I. TECHNICAL SPECIFICATION CHANGE REQUEST (TSCR) No. 156 (REV. 1)

The Licensee requests that the following page changes be made to the existing Technical Specifications using the attached revised pages:

a. Replace the following pages:

ii, iv, 3-62c, 3-62d, Pages 3-104, 3-105, 3-105a, 4-55d, 4-55e, 4-94, 4-95, 4-106, 4-107, 4-109, 5-10, Fig. 5-3

b. Add the following pages which are new:

3-62e, 3-62f, 4-55f, and 4-55g

TSCR 156 (Rev. 1) supersedes the previous TSCR 156 in its entirety.

II. REASON FOR CHANGE

TSCR 156 incorporates changes which are needed in order to comply with a condition of operation imposed by the Licensing Board as described in NRC's letter dated October 2, 1985 (Item 1.C). TSCR 156 (Rev. 1) incorporates NRC's comments from its review of TSCR 156.

III. SAFETY EVALUATION JUSTIFYING CHANGE

The Fuel Handling Building (FHB) ESF Air Treatment System contains, controls, mitigates, monitors and records radiation release resulting from a TMI-1 postulated spent fuel accident in the FHB as described in FSAR, Section 14.2.2.1, Update 4, 7/85. The design of this system is described in GPUN's submittal to NRC dated March 27, 1986 (5211-86-2047).

This TSCR incorporates specifications for the new FHB ESF Air Treatment System, modifies the specifications for the Auxiliary and Fuel Handling Building Air Treatment System, includes editorial changes to improve clarity, and administrative changes in order to adopt the test requirements of later standards. These changes are justified as described in greater detail as follows:

1) Sections 3.15.4 and 4.12.4 have been added to provide additional technical specifications for the FHB ESF Air Treatment System. The existing Sections 3.15.3 and 4.12.3 for the Auxiliary and Fuel Handling Building Air Treatment System and the Bases have been modified to reflect the addition of the new system.

   The FHB ESF Air Treatment System is required to be operable and operating whenever irradiated fuel is being moved within the FHB to protect against an accident involving the handling of irradiated fuel in the FHB. Design, construction, operation, and testing of the new system will be in accordance with Regulatory Guide 1.52, Revision 2, 1978, as discussed in GPUN's submittal to the NRC dated March 27, 1986. Revisions to commitments contained in that submittal are as follows:

a. A requirement for performing surveillance tests at least once per 18 months is not included in this proposed specification. This exception to Regulatory Guide 1.52, Revision 2, 1978 is justified as discussed in ERDA 76-21, Section 3.4.2. The FHB ESF Air Treatment System is not a continuously on-line system. The expected service of this system approaches that of a stand by system.

b. Since Specification 4.12.4 includes requirements to operate each train for at least 10 hours each month, requirements to operate the FHB ESF Air Treatment System for 2 hours prior to movement of irradiated fuel have not been included in this proposed specification as was discussed in the March 27, 1986 submittal to the NRC. Regulatory Guide 1.52, Revision 2, 1978 does not require the system to operate for two hours before declaring the system operable. Therefore, this change in commitments does not represent an exception to Regulatory Guide 1.52.

The Auxiliary and FHB Air Treatment System is required to be operable at all times during power operation for accident mitigation as described in FSAR Chapter 14 and in order to ensure that doses to radiation workers and releases to offsite during power operation are filtered and maintained As Low As Reasonably Achievable (ALARA). With the addition of the new ESF System, the Auxiliary and FHB Air Treatment System will not be required to mitigate the off-site dose consequences of a fuel handling accident in the FHB. Therefore, the Auxiliary and FHB Air Treatment System will not be required to be operable in order to move irradiated TMI-1 fuel in the FHB. Although not required by Technical Specifications, the Auxiliary and FHB Air Treatment System will be operated as necessary during movement of TMI-1 irradiated fuel in the FHB in order to minimize worker doses and ensure habitability of the Auxiliary Building and the Fuel Handling Building.

The proposed changes to Specification 3.15.3.1 require that both sets of exhaust fans and 4 banks of filters be operable at all times during power operation. The proposed changes to Specification 3.15.3.3 require that the redundant set of exhaust fans be verified in operation if one set of exhaust fans becomes inoperable and that a special report be submitted to the NRC if the Auxiliary and FHB Air Treatment System (both sets of exhaust fans) becomes inoperable during power operation and operability is not restored within 7 days.

