



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

ENCLOSURE

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 201 TO FACILITY OPERATING LICENSE NO. DPR-33
AMENDMENT NO. 220 TO FACILITY OPERATING LICENSE NO. DPR-52,
AMENDMENT NO. 174 TO FACILITY OPERATING LICENSE NO. DPR-68

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3

DOCKET NOS. 50-259, 50-260, AND 50-296

1.0 Introduction

By letter dated August 27, 1993, Tennessee Valley Authority (the licensee), submitted proposed changes to the Browns Ferry Nuclear Plant, Units 1, 2, and 3 Technical Specifications (TS) in support of its plan to implement the revised 10 CFR Part 20.

2.0 Evaluation

The licensee has revised the TS to include wording that is consistent with the revised 10 CFR Part 20, "Standards for Protection Against Radiation", and will retain the same overall level of effluent control required to meet the design objectives of Appendix I to 10 CFR Part 50.

The proposed TS changes and evaluations follow:

(1) Technical Specification 1.KK

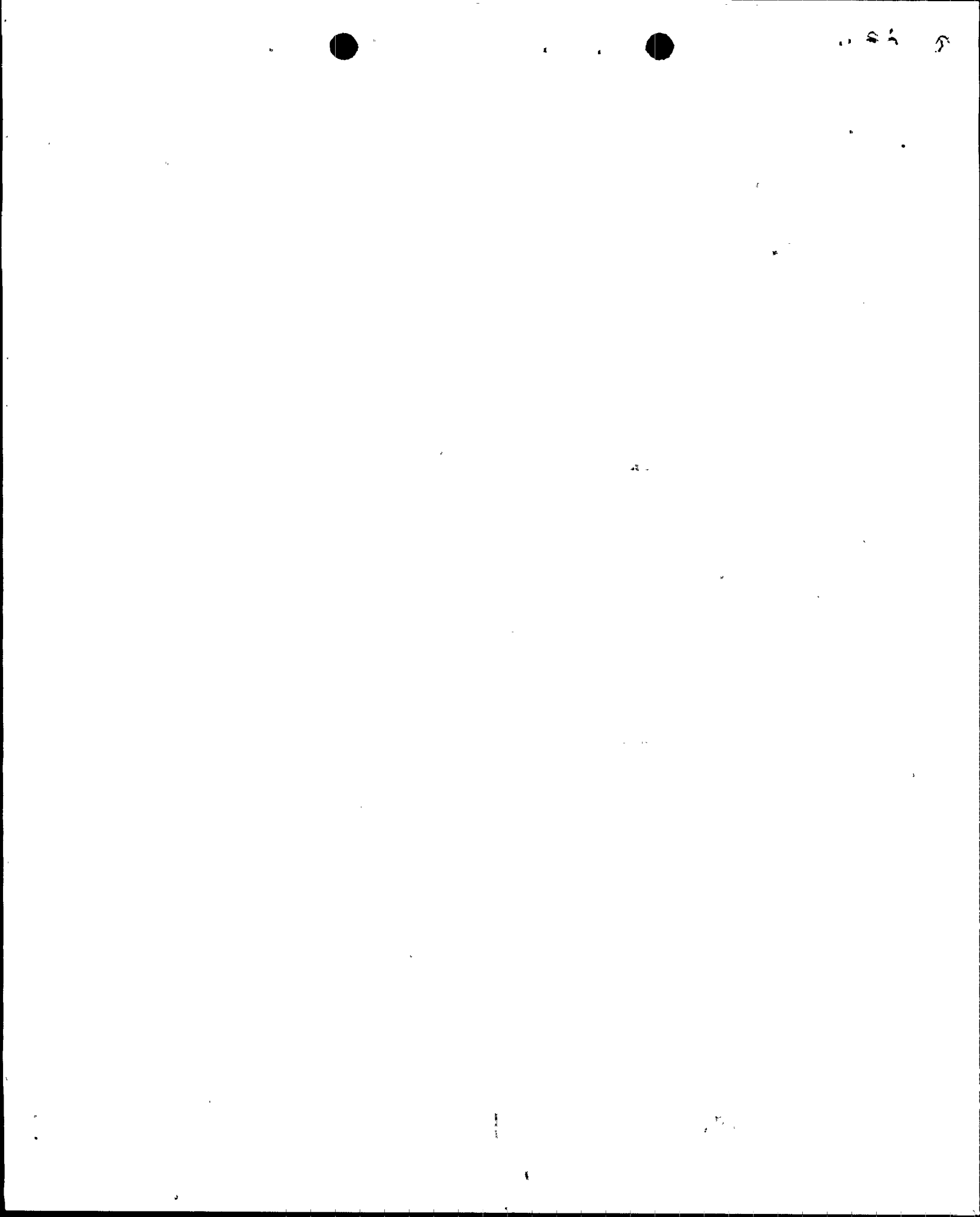
The licensee has proposed to revise the definition of MEMBER OF THE PUBLIC to conform to the definition used in 10 CFR 20.1003.

