

June 21, 1984

Docket No.: 50-458

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APPLICANT: Gulf States Utilities Company (GSU)

FACILITY: River Bend Station (RBS)

SUBJECT: SUMMARY OF MEETING WITH GSU AND STONE & WEBSTER ENGINEERING CORPORATION (SWEC) TO DISCUSS EQUIPMENT QUALIFICATION PROGRAMS FOR RIVER BEND STATION

The meeting was held in Bethesda, Maryland on Tuesday May 15, 1984. A list of persons attending the meeting is included in Enclosure 1. GSU and SWEC made a presentation describing the RBS Equipment Qualification program as included in Enclosure 2. As a result of this presentation the following action items were identified:

- 1) GSU is to provide the qualification completion status on the Master List in a July 1984 submittal. GSU will review and consider the NRC's general guidelines provided in a December 21, 1982, letter to GSU (Schwencer (NRC) to Cahill (GSU)).
- 2) GSU will make available to the NRC a set of response spectra prior to the Pump and Valve Operability Review Team (PVORT) and the Seismic Qualification Review Team (SQRT) audits to allow the staff to compare the spectra against available documentation during the audit.
- 3) GSU will provide examples of pump and valve specifications for balance of plant (BOP) and Nuclear Steam Supply System (NSSS) equipment.
- 4) GSU will provide a requalification list as a result of hydrodynamic/seismic loading.
- 5) GSU will provide a description of the method used at RBS for BOP and NSSS equipment to develop the load combinations for hydrodynamic and seismic conditions. GSU will also discuss how the test duration interval was derived.

GSU will be providing the above information to support SQRT/PVORT and Equipment Qualification audits tentively scheduled for October/November 1984.

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Licensing Branch No. 2
Division of Licensing

NRC Participants

W. F. Anderson
Goutam Bagchi
Harold Walker
Norman Romney
Dwight Chamberlain
J. P. Jaudon

Enclosures As stated *AS*

cc: See next page
LB#2/DL LB#2/DL
EJWeinkam:ch ASchwencer
06/1/84 06/21/84

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EQ/SQRT MEETING

E. J. Weinkam III	NRC/DL
J. G. Propson	GSU
W. F. Anderson	NRC/IE
Bruce Milles	BNL/Pump & Valve Information
Kamal Bandyopadhyay	BNL/Seismic Qualification
Goutam Bagchi	NRC/EQB
Norman Romney	NRC/EQB
Dick Hardy	GE
Rick King	GSU
Harold Walker	NRC/EQB
Narendra Muni	SWEC/Seismic
Laszlo Illy	SWEC/Environmental
Lyn Macy	GE
Eddie R. Grant	GSU/Licensing
Arie Blum	SWEC/Project
Jack James	SWEC E.Q. SEC. Manager
Noel Shirley	GE
L. Schell	GSU/Nuclear Plant Engineering
Dwight D. Chamberlain	NRC/SRI
J. P. Jaudon	NRC - Region IV
W. Culp	SWEC/Licensing

AGENDA

RIVER BEND STATION

EQUIPMENT QUALIFICATION PROGRAM PRESENTATION

DATE: MAY 15, 1984

TIME: 9:00-12:00 A.M.

LOCATION: NRC OFFICES, PHILLIPS BUILDING, BETHESDA, MD.

9:00	INTRODUCTION	GSU	R. KING
9:05	PROGRAM OVERVIEW	GSU	L. SCHELL
9:15	ENVIRONMENTAL CONDITIONS	S&W	W. CULP
	ENVIRONMENTAL QUALIFICATION METHODOLOGY		
	HARSH ENVIRONMENT		
	BOP		
9:25	ELECTRICAL	S&W	L. ILLY
9:35	MECHANICAL	S&W	J. JAMES
	NSSS		
9:45	ELECTRICAL	GE	N. SHIRLEY
	MECHANICAL	GE	N. SHIRLEY
10:05	MILD ENVIRONMENT	GSU	L. SCHELL
10:10	SEISMIC/DYNAMIC CONDITIONS	S&W	A. BLUM
	SEISMIC QUALIFICATION METHODOLOGY		
10:20	BOP EQUIPMENT	S&W	N. MUNI
10:30	NSSS EQUIPMENT	GE	R. HARDY
10:40	PUMP AND VALVE OPERABILITY		
	ASSURANCE	S&W	N. MUNI
10:50	QUALIFICATION DOCUMENTATION	GSU	L. SCHELL
11:00	QUESTION AND ANSWER SESSION		

GENERAL DESCRIPTION
FOR RIVER BEND STATION (RBS)

- o BWR/6 MARK III CONTAINMENT DESIGN (2394 MW)
- o NSSS AND TURBINE-GENERATOR SUPPLIER - GENERAL ELECTRIC CO.
- o BOP IS DESIGNED AND CONSTRUCTED BY A/E - STONE AND WEBSTER
- o LOCATED 24 MILES NW OF BATON ROUGE, LOUISIANA
- o UTILIZES THE MISSISSIPPI RIVER FOR ITS MAJOR WATER REQUIREMENTS

