

METROPOLITAN EDISON COMPANY
JERSEY CENTRAL POWER & LIGHT COMPANY

AND

PENNSYLVANIA ELECTRIC COMPANY

THREE MILE ISLAND NUCLEAR STATION UNIT 1

Operating License No. DPR-50
Docket No. 50-289
Technical Specification Change Request No. 7

This Technical Specification Change Request is submitted in support of Licensee's request to change Appendix A to Operating License No. DPR-50 for Three Mile Island Nuclear Station Unit 1. As a part of this request, proposed replacement pages for Appendix A are also included.

METROPOLITAN EDISON COMPANY

By *[Signature]*
President

Sworn and subscribed to me this 30th day of January, 1975

Richard I. Ruth
Notary Public

NOTARY PUBLIC
JANUARY 30, 1975
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UNITED STATES OF AMERICA

ATOMIC ENERGY COMMISSION

IN THE MATTER OF

DOCKET NO. 50--289
LICENSE NO. DPR-50


METROPOLITAN EDISON COMPANY

This is to certify that a copy of Technical Specification Change Request No. 7 to Appendix A of the Operating License for Three Mile Island Nuclear Station Unit 1, dated January 30, 1975, and filed with the U. S. Atomic Energy Commission on January 30, 1975, has this 30th day of January been served on the chief executives of Londonderry Township, Dauphin County, Pennsylvania and Dauphin County, Pennsylvania by deposit in the United States mail, addressed as follows:

Dr. Edward O. Swartz, Chairman
Board of Supervisors of
Londonderry Township
R. D. #1, Geyers Church Road
Middletown, Pennsylvania 17057

Mr. Charles P. Hoy, Chairman
Board of County Commissioners
of Dauphin County
Dauphin County Court House
P. O. Box 1295
Harrisburg, Pennsylvania 17120

METROPOLITAN EDISON COMPANY

By 
President

1587 021

Three Mile Island Nuclear Station Unit 1
Operating License No. DPR-50
Docket No. 50-289

Technical Specification Change Request No. 7

Licensee requests that the following changes be made to Appendix A of the Technical Specifications. A copy of proposed changed pages marked "Change Request No. 7" is attached.

Page ii. Add "3.15 AIR TREATMENT SYSTEMS", "3.15.1 EMERGENCY CONTROL ROOM AIR TREATMENT SYSTEM", "3.15.2 REACTOR BUILDING PURGE AIR TREATMENT SYSTEM", and "3.15.3 AUXILIARY AND FUEL HANDLING EXHAUST AIR TREATMENT SYSTEM" to the index.

Page iii. Delete "4.12 CONTROL ROOM FILTERING SYSTEM", "4.12.1 OPERATING TESTS", "4.12.2 FILTER TESTS" and "4.14 REACTOR BUILDING PURGE EXHAUST SYSTEM", and add "4.12 AIR TREATMENT SYSTEMS", "4.12.1 EMERGENCY CONTROL ROOM AIR TREATMENT SYSTEM", "4.12.2 REACTOR BUILDING PURGE AIR TREATMENT SYSTEM", and "4.12.3 AUXILIARY AND FUEL HANDLING EXHAUST AIR TREATMENT SYSTEM".

Page 3-61 through 3-66. Add new Specification Section 3.15.

Page 4-55. Delete existing specification 4.12 and add revised Specification Section 4.12 (pages 4-55 through 4-55e).

Reasons for Proposed Change

The change is proposed to provide additional specifications to ensure high confidence that these systems will function reliably, when needed, at a high degree of efficiency.

It should be noted that this proposed change was requested by the Commission's, Mr. George Lear, in his letter to the licensee dated December 6, 1974.

Safety Analysis Justifying Change

The change reflects additional and more stringent requirements than those currently existing. The change does not involve a significant hazards consideration nor an unreviewed safety question and will not cause undue risk to the health and safety of the public.

