G/712-4-1

Inter-Office Memorandum

Date August 9, 1979

GPU Service

Subject NRC/TMI Special Inquiry - Item 4
of July 12, 1979 Request

To Mr. J. E. Guerin

Location Mountain Lakes

This memorandum responds to Item 4 of the July 12, 1979 request by the NRC/TMI Special Inquiry Group. Item 4 asks for information on the tests run on certain filters and filtration systems utilized in TMI-2. Each specific request item is set forth and responded to below.

> Item: With respect to the filters and filtration systems of the Auxiliary Building and the Fuel Handling Building, the Supplementary Exhaust Filter System, and the Reactor Purge and Control Room Filtration Units, supply results for all in-place tests that have been conducted, including startup.

Response: In-place tests on the Auxiliary Building, the Fuel Handling Building, the Reactor Building Purge and the Control Room filtration units were conducted as part of the Unit 2 startup test program. These tests were conducted in January, February and March, 1978. The test procedures utilized for these tests and the results obtained are included in Test Package SP 2 dated 3/22/78, a copy of which is attached as Document No. G/712-4-2.

In-place tests on the Supplementary Exhaust Filter System were conducted on these units after they were installed at TMI-2 in April, 1979. The formal test report for these filter units has not been received from the manufacturer (MSA), but a summary of the test results prepared by L. Hegyi of Burns & Roe, Inc. ("B&R") is included in Document No. G/712-4-3.

> Item: For the carbon in these systems, supply the laboratory test results prior to installation and any results of testing of spent carbon.

Response: The Burns and Roe Specification for the Auxiliary Building, Fuel Handling Building, Reactor Building Purge and the Control Building Filters (2555-63) requires the performance of production test on carbon filters (Division 15J, Section 5.2.1). The results of these tests are supposed to be forwarded to the owner, but we have been unable to locate these tests results in our files. The test results might be obtained from Mine Safety Appliances, Evans City, Pennsylvania, the supplier of these filter units.

The carbon filter elements used in the Supplementary Exhaust Filter System were factory tested by the vendor, Mine Safety Appliances, prior to being shipped to Washington Public Power Supply System. Test reports for these filters are attached and collectively identified as Document No. G/712-4-4. In addition, a sample carbon element from one of these filters was sent to Nuclear Consulting Services, Inc. ("NUCON") for testing after the filters were received at TMI. The results obtained are documented in NUCON report 6MT611/02 dated May 3, 1979. A copy of this report is attached as Document No. G/712-4-5.

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Carbon filter elements were removed from the Auxiliary Building, the Fuel Handling Building, and the Reactor Building Purge filter units after the March 28, 1979 accident and were sent to NUCON for testing. The results of these tests are documented in their report NUCON 6MT611/05, a copy of which is attached as Document No. G/712-4-6.

Carbon filter elements are being removed from the Auxiliary Building, Fuel Handling Building and the Supplementary Exhaust Filter Systems after each 720 hours of operation. A formal test report from NUCON on these specific elements has not been received, but a work sheet reflecting the results obtained by NUCON, as conveyed over the telephone to Met-Ed, is included as Document No. G/712-4-7.

R. L. Williams

RLW:ry

Enclosures

5 18 79 L. HECHT 5/11/79

5/7 2-4-3

FILTER TEST DATA

SUPPLEMENTARY FILTER TRAINS

FILTER UNIT #	FILTER	D.O.P CONC [%]	D.O.P PENETR [%]	FILTER EFF η [%]	REMARKS
#1	HEPA-1	90	.035	99.96	
	HEPA-2	100	.05	99.95	
	CARBON (FREON)			99.98	
#2	HEPA-1	100	.08	99.98	
	HEPA-2	60	.09	99.85	
	CARBON (FREON			99.97	
#3	HEPA-1	87	.002	99,99	
	HEPA-2	95	.014	99.98	
	CARBON (FREON)			99.96	
#4	HEPA-1	80	.006	99.99	
	HEPA-2	95	.09	99.90	
	CARBON (FREON			99.96	

THREE MILE ISLAND UNIT II
TWG

FILTER EFFICIENCY TEST

NUMBER SP 2
MTX Refer to Page
CATEGORY A
DRAFT TCN-1

Item 204
Provided 5/4/79

PREPARED: Cognizant Engineer ____ Date 1-10-78

APPROVED: Lead Engineer N.A. Date —

APPROVED: Technical Engineer ____ Date 1-10-78

PRELIMINARY REVIEW MEETING: Date N.A. MINUTES OF MEETING NUMBER N.A.

TWG APPROVAL FOR PERFORMANCE:

GPU TWG Representative ____ Date 1-10-78

Met-Ed TWG Representative ____ Date 1/10/78

NSSS TWG Representative ____ Date 1/10/78

A-E TWG Representative ____ Date 1/10/78

TEST RESULTS: Acceptable with the following test exceptions and deficiencies-
E/D ____

Technical Engineer ____ Date 3-10-78

TWG APPROVAL OF TEST RESULTS:

GPU TWG Representative ____ Date 3-22-78

Met-Ed TWG Representative ____ Date 3-22-78

NSSS TWG Representative ____ Date 3-22-78

A-E TWG Representative ____ Date 3-22-78

ENCLOSURES:
1. Test Exception and Deficiency List
2. HEPA Filter Bank Leak Test Procedure (MSA) and Carbon Filter Bank Freon Leak Test Procedure (MSA)

TABLE OF EFFECTIVE PAGES

Page	Effective Page
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
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16	0
17	0
18	0
19	0
20	0
21	0
22	0

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TMI UNIT II
SP 2

MTX

The following MTX numbers apply to this procedure:

a. 33.7
b. 124.7
c. 170.7
d. 2.5
e. 136.8
f. 138.6
g. 77.5

1.0 PURPOSE (Cont'd.)

1.2.6 Reactor Building Purge and Exhaust

AH-F-20A/B
AH-F-21A/B
AH-F-31A/B

1.2.7 Fuel Handling Building

AH-F-13A/B
AH-F-14A/B
AH-F-17A/B

2.0 REFERENCES

2.1 Drawings

E-1 JCH 2.1.1 Flow Dia. 2044, Rev. 21, HVAC Control Building.

JCH 2.1.2 Flow Dia. 2028, Rev. 22, Radwaste Disposal - Gas.

E-1 JCH 2.1.3 Flow Dia. 2385, Rev. 18, HVAC Service Building.

E-1 JCH 2.1.4 Flow Dia. 2042, Rev 16, Heating and Ventilation Auxiliary Building.

E-1 JCH 2.1.5 Flow Dia. 2041, Rev. 21, Reactor Building Ventilation and Purge.

E-1 JCH 2.1.6 Flow Dia. 2343, Rev. 18, Heating and Ventilation Fuel Handling Building.

2.2 Miscellaneous

E-1 JCH 2.2.1 FSAR, Section 9.4, Amendment 61.

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1.0 PURPOSE

1.1 Prior to initial fuel loading, "in-place" leakage tests using dioctylphthalate (DOP) on High Efficiency Particulate Filter (HEPA) units and Freon-112 (or equivalent) on charcoal units shall be performed at design flow rates on each filter train:

1.2 Filters to be tested are as follows:

1.2.1 Control Building

AH-F-4
AH-F-5
AH-F-29

1.2.2 Radwaste Disposal - Gas

WDG-F-1

1.2.3 Service Building

AH-F-28

1.2.4 Auxiliary Building

AH-F-9A/B
AH-F-10A/B
AH-F-30A/B

1.2.5 Reactor Building Hydrogen Control

AH-F-33
AH-F-34
AH-F-35

3.0 TIME REQUIRED

3.1 Three men, Five (5) Eight (8)-hour shifts per filter train.

4.0 PREREQUISITES

4.1 Tests

The following tests have been completed sufficiently to support performance of this test procedure:

4.1.1 TP 172/2 - Control Building HVAC Functional Test - MTX 33.6.

Signature [signature] Date 1/5/79

E-2 4.1.2 TP 231/3 - Radwaste Disposal - Gas Functional Test - MTX 124.6.

Signature _____ Date _____

E-2 4.1.3 Spec 2555-63 - Service Building HVAC Vendor's Test - MTX 170.6.

Signature _____ Date _____

E-2 4.1.4 TP 173/2 - Auxiliary Building H&V Functional Test - MTX 2.4.

Signature _____ Date _____

E-2 4.1.5 TP 160/4 - Reactor Building Hydrogen Control Functional Test - MTX 136.6.

Signature [signature] Date 1/5/79

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4.0 PREREQUISITES (Cont'd.)

E-2
E-4 4.1.6 TP 160/6 - Reactor Building Purge and Exhaust Functional Test - MTX 138.4.

Signature_____Date_____

E-2 4.1.7 TP 177/2 - Fuel Handling Building H&V Functional Test - MTX 77.4.

Signature_____Date_____

4.2 Construction Completion Status

E-3 4.2.1 Met-Ed has accepted the following systems for pre-operational testing:

4.2.1.1 Control Building HVAC

Signature_____Date_____

E-3 4.2.1.2 Radwaste Disposal - Gas

Signature_____Date_____

E-3 4.2.1.3 Service Building HVAC

Signature_____Date_____

E-3 4.2.1.4 Auxiliary Building H&V

Signature_____Date_____

E-3 4.2.1.5 Reactor Building Vent and Purge

Signature_____Date_____

E-3 4.2.1.6 Reactor Building Hydrogen Control

Signature_____Date_____

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4.0 PREREQUISITES (Cont'd.)

E-3 4.2.1.7 Fuel Handling Building H&V

Signature_____ Date_____

4.3 Environmental Conditions

4.3.1 No special environmental conditions are required.

Signature J. C. Wilson Date 1/6/78

Duplicate Page 0

5.0 TEST EQUIPMENT

5.1 HEPA Filter Efficiency Test

5.1.1 All test equipment will be Vendor supplied.

5.2 Carbon Filter Efficiency Test

5.2.1 All test equipment will be Vendor supplied.

5.3 Services Required

5.3.1 110 volt AC power

5.3.2 220 volt AC power

5.3.3 Cylinder pre-purified nitrogen

5.3.4 Compressed air, regulated to 15 psi.

6.0 LIMITATIONS AND PRECAUTIONS

6.1 After completion of the activated carbon adsorber section test, the system should be purged (air flow maintained) until the residual refrigerant gas in the effluent is less than 0.01 ppm.

6.2 Do not circulate through the carbon filters if fumes from painting, fire or chemicals have been recently released in any ventilation zone communicating with the system under test.

6.3 Observe other limits and precautions as listed in Enclosure 2.

Duplicate Page 0

7.0 PLANT STATUS

7.1 Instrument Air System in operation per 2104-2.3 to support this test procedure.

Signature John C Ulrich Date 1/5/78

Duplicate Page 0

8.0 PREREQUISITE SYSTEM CONDITIONS

8.1 All prerequisite system conditions for each ventilation system are listed in section 9.0.

Signature John C. Ulrich Date 1/5/78

Duplicate Page 0

9.0 TEST METHOD

The major sections list the optional method of testing since it is realized that the ventilation systems will become available for testing at different times. However, the HEPA tes. will have to be performed first and then carbon filters tested last on the ventilation systems.

9.1 Control Building HVAC (AH-F-4, 5, and 29)

HEPA TEST

9.1.1 Control Building HVAC System is lined up for normal system operation per 2104-5.10 with the exception that air flow is diverted through AH-F-4, 5, and 29 using either AH-E-4A or 4B and damper D4092A is closed.

9.1.2 Perform test procedure and record data per Enclosure 2.

9.1.3 After HEPA test proceed to carbon filter test.

CARBON FILTER TEST

9.1.4 Tag AH-E-4A and 4B "OUT OF SERVICE" per Met-Ed tagging procedure AP-1002.

9.1.5 Perform test procedure and record data per Enclosure 2.

9.1.6 After completion of test, remove tags installed in step 9.1.4 and return control of the system to Met-Ed for normal system operation.

9.0 TEST METHOD (Cont'd.)

Section 9.1 AH-F-4 Accomplished Sat. ✓ Unsat. _____

Signature J. M. Hawkins Date 1-6-78

Section 9.1 AH-F-5 Accomplished Sat. ✓ Unsat. _____

Signature J. M. Hawkins Date 1-6-78

Section 9.1 AH-F-29 Accomplished Sat. ✓ Unsat. _____

Signature J. M. Hawkins Date 1-6-78

9.2 Radwaste Disposal - Gas System (WDG-F-1)

HEPA TEST

9.2.1 Waste Gas Decay Tank WDG-T-1A or 1B must be pressurized and have sufficient volume to provide a minimum of 100 CFM flow through WDG-F-1.

9.2.2 Initiate a gas release through WDG-F-1 per 2104-4.3 at a minimum flow rate of 100 CFM.

9.2.3 Perform test procedure and record data per Enclosure 2.

9.2.4 After completion of HEPA test, terminate gas release, return system to normal operations per 2104-4.3 and proceed to carbon filter test.

CARBON FILTER TEST

9.2.5 Red tag "CLOSED" the following valves:

9.0 TEST METHOD (Cont'd.)

9.2.5.1 WDG-V-32

9.2.5.2 WDG-V-33

9.2.5.3 WDG-V-35

RDO 9.2.6 Perform test procedure and record data per Enclosure 2.

RDO 9.2.7 After completion of test, remove tags installed in step 9.2.5 and return control of system to Met-Ed for normal system operations.

Section 9.2 Accomplished Sat. ✓ Unsat. _____

Signature RD Drag Date 2/24/78

9.3 Service Building HVAC (AH-F-23)

HEPA TEST (only)

RDC 9.3.1 Start fan AH-E-23A or 23B, if not already running, and initiate flow through AH-F-23.

RDO 9.3.2 Perform test procedure and record data per Enclosure 2.

RDO 9.3.3 After test, return control of system to Met-Ed for normal operations.

Section 9.3 Accomplished Sat. ✓ Unsat. _____

Signature RD Drag Date 2/24/78

9.0 TEST METHOD (Cont'd.)

9.4 Auxiliary Building HVAC (AH-F-9A/B, 10A/B, and 30A/B)

HEPA TEST

PBO 9.4.1 Line up Auxiliary Building HVAC system for normal operations per 2104-5.3 with the exception that flow is diverted through both filter trains using either AH-E-8A and 8B or AH-E-8C and 8D. Insure damper D4020A is closed.

PBO 9.4.2 Perform test procedure and record data per Enclosure 2.

PBO 9.4.3 After completion of HEPA test, return system to normal operations per 2104-5.3 and proceed with carbon filter test.

CARBON FILTER TEST

PBO 9.4.4 Close and tag the instrument air isolation valves to E-7 dampers D4020B, C, D, and E preventing those dampers from opening.

PBO 9.4.5 Perform test procedure and record data per Enclosure 2.

PBO 9.4.6 After completion of test, open instrument air isolation valves that were closed in step 9.4.4 above and return control of system to Met-Ed for normal operations.

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9.0 TEST METHOD (Cont'd.)

Section 9.4 AH-F-9A Accomplished Sat. ✓ Unsat. _____

Signature R D Bray Date 2/24/78

Section 9.4 AH-F-10A Accomplished Sat. ✓ Unsat. 2/24/78

Signature R D Bray Date _____

Section 9.4 AH-F-30A Accomplished Sat. ✓ 3-9-78 (C.O.) Unsat. X CCS

D-8 Signature R D Bray Date 2/24/78

Section 9.4 AH-F-9B Accomplished Sat. ✓ 3-9-78 C.O. Unsat. ✓ CCS

D-8 Signature R D Bray Date 2/24/78

Section 9.4 AH-F-10B Accomplished Sat. ✓ Unsat. _____

Signature R D Bray Date 2/24/78

Section 9.4 AH-F-30B Accomplished Sat. ✓ Unsat. _____

Signature R D Bray Date 2/24/78

9.5 Reactor Building Hydrogen Control System (AH-F-33, 34, and 35)

HEPA TEST

E-5 PMK 9.5.1 Place the Reactor Building Hydrogen Control System in operation per 2102-4.1E.

E-5 PMK 9.5.2 Throttle AH-V-25 to 150 CFM as read on AH-FR-5080 in the Control Room.

Duplicate Page 0

9.0 TEST METHOD (Cont'd.)

9.5.3 Perform test procedure and record data per Enclosure 2.

9.5.4 After completion of test, terminate flow and secure Hydrogen Control System per 2102-4.1E.

9.5.5 Proceed to carbon test.

CARBON FILTER TEST

9.5.6 Tag AH-E-34 "OUT OF SERVICE" per Met-Ed procedure 1002.

9.5.7 Perform test procedure and record data per Enclosure 2.

9.5.8 After completion of test remove tag from AH-E-34 and return control of system to Met-Ed for normal operations.

Section 9.5 AH-F-33 Accomplished Sat. ✓ Unsat. _____

Signature J. M. Hawkins Date 1-12-78

Section 9.5 AH-F-34 Accomplished Sat. ✓ Unsat. _____

Signature J. M. Hawkins Date 1-12-78

Section 9.5 AH-F-35 Accomplished Sat. ✓ Unsat. _____

Signature J. M. Hawkins Date 1-12-78

9.0 TEST METHOD (Cont'd.)

9.6 Reactor Building Purge and Exhaust (AH-F-20A/B, 21A/B, and 31A/B)

HEPA TEST

CM. 9.6.1 Line up and commence a reactor building purge per 2102-4.1 using both purge exhaust fans AH-E-19A and 19B. Purge at a rate of 50,000 CFM.

