

March 21, 1989

Docket No. 50-397

DISTRIBUTION

Docket File

NRC & LPDRS
RSamworth
MVirgilio
JLee
OGC
DPV Plant File
EJordan
SVarga
ACRS(10)
JCunningham
CHinson

Mr. G. C. Sorensen, Manager
Regulatory Programs
Washington Public Power Supply System
P. O. Box 968
3000 George Washington Way
Richland Washington 99352

Dear Mr. Sorensen:

SUBJECT: EXEMPTION RELATED TO 10 CFR PART 20 (TAC NO. 68268)

The Commission has issued the enclosed Exemption from the requirements of 10 CFR 20, Appendix A, footnote d-2(c). The Exemption allows the use of a radio-iodine protection factor of 50 for Mine Safety Appliances GMR-I canisters at WPPSS Nuclear Project No. 2. The exemption is in response to your application dated May, 10, 1988 (G02-88-113).

Based on the considerations discussed in the Exemption, we have concluded that the information and actions proposed in the application form an acceptable basis for the granting of an exemption in accordance with the provisions of 10 CFR 20.103(e) and 20.501. We have determined that the exemption is authorized by law and will not result in undue hazard to life or property.

The Exemption is being forwarded to the Office of the Federal Register for publication.

Sincerely,

original signed by

Robert B. Samworth, Senior Project Manager
Division of Reactor Projects - III
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Enclosure:
Exemption

cc w/enclosure:
See next page

[EXEMPTION/TAC NO 68268]
*See previous concurrence

DRSP/PD5
JLee
02/14/89

DRSP/DP5
RSamworth*:jd
02/15/89

NRR/PRPB
JCunningham*
02/23/89

OGC
*
03/01/89

DRSP/DP5
GK Knighton
03/01/89

(A)AD:DRSP35
MVirgilio
03/21/89

(A)D:DRSP
GM Holahan
03/21/89

RF01
"1"

8904030401 890321
PDR AUUCK 05000397
PDC

#1

#1

gh

Docket No. 50-397

Mr. G. C. Sorensen, Manager
Regulatory Programs
Washington Public Power Supply System
P. O. Box 968
3000 George Washington Way
Richland Washington 99352

Dear Mr. Sorensen:

DISTRIBUTION

Docket File
NRC & LPDRS
RSamworth
MVirgilio
JLee
OGC
DPV Plant File
EJordan
SVarga
ACRS(10)
JCunningham
CHinson

SUBJECT: EXEMPTION RELATED TO 10 CFR PART 20 (TAC NO. 68268)

The Commission has issued the enclosed Exemption from the requirements of 10 CFR 20, Appendix A, footnote d-2(c). The Exemption allows the use of a radio-iodine protection factor of 50 for Mine Safety Appliances GMR-I canisters at WPPSS Nuclear Project No. 2. The exemption is in response to your application dated May, 10, 1988 (G02-88-113).

Based on the considerations discussed in the Exemption, we have concluded that the information and actions proposed in the application form an acceptable basis for the granting of an exemption in accordance with the provisions of 10 CFR 20.103(e) and 20.501. We have determined that the exemption is authorized by law and will not result in undue hazard to life or property.

The Exemption is being forwarded to the Office of the Federal Register for publication.

Sincerely,

Robert B. Samworth, Senior Project Manager
Division of Reactor Projects - III
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Enclosure:
Exemption

cc w/enclosure:
See next page

[EXEMPTION/TAC NO 68268]

DRSP/PD5
JLee
02/ /89

DRSP/DP5
RSamworth:jd
02/15/89

NR/PRPB
JCunningham
02/27/89

DRSP:PD5 ADRSP DRSP:D OGC
GKnighton MVirgilio GHolahan *Pam Benford*
02/ /89 02/ /89 02/ /89 02/01/89



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

March 21, 1989

Docket No. 50-397

Mr. G. C. Sorensen, Manager
Regulatory Programs
Washington Public Power Supply System
P. O. Box 968
3000 George Washington Way
Richland, Washington 99352

Dear Mr. Sorensen:

SUBJECT: EXEMPTION RELATED TO 10 CFR PART 20 (TAC NO. 68268)

The Commission has issued the enclosed Exemption from the requirements of 10 CFR 20, Appendix A, footnote d-2(c). The Exemption allows the use of a radioiodine protection factor of 50 for Mine Safety Appliances GMR-I canisters at WPPSS Nuclear Project No. 2. The exemption is in response to your application dated May, 10, 1988 (G02-88-113).

