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SUBJECT: Responds to NRC 880316 request for addl info re util App A exemption request for respiratory protection appatatus.

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L-88-209
10 CFR 20
Appendix A

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

Gentlemen:

Re: St. Lucie Units 1 and 2
Docket Nos. 50-335 and 50-389
Request for Additional Information - 10 CFR 20
Appendix A Exemption Request for Worker Respiratory
Protection Apparatus (TAC Nos. 67138 and 67139)

Per NRC letter dated March 16, 1988, the Staff requested additional information relating to the above subject for St. Lucie Plant, Unit Nos. 1 and 2. Per letter L-88-188 dated April 22, 1988, Florida Power & Light Company provided a response schedule for the additional information.

The purpose of this letter is to provide the first of two separate sets of responses. This submittal provides responses to Questions 471.1, 471.2, 471.3, 471.4, 471.8, 471.10, 471.13 and 471.14.

Should there be further questions, please contact us.

Very truly yours,

J. K. Hays
for W. F. Conway
Acting Group Vice President
Nuclear Energy

WFC/MSD/gp

cc: Dr. J. Nelson Grace, Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, St. Lucie Plant

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QUESTION 471.1

Describe the methods that have been used and will be used to reduce radioiodine levels to minimal levels in St. Lucie work areas. The description should include (but not be limited to) a discussion of the utilization of engineering controls, radioactive decay, purification and degasification of primary coolant, use of local ventilation units and contamination control devices, and system and area decontamination. Long term efforts to avoid or alleviate the source of radioiodine problems by means of fuel quality assurance/quality control programs and other operational controls to minimize fuel defects should also be discussed.

RESPONSE

Reduction of radioiodine levels is primarily conducted through system cleanup. Shutdown boron concentrations for refueling operations are reached early in a unit cooldown to create a crud burst and allow for maximum cleanup time with the reactor coolant pumps available. To prevent radioiodine from remaining in the stagnant loops, the reactor coolant pumps are run concurrent with shutdown purification operations until the reactor coolant system iodine levels appear to be stable or decreasing to approximately 0.1 uCi/cc. The pressurizer steam space is vented to the volume control tank and the reactor coolant system degasification is accomplished by following Operating Procedure, 1-0030127, entitled "Reactor Plant Cooldown - Hot Standby to Cold Shutdown." The containment purge system and airborne activity removal fans are used to reduce radioiodine concentrations in the containment building. Temporary charcoal filters have also been placed at the inlet side of the containment coolers for additional iodine removal. Portable HEPA units (negative pressure ventilation blowers) are used at the steam generator manway openings and the reactor head during and after the breach of the reactor coolant system. Decontamination of work areas is accomplished throughout an outage. Previous major system decontamination efforts include the steam generator channel head and the refueling pool cavities. If practical, time is allowed for contamination reduction by decay; however, the main emphasis is on system and area cleanup. During normal operation, attempts are made to minimize power transients in order to reduce radioiodine levels. Long term efforts include QA/QC programs for fuel quality. Also, the benefits of the fuel reconstitution process are being evaluated for consideration in subsequent refueling outages. With respect to fuel design improvement, several areas are being evaluated and/or implemented in order to reduce the fretting of fuel pins; therefore, reducing the likelihood of fuel pin failures. Additionally, following outages of certain duration, slow power ramp rates are used to precondition the fuel which could result in a lower incidence of fuel failure.

QUESTION 471.2

Verify that St. Lucie has developed and implemented an ALARA program consistent with the position in Regulatory Guide 8.8.

RESPONSE

The St. Lucie Plant's ALARA program is described in Administrative Procedure No. 3300120, entitled "St. Lucie Plant ALARA Program." This program, as described in the procedure, is consistent with the position in Regulatory Guide 8.8.

QUESTION 471.3

The Florida Power & Light Company (FPL) submittal of February 3, 1988 indicates that the use of air-purifying respirators will enable a 25-50% reduction in the time required to conduct tasks requiring respiratory protection and that this correlates to a 25-50% reduction in man-rem exposure for these tasks. Provide the basis for this estimate, including discussion of the particular tasks at St. Lucie that have been identified as having the potential for such dose savings, and the magnitude of the man-rem exposure savings for these tasks. Also provide relevant examples of industry experience in this area.

