N006
Fenwal 158B7072P7
Temp. Element - Thermowell only

QUALIFICATION METHOD:

a. Company/Report Number/Date:

None

b. Qualification by:____Analysis:_____Test

c. Qualification Information[1,2]:

None

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:____Yes;__X__No

b. Reason for Conclusion:

Qualification information is not available.

c. Plans for Reevaluation/Requalification:

Reevaluation to new loads is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

GE 163C1263

EQUIPMENT/COMPONENT: C51-K002

Voltage Preamp.

QUALIFICATION METHOD:

a. Company/Report Number/Date:

None.

b. Qualification by: ____ Analysis: ____ Test

c. Qualification Information[1,2]:

None.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

Qualification information is not available.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

SHEET ____ Of ____

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

GE/112C3144G008
135B8363P208

EQUIPMENT/COMPONENT: C51-N002
IRM Detector

QUALIFICATION METHOD:

a. Company/Report Number/Date:

GE Report No. 994-79-007
May 14, 1979

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Resonance search performed.
Operability assessment performed.
Sinusoidal testing conducted.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ No

b. Reason for Conclusion:

Testing performed to sufficiently high g levels. Operability was verified.

c. Plans for Reevaluation/Requalification:

Evaluation to new loads is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

STATIC-O-RING
12N-AA4-TT

EQUIPMENT/COMPONENT: C71-N002

Press. Switch

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Static-0-Ring Report No. 7013-100
April 1974

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Natural frequency search performed from 0 - 1000 Hz. Sinusoidal testing performed. Operability demonstrated.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ___ No

b. Reason for Conclusion:

Test conducted to sufficiently high levels. Operability demonstrated.

c. Plans for Reevaluation/Requalification:

None.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

GE 237X731

EQUIPMENT/COMPONENT: D13-N003
Gamma Detector

QUALIFICATION METHOD:

a. Company/Report Number/Date:

GE Report No. 994-79-015
September 5, 1979

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Resonance search performed to 60 Hz. Sinusoidal testing performed to 20 g's @ 33 Hz. Operability was demonstrated.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ No

b. Reason for Conclusion:

Testing performed to sufficiently high g level. Operability was verified.

c. Plans for Reevaluation/Requalification:

Evaluation to new loads is in progress.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

154C4606

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Ogden Technology Laboratories Report No. F-73493, September 24, 1973

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Resonance search performed from 2 to 33Hz.
Fragility testing performed to 29g's @ 30 Hz.
Operability was demonstrated.

EQUIPMENT/COMPONENT: E31-N022

Barksdale PIH-M85SS-V Switch

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

Resonance search was not performed beyond 33Hz.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

169C8338

QUALIFICATION METHOD:

a. Company/Report Number/Date:

None

b. Qualification by:_____Analysis:_____Test

c. Qualification Information[1,2]:

None

EQUIPMENT/COMPONENT:

E32-N006 Schutte and Koerting
20-9651-8550

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:____Yes;__X__No

b. Reason for Conclusion:

Qualification information is not available

c. Plans for Reevaluation/Requalification:

Requalification by test is underway

SHEET_____Of_____

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

169C8339

QUALIFICATION METHOD:

a. Company/Report Number/Date:

None

b. Qualification by:_____Analysis:_____Test

c. Qualification Information[1,2]:

None

EQUIPMENT/COMPONENT: E32-N053

Schutte & Koerting
91-X-16-4-20
Flow Xmtr.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:____Yes;__X__No

b. Reason for Conclusion:

Qualification information is not available

c. Plans for Reevaluation/Requalification:

Requalification by test is underway

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:
145C3011

EQUIPMENT/COMPONENT:
E51-N006 Static-O-Ring 6N-AA21-VSTT Pressure Switch

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Static-O-Ring Report no. 7013-100
April 26, 1974

b. Qualification by:____Analysis:_X_Test

c. Qualification Information[1,2]:

Resonance search performed to 1000 Hz. Sinusoidal testing performed to 3g's horizontal and 1g vertical. Operability was demonstrated.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:_X_Yes;____No

b. Reason for Conclusion:

Testing performed to sufficiently high g level. Operability was demonstrated.

c. Plans for Reevaluation/Requalification:

None

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

163C1186

QUALIFICATION METHOD: Test

a. Company/Report Number/Date:

GE 262A7391

b. Qualification by:_____Analysis:__X__Test

c. Qualification Information[1,2]:

Vibration up to 10g's (all 3 areas) resulted in output changes of .03%, 12% and 1.5% in horizontal f-r, horizontal s-s, and vertical axes respectively during the vibration, and a max. .03% deviation after the test. Resonant frequencies vertical 40.0, horizontal-none, longitudinal-none.

EQUIPMENT/COMPONENT:

Diff. Press Transmitter
Bailey 556
See MPL list below

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:__X__Yes;____No

b. Reason for Conclusion:
Testing performed to sufficiently high g levels. Operability was demonstrated.

c. Plans for Reevaluation/Requalification: None

E51-N007	B21-N051
E51-N008	C34-N005
E51-N004	C41-N004
E51-N005	E12-N026
C34-N008	E12-N028
C34-N008	E22-N004

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

163C1183

QUALIFICATION METHOD:

a. Company/Report Number/Date:

None

b. Qualification by:_____Analysis:_____Test

c. Qualification Information[1,2]: None

EQUIPMENT/COMPONENT:

Bailey 555 Transmitter
See MPL List below

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:____Yes; X No

b. Reason for Conclusion:

Qualification information is not available.

c. Plans for Reevaluation/Requalification:

Obsolete - To be replaced by a qualified item.

B21-N027	E31-N015
B21-N032	E31-N035
B21-N033	E31-N036
B21-N034	
C34-N004	
E12-N013	
E12-N015	
E21-N003	
E22-N005	

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

145C3009P012

QUALIFICATION METHOD:

a. Company/Report Number/Date:

ITT Barton/R3-288A-1/10-2-79

b. Qualification by:____Analysis:_X__Test

c. Qualification Information[1,2]:

Bi-axial random motion test.

1-33 Hz 5 tests at OBE, level one at SSE, level 35 seconds each. Resonance search performed and operability demonstrated

EQUIPMENT/COMPONENT:

Barton 288A Pressure Switch
See MPL List Below

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:_X_Yes;____No

b. Reason for Conclusion:

Multifrequency, multiaxial testing performed. TRS enveloped RRS. Operability was demonstrated.

c. Plans for Reevaluation/Requalification:

None

288A	288	
B21-N024	C71-N004	T49-N004
B21-N031	E12-N029	T49-N005
B21-N037	E12-N009	
B21-N038	E21-N006	
	E22-N009	
	E22-N013	
	E31-N007	
	E31-N008	
	E31-N009	
	E31-N010	
	E31-N011	
	E31-N012	

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

145C3046

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Ogden Technology Laboratories, Report No. F-10670, November 21, 1968

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Subjected to high impact shock tests.

