PARA. 6

GINNA STATION
UNIT #1
COMPLETED
DATE:-
TIME:-

ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 9

PROCEDURE NO. PT-37.5 REV. NO. 0

CONTAINMENT RECIRCULATION FANS MASS AIR FLOW CHECK

TECHNICAL REVIEW

PORC 3-24-80

TR Schuler
QC REVIEW

3-29-80
DATE

APPROVED FOR USE

for J M Moon
PLANT SUPERINTENDENT

3-31-80
DATE

QA X NON-QA _____ CATEGORY 1.0

REVIEWED BY: _____

THIS PROCEDURE CONTAINS 10 PAGES

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PT-37.5

CONTAINMENT RECIRCULATION FANS MASS AIR FLOW CHECK

1.0 PURPOSE:

1.1 To determine total air flow through Containment Recirculation Fans.

2.0 TEST REQUIREMENTS:

2.1 Determine mass air flow of each containment recirculation fan during normal operation and "A" & "C" fans during accident operation.

3.0 REFERENCES:

3.1 Tech. Specs. Section 4.5.2.3.

4.0 INITIAL CONDITIONS:

4.1 Ensure that all fans except that fan undergoing the flow check, are not operating.

4.2 This procedure is divided into 6 sections. Indicate which sections were used and mark remainder N/A.

4.2.1 "A" Containment Recirculation Fan Normal Conditions Mass Air Flow Check. _____

4.2.2 "A" Containment Recirculation Fan Accident Conditions Mass Air Flow Check. _____

4.2.3 "B" Containment Recirculation Fan Normal Conditions Mass Air Flow Check. _____

4.2.4 "C" Containment Recirculation Fan Normal Conditions Mass Air Flow Check. _____

4.2.5 "C" Containment Recirculation Fan Accident Conditions Mass Air Flow Check. _____

4.2.6 "D" Containment Recirculation Fan Normal Conditions Mass Air Flow Check. _____

4.3 Test personnel are qualified in accordance with A-1102. _____

5.0 PRECAUTIONS:

5.1 Normal company safety precautions will be observed.

6.0 INSTRUCTIONS:

6.1 "A" Containment Recirculation Fan Normal Conditions Mass Air Flow Check:

6.1.1 Ensure that only the "A" Containment Recirculation Fan is running. _____

6.1.2 Ensure that normal loop entry damper 1 F-LED (5873) is open. _____

6.1.3 Insert Pitot Tube and position end into air flow. _____

6.1.4 Record air flow measurements at points indicated on data sheet. _____

6.1.5 Perform calculations for total air flow. _____

6.2 "A" Containment Recirculation Fan Accident Conditions Mass Air Flow Check:

6.2.1 Ensure that only the "A" Containment Recirculation Fan is running. _____

6.2.2 Press in armature button of CF1A/L relay in Relay Racks (latch in type relay), verify the following:

6.2.2.1 1F-LED damper (5873) assumes its fully closed position. _____

6.2.2.2 1I-CID damper (5871) assumes its fully open position. _____

6.2.2.3 1K-COD damper (5872) assumes its fully open position. _____

6.2.2.4 Green indicating light (at M.C.B.) for charcoal dampers is extinguished. _____

6.2.3 Insert Pitot Tube and position end into air flow. _____

6.2.4 Record air flow measurements at points indicated on data sheet. _____

6.2.5 Perform calculations for total air flow. _____

6.2.6 Return "A" Containment Recirculation Fan Dampers to their normal position by pressing in reset push button and verify the following:

6.2.6.1 1F-LED damper (5873) assumes its fully open position. _____

6.2.6.2 1I-CID damper (5871) assumes its fully closed position. _____

6.2.6.3 1K-COD damper (5872) assumes its fully closed position. _____

6.2.6.4 Green indicating light (at M.C.B.) for charcoal dampers is illuminated. _____

6.3 "B" Containment Recirculation Fan Normal Conditions Mass Air Flow Check:

