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SUBJECT: Forwards 5-yr technology review rept for State Certification
FL0002208 for 1988-1992, consisting of info re liquid
effluents, liquid effluent assessment & airborne
effluents.

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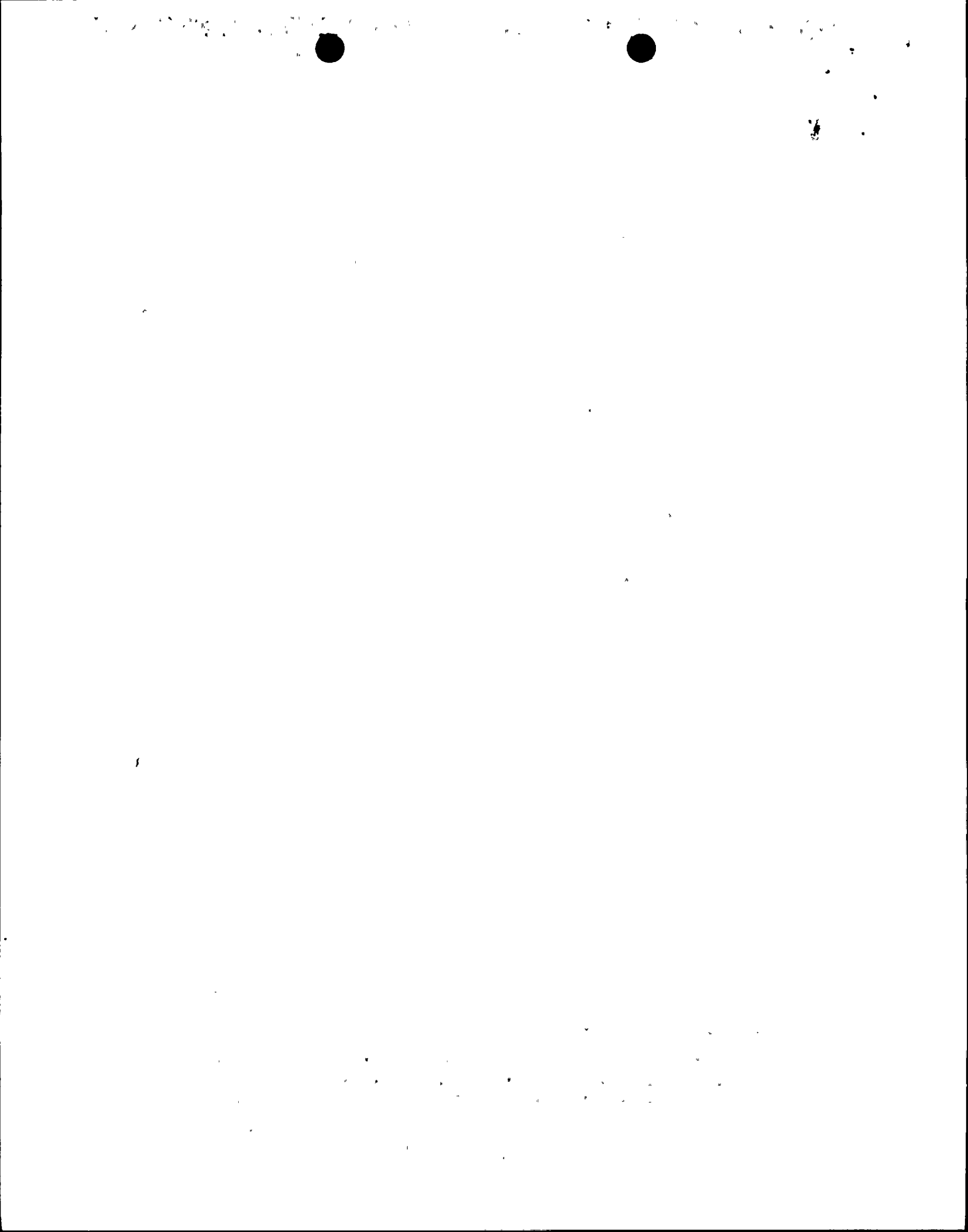
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May 11, 1993

L-93-135

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

Re: St. Lucie Unit 2
Docket No. 50-389
State Certification No. FL0002208
Five Year Technology Review Report

The following report is being provided in accordance with the requirements of Florida Department of Environmental Regulation, Conditions of Certification Section XVIII.D, for St. Lucie Unit 2. This report is for the five year period 1988 to 1992.

Should you have any questions on this information, please contact us.

Very truly yours,

D. A. Sager
Vice President
St. Lucie Plant

DAS:JJB:kw

cc: Stewart D. Ebnetter, Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, St. Lucie Plant

Attachment

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**ST. LUCIE UNIT NO.2
TECHNOLOGY REVIEW
1988-1992**

The following information is being provided in accordance with Florida Department of Environmental Regulation, Conditions of Certification for St. Lucie Unit No. 2.

Since initial startup in 1983, radiation doses from operation of St. Lucie Unit No. 2 have been well within the guidelines for "As low as reasonably achievable" (ALARA) as provided in 10 CFR 50, Appendix I. This report provides annual radiation dose information calculated during the most recent five year period of operation, 1988-1992, as required by Condition XVIII.D. of the above referenced permit. The information provided herein demonstrates that St. Lucie Unit No. 2 continues to be operated well within the Nuclear Regulatory Commission's ALARA guidelines.