EQUIPMENT/COMPONENT:

Barksdale D2H-M80SS
Pressure Switch
See MPL List Below

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

Natural frequencies were not calculated. Operability was not demonstrated. Test duration was short.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway
E51-N009
E51-N012
E51-N021

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

164C5359

EQUIPMENT/COMPONENT:

Barksdale BIT-M12SS Switch
See MPL List Below

QUALIFICATION METHOD:

a. Company/Report Number/Date:

None

b. Qualification by:_____Analysis:_____Test

c. Qualification Information[1,2]: None

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:____Yes; X No

b. Reason for Conclusion:

Qualification information is not available.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

B21-N020
B21-N023
B21-N024
B21-N039
B21-N045
C71-N003
E12-N032
E12-N033

SHEET_____Of_____

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

159C4606

EQUIPMENT/COMPONENT:

Barksdale PIH-M340SS-V Switch

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Ogden Technology Laboratories
Report No. F-73493, Sept. 24, 1973

b. Qualification by:_____Analysis:_X__Test

c. Qualification Information[1,2]:

Resonance search performed from 2-33 Hz.
Sinusoidal testing performed up to 29 g's@30Hz
Chatter monitored.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:___Yes;_X_No

b. Reason for Conclusion:

Resonance search was not performed beyond 33 Hz. Operability was not adequately demonstrated.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

SHEET_____Of_____

B33-N018B
E21-N001
E21-N009
E22-N012

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

145C3008P011

QUALIFICATION METHOD:

a. Company/Report Number/Date:

GE/Report 225A6225

May 1970

b. Qualification by:____Analysis:__X_Test

c. Qualification Information[1,2]:

Resonance search performed from 5-33Hz
Sinusoidel test performed. Operability was demonstrated.

EQUIPMENT/COMPONENT:

Barton 289 Switch
See MPL List Below

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:___Yes;_X_No

b. Reason for Conclusion:

Resonance search was not performed beyond 33Hz. Duration of sine test was not specified.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

SHEET____Of____

E12-N010
E21-N004
E22-N006
E51-N002

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

GE/194X927

EQUIPMENT/COMPONENT:

Sens. & Conv.
See MPL List Below

QUALIFICATION METHOD:

a. Company/Report Number/Date:

GE Report No. 225A6607
November 1970

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Resonance search performed to 33 Hz.
Fragility test performed to 15g's @ 33 Hz.
Operability was demonstrated.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

Resonance search was not performed beyond 33 Hz.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

D13-N009
D13-N019

SHEET ____ Of ____

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

Magnetrol 5.0 - 751
159C4361

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Ogden Technology Lab. F-73436

b. Qualification by: ____ Analysis: __X__ Test

c. Qualification Information[1,2]:

Resonance search test 4 to 1000 Hz input level .3g at rate of 1 octave per min. Resonance endurance test, 15 sec. dwell test at each discrete frequency from 4 to 30 Hz at an input of .5g vertical and 1.5g horizontal. Fragility test performed up to 10g's. Operability was demonstrated.

EQUIPMENT/COMPONENT:

Level Switch

See MPL List Below

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; ____ No

b. Reason for Conclusion:

No indication of chatter in excess of one microsecond during resonance search or endurance test. No visible evidence of damage or deformation resulting from the vibration. Equipment tested to sufficiently high g-level operability was demonstrated.

c. Plans for Reevaluation/Requalification:

None
C11-N013
E51-N010

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

117C3485

QUALIFICATION METHOD:

a. Company/Report Number/Date:

None

b. Qualification by:_____Analysis:_____Test

c. Qualification Information[1,2]:

None

EQUIPMENT/COMPONENT:

Pyco Temp Element

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:____Yes;__X_No

b. Reason for Conclusion:

No qualification information is available

c. Plans for Reevaluation/Requalification:

Requalification by analysis is underway
B33-N035
E12-N004
E12-N005
E12-N027
E12-N031
933-N021

SHEET_____Of_____

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

145C3224P001

EQUIPMENT/COMPONENT:

PYCO 145C3224P1 Thermocouple
See MPL List Below

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Ogden Technology Laboratories
Report No. 70822, February 7, 1972

b. Qualification by: X Analysis: ____ Test

c. Qualification Information[1,2]:

Resonance search performed from 5-33 Hz.
Operability verified after test.
Fragility test performed.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

Resonance search was not performed beyond 33 Hz. Operability was not demonstrated during the test. Fragility level and duration info was not specified.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

SHEET ____ Of ____

E31-N001	E31-N002
E31-N004	E31-N003
E31-N005	
E31-N006	
E31-N018	E31-N024
E31-N027	E31-N025
E31-N028	E31-N026
E31-N029	
E31-N030	
E31-N031	

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:
163C1184P016

EQUIPMENT/COMPONENT:
Robertshaw 713B Pressure Indicator
See MPL List Below

QUALIFICATION METHOD:

a. Company/Report Number/Date:
TII Testing Laboratories
Report No. 4938 February 7, 1973

b. Qualification by:____Analysis:__X__Test

c. Qualification Information[1,2]:
Resonance search performed to 200 Hz. Sinusoidal testing performed at all resonances to 4G horizontal and 2G vertical. Operability was demonstrated.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:__X__Yes;____No

b. Reason for Conclusion:
Resonance search was performed. Equipment tested to sufficiently high g levels. Operability was demonstrated.

c. Plans for Reevaluation/Requalification:
None

B21-R004	E51-R002
C41-R003	E51-R003
E21-R001	E51-R004
E21-R002	
E22-R001	
E22-R002	
E51-R001	

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

163C1185P003

EQUIPMENT/COMPONENT:

Robertshaw SP-222-C Pressure Switch
See MPL List Below

QUALIFICATION METHOD:

a. Company/Report Number/Date:

None

b. Qualification by: ____ Analysis: ____ Test

c. Qualification Information[1,2]: None

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

Qualification information not available.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

SHEET ____ Of ____

E12-N018
E12-N022
E21-N005
E22-N003

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

163C1917

QUALIFICATION METHOD:

a. Company/Report Number/Date:

None

b. Qualification by:_____Analysis:_____Test

c. Qualification Information[1,2]: None

EQUIPMENT/COMPONENT:

Rosemount 535E Temperature Transmtr
See MPL List Below

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:____Yes; _X_No

b. Reason for Conclusion:

Qualification information is not available.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

B33-N023
T49-K001

SHEET_____Of_____

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

163C1558P612313
163C1561P412203

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Rosemount/117415 Rev. A/5/3/76

b. Qualification by:____Analysis:_X_Test

c. Qualification Information[1,2]:

Single axis sine dwell testing performed at all resonant frequency with bracket and at 10,20,30, Hz without bracket. Amplitude 3" at 10Hz, 3g at the resonant frequencies. Operability was demonstrated.

