ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

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PROCEDURE NO. PT-47.3 REV. NO. 17

CONTROL ROOM AIR HANDLING UNIT - FILTRATION SYSTEM EFFICIENCY TEST

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RESPONSIBLE MANAGER

6-15-95

EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

THIS PROCEDURE CONTAINS 15 PAGES

GINNA STATION
START:
DATE _____
TIME _____
COMPLETED:
DATE _____
TIME: _____

PT-47.3

CONTROL ROOM AIR HANDLING UNIT -

FILTRATION SYSTEM EFFICIENCY TEST

1.0 PURPOSE:

1.1 To provide test steps for surveillance aerosol leak testing of the installed "HEPA" filter bank to ensure that there are no leaks greater than that allowed by system acceptance criteria.

1.2 To provide test steps for surveillance halide leak testing of the installed "CHARCOAL" adsorber bank to ensure that there are no leaks greater than that allowed by system acceptance criteria.

1.3 To provide steps for removal of charcoal adsorber test cells and complete charcoal filter bank replacement.

2.0 TEST REQUIREMENTS:

2.1 This test shall be performed every 18 months or after 720 hours of charcoal adsorber system operation since previous test, or following painting, fire, or chemical release, in the area communicating with the air handling unit and shall have the following conditions demonstrated.

2.1.1 In-place thermally generated "DOP" testing of the "HEPA" filters shall show $\geq$ 99% removal efficiency.

2.1.2 In-place "HALIDE" (Freon) leak testing, under normal operating conditions, shall show $\geq$ 99% removal efficiency.

2.1.3 A "charcoal" sample shall be removed from those cells with the longest in bank residence time or "test canister(s)" shall be removed, and sent to a laboratory for an "Iodine Removal Efficiency Test". The efficiency shall be at least 90% removal for iodine.

2.1.4 Pressure drop across the combined "HEPA" filter and "CHARCOAL" adsorber bank shall be $\leq$ 6" H_2O at design flow rate, ($\pm$ 10%).

2.2 Test shall be performed after each complete or partial replacement of the "HEPA" filter bank or after any structural maintenance performed on the "HEPA" mounting frames or housing.

2.3 After each replacement of a "CHARCOAL" adsorber cell or after any structural maintenance performed on the adsorber mounting frames or housing, the efficiency specified in step 2.1.2 shall be demonstrated.

2.4 Visual inspection of "charcoal" adsorber cell assemblies for damage and loss of charcoal shall be performed.

2.5 Visual inspection of "HEPA" filter assemblies for damage and freedom of dust accumulation shall be performed.

3.0 REFERENCES:

3.1 Plant Tech. Specs. - Sections 3.3.5 and 4.5.2.3 and 3.5.6.

3.2 ANSI/ASME N510-1975 (Testing of Nuclear Air Cleaning Systems).

3.3 NUCON - Vendor.

3.4 RG&E Ventilation System Flow Diagram #33013-1867.

3.5 Previously procedure PT-28 (1987).

3.6 Independent Verification Procedure A-1408.

4.0 INITIAL CONDITIONS:

NOTE: If preparatory work will be performed prior to vendor arrival, mark step 4.1 N/A.

4.1 Vendor documentation required by the applicable purchase order has been submitted to QC Dept. and found acceptable prior to start of work.

QC _____

4.2 If plant is operating at > 350°F RCS temperature, ensure an A-52.4 has been initiated prior to start of test, otherwise mark this step N/A.

_____

4.3 RG&E test personnel are qualified in accordance with A-1102.

_____

4.4 When mass air flow thru "HEPA" and "CHARCOAL" bank has been determined, log on applicable vendors "IN TEST" Data Sheet(s). _____

4.5 Notify Shift Supervisor and Head Control Operator at start of test. _____

4.6 This procedure is divided into the following sections. Initial which section(s) apply and mark remainder N/A.

NOTE: Sections 6.2, 6.5 and 6.6 are test requirements. These sections can be marked N/A only if their applicable requirement has been met within the last 18 months.