The current Specification 3.15.3.1 requires that both sets of exhaust fans and 4 filters be operable when fuel handling operations are in progress and irradiated fuel is in the storage pool. The current Specification 3.15.3.1 does not require operability at all times during power operation. Operability requirements during movement of irradiated fuel are being removed from the Auxiliary and FHB Air Treatment System and are being placed on the new ESF System as part of this proposed Amendment. The proposed changes to

Specification 3.15.3.1 provide additional operability requirements for the Auxiliary and Fuel Handling Building Air Treatment System during power operation in order to supplement the requirement of Specification 3.22.2.4 which is applicable to 10 CFR 50, Appendix I requirements for gaseous releases (ALARA). These additional operability requirements are intended to provide added assurance that the Auxiliary and Fuel Handling Building Air Treatment System would be available for iodine removal when needed in order to mitigate the maximum hypothetical accident (FSAR Section 14.2.2.5) or a waste gas tank rupture (FSAR Section 14.2.2.6). Since the Auxiliary and Fuel Handling Building Air Treatment System serves only to remove iodines which are conservatively assumed to be present during these events, and since appreciable amounts of iodine would only be available for release during power operation, these additional requirements for operability of the Auxiliary and Fuel Handling Building Air Treatment System during power operation to supplement the requirements of Specification 3.22.2.4 are adequate to mitigate the effects of accidents analyzed in the FSAR.

The proposed Specification 3.15.3.3 requiring that the redundant set of exhaust fans be verified operating if one set of exhaust fans becomes inoperable and requiring a special report be sent to the NRC if both sets of exhaust fans become inoperable for greater than 7 days during power operation imposes an additional requirement. Therefore, the proposed changes to Specification 3.15.3.1 and 3.15.3.3 do not represent a relaxation of requirements considering that the requirements for operability during movement of irradiated TMI-1 fuel in the FHB are included in the proposed Specifications for the new FHB ESF Air Treatment System. Instead, the proposed Specifications represent equal or greater operability requirements for the Auxiliary and Fuel Handling Building Air Treatment System considering the shift in operability requirements to the new ESF System which are also included in this proposed Amendment.

2) Specification 3.15.3.2.b has been revised to specify a 30°C test temperature for laboratory carbon sample analysis radioactive methyl iodide decontamination efficiency tests of the Auxiliary and Fuel Handling Building Air Treatment System charcoal filters. This is consistent with the more conservative test temperature for the same test specified in 3.15.4.2.b for the Fuel Handling Building ESF Air Treatment System.

3) Specification 4.12.3 has been revised to delete the 18 month maximum frequency for performing surveillance tests. Under normal circumstances at present, this change would not result in less frequent testing. However, if this change were to result in testing less frequently, the justification to exceed 18 months is backed up by GPUN operational experience with this system. Actual results has demonstrated that very little degradation of the system's methyl iodide removal efficiency has resulted even after approximately 5 years of continuous use. Therefore, tests and analyses once per refueling interval are adequate to detect degradation of the filters.

4) Specification 4.12.3.2.d has been deleted. A new Specification 4.12.4.3 requires that each filter train of the FHB ESF Air Treatment System be operated at least 10 hours each month in accordance with Regulatory Guide (R.G.) 1.52, Revision 2, 1978. The Auxiliary and FHB Air Treatment System is not required to meet R.G. 1.52. This requirement is not included in R.G. 1.140. Therefore, deletion of the requirement to operate the Auxiliary and FHB Air Treatment System at least 10 hours each month is justified.

5) Figure 5.3 has been revised to add the new release point associated with the FHB ESF Vent Stack. The FHB ESF Air Treatment System effluent will be released at a new location in close proximity to the main stack. The effluent will be released at an elevation of 348' which is adequate since no credit has been taken in the analysis for elevated releases. The use of a separate release point for the FHB ESF Air Treatment System, where effluent monitoring is optimized for the flow conditions of the new system, enhances the ability to monitor effluents and assess dose rates. The FHB ESF Air Treatment System with its separate release point will not degrade the capabilities of the Auxiliary and FHB Air Treatment System and the environmental effects will be less.

6) Tables 3.21-2, "Radioactive Gaseous Process and Effluent Monitoring Instrumentation" and 4.21-2, "Radioactive Gaseous Effluent Monitoring Instrumentation Surveillance Requirements" have been revised to specify Operability and Surveillance Requirements for the FHB ESF Air Treatment System instrumentation provided.

   Table 4.22-2, "Radioactive Gaseous Waste Sampling and Analysis Program" has been revised to specify sampling and analysis requirements for the new FHB ESF Air Treatment System. Since the FHB ESF Air Treatment System will only be operated during movement of irradiated TMI-1 fuel in the FHB, Quarterly Composite Particulate Sampling is not applicable.

7) Statements have been provided in the Bases for Sections 4.12.3 and 4.12.4 to reflect use of ANSI-N510-1980 guidelines for in-plant test criteria and laboratory test criteria of activated charcoal and ANSI-N509-1980 for qualification of replacement HEPA and charcoal filters. This is to allow use of the newer standards in lieu of the earlier 1975 and 1976 standards which are referenced in Regulatory Guide 1.52, Revision 2, March 1978.