EQUIPMENT/COMPONENT:

Rosemount 1151 ΔP Transmitter
See MPL List Below

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:_X_Yes;____No

b. Reason for Conclusion:

Sinusoidal testing performed at the resonant frequencies. Test to sufficiently high g levels. Operability was demonstrated.

c. Plans for Reevaluation/Requalification:

None

B33-N014	T49-N001
B33-N015	T49-N002
B33-N024	T49-N006
C34-N003	T49-N007
E32-N050	
E32-N051	
E32-N054	
E32-N055	
E32-N056	
E32-N058	
E32-N059	
E32-N060	
E32-N061	E51-N003

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

145C3011

QUALIFICATION METHOD:

a. Company/Report Number/Date:
Static-O-Ring Report No. 7013-100
4/26/74

b. Qualification by:____Analysis:_X_Test

c. Qualification Information[1,2]:
Resonance search performed to 1000 Hz. Sinusoidal testing performed to 3 g's horizontal and 1g vertical. Operability was demonstrated.

EQUIPMENT/COMPONENT:

Static-O-Ring 5N-AA3-SITT
Pressure Switch
See MPL List Below

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:_X_Yes;____No

b. Reason for Conclusion:

Testing performed to sufficiently high g level. Operability was demonstrated.

c. Plans for Reevaluation/Requalification:

None
B33-N018A
E12-N016
E12-N019

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:
Design Spec. 22A2702BC
Test Spec. CGE-03-092

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Southwest Research Institute
02-6056-001
November 7, 1980

b. Qualification by:____Analysis: X Test

c. Qualification Information[1,2]:

Multi-frequency, Multi-axis response spectra testing of Zimmer 72" Local Panel Mock-up.

EQUIPMENT/COMPONENT:
Used as the basis for qualification of the following Zimmer Local Panels:
H22-P002 H22-P015 H22-P021 H22-P027
H22-P004 H22-P017 H22-P025 H22-P041
H22-P005 H22-P018 H22-P026 H22-P073

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____No

b. Reason for Conclusion:
Testing conducted per IEEE 344-1975. Seismic and Hydrodynamic Loads were considered. TRS enveloped RRS.

c. Plans for Reevaluation/Requalification:

None

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

Design Spec. 22A2702BC
Test Spec. CGE-03-102

QUALIFICATION METHOD:

a. Company/Report Number/Date:
Southwest Research Institute
02-6056-001
December 30, 1980

b. Qualification by:____Analysis:_X__Test

c. Qualification Information[1,2]:

Multi-frequency, Multi-axis response spectra testing of Zimmer 48" Local Panel Mock-up.

EQUIPMENT/COMPONENT:
Used as the basis for qualification of the following Zimmer Local Panels:

H22-P001	H22-P010	H22-P021	H22-P024
H22-P009	H22-P017	H22-P022	H22-P027
			H22-P029

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:_X_Yes;____No

b. Reason for Conclusion:
Testing conducted per IEEE 344-1975. Seismic and Hydrodynamic Loads were considered. TRS enveloped RRS.

c. Plans for Reevaluation/Requalification:

None

SHEET_____Of_____

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:
Design Spec. 22A2702BC
Test Spec. CGE-03-104

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Southwest Research Institute
02-6056-001
January 23, 1981

b. Qualification by:____ Analysis:_X_ Test

c. Qualification Information[1,2]:

Multi-frequency, Multi-axis response spectra testing of Zimmer 30" Local Panel Mock-up.

EQUIPMENT/COMPONENT:
Used as basis for Qualification of the following Zimmer Local Panels:

H22-P004 H22-P006 H22-P074

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:_X_ Yes;___ No

b. Reason for Conclusion:

Testing conducted per IEEE 344-1975. Seismic and Hydrodynamic Loads were considered. TRS enveloped RRS.

c. Plans for Reevaluation/Requalification:

None

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

22A2702BC

QUALIFICATION METHOD:

a. Company/Report Number/Date:
   1) General Electric Seismic Summary: 249A1711 July 9, 1976, Test Report: 22A4315
   2) Sargent & Lundy, E or D 021333 February 8, 1980

b. Qualification by: X Analysis: X Test

c. Qualification Information[1,2]:

   Natural frequencies determined to be 15 Hz for S/S, 13 & 19 Hz for F/B and 31 & 33 Hz for V. Test results recommend rear support for all recorders. Low transmissabilities indicate successful operation during a seismic event of 0.75G.

   A dynamic analysis was performed in which all natural frequencies were calculated.

EQUIPMENT/COMPONENT:

H13-P601 Reactor Core Cooling Benchboard
204" Wide Benchboard

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ___ No

b. Reason for Conclusion:

   Seismic loads were considered. The actual stresses were lower than the allowable stresses. The test ZPA level was higher than the Zimmer Control Room floor ZPA level.

c. Plans for Reevaluation/Requalification:

   NONE.

TABLE 2

EQUIPMENT QUALIFICATION SUMMARY

CONTROL ROOM PANELS

EQUIPMENT/COMPONENT

H13-P601 Reactor Core Cooling Benchboard

CLASS 1E INSTRUMENTS

NAME	IDENTIFICATION
Square Root Converter	159C4486
Switch (Type CR2940)	145C3040
Controller	163C1392
Switch (Pushbutton)	145C3230
Switch (SBM Control)	234A9329
Switch (Series 40)	249A1892
Switch (SBM Control)	262A6023
Switch	163C1420
Switch (SBM Control)	262A7721

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

22A2702BC

EQUIPMENT/COMPONENT: H13-P603 Reactor Control Benchboard

124" wide benchboard

QUALIFICATION METHOD:

a. Company/Report Number/Date:

1) General Electric 994-78-140 November 3, 1978
ATR-510-EA004-01 August 1977
2) Sargent & Lundy EMD 021333 February 8, 1980

b. Qualification by: X Analysis: X Test

c. Qualification Information[1,2]:

Natural frequencies determined to be 14 & 23 Hz for S/S, 12 Hz for F/B and none observed for V.
Analysis based on results of Fermi 2 H11-P603 Seismic Test. Single frequency, single axis, sine beat test. 3 tests - 1 each axis.
Frequency range 1 Hz - 33 Hz. Test results show seismic requirements met structurally and functionally.
A dynamic analysis was performed in which all natural frequencies were calculated.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ___ No

b. Reason for Conclusion:

Seismic loads were considered. The actual stresses were lower than the allowable stresses. The test ZPA level was higher than the Zimmer control room floor ZPA level

c. Plans for Reevaluation/Requalification:

