Attachment I to JPN-94-006

PROPOSED TECHNICAL SPECIFICATION CHANGE REVISION OF MAIN STEAM AIR EJECTOR LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

(JPTS-92-007)

New York Power Authority

JAMES A. FITZPATRICK NUCLEAR POWER PLANT
Docket No. 50-333
DPR-59

LIMITING CONDITIONS FOR OPERATION

3.5 MAIN CONDENSER STEAM JET AIR EJECTOR (SJAE)

Applicability

Applies to main condenser offgas discharge rate for noble gases when the reactor is in the run, startup/hot standby or hot shutdown mode of operation and the SJAE is in service.

Objective

To ensure that the SJAE release rates are maintained at a level compatible for further treatment and release.

Specifications

a. The gross radioactivity (beta and/or gamma) rate of noble gases measured at the SJAE is given on Table 3.10-1.

SURVEILLANCE REQUIREMENTS

3.5 MAIN CONDENSER STEAM JET AIR EJECTOR (SJAE)

Applicability

Applies to the point of discharge at the SJAE when the reactor is in the run, startup/hot standby or hot shutdown mode of operation and the SJAE is in service.

Objective

To ensure that the SJAE release rates are properly monitored.

Specifications

a. The gross radioactivity (beta and/or gamma) rate of noble gases from the SJAE shall be determined to be within the limits of Specification 3.5.a by performing an isotopic analysis of a representative sample of gases taken at the discharge (prior to dilution and/or discharge) of the SJAE, or at the recombiner discharge (prior to delay of the offgas to reduce the total radioactivity) as follows:

1. At least monthly.

2. With the SJAE Monitor reading at 5,000 μCi/sec or greater, within 4 hours following an increase of greater than 50% (after factoring out increases due to changes in thermal power level) in the nominal steady state fission gas release from the primary coolant

TABLE 3.10-1
RADIATION MONITORING SYSTEMS THAT INITIATE AND/OR ISOLATE SYSTEMS

Minimum No. of Operable Instrument Channels	Trip Function	Trip Level Setting	Total Number of Instrument Channels Provided by Design	Action
1(a)	Refuel Area Exhaust Monitor	(b)	2	(c) or (d)
1(a)	Reactor Building Area Exhaust Monitors	(b)	2	(d)
1(a)	SJAE Radiation Monitors	$\leq$500,000 μCi/sec	2	(e)
1(a)	Turbine Building Exhaust Monitors	(b)	2	(f)
1(a)	Radwaste Building Exhaust Monitors	(b)	2	(f)
1(a)	Main Control Room Ventilation	$\leq 4 \times 10^3$ cpm[i]	1	(g)
(h)	Mechanical Vacuum Pump Isolation	$\leq$3 x Normal Full Power Background	4	(h)

NOTES FOR TABLE 3.10-1

(a) Whenever the systems are required to be operable, there shall be one operable or tripped instrument channel per system. From and after the time it is found that this cannot be met, the indicated action shall be taken.

(b) Trip level setting is in accordance with the methods and procedures of the ODCM.

(c) Cease operation of the refueling equipment.

(d) Isolate secondary containment and start the SBGTS.

(e) Bring the SJAE release rate below the trip level within 72 hours or isolate either the SJAE or all main steam lines within the next 12 hours.

(f) Refer to Appendix B, LCO 3.1.d.

(g) Control room isolation is manually initiated.

(h) Uses same sensors as primary containment isolation on high main steam line radiation. Refer to Appendix A Table 3.2-1 for minimum number of operable instrument channels and action required.

(i) Conversion factor is 8.15×10^7 cpm - 1 μCi/cc.

Amendment No. ~~93, 127~~,

3.0 GASEOUS EFFLUENTS

3.1 GASEOUS EFFLUENT MONITORS

The radioactive gaseous effluent instrumentation is provided to monitor and control the releases of radioactive materials in gaseous effluents during planned or unplanned releases. The alarm/trip set points for these instruments shall be calculated in accordance with methods in the ODCM to ensure that the alarm/trip will occur prior to exceeding the limits of 10 CFR 20.

The operability and use of this instrumentation is consistent with the requirements of 10 CFR 50, Appendix A, General Design Criteria 60, 63 and 64.