Notwithstanding the above, during the last five years, some of the new technologies and methods implemented by FPL have resulted in reductions in the quantities of radioactive materials released by reducing the source of the radioactivity. Reducing the source of the radioactivity has a direct benefit of reducing exposures to radiation both to plant workers and to members of the public. Compared to the previous five years (1983-1987) the quantity of radioactive materials released from the St. Lucie Plant in liquid effluents for this five year period was 74 percent lower while the quantity of radioactive materials released into the air was 88 percent lower. The following are some of the new technologies and methods that were implemented at the St. Lucie Plant to reduce the generation and availability for release of radioactive materials.

- Improved reactor fuel pin design to minimize the escape of radioactive materials from the nuclear fuel.

- Optimization of reactor water chemistry treatment to reduce the formation of radioactive corrosion products contained in the reactor cooling water.

- Improvements in primary (reactor) water filtration design to reduce the amount of radioactive corrosion products circulating in the plant's reactor water systems.

- Improved design of the plant's Containment Vent Path Filter System to reduce releases of radioiodines.

- Improved methods for processing radioactive resins resulting in reduced levels of radioactivity available for release from the plant.

In addition, St. Lucie Unit No. 2 Technical Specifications and plant operating procedures establish surveillance requirements, limiting conditions for plant operation and actions for radioactive liquid and gaseous effluents which fully implement the requirements of Sections II.A, II.B, II.C, III.A, and IV.A of Appendix I to 10CFR50. The action requirements of the technical specifications implement the guides set forth in Appendix I to assure that doses to members of the public due to releases of radioactive material in liquid and gaseous effluents to unrestricted areas will be kept "as low as reasonably achievable".

Liquid Effluents

Doses to members of the public from radioactive materials released from St. Lucie Unit No. 2 in liquid effluents are maintained ALARA by use of the Liquid Waste Management System (LWMS).

The average calculated annual dose during the last five years (1988-1992) along with the highest calculated annual dose, during the same period, that would have been received by the maximally exposed (hypothetical) member of the public due to liquid effluents from St. Lucie Unit No. 2 are shown below. The use of a hypothetical member of the public is conservative and provides additional assurance that doses to any member of the public will be well below the ALARA guidelines contained in 10CFR50, Appendix I Section II A. because all assumptions regarding the location and activities of the hypothetical individual are conservatively applied.

ALARA Guideline for
Liquid Effluents

10CFR50
Appendix I 3.00 mRem

Liquid Effluent Dose

	1988-1992 (Average) mRem	1988-1992 (Highest) mRem
Dose:	0.052	0.104
Percent of Appendix I	1.7%	3.5%

Liquid Effluent Assessment:

The current design and technology of the LWMS installed at St. Lucie Unit No. 2 is capable of maintaining radiation doses to members of the public to a small fraction of the dose guidelines contained in Section II A. of 10CFR50 Appendix I.

Airborne Effluents

Doses to members of the public from radioactive materials released from St. Lucie Unit No. 2 as airborne effluents are maintained ALARA by use of the Gaseous Waste Management System (GWMS) .

The average calculated annual dose during the last five years (1988-1992) along with the highest calculated annual dose, during the same period, that would have been received by the maximally exposed (hypothetical) member of the public due to gaseous effluents from St. Lucie Unit No. 2 are shown below for gamma air dose, beta air dose, organ dose and total body dose. The use of a hypothetical member of the public is conservative and provides additional assurance that doses to any member of the public will be well below the ALARA guidelines contained in 10CFR50, Appendix I Sections II B. and II C. because all assumptions regarding the location and activities of the hypothetical individual are conservatively applied.

ALARA Guidelines for
Gaseous Effluent-Gamma Air Dose

10CFR50
Appendix I 10 mRad

Gaseous Effluent-Gamma Air Dose

	1988-1992 (Average) mRad	1988-1992 (Highest) mRad
Dose:	0.0332	0.118
Percent of Appendix I	0.33%	1.2%

ALARA Guidelines for
Gaseous Effluent-Beta Air Dose

10CFR50
Appendix I 20.00 mRad

Gaseous Effluent-Beta Air Dose

	1988-1992 (Average) mRad	1988-1992 (Highest) mRad
Dose:	0.068	0.248
Percent of Appendix I	0.34%	1.2%

ALARA Guidelines for
Gaseous Effluent- Organ Dose

10CFR50
Appendix I 15.00 mRem

Gaseous Effluent-Organ Dose

	1988-1992 (Average) mRem	1988-1992 (Highest) mRem
Dose:	0.231	0.597
Percent of Appendix I	1.5%	4.0%

ALARA Guidelines for
Gaseous Effluent-Total Body Dose

10CFR50
Appendix I 5.00 mRem

Gaseous Effluent-Total Body Dose

	1988-1992 (Average) mRem	1988-1992 (Highest) mRem
Dose:	0.0015	0.0026
Percent of Appendix I	0.03%	0.052%

Airborne Effluent Assessment:

The current design and technology of the GWMS installed at St. Lucie Unit No. 2 is capable of maintaining radiation doses to members of the public to a small fraction of the dose guidelines contained in Section II B. and II C. of 10CFR50 Appendix I.

Conclusion:

As demonstrated above, the radiation dose to members of the public from operation of St. Lucie Unit No. 2 is being maintained well within the numerical guidelines for "as low as reasonably achievable" contained in 10 CFR 50, Appendix I. By comparison, an individual living in Florida typically receives an annual total body radiation exposure of 286 mRem each year from natural sources.