JMH 9.6.2 Perform test procedure and record data per Enclosure 2.

JMH 9.6.3 After test, terminate purge per 2102-4.1 and proceed to carbon filter test.

CARBON FILTER TEST

JMH 9.6.4 Tag AH-E-19A and 19B "OUT OF SERVICE" per procedure 1002.

JMH 9.6.5 Perform test procedure and record data per Enclosure 2.

JMH 9.6.6 After completion of test, remove tags installed in step 9.6.4 and return control of system to Met-Ed for normal operations.

Section 9.6 AH-F-20A Accomplished Sat. ✓ Unsat. _____

Signature J.M. Hawkins Date 1-10-78

Section 9.6 AH-F-21A Accomplished Sat. ✓ Unsat. _____

Signature J.M. Hawkins Date 1-10-78

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9.0 TEST METHOD (Cont'd.)

Section 9.6 AH-F-31A Accomplished Sat. ✓ Unsat. _____

Signature J. M. Hawkins Date 1-10-78

Section 9.6 AH-F-20B Accomplished Sat. ✓ Unsat. _____

Signature J. M. Hawkins Date 1-11-78

Section 9.6 AH-F-21B Accomplished Sat. ✓ Unsat. _____

Signature J. M. Hawkins Date 1-11-78

Section 9.6 AH-F-31B Accomplished Sat. ✓ Unsat. _____

Signature J. M. Hawkins Date 1-11-78

9.7 Fuel Handling Building HVAC (AH-F-13A/B, 14A/B, and 17A/B)

HEPA TEST

PSO 9.7.1 Fuel Handling Building HVAC system is lined up for normal operations per 2104-5.2 with the exception that air flow is diverted through both filter trains using either AH-E-10A and 10B or AH-E-10C and 10D. Insure damper D-5683 is closed.

PSO 9.7.2 Perform test procedure and record data per Enclosure 2.

PSO 9.7.3 After test, return system to normal operating line up per 2104-5.2 and proceed to carbon filter test.

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9.0 TEST METHOD (Cont'd.)

CARBON FILTER TEST

9.7.4 Close and tag the instrument air isolation valves to dampers D5671A, 56713, 5684A, and 56843 to prevent them from opening.

9.7.5 Perform test procedure and record data per Enclosure 2.

9.7.6 After completion of test, remove tags and open instrument air valves which were closed in step 9.7.4 above and return control of system to Met-Ed for normal operations.

Section 9.7 AH-F-13A Accomplished Sat. ✓ 3-9-78 Unsat. —

Signature [signature] Date 2/24/78

Section 9.7 AH-F-14A Accomplished Sat. ✓ 3-9-78 Unsat. —

Signature [signature] Date 2/24/78

Section 9.7 AH-F-17A Accomplished Sat. ✓ 3-9-78 Unsat. —

Signature [signature] Date 2/24/78

Section 9.7 AH-F-13B Accomplished Sat. ✓ 3-9-78 Unsat. —

Signature [signature] Date 2/24/78

Section 9.7 AH-F-14B Accomplished Sat. ✓ Unsat. _____

Signature [signature] Date 2/24/78

Section 9.7 AH-F-17B Accomplished Sat. ✓ 3-9-78 Unsat. —

Signature [signature] Date 2/24/78

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10.0 DATA REQUIREMENTS

10.1 All data will be recorded on data sheets in Enclosure 2.

11.0 ACCEPTANCE CRITERIA

11.1 The HEPA filter shall have a minimum efficiency of 99.97% on a 0.3 micron DOP smoke test at rated flow.

11.2 The activated charcoal filters shall have a minimum efficiency of 99.95%.

MINE SAFETY APPLIANCES COMPANY
EVANS CITY PLANT
Evans City, Pennsylvania 16033

FILTER APPLICATION ENGINEERING

Specification No.: MSA-JCPL-1A Dated: Dec. 17, 1973

Title: HEPA FILTER BANK LEAK TEST PROCEDURE

Reference:
Jersey Central Power and Light Company
Three Mile Island Unit #2
M. J. Doyle Company P.O. No. TMT-002-2
MSA Job No. 629011

	Rev. 0	Rev. 1	Rev. 2	Rev. 3	Rev. 4
Prepared by:					
Reviewed by:					
Q.C. Approval					
Customer Approval					

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TEST PROCEDURE EXCEPTION AND DEFICIENCY LIST

Rev. 1

ENCLOSURE 1 OF SP 2

COVER PAGE

The exception and deficiency consists of the following pages: 1,2

No.	E/D	Par.	Description/Initial/Date	Justification/Resolution	Justified/ Completed Signoff	Date
1	E	2.1 2.2	Update references to latest revisions, ammendments, etc. JCU 1/5/78	Must be done per TI's prior to running procedure	J.C. Ulrich	1/5/78
2	E	4.1.2 4.1.9 4.1.6 4.1.7 4.1.3	These systems have not been tested but will be tested prior to running the filter tests or an adequate explanation will be made with another exception, why these prerequisites won't be met. The systems where these prerequisites have been met, may be tested. JCU 1/5/78	See E-4 the status of these tests in no way enhances or degrades the data on Enclosure 2. data sheets and therefore does not affect the scope or intent of this TP as performed	CE Datto	3/9/78
3	E	4.2.1.1 4.2.1.2 4.2.1.3 4.2.1.4 4.2.1.5	These systems have not been turned over to MEC. JCU 1/5/78	The systems may be tested if they have not been turned over. It doesn't affect testing.	J.C. Ulrich	1-5-78
4	E	4.1.6	The functional test has not been done on this system. J.C.U. 1/15/78	The systems operable and these requirements have been met. The flow requirements are necessary to run SP 2	J.C. Ulrich	1/10/78
5	E	9.5.1 9.5.2	System not lined-up per O.P. 2102-4.1E CMC 1/12/78	Due to painting in Rx bldg., filter housing door was opened for suction and AH-V25 was blocked open to satisfy fan interlock	[illegible]	1/12/78

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SUBSEQUENT PAGES

No.	E/D	Par.	Description/Initial/Date	Justification/Resolution	Justification Complete Signoff	
6	E	9.2.1, 9.2.2, 9.2.4, 9.2.5,	Steps not performed RDO 2/24/78	Test performed as indicated on data sheet.	RDOrozy	4-
7	E	9.4	Sealed off bypass damper AH-D 4C20A with plastic RDO 2/24/78	Prevention of leakage thru damper	RDOrozy	2/2
8	D	9.4	Filters AH-F 30A and AH-F-9B did not meet acceptance criteria RDO 2/24/78	Retested filters: Resealed bypass damper, Changed downstream sample pt. Tested Sat. recorded on duplicate pages	RDOrozy	3/1
9	D	9.7	Filters AH-F-13A, 14A, 13B 17A and 17B did not meet acceptance criteria RDO 2/24/78	Retested filters: Resealed bypass damper. Tested Sat. recorded on duplicate pages	RDOrozy	2/1
10	E	Encl 2	Sample times differed slightly from times stated in the procedure. [illegible] 3/22/78	the times recorded did not affect the scope or intent of this procedure	[illegible]	3/22

MINE SAFETY APPLIANCES COMPANY
EVANS CITY PLANT
Evans City, Pennsylvania 16033

FILTER APPLICATION ENGINEERING

Specification No.: MSA-JCPL-TA Dated: Dec. 17, 1973

Title: HEPA FILTER BANK LEAK TEST PROCEDURE

Reference: Jersey Central Power and Light Company
Three Mile Island Unit #2
M. J. Doyle Company P.O. No. THT-002-2
MSA Job No. 629011

	Rev. 0	Rev. 1	Rev. 2	Rev. 3	Rev. 4
Prepared by:					
Reviewed by:					
Q.C. Approval					
Customer Approval					

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3.2 Air-operated DOP Generator using Laskin-type nozzles (N.R.L. Report 6110-96A/50, May 20, 1954). Commercial Model TDA-4A, Air Techniques, Inc. Average particle size of the DOP smoke is 0.7 microns (see Appendix A).

4. SERVICES REQUIRED

4.1 110 volt AC, 60 Hz power source

4.2 80 psig minimum air supply or compressor

4.3 One-inch minimum pipe size

4.4 System fan operable

5. BANK PREPARATION

5.1 Visually inspect HEPA mounting frame and attachment to housing for leak areas: bad welds, cracks, holes in frame, etc. Make any necessary repairs in accordance with approved procedures.

5.2 In large banks, it may be necessary to test the bank in sections. Generally a maximum of 15 filters can be tested at one time. Blank off all filters not under test.

6. EQUIPMENT PREPARATION

6.1 DOP Generator (Figure 3, Appendix C)

6.1.1 Examine holes in nozzles and collars to be sure they are free from dirt and debris.

6.1.2 Be sure DOP is at ambient temperature.

6.1.3 Be sure generator is level and the nozzles are in a vertical position.

6.1.4 Fill container with DOP to proper level. Proper level is at least even with the upper surface of the collar on the nozzle but no more than one inch above it.

6.1.5 Connect 80 psi air supply to the DOP air-inlet nipple.

6.1.6 Connect DOP generator to DOP inlet nipple in front of the HEPA bank under test.

Contractor: M. J. DOYLE COMPANY

Location: JCPL Three Mile Island Nuclear Station No. 2

Spec No.: 2555-63, Section 15J, Procedure No. 1A

P.O. No.: TMT-002-2 Date: October 24, 1973

MSA HEPA FILTER BANK TEST PROCEDURE

1. SCOPE

This procedure presents the steps required to conduct a filtration efficiency test of systems containing one or more particulate air-cleaning devices. This test method is an "In-place Test" method which measures the particle-removal efficiency of the system.

The installed air-cleaning device is confronted with an aerosol of DOP (dioctyl phthalate) of the proper particle size. The concentration of the DOP is measured upstream and downstream of the device by means of a photometer. The system filtration efficiency is then calculated from the two aerosol-concentration values obtained.

This in-place test is performed to determine the efficiency of the system in such a manner that any penetration of the test aerosol around the devices is included in the results. DOP smoke is introduced to the entire bank including framework, filters and gaskets.

2. DEFINITIONS

2.1 Particulate Air-cleaning Device - HEPA filter.

2.2 System - HEPA filters in the rack.

2.3 In-place Test - An in-place test is a test applied to a system, in the condition in which the system is to be operated, to measure its filtration efficiency.

3. EQUIPMENT

3.1 Aerosol Dust and Smoke Photometer with a linear response and a sensitivity range of 100,000 to 1. (N.R.L. Report P-2642, September 10, 1945). With the smoke concentration upstream set at 100%, a downstream concentration of 0.001% can be detected.
Commercial Model TDA 2C, Air Techniques, Inc.

6.2 Light Scattering Photometer (Schematic Diagram - Appendix C)

6.2.1 Connect photometer to 115 volt AC power.

6.2.2 Turn on main power switch. Allow instrument to warm up for 30 minutes.

6.2.3 Calibrate or adjust photometer in accordance with the manufacturer's instructions (indicating needle to be on zero.)

7. TEST PROCEDURE

7.1 Turn on system fans.

7.2 Adjust air flow to the correct volume; i.e., 1400 CFM for each 24 x 24 x 12 HEPA filter. This gives an air flow velocity through the media of 7 fpm.

Note: Airflow is measured through the system with a pitot tube.

7.3 Record air flow. (See Appendix B)

7.4 Measure HEPA bank resistance and record. (See Appendix B)

7.5 Turn on N_2 supply to DOP generator. Adjust pressure to some point between 10 psig and 40 psig.

CAUTION: Do not exceed 40 psig N_2 pressure or liquid carry-over may result.

7.6 Determine the DOP concentration upstream of the HEPA filter bank. Turn sample valve to test position; i.e., where sample air is pulled through the scattering chamber. Adjust N_2 pressure to read greater than 50% on scale on the photometer. Record reading.

TCN-1

7.7 Turn sample valve to clean air position; i.e., where clean filtered air is pulled through the scattering chamber. Zero the photometer for stray light effects using the stray-light control on the percent-penetration meter.

7.8 Determine the DOP concentration downstream of the HEPA filter bank. Turn sample valve to test position. If reading is greater than .03% - stop test. Inspect filter bank for obvious holes. Tighten hold down mechanism on filters. Continue with test. Take three (3) samples upstream and three (3) samples downstream until readings are stable within ± 5%. Record all readings.

US = concentration of the aerosol in the unfiltered air

$\Delta\bar{X}$ = standard error of $\bar{X}$

7.14 Determine whether the efficiency is within tolerance.

Filter tolerance = 99.97% efficiency

System tolerance = 99.95% efficiency

If the efficiency is within tolerance, the bank is acceptable; proceed to the next HEPA bank. If the system efficiency is not within tolerance, continue to Section 8.0.

8. PROCEDURE FOR INITIALLY UNACCEPTABLE BANKS

8.1 Reduce upstream concentration to C_L, defined as limited by the following inequalities:

$$C_L \geq 4C_B \text{ or } C_L \geq 10C_S \text{ min.}$$

where: C_B = background reading in upstream air

C_S = concentration equivalent to full-scale deflection on the most sensitive useable scale; that is, the scale where "raise" is less than 5% of full scale.

[Despite the fact that the in-place test is nondestructive, the total amount of DOP introduced to the system should be kept at a minimum. Since this section is not intended as a quantitative test but is, instead, a matter of judgment to be proven on retest, it is not necessary to introduce the relatively large concentration of DOP smoke needed for leak testing.]

8.2 Scan mounting frames and housing joints to locate leaks. Hold the probe approximately one (1) inch from the face of the filter or frame; make a traverse, first, around the periphery of the filters, as this is where leaks are most likely to occur. Then probe the faces of the filters in slightly overlapping strokes until the entire faces are covered.

As an arbitrary indicator, any location giving readings greater than or equal to 0.05 C_L will be considered in need of repair.

7.9 DELETED

7.10 DELETED

7.11 DELETED

7.12 DELETED

TCN-1

7.13 Calculate the bank efficiency using the following formula:

$$E = 100\left[1 - \frac{C_D}{C_U}\right]$$

where: E = system efficiency in percent

C_D = average downstream DOP concentration

C_U = average upstream DOP concentration

7.13.1 When the multiple sample technique is used, the 95% confidence interval for the filtration efficiency shall be calculated and reported with the filtration efficiency as follows: (Ref. 9.1)

$$E = \left[100 - 100\left(\frac{\bar{X}}{US}\right)\right] \pm t\left(\frac{100\ \Delta\bar{X}}{US}\right)$$

where: E = efficiency of the system in percent

$\bar{X}$ = arithmetic mean concentration

HEPA FILTER LEAK TEST RESULTS

Customer Name _____ Date _____

Filter Bank _____

FILTERS:

Quantity _____

Size _____

TEST INSTRUMENTS:

Photometer _____ Calibration Date _____

DOP Generator _____

TEST DATA:

Flow, CFM _____

Pressure Drop, Inches W.G. _____

Upstream DOP Concentration, % _____

Downstream DOP Penetration, % _____

Final Filter System Efficiency, % _____

COMMENTS:

_____

_____

_____

_____

_____

_____

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APPENDIX A

TESTING TECHNIQUES

It is very important that the samples taken are representative of the test aerosol in the duct. In some cases it may be necessary to use temporary baffles, etc., to insure adequate mixing.

If the system is under positive pressure, the test aerosol can be fed into the fan intake. If not, it should be injected as far as possible upstream of the filters so that the maximum amount of mixing will occur before the test mixture reaches the filters. The upstream sample should be taken as close to the filter as practical.

The downstream samples should be taken as far as practical from the filter bank. The outlet duct from the plenum where the air velocities are high is a good position.

If the DOP generator is set up and run, per Section 6.1 of this specification, the aerosol will have an average particle diameter of the order of 0.5 micron. Numberwise, the aerosol shall have 95% of the particles less than 1.0 micron diameter.

Sample volume rates should be equal and about 1 CFM. Tubing should be plastic and at least 1/4 in. in diameter.

8.3 Repair by welding all structural leakage discovered per 8.2. Used approved procedures and qualified welders for repairing these welds.

8.4 Scan gasket seal of filters with the same leakage indication requirements and repair as necessary.

8.5 Repair or replace damaged filters.

8.6 After repair work is complete, repeat Steps 8.1 through 8.4 until no leakage areas exist. (The probe used for scanning should have a head large enough that the probe inlet velocity is approximately the same as system flow for best results. The probe should be moved at a rate of about 10 to 15 fpm.)

8.7 Re-establish generator operating conditions of 7.5 and repeat leak test. (C_U will not be determined again, being entirely a function of generator conditions and air flow, which are reproducible.)

8.8 Repeat leak test with single point downstream sample. (Traverse will not be repeated unless distribution criterion is not met.)

8.9 Calculate bank leakage/efficiency as in Step 7.13.

8.10 If acceptable, proceed to next HEPA bank.

8.11 All records of test results and calculations will be submitted to the Engineer for approval. (See Appendix B)

9. REFERENCES

9.1 A.S.M.E. Standard No. N101.1-1972. Efficiency testing of air cleaning systems containing devices for removal of particles.

9.2 Tests of High Efficiency Filters and Filter Installations at ORNL. D. G. Parrish and W. R. Schneider, ORNL 34421, dated June 3, 1963.