1587 022

TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
3.1.3	MINIMUM CONDITIONS FOR CRITICALITY	3-6
3.1.4	REACTOR COOLANT SYSTEM ACTIVITY	3-8
3.1.5	CHEMISTRY	3-10
3.1.6	LEAKAGE	3-12
3.1.7	MODERATOR TEMPERATURE COEFFICIENT OF REACTIVITY	3-16
3.1.8	SINGLE LOOP RESTRICTIONS	3-17
3.1.9	LOW POWER PHYSICS TESTING RESTRICTIONS	3-18
3.1.10	CONTROL ROD OPERATION	3-18a
3.2	<u>MAKEUP AND PURIFICATION AND CHEMICAL ADDITION SYSTEMS</u>	3-19
3.3	<u>EMERGENCY CORE COOLING, REACTOR BUILDING EMERGENCY COOLING, AND REACTOR BUILDING SPRAY SYSTEMS</u>	3-21
3.4	<u>TURBINE CYCLE</u>	3-25
3.5	<u>INSTRUMENTATION SYSTEMS</u>	3-27
3.5.1	OPERATIONAL SAFETY INSTRUMENTATION	3-27
3.5.2	CONTROL ROD GROUP AND POWER DISTRIBUTION LIMITS	3-33
3.5.3	ENGINEERED SAFEGUARDS PROTECTION SYSTEM ACTUATION SETPOINTS	3-37
3.5.4	INCORE INSTRUMENTATION	3-38
3.6	<u>REACTOR BUILDING</u>	3-41
3.7	<u>UNIT ELECTRICAL POWER SYSTEM</u>	3-42
3.8	<u>FUEL LOADING AND REFUELING</u>	3-44
3.9	<u>RADIOACTIVE MATERIALS</u>	3-46
3.10	<u>MISCELLANEOUS RADIOACTIVE MATERIALS SOURCES</u>	3-46
3.11	<u>HANDLING OF IRRADIATED FUEL</u>	3-55
3.12	<u>REACTOR BUILDING POLAR CRANE</u>	3-57
3.13	<u>SECONDARY SYSTEM ACTIVITY</u>	3-58
3.14	<u>FLOOD</u>	3-59
3.14.1	PERIODIC INSPECTION OF THE DIKES AROUND TMI	3-59
3.14.2	FLOOD CONDITION FOR PLACING THE UNIT IN HOT STANDBY	3-60
3.15	<u>AIR TREATMENT SYSTEMS</u>	3-61
3.15.1	EMERGENCY CONTROL ROOM AIR TREATMENT SYSTEM	3-61
3.15.2	REACTOR BUILDING PURGE AIR TREATMENT SYSTEM	3-63
3.15.3	AUXILIARY AND FUEL HANDLING EXHAUST AIR TREATMENT SYSTEM	3-65
4	<u>SURVEILLANCE STANDARDS</u>	4-1
4.1	<u>OPERATIONAL SAFETY REVIEW</u>	4-1
4.2	<u>REACTOR COOLANT SYSTEM INSERVICE INSPECTION</u>	4-11
4.3	<u>TESTING FOLLOWING OPENING OF SYSTEM</u>	4-28
4.4	<u>REACTOR BUILDING</u>	4-29
4.4.1	CONTAINMENT LEAKAGE TESTS	4-29
4.4.2	STRUCTURAL INTEGRITY	4-35
4.4.3	HYDROGEN PURGE SYSTEM	4-37
4.5	<u>EMERGENCY LOADING SEQUENCE AND POWER TRANSFER, EMERGENCY CORE COOLING SYSTEM AND REACTOR BUILDING COOLING SYSTEM PERIODIC TESTING</u>	4-39
4.5.1	EMERGENCY LOADING SEQUENCE	4-39
4.5.2	EMERGENCY CORE COOLING SYSTEM	4-41
4.5.3	REACTOR BUILDING COOLING AND ISOLATION SYSTEM	4-43
4.5.4	DECAY HEAT REMOVAL SYSTEM LEAKAGE	4-45

TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
4.6	<u>EMERGENCY POWER SYSTEM PERIODIC TESTS</u>	4-46
4.7	<u>REACTOR CONTROL ROD SYSTEM TESTS</u>	4-48
4.7.1	CONTROL ROD DRIVE SYSTEM FUNCTIONAL TESTS	4-48
4.7.2	CONTROL ROD PROGRAM VERIFICATION	4-50
4.8	<u>MAIN STEAM ISOLATION VALVES</u>	4-51
4.9	<u>EMERGENCY FEEDWATER PUMPS PERIODIC TESTING</u>	4-52
4.9.1	TEST	4-52
4.9.2.	ACCEPTANCE CRITERIA	4-52
4.10	<u>REACTIVITY ANOMALIES</u>	4-53
4.11	<u>SITE ENVIRONMENTAL RADIOACTIVITY SURVEY</u>	4-54
4.12	<u>AIR TREATMENT SYSTEM</u>	4-55
4.12.1	EMERGENCY CONTROL ROOM AIR TREATMENT SYSTEM	4-55
4.12.2	REACTOR BUILDING PURGE AIR TREATMENT SYSTEM	4-55b
4.12.3	AUXILIARY AND FUEL HANDLING EXHAUST AIR TREATMENT SYSTEM	4-55d
4.13	<u>RADIOACTIVE MATERIALS SOURCES SURVEILLANCE</u>	4-56
4.14	Deleted	
4.15	<u>MAIN STEAM SYSTEM INSERVICE INSPECTION</u>	4-58
5.1	<u>DESIGN FEATURES</u>	5-1
5.1	<u>SITE</u>	5-1
5.2	<u>CONTAINMENT</u>	5-2
5.2.1	REACTOR BUILDING	5-2
5.2.2	REACTOR BUILDING ISOLATION SYSTEM	5-3
5.3	<u>REACTOR</u>	5-4
5.3.1	REACTOR CORE	5-4
5.3.2	REACTOR COOLANT SYSTEM	5-4
5.4	<u>NEW AND SPENT FUEL STORAGE FACILITIES</u>	5-6
5.4.1	NEW FUEL STORAGE	5-6
5.4.2	SPENT FUEL STORAGE	5-6
5.5	<u>AIR INTAKE TUNNEL FIRE PROTECTION SYSTEMS</u>	5-8
6	<u>ADMINISTRATIVE CONTROLS</u>	6-1
6.1	<u>ORGANIZATION, REVIEW, AND AUDIT</u>	6-1
6.2	<u>STATION OPERATING PROCEDURES</u>	6-2
6.3	<u>ACTIONS TO BE TAKEN IN THE EVENT OF AN ABNORMAL OCCURRENCE IN STATION OPERATION</u>	6-3
6.4	<u>ACTION TO BE TAKEN IN THE EVENT A SAFETY LIMIT IS EXCEEDED</u>	6-4
6.5	<u>STATION OPERATING RECORDS</u>	6-5
6.6	<u>RADIOLOGICAL CONTROLS</u>	6-7
6.7	<u>STATION REPORTING REQUIREMENTS</u>	6-8
6.7.1	SEMI-ANNUAL OPERATING REPORTS	6-8
6.7.2	NON-ROUTINE REPORTS	6-11
6.7.3	SPECIAL REPORTS	6-12

3.15 AIR TREATMENT SYSTEMS

3.15.1 EMERGENCY CONTROL ROOM AIR TREATMENT SYSTEM

Applicability

Applies to the emergency control room air treatment system and its associated filters.

Objective

To specify minimum availability and efficiency for the emergency control room air treatment system and its associated filters.

Specification

- 3.15.1.1 Except as specified in Specification 3.15.1.3 below, at least one emergency treatment system, AH-E18A fan and associated filter AH-F3A or AH-E18B fan and associated filter AH-F3B shall be operable at all times, per the requirements of Specification 3.15.1.2 below, when containment integrity is required.
- 3.15.1.2
- a. The results of the in-place cold DOP and halogenated hydrocarbon tests at design flows on HEPA filters and charcoal absorber banks shall show >99% DOP removal and >99% halogenated hydrocarbon removal.
 - b. The results of laboratory carbon sample analysis shall show ≥90% radioactive methyl iodide removal at a velocity within 20% of system design, 1.5 to 2.0 mg/m³ inlet iodide concentration, >60% R.H. and >85°F. D.B.
 - c. The fans AH-E18A and 18B shall be shown to operate within ±10% design flow.
- 3.15.1.3 From and after the date that both control room air treatment systems are made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding seven days unless one or both circuits are sooner made operable.
- 3.15.1.4 If these conditions cannot be met, reactor shutdown shall be initiated and the reactor shall be in hot shutdown within 24 hours.

Bases

The emergency control room air treatment systems AH-E18A and 18B and their associated filters are two independent systems designed to filter the control room atmosphere for intake air and/or for recirculation during control room isolation conditions. The control building is designed to be automatically placed in the recirculation mode upon an RM-A1 high radiation alarm, air tunnel device actuation, ESAS actuation or station blackout condition. The emergency control room air treatment fan and filter AH-E18A or B and AH-E3A or B is designed to be manually started by the operator if a high radiation alarm from RM-A1 is indicated.