3.2 GASEOUS DOSE RATES

This specification is provided to ensure that the dose at or beyond the site boundary from gaseous effluents will be within the annual dose limits of 10 CFR 20. The annual dose limits are the doses associated with the concentrations of 10 CFR 20, Appendix B, Table II, Column 1. These limits provide reasonable assurance that radioactive material discharges in gaseous effluents will not result in the exposure of a member of the public to annual average concentrations exceeding the limits specified in 10 CFR 20, Appendix B, Table II (10 CFR 20.106[b]). The specified limits restrict, at all times, corresponding gamma and beta dose rates above background to an individual at or beyond the exclusion area boundary to $\leq$500 mrem/year to the total body or to $\leq$3000 mrem/year to the skin. These limits also restrict the corresponding thyroid dose rate above background to a child via the inhalation pathway to $\leq$1500 mrem/year.

3.3 AIR DOSE, NOBLE GASES

This specification is provided to assure that the requirements of 10 CFR 50, Appendix I, Section II.B, III.A and IV.A are met. The Limiting Conditions for Operation are the guides set forth in Appendix I, Section II.B. The specification provides the required operating flexibility and, at the same time, implements the guides set forth in Appendix I, Section IV.A, to assure that the releases of radioactive material in gaseous effluents will be kept "as low as is reasonably achievable."

3.4 DOSE DUE TO IODINE-131, IODINE-133, TRITIUM AND RADIONUCLIDES IN PARTICULATE FORM

This specification is provided to assure that the requirements of 10 CFR 50, Appendix I, Section II.C, III.A and IV.A are met. The Limiting Conditions for Operation are the guides set forth in Appendix I, Section II.C. The specifications provide the required operating flexibility and, at the same time, implement the guides set forth in Appendix I, Section IV.A, to assure that the releases of radioactive materials in gaseous effluents will be kept "as low as is reasonably achievable."

3.5 MAIN CONDENSER STEAM JET AIR EJECTOR (SJAE)

This specification is provided to assure that remedial action is taken to limit the noble gas release rate at the SJAE. The requirement provides reasonable assurance that the amount of noble gas that must be treated and/or released is controlled to a level that prevents exceeding the limits specified in 10 CFR 20, Appendix B, Table II.

Two air ejector offgas monitors are provided and when their trip point is reached, cause an isolation of the air ejector offgas line. Isolation is initiated when both instruments reach their high trip point or one has an upscale trip and the other a downscale trip. There is a 15 minute delay before the air ejector offgas isolation valve is closed. This delay is accounted for by the 30 minute holdup time of the offgas before it is released to the stack. Both instruments are required for trip but the instruments are so designed that any instrument failure gives a downscale trip.

With the air ejector offgas monitors at 5,000 μCi/sec or greater, a measured increase in radioactivity of greater than 50% (after correcting for expected increases due to changes in thermal power) will also require the performance of an isotopic analysis within 4 hours after the increase is noted. This ensures that the increase is not indicative of a sustained increase in the radioactivity rate as a result of fuel failure. This is in addition to the normal 31 day grab sample surveillance requirement for monitoring reactor coolant activity levels for fuel failure. The 31 day frequency is adequate in view of other instrumentation that continuously monitor the offgas, and is acceptable, based on operating experience.

The 5,000 μCi/sec threshold level is an administrative control to reduce the number of unnecessary grab samples and analyses. This value is approximately 1 percent of the SJAE monitoring trip level setting of $\leq$500,000 μCi/sec. Calculated site boundary annual radiation exposures at the alarm setpoint remain within the 10 CFR 50, Appendix I guidelines.

3.6 OFFGAS TREATMENT SYSTEM

This specification is provided to ensure that the system will be available for use when required to reduce projected doses due to gaseous releases. This specification assures that the requirements of 10 CFR 50.36a, 10 CFR 50, Appendix A, General Design Criterion 60, and design objective in 10 CFR 50, Appendix I, Section II.D are met. The specified limits governing the use of appropriate portions of the systems are specified as a suitable fraction of the guide values set forth in 10 CFR 50, Appendix I, Sections II.B and II.C, for gaseous effluents.

The requirement for offgas treatment system operability provides assurance that the release of radioactive materials in gaseous waste will be kept "as low as is reasonably achievable." Operability of the system is based upon start-up of the second turbine driven feedwater pump. This is due to the fact that excess air in-leakages in the main condenser as a result of operating only one turbine driven feedwater pump will exceed offgas treatment system limitations and consequently render the system inoperable. Start-up of the second turbine driven feedwater pump will decrease air in-leakages and assure offgas treatment system availability.