The change is administrative in nature to incorporate the corresponding revised 10 CFR Part 20 definition and is acceptable.

(2) LIQUID HOLDUP TANK BASES 3.8.A

The licensee has proposed to revise the words "... the limits of 10 CFR Part 20, Appendix B, Table II, Column 2, at the nearest..." to read "... the limits of 10 CFR Part 20, Appendix B, Table 2, Column 2, at the nearest..."

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This change is administrative in nature to incorporate the corresponding revised 10 CFR Part 20 table number and is acceptable.

(3) Technical Specification 6.8.3

The licensee has proposed to revise the words "... show permissible radiation exposure and shall be consistent..." to read "...contain radiation dose limits and shall be consistent..."

The change is administrative in nature to be consistent with the revised 10 CFR Part 20 and is acceptable.

(4) Technical Specification 6.8.3

The licensee has proposed to revise the words "...requirements of 10 CFR 20 except in lieu of the 'control...'" to read "...requirements of 10 CFR 20 except for the 'control...'"

The change is administrative in nature and is acceptable.

(5) Technical Specification 6.8.3

The licensee has proposed to revise the words "...'device' or 'alarm signal' required by paragraph 20.203(c) of 10 CFR 20" to read "...'device' or 'alarm signal' required by 20.1601(a)."

The change is administrative in nature to incorporate the corresponding revised 10 CFR Part 20 section number and is acceptable.

(6) Technical Specification 6.8.3.1

The licensee has proposed to revise the words "Each high radiation area in which the intensity of radiation is greater than 100 mrem/hr but less than or equal to 1000 mrem/hr..." to read "Each high radiation area as defined in 10 CFR 20..."

The change is administrative in nature and is acceptable.

(7) Technical Specification 6.8.3.1

The licensee has proposed to revise the words "...by requiring issuance of a Radiological Work Permit.* Any..." to read "...by requiring issuance of a Radiological Work Permit. Individuals qualified in radiation protection procedures (e.g., a radiological control technician), or personnel escorted by such individuals, shall be exempt from the RWP requirements during the performance of their assigned duties in high radiation areas with radiation dose rates equal to or



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less than 1 rem in 1 hour at 30 centimeters, provided they otherwise comply with approved radiation protection procedures for entry into high radiation areas. Any..."

The changes are consistent with the guidance in Regulatory Guide 8.38, "Control of Access to High and Very High Radiation Areas in Nuclear Power Plants," and are acceptable.

(8) Technical Specification 6.8.3.1

The licensee has proposed to revise the words "...for providing positive control over the activities within..." to read "...for providing positive radiation protection control over the activities within..."

The change is administrative in nature to specify that the control is limited to radiation protection control and is acceptable.

(9) Technical Specification 6.8.3.1

The licensee has proposed to revise the words "...at the frequency specified by the facility Health Physicist..." to read "...radiation surveillance at the frequency specified in the ..."

The change is administrative in nature to delete an obsolete position title and is acceptable.

(10) Technical Specification 6.8.3.2

The licensee has proposed to revise the words "...Each high radiation area in which the intensity of radiation is greater than 1,000 mrem/hr shall be subject to the provisions of (1) above; and, in addition, access to the source and/or area shall be secured by lock(s). The key(s) shall be under the administrative control of the shift engineer. In cases of a high radiation area established for a period of 30 days or less, direct surveillance to prevent unauthorized entry may be substitute for permanent access control.