Prefilters and high efficiency particulate absolute (HEPA) filters are installed before the charcoal absorbers to prevent clogging of the iodine absorbers and remove particulate activity. The charcoal absorbers are installed to reduce the potential intake of radioiodine to the control room. The in-place test results should indicate charcoal absorber filter and HEPA filter efficiency of at least 99 percent removal. The laboratory carbon sample test results should indicate a radioactive methyl iodide removal efficiency of at least 90 percent for expected accident conditions. If the efficiencies of the HEPA filters and charcoal absorbers are as specified, the resulting doses will be less than the allowable levels stated in Criterion 19 of the General Design Criteria for Nuclear Power Plants, Appendix A to 10 CFR Part 50. Operation of the fans significantly different from the design flow will change the removal efficiency of the HEPA filters and charcoal absorbers.

If both systems are found to be inoperable, there is no immediate threat to the control room and reactor operation may continue for a limited period of time while repairs are being made. If at least one of the systems cannot be repaired within seven days, the reactor is shutdown and brought to hot shutdown within 24 hours.

References

- (1) FSAR Section 9.8
- (2) FSAR Figure 9-21

1587 026

3.15.2 REACTOR BUILDING PURGE AIR TREATMENT SYSTEM

Applicability

Applies to the reactor building purge air treatment system and its associated filters.

Objective

To specify minimum availability and efficiency for the reactor building purge air treatment system and its associated filters.

Specification

- 3.15.2.1 Except as specified in Specification 3.15.2.3 below, the Reactor Building Purge Air Treatment System filter AH-F1 and AH-E7A and B shall be operable as defined by the Specification below at all times.
- 3.15.2.2 a. The results of the in-place cold DOP and halogenated hydrocarbon tests at design flows on HEPA filters and charcoal absorber banks for AH-F1 shall show $\geq 99\%$ DOP removal and $\geq 99\%$ halogenated hydrocarbon removal.
- b. The results of laboratory carbon sample analysis from the reactor building purge system filter carbon shall show $\geq 90\%$ radioactive methyl iodide removal at a velocity within 20 percent of the purge air treatment system design, 1.5 to 2.0 mg/m^3 inlet methyl iodide concentration, $\geq 60\%$ R.H. and $\geq 120^\circ\text{F}$ D.B.
- 3.15.2.3 a. From and after the date that the filter AH-F1 in the reactor building purge system is made or found to be inoperable as defined by Specification 3.15.2.2 above, or both fans AH-E7A and B are found to be inoperable, reactor operation is permissible only during the succeeding thirty days, unless such filter and at least one fan is sooner made operable.
- b. If the required conditions for the reactor building purge filter and fan cannot be met after 30 days, operations shall be terminated immediately and the reactor placed in hot shutdown within 24 hours.

Bases

The Reactor Building Purge Exhaust system filter AH-F1 while normally used to filter all reactor building exhaust air, serves also as the post accident purge filter when used in conjunction with the Hydrogen Purge System to reduce hydrogen gas concentrations in the reactor building following a LOCA. It is necessary to demonstrate operability of these filters to assure readiness for service if required, approximately thirty (30) days following a hypothetical LOCA.

1587 027

High efficiency particulate absolute (HEPA) filters are installed before the charcoal absorbers to prevent clogging of the iodine absorbers for all emergency air treatment systems. The charcoal absorbers are installed to reduce the potential release of radioiodine to the environment. The in-place test results should indicate a charcoal absorber halogenated hydrocarbon removal efficiency of at least 99% and a HEPA efficiency of at least 99 percent removal of DOP particulates. The laboratory carbon sample test results should indicate a radioactive methyl iodide removal efficiency of at least 90 percent on the purge exhaust system sample. If the efficiencies of the HEPA filters and charcoal absorbers are as specified, the resulting doses will be less than the 10 CFR 100 guidelines for the accident analyzed in FSAR Supplement I Part III, which assumes 90% efficiency.

The flow through AH-F1 by design can vary from 0 CFM to 50,000 CFM, the maximum purge flow rate, with make-up air being provided between the filter AH-F1 and the fans AH-E7A and B to maintain a constant reactor building purge exhaust stack flow rate of 50,000 CFM regardless of the actual purge flow.

References

- (1) FSAR Section 5.3.3
- (2) FSAR Section 5.6
- (3) FSAR Section 9.8

1587 028

3.15.3 AUXILIARY AND FUEL HANDLING EXHAUST AIR TREATMENT SYSTEM

Applicability

Applies to the auxiliary and fuel handling exhaust air treatment system.

Objective

To specify the minimum availability and efficiency for the auxiliary and fuel handling exhaust air treatment system.

Specification

3.15.3.1 The auxiliary and fuel handling buildings exhaust air treatment system shall be operable at all times when fuel handling operations are in progress in the Fuel Handling Building. This applies to the exhaust filters AH-F2A, 2B, 2C, and 2D as well as the exhaust fans AH-E14A, 14B, 14C, and 14D.