None

TABLE 2

EQUIPMENT QUALIFICATION SUMMARY

CONTROL ROOM PANELS

EQUIPMENT/COMPONENT

H13-P603 Reactor Control Benchboard

CLASS 1E INSTRUMENTS

NAME	IDENTIFICATION
Switch (Pushbutton)	145C3230
Relay	145C3238
Switch	169C8044
Switch	17489070
Range Switch	126X494
Switch (Type CR2940)	145C3040

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

22A2702BC

QUALIFICATION METHOD:

a. Company/Report Number/Date:
General Electric
Seismic Summary: 262A7235 October 29, 1974
Qualification Test Report: 235A1893 January 11, 1972
Test Report: 22A4563 August 26, 1975

b. Qualification by:_____Analysis:__X__Test

c. Qualification Information[1,2]:

Natural frequencies determined to be 8 & 16 Hz for S/S, 19 and 24 Hz for F/B and 14 & 26 Hz for V. Analysis based on results of Hanford 2 H13 - P608 seismic test. Single frequency, single axis, sine beat 3 tests - 1 each axis. Frequency range 1 Hz - 33 Hz. Test results show panel will operate successfully at 0.7G horizontal and 0.4G vertical ZPA. Suggested modifications to module restraint system, power supply plugs, card support cage, and door latches to meet 1.2G level.

EQUIPMENT/COMPONENT:

H13-P608 Power Range Neutron Monitoring Cabinet
150" Wide 5 Bay Cabinet

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:__X__Yes;____No

b. Reason for Conclusion:

Operability demonstrated during test suggested modifications will be implemented at Zimmer. Test ZPA level was higher than the Zimmer control room floor ZPA level.

c. Plans for Reevaluation/Requalification:

None.

CLASS 1E INSTRUMENTS:

General Electric classifies this entire panel as a single device.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

MK2-02-057

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Wyle Laboratories, Report 58626
April 1981

b. Qualification by:_____Analysis:_X__Test

c. Qualification Information[1,2]:

Multi-frequency, multi-axis response spectra testing of H13-P609 panel mock-up. Panel H13-P611 is of the same size and construction as H13-P609.

EQUIPMENT/COMPONENT:

H13-P609 Reactor Protection System A Vertical Board
H13-P611 Reactor Protection System B Vertical Board

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:_X_Yes;____No

b. Reason for Conclusion:

Testing conducted per IEEE 344-1975. Seismic loads were considered. TRS enveloped RRS.

c. Plans for Reevaluation/Requalification:

None.

TABLE 2

EQUIPMENT QUALIFICATION SUMMARY

CONTROL ROOM PANELS

EQUIPMENT/COMPONENT

H13-P609 Reactor Protection System A Vertical Board

H13-P611 Reactor Protection System B Vertical Board

CLASS 1E INSTRUMENTS

NAME	IDENTIFICATION
Relay (Time Delay)	145C3035
Relay (Panel Auxiliary)	136B3137
Switch (Type CR2940)	145C3040
Contactor	145C3209

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

MK2-02-057

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Wyle Laboratories, Report 58626
April 1981

b. Qualification by:_____Analysis:__X__Test

c. Qualification Information[1,2]:

Multi-Frequency, Multi-Axis Response Spectra Testing of H13-P612 Panel Mock-up.

EQUIPMENT/COMPONENT:
H13-P612 Feedwater and Recirculation Instrument Panel
60" Wide Instrument Rack

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:__X__Yes;____No

b. Reason for Conclusion:

Testing conducted per IEEE 344-1975. Seismic loads were considered. TRS enveloped RRS.

c. Plans for Reevaluation/Requalification:

NONE.

TABLE 2

EQUIPMENT QUALIFICATION SUMMARY

CONTROL ROOM PANELS

EQUIPMENT/COMPONENT

H13-P612 Feedwater and Recirculation Instrument Panel

CLASS 1E INSTRUMENTS

NAME	IDENTIFICATION
Inverter	145C3027
Relay	145C3238
Power Supply	159C4487
Filter, Inverter	163C1566

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

MK2-02-057

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Wyle Laboratories, Report 58626
April 1981

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Multi-Frequency, Multi-Axis Response Spectra Testing of Zimmer H13-P613 Panel Mock-up.

EQUIPMENT/COMPONENT:

H13-P613 NSSS Process Instrumentation Panel
30" Wide Instrument Rack

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ No

b. Reason for Conclusion:

Testing conducted per IEEE 344-1975. Seismic loads were considered. TRS enveloped RRS.

c. Plans for Reevaluation/Requalification:

None.

TABLE 2

EQUIPMENT QUALIFICATION SUMMARY

CONTROL ROOM PANELS

EQUIPMENT/COMPONENT

H13-P613 NSSS Process Instrumentation Panel

CLASS 1E INSTRUMENTS

NAME	IDENTIFICATION
Relay	145C3238
Power Supply	159C4560

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

MK2-02-057

EQUIPMENT/COMPONENT:

H13-P618 Div. II RHR Relay Vertical Board
H13-P625 HPCS Relay Vertical Board
H13-P629 DIV. I LPCS & RHR a Vertical Board
48" Wide Vertical Board

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Wyle Laboratories
Report 58626
April 1981

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Multi-Frequency, Multi-Axis Response Spectra Testing of Zimmer H13-P618 Panel Mock-up.
Panels H13-P625 and H13-P629 are of the same size and construction as H13-P618

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ No

b. Reason for Conclusion:

Testing conducted per IEEE 344-1975. Seismic Loads were considered. TRS enveloped RRS.

c. Plans for Reevaluation/Requalification:

None

TABLE 2

EQUIPMENT QUALIFICATION SUMMARY

CONTROL ROOM PANELS

EQUIPMENT/COMPONENT
H13-P618 Div. II RHR Relay Vertical Board

CLASS 1E INSTRUMENTS

NAME	IDENTIFICATION
Relay, Panel Auxiliary	159C4251
Relay, Panel Auxiliary	136B3137
Relay, Time Delay	145C3035
Switch (Type CR2940)	145C3040

TABLE 2

EQUIPMENT QUALIFICATION SUMMARY

CONTROL ROOM PANELS

EQUIPMENT/COMPONENT
H13-P625 HPCS Relay Vertical Board

CLASS 1E INSTRUMENTS

NAME	IDENTIFICATION
Relay, Panel Auxiliary	159C4251
Relay, Panel Auxiliary	136B3137

TABLE 2

EQUIPMENT QUALIFICATION SUMMARY

CONTROL ROOM PANELS

EQUIPMENT/COMPONENT
H13-P629 Div. I LPCS & RHR A Relay Vertical Board

CLASS 1E INSTRUMENTS

NAME	IDENTIFICATION
Relay, Panel Auxiliary	136B3137
Relay, Time Delay	145C3035
Switch, (Type CR 2940)	145C3040
Relay, Panel Auxiliary	159C4251
Relay	145C3238