"*Health Physics personnel, or personnel escorted by Health Physics personnel, in accordance with approved emergency procedures, shall be exempt from the RWP issuance requirement during the performance of their assigned duties, provided they comply with approved radiation protection procedures for entry into high radiation areas..." to read "...In addition, areas that are accessible to personnel and that have radiation levels greater than 1 rem in 1 hour as measured at 30 centimeters, but less than 500 rads in 1 hour at 1 meter from the radiation source or from the surface which the radiation penetrates shall be under the administrative control of the duty Shift Operations Supervisor,



Radiological Control Manager or their respective designees. Doors shall remain locked except during periods of access by personnel under an approved RWP which specifies the dose rates in the immediate work areas and maximum allowable stay time for individuals in that area. In lieu of the stay time requirement of the RWP, direct or remote (such as closed circuit TV cameras) continuous surveillance may be made by individuals qualified in radiation protection procedures to provide positive exposure control over the activities being performed in the area."

The changes are consistent with the guidance in Regulatory Guide 8.38, "Control of Access to High and Very High Radiation Areas in Nuclear Power Plants," and are acceptable.

(11) Technical Specification 6.8.3.3

The licensee has proposed to add a new paragraph that reads as follows: "Individual radiation areas that are accessible to personnel and that have radiation levels greater than 1 rem in 1 hour as measured at 30 centimeters, but less than 500 rads in 1 hour at 1 meter from the radiation source, are located within large areas where no enclosure exists for the purpose of locking and where no enclosure can be reasonably constructed around the individual area, shall be barricaded, conspicuously posted, and a flashing light shall be activated as a warning device whenever the dose rate in the area exceeds or will shortly exceed 1 rem in 1 hour."

The changes are consistent with the guidance in Regulatory Guide 8.38, "Control of Access to High and Very High Radiation Areas in Nuclear Power Plants," and are acceptable.

(12) Technical Specification 6.8.4.1

The licensee has proposed to change the words "...areas conforming to 10 CFR Part 20, Appendix B, Table II, Column 2..." to read "...areas conforming to 10 times the concentration values stated in 10 CFR 20.1001-20.2401, Appendix B, Table 2, Column 2..."

The licensee has proposed this change in order to retain operational flexibility consistent with Appendix I to 10 CFR Part 50, concurrent with the implementation of the revised 10 CFR Part 20.

The current requirements for the content of the licensee's TS concerning radioactive effluents are contained in 10 CFR 50.36a. 10 CFR 50.36a requires licensees to maintain control over radioactive material in gaseous and liquid effluents to unrestricted areas, produced during normal reactor operations, to levels that are as low as reasonably achievable (ALARA). For power reactors, Appendix I to 10 CFR Part 50



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contains the numerical guidance to meet the ALARA requirement. The dose values specified in Appendix I of 10 CFR Part 50 are small percentages of the implicit limits in 10 CFR 20.106 and the explicit limits in 10 CFR 20.1301. As secondary controls, the instantaneous dose rates required by this TS were chosen by the staff to help maintain annual average releases of radioactive material in gaseous and liquid effluents to within the dose values specified in Appendix I of 10 CFR Part 50. For the purposes of this TS, 10 CFR Part 20 is used as a source of reference values only. These TS requirements allow operational flexibility, compatible with considerations of health and safety, which may temporarily result in release rates which, if continued for the calendar quarter, would result in radiation doses higher than specified in Appendix I of 10 CFR Part 50. However, these releases are within the implicit limits in 10 CFR 20.106 and the explicit limits in 10 CFR 20.1302 which references Appendix B, Table II concentrations. These referenced concentrations in the old 10 CFR Part 20 are specific values which relate to an annual dose of 500 mrem. The liquid effluent radioactive effluent concentration limits given in Appendix B, Table 2, Column 2 to 10 CFR 20.1001-20.2401 are based on an annual dose of 50 mrem total effective dose equivalent. Since an instantaneous release concentration corresponding to a dose rate of 500 mrem/year has been acceptable as a TS limit for liquid effluents, which applies at all times to assure that the values in Appendix I of 10 CFR Part 50 are not likely to be exceeded, it is not necessary to reduce this limit by a factor of ten.

The licensee states that operational history at Browns Ferry has demonstrated that the use of the concentration values associated with 10 CFR 20.106 as TS limits has resulted in calculated maximum individual doses to a member of the public that are small percentages of the values given in Appendix I to 10 CFR Part 50. Therefore, the use of effluent concentration values that are ten times those listed in Appendix B, Table 2, Column 2 to 10 CFR 20.1001-20.2401 will not have a negative impact on the ability to continue to operate within the design objectives in Appendix I to 10 CFR Part 50 and 40 CFR Part 190.