From and after the date that the fuel handling air treatment system is made or found to be inoperable that is, the filters AH-F 2A, B, C, and D and/or both sets of fans AH-E 14A and C and AH-E 14B and D, for any reason, fuel handling operations shall be terminated immediately until the components are returned to service.

- 3.15.3.2 a. The results of the in-place cold DOP and halogenated hydrocarbon tests at design flows on HEPA filters and charcoal absorber banks shall show >99% DOP removal >99% halogenated hydrocarbon removal.
- b. The results of laboratory carbon sample analysis from the auxiliary and fuel handling system carbon shall show >90% radioactive methyl iodide removal at a velocity within 20 percent of auxiliary and fuel handling exhaust air treatment system design, 1.5 to 2.0 mg/m³ inlet methyl iodide concentration, >60% R.H. and 125°F, D.B.

Bases

The Auxiliary and Fuel Handling Building Exhaust System consists primarily of the exhaust filter AH-F2A, B, C, and D and two sets of redundant exhaust fans AH-E14A 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. All the air passes through the exhaust filter AH-F2A, B, C, and D 100% of the time prior to being discharged to the stack.

High efficiency particulate absolute (HEPA) filters are installed before the charcoal absorbers to prevent clogging of the iodine absorbers for all emergency air treatment systems. The charcoal absorbers are installed to reduce the potential release of radioiodine to the environment. The in-place test results should indicate a charcoal absorber removal efficiency for halogenated hydrocarbon of 99% and a HEPA efficiency of at least 99 percent removal of DOP particulates. The laboratory carbon

sample test results should indicate a radioactive methyl iodide removal efficiency of at least 90 percent on the fuel handling system charcoal sample. If the efficiencies of the HEPA filters and charcoal absorbers 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.

If the auxiliary and fuel handling exhaust air system is found to be inoperable, all fuel handling and fuel movement operations will be terminated until the system is made operable.

References

- (1) FSAR Section 9.8
- (2) FSAR Figure 9-20

1587 030

4.12.2 REACTOR BUILDING PURGE AIR TREATMENT SYSTEM

Applicability

Applies to the reactor building purge air treatment system and associated components.

Objective

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

Specification

- 4.12.2.1 At least once per refueling interval, it shall be demonstrated that the pressure drop across the combined HEPA filters and charcoal absorber banks is less than 6 inches of water at system design flow rate.
- 4.12.2.2 a. The tests and sample analysis required by Specification 3.15.2.2, filter AH-F1 shall be performed initially and each refueling outage and following significant painting, fire, or chemical release in any ventilation zone communicating with the system.
- b. Cold DOP testing shall be performed on the affected portion of the filter after each complete or partial replacement of a HEPA filter bank or after any structural maintenance on the system housing.
- c. Halogenated hydrocarbon testing shall be performed on the affected portions of the filter after each complete or partial replacement of a charcoal absorber bank or after any structural maintenance on the system housing.
- d. The Reactor Building purge exhaust fans AH-E7A and B shall be operated at least 10 hours every month, either during actual purging or using makeup air.

Bases

Pressure drop across the combined HEPA filters and charcoal absorbers of less than 6 inches of water at the system design flow rate will indicate that the filters and absorbers 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.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal absorbers can perform as evaluated. Tests of the charcoal absorbers with halogenated hydrocarbon refrigerant shall be performed in accordance with approved test procedures. The charcoal absorber efficiency test procedures should allow for the removal of one absorber tray, emptying of one bed from the tray, mixing the absorbent 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. If test results are unacceptable, all absorbent in the

4.12 AIR TREATMENT SYSTEMS

4.12.1 EMERGENCY CONTROL ROOM AIR TREATMENT SYSTEM

Applicability

Applies to the emergency control room air treatment system and associated components.

Objective

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

Specification

- 4.12.1.1 At least every refueling interval, the pressure drop across the combined HEPA filters and charcoal absorber banks of AH-F3A and 3B shall be demonstrated to be less than 6 inches of water at system design flow rate.
- 4.12.1.2 a. The tests and sample analysis required by Specification 3.15.1.2 shall be performed initially and at least every refueling interval for standby service or after every 720 hours of system operation and following significant painting, fire or chemical release in any ventilation zone communicating with the system.
- b. Cold DOP testing shall be performed on the affected portions of the filter after each complete or partial replacement of the HEPA filter bank or after any structural maintenance on the system housing.
- c. Halogenated hydrocarbon testing shall be performed on the affected portion of the filter after each complete or partial replacement of the charcoal absorber bank or after any structural maintenance on the system housing.
- d. Each AH-E18A and B (AH-F3A and B) fan/filter circuit shall be operated at least 10 hours every month.
- 4.12.1.3 At least once per refueling interval, automatic initiation of the Control Building isolation and recirculation Dampers AH-D28, 37, 39, and 36 shall be demonstrated as operable.