8) Footnotes on page 3-62c and 4-55d were only applicable prior to Cycle 5 criticality and have been deleted. The reference to Specification 3.5.1 contained in Table 3.21-2, ACTION 27 applies only to RM-A9, and a clarification to this effect has been added within the reference statement. The order of entries in Table 4.22-2 has been rearranged to improve clarity. Appropriate FSAR references have been added to the bases sections. And other editorial changes and corrections have been made to improve the clarity of the specifications affected by this proposed amendment.

Operation in accordance with this proposed amendment is adequate to meet the conditions assumed in the plant's safety analysis and comply with the condition of operation imposed by the Licensing Board as described in the NRC's letter dated October 2, 1985 (Item 1.c).

IV. NO SIGNIFICANT HAZARDS CONSIDERATIONS

GPU Nuclear Corporation has determined that this TSCR poses no significant hazards as defined by NRC regulations in 10 CFR 50.92. This ensures that operation of the facility in accordance with the proposed amendment would not:

1) involve a significant increase in the probability or consequences of an accident previously evaluated (10 CFR 50.92(c)(1)). The design basis accident for the FHB ESF Air Treatment System is a fuel drop accident. Operation of this system and that of the Auxiliary and Fuel Handling Building Air Treatment System in accordance with this proposed amendment does not interfere with the fuel handling operations and does not increase the probability of the accident. The new system adds filtration redundancy, does not reduce filtration capacity, and therefore does not increase the consequences of an accident.

2) create the possibility of a new or different kind of accident from any accident previously evaluated (10 CFR 50.92(c)(2)). The FHB ESF Air Treatment System is similar in design features and configuration to other such systems. Therefore, operation in accordance with this proposed amendment does not create new or different risks from those evaluated.

3) involve a significant reduction in a margin of safety (10 CFR 50.92(c)(3)). To the contrary, the proposed changes provide an increased margin of safety by providing a separate ESF Air Treatment System.

The Commission has provided guidelines pertaining to the application of the Three Standards by listing specific examples in 48 FR 14870. The proposed amendment is considered to be in the same category as the following examples of amendments that are considered not likely to involve significant hazards consideration:

(i) A purely administrative change to achieve consistency, correction of an error, or a change in nomenclature.

(ii) A change that constitutes an additional limitation, restriction, or control not presently included in the technical specifications.

(v) Upon satisfactory completion of construction in connection with an operating facility, a relief granted from an operating restriction that was imposed because the construction was not yet completed satisfactorily.

This proposed amendment: provides additional requirements for operation and test of the new FHB ESF Air Treatment System which is adequate to protect against accidents involving the handling of irradiated fuel in the FHB; reduces some of the requirements for the Auxiliary and FHB Air Treatment System which is no longer required to protect against this type of accident while retaining those requirements of the Auxiliary and FHB Air Treatment System necessary to ensure that doses to radiation workers on site and releases during normal power operation are maintained As Low As Reasonably Achievable (ALARA); and includes administrative or editorial changes for clarity. As described above, the Three Standards of 10 CFR 50.92(c) are satisfied.

In summary, GPU Nuclear Corporation has determined and submits that these proposed changes do not represent any significant hazards.

V. IMPLEMENTATION

It is requested that the amendment authorizing this change become effective immediately with full implementation 90 days after receipt in order to allow for the final surveillance procedures to be put in place. Prior to moving irradiated TMI-1 fuel for the 6R Outage, all required procedures will be implemented with the exception of the surveillance procedures. All surveillance requirements may be met for 6R using startup procedures. This system needs to be in operation to support the next refueling outage, scheduled for November, 1986.

VI. AMENDMENT FEE (10 CFR 170.21)

Pursuant to the provisions of 10 CFR 170.21, a check for $150.00 was included with GPUN's submittal of TSCR 156. Therefore, an application is not required for this submittal.

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3.15.3 AUXILIARY AND FUEL HANDLING BUILDING AIR TREATMENT SYSTEM

Applicability

Applies to the Auxiliary and Fuel Handling Building Air Treatment System.

Objective

To specify the minimum availability and efficiency for the Auxiliary and Fuel Handling Building Air Treatment System.

Specification

3.15.3.1 The Auxiliary and Fuel Handling Building Air Treatment System including both pairs of exhaust fans (AH-E14A, B, C, and D) and 4 banks of exhaust filters (AH-F2A, B, C, and D) shall be operable at all times during power operation, except as provided in 3.15.3.3.

3.15.3.2 The Auxiliary and Fuel Handling Building Air Treatment System is operable when its surveillance requirements are met and:

a. The results of the in-place DOP and halogenated hydrocarbon tests at design flows on HEPA filters and charcoal adsorber banks shall show <0.05% DOP penetration and <0.05% halogenated hydrocarbon penetration, except that the DOP test will be conducted with prefilters installed.

b. The results of laboratory carbon sample analysis shall show >90% radioactive methyl iodide decontamination efficiency when tested at 30°C, 95% R.H.

c. Each set of fans AH-E-14 A & C and AH-E-14 B & D shall each be shown to operate within ± 11,881 CFM of design flow (118,810 CFM).