9.3 Design, Construction and Testing of High Efficiency on Filtration Systems for Nuclear Application; C. A. Burchsted and A. B. Fuller, ORNL-NISC-65, January 1970.

APPENDIX C

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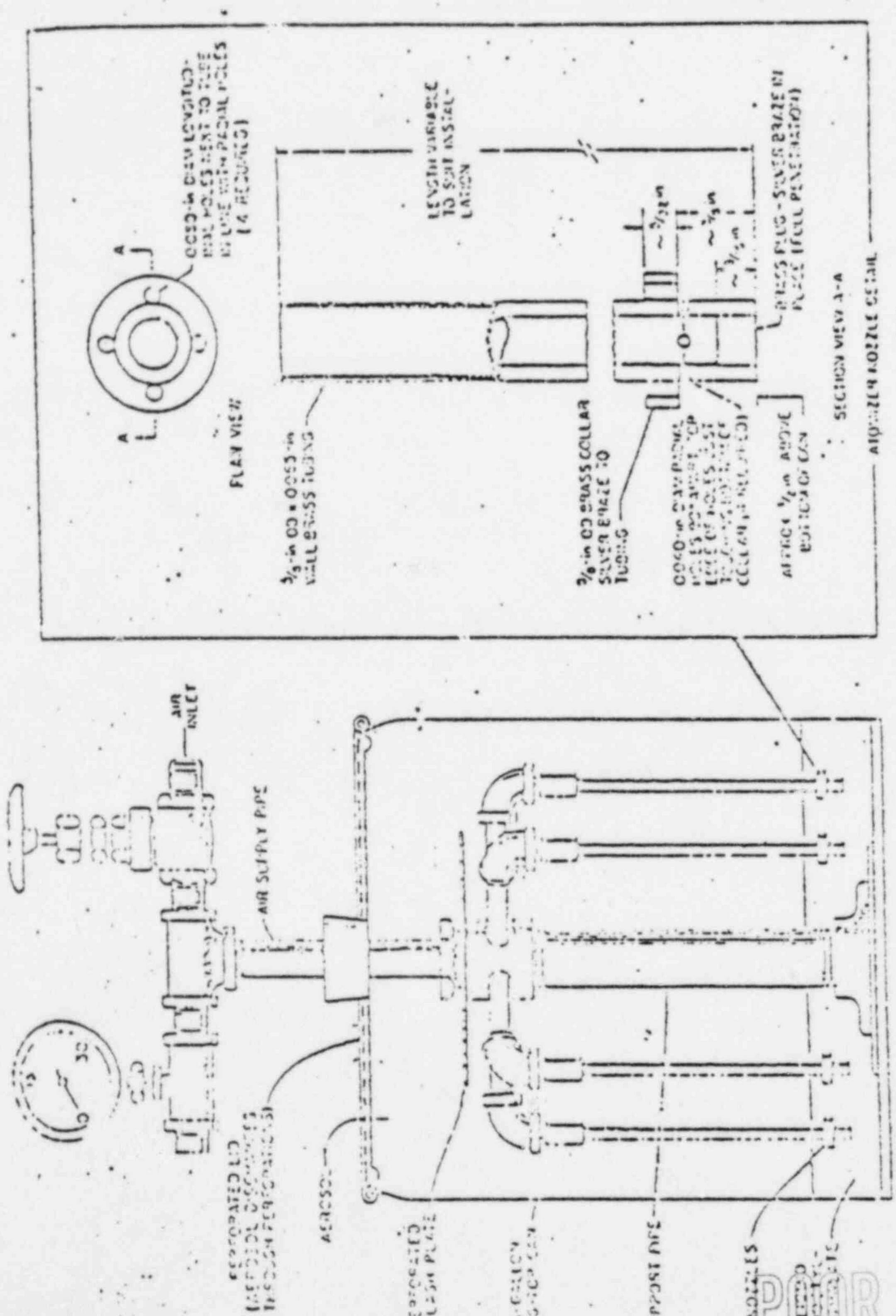
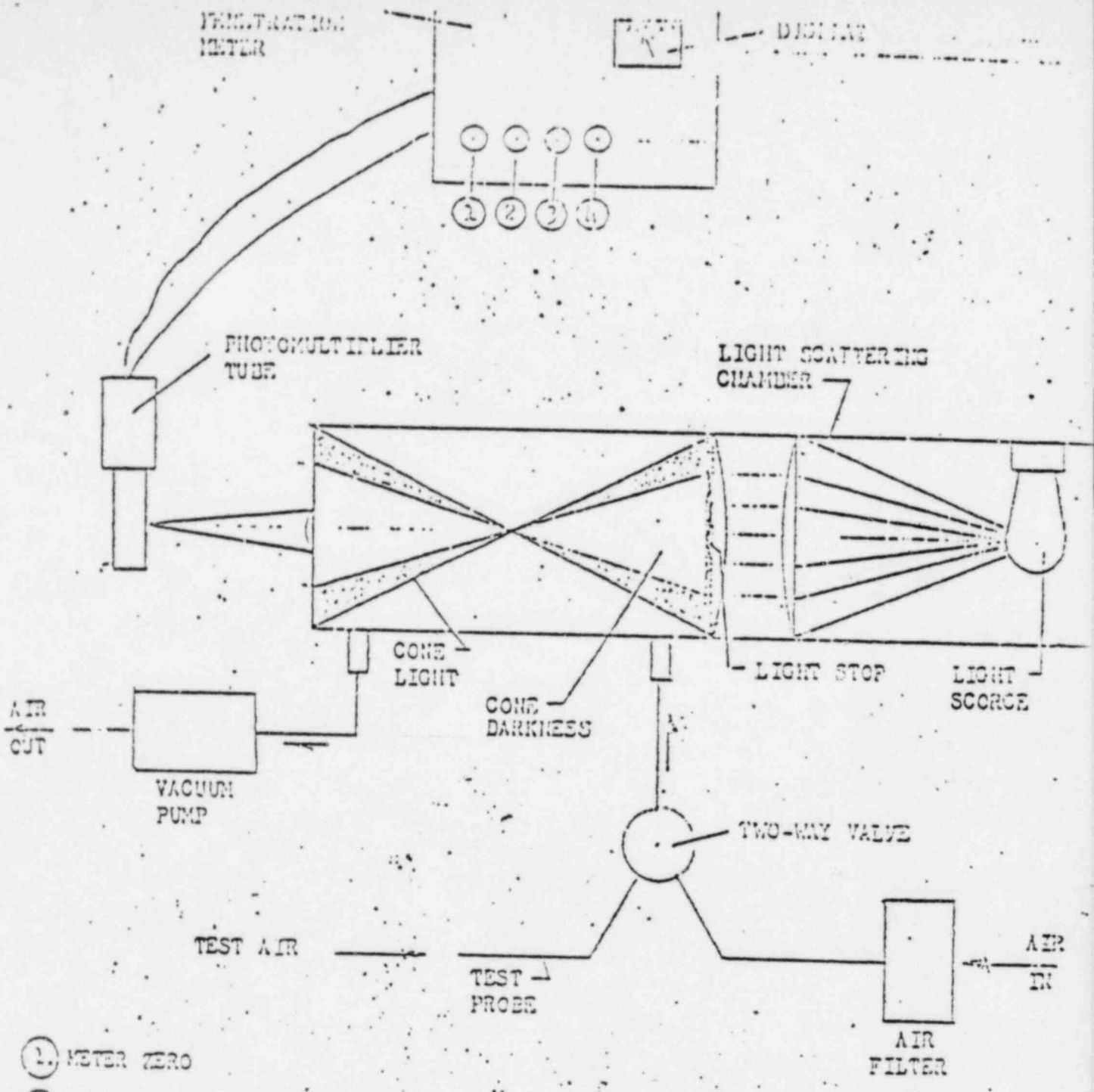


Fig. 3. A DOP aerosol generator and nozzle detail.



1. METER ZERO
2. GAIN CONTROL
3. STRAY LIGHT CONTROL
4. DISPLAY SCALE CHANGE KNOB

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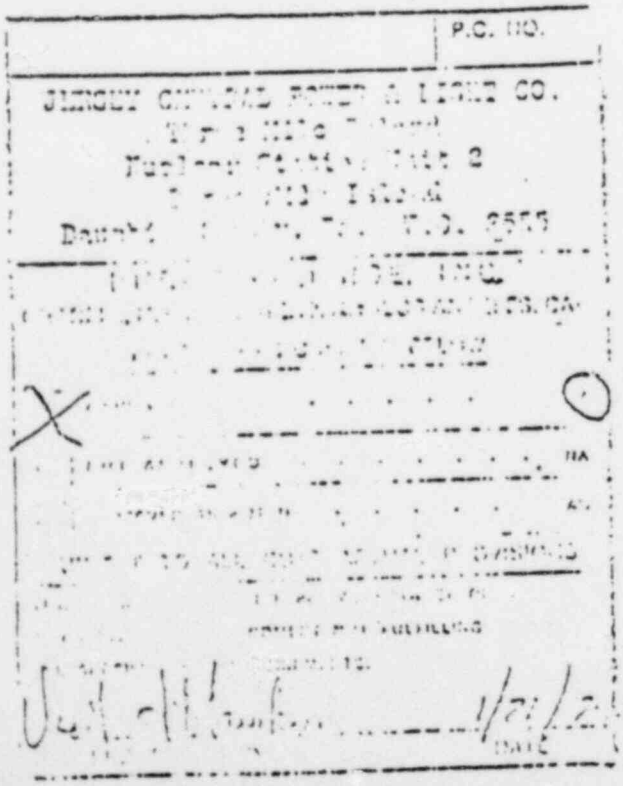
SCHEMATIC DIAGRAM FOR:

PHOTOELECTRIC LIGHT SCATTERING INSTRUMENT



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| P.O. NO.

JERSEY CENTRAL POWER & LIGHT CO.
Three Mile Island
Nuclear Station Unit 2
Three Mile Island
... Pa. W.O. 2555

... AND ROE, INC.
... LOS ANGELES, CAL.

... CHECKED ...

... APPROVED
... NA

... CONTRACTUAL PROVISIONS

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MINE SAFETY APPLIANCES COMPANY
EVANS CITY PLANT
Evans City, Pennsylvania 16033

FILTER APPLICATION ENGINEERING

Specification No.: MSA JCPL-10J Dated: September 6, 1977

Title: CARBON FILTER BANK "FREON 11" LEAK TEST PROCEDURE

Reference: Jersey Central Power and Light Company
Three Mile Island Unit No. 2
M. J. Doyle Company P.O. No. TMT-002-2
MSA Job No. 8-629011

	Rev. 0	Rev. 1	Rev. 2	Rev. 3	Rev. 4
Prepared by:	[signature]				
	9/27/77				
Reviewed by:	[signature]				
	9-27-77				
Q.C. Review	[signature]				
	9-28-77				
Mfg. Review	[signature]				
	9/28/77				

NOTE: This procedure replaces MSA JCPL-2B dated January 18, 1974.

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CARBON FILTER BANK "FREON 11" LEAK TEST PROCEDURE

1. SCOPE

This procedure presents the steps required to conduct an in-place efficiency test of systems containing one or more gaseous adsorption air-cleaning devices. The installed adsorber is confronted with gaseous "Freon 11".* The concentration of the "Freon 11" is measured upstream and downstream of the device by means of a gas chromatograph. The system efficiency is then evaluated from the two gaseous concentration values obtained.

The "Freon 11" leak test is designed to measure leakage flow through and around installed carbon beds.

The in-place test is performed to determine system efficiency in such a manner that any penetration of the test aerosol through the devices or any leakage of the test aerosol around the devices is included in the results.

2. REQUIRED EQUIPMENT

2.1 Freon Generator per Fig. 1 (Appendix E).

2.2 Freon Dilution System per Fig. 2 (Appendix E).

2.3 Varian Aerograph Model 600D single-column chromatograph with an electron capture cell or equivalent. (Linear range for the detector of "Freon 11" is based on 25% of the standing current. The upper limiting concentration is 250 ppb "Freon 11".

2.4 Leeds & Northrup Company Speedomax H Recorder or equivalent.

2.5 Prepurified nitrogen.

2.6 Freon 11.

2.7 Dry nitrogen cylinder and low pressure regulator with gauges.

3. REQUIRED UTILITIES

3.1 110 volt AC, 60 Hz power.

*Freon F-11 Trichloromonofluoromethane, CCl_3F

CARBON FILTER BANK "FREON 11" LEAK TEST PROCEDURE

4. BANK PREPARATION

4.1 Visually inspect carbon cell mounting structures and attachment to housing for any obvious leak paths and repair by welding (see Procedure MSA JCPL-3C, paragraphs 5.1.2.7 and 5.1.2.8).

4.2 Inspect carbon filters for:

a. Gasket damage
b. Metal work damage

4.3 Install carbon filters.

5. TEST EQUIPMENT PREPARATION

5.1 Freon Generator (see Figure 1)

Prepare generator to deliver "Freon 11" concentration of approximately 20 ppm or less. This can be accomplished by reference to rotameter curves shown in Appendix E. The MSA Freon 11 generator uses the Freon pressure to force the liquid "Freon 11" into the vaporizer. Vapors from here are then mixed with hot air and then injected into the system. See Figure 1.

5.1.1 Set up the generator near the inlet of the system to be tested.

5.1.2 Plug into 110 volt AC outlet.

5.1.3 Connect F-11 supply to Point C.

5.1.4 Refer to the calibration curves (see Appendix E). Determine the rotameter reading required to give a concentration of 20 ppm of "Freon 11" in air.

5.1.5 Be sure that outlet piping of vaporizer is directed into the inlet stream of the system.

5.1.6 Turn vaporizer switch to hot air position when ready to flow "Freon" gas into the system, i.e. ~3 minutes prior to need. (Swith A in Figure 1.)

CARBON FILTER BANK "FREON 11" LEAK TEST PROCEDURE

5.1.7 Control the "Freon 11" flow with the valve located at the top of the flowmeter (Item B or D in Figure 1).

5.2 Freon Dilution System (Reference Figure 2)

5.2.1 Connect Point C to sampling valve on chromatograph using 1/8" stainless steel or teflon tubing.

5.2.2 Connect Point A to sampling pump using 1/2" tygon tubing, or equivalent.

5.2.3 Connect Point E to clean air filter, MSA P/N 81857 with 1/2" tubing.

5.2.4 Connect Point B to downstream sample point on filter sytem.

5.2.5 Connect Point D to upstream sample point on filter system.

5.2.6 Connect Cord I to 110V, 60 Hz power.

5.3 Gas Chromatograph (Reference manufacturer's instructions)

5.3.1 Connect prepurified grade N_2 supply (carrier gas) to the chromatograph.

5.3.1.1 Install 0 to 300 psig regulator on N_2 bottle.

5.3.1.2 Connect N_2 line from bottle regulator to carrier gas inlet on chromatograph.

5.3.1.3 Open all valves on the N_2 supply line to the detector.

5.3.1.4 Adjust regulator for detector N_2 supply for approximately 22 psig.

5.4 Recorder

5.4.1 Connect recorder to chromatograph with electrical cable provided.

5.4.2 Check for adequate chart paper.

5.4.3 Plug cord into 110V AC, 60 Hz power source.

CARBON FILTER BANK "FREON 11" LEAK TEST PROCEDURE

6. TEST PROCEDURE FOR IN-PLACE "FREON 11" LEAK TEST

6.1 Preliminary Operations

These are usually completed the day before the actual test is performed.

6.1.1 Conduct an operational check per Section 5.0.

6.1.2 If all equipment performs satisfactorily, place on stand-by until ready to perform leak test. Do not turn off detector or detector N_2 supply.

6.1.3 Documents DP-1053, DP-1082 and ORNL-NSIC-65 suggest preconditioning "on stream" or "in use" carbon beds prior to testing by heating them to 65°C for 24 hours. The purpose of this is to drive water from the pores of the charcoal thereby making them available for Freon adsorption. MSA does not do this preconditioning. Many times it is impractical due to the size of the system.

The test as conducted by MSA is a more stringent test because it determines the efficiency of the carbon in its "installed" state.

If the carbon efficiency is satisfactory by this method, there is no doubt of satisfactory efficiency of the carbon when dried.

6.1.4 Determine air flow of the filter system being tested.

6.2 Test Procedure (see Appendix C for testing techniques)

6.2.1 Check flow through chromatograph. It should be ~75 cc/min. If not, adjust regulator on N_2 supply.

6.2.2 Locate suction end of the dilution air tubing (Point E on Fig. 2) in an area that is free of any impurities that might affect the detector.

6.2.3 Check operation of the detector.

a. Oven temperature should be adjusted to provide best separation of "F-11" and oxygen peaks (usually about 50°C).

b. Standing current for the detector must be at least 30 recorder units (RU) on Range 10, Attenuation 8. If the standing current does not equal or exceed this value, two possible causes are: (1) insufficient time for cell to warm up and purge clean with the hot N_2 flow; or (2) the cell is covered with non-volatile substances that cannot be purged off and must be replaced.

6.2.4 Calibrate detector. (See Appendix A.)

6.2.5 Start up the filter system fan.

6.2.6 Connect electrically the sampling pump.

6.2.7 Adjust flows on Freon Dilution and Sampling System (Figure 2).

6.2.7.1 Rotameters labeled 1 through 3 regulate air flows within this system.

6.2.7.2 Typical flows for dilution and sampling system.

Rotameter 1 - 2 CFH
2 - 50,000 cc/min.
3 - 100 cc/min.