3.7 OFFGAS TREATMENT SYSTEM EXPLOSIVE GAS MIXTURE INSTRUMENTATION

This specification is provided to ensure that the concentration of potentially explosive gas mixtures contained in portions of the offgas treatment system not designed to withstand a hydrogen explosion is maintained below the lower explosive limit of hydrogen. Operation of the offgas recombiner system ensures that the concentration of hydrogen in the offgas charcoal filters remains below combustible levels.

Thus it provides assurance that the releases of radioactive materials will be controlled in conformance with the requirements of 10 CFR 50, Appendix A, General Design Criterion 60. The low steam flow trip point is based on 92% of design steam flow and reroutes the offgas to prevent overheating or ignition of the recombiner catalyst. The high steam flow trip point isolates the recombiner on excess steam flow that may be associated with a pipe break downstream of the recombiner.

3.8 STANDBY GAS TREATMENT SYSTEM (SBGTS)

Four radiation monitors are provided which initiate isolation of the reactor building and operating of the SBGTS. The monitors are located as follows: two in the reactor building ventilation exhaust duct and two in refuel floor ventilation exhaust duct. Each pair is considered a separate system. The trip logic consists of any upscale trip on a single monitor or a downscale trip on both monitors in a pair to cause the desired action.

Trip settings for the monitors in the refueling area ventilation exhaust ducts are based upon initiating normal ventilation isolation and SBGTS operation so that most of the activity released during the refueling accident is processed by the SBGTS.

The radiation monitors in the refueling area ventilation duct which initiate building isolation and standby gas treatment operation are arranged in a one out of two logic system. The bases given in Appendix A Bases 4.2 for the rod blocks apply here also and were used to arrive at the functional testing frequency. The air ejector offgas monitors are connected in a two out of two logic arrangement. Based on experience with instruments of similar design, a testing interval of once every three months has been found adequate.

3.9 MECHANICAL VACUUM PUMP ISOLATION

3.10 MAIN CONTROL ROOM VENTILATION RADIATION MONITOR

SAFETY EVALUATION FOR PROPOSED TECHNICAL SPECIFICATION CHANGES MAIN CONDENSER STEAM AIR EJECTOR SURVEILLANCE REQUIREMENT (JPTS-92-007)

I. DESCRIPTION OF THE PROPOSED CHANGES

This application for an amendment to the James A. FitzPatrick Radiological Effluent Technical Specifications (RETS) proposes to revise the limiting conditions for operation (LCO), surveillance requirements, and bases section for the main condenser steam jet air ejectors (SJAE).

The proposed changes also correct a typographical error in the section title which has no other affect on the content of the Technical Specifications and no associated safety implications.

Minor changes in format, such as type font, margins or hyphenation, are not described in this submittal. These changes are typographical in nature and do not affect the content of the Technical Specifications.

Page 28 of the RETS, Limiting Conditions for Operation 3.5

Revise the applicability section of this specification by appending the following words:

> "when the reactor is in the run, startup/hot standby or hot shutdown mode of operation and the SJAE is in service."

Page 28 of the RETS, Surveillance Requirement 3.5

Replace the word "Ejectors" with the word "Ejector" in the title of Surveillance Requirement 3.5.

Revise the applicability section of this specification by appending the following words:

> "when the reactor is in the run, startup/hot standby or hot shutdown mode of operation and the SJAE is in service."

Revise Surveillance Requirement 3.5.a.2 by replacing the phrase:

> "Within 4 hours following an increase as indicated by the SJAE Monitor,"

with

> "With the SJAE Monitor reading at 5,000 μCi/sec or greater, within 4 hours following an increase."

Page 37 of the RETS, Table 3.10-1

Revise note "(e)" to read:

> "Bring the SJAE release rate below the trip level within 72 hours or isolate either the SJAE or all main steam lines within the next 12 hours."

Page 40 of the RETS, Bases Section 3.4

Move the remainder of Bases Section 3.4 from page 41 to the bottom of this page and append.

Page 41 of the RETS, Bases Section 3.5

At the end of this Bases section, add the following:

> "With the air ejector offgas monitors at 5,000 μCi/sec or greater, a measured increase in radioactivity of greater than 50% (after correcting for expected increases due to changes in thermal power) will also require the performance of an isotopic analysis within 4 hours after the increase is noted. This ensures that the increase is not indicative of a sustained increase in the radioactivity rate as a result of fuel failure. This is in addition to the normal 31 day grab sample surveillance requirement for monitoring reactor coolant activity levels for fuel failure. The 31 day frequency is adequate in view of other instrumentation that continuously monitor the offgas, and is acceptable, based on operating experience.
>
> The 5,000 μCi/sec threshold level is an administrative control to reduce the number of unnecessary grab samples and analyses. This value is approximately 1 percent of the SJAE monitoring trip level setting of ≤500,000 μCi/sec. Calculated site boundary annual radiation exposures at the alarm setpoint remain within the 10 CFR 50, Appendix I guidelines."