Based on the considerations discussed in the Exemption, we have concluded that the information and actions proposed in the application form an acceptable basis for the granting of an exemption in accordance with the provisions of 10 CFR 20.103(e) and 20.501. We have determined that the exemption is authorized by law and will not result in undue hazard to life or property.

The Exemption is being forwarded to the Office of the Federal Register for publication.

Sincerely,

A handwritten signature in cursive script that reads "Robert B. Samworth".

Robert B. Samworth, Senior Project Manager
Division of Reactor Projects - III
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Enclosure:
Exemption

cc w/enclosure:
See next page

Mr. G. C. Sorensen, Manager
Washington Public Power Supply System

WPPSS Nuclear Project No. 2
(WNP-2)

cc:

Nicholas S. Reynolds, Esq.
Bishop, Cook, Purcell
& Reynolds
1400 L Street NW
Washington, D.C. 20005-3502

Regional Administrator, Region V
U.S. Nuclear Regulatory Commission
1450 Maria Lane, Suite 210
Walnut Creek, California 94596

Mr. G. E. Doupe, Esquire
Washington Public Power Supply System
P. O. Box 968
3000 George Washington Way
Richland, Washington 99532

Chairman
Benton County Board of Commissioners
Prosser, Washington 99350

Mr. Curtis Eschels, Chairman
Energy Facility Site Evaluation Council
Mail Stop PY-11
Olympia, Washington 98504

Mr. Christian Bosted
U. S. Nuclear Regulatory Commission
P. O. Box 69
Richland, Washington 99352

Mr. Alan G. Hosler, Licensing Manager
Washington Public Power Supply System
P. O. Box 968, MD 956B
Richland, Washington 99352

Mr. A. Lee Oxsen
Assistant Managing Director for Operations
Washington Public Power Supply System
P. O. Box 968, MD 1023
Richland, WA 99352

Mr. Gary D. Bouchey, Director
Licensing and Assurance
Washington Public Power Supply System
P. O. Box 968, MD 280
Richland, Washington 99352

Mr. C. M. Powers
WNP-2 Plant Manager
Washington Public Power Supply System
P. O. Box MD 927M
Richland, Washington 99352

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of

WASHINGTON PUBLIC POWER SUPPLY SYSTEM
(Nuclear Project No. 2)

)
)
)
)

Docket No 50-397

EXEMPTION

I.

Washington Public Power Supply System (WPPSS) holds Facility Operating License No NPF-21, which authorizes operation of Nuclear Project No 2 (WNP-2). The license provides, among other things, that the facility is subject to all rules, regulations and orders of the Nuclear Regulatory Commission (the Commission) now or hereafter in effect. The facility is a boiling water reactor located in Benton County, Washington.

II.

Appendix A of 10 CFR Part 20, "Standards for Protection Against Radiation," defines protection factors for respirators. Footnote d-2(c) of this Appendix states that "No allowance is to be made for the use of sorbents against radioactive gases or vapors."

By letter dated May 10, 1988, WPPSS requested an exemption to 10 CFR Part 20, Appendix A, footnote d-2(c). The licensee submitted this request in accordance with 10 CFR 20.103(e) and 10 CFR 20.501.

Test data and canister qualification information have been provided by WPPSS by reference to Mine Safety Appliances Company (MSA) data submitted in conjunction with similar exemption requests for Farley 1 & 2 by Alabama Power Company dated January 13, 1984, and for San Onofre 1, 2, and 3 by Southern California Edison Company dated March 20, 1985.