RBS MILESTONES

CP ISSUANCE	MARCH 1977
FSAR DOCKETED (SRP NUREG-75/087)	AUGUST 1981
SER ISSUANCE	MAY 1984
FULL ACRS MEETING	JULY 1984 (S)
EQ/SQRT/PVORT AUDITS	OCTOBER 1984 (S)
EQB SER SUPPLEMENT	FEBRUARY 1985 (S)
FUEL LOAD	APRIL 1985 (S)
COMMERCIAL OPERATION	DECEMBER 1985 (S)

(S) - SCHEDULED

RIVER BEND COMMITMENTS

(FINAL SAFETY ANALYSIS REPORT)

IEEE STANDARD 323-1974

"QUALIFYING CLASS 1E EQUIPMENT FOR NUCLEAR POWER
GENERATING STATIONS"

NUREG-0588

"INTERIM STAFF POSITION ON ENVIRONMENTAL QUALIFICATION
OF SAFETY RELATED ELECTRICAL EQUIPMENT"

IEEE STANDARD 344-1975

"SEISMIC QUALIFICATION OF CLASS 1E EQUIPMENT FOR
NUCLEAR POWER GENERATING STATIONS"

RIVER BEND QUALIFICATION PROGRAMS

• ENVIRONMENTAL QUALIFICATION PROGRAM

ELECTRIC EQUIPMENT PER 10CFR50.49

ACTIVE SAFETY RELATED MECHANICAL EQUIPMENT

• SEISMIC/HYDRODYNAMIC QUALIFICATION PROGRAM

SEISMIC CATEGORY I EQUIPMENT

LS-5/15/84

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DIVISION OF RESPONSIBILITY

- GENERAL ELECTRIC COMPANY

NSSS EQUIPMENT, I.E. EQUIPMENT SUPPLIED
UNDER THE NSSS CONTRACT

- STONE & WEBSTER ENGINEERING CORPORATION

BALANCE OF PLANT EQUIPMENT

LS-5/15/84

MILESTONES

JUNE 1, 1984

FSAR UPDATE
(REVISED EQUIPMENT QUALIFICATION
DOCUMENT (EQD))

JULY 1, 1984

MASTER LIST SUBMITTAL

SEPTEMBER 30, 1984

>85% QUALIFICATION COMPLETION

OCTOBER 1984

NRC AUDITS (EQB, SQRT)

MARCH 1985

100% COMPLETE QUALIFICATION

APRIL 1985

FUEL LOAD

LS-5/15/84

ENVIRONMENTAL CONDITIONS

NORMAL PLUS ACCIDENT CRITERIA

TEMPERATURE, PRESSURE, HUMIDITY

REG GUIDE 1.46

MEB 3 - 1

APCSB 3 - 1

LOOP, SAFE SHUTDOWN ANALYSIS

*330° Drywell
165° Containment*

RADIATION

NUREG - 0016 SCALED

NUREG - 0588

MSIV ISOLATION

RECIRCULATING LOCA FLUIDS

SOURCE TERMS APPROVED

CHEMICAL ENVIRONMENT

NO CHEMICAL ADDITIVES

NO SPRAYS

SUBMERGENCE

ZONES CT-SP, CT-2

RIVER BEND STATION

EQUIPMENT QUALIFICATION

HARSH ENVIRONMENT PROGRAM

BOP ELECTRICAL

I PROGRAM

- A. 10 CFR 50.49 REQUIREMENTS
- B. NUREG 0588 (CATEGORY 1 GUIDELINES)
- C. 10 CFR 21
- D. PROCUREMENT SPECIFICATION

II QUALIFICATION METHODS

- A. TYPE TESTING IDENTICAL EQUIPMENT
- B. TYPE TESTING SIMILAR EQUIPMENT
 - 1. ADDITIONAL ANALYSIS REQUIRED
- C. EXPERIENCE WITH IDENTICAL OR SIMILAR EQUIPMENT (INDUSTRY DATA)
 - 1. SIMILAR CONDITIONS OF SERVICE
 - 2. ADDITIONAL ANALYSIS MAY BE REQUIRED
- D. ANALYSIS OF IDENTICAL OR SIMILAR EQUIPMENT SUPPORTED BY TYPE TEST DATA

E. VENDOR DOCUMENTS

1. TEST PLANS
2. TEST REPORTS

F. DOCUMENTATION

1. CHECKLIST
2. SUPPLIER DOCUMENT DATA FORM (SDDF)
3. SYSTEM COMPONENT EVALUATION WORK (SCEW) SHEETS

III METHODOLOGY

A. AGING

1. ARRHENIUS METHODOLOGY
2. OTHER METHODS IF ADEQUATELY JUSTIFIED
3. PRIOR TO SEISMIC AND/OR DBA EVENT
4. SYNERGYSTIC EFFECTS (WHERE IDENTIFIED)
5. MAINTENANCE AND/OR REPLACEMENT SCHEDULES