Based on the above, it is acceptable that the instantaneous limits associated with the liquid release rate TS are based on ten times the effluent concentration values given in Appendix B, Table 2, Column 2 to 10 CFR 20.1001-20.2401, to apply at all times.

(13) Technical Specification 6.8.4.1

The licensee has proposed to change the Part 20 section reference from "20.106" to "20.1302."

This change is administrative in nature to incorporate the corresponding revised 10 CFR Part 20 section number and is acceptable.



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(14) Technical Specification 6.8.4.1

The licensee has proposed to revise item g. of this TS which specifies the limitations on the concentrations of radioactive material released in gaseous effluents. The licensee has proposed that the TS be revised to read as follows:

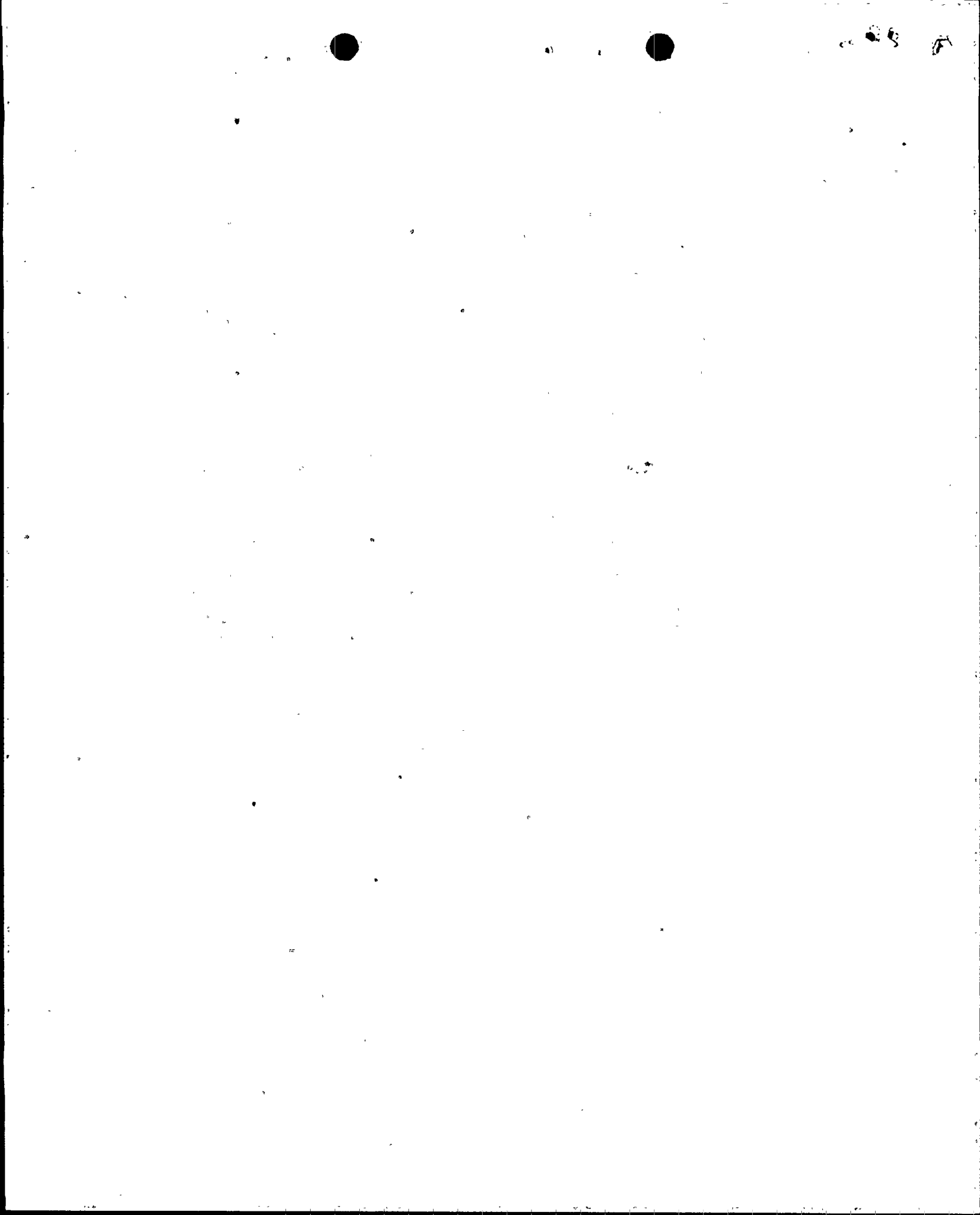
"Limitations on the dose rate resulting from radioactive material released in gaseous effluents from the site to areas at or beyond the SITE BOUNDARY shall be limited to the following:

1. For noble gas: less than or equal to a dose rate of 500 mrem/yr to the total body and less than or equal to a dose rate of 3000 mrem/yr to the skin, and
2. For Iodine-131, Iodine-133, tritium, and for all radionuclides in particulate form with half-lives greater than 8 days: less than or equal to a dose rate of 1500 mrem/yr to any organ."