Note: Flows through rotameters 2 and 3 are for dilution of the upstream sample to a level of readability. The ratio of flows through meters 2 and 3 is 500:1 and this dilution factor of .002 is used in the calculation of the adsorption efficiency.

The dilution air flow through rotameter #2 must be free of any impurities including traces of F-11. Consequently, the dilution air is obtained from a clean area upwind of the test station.

CARBON FILTER BANK "FREON 11" LEAK TEST PROCEDURE

6.2.8 Take upstream and downstream samples and note recorder trace for any unusual peaks which may interfere with the F-11 peak in an air sample. The test cannot be conducted if other peaks interfere with the F-11 peak. However, background peaks are permissible if they are consistent in size and less than the value of the standing current. (See Appendix B.)

6.2.9 Start flow to the Freon Vaporizer. Adjust to correct value using flowmeter B or D to obtain a Freon concentration of about 20 ppm. The calibration curve in Appendix E shows the relationship between Freon flow and duct air flow.

If desired flow cannot be obtained in flowmeters B or D, heat the F-11 cylinder to provide pressure until the flow rate is obtained (~90°F to 100°F on cylinder). An alternate method of providing sufficient pressure is to pressurize the Freon cylinder with air or nitrogen to 40 psig.

Note: The curves in Appendix E are typical curves. The actual calibration curves are generated at the factory prior to field testing.

6.2.10 At zero time, inject "Freon 11" into the filter system intake. Take samples as follows:

Time (sec.)	Location
30	Upstream
90	Downstream
150	Downstream
210	Downstream
270	Upstream
330	Upstream
390	Upstream

E-10

6.2.11 When test is completed and results appear satisfactory, close Freon flow valve on the Freon generator; turn toggle switch to "cold air" position; wait 5 minutes for generator to cool; and then turn toggle switch to "off" position. (Ref. Fig. 1.)

6.2.12 Record data. See Appendix D.

Note: A minimum of three upstream samples and three downstream samples is to be taken.

CARBON FILTER BANK "FREON 11" LEAK TEST PROCEDURE

6.2.13 Calculate results of leak test as follows:

$$E = 100\left[1 - \left(\frac{R_D}{R_U} \times \frac{1}{d}\right)\right]$$

where:

E = "F-11" adsorption efficiency, %

*R_D = downstream detector response for "F-11" during leak test, recorder units (RU)

*R_U = upstream detector response for "F-11" during leak test, recorder units (RU)

d = dilution factor of sample from upstream of carbon bed(s) to upstream detector, dimensionless constant.

6.2.14 Plot the percent F-11 efficiency versus time on graph paper for each of the samples. See Appendix D-A. The value of the F-11 efficiency at time zero equals the final system efficiency.

6.2.15 If the efficiency meets the requirements of the specification (i.e. 99.95%) the bank is ready for operation. If not, make necessary repairs and retest.

6.2.16 When the test results are satisfactory, shut down all equipment, dismantle, and return the bed(s) to normal service.

Note: When the equipment is disconnected, it is imperative that all detector prepurified nitrogen lines and instrument connections be plugged with clean tubing plugs and that the N_2 valve in the line and on the detector be closed. Plugs for these lines should be identified and never used for any other lines. The prepurified N_2 regulator must also be kept clean. Other lines should also be plugged to keep out any debris but these plugs must never be used for the prepurified N_2 lines.

*These values are net values. Background readings are subtracted from the test readings to obtain these values.

CARBON FILTER BANK "FREON 11" LEAK TEST PROCEDURE

7. DOCUMENTATION

Approved records of test results and efficiency calculations will be submitted to the Engineer. (See Appendix D.)

8. REFERENCES

8.1 ORNL-NSIC65, "Design, Construction and Testing of High Efficiency Air Filtration Systems for Nuclear Applications".

8.2 DP-1053, "Nondestructive Test of Carbon Beds for Reactor Confinement Applications".

8.3 DP-1082, "Standardized Nondestructive Test of Carbon Beds for Reactor Confinement Applications".

APPENDIX A

TECHNIQUE FOR CALIBRATION OF A SINGLE COLUMN GAS CHROMATOGRAPH ELECTRON CAPTURE DETECTOR BY F-112 - F-11 HEXANE SOLUTION*

The "F-112 - F-11" in hexane method of calibration has the advantage of being able to calibrate the detector on an absolute basis at the test site if the absolute concentration of "F-112 - F-11" in hexane is known. Such standard calibration solutions may be purchased from commercial laboratories.

The detector is calibrated by injecting a known volume of a standard solution of "F-112 - F-11" in hexane**. The volume can be accurately measured with a microliter syringe. The use of the microliter syringe for this purpose is outlined in the Detector Instruction Manual and in the literature supplied with the syringe. (A care and maintenance guide is also supplied with the syringe.) Below is outlined a satisfactory calibration method. Observe all precautions. Each person calibrating the detector must develop his technique so that he can accurately reproduce sample injections.

Grasping only the syringe flange and plunger, pump out the air into the calibration solution and then overfill the syringe. Hold syringe vertically (needle up) and expel solution until approximately the desired quantity remains in the barrel. Lower the plunger until air appears above solution. Determine the exact volume of solution in syringe. Subtract any air bubbles appearing in the solution in the syringe. With the plunger in the same position (air above solution), guide the syringe needle through the septum and into the detector as far as possible. Quickly inject the solution and quickly withdraw the needle. Hold the syringe vertical (needle up) and withdraw the plunger far enough to be sure no more solution remains in the needle. Determine the exact volume of solution remaining in the syringe body and subtract it from the volume before injection to determine the exact volume of solution injected. Record the volume injected and the detector response to "F-112 - F-11" only, in recorder units. Repeat the above procedure until enough data points are obtained to plot a reliable calibration curve.

* AEC Research & Development Report DP-1002, Savannah River Laboratory, Aiken, South Carolina (duPont)

**The calibration solution should contain about 0.2×10^{-10} gram of "F-112 - F-11" per microliter of chromatograph-grade hexane.

APPENDIX B

TECHNIQUE FOR READING CHROMATOGRAMS*

Typical chromatograms are illustrated in Figure 4. Traces A and B are ideal for "F-112" in air and hexane. Traces C and D are typical cases for "F-112" in hexane. Trace C differs from the ideal because there is inadequate separation between the hexane and "F-112" peaks. The problem is probably due to high oven temperature. A lower oven temperature should provide adequate separation of peaks. The detector should not be calibrated if moderate overlapping of peaks occurs. However, minor overlapping is permitted if the apparent peak height is corrected by one-half of the base drift (BD) as shown by trace C.

Trace D of Figure 4 differs from the ideal trace for "F-112" in hexane because the detector cell is dirty. The condition need not be corrected until the standing current is less than 25 recorder units (RU) at 128 attenuator setting. However, the apparent peak height should be corrected by one-half of the base drift as shown by trace D.

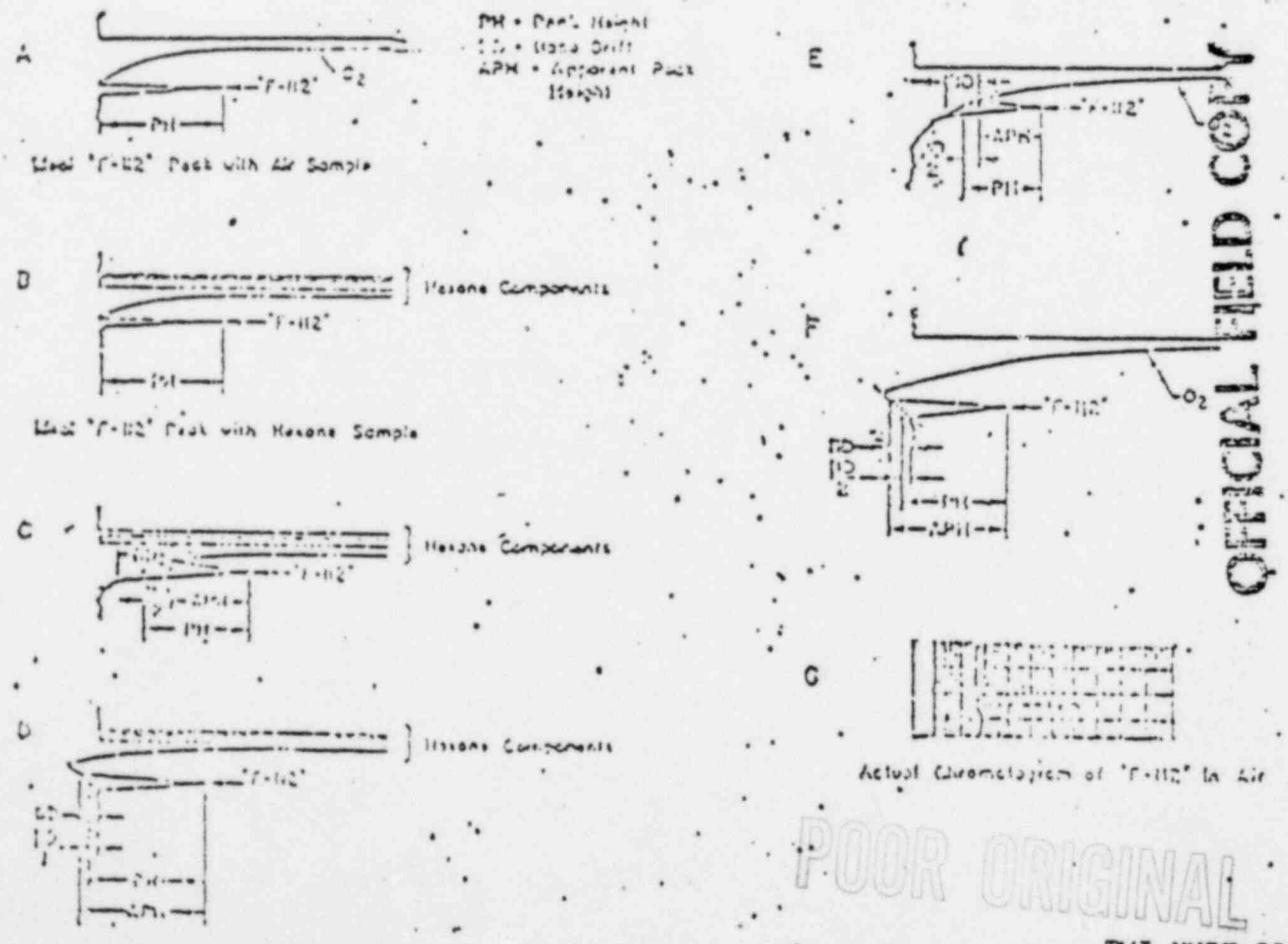

FIG. 4 TYPICAL CHROMATOGRAMS (WITH "F-112" PEAKS)

Traces B and F of Figure 4 illustrate (for "F-112" in air) the same conditions as traces C and D. Trace G is an actual chromatograph of an "F-112" air sample with the "F-112" peak height labeled.

* Although this is written for F-112, it is applicable to F-11.

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APPENDIX C

TESTING TECHNIQUES

Care must be exercised to prevent contamination of the electron capture cell. Only prepurified N_2 carrier gas can be used. The N_2 supply line system must be kept clean and protected from contamination when disconnected by the use of plugs, etc. No interchange of Freon sample lines and N_2 lines is permissible.

To prevent the possibility of erroneous readings, the dilution air line (Fig. 1, Point E) must be located at a point where there is no possibility of ambient Freon or other hydrocarbon vapors entering the system.

It is very important that the samples taken are representative of the test gas in the duct. In some cases it may be necessary to use temporary baffles, etc., to insure adequate mixing.

If the system is under positive pressure, the test gas can be fed into the fan intake. If not, it should be injected as far as possible upstream of the filters so that the maximum amount of mixing will occur before the test mixture reaches the filters. The upstream sample should be taken as close to the filters as practical.

The downstream sample should be taken as far as practical from the filter bank. The outlet duct from the plenum where air velocities are high is a good position.

APPENDIX "D"

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CARBON OLD F-11 & F-112 LEAK TEST DATA SHEET

Detector Identification Number _____

Standing Current _____ Ambient Air Temperature, °F _____

Oven Temperature _____ Carbon Bed Temperature, °F _____

Detector N_2 Pressure _____ Carbon Bed Air Flow, CFM _____

Rotometer Readings Sample Interval _____

Dilution Air _____ Attenuator Setting _____

Sample Air _____ Range Setting _____

F-11 or F-112 _____

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Peak Height During Test:

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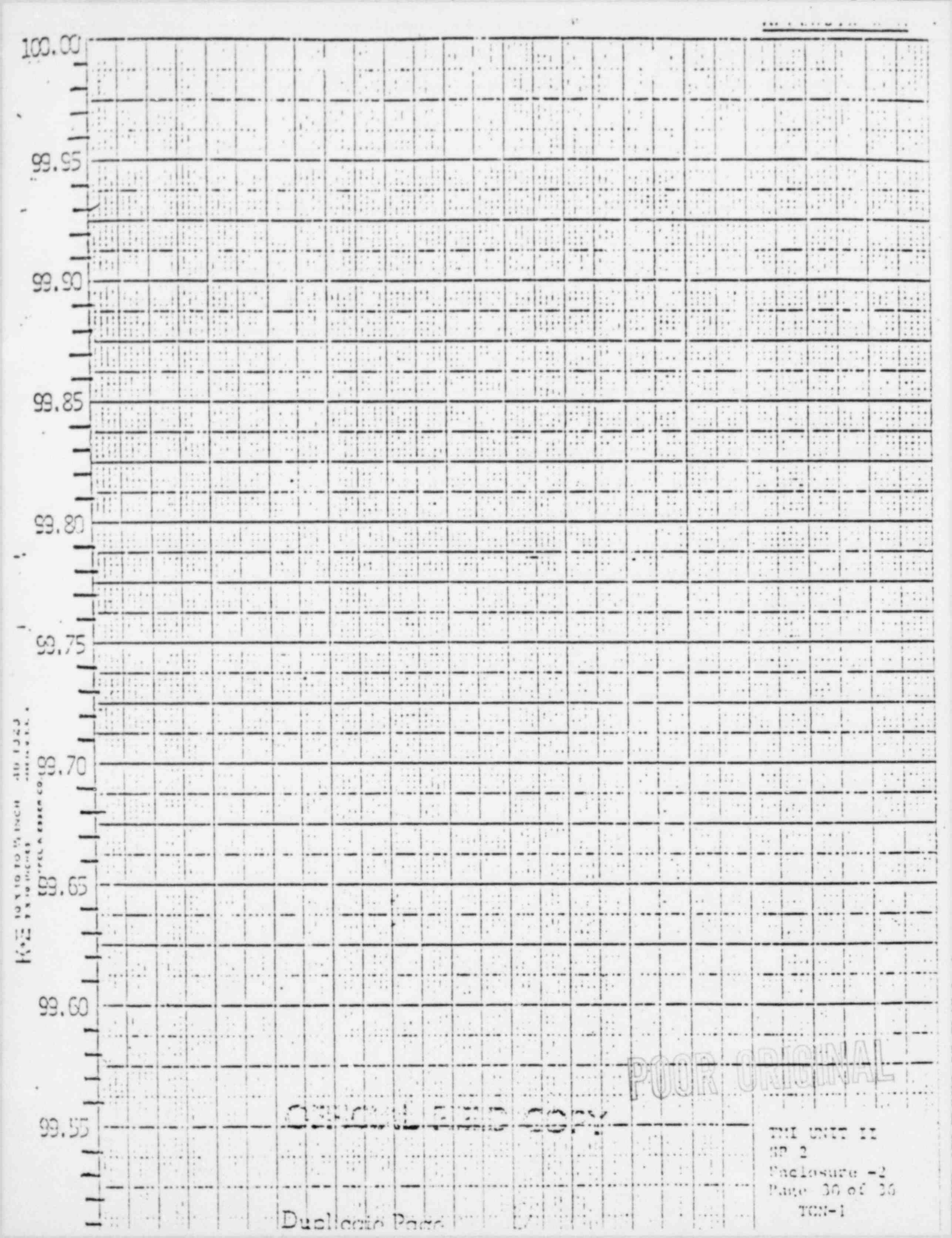
Sample No.	Time (sec.)	Recorder Units Upstream	Recorder Units Downstream

Efficiency Data:

Sample Number	Efficiency

Efficiency at zero time from curve = _____

Date of Test _____ Train _____



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APPENDIX E

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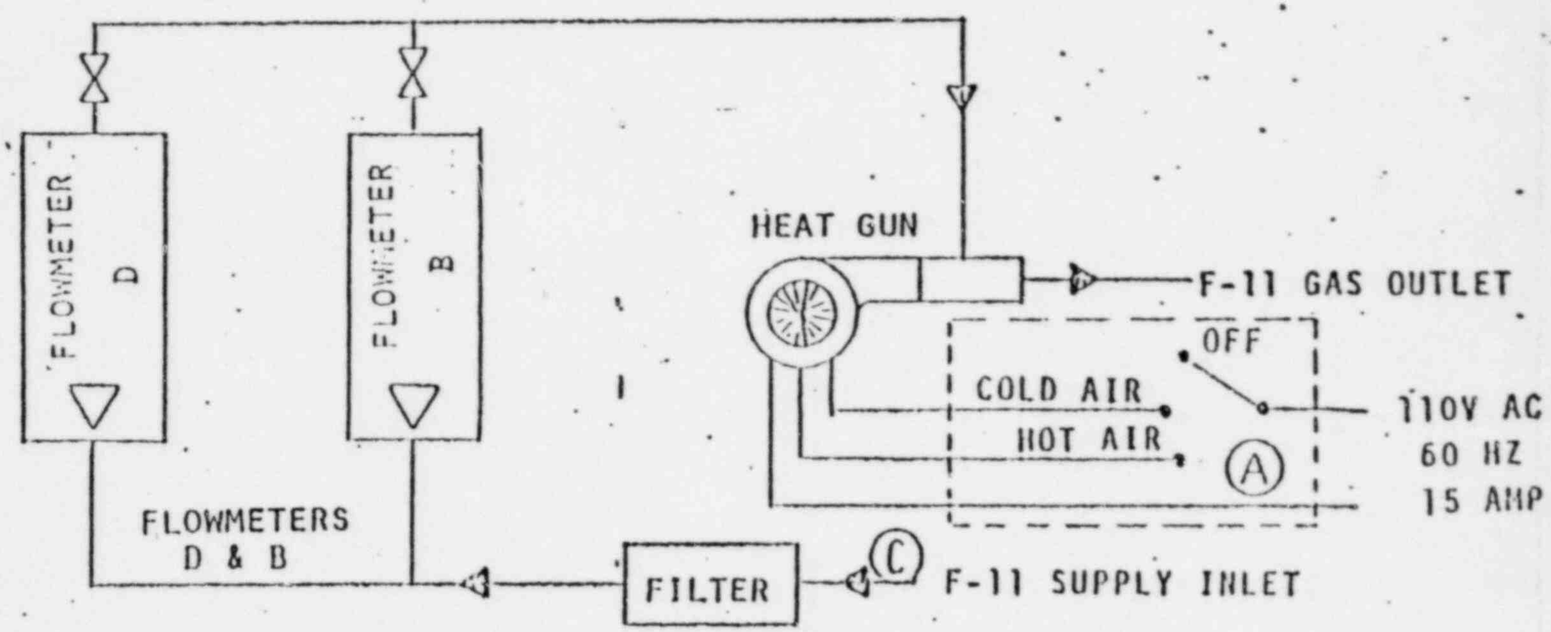
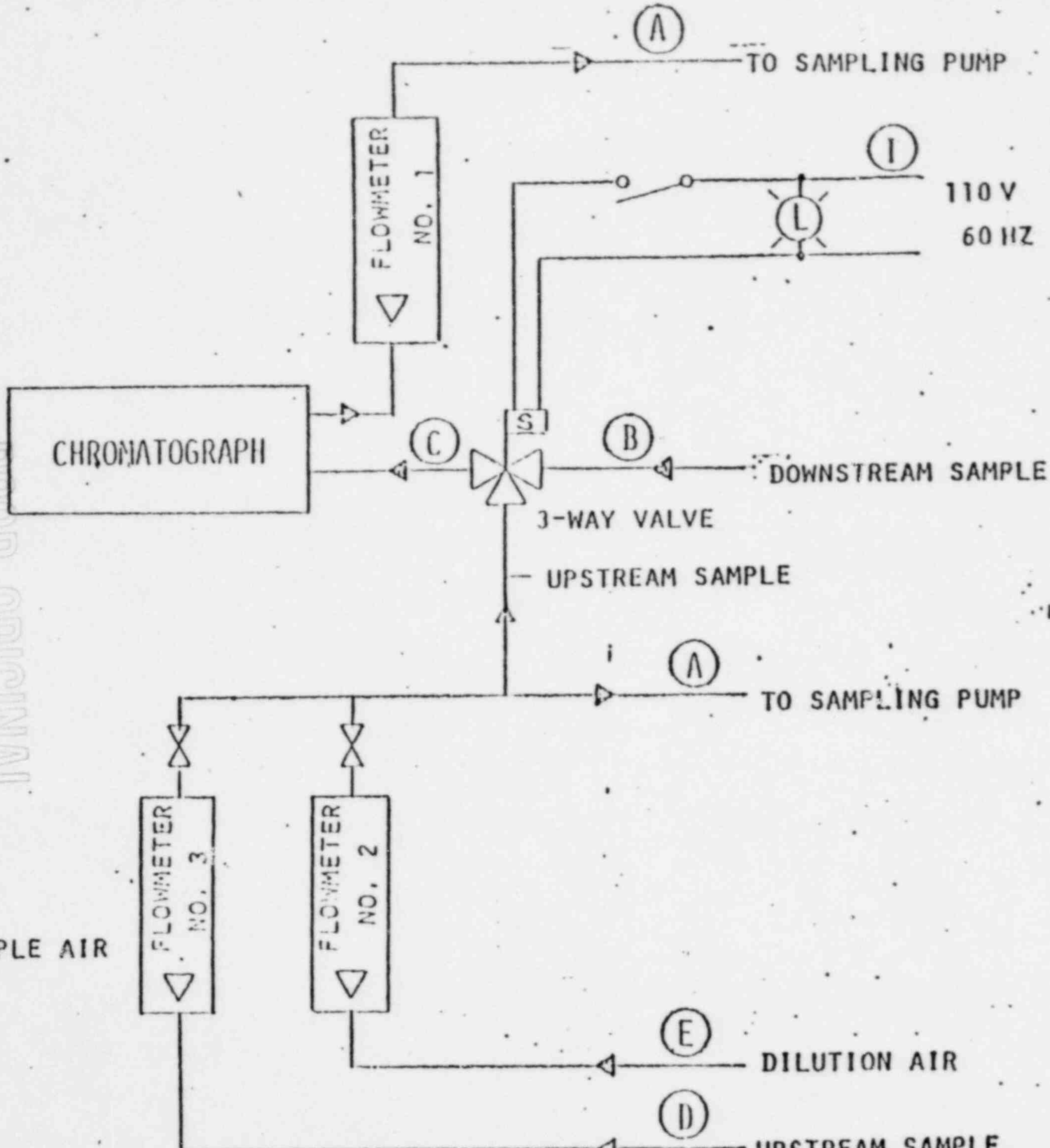


FLOWMETER FUNCTIONS

D - LOW FREON FLOW

B - HIGH FREON FLOW

MSA FREON GENERATOR FIGURE 1



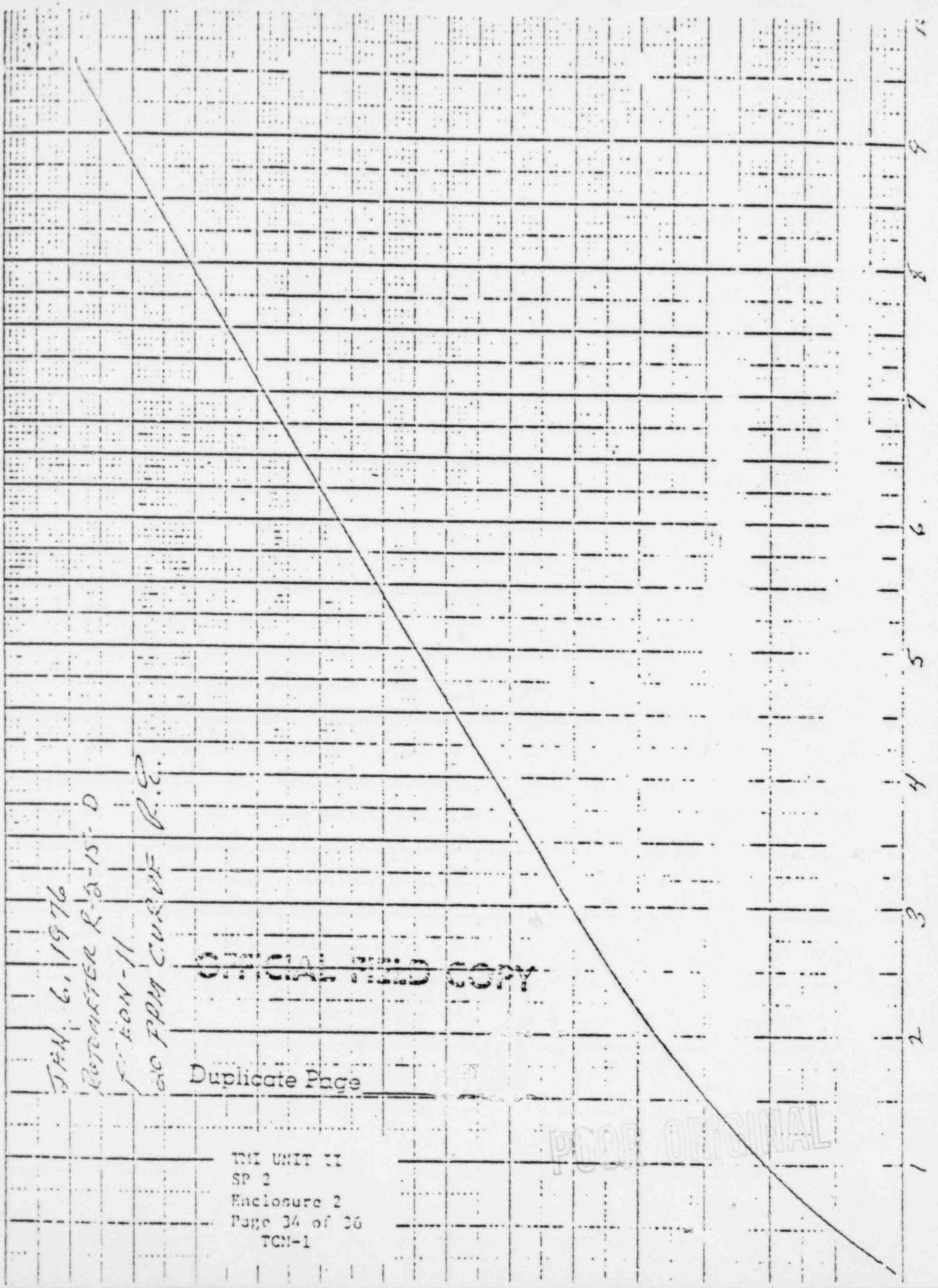
OWMETER FUNCTIONS

O. 1 - SAMPLE

O. 2 - DILUTION AIR

O. 3 - UPSTREAM SAMPLE AIR

MSA FREON DILUTION SYSTEM FIGURE 2



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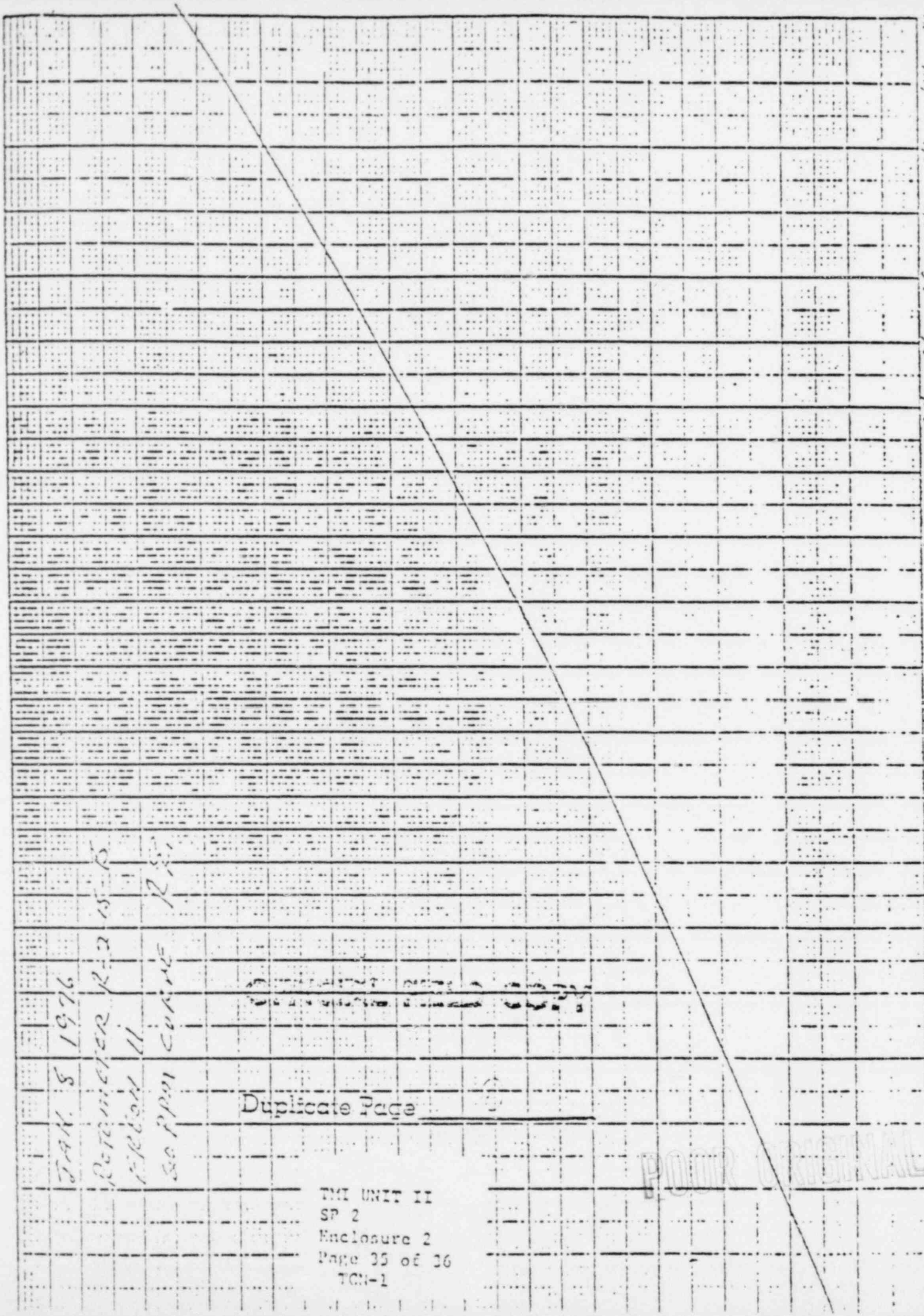
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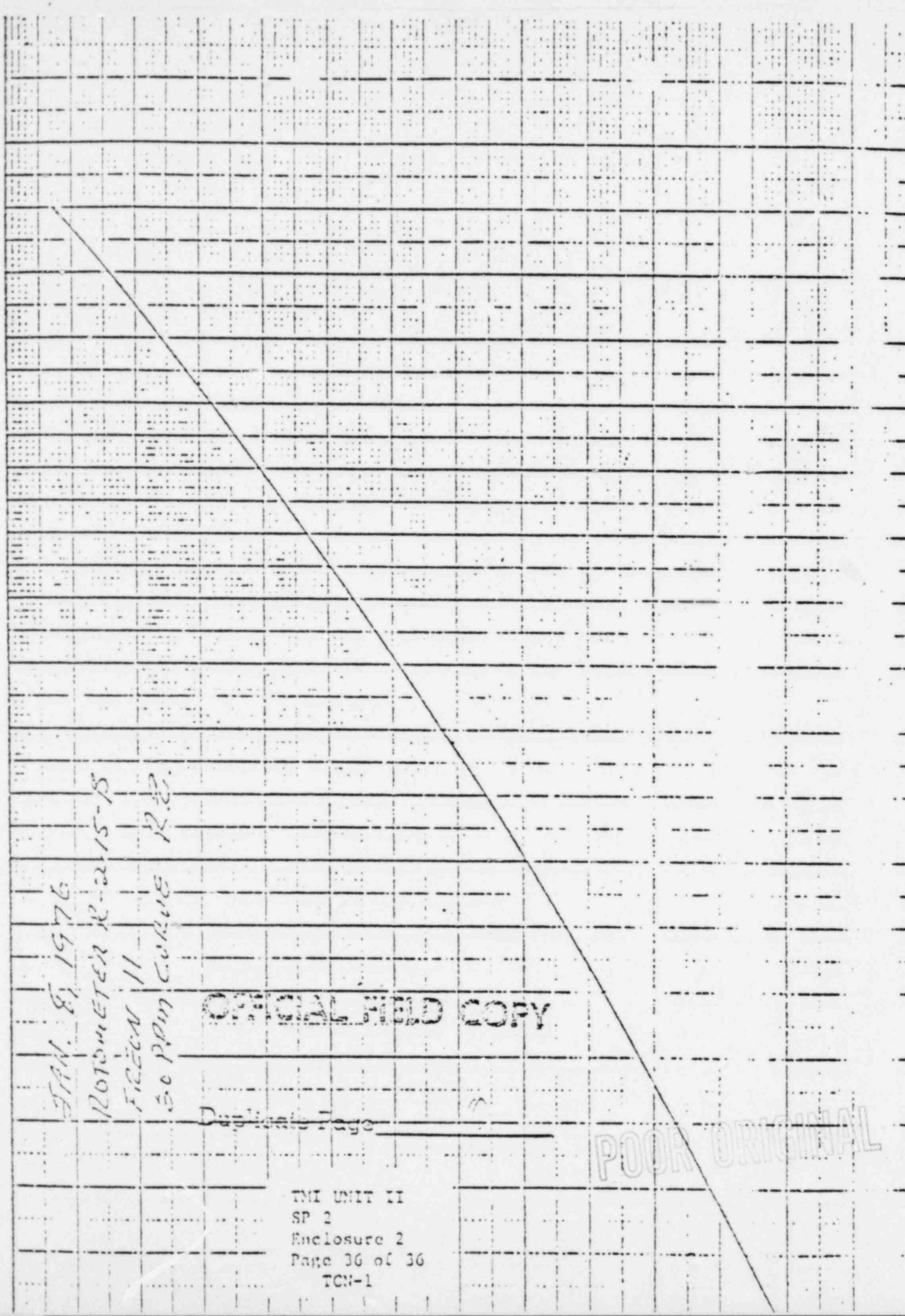

TMI UNIT II
SP 2
Enclosure 2
Page 36 of 36
TCN-1

TEST EQUIPMENT USED FOR HEPA & CHARCOAL TEST

	Type of Equipment	Calibration Date
Freon Tests	Varian Aerograph Gas Chromatograph Model 600-D or equivalent	When Used
	MSA Freon Dilution System	10/16/77
	MSA Freon Generator	10/16/77
	Linear Instrument Co. Recorder - Serial No. 22186	10/16/77
DOP Tests	ATI Particulate Detection Apparatus, Model TDA-2D Serial No. 1584	10/16/77
	ATI DOP Aerosol Generator - Serial No. 1601	N/A
	ATI DOP Aerosol Generator - Serial No. 2059	N/A
Air Flow Equipment	Pitot Tube	N/A
	Manometer	N/A
	Hastings Air Meter - Serial No. 157	10/16/77

HEPA FILTER LEAK TEST RESULTS

Customer Name TMI UNIT 2 Date JAN. 6, 1978

Filter Bank CONTROL Room By PASS

FILTERS:

Quantity 12 / BANK

Size 12x24x24

TEST INSTRUMENTS: AIR TECHNIQUES INC.