3.15.3.3 a. With one pair of Auxiliary and Fuel Handling Building Air Treatment System exhaust fans (AH-E14A and C or AH-E14B and D) inoperable, verify that the redundant pair of exhaust fans is in operation and discharging through its HEPA filters and charcoal adsorbers within 8 hours, except as provided in 3.15.3.3.b.

b. From the date that the Auxiliary and Fuel Handling Building Air Treatment System becomes inoperable for any reason during power operation, the system (at least one pair of exhaust fans discharging through its HEPA filters and charcoal adsorbers) must be restored to operable condition within 7 days. If the system is not restored to operable within 7 days, prepare and submit a special report to the NRC within the next 30 days outlining the actions taken to restore operability and the plans and schedules for restoring the system to operable status.

Bases

The Auxiliary and Fuel Handling Building Air Treatment System is considered to be the 4 banks of exhaust filters (AH-F2A, B, C, and D) and the two sets of redundant exhaust fans (AH-E-14A and C or AH-E14B and D) which take the exhaust air from both the Auxiliary Building and the Fuel Handling Building and discharge it to the Auxiliary and Fuel Handling building exhaust stack. Exhaust air passes through all of the exhaust filters (AH-F2A, B, C, and D) prior to being discharged to the stack whenever either set of AH-E14 exhaust fans is in operation.

High efficiency particulate absolute (HEPA) filters are installed before the charcoal adsorbers to prevent clogging of the iodine adsorbers for all emergency air treatment systems. The charcoal adsorbers are installed to reduce the potential release of radioiodine to the environment.

If the efficiencies of the HEPA filters and charcoal adsorbers are as specified, the resulting doses will be less than the 10 CFR 100 guidelines for the accidents analyzed in Chapter 14 of the FSAR, which assumes 90% efficiency. Mitigation of Fuel Handling Accidents is provided by the Fuel Handling Building ESF Air Treatment System and does not depend on the operation of the Auxiliary and Fuel Handling Building Air Treatment System. The Auxiliary and Fuel Handling Building Air Treatment System is isolated by automatic damper actuation in the event of increasing activity in the Fuel Handling Building as sensed by radiation monitors.

References

(1) FSAR Section 9.8
(2) FSAR Figure 9.8-4
(3) FSAR Section 14.2.2.5
(4) FSAR Section 14.2.2.6

3.15.4 Fuel Handling Building ESF Air Treatment System

Applicability

Applies to the Fuel Handling Building (FHB) ESF Air Treatment System and its associated filters.

Objective

To specify minimum availability and efficiency for the FHB ESF Air Treatment System and its associated filters for irradiated fuel handling operations.

Specifications

3.15.4.1 Prior to fuel movement each refueling outage, two trains shall be operable. One train shall be operating continuously whenever TMI-1 irradiated fuel handling operations in the FHB are in progress.

a. With one train inoperable, irradiated fuel handling operations in the Fuel Handling Building may continue provided the redundant train is operating.

b. With both trains inoperable, handling of irradiated fuel in the Fuel Handling Building shall be suspended until such time that at least one train is operable and operating. Any fuel assembly movement in progress may be completed.

3.15.4.2 A FHB ESF Air Treatment System train is operable when its surveillance requirements are met and:

a. The results of the in-place DOP and halogenated hydrocarbon tests at design flows on HEPA filters and carbon adsorber banks shall show <0.05% DOP penetration and <0.05% halogenated hydrocarbon penetration.

b. The results of laboratory carbon sample analysis shall show >90% radioactive methyl iodide decontamination efficiency when tested at 30°C, 95% R.H.

c. The fans AH-E-137A and B shall each be shown to operate within ±10% of design flow (6,000 SCFM).

Bases

Compliance with these specifications satisfies the condition of operation imposed by the Licensing Board as described in NRC's letter dated October 2, 1985, item 1.c.

The FHB ESF Air Treatment System contains, controls, mitigates, monitors and records radiation release resulting from a TMI-1 postulated spent fuel accident in the Fuel Handling Building as described in the FSAR. Offsite doses will be less than the 10 CFR 100 guidelines for accidents analyzed in Chapter 14.

Bases (Cont'd.)

Normal operation of the FHB ESF Air Treatment System will be during TMI-1 irradiated fuel movements in the Fuel Handling Building. The system includes air filtration and exhaust capacity to ensure that any radioactive release to atmosphere will be filtered and monitored. Effluent radiation monitoring and sampling capability are provided.