B. TEST SEQUENCE (IF TYPE TEST USED)

SPECIFIED SEQUENCE

- A. IEEE 323-74 - SAME UNIT
- B. ALTERNATE IF JUSTIFIED

C. MARGIN

1. DIFFERENCE BETWEEN MOST SEVERE SPECIFIED SERVICE CONDITIONS AND CONDITIONS USED IN TYPE TESTING
2. REQUIREMENTS
 - A. REG GUIDE 1.89 REV 1 (DRAFT)
 - B. NUREG 0588
 - C. IEEE 323-1974
 - D. 10 CFR 50.49

D. RADIATION

1. GAMMA RADIATION
2. BETA RADIATION
3. NEUTRON RADIATION
4. LOCATION SPECIFIC CALCULATIONS
(IF REQUIRED)

ENVIRONMENTAL QUALIFICATION OF BOP MECHANICAL EQUIPMENT

- PROGRAM OBJECTIVE
- PROGRAM METHODOLOGY
- PROGRAM DOCUMENTATION

BOP PROGRAM OBJECTIVE

- THE OBJECTIVE OF THE MECHANICAL EQUIPMENT QUALIFICATION PROGRAM IS TO ESTABLISH THE ~~RELIABLE~~ QUALIFIED LIFE OF NONMETALLIC COMPONENTS

BOP PROGRAM METHODOLOGY

- IDENTIFICATION OF SAFETY RELATED MECHANICAL EQUIPMENT
- IDENTIFICATION OF ORGANIC MATERIALS
- DEVELOPMENT OF COMPONENT THERMAL SERVICE LIFE
- DEVELOPMENT OF COMPONENT RADIATION SERVICE LIFE
- REVIEW: ACCEPTANCE CRITERIA

BOP PROGRAM DOCUMENTATION

- QUALIFICATION REPORT SUMMARY
- SUBCOMPONENT DATA SHEETS
- ENGINEERING ANALYSIS SHEETS
- RADIATION RESISTANCE OF MATERIALS
- THERMAL AGING ANALYSIS

HARSH ENVIRONMENT - NSSS CLASS 1E ELECTRICAL EQUIPMENT

o METHODOLOGY

NEDE - 24326-1-P

o SCOPE

o 273 DEVICES

o TEST - 60

o JNT - 46

o SIMILARITY - TEST - 138

o REPLACE - 11

o ANALYSIS, INDUSTRY DATA, ETC. - 18

o APPROACH

o TESTING IS PREFERRED

o OTHER APPLICABLE APPROACHES

o PARTIAL TEST WITH ANALYSIS

o OPERATING EXPERIENCE

o ANALYSIS

o STANDARDS ADDRESSED

o IEEE-323-1974

o ANSI N45.2

o IEEE-344-1975

HARSH ENVIRONMENT - NSSS MECHANICAL EQUIPMENT

- ① PREPARE LIST OF EQUIPMENT
 - PUMPS (RHR, LPCS, HPCS, RCIC, AND SLC)
 - RCIC TURBINE LUBE OIL SYSTEM
 - SDV VENT AND DRAIN VALVES
 - HCU
 - PACKING AND GASKETS (MSIV AND SRV)
- ① LIST NON-METALLIC MATERIAL
- ① DEFINE SAFETY FUNCTION AND FUNCTION TIME
- ① EVALUATE MATERIALS RELATIVE TO THRESHHOLD FOR DEGRADATION
 - DETERMINE IF FAILURE CAN BE TOLERATED
 - DEMONSTRATE UNACCEPTABLE FAILURE WILL NOT OCCUR
 - DEMONSTRATE ACCEPTABILITY
 - ANALYSIS
 - TEST
 - COMBINATION
- ① ESTABLISH QUALIFIED LIFE
 - UPDATE O&M MANUAL

ENVIRONMENTAL QUALIFICATION

MILD ENVIRONMENT

"A MILD ENVIRONMENT IS AN ENVIRONMENT THAT WOULD AT NO TIME BE SIGNIFICANTLY MORE SEVERE THAN THE ENVIRONMENT THAT WOULD OCCUR DURING NORMAL PLANT OPERATION, INCLUDING ANTICIPATED OPERATIONAL OCCURRENCES."