The exemption would allow the use of a radioiodine protection factor of 50 for MSA GMR-I canisters to be used at the WNP-2 power reactor facility. Criteria and background information used for the evaluation includes 10 CFR 20.103, 10 CFR 19.12, Regulatory Guide 8.15, "Acceptable Programs for Respiratory Protection," Regulatory Guide 8.20, "Applications of Bioassay for I-125 and I-131," NUREG/CR-3403, "Criteria and Test Methods for Certifying Air Purifying Respirator Cartridges and Canisters Against Radioiodine," and Regulatory Guide 8.8, "Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Stations Will Be As Low As Is Reasonably Achievable." The NRC staff's discussion and evaluation of the request for exemption follows.

Since a NIOSH/MSHA testing and certification schedule for sorbents for use for protection against radioiodine gases and vapors has not been developed, the NRC staff has evaluated WPPSS's request and verified, as required by 10 CFR 20.103(e), that the licensee has demonstrated through reliable test data and adequate quality assurance measures that the material and performance characteristics of the MSA GMR-I canister can provide the proposed degree of protection (i.e., a protection factor of 50) under the anticipated conditions

of use, for 8 hours. Canister efficiency and service life, and the effects of temperature, poisons, relative humidity, challenge concentration and breathing rates on canister efficiency and service life were considered in the staff's technical evaluation. The staff's programmatic evaluations considered quality control/quality assurance, administrative controls, and radiation protection/ALARA, including task preparation and planning, on-the-job and post-task evaluations, use of engineering controls, radiological surveillance, and radiological training.

The licensee has provided by reference reliable test information which verifies that the MSA GMR-I canister will provide a protection factor of 50 over a period of 8 hours of continuous use, provided that the total challenge of radioactive and nonradioactive iodine and other halogenated compounds does not exceed 1 ppm, and temperature does not exceed 110°F, or up to 120°F provided the dewpoint does not exceed 107°F. The data provided by MSA showed the breakthrough point to be well beyond 8 hours.

Testing has been conducted under acceptable conditions of cyclic flow, and under worst case conditions for those environmental factors affecting service life: temperature, relative humidity, and challenge concentration of CH_3I (methyl iodide/methyl radioiodide), which is the most penetrating of the challenge forms. Data provided from MSA indicate that the MSA GMR-I canisters perform adequately under the accepted test conditions. These conditions - the criteria and test methods - are consistent with those derived for the canisters by the staff from NUREG/CR-3403, and are acceptable.

The licensee, through a planned verification and acceptance of MSA QA controls, has provided commitments that the MSA GMR-I canisters used with a protection factor at WNP-2 will meet standards for quality assurance and quality

control which are recognized by NIOSH, compatible with NRC staff positions, and are therefore acceptable. This includes a commitment by MSA to establish a 1% AQL (Acceptable Quality Limit) in a 5 to 10 ppm challenge concentration of CH_3I , 90% relative humidity, 110°F, 64 LPM cyclic flow, for a service life of 8 hours or more at penetration equal to 1% of the challenge concentration. Testing data referenced by the licensee demonstrated that performance (i.e., service life) of canisters at 100% relative humidity is acceptable.

Coupled with the use of a full facepiece respirator capable of providing a fit factor of greater than 500, the protection factor of 50 is conservative under these conditions. The licensee's application for exemption dated May 10, 1988 limited the use of canisters to properly fitted full facepiece respirators capable of providing protection factors of 100. Based on recent deliberations within the American National Standards Institute (ANSI) Committee Z 88.2, the licensee revised this limitation to full facepiece respirators capable of providing fit factors of 500 (letter G.C. Sorensen to U.S. Nuclear Regulatory Commission dated March 3, 1989).

Canister efficiency will be retained for the radioiodine gas or vapors of interest (CH_3I , I_2 , HOI) for the 8-hour time period. To preclude aging, service life will be calculated from unsealing time, including periods of non-use, and the canister will not be used in the presence of organic solvents or in temperatures in excess of 110°F. Canisters will be stored in sealed humidity-barrier packaging in a cool, dry environment, and discarded after the 8-hour use period to prevent reuse. Through usage restrictions and air sampling, the licensee will preclude exposures to organic vapors and chemicals (such as hexane, toluene, xylene and their derivatives, trichloroethane, methylenechloride, trichlorofluoroethane, and Stoddard Solvent) which could cause aging, poisoning

or desorption of the adsorbed radioiodines. Plant procedures describing air sampling and administrative controls for detecting and precluding the presence of organic vapors and chemicals will be developed.