References

(1) Updated FSAR, Section 14.2.2.1

TABLE 3.21-2 (Continued)

RADIOACTIVE GASEOUS PROCESS AND EFFLUENT MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABILITY	ACTION
5. Auxiliary and Fuel Handling Building Air Treatment System			
a. Noble Gas Activity Monitor (RM-A8) or (RM-A4 and RM-A6)	1	*	27
b. Iodine Sampler (RM-A8) or (RM-A4 and RM-A6)	1	*	31
c. Particulate Sampler (RM-A8) or (RM-A4 and RM-A6)	1	*	31
d. Effluent System Flow	1	*	26
e. Sampler Flow Rate Monitor	1	*	26
6. Fuel Handling Building ESF Air Treatment System			
a. Noble Gas Activity Monitor (RM-A14 or Suitable Equivalent)	1(2)	****	27, 33
b. Iodine Cartridge	N/A(3)	****	31, 33
c. Particulate Filter	N/A(3)	****	31, 33
d. Effluent System Flow (UR-1104A/B)	1	****	26, 33
e. Sampler Flow Rate Monitor	1	****	26, 33

NOTE 2: Until the beginning of the 7R refueling outage, a suitable equivalent OPERABLE channel may be defined for item 6.a of this specification and specification 4.21.2 (Table 4.21-2, item 6.a) as a system capable of alerting the Control Room by alarm or voice communication and capable of measuring the full range of normal and calculated accident releases for existing plant conditions.

NOTE 3: No instrumentation channel is provided. However, for determining operability, the equipment named must be installed and functional or the ACTION applies.

TABLE 3.21-2
(Continued)

TABLE NOTATION

*At all times
**During waste gas holdup system operation.
***Operability is not required when discharges are positively controlled through the closure of WDG-V47, and RM-A8 and FT-151 are operable.
****During Fuel Handling Building ESF Air Treatment System Operation.

ACTION 25 With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, the contents of the tank may be released to the environment for up to 14 days provided that prior to initiating the release:

1. At least two independent samples of the tank's contents are analyzed, and

2. At least two technically qualified members of the Unit staff independently verify the release rate calculations and verify the discharge valve lineup.

3. The Operations and Maintenance Director, Unit 1 shall approve each release.

Otherwise, suspend release of radioactive effluent via this pathway.

ACTION 26 With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 28 days provided the flow rate is estimated at least once per 4 hours.

ACTION 27 With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 28 days provided grab samples are taken at least once per 8 hours and these samples are analyzed for gross activity within 24 hours. (For RM-A9 only, see also Specification 3.5.1, Table 3.5-1, Item C.3.f).

ACTION 30 1. With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, a grab sample shall be collected and analyzed for the inoperable gas channel(s) at least once per 24 hours. With both channels inoperable, a grab sample shall be collected and analyzed for the inoperable gas channel(s).

(a) at least once per 4 hours during degassing operations.

(b) at least once per 24 hours during other operations (e.g. Feed and Bleed).

TABLE 3.21-2
(Continued)

TABLE NOTATION

ACTION 30 (CONTINUED)

2. If the inoperable gas channel(s) is not restored to service within 14 days, a special report shall be submitted to the Regional Administrator of the NRC Region I Office and a copy to the Director, Office of Inspection and Enforcement within 30 days of declaring the channel(s) inoperable. The report shall describe (a) the cause of the monitor inoperability, (b) action being taken to restore the instrument to service, and (c) action to be taken to prevent recurrence.

ACTION 31

With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 28 days, provided that within four hours after the channel has been declared inoperable, samples are continuously collected with auxiliary sampling equipment.

ACTION 32

With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 28 days, provided that one OPERABLE channel remains in service or is placed in service within one hour. After 28 days, or if one OPERABLE channel does not remain in service or is not placed in service within one hour, the provisions of 3.0.1 apply.

ACTION 33

With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, either restore the inoperable channel to OPERABLE status within 7 days, or prepare and submit a special report within 30 days outlining the action(s) taken, the cause of the inoperability, and plans and schedule for restoring the system to OPERABLE status.

Amendment Nos. ~~72~~, ~~103~~, 104

4.12.3 AUXILIARY AND FUEL HANDLING BUILDING AIR TREATMENT SYSTEM

Applicability

Applies to the Auxiliary and Fuel Handling Building Air Treatment System and associated components.

Objective

To verify that this system and associated components will be able to perform its design function.

Specification

4.12.3.1 At least once per refueling interval:

a. The pressure drop across the combined HEPA filter and adsorber banks shall be demonstrated to be less than 6 inches of water at system design flow rate (±10%).

b. The tests and sample analysis required by Specification 3.15.3.2 shall be performed.

4.12.3.2 Testing necessary to demonstrate operability shall be performed as follows:

a. The tests and sample analysis required by Specification 3.15.3.2 shall be performed following significant painting, steam, fire, or chemical release in any ventilation zone communicating with the system that could contaminate the HEPA filters or charcoal adsorbers.

b. DPO testing shall be performed after each complete or partial replacement of a HEPA filter bank or after any structural maintenance on the system housing that could affect the HEPA filter bank bypass leakage.

c. Halogenated hydrocarbon testing shall be performed after each complete or partial replacement of a charcoal adsorber bank or after any structural maintenance on the AH-F2A, B, C, or D housing that could affect charcoal adsorber bank bypass leakage.