Photometer TDA 2D Calibration Date 10/16/77

DOP Generator TDA 5A

TEST DATA: AH-F-4 AH-F-29

Flow, CFM 14000

Pressure Drop, Inches W.G. HEPA #1 .95 HEPA #2 .95

Upstream DOP Concentration, % 100 — 100

Downstream DOP Penetration, % .012 — .008

Final Filter System Efficiency, % 99.985 — 99.992

COMMENTS:

HOLD DOWN MECHANISM TIGHTENED ON BANK #1 & 2 BANK

1 FILTER REPLACED (DAMAGED) #1 BANK

Robert Gleason

Mine Safety Appliances Co.

Duplicate Page 0

Detector Identification Number [illegible]

Standing Current .32 [illegible]

Ambient Air Temperature, °F ~75

Oven Temperature 75 °C

Carbon Bed Temperature, °F ~75

Detector N_2 Pressure 17 PSI

Carbon Bed Air Flow, CFM 14000

Rotometer Readings

Sample Interval 60 SEC.

Dilution Air 50,000 cc/M

Attenuator Setting 16

Sample Air 100 cc/M

Range Setting R 10²

F-11 or F-112 F-11

ΔP .90

Peak Height During Test: 1

Sample No.	Time (sec.)	Recorder Units Upstream	Recorder Units Downstream
BACKGROUND		1	8
1	30	41-1 = 40	
2	90	41-1 = 40	
3	150	41-1 = 40	
4	210		9-8 = 1
5	270		9-8 = 1
6	330		8-8 = 0

Efficiency Data:

Sample Number	Efficiency
1	99.995
2	99.995
3	100

Efficiency at zero time from curve = 99.995 %

 0

HEPA FILTER LEAK TEST RESULTS

Customer Name T M I Date FEB. 17, 1978

Filter Bank RAD WASTE WDG-F-1

FILTERS:

Quantity 1

Size ? CYLINDRICAL

TEST INSTRUMENTS:

Photometer TDA 2-D Calibration Date 4/5-77

DOP Generator TDA 2-A

TEST DATA:

Flow, CFM

Pressure Drop, Inches W.G.

Upstream DOP Concentration, % 100

Downstream DOP Penetration, % .001

Final Filter System Efficiency, % 99.999

COMMENTS:

PORTABLE HIGH PRESSURE VACUUM SWEEPER USED AS AIR SUPPLY. INLET & OUTLET COULD NOT BE DISCONNECTED DUE TO ALL WELDED JOINTS, DRAIN LINES & SAMPLE LINES WERE USED AS INLET & OUTLET.

OFFICIAL FIELD COPY

Robert Ellwood

Mine Safety Appliances Co.

Go to Page 0

Detector Identification Number ANALYTICAL INSTRUMENT DEVELOPMENT INC

Standing Current 5200 RL

Ambient Air Temperature, °F ~75

Oven Temperature 75°C

Carbon Bed Temperature, °F ~75

Detector N_2 Pressure 17 PSI

Carbon Bed Air Flow, CFM

Rotometer Readings

Sample Interval 60 SEC.

Dilution Air 50 000 cc/m

Attenuator Setting A-16

Sample Air 100 cc/m

Range Setting R 10^2

F-11 or F-112 F-11

Peak Height During Test:

Sample No.	Time (sec.)	Recorder Units Upstream	Recorder Units Downstream
BACKGROUND		36	10
1	60	67-36 = 31	
2.	120	71-36 = 35	
3	180		
4	240		11-10 = 1
5	300		11-10 = 1
6	360		

POOR ORIGINAL

Efficiency Data:

Sample Number	Efficiency
	99.99 4
	99.99 5

Efficiency at zero time from curve = 99.99

Duplicate Page 0

Date of Test FEB 18 1978

Train RAD WASTE WDG-F-1

Signature [illegible signature]

Customer T M I.

HEPA FILTER LEAK TEST RESULTS

Customer Name T. M. I. Date FEB. 9 1978

Filter Bank SOILED EXHAUST AH-F.28

FILTERS:

Quantity 9

Size 12x24x24

TEST INSTRUMENTS:

Photometer TDA 2-D Calibration Date 4-2-77

DOP Generator TDA 5-A

TEST DATA:

Flow, CFM 10,000

Pressure Drop, Inches W.G. .80

Upstream DOP Concentration, % 100

Downstream DOP Penetration, % .012

Final Filter System Efficiency, % 99.988

COMMENTS:

TIGHTENED FILTER HOLD DOWN MECHANISM.

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Robert Pleasant

Mine Safety Appliances Co.

HEPA FILTER LEAK TEST RESULTS

Customer Name T.M.I. Date FEB 13, 1978

Filter Bank AUX BLDG EXH "A"

FILTERS:

Quantity 30

Size 12x24x24

TEST INSTRUMENTS:

Photometer TDA 2-D Calibration Date 4-5-77

DOP Generator TDA 5-A

TEST DATA:

	AH-F-9A HEPA #1	AH-F-30A HEPA #2
Flow, CFM	32,500	
Pressure Drop, Inches W.G.	.70	.75
Upstream DOP Concentration, %	100	100
Downstream DOP Penetration, %	.01	.045
Final Filter System Efficiency, %	99.99	99.955

COMMENTS:

BYPASS DAMPER SEALED WITH PLASTIC.

POOR ORIGINAL

~~OFFICIAL FIELD COPY~~

Robert Ellwood

Mine Safety Appliances Co.

Duplicate Page 0

...PA FILTER LEAK TEST RESULTS

Customer Name T. M. I. Date 3-9-78

Filter Bank AUX. BLDG PLENUM 'A'

FILTERS:

Quantity 20/BANK

Size 12x24x24"

TEST INSTRUMENTS:

Photometer TDA 2D A.T.I. Calibration Date 4/2-77

DOP Generator TDA 5A A.T.I

TEST DATA:

Flow, CFM 20,000 AN.F-30A HEPA #2

Pressure Drop, Inches W.G. .75

Upstream DOP Concentration, % 100

Downstream DOP Penetration, % .012

Final Filter System Efficiency, % 99.988

COMMENTS:

RETEST - RESEALED BYPASS DAMPER

CHANGED DOWNSTREAM SAMPLE POINT

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Data Page 1

Mine Safety Appliances Co.

Detector Identification Number ANALYTICAL INSTRUMENT DEVELOPMENT INC

Standing Current 3200 RU

Oven Temperature 175°C

Detector N_2 Pressure 17 PSI

Rotometer Readings

Dilution Air 50 000 cc/m

Sample Air 100 cc/m

F-11 or F-112 F-11

Ambient Air Temperature, °F ~75

Carbon Bed Temperature, °F ~75

Carbon Bed Air Flow, CFM 32,500

Sample Interval 60 SEC.

Attenuator Setting A-16

Range Setting R 10^2

Peak Height During Test:

Sample No.	Time (sec.)	Recorder Units Upstream	Recorder Units Downstream
BACKGROUND			23
1	60	20 - 2 = 18	
2	120	20 - 2 = 18	
3	180	20 - 2 = 18	
4	240		30 → 23 = 7
5	300		29 - 23 = 6
6	360		28 - 23 = 5

Efficiency Data:

Sample Number	Efficiency
	99.95
	99.99
	99.97

Efficiency at zero time from curve = Duplicate Page 99.95 AH-F-10A

Date of Test FEB 13 1978

Train AUX. BLDG. EXH. "A"

HEPA FILTER LEAK TEST RESULTS

Customer Name T.M.I. Date FEB 14 1978

Filter Bank AUX. BLDG EXH B

FILTERS:

Quantity 30

Size 12x24x24

TEST INSTRUMENTS:

Photometer TDA 2-0 Calibration Date 4-5-77

DOP Generator TDA 5.A

TEST DATA:

	AH-F-90 D-8 HEPA-1	AH-F-306 HEPA-2
Flow, CFM	32,500	
Pressure Drop, Inches W.G.	.70	.75
Upstream DOP Concentration, %	100	100
Downstream DOP Penetration, %	.04	.03
Final Filter System Efficiency, %	99.96	99.97

COMMENTS:

R.E.

FIRST ATTEMPT TO TEST INDICATED 2.0% BEN. DOWNSTREAM OF FAN WHERE SAMPLE WAS TAKEN. BYPASS DAMPER WAS THEN SEALED WITH PLASTIC. RESULTS SATISFACTORY

OFFICIAL FIELD COPY

Robert E. Chenard

Mine Safety Appliances Co.

Duplicate Page 0

HEPA FILTER LEAK TEST RESULTS

Customer Name T. M. I. Date 9-9-77

Filter Bank AUX. BLDG. EXH. PLENUM 'B'

FILTERS:

Quantity 20/BANK

Size 12"x24"x24"

TEST INSTRUMENTS:

Photometer TDA 2C A.T.I. Calibration Date 4-2-77

DOP Generator TDA 5A A.T.I.

TEST DATA:

Flow, CFM	20,000 AH-F-96 RETEST	AH-F-103 RETEST
Pressure Drop, Inches W.G.	.70	.75
Upstream DOP Concentration, %	100	100
Downstream DOP Penetration, %	.007	.025
Final Filter System Efficiency, %	99.993	99.975

COMMENTS:

RETEST - RESEALED BYPASS DAMPER.

CHANGED DOWNSTREAM SAMPLE POINT

OFFICIAL FIELD COPY

Robert Sprouse

Mine Safety Appliances Co.

Detector Identification Number ANALYTICAL INSTRUMENT DEVELOPMENT INC

Standing Current 5200 RL

Ambient Air Temperature, °F ~75

Oven Temperature 75°C

Carbon Bed Temperature, °F ~75

Detector N_2 Pressure 17 PSI

Carbon Bed Air Flow, CFM 32 500 cc/m

Rotometer Readings

Sample Interval 60 SEC.

Dilution Air 50 000 cc/m

Attenuator Setting A-16

Sample Air 100 cc/m

Range Setting R 10^2

F-11 or F-112 F-11

Peak Height During Test:

Sample No.	Time (sec.)	Recorder Units Upstream	Recorder Units Downstream
BACKGROUND		1	7
1	60	15 - 1 = 14	
2	120	15 - 1 = 14	
3	180	15 - 1 = 14	
4	240		12 - 7 = 5
5	300		13 - 7 = 6
6	360		13 - 7 = 6

Efficiency Data:

Sample Number	Efficiency
1	99.95
2	99.97
3	99.97
AVERAGE	

RM-F-100

Efficiency at zero time from curve = 99.95 EXTRAPOLATED

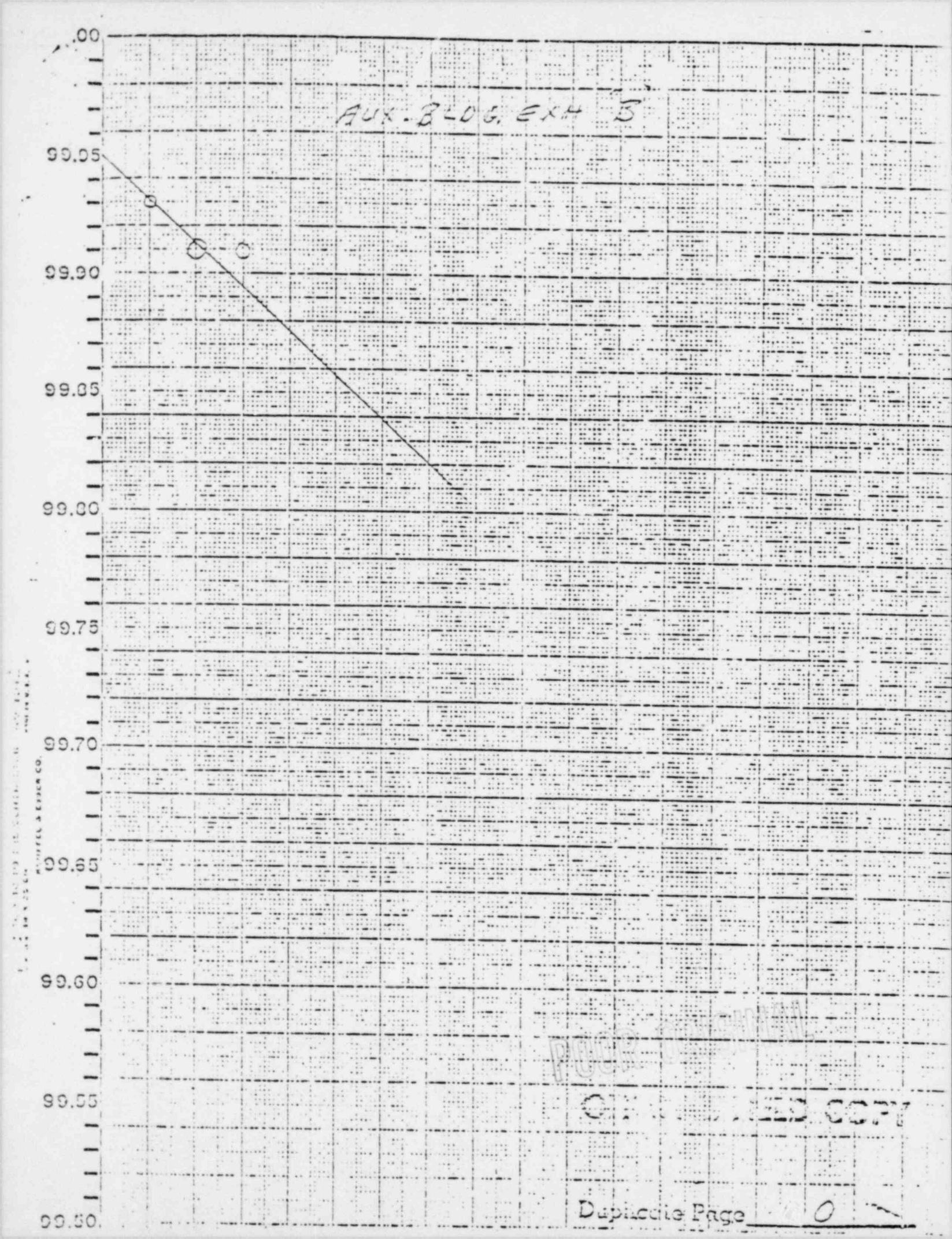
Duplicate Page 0

Date of Test FEB 15, 1979

Train AUX. BLDG. EXH. "B"

Signature: Robert Pillmore

Customer TMI



HEPA FILTER LEAK TEST RESULTS

Customer Name TMI UNIT 2 Date JAN. 12 1978

Filter Bank HYDROGEN VENT

FILTERS:

Quantity 1/BANK

Size 12x24x24

TEST INSTRUMENTS:

Photometer TDA 2D Calibration Date 12-16-77

DOP Generator TDA 5A

TEST DATA:

Flow, CFM	2100	AH-F-33 AH-F-35
Pressure Drop, Inches W.G.	#1 FILTER - #2 FILTER	
Upstream DOP Concentration, %	100	- 100
Downstream DOP Penetration, %	.001	- .001
Final Filter System Efficiency, %	99.999	- 99.999

COMMENTS:

NO PROBLEMS

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Robert Plumb

Mine Safety Appliances Co.

Duplicate Page 0

Standing Current .32 ct

Oven Temperature 75 °C

Detector N_2 Pressure 17 PSI

Rotometer Readings

Dilution Air 50,000 cc/M

Sample Air 100 cc/M

F-11 or F-112 F-11

Ambient Air Temperature, °F ~75

Carbon Bed Temperature, °F ~75

Carbon Bed Air Flow, CFM ~100

Sample Interval 60 SEC.