NO COMMON MODE ENVIRONMENTAL CHANGES DUE TO ACCIDENT

ENVIRONMENTAL QUALIFICATION
MILD ENVIRONMENT

GULF STATES UTILITIES POSITION:

- SERVICE CONDITIONS AND SAFETY FUNCTION
MUST BE SPECIFIED AND ENVELOPED BY DESIGN
- MANUFACTURER MUST CERTIFY EQUIPMENT
AGAINST SPECIFICATION

SEISMIC/DYNAMIC CONDITIONS

I. SEISMIC LOADS

- OBE - FIVE
- SSE - ONE

II. DYNAMIC LOADS

- SRV EVENTS - ENVELOPE OF SRV EVENTS
(i.e. 1 - VALVE, 2 - VALVES, 7 - VALVES, 16 - VALVES)
- LOCA EVENTS - CHUGGING
CONDENSATION OSCILLATION
POOL SWELL
- ANNULUS PRESSURIZATION - DUE TO HIGH ENERGY LINE BREAK

II. RESPONSE SPECTRA

A. AMPLIFIED RESPONSE SPECTRA (ARS)

- STRUCTURAL DYNAMIC ANALYSIS

Time history

B. REQUIRED RESPONSE SPECTRA (RRS)

- PEAK BROADENED - SEISMIC + 25 AND -20 PERCENT
HYDRODYNAMIC \pm 15 PERCENT

- LOAD COMBINATION - NUREG -0484

seismic & hydrodynamic (SASS)

C. TEST RESPONSE SPECTRA (TRS)

II. CYCLIC EFFECTS OF HYDRODYNAMIC LOADS

A. NUMBER OF EVENTS

High Frequency - High amplitude

● SRV - 1800 SRV ACTUATION

● LOCA - 2600 CHUGS

B. STRESS CYCLES

C. TEST DURATION

SEISMIC/DYNAMIC QUALIFICATION

OF

SAFETY-RELATED EQUIPMENT

SEISMIC/DYNAMIC QUALIFICATION CRITERIA

- NUREG-0800, REVISION 2

- NUREG-0484, REVISION 1 (LOAD COMBINATION)

- REGULATORY GUIDES 1.29 (CLASSIFICATION OF SEISMIC CATEGORY I STRUCTURES, SYSTEM, AND COMPONENTS)
 - 1.48 (CRITERIA FOR ASME COMPONENTS)
 - 1.60 (DEVELOPMENT OF GROUND RESPONSE SPECTRA)
 - 1.61 (DAMPING)
 - 1.92 (SPATIAL AND MODAL RESPONSE COMBINATION)
 - 1.100 (SEISMIC QUALIFICATION OF CLASS 1E EQUIPMENT)
 - 1.122 (MODIFICATION OF RESPONSE SPECTRA)

- IEEE 344-1975

- ASME CODE, SECTION III, 1974 (PRESSURE BOUNDARY)

- ADDITIONAL REQUIREMENTS FOR HYDRODYNAMIC LOADS

SRV, upset (OBE, SRV), faulted, Chugging
Duration of test required by stress cycle #

QUALIFICATION METHODS

- ANALYSIS

- TESTING

- COMBINED ANALYSIS/TESTING

PROGRAM SCOPE

I. SAFETY-RELATED MECHANICAL EQUIPMENT

- PUMPS (ACTIVE, NONACTIVE)
- VALVES (ACTIVE, NONACTIVE)
- OTHER MECHANICAL EQUIPMENT (I.E., CRANES, HVAC, ETC)

II. ELECTRICAL EQUIPMENT AND INSTRUMENTATION

- SWITCHGEAR
- MOTOR CONTROL CENTERS
- STANDBY BATTERIES AND BATTERY CHARGERS
- STANDBY DIESEL GENERATOR SYSTEM

PROGRAM SCOPE (CONT)

- MISCELLANEOUS CONTROL AND RELAY BOARDS
- INSTRUMENTATION (I.E., TRANSMITTERS, SWITCHES, RTD'S, ETC.)

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QUALIFICATION METHODS (CONT)

A. ANALYSIS

- STATIC ANALYSIS - RIGID AND FLEXIBLE (EQUIVALENT STATIC) EQUIPMENT
- DYNAMIC ANALYSIS - MODAL ANALYSIS, TIME HISTORY
- STRESS CYCLES, CUMULATIVE USAGE FACTOR
- SUPPLEMENTAL ANALYSIS FOR EQUIPMENT PREVIOUSLY QUALIFIED FOR SEISMIC LOADS ONLY

B. TESTING

- MULTIFREQUENCY, MULTIAXIS
- SINGLE FREQUENCY, SINGLE AXIS WHERE JUSTIFIED

QUALIFICATION METHODS (CONT)

- VIBRATION ACING - DBE, HYDRODYNAMIC

C. COMBINED ANALYSIS/TESTING

- SIMILARITY ANALYSIS

QUALIFICATION METHOD (CONT)

(PARTIAL LIST)

