



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

February 19, 1991

Docket Nos. 50-348  
and 50-364

Mr. W. G. Hairston, III  
Senior Vice President  
Alabama Power Company  
40 Inverness Center Parkway  
P. O. Box 1295  
Birmingham, Alabama 35201

Dear Mr. Hairston:

SUBJECT: AMENDMENT TO EXEMPTION FOR USE OF SOLVENT IODINE CANISTERS -  
JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2 (TAC NOS.  
76181 AND 76182)

The Nuclear Regulatory Commission (NRC) has granted the enclosed exemption amendment for certain solvent iodine respiratory protection canisters used by workers at the Joseph M. Farley Nuclear Plant, Units 1 and 2. By submittal dated February 19, 1990, as supplemented June 11 and December 5, 1990, you requested an amendment to the exemption granted October 23, 1984, to allow Mine Safety Appliances (MSA) GMR-I canisters to be stored in a Class C storage environment versus a Class A storage environment as defined in ANSI N45.2.2. Additionally, in response to concerns identified by the NRC staff, you have included in the amendment request a commitment to a revised respirator fit factor for use of the MSA GMR-I canisters. These changes involve restrictions contained in the Safety Evaluation issued with the October 23, 1984, exemption.

The Safety Evaluation supporting granting of this amendment to the October 23, 1984, exemption is also enclosed.

In addition, a clarification is required concerning your December 5, 1990, letter. Your letter states that a respirator fit factor equal to or greater than ten times the 10 CFR Part 20 allowed protection factor for negative pressure full face respirators is required by the NRC. A fit factor of ten times the allowed protection factor is not an NRC requirement but is considered a good industry practice which the NRC has found acceptable in the past. Other approaches could be used if demonstrated to be technically adequate.

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W. G. Hairston, III

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A copy of the exemption amendment is being forwarded to the Office of the Federal Register for publication.

Sincerely,

Original signed by:

Stephen T. Hoffman, Project Manager  
Project Directorate II-1  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Enclosures:

- 1. Exemption Amendment
- 2. Safety Evaluation

cc w/enclosures:  
See next page

\*SEE PREVIOUS CONCURRENCE

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Joseph M. Farley Nuclear Plant

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## UNITED STATES NUCLEAR REGULATORY COMMISSION

In the Matter of

ALABAMA POWER COMPANY

(Joseph M. Farley Nuclear  
Plant, Units 1 And 2)}
  
}
  
}Docket Nos. 50-348  
and 50-364EXEMPTION AMENDMENT

## I.

The Alabama Power Company (the licensee) is the holder of Facility Operating License Nos. NPF-2 and NPF-8 which authorize full power operation of the Joseph M. Farley Nuclear Plant (Farley), Units 1 and 2. The licenses provide, among other things, that they are subject to all rules, regulations and Orders of the Nuclear Regulatory Commission (the Commission).

Farley, Units 1 and 2, consist of two pressurized water reactors at the licensee's site located near the City of Dothan, Alabama.

## II.

10 CFR Part 20, Appendix A, "Protection Factors for Respirators," establishes protection factors of air-purifying respirators for protection against particulates only. Furthermore, footnote d-2(c) states, "No allowance is to be made for the use of sorbents against radioactive gases or vapors." On October 23, 1984, the Commission granted an exemption to the facility from the restriction of 10 CFR Part 20, Appendix A, footnote d-2(c), and authorized the use of the Mine Safety Appliances (MSA) GMR-I canister with restrictions as shown in the staff's Safety Evaluation issued in support of that exemption.

By letter dated February 19, 1990, as supplemented June 11 and December 5, 1990, the licensee requested an amendment to the exemption to allow the MSA

GMR-I canisters to be stored in a Class C storage environment as defined in ANSI N45.2.2, versus a Class A or better environment which is a restriction contained in the Safety Evaluation for the exemption granted October 23, 1984. The licensee provided a summary of test results from MSA justifying Class C storage requirements for the MSA GMR-I canisters.

In response to concerns identified by the staff, the licensee also included in the amendment request a commitment to a revised respirator fit factor for use of the MSA GMR-I canisters.

The staff has evaluated the information provided by the licensee to support the exemption amendment. The Safety Evaluation relating to the licensee's request concerning use of the MSA GMR-I canisters at Farley, Units 1 and 2, is being issued concurrently with this exemption amendment. The Safety Evaluation concludes that Class C storage and the revised fit factor are acceptable for use of radioiodine MSA GMR-I canisters.

### III.

Accordingly, the Commission has determined that, pursuant to 10 CFR 20.501, an exemption amendment as requested by the licensee's letter of February 19, 1990, as supplemented June 11 and December 5, 1990, is authorized by law and will not result in undue hazard to life or property. The Commission hereby grants an amendment to the exemption granted October 23, 1984, and authorizes Class C storage for the MSA GMR-I canisters, subject to the restrictions shown in Attachment 1 to this exemption amendment. Attachment 1 contains the restrictions imposed by the exemption issued October 23, 1984, as modified by the exemption amendment. The exemption amendment is subject to modification by rule, regulation or Order of the Commission.

Pursuant to 10 CFR 51.32, the Commission has determined that the issuance of the exemption amendment will have no significant impact on the environment ( 56 FR 5427 ).