4.6.1 Removal of adsorber cell(s) or test canister(s) for iodine removal efficiency testing (Section 6.2). _____

4.6.2 Filter bank removal and replacement (Section 6.3). _____

4.6.3 HEPA Filter Bank Testing - DOP (Section 6.5). _____

4.6.4 Charcoal Adsorber Bank Testing - Halide (Section 6.6). _____

4.7 Prepare Test Tags for the following:

	POSITION PRIOR TO TEST:	POSITION REQUIRED FOR TEST:
Fire Mode Selector Switch HS88 (Fire Bench Panel)	_____	"As Required" _____
Control Room Air Handling Unit/Control Room Return Air Fan Switch (FBP)	_____	"As Required" _____
Control Room Charcoal Filter Fan Switch (FBP)	_____	"As Required" _____
Fresh Air Intake Controller (S-81) Located in Control Room Kitchen	_____	"As Required" _____
Fresh Air Intake Controller (S-88) Located in Control Room Kitchen	_____	"As Required" _____

4.8 The individual performing the independent verification shall be a person knowledgeable in the appropriate system involved, normally an Auxiliary Operator or Licensed Operator. _____

4.9 Initiate Trouble Card, per A-1603, if any discrepancies are noted. _____

NOTE: If preparatory work will be performed prior to vendor arrival, mark step 4.10 N/A.

CAUTION: Applicable fire systems must be disconnected prior to DOP or Halide testing.

4.10 Notify Fire and Safety Coordinator, prior to system testing. Ensure the following fire systems are disconnected in accordance with SC-3.16.2.4. _____

S06 - Air Handling Room _____

S07 - Computer Room Halon _____

S08 - Relay Room Halon _____

4.11 Notify QC Dept. prior to start of test. _____

4.12 Notify Chemical Control to ensure labels are available to be posted on all chemical containers used for this test. _____

4.12.1 A Restricted Use Permit has been issued for the listed products:

PRODUCT:	PERMIT #:	
DIOCTYL PHTHALATE (DOP):	90:173P	_____
GERETRON (HALIDE R-11):	90:188P	_____

5.0 PRECAUTIONS:

5.1 Normal company work safety practices will be observed at all times.

5.2 Notify Control Room personnel that DOP and Halide will be used to test the filter units and a strong organic odor may be noticed in the areas affected by this system.

6.0 INSTRUCTIONS:

NOTE: This procedure is sectionalized. Sections 6.5 and 6.6 may be performed in any order.

6.1 Ensure the following fans are shut down ("PULL STOP" position) and test tags are hung on fan switches before entering fan unit. _____

Control Room Air Handling Unit/Control Room Return Air Fan Switch (FBP).

PULL STOP _____

Control Room Charcoal Filter Fan Switch (FBP)

PULL STOP _____

6.2 REMOVAL OF ADSORBER CELL OR TEST CANISTER FOR IODINE REMOVAL EFFICIENCY TESTING

6.2.1 Remove charcoal adsorber cell with longest in bank residence time (as determined by Attachment 3) OR test canister from filter bank to obtain charcoal sample for laboratory testing. _____

6.2.2 Replace removed adsorber cells with approved same or cap as applicable. _____

6.2.3 Label newly installed charcoal cell faceplate using approved marker to reflect replacement date. _____

NOTE: When identifying cell or test canister location below, use coordinate system from Attachment 3. (Example: cell-1, etc.)