<u>EQUIPMENT</u>	<u>ANALYSIS</u>	<u>TEST</u>
POLAR CRANE	X	
VALVES	X	X
PUMPS	X	
HVAC (MISCELLANEOUS)	X	
FIRE DAMPER	X	X
HIGH DENSITY FUEL RACKS	X	
LEAKAGE CONTROL SYSTEM	X	X
HEAT EXCHANGERS	X	
HYDROGEN ANALYZER	X	X
HYDROGEN RECOMBINER	X	X
I & C DEVICES		X
ELECTRICAL PENETRATIONS	X	X
MOTORS (MISCELLANEOUS)	X	X
MOTOR CONTROL CENTERS		X
SWITCHGEAR		X
BATTERIES AND RACKS	X	X
BATTERY CHARGERS		X
TRANSFORMERS (MISCELLANEOUS)		X
DUCT HEATERS	X	X
DIESEL GENERATOR SYSTEM	X	X
UNINTERRUPTIBLE POWER SUPPLY		X
PANELS AND RACKS (MISCELLANEOUS)	X	X

RIVER BEND SORT PROGRAM

NSSS SCOPE OF SUPPLY

MAY 15, 1984

RICHARD W. HARDY

GENERAL ELECTRIC

PROGRAM BASIS

- o NRC LETTER OF FEBRUARY 27 1979 FROM R. S. BOYD TO THREE
LEAD PLANT UTILITIES (ZIMMER, SHOREHAM, LASALLE)

- o IEEE-STD-344-1975
 - R.G. 1.92
 - R.G. 1.100
 - SRP 3.9.2
 - SRP 3.10

- o MULTI-AXIS MULTI-FREQUENCY CONCERNS
 - HYDRODYNAMIC + SEISMIC LOADS
 - OPERABILITY
 - HYDRODYNAMIC FATIGUE

GE APPROACH

- o SIMILARITY COMPARISON TO EQUIPMENT ALREADY QUALIFIED TO SORT REQUIREMENTS.

- o UTILIZATION OF RESULTS GENERATED BY GE'S NEW LOADS ADEQUACY EVALUATION PROGRAM, PHASE 3 ENVIRONMENTAL QUALIFICATION PROGRAM, AND SDV/ATWS QUALIFICATION PROGRAM.

- o PERFORMANCE OF ANALYSES TO SHOW ADEQUACY OF EXISTING QUALIFICATION WHEN INTERPRETED TO SORT CRITERIA. ADDRESS TRS ENVELOPING RRS, CROSS COUPLING, CLOSELY SPACED MODES, RIGID VS FLEXIBLE RESPONSE, ZPA, OPERABILITY, MARGINS.

- o REQUALIFICATION OF EQUIPMENT WHICH CANNOT BE SHOWN TO BE ADEQUATE BY ABOVE STEPS.

RIVER BEND SQRT PROGRAM
RESPONSIBILITY FOR DYNAMIC LOADS

	<u>TYPE</u>	<u>ORGANIZATION</u>
o	FLOOR RESPONSE SPECTRA	S&W
o	EQUIPMENT MOUNTED ON BOP PIPING	S&W
o	EQUIPMENT MOUNTED ON NSSS PIPING	GE
o	EQUIPMENT MOUNTED IN RACKS AND PANELS	GE

RIVER BEND SQRT PROGRAM
EQUIPMENT LIST, SCHEDULE, EXPECTED
QUALIFICATION METHOD

<u>MPL</u>	<u>DESCRIPTION</u>	<u>SCHEDULE</u>	<u>METHOD</u>
I. FLOOR MOUNTED EQUIPMENT			
C11-D001	HCU	8439	T
C41-A001	SLC STORAGE TANK	8440	A
C41-C001	SLC PUMP/MOTOR	8440	T/A
E12-B001	RHR HEAT EXCHANGER	REQUALIFY	A
E12-C002	RHR PUMP/MOTOR	8440	T/A
E12-N012/N014	RHR FLOW ORIFICE	8440	A
E21-C001	LPCS PUMP/MOTOR	8440	T/A
E21-N002	LPCS FLOW ORIFICE	8440	A
E22-C001	HPCS PUMP/MOTOR	8440	T/A
E22-S001	HPCS D/G	REQUALIFY	T/A
E22-S002	HPCS MCC	8439	T
E22-S003	HPCS TRANSFORMER	8439	T
E22-S004	HPCS SWITCHGEAR	8439	T
E51-C001	RCIC PUMP	8440	T/A
E51-C002	RCIC TURBINE	8440	T/A
II. PIPE MOUNTED EQUIPMENT			
B21-F022/F028	MSIV	8448	T/A
B21-F041/F047/ F051	SRV	8503	T/A
B21-N005	FLOW ELEMENT	8439	A
B33-C001	RECIRC PUMP/MOTOR	8440	A

