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FACIL:50-397 WPPSS Nuclear Project, Unit 2, Washington Public Powe 05000397
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SCHWENCER,A. Licensing Branch 2

SUBJECT: Forwards nev to Equipment Justification 6,per util 830630 & 0916 ltrs.Analyzer unqualified for post-accident pressure, temp & humidity conditions.Rationale for interim operation, per 830916 ltr,remains applicable.

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[illegible] justification [illegible]
[illegible] Analyzer qualification for [illegible]
[illegible] conditions [illegible] for [illegible] operation
[illegible].

[illegible]
[illegible] Qualification

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

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April 5, 1984
G02-84-210

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 PLANT NO. 2
ENVIRONMENTAL QUALIFICATION REPORT
FOR SAFETY RELATED EQUIPMENT

References:
1) Letter, G02-83-842, G. C. Sorensen (SS) to A. Schwencer (NRC), "Environmental Qualification Report for Safety Related Equipment, September 1983", dated September 16, 1983
2) Letter, G02-83-590, G. D. Bouchey (SS) to A. Schwencer (NRC), "Justification for Interim Operation", dated June 30, 1983

Reference 1 submitted changes to the Justification for Interim Operation (JIO) provided by reference 2. Equipment Justification #6 (H_2-O_2 analyzers) was changed with the reference 1 submittal. Subsequent to submittal of these changes, information was received indicating that the analyzer has not been qualified for post-accident pressure, temperature, and humidity conditions. Accordingly, the attached revision to Equipment Justification #6 is provided to reflect this condition. The rationale for interim operation provided by reference 1 remains applicable; operators will initiate hydrogen recombiner operation conservatively so that the exceeding of operating or flammability limits is avoided.

Should you have any questions, please call Mr. P. L. Powell, Manager, WNP-2 Licensing.

Very truly yours,

G. C. Sorensen, Manager
Regulatory Programs

PLP/tmh
Attachment

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

A048
1/1

EQUIPMENT JUSTIFICATION #6

1.0 COMPONENT IDENTIFICATION

EPN: CMS-AY-1, -3

Description: Containment H_2-O_2 Analyzer

Component Type: Gas Analyzer

Manufacturer/Model: Kaman/Beckman 7C (hydrogen) and 755 (oxygen)

2.0 ACCIDENT CONDITIONS

	Temperature	Relative Humidity
Accident Profile:	Note 1	#4

Use Code: 1

Operability Time: 4320 Hours

Radiation Zone: R548E

Zone Dose: 1 x 10^6 Rads (from internal process fluid)

Note 1: External - T_{max} = 107°F, P_{max} = Atm.
Internal Process Fluid - T_{max} = 340°F (prior to cooler), P_{max} = 45 psig

REV. 3

3.0 COMPONENT SAFETY FUNCTION

The containment H_2-O_2 analyzer is part of the containment monitoring system. Instrumentation to monitor containment hydrogen and oxygen is required in accordance with Regulatory Guide 1.97 to provide information to indicate the potential for breach of the primary containment.

The H_2-O_2 analyzer's function is to continuously monitor, record, and display in the control room, the containment hydrogen and oxygen concentrations. When oxygen concentration reaches 4.4% by volume, operators initiate at least one of the two 100% capacity hydrogen-oxygen recombiners.

4.0 QUALIFICATION STATUS

4.1 Summary of Qualification Status

The H_2-O_2 analyzer is located in an isolated room serviced by Quality Class 1 HVAC. Thus, it is in a mild environment for temperature, pressure, and relative humidity.

The H_2-O_2 analyzer is required to be qualified for the external environmental conditions (i.e., radiation) and internal process conditions (i.e., radiation, relative humidity, and pressure) that it will be subjected to following a LOCA inside primary containment. Radiation dose calculations indicate the analyzers would be subjected to a dose of 9.0×10^3 rads based on shine from primary containment and nearby piping. It is estimated that the radiation dose will increase to approximately 1×10^6 rads when dose contributions from the analyzer's process piping stream are taken into account. In addition to the process stream radiation, the pressure and humidity conditions will increase the demand on sample pump equipment and process temperature may affect component materials. Qualification for the external and internal radiation, and internal high pressure, and humidity and temperature condition has not been demonstrated. REV. 3

4.2 Parameters Requiring Justification

Radiation dose.

Accident operating pressure and humidity.

5.0 JUSTIFICATION FOR INTERIM OPERATION REV. 3

Prior to Inerting

In accordance with Technical Specification 3.6.6.3, primary containment will be inerted with nitrogen at the 25% power level. Prior to inerting, combustible gas control depends on the control of primary containment hydrogen concentration.

Approved analytical models, described in Section 6.2.5.3 of the FSAR, show that the drywell hydrogen concentration will exceed the control limit of 4% by volume approximately 4.0 hours after a postulated LOCA if the hydrogen recombiner is not in operation.

Operation of one qualified 100% capacity hydrogen-oxygen recombiner (CAC-HR-1A or CAC-HR-1B) will be initiated when the hydrogen concentration reaches approximately 3.5% by volume (2.75 hours after the postulated LOCA). This manual initiation of the recombiner from the control room does not consider that any information, alarms or recording, is available from the analyzers. This action conservatively limits the hydrogen concentration in containment to less than the 4.0% control limit.

After Inerting

After primary containment is inerted with nitrogen at the 25% power level, combustible gas control depends on the control of primary containment oxygen concentration. REV. 3

Section 6.2.5.3 of the FSAR shows that the containment wetwell oxygen concentration will reach 4.4% by volume approximately six hours after a LOCA if the recombiner is not operating. At 12.5 hours after a LOCA, if the recombiner is not operating, the wetwell oxygen concentration will reach 4.8% by volume. This is the maximum oxygen concentration for control of the recombiner to limit the catalytic bed exit temperature to 1150°F.

Initiating recombiner operation at 4.4% provides adequate margin to meet the recombiner operational limit (4.8%) and the oxygen flammability limit of 5%.

Therefore, to control both H_2 and O_2 the operators will initiate operation of the recombiner within 2.75 hours of the declaration that a LOCA condition exists. This manual initiation of the recombiner, from the control room, conservatively limits the oxygen concentration in containment to less than the 4.8% recombiner operational limit, and less than 5.0% flammability limit by volume.

6.0 CONCLUSION

Interim operation is justified on the following basis:

1. Until qualification of the H_2-O_2 analyzer is documented provisions will be made so that the hydrogen-oxygen recombiner operation will be initiated as described above, since the recombiner operation is independent of the analyzer operation.

2. In the unlikely event that the H_2-O_2 analyzer fails due to lack of data on radiation or operating temperature and pressure qualification, the requirement to initiate one of the qualified hydrogen-oxygen recombiners within 2.75 hours after a postulated LOCA will provide conservative assurance that the containment hydrogen control limit, or the containment oxygen flammability limit, will not be reached.