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:
MK2-02-057

EQUIPMENT/COMPONENT:
H13-P621 RCIC Relay Vertical Board
H13-P622 Inboard Valve Relay Vertical Board
H13-P623 Outboard Isolation Valve Relay Vert. Brd. 24" Wide Vertical Board

QUALIFICATION METHOD:

a. Company/Report Number/Date:
Wyle Laboratories
Report 58626
April 1981

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:
Multi-Frequency, Multi-Axis Response Spectra Testing of Zimmer H13-P621 Panel Mock-up. Panels H13-P622 and H13-P623 are of the same size and construction as H13-P621.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ No

b. Reason for Conclusion:
Testing conducted per IEEE 344-1975. Seismic Loads were considered. TRS enveloped RRS.

c. Plans for Reevaluation/Requalification:
None

TABLE 2

EQUIPMENT QUALIFICATION SUMMARY

CONTROL ROOM PANELS

EQUIPMENT/COMPONENT
H13-P621 RCIC Relay Vertical Board

CLASS 1E INSTRUMENTS

NAME	IDENTIFICATION
Relay, Panel Auxiliary	159C4251
Relay, Panel Auxiliary	136B3137
Relay, Time Delay	145C3035

TABLE 2

EQUIPMENT QUALIFICATION SUMMARY

CONTROL ROOM PANELS

EQUIPMENT/COMPONENT
H13-P622 Inboard Valve Relay Vertical Board
H13-P623 Outboard Isolation Valve Relay Veritical Board

CLASS 1E INSTRUMENTS

NAME	IDENTIFICATION
Relay, Panel Auxiliary	136B3137
Relay	145C3238

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER: 22A2702BC

EQUIPMENT/COMPONENT:
H13-P628 ADS Channel A Vertical Board
H13-P631 ADS Channel B Vertical Board
H13-P642 DIV. II Leak Detection Vert. Board
36" Vertical Board

QUALIFICATION METHOD:

a. Company/Report Number/Date:
General Electric Company
Un-numbered seismic summary dated 1/13/79 by N. Luria. H13-P654, P655-Apparent Test Report - Perry H13-P654 and P655

b. Qualification by:____Analysis:_X_Test

c. Qualification Information[1,2]:
Natural frequencies determined. Analysis based on results of Perry H13-P654 Seismic Test Multi-frequency, multi-axis, random motion test. 50BE, 4SSE, 3 sine sweep tests, 3 transfer functions tests 4 MSIV response spectrum tests (Exceeds GE plant response spectrum between 8Hz and 40Hz) - No abnormalities.
Frequency Range: Random 1Hz to 45Hz
Sine sweep 3Hz to 60Hz
Test results show no instrument malfunction. Panels are capable of withstanding seismic events comparable to those associated with the Plant Response Spectra.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:_X_Yes;___No

b. Reason for Conclusion:

Testing conducted per IEEE 344-1975. Seismic Loads were considered. TRS enveloped RRS.

c. Plans for Reevaluation/Requalification:
None

TABLE 2

EQUIPMENT QUALIFICATION SUMMARY

CONTROL ROOM PANELS

EQUIPMENT/COMPONENT
H13-P628 Automatic Depressurization System Channel A Vertical Board

CLASS 1E INSTRUMENTS

NAME	IDENTIFICATION
Relay	136B3137
Relay	145C3035
Switch	145C3040
Relay	159C4251

TABLE 2

EQUIPMENT QUALIFICATION SUMMARY

CONTROL ROOM PANELS

EQUIPMENT/COMPONENT

H13-P631 Automatic Depressurization System Channel B Vertical Board

CLASS 1E INSTRUMENTS

NAME	IDENTIFICATION
Relay, Panel Auxiliary	136B3137
Relay, Time Delay	145C3035
Switch (Type CR2940)	145C3040
Relay, Panel Auxiliary	159C4251

TABLE 2

EQUIPMENT QUALIFICATION SUMMARY

CONTROL ROOM PANELS

EQUIPMENT/COMPONENT

H13-P642 Division 2 Leak Detection Vertical Board

CLASS 1E INSTRUMENTS

NAME	IDENTIFICATION
Relay, Panel Auxiliary	159C4251
Switch (Type CR2940)	145C3040
Timer, Motor Driven	145C3043
Temperature Monitor	163C1252
Alarm	159C4660

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

MK2-02-057

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Wyle Laboratories
Report 58626
April 1981

b. Qualification by:_____Analysis:__X__Test

c. Qualification Information[1,2]:

Multi-frequency, multi-axis response spectra testing of Zimmer H13-P632 panel mock-up.

EQUIPMENT/COMPONENT:

H13-P632 Div. I Leak Detection Vertical Board 72" wide vertical board.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:__X__Yes;____No

b. Reason for Conclusion:

Testing conducted per IEEE 344-1975. Seismic loads were considered. TRS enveloped RRS.

c. Plans for Reevaluation/Requalification:

None

TABLE 2

EQUIPMENT QUALIFICATION SUMMARY

CONTROL ROOM PANELS

EQUIPMENT/COMPONENT

H13-P632 Division I Leak Detection Vertical Board

CLASS 1E INSTRUMENTS

NAME	IDENTIFICATION
Relay, Panel Auxiliary	159C4251
Switch (Type CR2940)	145C3040
Timer, Motor Driven	145C3043
Temperature Monitor	163C1252
Square Root Converter	159C4486
Power Supply	159C4487
Summer	159C4659
Alarm	159C4660

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

MK2-02-057

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Wyle Laboratories
Report 58626 April 1981

b. Qualification by:____Analysis:_X_Test

c. Qualification Information[1,2]:

Multi-frequency, multi-axis response spectra testing of Zimmer H13-P635 Panel mock-up. Panel H13-P636 is of the same size and construction as H13-P635.

EQUIPMENT/COMPONENT:

H13-P635 Div. I. Radiation Monitor Cabinet H13-P636 Div. II. Radiation Monitor Cabinet 48" Wide Instrument Rack

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:_X_Yes;____No

b. Reason for Conclusion:

Testing conducted per IEEE 344-1975. Seismic loads were considered. TRS enveloped RRS.

c. Plans for Reevaluation/Requalification:

None

TABLE 2

EQUIPMENT QUALIFICATION SUMMARY

CONTROL ROOM PANELS

EQUIPMENT/COMPONENT

H13-P635 Division I Radiation Monitor Cabinet
H13-P636 Division II Radiation Monitor Cabinet

CLASS 1E INSTRUMENTS

NAME	IDENTIFICATION
Trip Auxiliary Unit	238X697
WRM-MSV	368X102AA
Ind/Trip Unit	129B2802
Log. Rad. Mon.	238X660

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:
22A2702BC

EQUIPMENT/COMPONENT:
H13-P655 Div. I. Main Steam Isolation Valve Leakage Control Vertical Board. 60" Wide Vertical Board.