6.3.1 Ensure that only the "B" Containment Recirculation Fan is running. _____

6.3.2 Ensure that normal loop entry damper 1G-LED is open. _____

6.3.3 Insert Pitot Tube and position end into air flow. _____

6.3.4 Record air flow measurements at points indicated on data sheet. _____

6.3.5 Perform calculations for total air flow. _____

6.4 "C" Containment Recirculation Fan Normal Conditions Mass Air Flow Check:

6.4.1 Ensure that only the "C" Containment Recirculation Fan is running. _____

6.4.2 Ensure that normal loop entry damper 1H-LED (5875) is open. _____

6.4.3 Insert Pitot Tube and position end into air flow. _____

6.4.4 Record air flow measurements at points indicated on data sheet. _____

6.4.5 Perform calculations for total air flow. _____

6.5 "C" Containment Recirculation Fan Accident Conditions Mass Air Flow Check:

6.5.1 Ensure that only the "C" Containment Recirculation Fan is running. _____

6.5.2 Press in armature button of CF1C/L relay in Relay Racks (latch in type relay), verify the following:

6.5.2.1 1H-LED damper (5875) assumes its fully closed position. _____

6.5.2.2 1J-CID damper (5876) assumes its fully open position. _____

6.5.2.3 1L-COD damper (5874) assumes its fully open position. _____

6.5.2.4 Green indicating light (at M.C.B.) for charcoal dampers is extinguished. _____

6.5.3 Insert pitot tube and position end into air flow. _____

6.5.4 Record air flow measurements at points indicated on data sheet. _____

6.5.5 Perform calculations for total air flow. _____

6.5.6 Return "C" Containment Recirculation Fan Dampers to their normal position by pressing in reset push buttong and verify the following:

6.5.6.1 1H-LED damper (5875) assumes its fully open position. _____

6.5.6.2 1J-CID damper (5876) assumes its fully closed position. _____

6.5.6.3 1L-COD damper (5874) assumes its fully closed position. _____

6.5.6.4 Green indicating light (at M.C.B.) for charcoal dampers is illuminated. _____

6.6 "D" Containment Recirculation Fan Normal Conditions Mass Air Flow Check:

6.6.1 Ensure that only the "D" Containment Recirculation Fan is running. _____

6.6.2 Ensure that normal loop entry damper 1E-LED is open. _____

6.6.3 Insert Pitot Tube and position end into air flow. _____

6.6.4 Record air flow measurements at points indicated on data sheet. _____

6.6.5 Perform calculations for total air flow. _____

COMPLETED BY: _____

DATE COMPLETED: _____

SHIFT SUPERVISOR: _____

RESULTS AND TEST REVIEW: _____ DATE: _____

"A" CONTAINMENT RECIRCULATION FAN NORMAL CONDITIONS

MASS AIR FLOW CHECK DATA SHEET

INCHES	TRAVERSE #1	TRAVERSE #2
1 1/16		
3 7/16		
6 1/8		
9 1/2		
14 3/8		
27 5/8		
32 1/2		
35 7/8		
38 9/16		
40 15/16		
TOTAL		

Tot. Traverse #1 _____ / 10 = ave. traverse #1 _____

Tot. Traverse #2 _____ / 10 = ave. traverse #2 _____

Total _____ / 2 = _____ / ΔP = _____ "H_2O

$$\frac{(\quad\text{"}H_2O)\ 144\ in^2/ft^2}{(12\ in/ft)\ 2.31\ ft/H_2O/\#/in^2} = \_\_\_\_\_\ \#/ft^2$$

$$V = \sqrt{\frac{2g\ (\Delta P)}{e}} = \sqrt{\frac{(64.4\ ft/sec^2)(\_\_\_\_\_\ \#/ft^2}{.075\ \#/ft^3}} =$$

$$\sqrt{\_\_\_\_\_\ ft^2/sec^2} = \_\_\_\_\_\ ft/sec$$

Area of 42" Duct = 9.6218 ft^2

$Q = AV = (9.6218\ ft^2)$ (_____ ft/sec) (60 sec/min) = _____ ft^3/min

COMMENTS:

PERFORMED BY: _____

DATE: _____

"A" CONTAINMENT RECRCULATION FAN ACCIDENT CONDITIONS

MASS AIR FLOW CHECK DATA SHEET

INCHES	TRAVERSE #1	TRAVERSE #2
1 1/16		
3 7/16		
6 1/8		
9 1/2		
14 3/8		
27 5/8		
32 1/2		
35 7/8		
38 9/16		
40 15/16		
TOTAL		

Tot. Traverse #1 $\frac{\quad}{10}$ = ave. traverse #1 _____

Tot. Traverse #2 $\frac{\quad}{10}$ = ave. traverse #2 _____

Total $\frac{\quad}{2}$ = $\frac{\quad}{\Delta P}$ = _____ "H_2O

$$\frac{(\quad \text{"}H_2O)\ 144\ in^2/ft^2}{(12\ in/ft)\ 2.31\ ft/H_2O/\#/in^2} = \_\_\_\_\_\ \#/ft^2$$

$$V = \sqrt{\frac{2g\ (\Delta P)}{e}} = \sqrt{\frac{(64.4\ ft/sec^2)(\quad \#/ft^2}{.075\ \#/ft^3}} =$$

$$\sqrt{\quad}\ ft^2/sec^2 = \_\_\_\_\_\ ft/sec$$

Area of 42" Duct = 9.6218 ft^2

$Q = AV = (9.6218\ ft^2)$ (_____ ft/sec) (60 sec/min) = _____ ft^3/min

COMMENTS:

PERFORMED BY: _____

DATE: _____

"B" CONTAINMENT RECIRCULATION FAN NORMAL CONDITIONS

MASS AIR FLOW CHECK DATA SHEET

INCHES	TRAVERSE #1	TRAVERSE #2
1 1/16		
3 7/16		
6 1/8		
9 1/2		
14 3/8		
27 5/8		
32 1/2		
35 7/8		
38 9/16		
40 15/16		
TOTAL		

Tot. Traverse #1 _____ / 10 = ave. traverse #1 _____

Tot. Traverse #2 _____ / 10 = ave. traverse #2 _____

Total _____ / 2 = _____ / ΔP = _____ "H_2O

$$\frac{(\_\_\_\_\_\ "H_2O)\ 144\ in^2/ft^2}{(12\ in/ft)\ 2.31\ ft/H_2O/\#/in^2} = \_\_\_\_\_\ \#/ft^2$$

$$V = \sqrt{\frac{2g\ (\Delta P)}{e}} = \sqrt{\frac{(64.4\ ft/sec^2)(\_\_\_\_\_\ \#/ft^2}{.075\ \#/ft^3}} = \sqrt{\_\_\_\_\_\ ft^2/sec^2} = \_\_\_\_\_\ ft/sec$$

Area of 42" Duct = 9.6218 ft^2

$Q = AV = (9.6218\ ft^2)$ (_____ ft/sec) (60 sec/min) = _____ ft^3/min

COMMENTS:

PERFORMED BY: _____

DATE: _____

"C" CONTAINMENT RECIRCULATION FAN NORMAL CONDITIONS

MASS AIR FLOW CHECK DATA SHEET

INCHES	TRAVERSE #1	TRAVERSE #2
1 1/16		
3 7/16		
6 1/8		
9 1/2		
14 3/8		
27 5/8		
32 1/2		
35 7/8		
38 9/16		
40 15/16		
TOTAL		