6.2.4 Adsorber cell location (N/A if test canisters installed) _____ _____

6.2.5 Test canister location (N/A if test canister not installed) _____ _____

6.2.6 Perform PT-38.1 _____

6.3 FILTER BANK REMOVAL AND REPLACEMENT:

6.3.1 Remove applicable filter bank. _____

6.3.2 Type filter bank removed: (Mark non-applicable type N/A)

HEPA _____

Charcoal _____

6.3.3 Number of filter cells removed:

(HEPA) # _____ _____

(Charcoal) # _____ _____

6.3.4 Replace filter cells removed with approved type and ensure the bank is restored to operating condition. _____

6.3.5 Label newly installed charcoal filter faceplates using approved marker to reflect replacement dates and ensure the bank is restored to operating condition. _____

6.3.6 For charcoal filter bank only, document replaced cell locations by writing "ALL" below. If no charcoal adsorbers were replaced mark this step N/A.

Cell Locations: _____ _____

6.3.7 Perform PT-38.1. _____

6.3.8 Test system utilizing appropriate test section to ensure system efficiency within allowable limits. _____

6.4 SYSTEM STARTUP/TEST ALIGNMENT

6.4.1 Start the Control Room air handling unit. _____

6.4.2 Return the Control Room charcoal filter fan switch (EBP) to the "AUTO AFTER STOP" position. _____

6.4.3 Depress Control Room HVAC "Manual Recirculation" pushbutton. _____

6.4.4 Log "Start" time of charcoal filter fan on Control Room HVAC "filter In-Service" Log Sheet if need be, otherwise mark N/A. _____

6.4.5 Place or verify fresh air intake controller "S-88" to minimum. _____

6.4.6 Place or verify fresh air intake controller "S-81" to minimum. _____

6.4.7 Verify that the following dampers are aligned in the position listed below and charcoal filter fan is running. _____

DAMPER	LOCATION	REQUIRED POSITION	VERIFICATION
AKD10	Outside Air	Closed	_____
AKD01	Outside Air	Closed	_____
AKD09	Filter Unit Recirc	Open	_____
AKD07	Filter Fan Discharge	Open	_____
AKD05	Exhaust Relief	Closed	_____
AKD04	Exhaust Relief	Closed	_____
AKD02	Toilet Exhaust (GREEN LIGHT INDICATION ON CR HVAC PANEL)	Closed	_____
AKD08	Filter Outside Air	Closed	_____

6.4.8 Verify Charcoal Filter Fan running. (RED LIGHT INDICATION ON CR HVAC PANEL) _____

NOTE: If Step 4.1 was performed, mark step 6.4.9 N/A.

6.4.9 Vendor documentation required by the applicable purchase order has been submitted to Q.C. Dept. and found acceptable prior to start of "vendor" work.
Q.C. _____

NOTE: If Step 4.10 was performed, mark step 6.4.10 N/A.

6.4.10 Notify Fire and Safety Coordinator, prior to system testing. Ensure the following fire systems are disconnected in accordance with SC-3.16.2.4.

S06 - Air Handling Room _____

S07 - Computer Room Halon _____

S08 - Relay Room Halon _____

6.5 HEPA FILTER BANK TESTING - DOP:

6.5.1 Connect DOP Aerosol Detector to power line outlet. _____

6.5.2 Connect sample lines from detector to upstream and downstream sample ports. _____

6.5.3 Record pressure drop across the Hepa filter bank only.

Hepa /\P _____ "H_2O
PDI-

6.5.3.1 Record combined pressure drop across the Hepa & Charcoal filters: (PDI-_____ + PDI-_____)

(Max. Allowable ≤ 6" H_2O)

Combined Hepa & Charcoal /\P _____ "H_2O

NOTE: If pressure drop is beyond allowable limit, investigate and correct problem prior to testing.