QUALIFICATION METHOD:

a. Company/Report Number/Date:
General Electric Company
994-78-122 Seismic Test Report Summary
H13-P654/P655 Perry H13-P654, H13-P655
Seismic Test Report

b. Qualification by: ____ Analysis: __X__ Test

c. Qualification Information[1,2]:
Natural frequencies determined. Analysis based on results of Perry H13-P655 Seismic Test. Multi-frequency, multi-axis random motion. 3 sine sweep tests, 3 trans. func. tests 4 MSIV Response Spectrum Tests (Exceeds GE plant response spectra between 8Hz and 40-Hz (no abnormalities). Frequency range: Random: 1Hz - 45Hz Sine Sweep: 3 Hz - 60 Hz
Test results show panel will operate successfully with a ZPA of .56G but not to GE Standard Plant ZPA of 1.8G.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: __X__ Yes; ___ No

b. Reason for Conclusion:

Testing conducted per IEEE 344-1975. Seismic loads were considered. TRS enveloped RRS.

c. Plans for Reevaluation/Requalification:
None

TABLE 2

EQUIPMENT QUALIFICATION SUMMARY

CONTROL ROOM PANELS

EQUIPMENT/COMPONENT

H13-P655 Div. I Main Steam Isolation Valve Leakage Vertical Board.

CLASS 1E INSTRUMENTS

NAME	IDENTIFICATION
Timer, Motor Driven	145C3043
Relay	145C3238
Power Supply	195C4487
Alarm	159C4660
MV Converter	164C5630
Switch (Type CR2940)	145C3040
Meter	169C8317

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

MK2-02-057

EQUIPMENT/COMPCNENT:

H13-P654 MSIV Leakage Control Division II Vertical Board H13-P865 Division I Flammability Control Vertical Board H13-P866 Division II Flammability Control Vertical Board 30" Wide Vertical Board

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Wyle Laboratories
Report 58626
April 1981

b. Qualification by:_____Analysis:__X__Test

c. Qualification Information[1,2]:

Multi-frequency, multi-axis response spectra testing of surplus Zimmer panel H13-P689. Panels H13-P654, H13-P865, and H13-P866 are of the same size and construction as H13-P689.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:_X_Yes;____No

b. Reason for Conclusion:
Testing conducted per IEEE 344-1975. Seismic loads were considered. TRS enveloped RRS.

c. Plans for Reevaluation/Requalification:

None.

TABLE 2

EQUIPMENT QUALIFICATION SUMMARY

CONTROL ROOM PANELS

EQUIPMENT/COMPONENT

H13-P654 MSIV Leakage Control Division II Vertical Board

CLASS 1E INSTRUMENTS

NAME	IDENTIFICATION
Timer, Motor Driven	145C3043
Relay	145C3238
Power Supply	159C4487
Alarm	159C4660
Switch (Type CR2940)	145C3040
Meter	169C8317

TABLE 2

EQUIPMENT QUALIFICATION SUMMARY

CONTROL ROOM PANELS

EQUIPMENT/COMPONENT

H13-P865 Division I Flammability Control Vertical Board
H13-P866 Division II Flammability Control Vertical Board

CLASS 1E INSTRUMENTS

NAME	IDENTIFICATION
Switch (Type CR2940)	145C3040
Relay	145C3238
Alarm	159C4660
Controller	163C1392
Multiplier/Divider	163C1919
Switch, SBM Control	234A9874
Switch, SBM Control	249A1392
Power Supply	159C4487

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

129B2802

EQUIPMENT/COMPONENT:

GE Indicator and Trip Unit

QUALIFICATION METHOD:

a. Company/Report Number/Date:

GE Report No. 225A6608
July 21, 1970

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Resonance search performed to 33 Hz. Sinusoidal testing performed.
Input g-level S/S 15g F/B-15g V-15g.
Functional operability verified.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

Duration information was not specified in test report.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:
136B3137

EQUIPMENT/COMPONENT:

GE Auxiliary Panel Relay
12HFA51A

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Wyle Labs. July 14, 1975 Report No. 53303

b. Qualification by:____Analysis:_X_Test

c. Qualification Information[1,2]:

Resonance search performed to 33 Hz.
Sinusoidal testing performed.
Input g-level energized.
S/S-11g F/B-11g V-7.5g
de-energized S/S-11g F/B-11g V-7.5g
Operability was demonstrated.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:_X_Yes;____No

b. Reason for Conclusion:

Tested to sufficiently high g levels.
Operability was demonstrated.

c. Plans for Reevaluation/Requalification:

None.

SHEET____Of____

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:
145C3027

EQUIPMENT/COMPONENT:
GE Inverter GWR-125-60

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Ogden Labs, Report No. 70579
June 10, 1971

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Resonance search performed to 33 Hz.
Sinusoidal testing performed.
Input g level S/S-15g F/B-10g V-7g.
Operability was demonstrated.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ No

b. Reason for Conclusion:

Tested to sufficiently high g levels.
Operability was demonstrated.

c. Plans for Reevaluation/Requalification:

None.

SHEET ____ Of ____

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

145C3035

EQUIPMENT/COMPONENT:

Time delay relay

CR2820

QUALIFICATION METHOD:

a. Company/Report Number/Date:

GE DVF No. 145C3035

b. Qualification by: ____ Analysis: _X_ Test

c. Qualification Information[1,2]:

Resonance search performed to 33 Hz.
Sinusoidal testing was performed.
Input g-level S/S-25g, F/B-25g, V-25g.
Functional operability verified.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; _X_ No

b. Reason for Conclusion:

Duration information was not specified in test report.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

174B9070
145C3040

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Report No. 225A6280
December 17, 1969

b. Qualification by: ____ Analysis: __X__ Test

c. Qualification Information[1,2]:

Resonance search performed to 33 Hz. Sinusoidal testing performed.
Input g-level S/S-20g F/B-20g V-20g.
Functional operability verified.