4.12.3.3 An air distribution test shall be performed on the HEPA filter bank after any maintenance or testing that could affect the air distribution within the system. The air distribution across the HEPA filter bank shall be uniform within ±20%. The test shall be performed at 118,810 cfm (±10% flow rate).

Bases

Pressure drop across the combined HEPA filters and charcoal adsorbers of less than 6 inches of water at the system design flow rate will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter. Pressure drop should be determined at least once every refueling interval to show system performance capability.

Tests and sample analysis assure that the HEPA filters and charcoal adsorbers can perform as evaluated. The charcoal adsorber efficiency test procedures should allow for the removal of one adsorber tray, emptying of one bed from the tray, mixing the adsorbent thoroughly and obtaining at least two samples. Each sample should be at least two inches in diameter and a length equal to the thickness of the bed. The in-place test criteria and laboratory test criteria for activated charcoal will meet the guidelines of ANSI-N510-1980. If test results are unacceptable, all adsorbent in the system should be replaced with an adsorbent qualified according to Regulatory Guide 1.52, March 1978 or ANSI-N509-1980. Any HEPA filters found defective should be replaced with filters qualified according to Regulatory Guide 1.52, March 1978 or ANSI-N509-1980.

If significant painting, steam, fire, or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from the fumes, chemicals or foreign material, the same tests and sample analysis shall be performed as required for operational use. The determination of what is significant shall be made by the TMI-1 Operations & Maintenance Director.

4.12.4 FUEL HANDLING BUILDING ESF AIR TREATMENT SYSTEM

Applicability

Applies to Fuel Handling Building (FHB) ESF Air Treatment System and associated components.

Objective

To verify that this sytem and associated components will be able to perform its design functions.

Specification:

4.12.4.1 Each refueling interval prior to movement of irradiated fuel:

a. The pressure drop across the entire filtration unit shall be demonstrated to be less than 7.0 inches of water at 6,000 cfm flow rate (±10%).

b. The tests and sample analysis required by Specification 3.15.4.2 shall be performed.

4.12.4.2 Testing necessary to demonstrate operability shall be performed as follows:

a. The tests and sample analysis required by Specification 3.15.4.2 shall be performed following significant painting, steam, fire, or chemical release in any ventilation zone communicating with the system that could contaminate the HEPA filters or charcoal adsorbers.

b. DOP testing shall be performed after each complete or partial replacement of a HEPA filter bank, and after any structural maintenance on the system housing that could affect the HEPA filter bank bypass leakage.

c. Halogenated hydrocarbon testing shall be performed after each complete or partial replacement of a charcoal adsorber bank, and after any structural maintenance on the system housing that could affect charcoal adsorber bank bypass leakage.

4.12.4.3 Each filter train shall be operated at least 10 hours every month.

4.12.4.4 An air flow distribution test shall be performed on the HEPA filter bank initially and after any maintenance or testing that could affect the air flow distribution within the system. The distribution across the HEPA filter bank shall be uniform within ±20%. The test shall be performed at 6,000 cfm ± 10% flow rate.

Bases

The FHB ESF Air Treatment System is a system which is normally kept in a "standby" operating status. Tests and sample analysis assure that the HEPA filters and charcoal adsorbers can perform as evaluated. The charcoal adsorber efficiency test procedure should allow for the removal of a sample from one adsorber test cannister. Each sample should be at least two inches in diameter and a length equal to the thickness of the bed. The in-place test criteria and laboratory test criteria for activated charcoal will meet the guidelines of ANSI-N510-1980. If test results are unacceptable, all adsorbent in the system shall be replaced with an adsorbent qualified in accordance with ANSI-N509-1980. Any HEPA filters found defective will be replaced with filters qualified in accordance with ANSI-N509-1980.

Pressure drop across the entire filtration unit of less than 7.0 inches of water at the system design flow rate will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter.

Operation of the system for 10 hours every month will demonstrate operability of the filters and adsorber system and remove excessive moisture buildup on the adsorbers and HEPA filters.

If significant painting, steam, fire, or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from the fumes, chemicals or foreign material, the same tests and sample analysis shall be performed as required for operational movement of irradiated fuel . The determination of what is significant shall be made by the TMI-1 Operations & Maintenance Director.