6.5.4 Take background aerosol measurement with detector, and if the downstream concentrations cannot be zeroed out, purge the system until an acceptable background level is reached. _____

6.5.5 Connect appropriate DOP Aerosol Generator (thermally operated) to injection port, start injection, and adjust generator as necessary. _____

6.5.6 Connect DOP Detector to upstream sample line, allow reading to stabilize, record reading on vendor's "DOP TEST" data sheet, and disconnect sample line. _____

6.5.7 Connect DOP Detector to downstream sample line, allow reading to stabilize, record reading, and disconnect sample line. _____

6.5.8 Repeat step 6.5.7 to ensure that upstream concentration has remained the same, (± 5%). _____

6.5.9 Calculate percent efficiency and transfer data to appropriate vendor's data sheet.

Efficiency: _____ %

6.5.10 If efficiency obtained in Step 6.5.9 does not meet percent efficiency acceptance requirements, perform the following: (Otherwise mark this step inclusive N/A) _____

6.5.10.1 Evaluate inspection/sample arrangement and re-orient as necessary. _____

6.5.10.2 Retest by re-performing steps 6.5.4 through 6.5.9. _____

Retest Efficiency: _____

6.5.10.3 If retest efficiency does not meet percent efficiency acceptance requirements, submit WR/TR. Otherwise mark N/A. _____

6.5.11 If testing of air handling unit is complete, remove all DOP equipment hoses from sample points, otherwise mark this step N/A. _____

6.5.12 If testing of air handling unit is complete, replace all pipe caps and fittings on unit, otherwise mark this step N/A. _____

6.6 CHARCOAL ADSORBER BANK TESTING - HALIDE:

6.6.1 Connect Halide Detector to power supply and allow approximately 15 minutes warm up time. _____

6.6.2 Connect sample lines to upstream and downstream sample ports. _____

6.6.3 Establish air flow through system. _____

6.6.4 Record pressure drop across the Charcoal filter bank only.

Charcoal /\P _____"H_2O
PDI -

6.6.4.1 Record combined pressure drop across the Hepa & Charcoal filters: (PDI-_____ + PDI-_____)

(Max. Allowable $\leq$ 6"H_2O)

Combined Hepa & Charcoal /\P _____"H_2O

NOTE: If pressure drop is beyond allowable limit, investigate and correct problem prior to testing.

6.6.5 Establish upstream and downstream sample flows and set upstream dilution air ratios if necessary, to produce an upstream concentration which is within the linear response range of the detector.

_____

6.6.6 Take upstream and downstream background sample readings.

_____

NOTE: If these readings show no background contaminants that might interfere with test results, continue with the test. If interference is indicated, purge system with air flow until interference is reduced to an acceptable level.

6.6.7 Start injection. _____

6.6.8 Monitor and record upstream and downstream tracer gas concentrations for five minutes per Vendor's data sheet.

_____

NOTE: Halide concentrations are determined by averaging (4) stabilized readings previously recorded.

6.6.9 Calculate percent efficiency and transfer data to appropriate vendor's data sheet.

Efficiency _____ %

6.6.10 If efficiency obtained in step 6.6.9 does not meet percent efficiency acceptance requirements, perform the following: (Otherwise mark this step inclusive N/A)

_____

6.6.10.1 Evaluate inspection/sample arrangement and re-orient as necessary.

_____

6.6.10.2 Retest by re-performing steps 6.6.5 through 6.6.9.

_____

Retest Efficiency: _____

6.6.10.3 If retest efficiency does not meet percent efficiency acceptance requirements, submit WR/TR. Otherwise mark N/A .

_____

6.6.11 If testing of air handling unit is complete, remove all sample lines from ports, otherwise mark this step N/A. _____

6.6.12 If testing of air handling unit is complete, replace all pipe caps or fittings on unit, otherwise mark this step N/A. _____

6.7 RESTORATION

6.7.1 Request Operations place Control Room HVAC to desired mode, as per Attachment 1. _____

6.7.2 Log required damper positions and fan status on Attachment 2. _____

6.7.3 Perform independent verification of Control Room HVAC lineup per Attachment 2. _____

6.7.4 Log "STOP" time of charcoal filter fan on Control Room HVAC, "Filter In-Service" log sheet. (Mark N/A if not in Mode I) _____