Attenuator Setting 16

Range Setting R 10²

Peak Height During Test:

Sample No.	Time (sec.)	Recorder Units Upstream	Recorder Units Downstream
BACKGROUND		1	21
1	30	25-1 = 24	
2	90	25-1 = 24	
3	150	25-1 = 24	
4	210		21-21 = 0
5	270		21-21 = 0
6	330		21-21 = 0

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Efficiency Data:

Sample Number	Efficiency 0
1	100
2	100
3	100

POOR ORIGINAL

Efficiency at zero time from curve = 100 %

Date of Test JAN 12, 1978

Signature: Robert Ellwood
Mine Safety Appliances Co.

Train HYDROGEN VENT AH-F-37

Customer TMI UNIT #2

HEPA FILTER LEAK TEST RESULTS

Customer Name T. M. I. Date FEB 17 1978

Filter Bank HYDROGEN VENT

FILTERS:

Quantity 1 / BANK

Size 12 x 24 x 5 4

TEST INSTRUMENTS:

Photometer TDA 2D Calibration Date 4-2-77

DOP Generator TDA 5-A

TEST DATA:

Flow, CFM	~ 100	
Pressure Drop, Inches W.G.	HEPA #1 .15	HEPA #2 .15
Upstream DOP Concentration, %	100	100
Downstream DOP Penetration, %	.001	.001
Final Filter System Efficiency, %	99.999	99.999

COMMENTS:

SEE ATTACHMENT

Robert Plimpton

Mine Safety Appliances Co.

ATTACHMENT

SUBJECT: Retest of Hydrogen Purge Filter

The downstream Hepa filter was tested first. The upstream filter was loosened and moved backward to allow DOP smoke to bypass. The upstream sample was taken on the upstream face of the downstream filter. The downstream sample was taken downstream of the fan. The upstream DOP concentration was >100%. The downstream concentration was .001% penetration.

The upstream Hepa was then placed into position and tightened down. A piece of cardboard with a 4" hole cut into the center was then sealed over the downstream filter. Using the same DOP smoke injection port (the farthest point obtainable upstream) the face of the upstream was traversed at 9 points to determine the 100% DOP upstream sample point. A reading of >100% was achieved. The downstream sample was then taken at the 4" hole on the upstream face of the downstream filter. Again a penetration of .001% penetration was achieved.

Duplicate Page 0

HEPA FILTER LEAK TEST RESULTS

Customer Name TMI UNIT 2 Date JAN 10, 1978

Filter Bank REACTOR BLDG. PIECE "A"

FILTERS:

Quantity 20/BANK

Size 12x24x24

TEST INSTRUMENTS: AIR TECHNIQUES INC.

Photometer TDA 2D Calibration Date 10-16-77

DOP Generator TDA 5A

TEST DATA:

	AH-F-20A	AH-F-31A
Flow, CFM	20,000	
Pressure Drop, Inches W.G.	#1 BANK 1.10	#2 BANK 1.10
Upstream DOP Concentration, %	80	80
Downstream DOP Penetration, %	.015	.012
Final Filter System Efficiency, %	99.982	99.988

COMMENTS:

HOLD DOWN MECHANISM TIGHTENED ON BANK #1 & 2

OFFICIAL FIELD COPY

Robert Sellers

Mine Safety Appliances Co.

Duplicate Page 0

Standing Current ~~.3.2 cc~~ ___ Ambient Air Temperature, °F ~75

Oven Temperature 75 °C Carbon Bed Temperature, °F ~75

Detector N_2 Pressure 17 PSI Carbon Bed Air Flow, CFM 30,000

Rotometer Readings Sample Interval 60 SEC.

Dilution Air 50,000 cc/M Attenuator Setting 16

Sample Air 100 cc/M Range Setting R 10²

F-11 or F-112 F-11 ΔP 1.0

Peak Height During Test:

Sample No.	Time (sec.)	Recorder Units Upstream	Recorder Units Downstream
BACKGROUND		1	5
1	30	36 - 1 = 35	
2	90	36 - 1 = 35	
3	150	36 - 1 = 35	
4	210		7 - 5 = 2
5	270		38 - 5 = 33
6	330		25 - 5 = 20

Efficiency Data:

Sample Number	Duplicate Pass ~~Efficiency~~
1	99.98
2	99.92
3	99.90

Efficiency at zero time from curve = > 99.98 %

Date of Test JAN. 10 1978 Train REACTOR BLDG PURGE FILTER AH-F-21A

Signature: [signature] Customer TMI UNIT #2

Mine Safety Appliances Co.

HEPA FILTER LEAK TEST RESULTS

Customer Name TMI UNIT 2 Date JAN. 11, 1978

Filter Bank REACTOR BLDG. PURGE "B"

FILTERS:

Quantity 20/BANK

Size 12 x 24 x 24

TEST INSTRUMENTS: AIR TECHNIQUES INC.

Photometer TDA 2D Calibration Date 10-16-77

DOP Generator TDA 5A

TEST DATA: AH-F-20B AH-F-31B

Flow, CFM 20,000

Pressure Drop, Inches W.G. #1 BANK .10 - #2 BANK .10

Upstream DOP Concentration, % 100 - 100

Downstream DOP Penetration, % .022 - .01

Final Filter System Efficiency, % 99.978 99.99

COMMENTS:

HOLD DOWN MECHANISM TIGHTENED ON #1 & #2 BANK

OFFICIAL FIELD COPY

Robert Pellman

Mine Safety Appliances Co.

Duplicate Page 0

Detector Identification Number [illegible]

Standing Current .32 ct

Oven Temperature 75°C.

Detector N_2 Pressure 17 PSI

Rotometer Readings

Dilution Air 50,000 cc/M

Sample Air 100 cc/M

F-11 or F-112 F-11

Ambient Air Temperature, °F ~75

Carbon Bed Temperature, °F ~75

Carbon Bed Air Flow, CFM 20,000

Sample Interval 60 SEC.

Attenuator Setting 16

Range Setting R 10^2

ΔP .50

Peak Height During Test:

Sample No.	Time (sec.)	Recorder Units Upstream	Recorder Units Downstream
BACKGROUND		1	13
1	30	45-1 = 44	
2	90	45-1 = 44	
3	150	45-1 = 44	
4	210		21-13 = 8
5	270		36-13 = 23
6	330		37-13 = 24

Efficiency Data:

Sample Number	Efficiency
1	99.96
2	99.99
3	99.99

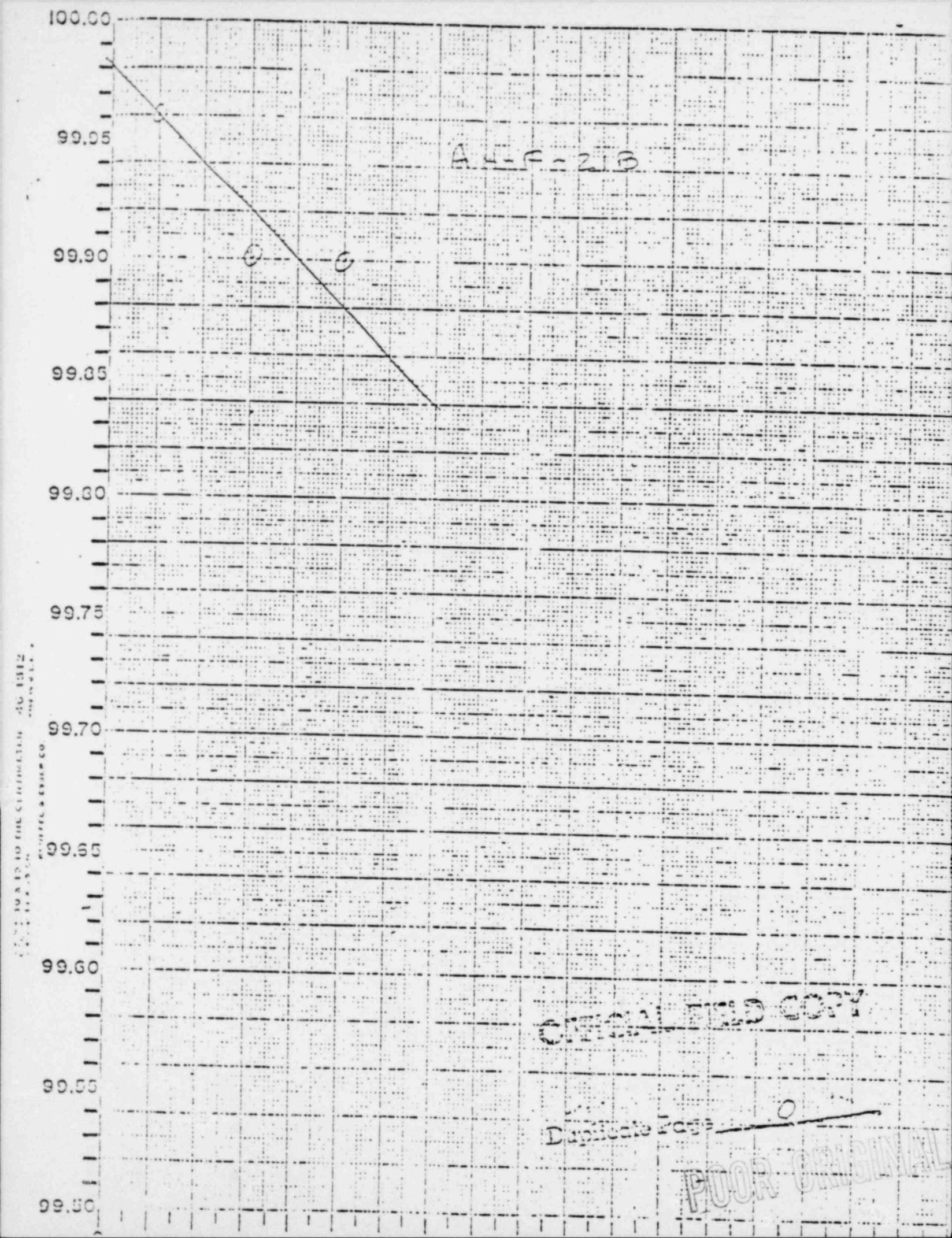
Efficiency at zero time from curve = 99.98 %

Date of Test JAN. 11 1978

Train AH-F-21B REACTOR BLDG. PURGE PLENUM #2

Signature: Robert E Lovett
Mine Safety Appliances Co.

Customer TMI UNIT #2


100.00
99.95
99.90
99.85
99.80
99.75
99.70
99.65
99.60
99.55
99.50
A-4-F-2.B
CENTRAL FILE COPY
PUOR ORIGINAL

HEPA FILTER LEAK TEST RESULTS

Customer Name T. M. I. Date FEB. 16, 1978

Filter Bank F H E "A"

FILTERS:

Quantity 20

Size 12 x 24 x 24

TEST INSTRUMENTS:

Photometer TDA 2-D Calibration Date 42-77

DOP Generator TDA 5-A

TEST DATA:

Flow, CFM	20 000 AH-F-13A D-9 HEPA #1	AH-F-17A D-9 HEPA #2
Pressure Drop, Inches W.G.	1.0	1.0
Upstream DOP Concentration, %	100	100
Downstream DOP Penetration, %	.045	.040
Final Filter System Efficiency, %	99.955	99.96

COMMENTS:

BYPASS HAD BEEN SEALED TO TEST FHE-B

TEST WAS SATISFACTORY.

OFFICIAL FIELD COPY

Robert Pellicciotti

Mine Safety Appliances Co.

Duplicate Page 0

HEPA FILTER LEAK TEST RESULTS

Customer Name T M I Date 3-9-78

Filter Bank E.H.E. PLENUM "A"

FILTERS:

Quantity 30

Size 12x24x24

TEST INSTRUMENTS:

Photometer TDA 2-D A.T.I. Calibration Date 12-77

DOP Generator TDA 5A A.T.I.

TEST DATA:

Flow, CFM	52,500 AH-F-13A	AH-F-17A
Pressure Drop, Inches W.G.	HEPA FI 1.0	HEPA F2 1.0
Upstream DOP Concentration, %	100	100
Downstream DOP Penetration, %	.01%	.02%
Final Filter System Efficiency, %	99.992	99.972

COMMENTS:

RETEST - RESEALED BYPASS DAMPERS

OFFICIAL FIELD COPY

Mine Safety Appliances Co.

Detector Identification Number ANALYTICAL INSTRUMENT DEVELOPMENT INC

Standing Current 5200 RL

Ambient Air Temperature, °F ~75

Oven Temperature 75°C

Carbon Bed Temperature, °F ~75

Detector H_2 Pressure 17 PSI

Carbon Bed Air Flow, CFM

Rotometer Readings

Sample Interval 60 SEC.

Dilution Air 50 000 cc/m

Attenuator Setting A-16

Sample Air 100 cc/m

Range Setting R 10^2

F-11 or F-112 F-11

Peak Height During Test:

Sample No.	Time (sec.)	Recorder Units Upstream	Recorder Units Downstream
BACKGROUND		2	9
1	60	28 = 2 - 26	
2	120	28 - 2 = 26	
3	180	28 - 2 = 26	
4	240		35 - 9 = 26
5	300		33 - 9 = 24
6	360		36 - 9 = 25 RH

Efficiency Data:

Sample Number	Efficiency
1	99.90
2	99.92
3	99.91

Efficiency from curve → 99.50 AH-E-IHA D-9

Date of Test FEB 16 1978

Train FHE "A"

Signature: [illegible]

Customer TMI

Mine Safety Appliances Co.

Standing Current 1.3 x 10

Ambient Air Temperature, °F ~75

Oven Temperature 95 °C.

Carbon Bed Temperature, °F ~75

Detector N_2 Pressure 17 PSI

Carbon Bed Air Flow, CFM 32,500 ±?

Rotometer Readings

Sample Interval 60 SEC.

Dilution Air 50,000 cc/M

Attenuator Setting 16

Sample Air 100 cc/M

Range Setting R 10^2

F-11 or F-112 F-11

Peak Height During Test:

Sample No.	Time (sec.)	Recorder Units Upstream	Recorder Units Downstream
BACKGROUND		3	7
1	60	39 - 3 = 36	
2	120	39 - 3 = 36	
3	180	39 - 3 = 36	
4	240		12 - 7 = 5
5	300		12 - 7 = 5
6	360		14 - 7 = 7

POOR ORIGINAL

Efficiency Data:

Sample Number	Efficiency
1	99.97
2	99.97
3	99.97

ORIGINAL FIELD COPY

Duplicate Page 1

Efficiency at Zero Time from Curve 99.97 AH-F-14A

Date of Test [illegible] 7, 1985

Train CHF [illegible]

Signature: [illegible]

Mine Safety Appliances Co.

Customer T [illegible]

HEPA FILTER LEAK TEST RESULTS

Customer Name T. M. I. Date Feb. 15 1978

Filter Bank FHE "B"

FILTERS:

Quantity 20/RACK

Size 2x24x24

TEST INSTRUMENTS:

Photometer TDA 2-D Calibration Date 12-77

DOP Generator TDA 5-A

TEST DATA:

	HEPA #1	HEPA #2
Flow, CFM	20 000 AM-F-130 D-9	AM-F-170 D-9
Pressure Drop, Inches W.G.	1.0	1.1
Upstream DOP Concentration, %	100	100
Downstream DOP Penetration, %	.035	.045
Final Filter System Efficiency, %	99.965	99.955

COMMENTS:

FIRST ATTEMPT TO TEST ENDICATED 15.0 % LEAKAGE. 2 BYPASS DAMPERS WERE SEALED WITH PLASTIC. RETEST WAS SATISFACTORY

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Robert Glover
Mine Safety Appliances Co.

Duplicate Page 0 -

HEPA FILTER LEAK TEST RESULTS

Customer Name T. M. I. Date 8-4-77

Filter Bank FHE. PLENUM 'B'

FILTERS:

Quantity 30

Size 12x24x24

TEST INSTRUMENTS:

Photometer TDA 2D A.T.I. Calibration Date 4/2-77

DOP Generator TDA 5A A.T.I.

TEST DATA:

Flow, CFM ~~[illegible]~~ 32,560 RE AH-E-13A AH-E-17C

	HEPA #1	HEPA #2
Pressure Drop, Inches W.G.	1.0	1.1
Upstream DOP Concentration, %	100	100
Downstream DOP Penetration, %	.025	.026
Final Filter System Efficiency, %	99.975	99.974

COMMENTS:

RETEST - RESEALED BYPASS DAMPERS

OFFICIAL FIELD COPY Robert [illegible]

Mine Safety Appliances Co.

D[illegible]cate Page 1

POOR ORIGINAL

Detector Identification Number ANALYTICAL INSTRUMENT DEVELOPMENT INC

Standing Current 3200 RU

Ambient Air Temperature, °F ~75

Oven Temperature 75°C

Carbon Bed Temperature, °F ~75

Detector N_2 Pressure 17 PSI

Carbon Bed Air Flow, CFM 30 000

Rotometer Readings

Sample Interval 60 SEC.