Page 41 of the RETS, Bases Section 3.7

Move the contents of Bases Section 3.7 to page 42.

II. PURPOSE OF THE PROPOSED CHANGES

The proposed changes correct a typographical error, clarify the modes of operation during which the SJAE LCOs and surveillance requirements are applicable, revise the action required upon entering a SJAE LCO, and establish a threshold level below which there will be no requirement to perform grab samples and isotopic analyses of

SJAE effluent. The proposed changes are based on information provided in the Standard Technical Specifications (STS) (Reference 1).

LCO and Surveillance Requirement Applicability

The existing applicability sections of the LCO and surveillance requirements for the main condenser steam jet air ejector do not identify the operating modes in which the Technical Specifications are applicable. The proposed changes correct this omission by adopting the applicability requirements used in the STS.

The STS stipulate that these requirements apply when the reactor is in the run, startup/hot standby, or hot shutdown modes of operation. It is during these modes that main steam is being directed to the main condenser and the non-condensible gases are processed through the main condenser offgas system. When there is no steam flow through the main condenser (i.e., during cold shutdown or refueling modes) these requirements are not applicable.

Revision of LCO Action Requirement

The current required action specified by the LCO is to correct the SJAE radiological release rate within 72 hours or be in hot standby within the following 12 hours. However, bringing the reactor to hot standby does not prevent the release of radioactive gases since the main steam isolation valves, main steam line drains and the SJAEs may still operate allowing the release of gases to the environment. To address this concern, the proposed changes adopt the the applicable STS action statement which requires isolation of either all main steam lines or the SJAEs, within 12 hours.

Clarification of Grab Sample/Isotopic Analysis Frequency

The current SJAE surveillance requirements specify a four hour action time for performing an offgas sample and analysis when the process radiation monitor indicates an increased release rate of >50% after correction for changes in thermal power level. The purpose of this requirement is to assure that fuel failures are detected. However, when the levels of radioactivity are small (i.e., 5,000 μCi/sec or less), an increase of >50% in release rate can not be readily identified. The proposed change adds a threshold detection level of 5,000 μCi/sec that will not result in significant offsite radiological doses while providing for indication of failed fuel. Since the normal release rate from the SJAE at full steady-state power levels is approximately 10,000 μCi/sec, the proposed change will eliminate grab samples and isotopic analyses that are excessive and unnecessary without reducing the operators ability to detect failed fuel.

III. SAFETY IMPLICATIONS OF THE PROPOSED CHANGES

The function of the Main Condenser Offgas System is to control and reduce gaseous radwaste emissions. During plant operation, air from condenser in-leakage and non-condensible gases from steam are collected in the main condenser which is then exhausted through the SJAEs to the main condenser offgas system. This system uses a catalytic recombiner to recombine dissociated hydrogen and oxygen. The gaseous mixture is cooled and condensible gases are removed by the offgas condenser and moisture separator. The radioactivity of the remaining non-condensible gaseous mixture (i.e., the offgas recombiner effluent) is monitored downstream of the moisture separator prior to entering the holdup line and release to the environment. Operation of the SJAEs is required whenever there is steam flow through the main condenser, except during startup when mechanical vacuum pumps provide the initial vacuum until reactor steam is available. The safety implications of the specific changes are discussed below.

LCO and Surveillance Requirement Applicability

By specifying the modes of operation during which the LCOs and surveillance requirements are applicable, these changes clarify the Technical Specifications. There are no adverse safety implications associated with this change.

Revision of LCO Action Requirement

Revising the required actions of Note "(e)" to isolate either the SJAEs or all main steam isolation valves requires the operators to take active measures to prevent the release of radioactive effluents to the environment. The isolation of potential radiological effluent pathways provides an added benefit over the current requirement of merely attaining hot standby conditions.

Clarification of Grab Sample/Isotopic Analysis Frequency

The present surveillance requirement requires a grab sample once per month or within 4 hours after a >50% increase in the nominal steady state fission gas release, after factoring out increases due to changes in reactor power level. The purpose of this requirement is to assure that such an increase does not indicate a radioactive material release from failed fuel.

