ATTACHMENT 2

Form 34731 (10-81)
(Formerly SPD-1002-1)

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: TT/1/A/9100/101B
Change(s) 0 to
0 Incorporated

(2) STATION: McGUIRE

(3) PROCEDURE TITLE: AUXILIARY BUILDING VENTILATION SYSTEM
AIR FLOW DISTRIBUTION MEASUREMENTS II

(4) PREPARED BY: Philip W. Roberson DATE: 10/22/85

(5) REVIEWED BY: K A Thomas DATE: 10/23/85

Cross-Disciplinary Review By: _____ N/R: N/A

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: _____ (SRO) Date: _____

By: _____ Date: _____

(7) APPROVED BY: _____ Date: _____

(8) MISCELLANEOUS:

Reviewed/Approved By: David White Date: 10-23-85

Reviewed/Approved By: _____ Date: _____

DUKE POWER COMPANY
McGUIRE NUCLEAR STATION
AUXILIARY BUILDING VENTILATION SYSTEM
AIR FLOW DISTRIBUTION MEASUREMENTS II

1.0 Purpose

To determine air flow velocity profile for carbon adsorber bed entry and exit in the VA filtered exhaust package.

2.0 References

2.1 ANSI N-510, Rev. 1980

2.2 ANSI N-510, Rev. 1975

2.3 TP/0/A/1450/02

3.0 Time Required

One test coordinator and technician for 2 hours.

4.0 Prerequisite Tests

None

5.0 Test Equipment

5.1 Flashlight

5.2 Hot-wire anemometer

5.3 Ladder

5.4 Tape Measure

6.0 Limits and Precautions

6.1 Follow HP guidelines for entry into operating filter package.

6.2 Use caution during testing to avoid placement of ladders, personnel, etc. such that velocity readings would be affected.

7.0 Required Unit Status

None

8.0 Prerequisite System Conditions

Initial/Date

____/____ 8.1 The Unit 1 VA Filtered Exhaust Package is running in filter mode (keyswitch turned to TEST) with both Unit 1 VA supply fans on.

9.0 Test Method

A traverse of the vertical entry and exit slots for the VA carbon adsorber bed will be performed with an anemometer. Ten data points will be recorded for each of the upstream and downstream flow paths in order to analyze flow distribution.

10.0 Data Required

10.1 VA filtered exhaust system flow rate (as read by in-place instrumentation).

10.2 Air flow velocity readings as specified by enclosures (as read by anemometer).

10.3 Average velocities and worst case high and low percent deviations as calculated on Enclosure 13.3.

11.0 Acceptance Criteria

11.1 Results of velocity distribution data will be evaluated by Design Engineering to determine effects on residence time and representative carbon sampling per MCC-1211.00-00-0096, Acceptance Criteria for Supplemental Filter Testing.

12.0 Procedure

Initial/Date

NOTE: IV means independent verification is required.

____/____ 12.1 Prerequisites are met and Limits and Precautions have been reviewed.

____/____ 12.2 Record VA filtered exhaust flow rate as read by 1MVAPG9370: _____cfm.

____/____ 12.3 Enter VA filtered exhaust package between the downstream HEPA face and carbon adsorber bed, and ensure door is closed.

____/____ 12.4 Complete all data blanks as required by Enclosure 13.1.

____/____ 12.5 Exit filter housing, being sure to remove all test equipment.

____/____ 12.6 Enter filter housing between the carbon adsorber bed and the downstream isolation damper.

CAUTION: At this point in the filter housing, the only components between personnel and the exhaust fans are the downstream isolation dampers. Use care such that personal protective equipment and test equipment is not drawn into fans.