TABLE 4.21-2 (continued)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL TEST	APPLICABILITY
5. Auxiliary and Fuel Handling Building Air Treatment System					
a. Noble Gas Activity Monitor (RM-A8) or (RM-A4 and RM-A6)	D	M	R(3)	Q(1)	*
b. Iodine Sampler (RM-A8) or (RM-A4 and RM-A6)	W	N/A	N/A	N/A	*
c. Particulate Sampler (RM-A8) or (RM-A4 and RM-A6)	W	N/A	N/A	N/A	*
d. System Effluent Flow Rate Measurement Devices	D	N/A	R	Q	*
e. Sampler Flow Rate	D	N/A	R	Q	*
6. Fuel Handling Building ESF Air Treatment System					
a. Noble Gas Activity Monitor (RM-A14)	D	M	R(3)	Q(2)	****
b. System Effluent Flow Rate (UR-1104 A/B)	D	N/A	R	Q	****
c. Sampler Flow Rate Measurement Device	D	N/A	R	Q	****

TABLE 4.21-2 (Continued)

TABLE NOTATION

* At all times.
** During waste gas holdup system operation.
*** Operability is not required when discharges are positively controlled through the closure of WDG-V47, and RM-A8 and FT-151 are operable.
**** During Fuel Handling Building ESF Air Treatment System Operation.

(1) The CHANNEL TEST shall also demonstrate that automatic isolation of this pathway for the Auxiliary and Fuel Handling Building Air Treatment System, the supply ventilation is isolated and control room alarm annunciation occurs if the following condition exists:

1. Instrument indicates measured levels above the high alarm/trip setpoint. (Includes circuit failure)

2. Instrument indicates a down scale failure. (Alarm function only) (Includes circuit failure)

3. Instrument controls moved from the operate mode. (Alarm function only)

(2) The CHANNEL TEST shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exist:

1. Instrument indicates measured levels above the alarm setpoint. (includes circuit failure)

2. Instrument indicates a down scale failure (Includes circuit failure)

3. Instrument controls moved from the operate mode.

(3) The initial CHANNEL CALIBRATION for radioactivity measurement instrumentation shall be performed using one or more of the reference standards certified by the National Bureau of Standards or using standards that have been obtained from suppliers that participate in measurement assurance activities with NBS. These standards should permit calibrating the system over its intended range of energy and measurement range. For subsequent CHANNEL CALIBRATION, sources that have been related to the initial calibration should be used. (Operating plants may substitute previously established calibration procedures for this requirement.)

(4) The CHANNEL CALIBRATION shall include the use of standard gas samples containing a nominal:

1. One volume percent hydrogen, balance nitrogen, and

2. Four volume percent hydrogen, balance nitrogen.

TABLE 4.22-2

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM

Gaseous Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) (uCi/ml)[a]
A. Waste Gas Storage Tank	P Each Tank Grab Sample	P Each Tank	Principal Gamma Emitters [g]	1×10^{-4}
B. Containment Purge	P Each Purge [b] Grab Sample	P Each Purge [b]	H-3 Principal Gamma Emitters [g]	1×10^{-6} 1×10^{-4}
C. Auxiliary and Fuel Handling Building Air Treatment System	M[c,e] Grab Sample	M	H-3 Principal Gamma Emitters [g]	1×10^{-6} 1×10^{-4}
D. Fuel Handling Building ESF Air Treatment System	M (during system operation) Grab Sample	M (during system operation)	H-3 Principal Gamma Emitters [g]	1×10^{-6} 1×10^{-4}
E. Condenser Vacuum Pumps Exhaust [h]	M[b,h] Grab Sample	M[b,h]	H-3 Principal Gamma Emitters [g]	1×10^{-6} 1×10^{-4}

TABLE 4.22-2 (Continued)

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM

Gaseous Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) (uCi/ml) [a]
F. All Release Types as Listed Above in A, B, C and D (during System Operation)	Continuous [f]	W[d] Charcoal Sample	I-131 I-133	1×10^{-12} 1×10^{-10}
	Continuous [f]	W[d] Particulate	Principle Gamma Emitters [g] (I-131, Others)	1×10^{-11}
	Continuous [f,i]	Q Composite Particulate Sample	Gross Alpha	1×10^{-11}
	Continuous [f,i]	Q Composite Particulate Sample	Sr-89, Sr-90	1×10^{-11}

TABLE 4.22-2 (Continued)

d. Samples shall be changed at least once per 7 days and analyses shall be completed within 48 hours after changing (or after removal from sampler).

e. Tritium grab samples shall be taken weekly from the ventilation exhaust from the spent fuel pool area whenever spent fuel is in the spent fuel pool.

f. The ratio of the sample flow rate to the sampled stream flow rate shall be known for the time period covered by each dose or dose rate calculation made in accordance with Specifications 3.22.2.1, 3.22.2.2, and 3.22.2.3.