Tot. Traverse #1 _____ / 10 = ave. traverse #1 _____

Tot. Traverse #2 _____ / 10 = ave. traverse #2 _____

Total _____ / 2 = _____ / ΔP = _____ "H_2O

$$\frac{(\quad\text{"}H_2O)\ 144\ in^2/ft^2}{(12\ in/ft)\ 2.31\ ft/H_2O/\#/in^2} = \quad\#/ft^2$$

$$V = \sqrt{\frac{2g\ (\Delta P)}{e}} = \sqrt{\frac{(64.4\ ft/sec^2)(\quad\#/ft^2}{..075\ \#/ft^3}} = \sqrt{\quad}\ ft^2/sec^2 = \quad ft/sec$$

Area of 42" Duct = 9.6218 ft^2

$Q = AV = (9.6218\ ft^2)$ (_____ ft/sec) (60 sec/min) = _____ ft^3/min

COMMENTS:

PERFORMED BY: _____

DATE: _____

"C" CONTAINMENT RECIRCULATION FAN ACCIDENT CONDITIONS

MASS AIR FLOW CHECK DATA SHEET

INCHES	TRAVERSE #1	TRAVERSE #2
1 1/16		
3 7/16		
6 1/8		
9 1/2		
14 3/8		
27 5/8		
32 1/2		
35 7/8		
38 9/16		
40 15/16		
TOTAL		

Tot. Traverse #1 $\frac{\_\_\_\_\_}{10}$ = ave. traverse #1 _____

Tot. Traverse #2 $\frac{\_\_\_\_\_}{10}$ = ave. traverse #2 _____

Total $\frac{\_\_\_\_\_}{2}$ = $\frac{\_\_\_\_\_}{\Delta P}$ = _____ "H_2O

$$\frac{(\_\_\_\_\_\ "H_2O)\ 144\ in^2/ft^2}{(12\ in/ft)\ 2.31\ ft/H_2O/\#/in^2} = \_\_\_\_\_\ \#/ft^2$$

$$V = \sqrt{\frac{2g\ (\Delta P)}{e}} = \sqrt{\frac{(64.4\ ft/sec^2)(\_\_\_\_\_\ \#/ft^2}{.075\ \#/ft^3}} =$$

$$\sqrt{\_\_\_\_\_\ ft^2/sec^2} = \_\_\_\_\_\ ft/sec$$

Area of 42" Duct = 9.6218 ft^2

$Q = AV = (9.6218\ ft^2)$ (_____ ft/sec) (60 sec/min) = _____ ft^3/min

COMMENTS:

PERFORMED BY: _____

DATE: _____

"D" CONTAINMENT RECIRCULATION FAN NORMAL CONDITIONS

MASS AIR FLOW CHECK DATA SHEET

INCHES	TRAVERSE #1	TRAVERSE #2
1 1/16		
3 7/16		
6 1/8		
9 1/2		
14 3/8		
27 5/8		
32 1/2		
35 7/8		
38 9/16		
40 15/16		
TOTAL		

Tot. Traverse #1 $\frac{\quad}{10}$ = ave. traverse #1 _____

Tot. Traverse #2 $\frac{\quad}{10}$ = ave. traverse #2 _____

Total $\frac{\quad}{2}$ = $\frac{\quad}{\Delta P}$ = _____ "H_2O

$$\frac{(\quad \text{"}H_2O)\ 144\ in^2/ft^2}{(12\ in/ft)\ 2.31\ ft/H_2O/\#/in^2} = \quad \#/ft^2$$

$$V = \sqrt{\frac{2g\ (\Delta P)}{e}} = \sqrt{\frac{(64.4\ ft/sec^2)(\quad \#/ft^2}{.075\ \#/ft^3}} = \sqrt{\quad ft^2/sec^2} = \quad ft/sec$$

Area of 42" Duct = 9.6218 ft^2

$Q = AV = (9.6218\ ft^2)$ (_____ ft/sec) (60 sec/min) = _____ ft^3/min

COMMENTS:

PERFORMED BY: _____

DATE: _____