____/____ 12.7 Ensure access portal is closed.

____/____ 12.8 Complete all data blanks as required by Enclosure 13.2.

____/____ 12.9 Exit filter housing, being sure to remove all test equipment.

____/____ 12.10 Ensure all VA filter package doors, entry ports and sample

____/____IV ports are properly sealed.

____/____ 12.11 Perform calculations as required by Enclosure 13.3.

13.0 Enclosures

13.1 Velocity Distribution at Adsorber Bed Upstream Face

~~13.2 Velocity Distribution at Adsorber Bed Downstream Face~~ Test Deleted

13.3 Velocity Distribution Calculations

Enclosure 13.1
Velocity Distribution at Adsorber Bed Upstream Face

1. Record instrument identification:
   Anemometer ID # ______________
   Last Calibration ______________
   Calibration Due ______________

2. Divide each of the 20 vertical inlet slots into 10 equal sections, using the tape measure. Perform velocity measurements with the anemometer at the center of each of these 10 sections for each of the vertical slots. Record readings in the corresponding blanks below.
   NOTE: Vertical inlet slots are numbered from left to right, as viewed facing downstream. Data is recorded from the 10 equal sections from top to bottom.

1. ______	2. ______	3. ______	4. ______	5. ______	6. ______	7. ______
______	______	______	______	______	______	______
______	______	______	______	______	______	______
______	______	______	______	______	______	______
______	______	______	______	______	______	______
______	______	______	______	______	______	______
______	______	______	______	______	______	______
______	______	______	______	______	______	______
______	______	______	______	______	______	______
______	______	______	______	______	______	______

Measurements Taken By ________________ Date ______________

Data Recorded By ________________ Date ______________

8.	9.	10.	11.	12.	13.	14.

15.	16.	17.	18.	19.	20.

Measurements Taken By _____ Date _____

Data Recorded By _____ Date _____

1.0 Average the ten readings for each vertical inlet slot as recorded on Enclosure 13.1.

$$V = \frac{\Sigma V_i}{10}$$

1. _____	2. _____	3. _____	4. _____	5. _____	6. _____	7. _____
8. _____	9. _____	10. _____	11. _____	12. _____	13. _____	14. _____
15. _____	16. _____	17. _____	18. _____	19. _____	20. _____	

2.0 Average the above velocities to derive the overall adsorber bed upstream average velocity.

$$V_{avg,abu} = \frac{\Sigma V_i}{20} = \_\_\_\_\_ \text{ fpm}$$

3.0 Enter lowest and highest average upstream velocities from Step 1.0 and calculate percent deviation from average.

$V_{u,l}$ = _____ fpm $V_{u,h}$ = _____ fpm

$$\% \text{ dev(l)} = \frac{Vavg,abu - Vu,l}{Vavg,abu} \times 100 = \_\_\_\_\_ \%$$

$$\% \text{ dev(h)} = \frac{Vu,h - Vavg,abu}{Vavg,abu} \times 100 = \_\_\_\_\_ \%$$

4.0 Average the ten readings for each vertical exit slot as recorded on Enclosure 13.2.

$$V = \frac{\Sigma V_i}{10}$$

NOTE: Depending on the number of vertical exit slots present in the carbon adsorber bed, mark blanks 20. and/or 21. "N/A" as required.

1. _____	2. _____	3. _____	4. _____	5. _____	6. _____	7. _____
8. _____	9. _____	10. _____	11. _____	12. _____	13. _____	14. _____
15. _____	16. _____	17. _____	18. _____	19. _____	20. _____	21. _____

5.0 Average the above velocities to derive the overall adsorber bed downstream average velocity.

$$V_{avg,abd} = \frac{\Sigma V_i}{\text{No. exit slots}} = \_\_\_\_\_ \text{ fpm}$$

Data Calculated By _____ Date _____

6.0 Enter lowest and highest average downstream velocities from Step 4.0 and calculate percent deviation from average.

$V_{d,l}$ = _____ fpm

$$\% \text{ dev(l)} = \frac{V_{avg,abd} - V_{d,l}}{V_{avg,abd}} \times 100$$

= _____%

$V_{d,h}$ = _____ fpm

$$\% \text{ dev(h)} = \frac{V_{d,h} - V_{avg,abd}}{V_{avg,abd}} \times 100$$

= _____%

Data Calculated By _____ Date _____