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ACCESSION NBR:8312130387 DOC.DATE: 83/12/05 NOTARIZED: NO DOCKET #
FACIL:50-397 WPPSS Nuclear Project, Unit 2, Washington Public Powe 05000397
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SCHWENCER,A. Licensing Branch 2

SUBJECT: Forwards response to Reg Guide 1.97 re environ qualification of safety-related equipment.Info provides justification for SSER3 concerns.

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TITLE: OR/Licensing Submittal: Equipment Qualification

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December 5, 1983
G02-83-1115

Docket No. 50-397

Director of Nuclear Reactor Regulation
Attention: Mr. A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Schwencer:

Subject: NUCLEAR PROJECT NO. 2
REGULATORY GUIDE 1.97 EQUIPMENT QUALIFICATION

References: 1) Safety Evaluation Report Related to the Operation of Supply System Nuclear Project No. 2, Docket No. 50-397, NUREG-0892, Supplement No. 3, dated May 1983

2) G02-83-842, G. C. Sorensen to A. Schwencer, "Nuclear Project No. 2, Environmental Qualification Report for Safety Related Equipment, September 1983", dated September 16, 1983

The Supply System has provided its response to Regulatory Guide 1.97 in Section 7.5 of the FSAR. That Section identifies Category 1 and 2 equipment that is available to perform the post-accident monitoring function.

Attachment I is a list of this post-accident monitoring equipment that can be potentially exposed to a harsh environment. Except as discussed below, this equipment is environmentally qualified, justified by previous submittal, Reference 2, on Table B of the JIO, or purchased qualified for installation prior to fuel load.

A recent review of the Category 2 monitoring equipment identified the need to develop environmental qualification documentation for radiation elements and their supporting equipment that monitor reactor building exhaust air. A Justification for Interim Operation for these pieces of equipment is attached.

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FSAR Table 7.5-1 presently shows Radiation Exposure Rate design criteria, as would be applied to area radiation monitors, as Category 2. As provided in Revision 3 to Regulatory Guide 1.97, we will revise the FSAR to make such instruments Category 3, and they are not included in the Tables attached.

We appreciate your review and consideration of this justification. While we judge that this response addresses this SSER concern satisfactorily, we are available to assist your review if necessary.

Very truly yours,

G C Sorensen

G. C. Sorensen, Manager
Regulatory Programs

KRW/sms

cc: R Auluck - NRC
WS Chin - BPA
A Toth - NRC Site

ATTACHMENT I

REG. GUIDE 1.97 CATEGORY 1 EQUIPMENT

LOCATED IN A HAZARDOUS ENVIRONMENT

EQUIPMENT NO.	EQUIPMENT NO.
SRM-DET-1A thru D	CMS-LE-5A, B
SRM-EAMP-1A thru D	CMS-AY-1 thru 4
MS-LITS-26A, D	SPTM-TE-1A, B
MS-LITS-44A, B	SPTM-TE-2A, B
MS-PT-51A, B	SPTM-TE-3A, B
CMS-PT-1,2,5,6,7,8	SPTM-TE-4A, B
CMS-LS-1 thru 4	SPTM-TE-5A, B
CSP-RLY-V/10/R1	SPTM-TE-6A, B
CSP-RLY-V/10/R2	SPTM-TE-7A, B
CSP-RLY-V/10/R4	SPTM-TE-8A, B
CSP-RLY-V/10/R5	SPTM-TE-9 thru 16
CSP-RLY-V/10/CR	CMS-TE-1 thru 14
CSP-RLY-V/8/R1	CMS-TE-24 thru 31
CSP-RLY-V/8/R2	MS-POE-1A thru 4A
CSP-RLY-V/8/R4	MS-POE-1B thru 5B
CSP-RLY-V/8/R5	MS-POE-1C thru 5C
CSP-RLY-V/8/CR	MS-POE-1D thru 4D
CSP-RLY-V/7/R1	MS-POT-1A thru 4A
CSP-RLY-V/7/R2	MS-POT-1B thru 5B
CSP-RLY-V/7/R4	MS-POT-1C thru 5C
CSP-RLY-V/7/CR	MS-POT-1D thru 4D
CAC-RLY-4A/CR1	CMS-RE-27E, F
CAC-RLY-4A/CR2	SW-FE-1A, B
CAC-RLY-4B/CR1	SW-FT-8A, B
CAC-RLY-4B/CR2	
CMS-LE-3A, B	
CMS-LE-4A, B	