At low levels of radioactivity, the current surveillance requirement is met by taking frequent grab samples (i.e., three times a week) to verify that increases in radioactivity greater than 50%, after factoring out power increases, have not occurred. This is necessary because the sensitivity of the detectors is insufficient in detecting variations in activity at low levels. Performance of these grab samples results in additional occupational exposure without any significant safety benefit.

To reduce the number of unnecessary grab samples, an administrative control (i.e., threshold level) is proposed to determine when to perform a grab sample and analysis. This threshold level below which the surveillance requirement would not be applied would allow the intent of the Surveillance Requirement to be met without requiring the performance of grab samples and analyses for increases in which offsite radiological doses are insignificant. This threshold value is 1% of the SJAE monitoring trip level setting of $\leq$500,000 μCi/sec and less then 10% of the SJAE instrument alarm value. Calculated site boundary annual radiation exposures at the alarm value (Reference 2) remain within the 10 CFR 50, Appendix I guidelines. Therefore, using 5,000 μCi/sec for a threshold level will reduce the number of unnecessary grab samples and analyses with no potential for approaching the offsite release limits.

Clarifying Surveillance Requirement 3.5.a.2 to apply the surveillance requirement above a threshold level (i.e., 5,000 μCi/sec.), when a sufficient amount of radioactivity is available to provide for accurate monitoring and a meaningful analysis, will not have any adverse safety implications. SJAE monitor readings below 5,000 μCi/sec indicates that the primary coolant has insignificant radioactivity. The relevant radionuclides concentrations are not high enough to indicate gradual increases in fuel failure on the installed instrumentation. In addition, the proposed threshold level would not preclude the monitoring system from indicating any substantial increase of radioactive material in the primary coolant. The amount of activity released from a failed fuel pin gas gap (Reference 3) is higher than the proposed SJAE monitoring threshold level of 5,000 μCi/sec and would be detected.

The relocation of Bases Sections 3.4 and 3.7 text to accommodate the additional information of Bases Section 3.5 associated with the change to the Surveillance Requirement has no safety implications. Relocation of text in this manner does not alter the intent or contents of the material being moved.

IV. EVALUATION OF SIGNIFICANT HAZARDS CONSIDERATION

Operation of the FitzPatrick plant in accordance with the proposed Amendment would not involve a significant hazards consideration as defined in 10 CFR 50.92, since it would not:

1. involve a significant increase in the probability or consequences of an accident previously evaluated.

   The proposed amendment revision involves no hardware changes, no changes to the operation of any systems or components and no changes to structures. The changes clarify the Technical Specifications by specifying the modes of operation during which the LCOs and Surveillance Requirements of Specification 3.5 are applicable. The changes also include specific guidance for the operators to prevent or minimize the release of radioactive gases to the environment. These changes can not cause an increase in the probability of, nor alter the consequences of, an accident previously evaluated.

The establishment of a threshold below which grab samples are not required will alter procedures (Reference 4) by allowing SJAE operation without grab samples to determine effluent content at low levels of radioactivity (i.e., <5,000 μCi/sec). This will not affect the monitoring system's ability to detect, alarm, and isolate the offgas system if the concentration of radioactive material in the effluence reaches the appropriate setpoint.

The surveillance requirement for taking a grab sample after a >50% increase in release rate is intended to assist operators in determining if there is any increase in fuel failure during steady state operations. This would assure that routine operational limits are maintained. The grab samples do not provide any automatic protective function (e.g., MSIV or Offgas System isolation) for mitigating an accident but provide radionuclide concentration data.

The performance of SJAE effluent grab samples is not credited towards detecting nor mitigating any design basis accidents since spontaneous fuel failure is not a FSAR accident initiator but a consequence of an accident. Therefore, the use of a 5,000 μCi/sec threshold, which is approximately 1% of the trip setpoint, would not alter the consequences or probabilities of established accident scenarios.

2. create the possibility of a new or different kind of accident from those previously evaluated.

   The proposed changes provide improved clarity concerning applicability of the specifications and specific guidance for preventing/mitigating the release of radioactive gases to the environment. The proposed changes also provide guidance for limiting the number of unnecessary grab samples.

   These changes do not affect the manner in which the main condenser steam jet air ejector is operated. The proposed changes to the Technical Specifications reflect either established plant practice (i.e., applicable modes or mitigation procedures) or new surveillance guidelines to minimize unnecessary grab samples. In all cases, the proposed changes have no affect on any parameters which would be considered or used in an accident analysis. The changes, therefore, do not pose a safety issue different from those analyzed previously for the FSAR.

3. involve a significant reduction in the margin of safety.