The licensee has proposed this change in order to retain operational flexibility consistent with 10 CFR Part 50, Appendix I, concurrent with the implementation of the revised 10 CFR Part 20.

The current requirements for the content of the licensee's TS concerning radioactive effluents are contained in 10 CFR 50.36a. 10 CFR 50.36a requires licensees to maintain control over radioactive material in gaseous and liquid effluents to unrestricted areas, produced during normal reactor operations, to levels that are as low as reasonably achievable (ALARA). For power reactors, Appendix I to 10 CFR Part 50 contains the numerical guidance to meet the ALARA requirement. The dose values specified in Appendix I of 10 CFR Part 50 are small percentages of the implicit limits in 10 CFR 20.106 and the explicit limits in 10 CFR 20.1301. As secondary controls, the instantaneous dose rates required by this specification were chosen by the staff to help maintain annual average releases of radioactive material in gaseous and liquid effluents to within the dose values specified in Appendix I of 10 CFR Part 50. For purpose of the bases of this TS, 10 CFR Part 20 is used as a source of reference values only. These TS requirements allow operational flexibility, compatible with considerations of health and safety, which may temporarily result in release rates which, if continued for the calendar quarter, would result in radiation doses higher than specified in Appendix I of 10 CFR Part 50. However, these releases are within the limits specified in 10 CFR 20.106 (10 CFR 20.1302).

This specification, which is based on guidance contained in NUREG-0133, is acceptable as a TS limit for gaseous effluents, which applies at all times as an assurance that the values in Appendix I of 10 CFR Part 50 are not likely to be exceeded.



The licensee states that the use of the proposed TS will not have a negative impact on the ability to continue to operate within the design objectives in Appendix I of 10 CFR Part 50.

Based on the above, it is acceptable that the gaseous release rate TS for radioactive material be based on the stated dose rates.

(15) Technical Specification 6.9.1.2

The licensee has proposed to change the words "...utility and other personnel (including contractors)..." to read "...utility and other personnel (including contractors) for whom monitoring was required..."

This change is administrative in nature to clarify the applicability of the external dose monitoring program and is acceptable.

(16) Technical Specification 6.9.1.2

The licensee has proposed to change the words "...receiving exposures greater than 100 mrem/yr and their..." to read "...receiving annual deep dose equivalent exposures greater than 100 mrem and their..."

The change is administrative in nature to incorporate the corresponding revised 10 CFR Part 20 terminology and is acceptable.

(17) Technical Specification 6.9.1.2

The licensee has proposed to change the words "...may be estimated based on pocket dosimeter, TLD, or film badge measurements. Small exposures totaling less than 20%..." to read "...may be estimates based on measurements obtained with self reading dosimeter, TLD, or film badge. Small exposures totaling less than 20%..."

The changes are administrative in nature and are acceptable.