6.7.5 Ensure Fire and Safety Coordinator has been notified that fire systems S-06, S-07, S-08 can be restored to normal operating status. _____

6.7.6 Ensure all test tags hung in previous sections have been removed and test tag log reflects so. _____

6.7.7 Notify Head Control Operator that system testing is completed and system may be restored to normal operating conditions. _____

COMMENTS:

COMPLETED BY (RG&E): _____

DATE COMPLETED: _____

HEAD CONTROL OPERATOR: _____

SHIFT SUPERVISOR: _____

RESULTS & TEST REVIEW: _____ DATE _____

(INITIATE PERMANENT PCN OF ATTACHMENT 3 TO REFLECT INSTALLATION DATES OF REPLACED CELLS. MARK N/A IF NONE WERE REPLACED)

PCN # _____

ATTACHMENT 1

DAMPERS

MODE	AKD01	AKD04	AKD08	AKD07	AKD09	AKD10	AKD05	AKD02	EMER FILTER FAN
I NORMAL	(PISTON IN) CLOSED OR PARTIALLY OPEN	(PISTON IN) CLOSED OR PARTIALLY OPEN	C	C	C	OPEN 2000 CFM	OPEN 2000 CFM	OPEN 150 CFM	OFF
II (R-1) POST ACC W/ OA	C CFM	VAR 0-2000 CFM	0-2000 CFM	OPEN 2000 CFM	VAR 2000-0 CFM	STAYS OPEN	STAYS OPEN	STAYS OPEN	ON
III (R-1) POST ACC W/O OA	C	C	C	OPEN 2000	OPEN 2000	STAYS OPEN	STAYS OPEN	STAYS OPEN	ON
IV FIRE W/ OA	VAR 0-2000 CFM	VAR 0-2000 CFM	C	OPEN 2000 CFM	VAR 2000 CFM	STAYS OPEN	STAYS OPEN	STAYS OPEN 150 CFM	ON
V FIRE W/O OA	C	C	C	OPEN 2000 CFM	OPEN 2000 CFM	STAYS OPEN	STAYS OPEN	STAYS OPEN 150 CFM	ON
VI TOXIC GAS HIGH RAD	C	C	C	OPEN	OPEN	C	C	C	ON

NOTE: **Damper positions for damper AKD01 and AKD04 may vary due to their response to a unit temperature setting of 50°F.**

Attachment 2

Control Room HVAC Lineup Check

NOTE: * Log required damper position and fan status using Attachment 1 for guidance.

1.0 Log required HVAC mode per step 6.7.2.

Mode #_____

_____

2.0 Lineup verification

	Damper	Required Position	Independent Verification
2.0.1	AKD10	* _____	_____
2.0.2	AKD01	* _____	_____
2.0.3	AKD09	* _____	_____
2.0.4	AKD07	* _____	_____
2.0.5	AKD05	* _____	_____
2.0.6	AKD04	* _____	_____
2.0.7	AKD02	* _____	_____
2.0.8	AKD08	* _____	_____
2.0.9	Charcoal Filter Fan (Emer RTM Fan)	* _____	_____

CONTROL ROOM AIR HANDLING UNIT (CHARCOAL)
(ATTACHMENT 3)

SPECIFICATIONS:

- 6 CHARCOAL FILTERS
- TYPE 2
- 28 1/8"*22 5/16"*6 1/4"

LOCATION:

- AIR HANDLING RM.

REPLACEMENT DATES

1	( )	12 APR 95	( )
2	( )	12 APR 95	( )
3	( )	12 APR 95	( )
4	( )	12 APR 95	( )
5	( )	12 APR 95	( )
6	( )	12 APR 95	( )

KEY:

( ) = SAMPLE CANNISTER INSTALLED

(O) = CAPPED SAMPLE PORT

EAST <——————> WEST

NOTE: CHART REPRESENTS VIEW OF UNIT FILTER BANK LOOKING IN THE ACCESS DOOR FACING SOUTH.