   The proposed changes to the Technical Specifications will not alter the intent of the surveillance requirement to monitor for the possibility of fuel failure. Considering the difference between the proposed threshold value and the current alarm setpoint, a reduction in grab samples during plant operation with low concentrations of radioactivity in the primary coolant will not affect any plant safety margins.

V. IMPLEMENTATION OF THE PROPOSED CHANGES

Implementation of the proposed changes will not adversely affect the ALARA or Fire Protection Program at the FitzPatrick plant, nor will the changes impact the environment. These changes will not result in any new releases to the environment since there are no hardware, structural, or operational changes. For these same reasons, the changes pose no radiological or fire hazards. The changes do not alter the goals or intent of the relevant LCO's or Surveillance Requirements.

VI. CONCLUSION

The changes, as proposed, do not constitute an unreviewed safety question as defined in 10 CFR 50.59. That is, they:

1. will not increase the probability nor the consequences of an accident or malfunction of equipment important to safety as previously evaluated in the Safety Analysis Report;

2. will not create the possibility of an accident or malfunction of a type different from any previously evaluated in the Safety Analysis Report; and

3. will not reduce the margin of safety as defined in the basis for any technical specification.

The changes involve no significant hazards consideration, as defined in 10 CFR 50.92.

VII. REFERENCES

1. NUREG-1433, "Standard Technical Specifications General Electric Plants BWR/4," Revision 0, dated September 1992.

2. James A. FitzPatrick Nuclear Power Plant Radiological Calculation JAF-CALC-RAD-00001, "Impact of Offgas High Flow Rate on FSAR Radiological Evaluations," Revision 0, dated May 7, 1991.

3. James A. FitzPatrick Nuclear Power Plant Radiological Calculation JAF-CALC-RAD-00008, "Radiological Consequences of Design Basis Accidents at James A. FitzPatrick," Revision 0, dated November 27, 1991.

4. James A. FitzPatrick Nuclear Power Plant Process Surveillance Procedure, PSP-23, "Steam Jet Air Ejector and Recombiner Sampling and Analysis," Revision 6, dated June 8, 1992.

5. James A. FitzPatrick Nuclear Power Plant Updated Final Safety Analysis Report Sections 10.4.3.1 "Main Condenser Air Removal System" and 11.4 "Gaseous Radioactive Waste System," through Revision 5, dated January 1992.

6. James A. FitzPatrick Nuclear Power Plant Safety Evaluation Report (SER), dated November 20, 1972, and Supplements.

Attachment III to JPN-94-006

PROPOSED TECHNICAL SPECIFICATION CHANGE
REVISION OF MAIN STEAM AIR EJECTOR
LIMITING CONDITIONS FOR OPERATION AND
SURVEILLANCE REQUIREMENTS

MARK-UP OF EXISTING TECHNICAL SPECIFICATION PAGES

(JPTS-92-007)

New York Power Authority

JAMES A. FITZPATRICK NUCLEAR POWER PLANT
Docket No. 50-333
DPR-59

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
3.5 MAIN CONDENSER STEAM JET AIR EJECTOR (SJAE)	**3.5 MAIN CONDENSER STEAM JET AIR EJECTORS (SJAE)**
Applicability	**Applicability**
Applies to main condenser offgas discharge rate for noble gases, when the reactor is in the run, startup/hot standby or hot shutdown mode of operation and the SJAE is in service.	**Applies to the point of discharge at the SJAE.**
Objective	**Objective**
To ensure that the SJAE release rates are maintained at a level compatible for further treatment and release.	**To ensure that the SJAE release rates are properly monitored.**
Specifications	**Specifications**
a. The gross radioactivity (beta and/or gamma) rate of noble gases measured at the SJAE is given on Table 3.18-1.	**a. The gross radioactivity (beta and/or gamma) rate of noble gases from the SJAE shall be determined to be within the limits of Specification 3.5.a by performing an isotopic analysis of a representative sample of gases taken at the discharge (prior to dilution and/or discharge) of the SJAE, or at the recombiner discharge (prior to delay of the offgas to reduce the total radioactivity) as follows:**
	1. At least monthly.
	2. Within 4 hours following an increase as indicated by the SJAE Monitor, of greater than 50% (after factoring out increases due to changes in thermal power level) in the nominal steady state fission gas release from the primary coolant.

replace with insert "A"