EQUIPMENT/COMPONENT:

GE Switch CR2940

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: __X__ Yes; ____ No

b. Reason for Conclusion:

Tested to sufficiently high g levels. Operability was demonstrated.

c. Plans for Reevaluation/Requalification:

None

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

145C3043

EQUIPMENT/COMPONENT:

Timer, Motor Driven
HP51A6 (to 55A6)

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Eagle Signal Report No. QLR-HP55A6
January 3, 1972

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Resonance search performed to 1000 Hz.
Sinusoidal testing performed.
Input g-level S/S-10g, F/B-10g, V-10g.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

Operability was not demonstrated.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

145C3209

EQUIPMENT/COMPONENT:

Contactor
CR205

QUALIFICATION METHOD:

a. Company/Report Number/Date:

GE Report No. 225A6279
May 20, 1970

b. Qualification by: ____ Analysis __X__ Test

c. Qualification Information[1,2]:

Resonance search performed to 33 Hz.
Sinusoidal testing performed.
Input g-level S/S-12g, F/B-12g, V-12g.
Functional operability verified.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; __X__ No

b. Reason for Conclusion:

Duration information was not specified in test report.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

145C3230

EQUIPMENT/COMPONENT:

Cutler Hammer Pushbutton Switch
10250T1

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Inland Testing Labs
Report No. 3359B
November 19, 1971

b. Qualification by: ____ Analysis: _X_ Test

c. Qualification Information[1,2]:

Resonance search performed to 35 Hz.
Sinusoidal testing performed.
Input g-level S/S-10g, F/B-10g, V-10g.
Functional operability verified.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; _X_ No

b. Reason for Conclusion:

Duration information was not specified in test report.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

145C3238

EQUIPMENT/COMPONENT:

Agastat Relay, GPI Model

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Wyle Laboratories Report No. 53303

June 30, 1975

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Resonance search performed to 33 Hz.
Sinusoidal testing performed.
Input g-level S/S-11g, F/B-11g, V-7.5g.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

Operability was not demonstrated

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:
159C4251

EQUIPMENT/COMPONENT:
Relay, Panel Auxiliary
HMA

QUALIFICATION METHOD:

a. Company/Report Number/Date:
Wyle Labs Report No. 53303
December 28, 1972

b. Qualification by:____Analysis:_X__Test

c. Qualification Information[1,2]:
Resonance search performed to 35 Hz.
Sinusoidal testing performed.
Input g-level S/S-11g, F/B-11g, V-7.5g.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:_X_Yes;____No

b. Reason for Conclusion:
Test to sufficiently high g levels.
Operability was demonstrated.

c. Plans for Reevaluation/Requalification:
None

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

159C4486

QUALIFICATION METHOD:

a. Company/Report Number/Date:

GE Report No. C61-P001

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Resonance search performed to 60 Hz. Sinusoidal testing performed. Input g-level S/S-8g F/B 10g V-10g. Functional operability verified.

EQUIPMENT/COMPONENT:

Bailey Square Root Converter 750020AAAE1

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ Nc

b. Reason for Conclusion:

Tested to sufficiently high g levels. Operability was demonstrated.

c. Plans for Reevaluation/Requalification:

None

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

159C4487

EQUIPMENT/COMPONENT:

GE Power Supply 9T66Y987G03

QUALIFICATION METHOD:

a. Company/Report Number/Date:

GE Report No. 262A6764
April 30, 1974

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Resonance search was performed to 33 Hz.
Sinusoidal testing performed.
Inpug g-level S/S-2.5g F/B-2.5g V-2.5g

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

Operability was not demonstrated.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

159C4659

EQUIPMENT/COMPONENT:

Summer Bailey Meter 752410AAAE1

QUALIFICATION METHOD:

a. Company/Report Number/Date:

GE/MAC Report Nos. 471 and 525
November 16, 1972 and June 14, 1973

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Resonance search performed to 100 Hz.
Sinusoidal testing performed.
Input g-level S/S-9g F/B-9g V-13g. Functional operability verified.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ No

b. Reason for Conclusion:

Tested to sufficiently high g levels. Operability was demonstrated.

c. Plans for Reevaluation/Requalification:

None

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:
159C4660

EQUIPMENT/COMPONENT:
Bailey Alarm 7451X0AAAE1

QUALIFICATION METHOD:

a. Company/Report Number/Date:
GE/MAC Report No. 468
November 16, 1972

b. Qualification by:_____Analysis:__X__Test

c. Qualification Information[1,2]:

Resonance search performed to 100 Hz.
Sinusoidal testing performed.
Input g-level S/S-9g F/B 9.5g V-13g.
Functional operability verified.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:__X__Yes;____No

b. Reason for Conclusion:

Tested to sufficiently high g levels.
Operability was demonstrated.

c. Plans for Reevaluation/Requalification:

None

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

163C1252

EQUIPMENT/COMPONENT:

Temperature Monitor Relay 86

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Riley Report No. 900037
March 9, 1872

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Resonance search performed to 30 Hz.
Sinusoidal testing performed.
Input g level S/S-9g, F/B-8.5g, V-8.0g.
Functional operability verified.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ No

b. Reason for Conclusion:

Tested to sufficiently high g levels.
Operability was demonstrated.

c. Plans for Reevaluation/Requalification:

None

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

163C1392

EQUIPMENT/COMPONENT:

Bailey Controller 701003AAAE1

QUALIFICATION METHOD:

a. Company/Report Number/Date:

GE/MAC Report No. 502
December 21, 1972

b. Qualification by:____Analysis:_X_Test

c. Qualification Information[1,2]:

Resonance search performed to 100 Hz. Sinusoidal testing performed. Input g level, S/S-20g F/B-8.5g V-7.5g. Functional operability verified.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:_X_Yes;____No

b. Reason for Conclusion:

Tested to sufficiently high g levels. Operability was demonstrated.

c. Plans for Reevaluation/Requalification:

None

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

249A1892
163C1420

EQUIPMENT/COMPONENT:

Switch-Electro Switch Series 40

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Action Corp.
Report No. 2070-01

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Resonance search performed to 25 Hz.
Sinusoidal testing performed.
Input g level S/S-10g F/B-10g, V-10g.
Functional operability verified.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ No

b. Reason for Conclusion:

Tested to sufficiently high g levels.
Operability was demonstrated.

c. Plans for Reevaluation/Requalification:

None.

SHEET ____ Of ____

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

163C1566

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Viking Labs., Sunnyvale. Report No. 30430-1
September 25, 1975.

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Resonance search performed to 50 Hz.
Sinusoidal testing performed.
Input g-level S/S 10g F/B 10g V-10g.
Functional operability verified.

EQUIPMENT/COMPONENT:

Filter, Inverter
Powermark 3/74

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ No

b. Reason for Conclusion:

Tested to sufficiently high g levels.
Operability was demonstrated.

c. Plans for Reevaluation/Requalification:

None.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

PPD163C1919

EQUIPMENT/COMPONENT:

Bailey Multiplier Divider
753010AAAE1

QUALIFICATION METHOD:

a. Company/Report Number/Date:
U.P.A.P.D. Report No. 548
October 16, 1973

b. Qualification by: ____ Analysis: _X_ Test

c. Qualification Information[1,2]:

Resonance search performed to 60 Hz.
Sinusoidal testing was performed.
Input g-level S/S-10g F/B-7g V-9g.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; _X_ No

b. Reason for Conclusion:

Operability was not demonstrated.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

164C5630

QUALIFICATION METHOD:

a. Company/Report Number/Date:

UPAPD Report No. 549

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Resonance search performed to 60 Hz.
Sinusoidal testing performed.
Input g-level S/S-9g F/B-9g V-9g.
Functional operability verified.