Certain limitations and precautions based on NUREG/CR-3403 guidance are necessary for utilization of the sorbent canisters. The staff agrees with the following such limitations and usage restrictions as proposed by the licensee to be include in Plant Procedure PPM 11.2.11.2, "Selection of Respiratory Protection Equipment.":

1. A maximum protection factor of 50 will be used.
2. The maximum permissible continuous use of the canisters will be 8 hours, after which the canister will be discarded. The allowable canister service life will be calculated from the time of unsealing the canister, including periods of non-exposure.
3. Canisters will not be used in the presence of organic solvent vapors or chemicals which would interfere with the canister's ability to absorb radioiodine. The use of organic solvents or chemicals will be prohibited while the GMR-I canisters are in use.
4. Canisters will be stored in sealed, humidity barrier packaging in a cool, dry environment. The GMR-I canisters will be maintained in class "A" storage (temperature and humidity controlled between 60 and 90°F and 30 and 60%, respectively) except for those maintained for ready issue in the respirator issue area.
5. Canisters will be used only with properly fitted full facepiece respirators capable of providing fit factors of 500.

6. Canisters will not be used in total challenge concentrations of organic iodines and other halogenated compounds greater than 1 ppm, including non-radioactive compounds.
7. Canisters will not be used in environments where temperatures exceed 110°F. Temperatures where GMR-I canisters may be used will be measured each shift and/or coincidentally with operations which heat the work areas to assure that this limit is not exceeded.

In addition to the above limitations, the following controls will be utilized by the Supply System.

1. During initial GMR-I canister implementation, the following program verification measures will be included in PPM 11.2.11.2.
 - a. Weekly whole body counts of individuals using the GMR-I canister for radioiodine protection will be performed.
 - b. A whole body count will be given to individuals who exceed 30 MPC hours in seven consecutive days prior to their next entry into a radioiodine atmosphere.
 - c. If an individual measures 35 nCi or greater iodine uptake to the thyroid during a whole body count, the individual will be restricted from further entries into radioiodine atmospheres pending a health physics evaluation.
 - d. A whole body count survey data base will be compiled to coordinate the results of the program.
2. The following procedures and training courses will be updated as necessary to include the required information regarding the proper use and limitations of the GMR-I canisters prior to use for radioiodine protection.

6. Canisters will not be used in total challenge concentrations of organic iodines and other halogenated compounds greater than 1 ppm, including non-radioactive compounds.
7. Canisters will not be used in environments where temperatures exceed 110°F. Temperatures where GMR-I canisters may be used will be measured each shift and/or coincidentally with operations which heat the work areas to assure that this limit is not exceeded.

In addition to the above limitations, the following controls will be utilized by the Supply System.

1. During initial GMR-I canister implementation, the following program verification measures will be included in PPM 11.2.11.2.
 - a. Weekly whole body counts of individuals using the GMR-I canister for radioiodine protection will be performed.
 - b. A whole body count will be given to individuals who exceed 30 MPC hours in seven consecutive days prior to their next entry into a radioiodine atmosphere.
 - c. If an individual measures 35 nCi or greater iodine uptake to the thyroid during a whole body count, the individual will be restricted from further entries into radioiodine atmospheres pending a health physics evaluation.
 - d. A whole body count survey data base will be compiled to coordinate the results of the program.
2. The following procedures and training courses will be updated as necessary to include the required information regarding the proper use and limitations of the GMR-I canisters prior to use for radioiodine protection.

- a. PPM 11.2.4.1, "MPC-hour Assessment and Documentation"
 - b. PPM 11.2.11.2, "Selection of Respiratory Protection Equipment"
 - c. PPM 11.2.11.3, "Issuance of Respiratory Protection Equipment"
 - d. 80-RDT-0606-LP, "Respiratory Protection Training"
 - e. 80-RDT-0606-RT, "Respiratory Protection Refresher Training"
 - f. 80-HPT-1801-LP, "Advanced Respiratory Protection"
3. To ensure that the MSA GMR-I canisters meet standards for quality control, PPM 11.2.11.2 will require personnel to verify that for each canister used with the protection factor that the seal is intact, the canister shelf life has not expired, and the following MSA label is attached to the GMR-I canister:
- "This Canister Meets the NRC Quality Assurance Specification Required for Radioiodine Protection Factor Credit, In Addition To The NIOSHA/MSHA Requirements."
4. Organic solvents and chemicals of concern relative to GMR-I canister use include materials such as paints, paint thinners, freon solvents, organochlorine solvents and isopropyl alcohol. These chemicals are not of concern in areas where GMR-I canisters will be stored since they are purchased in hermetically sealed packaging and are not opened until placed in service.