TABLE 3.10-1

RADIATION MONITORING SYSTEMS THAT INITIATE AND/OR ISOLATE SYSTEMS

Minimum No. of Operable Instrument Channels	Trip Function	Trip Level Setting	Total Number of Instrument Channels Provided by Design	Action
1(a)	Refuel Area Exhaust Monitor	(b)	2	(c) or (d)
1(a)	Reactor Building Area Exhaust Monitors	(b)	2	(d)
1(a)	SJAE Radiation Monitors	≤500,000 μCi/sec	2	(e)
1(a)	Turbine Building Exhaust Monitors	(b)	2	(f)
1(a)	Radwaste Building Exhaust Monitors	(b)	2	(f)
1(a)	Main Control Room Ventilation	≤4 x 10^9 cpm(i)	1	(g)
(h)	Mechanical Vacuum Pump Isolation	≤3 x Normal Full Power Background	4	(h)

NOTES FOR TABLE 3.10-1

(a) Whenever the systems are required to be operable, there shall be one operable or tripped instrument channel per system. From and after the time it is found that this cannot be met, the indicated action shall be taken.

(b) Trip level setting is in accordance with the methods and procedures of the ODCM.

(c) Cease operation of the refueling equipment.

(d) Isolate secondary containment and start the SBGTS.

(e) Bring the SJAE release rate within the limit within 72 hours or be in hot standby within the next 12 hours.
* below the trip level
* isolate either the SJAE or all main steam lines within

(f) Refer to Appendix B LCO 3.1.d.

(g) Control room isolation is manually initiated.

(h) Uses same sensors as primary containment isolation on high main steam line radiation. Refer to Appendix A Table 3.2-1 for minimum number of operable instrument channels and action required.

(i) Conversion factor is 8.15 x 10^7 cpm - 1 μCi/cc.

Amendment No. 94 127

3.0 GASEOUS EFFLUENTS

3.1 GASEOUS EFFLUENT MONITORS

The radioactive gaseous effluent instrumentation is provided to monitor and control the releases of radioactive materials in gaseous effluents during planned or unplanned releases. The alarm/trip set points for these instruments shall be calculated in accordance with methods in the ODCM to ensure that the alarm/trip will occur prior to exceeding the limits of 10 CFR 20.

The operability and use of this instrumentation is consistent with the requirements of 10 CFR 50, Appendix A, General Design Criteria 60, 63 and 64.

3.2 GASEOUS DOSE RATES

This specification is provided to ensure that the dose at or beyond the site boundary from gaseous effluents will be within the annual dose limits of 10 CFR 20. The annual dose limits are the doses associated with the concentrations of 10 CFR 20, Appendix B, Table II, Column 1. These limits provide reasonable assurance that radioactive material discharges in gaseous effluents will not result in the exposure of a member of the public to annual average concentrations exceeding the limits specified in 10 CFR 20, Appendix B, Table II (10 CFR 20.106[b]). The specified limits restrict, at all times, corresponding gamma and beta dose rates above background to an individual at or beyond the exclusion area boundary to ≤500 mrem/year to the total body or to ≤3000 mrem/year to the skin. These limits also restrict the corresponding thyroid dose rate above background to a child via the inhalation pathway to ≤1500 mrem/year.

3.3 AIR DOSE, NOBLE GASES

This specification is provided to assure that the requirements of 10 CFR 50, Appendix I, Section II.B, III.A and IV.A are met. The Limiting Conditions for Operation are the guides set forth in Appendix I, Section II.B. The specification provides the required operating flexibility and, at the same time, implements the guides set forth in Appendix I, Section IV.A, to assure that the releases of radioactive material in gaseous effluents will be kept "as low as is reasonably achievable."

3.4 DOSE DUE TO IODINE-131, IODINE-133, TRITIUM AND RADIONUCLIDES IN PARTICULATE FORM

This specification is provided to assure that the requirements of 10 CFR 50, Appendix I, Section II.C, III.A and IV.A are met. The Limiting Conditions for Operation are the guides set forth in Appendix I, Section II.C. The specifications provide the required operating flexibility and, at the same time, implement the guides set forth in Appendix I, Section

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relocate to page 40 → IV.A, to assure that the releases of radioactive materials in gaseous effluents will be kept "as low as is reasonably achievable."

3.5 MAIN CONDENSER STEAM JET AIR EJECTOR (SJAE)

This specification is provided to assure that remedial action is taken to limit the noble gas release rate at the SJAE. The requirement provides reasonable assurance that the amount of noble gas that must be treated and/or released is controlled to a level that prevents exceeding the limits specified in 10 CFR 20, Appendix B, Table II.