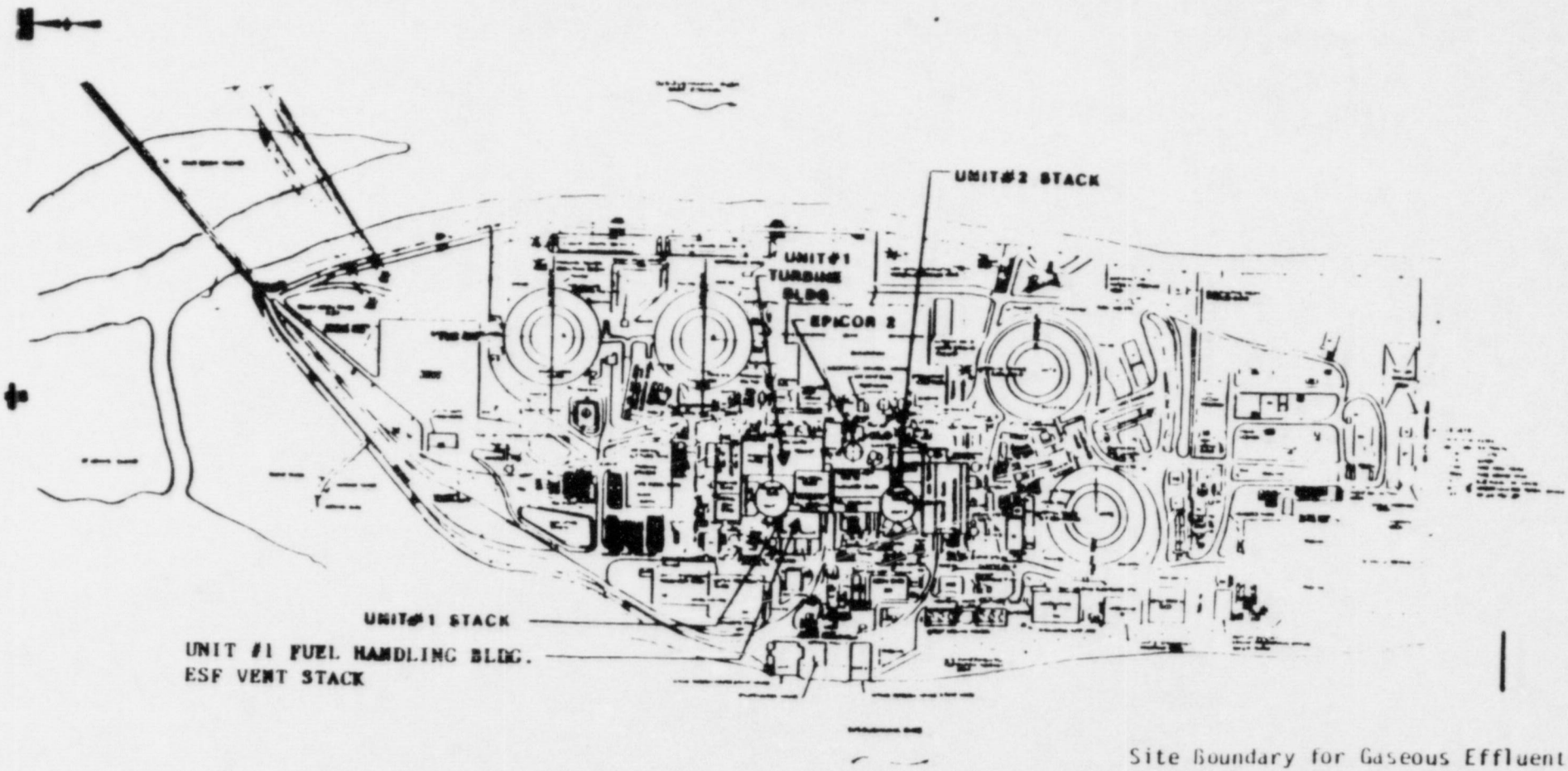
g. The principal gamma emitters for which the LLD specification applies exclusively are the following radionuclides: Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135 and Xe-138 for gaseous emmissions and Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-137, Ce-141 and Ce-144 for particulate emissions. This list does not mean that only these nuclides are to be detected and reported. Other peaks which are measureable and identifiable, together with the above nuclides, shall also be identified and reported. Nuclides which are below the LLD for the analyses shall be reported as "less than" the nuclide's LLD, and shall not be reported as being present at the LLD level for that nuclide. The "less than" values shall not be used in the required dose calculations.

h. Applicable only when condenser vacuum is established. Sampling and analyses shall be performed within 4 hours following each shutdown, startup or thermal power level change exceeding 15% of Rated Thermal Power in one hour.

i. Gross Alpha, Sr-89, and Sr-90 analyses do not apply to the Fuel Handling Building ESF Air Treatment System.

ELEVATIONS FOR GASEOUS EFFLUENT RELEASE POINTS

Unit 1 Stack	483' 7"
Unit 1 Turbine Building	425' 4"
Unit 2 Stack	483' 0"
Epicor II	359' 6"
Unit 1 Fuel Handling Building ESF Vent Stack	348'



Site Boundary for Gaseous Effluents

Figure 5-3