(18) Technical Specification 6.9.1.2

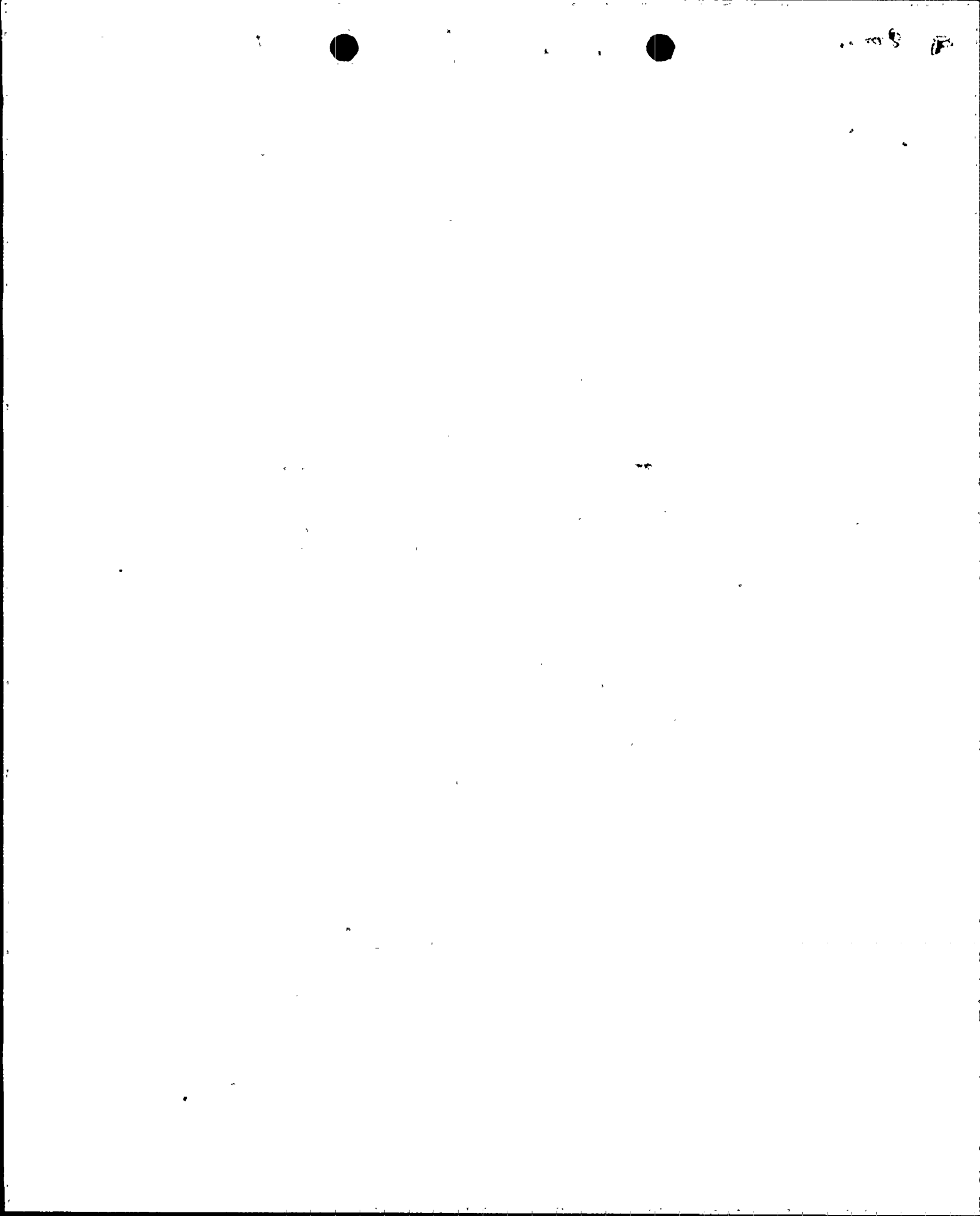
The licensee has proposed to change the words "...the aggregate, at least 80% of the total body dose..." to read "...the aggregate, at least 80% of the total deep dose equivalent exposure..."

The change is administrative in nature to incorporate the corresponding revised 10 CFR Part 20 terminology and is acceptable.

(19) Technical Specification 6.9.1.2

The licensee has proposed to change the Part 20 section reference from "20.407" to "20.2206."

This change is administrative in nature to incorporate the corresponding revised 10 CFR Part 20 section number and is acceptable.



(20) Technical Specification 6.10.1

The licensee has proposed to change the words "...Gaseous and liquid radioactive waste released to the environs..." to read "...Records of gaseous and liquid radioactive waste released to the environs, and the resulting calculated dose to individual members of the public..."

The change incorporates the requirements of 10 CFR 20.2107 that a licensee maintain records sufficient to demonstrate compliance with the dose limit for individual members of the public, and that the records be maintained for the duration of the operating license. The change is acceptable.

(21) Technical Specification 6.10.1

The licensee has proposed to change the words "...Radiation exposures for all plant personnel..." to read "...Radiation exposures of all plant personnel for whom monitoring was required..."

This change is administrative in nature to clarify the applicability of the external dose monitoring program and is acceptable.

(22) Technical Specification 6.12.1

The licensee has proposed to change the Part 20 section reference from "20.106" to "20.1302."

This change is administrative in nature to incorporate the corresponding revised 10 CFR Part 20 section number and is acceptable.