Administrative controls for chemical usage are specified in PPM 1.13.2, "Chemical Surveillance and Control." This procedure established controls over the ordering, storage, use, transfer and disposal of chemicals which could be harmful to personnel, the environment or plant systems. The indiscriminate use of chemicals

- c. Currently WNP-2 has maintained relatively good fuel integrity. In the event of failed fuel, the cause of the failure would be investigated and corrected. Radioiodine levels are trended as a means of monitoring for fuel failures.
- d. At WNP-2, radiological surveys are conducted frequently during maintenance activities and decontamination conducted accordingly.
- e. Maintenance planning takes into account decay of reactor systems to reduce to overall exposure and airborne contamination potential.

The primary basis for WPPSS's request for exemption are the potentials for both work effort reduction and dose reduction. The utilization of air purifying respirators in lieu of air-supplied or self-contained apparatuses, where possible, can result in person-rem reductions estimated overall at 30% for tasks requiring radioiodine protection.

The light weight, less cumbersome air purifying respirators (i.e., sorbent canisters) can provide increased comfort and mobility in most cases, and result in increased worker efficiency and decreased time on the job. The licensee has provided a task analysis which shows that the use of sorbent canisters at WNP-2 can result in significant dose savings and should be an effective ALARA measure.

Item 5 above identifies actions taken by WPPSS to ensure that exposures to radioiodine are as low as is reasonably achievable (ALARA). Item 1 identifies additional whole body counts to be performed during the initial period of usage of the canisters. The licensee's efforts to keep exposure ALARA are consistent with positions in Regulatory Guide 8.8 and are acceptable.

In summary, the NRC staff's review of the licensee's proposal indicates that the actions proposed by WPPSS can result in significant dose savings over alternative methods while still providing effective protection. This exemption would enable the licensee to use a protection factor for air purifying radioiodine gas and vapor respirators in estimating worker exposures from radioiodine gases and vapors. The licensee has provided usage restrictions and controls which can assure an effective radioiodine protection program. The proposed criteria and test methods for verifying the effectiveness and quality of GMR-I canisters are consistent with NRC criteria. The licensee's proposed exemption, with the controls and limitations, meets the positions in NUREG/CR-3403 and Regulatory Guide 8.8, and is acceptable. The actions proposed by the licensee are consistent with the requirements of 10 CFR Part 20.103(e), and form an acceptable basis to authorize an exemption in accordance with the provisions of 10 CFR 20.103(e) and 20.501.

III.

Accordingly, the Commission has determined that, pursuant to 10 CFR 20.501, the exemption is authorized by law and will not result in undue hazard to life or property. The Commission hereby grants an exemption from the requirements of Footnote d-2(c) of Appendix A to 10 CFR Part 20.

The Commission has prepared an Environmental Assessment and Finding of No Significant Impact related to this action which was published in the Federal Register on August 1, 1988 (53 FR 28926). The Environmental Assessment concluded that this action will not have a significant effect on the quality

of the human environment, and therefore the Commission has determined not to prepare an environmental impact statement for this exemption.

For further details with respect to this action, see the application for exemption dated May 10, 1988 which is available for public inspection at the Commission's Public Document Room, 2120 L Street, N.W., Washington, D.C., and at the Richland Public Library, Swift and Northgate Street, Richland, Washington.

Dated at Rockville, Maryland, this 21st day of March, 1989.

FOR THE NUCLEAR REGULATORY COMMISSION



Gary M. Holahan, Acting Director
Division of Reactor Projects III,
IV, V, and Special Projects
Office of Nuclear Reactor Regulation