T = TEST
A = ANALYSIS

RIVER BEND SQRT PROGRAM
EQUIPMENT LIST, SCHEDULE, EXPECTED
QUALIFICATION METHOD

<u>MPL</u>	<u>DESCRIPTION</u>	<u>SCHEDULE</u>	<u>METHOD</u>
II. PIPE MOUNTED EQUIPMENT (CONT'D)			
B33-D014	SAMPLE PROBE	8440	A
B33-F023	RECIRC VALVE	8440	A
B33-F060	RECIRC FCV	8440	A
B33-F067	RECIRC VALVE	8440	A
C11-F009/F182	SDV SOLENOID VALVES	8440	T
C11-F010/F180	SDV VENT VALVES	8440	T
C11-F011/F181	SDV DRAIN VALVES	8440	T
C41-F004	SLC EXPLOSIVE VALVE	8440	T
E22-F001/F004/ F010/F011/ F012/F015/ F023	HPCS VALVES	8448	T/A
E22-N007	HPCS FLOW ORIFICE	8440	A
E33-D001/D021	FLOW ORIFICE	8440	A
E33-N006/N026	FLOW ORIFICE	8440	A
E51-N001	RCIC FLOW ORIFICE	8440	A
G33-N011/N040	RWCU FLOW ORIFICE	8440	A
GSS-N035/N043	RwCU FLOW ORIFICE	8440	A

III. FUEL AND SERVICE EQUIPMENT

F11-E001	FUEL PREP MACHINE	8439	A
F11-E002	NEW FUEL INSPECTION STAND	8439	A

T = TEST
A = ANALYSIS

RIVER BEND SQRT PROGRAM
EQUIPMENT LIST, SCHEDULE, EXPECTED
QUALIFICATION METHOD

<u>MPL</u>	<u>DESCRIPTION</u>	<u>SCHEDULE</u>	<u>METHOD</u>
III. FUEL AND SERVICE EQUIPMENT (CONT'D)			
F11-E011	GENERAL PURPOSE GRAPPLE	8439	A
F11-E012	JIB CRANE	8439	A
F11-E014/E017	FUEL HANDLING PLATFORM	8440	A
F13-E005	HEAD HOLDING PEDESTAL	8439	A
F13-E008	DRYER SEPARATOR STRONGBACK	8439	A
F13-E009	HEAD STRONGBACK CAROUSEL	8439	A
F14-E002	CONTROL ROD GRAPPLE	8439	A
F15-E003/E006	REFUELING PLATFORM EQUIPMENT	8439	A
F15-E005	AUXILIARY PLATFORM	8439	A
F16-E002	FUEL STORAGE RACK	8439	A
F16-E006	IN-VESSEL RACK	REQUALIFY	A
F16-E009	DEFECTIVE FUEL STORAGE CONTAINER	8439	A
F16-E011	EQUIPMENT STORAGE RACK	8439	A
F16-E012	FUEL STORAGE RACK	8439	A
F42-D001	INCLINE FUEL TRANSFER TUBE	8439	A
F42-G001	BELLOWS	8439	A

T = TEST
A = ANALYSIS

RIVER BEND SORT PROGRAM
EQUIPMENT LIST, SCHEDULE, EXPECTED
QUALIFICATION METHOD

<u>MPL</u>	<u>DESCRIPTION</u>	<u>SCHEDULE</u>	<u>METHOD</u>
IV. LOCAL RACKS			
C71-S003	ELECTRICAL PROTECTION ASSEMBLY	8439	T/A
H22-P001	LPCS	8439	T/A
H22-P002	REACTOR WATER CLEANUP	8439	T/A
H22-P004	REACTOR VESSEL LEVEL & PRESSURE A	8439	T/A
H22-P005	REACTOR VESSEL LEVEL & PRESSURE C	8439	T/A
H22-P009	JET PUMP B	8439	T/A
H22-P010	JET PUMP A	8439	T/A
H22-P011	STANDBY LIQUID CONTROL	8439	T/A
H22-P015	MAIN STEAM FLOW A	8439	T/A
H22-P017	RCIC	8439	T/A
H22-P018	RHR A	8439	T/A
H22-P021	RHR B	8439	T/A
H22-P024	HPCS	8439	T/A
H22-P025	MAIN STEAM FLOW B	8439	T/A
H22-P026	REACTOR VESSEL LEVEL & PRESSURE D	8439	T/A
H22-P027	REACTOR VESSEL LEVEL & PRESSURE B	8439	T/A
H22-P028	HPCS DIESEL GENERATOR	8439	T/A
H22-P030	SRM & IRM	8439	T/A

T = TEST
A = ANALYSIS

RIVER BEND SORT PROGRAM
EQUIPMENT LIST, SCHEDULE, EXPECTED
QUALIFICATION METHOD

<u>MPL</u>	<u>DESCRIPTION</u>	<u>SCHEDULE</u>	<u>METHOD</u>
IV. LOCAL RACKS (CONT'D)			
H22-P031	SRM & IRM	8439	T/A
H22-P032	SRM & IRM	8439	T/A
H22-P033	SRM & IRM	8439	T/A
H22-P041	MAIN STEAM FLOW D	8439	T/A
H22-P042	MAIN STEAM FLOW C	8439	T/A
H22-P055	RHR C	8439	T/A
H22-P073	MS LEAKAGE CONTROL DIV. 1	8439	T/A
H22-P074	MS LEAKAGE CONTROL DIV. 2	8439	T/A
V. CONTROL ROOM PANELS			
C22-P001/P002	RRCS	8437	T/A
C61-P001	REMOTE SHUTDOWN PANEL	8437	T/A
H13-P601	REACTOR CORE COOLING	8437	T/A
H13-P618	RHR RELAY DIV. 2	8437	T/A
H13-P621	REACTOR CORE ISOLATION COOLING	8437	T/A
H13-P622	IN-BOARD VALVE RELAY	8437	T/A
H13-P623	OUT-BOARD VALVE RELAY	8437	T/A
H13-P625	HPCS RELAY	8437	T/A
H13-P628	ADS RELAY A	8437	T/A