(23) ADMINISTRATIVE CONTROLS

The licensee has proposed to revise the page number for Technical Specification 6.8.4 from "6.0-23" to "6.0-23a."

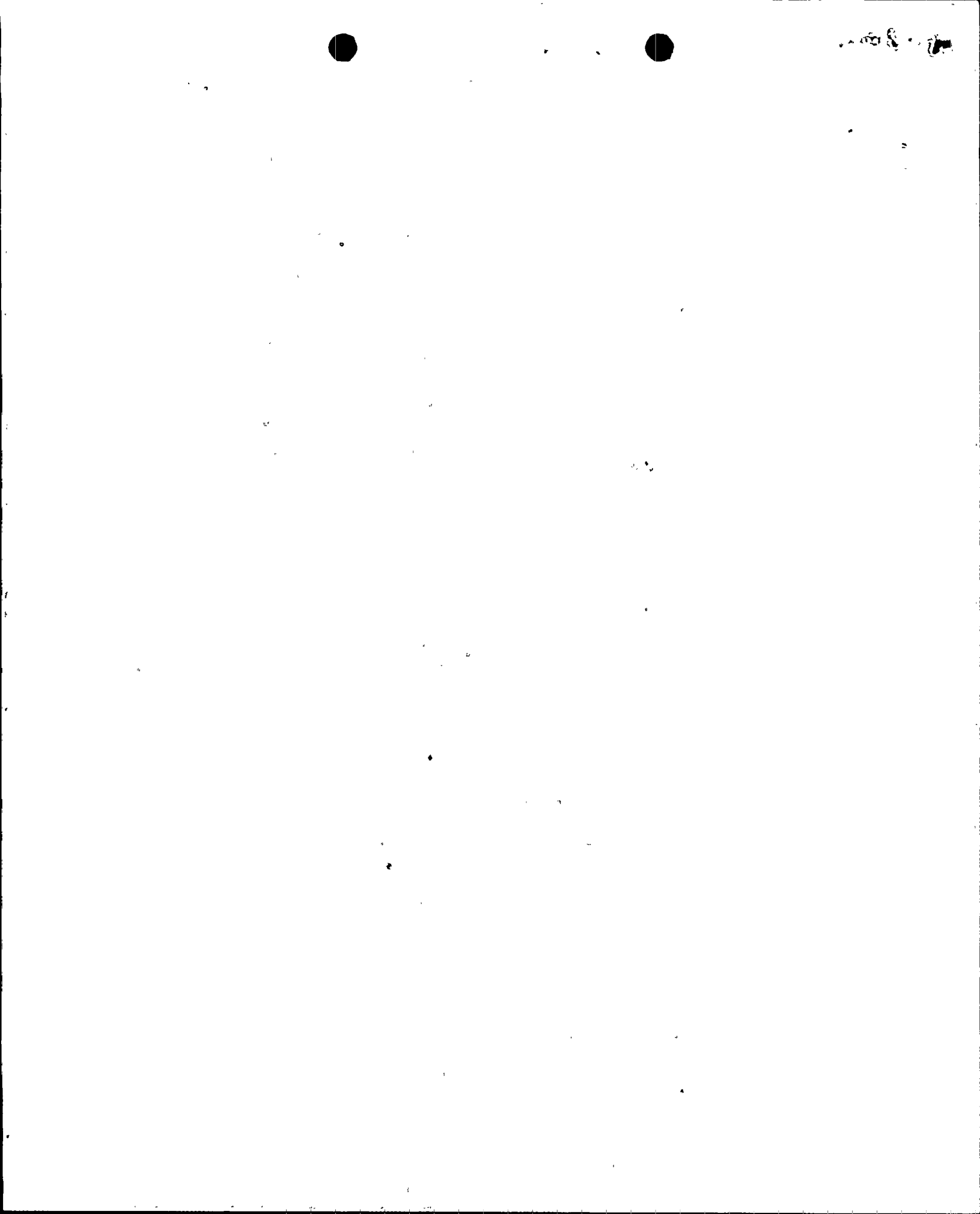
The change is administrative in nature and is acceptable.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Alabama State official was notified of the proposed issuance of the amendment. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change the surveillance requirements, or change recordkeeping, reporting, or administrative procedures or requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released



offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (58 FR 58203 on October 29, 1993). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) and (c)(10). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

5.0 CONCLUSION

The NRC staff has concluded, based on the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: Stephen Klementowicz and David Trimble

Date: December 2, 1993