Position switches for containment isolation valves

ATTACHMENT I

REG. GUIDE 1.97 CATEGORY 2 EQUIPMENT

LOCATED IN A HAZARDOUS ENVIRONMENT

EQUIPMENT NO.	EQUIPMENT NO.
MSLC-PS-7A thru 7D	REA-FE-8
MSLC-PS-8A thru 8D	REA-V-55
MSLC-PS-20	REA-FCV-1
MSLC-PS-24	REA-BV-1
MSLC-PS-25	REA-FT-10
MSLC-PS-60	REA-FR-94
MSLC-PS-70A thru 70D	REA-P/I-2
MSLC-PT-6A thru 6D	REA-P/I-1
MSLC-PT-10A thru 10D	REA-PI-13
MSLC-PT-11	REA-PI-12
MSLC-PT-12A thru 12D	REA-PI-11
MSLC-PT-13	REA-PI-10
MSLC-PT-23	REA-PI-9
RCIC-FE-1	REA-PI-8
RCIC-FT-3	REA-PI-7
HPCS-FE-7	REA-PI-6
HPCS-FT-5	REA-PI-5
LPCS-FE-2	REA-PI-4
LPCS-FT-3	REA-PI-3
RHR-FE-14A thru 14C	REA-P/P-2
RHR-FT-15A thru 15C	REA-P/P-1
SLC-FT-1	REA-FC-2
SLC-FE-1	REA-FC-1
RHR-TE-27A, B	REA-SQRT-3
SW-TE-1A thru 1D	REA-SQRT-2
SW-FE-1A, B	REA-SQRT-1
SW-FT-8A, B	REA-FT-9
REA-RE-19A	REA-FT-8
REA-SR-27A	REA-FT-7
REA-RE-19	REA-FI-8
REA-FIS-1	REA-FI-7
REA-PI-14	REA-DPI-4
REA-SR-27	REA-DPI-3
REA-JB-SR27	REA-DPI-2
REA-SR-37	REA-DPI-1
REA-RV-1	REA-FN-94
REA-FCV-2	

Emergency ventilation damper position switches,
RHR valve position switches

EQUIPMENT JUSTIFICATION #23

1.0 COMPONENT IDENTIFICATION

EPNs: REA-SR-27, 27A, and 37 including all subcomponents.

Description: Reactor Building Exhaust Stack Air Sample Racks

Component Type: Composite Rack consisting of Air Sampling and Radionuclide Analysis Instrumentation

Manufacturer/Model: Kaman Sciences Corp./Model 952312
Nuclear Measurement/Model Pt. #285501
Air Monitor Corp./Model AMC-79-128

2.0 ACCIDENT CONDITIONS

	Temperature	Relative Humidity
Accident Profile:	#4	22X
Use Code:	1	
Operability Time:	4320 Hours	
Radiation Zone:	R606A	
Zone Dose:	2.4×10^4 Rads	

3.0 COMPONENT SAFETY FUNCTION

The reactor building exhaust stack air monitoring instrumentation provides the operator with continuous indication of the radioactivity level in the stack air being released. If the activity levels of the stack air begin to increase, the control room indication and associated alarm provide information necessary for the operator to take corrective action before the limits specified by 10CFR100 are exceeded.

As part of Regulatory Guide 1.97 instrumentation, this monitoring system must provide continuous long-term indication of post accident effluent releases.

4.0 QUALIFICATION STATUS

4.1 Summary of Qualification Status

The design was finalized and this instrumentation was purchased before TMI (Regulatory Guide 1.97) requirements were imposed. Subsequently, qualification was required by Regulatory Guide 1.97 and 10CFR50.49. Complete equipment qualification documentation is not presently available. This rack is in a relatively mild environment. That is, it is exposed to moderate accident temperature and radiation environments. However, radiation qualification data is not presently available. In the interim, the following justification is provided.

4.2 Parameters Requiring Justification

Radiation.

5.0 JUSTIFICATION FOR INTERIM OPERATION

These sample racks are not exposed to harsh temperature and relative humidity profiles for which operation must be demonstrated. They are exposed to a moderate radiation environment. For the worst case LOCA, the total integrated dose (T.I.D.) would be approximately $1x10^4$ Rads after eight days (1.0×10^4 Rads is the threshold at which radiation qualification would be required) and $1.8x10^4$ Rads after six months. The components comprising this equipment were reviewed for radiation sensitive materials. No components were found that had radiation sensitive materials at these levels. Therefore, operability is assured for at least eight days by which point the plant's decay heat removal operations have been initiated. Monitoring of effluents is critical until the plant has been depressurized and long-term cooling has been established. This is because the magnitude of the potential fission product releases which could occur are greater when the plant is pressurized.

If all of the reactor building exhaust stack air monitoring instrumentation failed when the T.I.D. reached $1.0x10^4$ Rads, the safety objective would still not be compromised. The removal of contaminants is performed by the Standby Gas Treatment System (SGTS) and its effectiveness is measured by the stack monitors. The SGT system is a fully qualified safety related, dual train system. Each train is designed to remove containment and reactor building airborne contamination associated with the worst case LOCA and ensure that the activity in the air discharged to the reactor building exhaust stack is below the 10CFR100 limits. As documented in the Equipment Qualification Report, each train has a complete set of qualified flow, temperature, and relative humdity instrumentation. Therefore, operation of the SGTS system can be monitored. Continued observation of these normal performance indicators provides a level of confidence that the Standby Gas Treatment System is operating normally and that it is performing as designed, to reduce exhaust stack air activity levels below the 10CFR100 limits.

Also, failure of the Reactor Building Exhaust Stack Air monitoring system after eight days does not imply that all effluent monitoring has been eliminated. Portable instruments can and would be positioned to measure off-site releases following an accident. Long-term monitoring is assured by alternate means.

6.0 CONCLUSION

Interim operation is justified on the following basis:

1. This entire monitoring system was designed in accordance with Supply System Specifications. These specifications require that the system be capable of operating for anticipated temperature and humidity harsh service conditions. It is, therefore, reasonable to assume that this system will survive the environment for which it was designed.

2. Should the system fail, releases in excess of 10CFR100 will not occur unless accompanied by failure of both SGTS trains.

3. If both the Reactor Building Exhaust Stack Air monitoring and the two SGTS trains fail, then off-site releases can be monitored by mobilization of portable monitoring equipment. Sufficient time is available to accomplish this, since a harsh environment (i.e, TID > 10^4 Rads) is not experienced by the equipment until eight days after the accident.