T = TEST
A = ANALYSIS

RIVER BEND SQRT PROGRAM
EQUIPMENT LIST, SCHEDULE, EXPECTED
QUALIFICATION METHOD

<u>MPL</u>	<u>DESCRIPTION</u>	<u>SCHEDULE</u>	<u>METHOD</u>
V. CONTROL ROOM PANELS (CONT'D)			
H13-P629	LPCS & RHR RELAY DIV. 1	8437	T/A
H13-P631	ADS RELAY B	8437	T/A
H13-P632	LEAK DETECTION DIV. 1	8437	T/A
H13-P642	LEAK DETECTION DIV. 2	8437	T/A
H13-P654	MSIV LEAKAGE CONTROL DIV. 2	8437	T/A
H13-P655	MSIV LEAKAGE CONTROL DIV. 1	8437	T/A
H13-P669	NEUTRON PROCESS RAD. DIV. 1	8437	T/A
H13-P670	NEUTRON PROCESS RAD. DIV. 2	8437	T/A
H13-P671	NEUTRON PROCESS RAD. DIV. 3	8437	T/A
H13-P672	NEUTRON PROCESS RAD. DIV. 4	8437	T/A
H13-P680	PLANT CONTROL	8437	T/A
H13-P691	RPS A	8437	T/A
H13-P692	RPS B	8437	T/A
H13-P693	RPS C	8437	T/A
H13-P694	RPS D	8437	T/A

RIVER BEND SQRT PROGRAM
EQUIPMENT LIST, SCHEDULE, EXPECTED
QUALIFICATION METHOD

<u>MPL</u>	<u>DESCRIPTION</u>	<u>SCHEDULE</u>	<u>METHOD</u>
V. CONTROL ROOM PANELS (CONT'D)			
H13-P702/P703/ P704/P710/ P711/P712/ P713/P714/ P715/P717/ P721/P743/ P744/P745/ P746/P747/ P748/P750/ P751/P799	TERMINATION CABINETS	8437	T/A
H13-P808	ELECTRICAL DIST.	8437	T/A
H13-P819	BOP SAFETY DIV. 1	8437	T/A
H13-P820	BOP SAFETY DIV. 2	8437	T/A
H13-P841	SAFETY INST. DIV. 1	8437	T/A
H13-P842	SAFETY INST. DIV. 2	8437	T/A
H13-P851	BOP AUX. RELAY DIV. 1	8437	T/A
H13-P852	BOP AUX. RELAY DIV. 2	8437	T/A
H13-P863	HVAC	8437	T/A
H13-P870	BOP CONTROL	8437	T/A
H13-P877	STANDBY DIESEL	8437	T/A
H13-P951	BOP AUX. RELAY DIV. 1	8437	T/A
H13-P952	BOP AUX. RELAY DIV. 2	8437	T/A

T = TEST
A = ANALYSIS

RIVER BEND SQRT PROGRAM
EQUIPMENT LIST, SCHEDULE, EXPECTED
QUALIFICATION METHOD

<u>PPD</u>	<u>DESCRIPTION</u>	<u>SCHEDULE</u>	<u>METHOD</u>
VI. SHIP LOOSE DEVICES			
204B7269	CONDENSING CHAMBER	8435	A
112C3144	DETECTOR	8435	A
145C3103	THERMOMETER	8435	A
145C3156	LEVEL TRANSMITTER	8435	T
145C3224	TEMPERATURE ELEMENT	8435	T
157C4629	TEMPERATURE SWITCH	8435	A
159C4313	TEMPERATURE ELEMENT	8435	A
159C4361	LEVEL SWITCH	8435	T
159C4520	TEMPERATURE ELEMENT	8435	A
163C1184	PRESSURE INDICATOR	8435	T
163C1303	LIMIT SWITCH	8435	T
163C1544	CONDUCTIVITY CELL	8435	A
163C1973	LEVEL TRANSMITTER	8435	T
169C8392	PRESSURE TRANSMITTER	8435	T
169C8394	PRESSURE TRANSMITTER	8435	T
169C8969	PRESSURE TRANSMITTER	8435	T
184C4770	PRESSURE SWITCH	8435	T
237X731	DETECTOR	8435	T