RESPONSE

A loss of mobility and hose entanglement while using airline respirators results in increased man-hours and man-rem for work in high radiation areas requiring respiratory protection. In 1985 the Unit 1 Steam Generator channel heads were shielded to reduce exposure during a nozzle dam modification. During mock-up training, time trials were performed using airline respirators vs. air-purifying respirators with iodine canisters. It took twenty six minutes of jump time to install the shielding in one channel head using airline respirators vs. eighteen minutes using air-purifying respirators. This 31% reduction in time would have resulted in a reduction of 2.400 man-rem (300 mrem/min) per channel head and a total of 9.600 man-rem for all four channel heads. Nozzle dam installation/removal has been identified as a task where significant man-rem reductions could be realized using air-purifying respirators. In 1987, forty-two (42) man-rem were received for this job. 12.6 man-rem would have been avoided if air-purifying respirators had been used. In 1984, the Farley Plant provided a task analysis showing that the use of the GMR-1 canisters at Farley would result in significant dose savings and would be an effective ALARA measure.

QUESTION 471.4

Verify that St. Lucie has in place a respirator protection program that meets the requirements of 10 CFR 20.103 and that can integrate the practical use of sorbent canisters for protection against radioiodines.

RESPONSE

The St. Lucie Plant's respiratory protection program is described in Health Physics Procedure HP-60 entitled "Respiratory Protection Manual." This program, as described in the procedure, meets the requirements for protection against airborne radioactive materials set forth in 10 CFR 20.103 and NUREG 0041, "Manual of Respiratory Protection Against Airborne Radioactive Materials." Upon acceptance of the exemption request, this procedure would be revised to incorporate guidelines for the use of sorbent canisters for protection against radioiodines.

QUESTION 471.8

The FPL submittal states that the SCOTT canisters will not be used in the presence of organic solvent vapors. Describe the methods and particular procedures that will be applied to prevent the use of the SCOTT canisters in the presence of organic solvent/chemical vapors at St. Lucie. This should include a discussion of (a) which organic solvent/chemical vapors if present would preclude the use of the SCOTT canisters at St. Lucie; (b) methods and procedures for detecting (sampling) and/or precluding the presence of organic solvent/chemical vapors where the SCOTT canisters are used (e.g., identify general sampling procedures applied specifically for SCOTT canister use; identify administrative procedures which preclude use or release of organic solvent/chemical vapors in areas in which the SCOTT canisters are used); and (c) related controls for other systems or operations, such as charcoal filter bed technical specifications, which can also limit SCOTT canister exposure to organics. Are there any other potential contaminants in air at St. Lucie that could adversely affect the performance of the SCOTT canisters? If there are, describe the methods and procedures that will be used to prevent use of the SCOTT canisters in the presence of these contaminants.

RESPONSE

The St. Lucie Plant's chemical control program precludes the unauthorized and indiscriminate use of organic solvents and chemicals. The organic solvent vapors of concern to the SCOTT cartridges are paints, paint solvents, methyl alcohol, ethanol, isopropyl alcohol and acetone.

The St. Lucie Plant will establish procedural controls over the use of the SCOTT canister in the presence of these chemicals. The controls will not prohibit the use of the SCOTT canister in the presence of these organic solvent vapors and chemicals, but the protection factor of the canister will be reduced to 1.

Other than the chemicals and organic solvents addressed above there are no other known potential contaminants that would adversely affect the performance of the SCOTT canister.

QUESTION 471.10

The FPL submittal states that the SCOTT canisters are to be used only with a full facepiece respirator for which the canister has been NIOSH/MSHA certified. Provide the details of this NIOSH MSA certification and explain its relevance to the use of this equipment for protection against radioiodine. Specify the means by which FPL will determine that the fit of the full facepiece (to be used with the canister) will reasonably ensure that a workplace radioiodine protection factor of 50 can be achieved for each user of the respirator.

RESPONSE

The submittal states that the SCOTT canister will be used only with NIOSH/MESA certified full face respirator. The intent of this condition is to integrate both the SCOTT canister and a NIOSH/MESA approved full face respirator into a unit in which the SCOTT canister will provide protection against both radioiodines and radioactive particulates. The SCOTT canister currently has a NIOSH/MESA certification for radioactive particulates. In order for the St. Lucie Plant to take credit for the particulate certification of the cartridge it must be used with an approved respirator. Use of an approved full face respirator with the cartridge will provide for a protection factor of 50 when used in the presence of radioiodine or radioactive particulates.