This exemption amendment is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by:

Steven A. Varga, Director  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Usage Restrictions

Dated at Rockville, Maryland  
this 12th day of February 1991

|      |            |              |          |          |           |          |
|------|------------|--------------|----------|----------|-----------|----------|
| OFC  | :LA:PDII-1 | :PM:PDII-1   | :PRPB    | :OGC     | :D:PDII-1 | :AD:DRP  |
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| DATE | :1/14/91   | :1/14/91     | :1/17/91 | :1/24/91 | :1/25/91  | :2/13/90 |
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| NAME | :SVarga    | :            | :        | :        | :         | :        |
| DATE | :2/19/91   | :            | :        | :        | :         | :        |

## Attachment I

### Limitations, Usage Restrictions, and Controls Applicable to the Use of MSA GMR-I Canister at the Joseph M. Farley Nuclear Plant, Units 1 and 2

1. Protection factor equal to 50 as a maximum value.
2. The maximum permissible continuous use time is eight hours after which the canister will be discarded.
3. Canisters are not to be used in the presence of organic solvent vapors.
4. Canisters are to be stored in a Class C or better environment, as defined in ANSI N45.2.2.
5. Canister allowable service life is to be calculated from the time of unsealing the canister, including periods of non-exposure.
6. Canister is to be used with a full facepiece capable of providing a fit factor equal to or greater than 500.
7. Canisters are not to be used in total challenge concentrations of organic iodines and other halogenated compounds greater than 1 ppm, including nonradioactive compounds.
8. Canisters are not to be used in environments where temperatures are greater than 110°F.

In addition to the limitations and usage restrictions noted above, the following additional controls will be utilized by the licensee:

1. Temperatures will be measured each shift and/or coincidentally with operations which heat the work areas to assure that temperatures do not exceed 100°F during GMR-I canister use.
2. In initially implementing GMR-I canister use, the following program verification measures will be used:
  - a. weekly whole body counts for individuals using the GMR-I canister for radioiodine protection;
  - b. for individuals who exceed 20 MPC hours, a whole body count will be required prior to their next entry into a radioiodine atmosphere (i.e., effectively a 20 MPC hour stay time);
  - c. if an individual measures 70 nCi or greater iodine uptake to the thyroid during a whole body count, the individual's entry into radioiodine atmospheres will be restricted pending health physics evaluation;
  - d. a whole body count/survey data base will be compiled to evaluate the results of the program.



3. Technical Specification controls currently existing which restrict painting and chemical releases in areas served by safety-related ventilation filtration systems will provide sufficient restrictions for GMR-I use in these areas also. For other areas, painting or the use of organic substance will be prohibited while the GMR-I canister is in use.
  
4. Specific plant procedures will incorporate the limitations and usage restrictions listed as 1 through 8 above prior to GMR-I use. Additionally, a specific APCo procedure, FNP-0-RCP-117, "Issue and Use of GMR-I Iodine Canisters," has been prepared for field use of the GMR-I canister.
  
5. Existing respiratory protection program requirements and restrictions (e.g., physicals, fit tests, Part 20 requirements, Appendices A and B) still apply.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

CLASS C STORAGE ENVIRONMENT FOR SORBENT CANISTERS

JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-348 AND 50-364

INTRODUCTION

By submittal dated February 19, 1990, as supplemented June 11 and December 5, 1990, Alabama Power Company (the licensee) requested an amendment to the exemption granted October 23, 1984, to allow Mine Safety Appliances (MSA) GMR-I canisters to be stored in a Class C storage environment versus a Class A storage environment as defined in ANSI N45.2.2. Additionally, in response to concerns identified by the Nuclear Regulatory Commission (NRC) staff, the licensee has included in the amendment request a commitment to a revised respirator fit factor for use of the MSA GMR-I canisters.

EVALUATION

The licensee's submittal provided a letter from the Mine Safety Appliances Company (MSA) which contains a summary of test results which form the basis for MSA and the licensee's conclusion that Class C storage is acceptable. The test summary discussed accelerated storage tests, Class B storage tests, and a moisture permeation study of the bottom seal.

The accelerated storage tests consisted of 24 canisters after 4 months' storage being exposed to a 10 ppm methyl iodide concentration for 480 minutes, three canisters after 6 months' storage being exposed to a 5 ppm methyl iodide concentration for 480 minutes, and one canister after 1 year's storage being exposed to an 8 ppm methyl iodide concentration for 480 minutes. In all cases, methyl iodide penetration was below 0.5%. In addition, the three canisters tested after 6 months' storage had their testing continued to a 1% break-through of methyl iodide. The average time to a 1% breakthrough was 44 hours.

The Class B storage tests consisted of samples drawn at 3- and 4-year storage intervals and tested. Test penetrations were at or below initial inspection results for the canister lot.

The moisture permeation study on the canister bottom seal was conducted at 100°F and 100% relative humidity. MSA found the moisture incursion to be insignificant.

The NRC staff has reviewed the information submitted by the licensee and concludes that Class C storage is acceptable.

The exemption granted on October 23, 1984, included a limitation that the canisters be used with a full facepiece capable of providing a protection factor greater than 100. Protection factors are a measure of protection from the work place atmosphere that can be assumed when using a particular respirator. Protection factors are established in Appendix A to 10 CFR Part 20 for various classes of respirators. Appendix A to 10 CFR Part 20 specifies a maximum protection factor of 50 for a full facepiece negative pressure respirator in which the MSA GMR-I canisters are to be used. Therefore, Appendix A to 10 CFR Part 20 does not allow credit for a protection factor of 100 for a full facepiece respirator as was specified in the original exemption.

In response to discussions with the NRC staff, the licensee resolved this issue by revising the amendment request to commit to use the MSA GMR-I canisters with a full facepiece respirator capable of providing a fit factor equal to or greater than 500. A minimum fit factor of 500 is consistent with current good industry practice and has been found acceptable in the past by the NRC staff. Therefore, the revised fit factor is acceptable for the use of the MSA GMR-I canisters at Joseph M. Farley Nuclear Plant, Units 1 and 2.

Principal Contributor: Stephen T. Hoffman

Dated: February 19, 1991

DISTRIBUTION

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