Two air ejector offgas monitors are provided and when their trip point is reached, cause an isolation of the air ejector offgas line. Isolation is initiated when both instruments reach their high trip point or one has an upscale trip and the other a downscale trip. There is a 15 minute delay before the air ejector offgas isolation valve is closed. This delay is accounted for by the 30 minute holdup time of the offgas before it is released to the stack. Both instruments are required for trip but the instruments are so designed that any instrument failure gives a downscale trip.

Insert "B" →

3.6 OFFGAS TREATMENT SYSTEM

This specification is provided to ensure that the system will be available for use when required to reduce projected doses due to gaseous releases. This specification assures that the requirements of 10 CFR 50.36a, 10 CFR 50, Appendix A, General Design Criterion 60, and design objective in 10 CFR 50, Appendix I, Section II.D are met. The specified limits governing the use of appropriate portions of the systems are specified as a suitable fraction of the guide values set forth in 10 CFR 50, Appendix I, Sections II.B and II.C, for gaseous effluents.

The requirement for offgas treatment system operability provides assurance that the release of radioactive materials in gaseous waste will be kept "as low as is reasonably achievable." Operability of the system is based upon start-up of the second turbine driven feedwater pump. This is due to the fact that excess air in-leakages in the main condenser as a result of operating only one turbine driven feedwater pump will exceed offgas treatment system limitations and consequently render the system inoperable. Start-up of the second turbine driven feedwater pump will decrease air in-leakages and assure offgas treatment system availability.

3.7 OFFGAS TREATMENT SYSTEM EXPLOSIVE GAS MIXTURE INSTRUMENTATION

relocate to page 42 →

This specification is provided to ensure that the concentration of potentially explosive gas mixtures contained in portions of the offgas treatment system not designed to withstand a hydrogen explosion is maintained below the lower explosive limit of hydrogen. Operation of the offgas recombiner system ensures that the concentration of hydrogen in the offgas charcoal filters remains below combustible levels.

insert from page 41

Thus it provides assurance that the releases of radioactive materials will be controlled in conformance with the requirements of 10 CFR 50, Appendix A, General Design Criterion 60. The low steam flow trip point is based on 82% of design steam flow and reroutes the offgas to prevent overheating or ignition of the recombiner catalyst. The high steam flow trip point isolates the recombiner on excess steam flow that may be associated with a pipe break downstream of the recombiner.

3.8 STANDBY GAS TREATMENT SYSTEM (SBGTS)

Four radiation monitors are provided which initiate isolation of the reactor building and operating of the SBGTS. The monitors are located as follows: two in the reactor building ventilation exhaust duct and two in refuel floor ventilation exhaust duct. Each pair is considered a separate system. The trip logic consists of any upscale trip on a single monitor or a downscale trip on both monitors in a pair to cause the desired action.

Trip settings for the monitors in the refueling area ventilation exhaust ducts are based upon initiating normal ventilation isolation and SBGTS operation so that most of the activity released during the refueling accident is processed by the SBGTS.

The radiation monitors in the refueling area ventilation duct which initiate building isolation and standby gas treatment operation are arranged in a one out of two logic system. The bases given in Appendix A Bases 4.2 for the rod blocks apply here also and were used to arrive at the functional testing frequency. The air ejector offgas monitors are connected in a two out of two logic arrangement. Based on experience with instruments of similar design, a testing interval of once every three months has been found adequate.

3.9 MECHANICAL VACUUM PUMP ISOLATION

3.10 MAIN CONTROL ROOM VENTILATION RADIATION MONITOR

INSERT "A"

"With the SJAE Monitor reading at 5,000 μCi/sec or greater, within 4 hours following an increase"

INSERT "B"

"With the air ejector offgas monitors at 5,000 μCi/sec or greater, a measured increase in radioactivity of greater than 50% (after correcting for expected increases due to changes in thermal power) will also require the performance of an isotopic analysis within 4 hours after the increase is noted. This ensures that the increase is not indicative of a sustained increase in the radioactivity rate as a result of fuel failure. This is in addition to the normal 31 day grab sample surveillance requirement for monitoring reactor coolant activity levels for fuel failure. The 31 day frequency is adequate in view of other instrumentation that continuously monitor the offgas, and is acceptable, based on operating experience.

The 5,000 μCi/sec threshold level is an administrative control to reduce the number of unnecessary grab samples and analyses. This value is approximately 1 percent of the SJAE monitoring trip level setting of $\leq$500,000 μCi/sec. Calculated site boundary annual radiation exposures at the alarm setpoint remain within the 10 CFR 50, Appendix I guidelines."