Prior to allowing an individual to use a respirator, the individual must successfully complete a quantitative respirator fitting. The quantitative fitting consists of measuring the concentration of a challenge atmosphere inside the facepiece of a respirator and comparing that concentration to the concentration of the challenge atmosphere outside the respirator. In order to successfully complete the test and receive permission to use a respirator, the concentration of the challenge atmosphere inside the facepiece must be less than 2 percent of the concentration of the challenge atmosphere outside the respirator. This will ensure that a protection factor of at least 50 will be

obtained. This is the protection factor that is allowed by 10 CFR 20, Appendix A, for a full facepiece air-purifying respirator. In actual practice, protection factors from 100 to 1000 are achievable for this type of respirator. The process of respirator fitting is performed under Health Physics Procedure, HP-66A, "Rèspirator Fitting".

QUESTION 471.13

Identify the specific plant and training procedures that will be used to verify the effectiveness of this special respiratory protection program. The following elements should be considered: (a) weekly whole-body/thyroid counts for individuals using the SCOTT canisters for radioiodine protection; (b) whole body/thyroid counts for individuals who exceed 10 MPC hours in seven (7) consecutive days, prior to their next entry into a radioiodine atmosphere; (c) establishment of a thyroid radioiodine uptake level (e.g., 70 nCi) which if exceeded will result in restricting the individuals entry into radioiodine atmospheres pending health physics evaluation; and (d) establishment of a whole body count/survey data base to be used to evaluate and verify the effectiveness of the program.

RESPONSE

Verification of the effectiveness of this special part of the St. Lucie Plant respiratory protection program will be accomplished through the following procedures:

1) Health Physics Procedure, HP-63, "Maximum Permissible Concentration Hour Accountability"
2) Health Physical Procedure, HP-31, "Calibration and Operation of the Whole Body Counting System"
3) Health Physics Procedure, HP-35, "Bioassay Program"
4) Health Physics Procedure, HP-67, "Respiratory Protection Training"

These procedures will be modified to reflect the additional efforts that will be necessary to verify the effectiveness of the SCOTT canister program.

St. Lucie proposes that the initial implementation of the program contain the following conditions relative to the verification of the programs effectiveness.

1) All personnel who exceed 10 maximum permissible concentration hours in seven (7) consecutive days will receive a whole body/thyroid count prior to re-entering a radioiodine atmosphere.

2) Personnel that have a thyroid burden of 70 nCi or greater as determined by whole body/thyroid count will be restricted from further exposure to radioiodine atmospheres until the reason for the thyroid burden has been evaluated by Health Physics and until the individual is authorized by the Health Physics Department Head to re-enter atmospheres containing radioiodines.

3) A database of whole body/thyroid count results and maximum permissible concentration hour data will be established to assist in the evaluation of the program's effectiveness.

St.Lucie will evaluate the effectiveness of the SCOTT canister program. If data demonstrates that the relaxation of any or all these restrictions is appropriate, St. Lucie proposes that the restrictions be relaxed in a controlled manner with the eventual goal of relaxing the restrictions to the levels that are currently in use in the existing respiratory protection program. For example, if data demonstrates that the proposed program results in the expected level of protection against radioiodines, it may be appropriate to relax the whole body/thyroid counting limit of 10 maximum permissible concentration hours to the current program limit of 30 maximum permissible concentration hours before requiring a whole body/thyroid count.

QUESTION 471.14

Identify the specific plant and training procedures that will be developed or modified to incorporate controls, restrictions, and use of the SCOTT canisters and to instruct SCOTT canister users and health physics personnel in the limitations for use of the canisters and in their proper field use.

RESPONSE

The St. Lucie Plant's respiratory protection program contains the necessary procedures to adequately implement the use of the SCOTT canister program without initiating new procedures. The following procedures will be modified to incorporate the provisions of the SCOTT canister program:

1) Health Physics Procedure, HP-60, "Respiratory Protection Manual"
2) Health Physics Procedure, HP-61, "Issue and Use of Respiratory Protection Equipment"
3) Health Physics Procedure, HP-62, "Inspection, Maintenance and Quality Assurance of Respiratory Protection Equipment"
4) Health Physics Procedure, HP-63, "Maximum Permissible Concentration Hour Accountability"

5) Health Physics Procedure, HP-65, "Cleaning, Disinfection and Decontamination of Respiratory Protection Equipment"
6) Health Physics Procedure, HP-66A, "Respirator Fitting"
7) Health Physics Procedure, HP-67, "Respiratory Protection Training"
8) Health Physics Procedure, HP-31, "Calibration and Operation of the Whole Body Counting System"
9) Health Physics Procedure, HP-35, "Bioassay Program"