Bases

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

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal absorbers can perform as evaluated. Tests of the charcoal absorbers with halogenated hydrocarbon shall be performed in accordance with approved test procedures. The charcoal absorber efficiency test procedures should allow for the removal of one absorber tray, emptying of one bed from the tray, mixing the absorbent 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. If test results are unacceptable all absorbent in the system shall be replaced with an absorbent of quality equal to or exceeding the original filters. The replacement tray for the absorber tray removed for the test should meet the same absorbent quality. Tests of the HEPA filters with DOP aerosol shall also be performed in accordance with approved test procedures. Any HEPA filters found defective shall be replaced with filters of quality equal to or exceeding the original filters.

Operation of the system for 10 hours every month will demonstrate operability of the filters and absorber system and remove excessive moisture built up on the absorber.

If significant painting, fire or chemical release occurs such that the HEPA filter or charcoal absorber could become contaminated from the fumes, chemicals or foreign materials, the same tests and sample analysis shall be performed as required for operational use. The determination of significance shall be made by the Station Superintendent.

Demonstration of the automatic initiation of the recirculation mode of operation is necessary to assure system performance capability.

1587 033

system shall be replaced with an absorbent of quality equal to or exceeding the original filters. The replacement tray for the absorber tray removed for the test should meet the same absorbent quality. Tests of the HEPA filters with DOP aerosol shall also be performed in accordance with approved test procedures. Any HEPA filters found defective shall be replaced with filters of quality equal to or exceeding the original filters.

Operation of the emergency air treatment system each month for at least ten (10) hours will demonstrate operability of the fans and when operated in the purge mode will tend to cause the filter and absorber system to remove excessive moisture built up on the absorber.

If significant painting, fire, or chemical release occurs such that the HEPA filter or charcoal absorber 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 significant shall be made by the Station Superintendent.

1587 034

shall be replaced with an absorbent of quality equal to or exceeding the original filters. The replacement tray for the absorber tray removed for the test should meet the same absorbent quality. Tests of the HEPA filters with DOP aerosol shall be performed in accordance with approved procedures. Any HEPA filters found defective shall also be replaced with filters of quality equal to or exceeding the original filters.

Operation of the Auxiliary and Fuel Handling Building Exhaust Fans each month for at least ten (10) hours will demonstrate operability of the fans.

If significant painting, fire, or chemical release occurs such that the HEPA filter or charcoal absorber 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 significant shall be made by the Station Superintendent.

1587 035

4.12.3 AUXILIARY AND FUEL HANDLING EXHAUST AIR TREATMENT SYSTEM

Applicability

Applies to the auxiliary and fuel handling building exhaust air treatment system and associated components.

Objective

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

Specification

- 4.12.3.1 At least once per refueling interval, it shall be demonstrated that the pressure drop across the combined absorber banks is less than 6 inches of water at system design flow rate.
- 4.12.3.2
- a. The tests and sample analysis required by Specification 3.15.3.2 shall be performed initially and at least every refueling interval and following significant painting, fire or chemical release in any ventilation zone communicating with the system.
 - b. Cold DOP testing shall be performed on the affected portions of the filter after each complete or partial replacement of a HEPA filter bank or after any structural maintenance on the system housing.
 - c. Halogenated hydrocarbon testing shall be performed on the affected portions of the filter after each complete or partial replacement of a charcoal absorber bank or after any structural maintenance on the AH-F 2A, B, C, or D housing.
 - d. The fan combination AH-E 14A and C and AH-E 14B and D shall be operated at least 10 hours every month.

Bases

Pressure drop across the combined HEPA filters and charcoal absorbers of less than 6 inches of water at the system design flow rate will indicate that the filters and absorbers 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.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal absorbers can perform as evaluated. Tests of the charcoal absorbers with halogenated hydrocarbon refrigerant shall be performed in accordance with approved test procedures. The charcoal absorber efficiency test procedures should allow for the removal of one absorber tray, emptying of one bed from the tray, mixing the absorbent 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. If test results are unacceptable, all absorbent in the system

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