EQUIPMENT/COMPONENT:

Bailey Millivolt Converter
740110AAAE1

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: X Yes; ____ No

b. Reason for Conclusion:

Tested to sufficiently high g levels.
Operability was demonstrated.

c. Plans for Reevaluation/Requalification:

None.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:
169C8044

EQUIPMENT/COMPONENT:
GE Switch SB-9

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Ogden Technology Labs. Report No. 70709-2
September 21, 1971.

b. Qualification by:_____Analysis:__X__Test

c. Qualification Information[1,2]:

Resonance search to 33 Hz. Sinusoidal testing performed.
Inpug g-level S/S-25g F/B-25g V-259.
Functional operability verified.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:__X__Yes;____No

b. Reason for Conclusion:

Test to sufficiently high g levels. Operability was demonstrated.

c. Plans for Reevaluation/Requalification:

None.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

169C8317

QUALIFICATION METHOD:

a. Company/Report Number/Date:

GE Report No. 234A9804
April 14, 1971

b. Qualification by: ____ Analysis: __X__ Test

c. Qualification Information[1,2]:

Resonance search performed to 33 Hz.
Sinusoidal testing performed.
Inpug g level S/S-189 F/B-189 V-7g.

EQUIPMENT/COMPONENT:

Meter 180 type
E32-N65 thru N661

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; __X__ No

b. Reason for Conclusion:

Operability was nc' demonstrated.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

SHEET ____ Of ____

SEISMIC QUALIFICATION REVIEW

Table 4

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

216X494

EQUIPMENT/COMPONENT:

Range Switch C51A-Z08 & Z09

QUALIFICATION METHOD:

a. Company/Report Number/Date:

GE Report No. 994-78-136
October 31, 1978

b. Qualification by: X Analysis: ____ Test

c. Qualification Information[1,2]:

Static analysis was performed.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

Natural frequencies were not calculated. Operability was not demonstrated.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

262A7721 234A9897
262A6023 234A9329

EQUIPMENT/COMPONENT:

GE Switch SBM Control

QUALIFICATION METHOD:

a. Company/Report Number/Date:

Ogden Technology Laboratories Report No. 70709-2
September 21, 1971.

b. Qualification by:_____Analysis:__X__Test

c. Qualification Information[1,2]:

Resonance search performed to 33 Hz.
Sinusoidal testing performed.
Input g-level S/S-25g F/B -25g V-25g
Functional operability verified.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met:__X__Yes;____No

b. Reason for Conclusion:

Tested to sufficiently high g levels.
Operability was demonstrated.

c. Plans for Reevaluation/Requalification:

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

GE238X660

EQUIPMENT/COMPONENT:

Log Rad Monitor

QUALIFICATION METHOD:

a. Company/Report Number/Date:

GE Report No. 225A6609

b. Qualification by: ____ Analysis: _X_ Test

c. Qualification Information[1,2]:

Resonance search performed to 33 Hz.
Sinusoidal testing performed.
Input g-level S/S-18g F/B-18g V-18g

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; _X_ No

b. Reason for Conclusion:

Duration information was not specified in test report.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:

GE 238X697

EQUIPMENT/COMPONENT:

Trip Auxiliary Unit

QUALIFICATION METHOD:

a. Company/Report Number/Date:
Phileo Ford, P.A., Ca

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Resonance search performed to 33 Hz.
Sinusoidal testing performed.
Input g-level S/S-17g, F/B-17g, V-17g.
Functional operability verified.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:

Duration information was not specified in test report.

c. Plans for Reevaluation/Requalification:

Requalification by test is underway.

SEISMIC QUALIFICATION REVIEW

Table 2

Zimmer Equipment Qualification Summary

SPECIFICATION NUMBER:
GE/NID 368X102AA

EQUIPMENT/COMPONENT:
Wide Range Monitor

QUALIFICATION METHOD:

a. Company/Report Number/Date:
GE Report No. 225A6612
July 20, 1970

b. Qualification by: ____ Analysis: X Test

c. Qualification Information[1,2]:

Resonance search performed to 33 Hz.
Sinusoidal testing performed.
Input g-level S/S-8.5g, F/B-8.5, V-8.5g.

SQRT REVIEW RESULTS:

a. SQRT Criteria Met: ____ Yes; X No

b. Reason for Conclusion:
Duration information was not specified in test report.

c. Plans for Reevaluation/Requalification:
Requalification by test is underway.

Attachment B

CRITERIA FOR EVALUATION OF EQUIPMENT REQUIREMENTS FOR HOT STANDBY AND COLD SHUTDOWN

Definitions:

Hot Shutdown Condition - The reactor is in the hot shutdown condition when the mode switch is in the shutdown position and the reactor coolant temperature is greater that 212°F.

Hot Standby Mode - The condition of the reactor when it is operating with coolant temperature greater than 212°F, system pressure less than 600psig, and the mode switch in the startup position.

Cold Shutdown Condition - Condition of the reactor when the reactor is shut down, the reactor vessel coolant is maintained at less than 212°F and the reactor vessel is vented to atmosphere.

All safety related equipment is classified as essential active or passive because it is required to prevent or mitigate the consequences of those design basis accidents described in Chapter 15 of the Zimmer FSAR. Safety related equipment either initiates a safety function in response to a variable exceeding an allowable value or it completes a safety function such that the reactor is in a safe shutdown condition and off-site exposures are less than 10CFR100 limits. Each of these potential events are analysed in the FSAR (Chapter 15).

Since the hot standby mode is a normal operating mode and is

rarely an end point state following any abnormal or design basis event, the hot shutdown state is the terminology selected for preparation of Table 1.

Typically all active mechanical and electrical components which initiate or carry out such safety functions as reactor scram, containment isolation, or emergency core cooling have been designated as required to achieve hot shutdown. Included with the above mentioned instruments are those auxiliary items, although they do not directly initiate or carry out the safety function, they are required for the proper and safe operation of the safety related system.

For cold shutdown requirements, a scenario has been identified in Reference 1 which identifies all safety related equipment necessary to achieve a cold shutdown. The listing also includes all items which are needed to reach a hot safe shutdown prior to the completion of the cooldown using the balance of the equipment. For the purpose of completing the table, only those mechanical and electrical components which are required to bring the reactor from a hot shutdown condition to a cold shutdown condition are listed as required for cold shutdown. For example, if the RHR system pumps are initiated following a LOCA from a high drywell pressure signal, the pressure sensing instrument is listed as required for hot shutdown. However, since at least one of the RHR pumps would remain running in the shutdown cooling mode, these pumps are listed as required for both hot shutdown and cold shutdown. If should also be noted that although other equipment may be used in different cold shutdown scenarios, only those items required for the scenario in Reference 1 are identified.

Reference 1: Letter from E.A. Borgmann (CG&E) to H. Denton (NRC), dated May 4, 1979, Docket No. 50-538.