T = TEST
A = ANALYSIS

ACTIVE PUMP AND VALVE

OPERABILITY ASSURANCE

• ACTIVE VALVES

- ANALYSIS - STRESS, DEFLECTION
- DYNAMIC TESTING - COMPONENTS (OPERATOR, LIMIT SWITCH, SOLENOID VALVE)
- STATIC/DYNAMIC TESTING OF ASSEMBLY

• ACTIVE PUMPS

- ANALYSIS - STRESS, DEFLECTION, LOWER ALLOWABLE LIMITS
- PROTOTYPE TESTING OF MOTORS (IEEE STANDARDS)
- PREINSTALLATION/POSTINSTALLATION TESTING
- PERIODIC TESTING AND INSPECTION

QUALIFICATION DOCUMENTATION

- MASTER LIST
- SYSTEM COMPONENT EVALUATION WORK (SCEW) SHEET
- SQRT/PVORT FORM
- AUDITABLE FILE

MASTER LIST

MASTER LISTS WILL BE PROVIDED FOR:

10CFR50.49 EQUIPMENT

ACTIVE SAFETY-RELATED MECHANICAL EQUIPMENT

SEISMIC CATEGORY I EQUIPMENT

- LISTS EQUIPMENT BY MARK NUMBER
- IDENTIFIED MANUFACTURER AND MODEL NUMBER
- PROVIDES STATUS OF QUALIFICATION AND INSTALLATION

SYSTEM COMPONENT EVALUATION WORK (SCEW) SHEET

- FORMAT BASED ON IE-BULLETIN 79-01B
- COMPREHENSIVE PRESENTATION OF QUALIFICATION RESULTS
- "ROADMAP" TO QUALIFICATION DOCUMENTATION
- DOCUMENTED EVIDENCE OF QUALIFICATION REVIEW

SCEW SHEETS WILL BE PREPARED FOR 10CFR50.49 EQUIPMENT

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QUAL REF # _____ REV _____

EQUIPMENT DESCRIPTION	ENVIRONMENTAL CONDITIONS AND QUALIFICATION							
	PARAMETER	SPECIFIED	QUALIFIED	DOCUMENT REFERENCE		QUAL METHOD	MARGIN DEMO	REMARKS
		VALUE	VALUE	SPECIFIED	QUALIFIED			
EQUIP NO.:	OP. TIME:							
SPEC NO.:	TEMP (F):							NOTE 1
SYSTEM:	NORMAL							
	ABNORMAL							
	ACCIDENT							
TYPE: (DESCRIPTION)	PRESS (PSIG):							NOTE 1
	NORMAL							
	ABNORMAL							
MANUFACTURER:	ACCIDENT							
	RH (%):							NOTE 1
	NORMAL							
MODEL NO.:	ABNORMAL							
	ACCIDENT							
	RADIATION:							NOTE 1
SAFETY FUNCTION: - - -	NORM GAMMA							
	ACC GAMMA							
	ACCIDENT							
OP. CODE:	NORM BETA							
	ACC BETA							
	NEUTRON							
ACCURACY - -	SPRAY							
	SUBMERGENCE:							
SPEC:	PREPARED BY: _____			DATE _____				
DEMO:	REVIEWED BY: _____			DATE _____				
ZONE NO.:	DOCUMENT REFERENCE:							NOTES: 1. FOR COMPLETE ENVIRONMENTAL CONDITIONS, SEE THE DOCUMENT REFERENCED.
FLOOD LEVEL	1. ENVIRONMENTAL DESIGN CRITERIA (EDC). SWEC							
ELEVATION:	DOCUMENT NO. 215.150, REV.2, 1984							
ABOVE FLOOD	2. VENDOR ENVIRONMENTAL QUALIFICATION REPORT,							
LEVEL?	SDDF #							
ABOVE SPRAY/	3. RBS1 POST-ACCIDENT OPERABILITY PERIOD:							
FROTH LEVEL?	PEOT #							
DOCUMENTATION ACCEPTABILITY:	4. SEE SPEC, REV. , ADD .							
----- NUREG 0588, CAT I								
MAINT/SURVEILL - - -								
REFERENCE:								
QUALIFIED LIFE - - -								
(YEARS):								
REFERENCE:								

SQRT/PVORT FORM

- NRC RECOMMENDED FORMAT

- COMPREHENSIVE PRESENTATION OF QUALIFICATION RESULTS

- "ROADMAP" TO QUALIFICATION DOCUMENTATION

- DOCUMENTED EVIDENCE OF QUALIFICATION REVIEW

SQRT/PVORT FORMS WILL BE PREPARED AS REQUESTED BY THE NRC

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AUDITABLE FILE

CONTAINS SUPPORT INFORMATION

- SPECIFICATIONS
- TEST PROCEDURES
- QUALIFICATION REPORTS
- MAINTENANCE INFORMATION

HARDCOPY AND/OR MICROFILMED

RETRIEVABLE THROUGH COMPUTERIZED SYSTEM

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