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 FACIL: 50-397 WPPSS Nuclear Project, Unit 2, Washington Public Power 05000397
 AUTH. NAME: SORENSEN, G. L., AUTHOR AFFILIATION: Washington Public Power Supply System
 RECIP. NAME: SCHWENCER, A., RECIPIENT AFFILIATION: Licensing Branch 2

SUBJECT: Forwards rev 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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 TITLE: OR/Licensing Submittal: Equipment Qualification

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1. The purpose of this document is to provide a comprehensive overview of the current status of the project and to identify the key areas for improvement. The information presented here is based on the most recent data available and is intended to serve as a guide for decision-making.

2. The following table provides a detailed breakdown of the project's performance across various key metrics. The data is presented in a clear and concise format, allowing for easy comparison and analysis.

3. The information presented in this document is confidential and should be handled accordingly. It is not to be distributed outside of the project team without prior approval.

Project A		Project B		Project C		Project D	
Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2
10	12	8	10	15	18	20	22
12	15	10	12	18	20	25	28
15	18	12	15	20	22	30	32
18	20	15	18	22	25	35	38
20	22	18	20	25	28	40	42
22	25	20	22	28	30	45	48
25	28	22	25	30	32	50	52
28	30	25	28	32	35	55	58
30	32	28	30	35	38	60	62
32	35	30	32	38	40	65	68
35	38	32	35	40	42	70	72
38	40	35	38	42	45	75	78
40	42	38	40	45	48	80	82
42	45	40	42	48	50	85	88
45	48	42	45	50	52	90	92
48	50	45	48	52	55	95	98
50	52	48	50	55	58	100	102
52	55	50	52	58	60	105	108
55	58	52	55	60	62	110	112
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65	68	62	65	70	72	130	132
68	70	65	68	72	75	135	138
70	72	68	70	75	78	140	142
72	75	70	72	78	80	145	148
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78	80	75	78	82	85	155	158
80	82	78	80	85	88	160	162
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232	235	230	232	238	240	465	468
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242	245	240	242	248	250	485	488
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382	385	380	382	388	390	765	768
385	388	382	385	390	392	770	772
388	390	385	388	392	395	775	778
390	392	388	390	395	398	780	782
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398	400	395	398	402	405	795	798
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415	418	412	415	420	422	830	832
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420	422	418	420	425	428	840	842
422	425	420	422	428	430	845	848
425	428	422	425	430	432	850	852
428	430	425	428	432	435	855	858
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432	435	430	432	438	440	865	868
435	438	432	435	440	442	870	872
438	440	435	438	442	445	875	878
440	442	438	440	445	448	880	882
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445	448	442	445	450	452	890	892
448	450	445	448	452	455	895	898
450	452	448	450	455	458	900	902

Washington Public Power Supply System

P.O. Box 968 3000 George Washington Way Richland, Washington 99352 (509) 372-5000

April 5, 1984
G02-84-210

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PDR ADDCK 05000397
PDR

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. Bouchev (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,

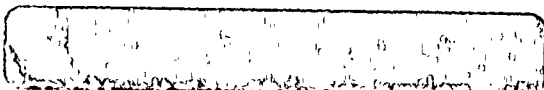


G. C. Sorensen, Manager
Regulatory Programs

PLP/tmh
Attachment

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

A048
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EQUIPMENT JUSTIFICATION #6

1.0 COMPONENT IDENTIFICATION

EPN: CMS-AY-1, -3
Description: Containment H₂-O₂ Analyzer
Component Type: Gas Analyzer
Manufacturer/Model: Kaman/Beckman 7C (hydrogen) and 755 (oxygen)

2.0 ACCIDENT CONDITIONS

	<u>Temperature</u>	<u>Relative Humidity</u>
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 H₂-O₂ 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 H₂-O₂ 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 H₂-O₂ 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 H₂-O₂ 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



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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 H₂ and O₂ 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 H₂-O₂ 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 H₂-O₂ 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.



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