Dilution Air 50 000 cc/m

Attenuator Setting A-16

Sample Air 100 cc/m

Range Setting R 10^2

F-11 or F-112 F-11

Peak Height During Test:

Sample No.	Time (sec.)	Recorder Units Upstream	Recorder Units Downstream
BACKGROUND		2	9
1	60	20 - 2 = 18	
2	120	20 - 2 = 18	
3	180	20 - 2 = 18	
4	240		12 - 9 = 3
5	300		12 - 9 = 3
6	360		12 - 9 = 3

Efficiency Data:

Sample Number	Efficiency
1	99.97
2	99.97
3	99.97
ORIGINAL FIELD COPY	

Efficiency at zero time from curve = 99.97 AM-F-14B

Duplicate Page 0

Date of Test FEB 16, 1978

Train F H E "R"

Signature: [signature]
Mine Safety Appliances Co.

Customer T. M. I.

POOR ORIGINAL

—720 HOUR CHARCOAL FILTER EFFICIENCY TEST SCHEDULE—

	1ST		2ND		3RD		4TH		5TH		6TH		7TH		8TH		9TH	
	TEST DATE	EFF. %	TEST DATE	EFF. %	TEST DATE	EFF. %	TEST DATE	EFF. %	TEST DATE	EFF. %	TEST DATE	EFF. %	TEST DATE	EFF. %	TEST DATE	EFF. %	TEST DATE	EFF. %
AB-"A"	5/18	97.8	6/15	88.8	7/25													
AB-"B"	5/18	[illegible]	6/15	81.1	7/25													
FHB-"A"	5/25	98.7	6/22	91.5	7/21													
FHB-"B"	6/22	98.7	7/23	91.2	7/21													
* SS-1	6/12	[illegible]	7/12															
* SS-2	6/12	21.5	7/12															
* SS-3	6/12	96.3	7/12															
* SS-4	6/12	97.3	7/12															
COND. VACUUM	5/18	99.6	6/15		7/14													
RB-"A"																		
RB-"B"																		
CONTROL BLDG.																		

* TEST SCHEDULE BASED ON OPERATIONAL DATE OF 5/14/79 PER J.T. COLLINS LETTER DATED 5/11/79.

DAVE GOOD HAS PUT CHANGE OUT OF SAMPLE CHARCOAL ON COMPUTER- EVERY 28 DAYS FOR FHB-A&B AB-A&B SUPPLEMENTAL 1 2 3 & 4

1	2	3	4	5	6	7	8	9	10	
64180 202-101.	68805 132-35.	67233 265-85.	67196 281-125.	68765 181-93.	68763 157-49.	68782 135-35.	68799 189-91	68810 192-91	68153 151-99	1
68790 139-35.	68772 191-91.	68793 215-101.	67166 190-6.	68802 168-99.	68829 171-93.	68768 152-99.	67228 66-9.	68797 196-91	68800 184-93	2.
~~68767~~ 68300 ~~293-104~~ 293-80.	68752 184-35.	67181 199-6.	67189 215-97.	68726 156-99.	68798 177-93.	68764 172-93	~~68561~~ 68796 * ~~201-101~~ 165-99.	68771 150-99	68808 175-93	3

ACT-1 West Bank

HEPA

* frame bent not put in.

→

1	2	3	4	5	6	7	8	9	10	
67281 187-6	68638 312-46	68723 102-9	67238 68-13	68721 84-18	67278 185-3	68702 37-105	67252 194-6	68664 338-46	68639 313-37	1
68696 28-46	67254 46-36	68658 332-37	68717 105-9	67276 273-125	68675 349-82	68682 23-46	68695 2-20	68733 77-18	68640 314-46	2
68666 340-105	68635 309-18	68663 337-46	68637 311-46	68716 81-18	67216 50-36	67274 47-36	67225 ~~68665~~ ~~339-105~~ 277-12.5	~~68662~~ 68665 ~~336-37~~ 339-105	68662 336-37	3

EAST BANK

HEPA - NOT IN

HEPA

N

1	2	3	4	5	6	7	8	9	10	
68297 243-114	67200 207-25	68287 248-114	67220 241-113	68290 265-96	68298 256-96	67208 232-28	67172 222-47	68277 303-31	67223 253-113	1
68616 290-119	68278 297-31	68821 238-94	68301 291-88	68943 161-49	68935 138-35	68881 186-93	67073 19-3	68900 198-91	67232 262-85	2
68253 281-7	67185 88-53	67183 242-113	68251 287-80	68885 133-35	68902 225-104	~~68305~~ 68936 ~~267-7~~ 162-49	68305 267-7	67226 21-3	67066 174-116	3

ACT 4 WEST BANK

N

HEDA

1	2	3	4	5	6	7	8	9	10	
67173 83-53	68282 266-96	68699 50-105	67219 259-85	68683 44-105	68645 319-46	68230 259-96	68647 321-46	67245 34-5	68656 330-20	1
68626 00-42	68281 262-96	68260 278-7	68283 261-96	68649 323-119	67266 269-85	68302 268-7	~~67168~~ 67168 177-3	68252 283-7	68288 269-7	2
68684 1-82	68677 351-46	68700 54-82	67268 35-5	67242 40-5	68701 60-82	68276 258-96	67269 71-13	68888 209-101	67179 188-6	3

HEPA

N

HPA-ACT-3 WEST

1	2	3	4	5	6	7	8	9	10	
68817 233-104.	68974 149-99.	68294 263-96.	66989 133-2.	68285 274-24.	68945 212-101.	68291 298-31.	68812 182-93	68779 220-101.	68813 181-93	1
68725 94-42.	66998 113-126	68884 145-99.	68766 160-49.	67055 161-116.	68272 273-52.	68946 169-49.	69008 235-94.	68761 221-101	68756 185-93	2
68707 82-18.	68273 272-52.	68824 155-99	68292 296-80.	68284 277-24.	68940 230-104.	68289 271-52.	68818 234-104.	67191 288-125.	68827 180-93	3

HEPA

HEPA ACT I CAST BACK

STARTED SYSTEM

FINISHED - 10:00 PM

1	2	3	4	5	6	7	8	9	10	
68261 189-80	67042 115-126	68828 164-49	68747 141-35	67246 260-85	68607 284-125	68708 96-42	67221 248-113	67041 116-126	68595 234-128	1
66939 183-93	68732 7-20	68814 236-94	68605 197-25	68882 208-101	68781 140-35	67190 88-53	67051 105-46	68754 153-99	68709 117-119	2
66619 293-42	68816 227-104	68793 203-101	68296 308-45	68819 237-94	68599 255-113	68597 235-128	66997 117-126	68843 197-91	67037 125-2	3

MISSING

HEPA

ACT II

4/25/79

EAST BANK

N

1	2	3	4	5	6	7	8	9	10	
7206 183-3	68286 246-114	67213 44-5	68295 240-24	67229 63-9	68306 260-96	68811 200-101	68795 206-101	68776 223-101	68718 213-101	1
7210 87-53	68303 264-94	67065 7-18	67169 189-6	68293 270-7	68299 254-96	68760 207-101	68801 190-91	68758 217-101	68777 193-91	2
7218 88-128	68279 290-80	67207 246-113	67217 271-85	68304 252-96	67209 261-85	68804 178-93	68774 226-101	68755 219-101	68809 176-93	3

ACT-2 West Bank

MISSING

HEDA

FINISHED 11:30 AM 4/24/99

TOP

2 MISSIONS

← N

ACT I

	1	2	3	4	5	6	7	8	9	10
1	76-2729	76-2241	77-742	76-3074	76-3323	76-3322	76-2501	77-439	77-684	76-2036
2	76-2537	76-1841	76-2730	76-1608	76-2983	76-1181	76-2936 ~~76-3322~~	76-2610	76-2235	76-1296
3	76-2843	76-1836	77-556	76-1727	76-2918	76-3416	76-2576 ~~76-3323~~	76-3117	77-682	76-1698
4	77-552	76-1239	76-1840	76-3404	76-2621	77-248	77-537 ~~76-3324~~	76-1309	77-371	76-1642
5	77-563	76-1842	76-1845	76-2353	76-1732	76-2294	76-2266 ~~77-242~~	77-263	76-1985	76-1313
6	76-1838	76-2486	77-546	76-2070	76-2362	77-344	76-2298	76-1689	77-679	77-576
7	76-1721	77-370	77-558	77-295	76-2359	76-2487	76-2261	77-237	77-612	76-2711
8	76-2239	77-669	77-665	76-2731	76-1761	76-2271	76-2482	77-611	76-1980	76 2013
9	76-2635	77-358	77-562	77-743	76-1719	76-2619	76-2940	76-2237	76-2000	76-1655

TOP

MISSING

ACT II

N

	1	2	3	4	5	6	7	8	9	10
1	76-3080	76-1808	76-3079	76-2495	77-671	~~77-619~~ 77-617	76-2300	76-2811	76-1903	76-1904
2	76-1804	76-3060	76-687	76-1911	76-2518	77-683	76-2633	76-1978	76-2486	76-2329
3	77-672	76-2606	76-2497	76-2595	76-2301	76-2175	77-667	76-2522	77-375	76-2464
4	77-614	76-3062	76-1910	76-1806	76-2291	76-2613	77-567	76-2939	76-2517	76-2652
5	76-2611	76-3078	76-2945	76-2941	76-2637	77-619	77-615	76-1822	76-2984	76-2514
6	77-675	77-251	76-1988	77-680	76-2636	76-2327	76-1737	76-2608	76-2519	77-666
7	77-680	76-1905	76-2469	77-677	76-2477	76-1762	76-1178	76-2601	77-348	76-2485
8	72-674	76-2607	76-1906	77-673	76-2794	77-663	77-678	76-2351	76-2524	76-2484
9	76-2168	76-2466	76-2506	76-1808	76-1819	76-2287	~~76-2531~~ 76-2531	76-3132	77-29	77-747

HPA-ACT-3

TOP

CHARCOAL

N

	1	2	3	4	5	6	7	8	9	10
1	76-1682	77-353	76-2655	77-432	77-660	76-1809	77-749	77-302	77-458	76-2617
2	76-2031	76-2367	77-430	77-350	77-735	76-1354	76-2242	76-3063	77-638	76-2609
3	76-2064	76-~~2767~~ 1680	76-2180	76-2017	76-1718	76-1657	77-369	77-639	77-452	77-560
4	76-2063	~~76-1680~~ 77-663	77-557	76-~~A~~ 1705	76-1802	77-~~295~~ 178	77-296	77-941	76-3346	77-454
5	77-356	~~77-663~~ 76-1679	77-341	77-286	77-221	~~76-2515~~ 77-293	77-298	76-3154	76-3324	77-343
6	76-2068	76-~~1679~~ 2368	76-1729	76-1648	77-767	76-2515	77-368	77-223	76-1843	76-3326
7	76-2066	76-1668	76-1685	76-2236	77-769	77-294	76-3347	77-451	77-457	76-3325
8	76-2069	77-559	77-431	76-2001	77-274	77-300	76-3081	76-2053	76-3324	76-2917
9	76-2338	77-434	77-437	77-372	76-2593	77-765	77-~~3~~ 301	77-228	77-453	77-340

?018

TOP

N

HPA-ACT-4

	1	2	3	4	5	6	7	8	9	10
1	76-2686	77-241	76-1670	76-1321	76-2080	76-2319	77-635	76-1666	76-1723	76-2210
2	76-2696	77-190	77-575	76-1728	76-1649	76-1902	77-627	77-299	76-1324	76-2209
3	77-786	77-240	76-671	76-2644	76-2198	76-2529	77-636	76-1731	76-1732	77-616
4	76-2737	77-630	77-545	76-2663	76-2631	76-2331	76-2520	76-2055	76-1689	77-233
5	77-231	76-1901	77-571	77-574	76-1674	77-357	77-533	76-2033	76-1658	77-490
6	76-1998	77-722	76-1734	76-2406	77-342	76-2290	77-374	76-1695	76-2211	76-1338
7	76-2693	76-3311	76 2030	76-2054	76-2481	76-1755	77-440	76 2265	76-1690	77-618
8	76-3312	77-740	76-1664	76-2702	77-347	77-564	77-577	76-2016	77-485	77-195
9	77-242	77-640	77-554	76-1672	76-1612	76-2157	76-2159	76-2057	77-479	76-2217

Mech. Struct. Weld Piping

22 of 72 G-1-4

RECEIVING CHECKLIST/INSPECTION REPORT

~~Spec~~ Carbon Filter
Identification No.

JOB NO. _____

P.O.NO. _____ REQUISITION NO. _____ ITEM NO. _____

SPECIFICATION: ENGINEERING GED-RS-1C Rev. 0 ASTM _____

CLASS LEVEL: _____ VENDOR Mine Safety Appliances

MATERIAL DESCRIPTION: Carbon filter cells (see attached quality shipment release)

CHECKLIST ITEMS	REQUIRED	VERIFIED
CHEM. & PHYS.	( )	
HYDRO	( )	
RT	( )	
MP	( )	
LP	( )	
UT	( )	
LETTER OF COMPLIANCE	(X)	A. Salcido
MARKINGS	( )	
SAMPLE INSP. PER AQL 2.5	( )	
OTHER Test Reports	(X)	A. Salcido

REMARKS: _____

MRT. NO. _____

HOLD TAG NO. _____ WAIVER TAG NO. _____

ACCEPT TAG NO. _____

— SEE ADDITIONAL CHECKLIST ITEMS ENTERED ON REVERSE OF CARD

QC RECEIVING INSPECTOR _____ 5-9-79
Signature Date

QA ENGINEER Antonio Salcido 5-8-79
Signature Date

POSITIVE IDENTIFICATION OF ITEMS: By serial numbers

VISUAL INSPECTION FOR SHIPPING DAMAGE No damage (verified by GPUSC/QA upon installation)

SPECIFIC CHECKLIST ATTACHED ( )

OTHER REQUIRED CHECK-POINT ITEMS:

THOSE CARBON FILTER CELLS MARKED WITH A DOT IN THE ENCLOSED LIST WERE INSTALLED ON TOP OF THE AUX. BUILDING.

A Salcido 5-8-79
QUALITY ASSURANCE Date

FORM ...
REV 3/76

(e) nited engineers & constructors

PROJECT: ...
UNIT(S): WNP-1

DATE April 27 1978

QUALITY SHIPMENT RELEASE

CONTRACTOR Mine Safety Appliances Co.
LOCATION Evans City, Pennsylvania
CONTRACT/PO. 9779-18 + ADD #5
DWG. NO. 46-27-14 REV. 3
QUALITY/SAFETY CLASS: All (I, II & G)

ITEM DESCRIPTION Carbon Filter Cells
NO RELEASED THIS SHIPMENT 306
S/N(S) ~~MK NO(S)~~
See "Remarks" & attachment.

NOTES:
1. THIS RELEASE FOR SHIPMENT DOES NOT CONSTITUTE FINAL ACCEPTANCE AND DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY ACCORDING TO THE CONTRACT.
2. UE&C QUALITY ASSURANCE RESERVES THE RIGHT TO WAIVE ANY VERIFICATION.
3. DISTRIBUTION: UE&C QA REPRESENTATIVE SENDS ONE COPY TO FIELD SUPERINTENDENT-QA AND SENDS ONE COPY TO QA HOME OFFICE AND PROVIDES ONE COPY TO VENDOR FOR TRANSMITTAL WITH DATA PACKAGE.

NOMENCLATURE: REVIEW OF A QUALITY REQUIREMENT AND ITS STATUS IS DENOTED BY: (A) FOR ACCEPTABLE, (W) FOR WAIVED [SEE REMARKS], (C) FOR CONDITIONAL [SEE REMARKS], (F) FOR FOLLOWUP [SEE REMARKS], OR (NR) FOR NOT REQUIRED.

QUALITY REQUIREMENTS

A-VERIFICATION CHECKLIST

Item	Status
1. FINAL VISUAL EXAMINATION (WORKMANSHIP)	N/A
2. FINAL DIMENSIONAL	N/A
3. COATING/LINING	N/A
4. LUBRICANTS/OILS	N/A
5. CLEANLINESS	N/A
6. ELECTRICAL INSTALLATION	N/A
7. MARKING/IDENTIFICATION	A
8. NAMEPLATE/CODESTAMP	N/A
9. PACKAGING	A

B-DOCUMENTATION CHECKLIST
(AT TIME OF FINAL VERIFICATION)

Item	Status
1. SUBMITTED DOCUMENTS	A
2. NCR's CLOSED	N/A
3. CHANGE ORDERS APPROVED	A
4. VENDOR DRAWING STATUS (REVISION PRESENTED BY CONTRACTOR)	A Rev 5
5. DATA PACKAGE (INCLUDING PHYSICAL PROPERTY DATA) REVIEWED (AVAILABLE AND CORRECT)	A

C-CERTIFICATE OF CONFORMANCE A

D-REMARKS Carbon Filter Cells

Unit Tag No.	Qty.	Unit Tag No.	Qty.
HRW-ACT-1	81	HSG-ACT-1A	72
HRW-ACT-2	81	HSG-ACT-1B	72

Total 306 Carbon cells. Lists of S/No are attached to Vendor Surveillance tags.

POOR ORIGINAL

UE&C QUALITY ASSURANCE REPRESENTATIVE

I HEREBY CERTIFY THAT ABOVE APPLICABLE VERIFICATIONS WERE PERFORMED OR WITNESSED AND DOCUMENTATION CHECKED AS INDICATED.

Joseph S. Vostiuchy — 4/27/78
SIGNATURE DATE

Mine Safety Appliances Company • Evans City, Pennsylvania 16033

CERTIFICATE OF COMPLIANCE

Customer: Washington Public Power Supply System

Address: 3000 George Washington Way

Richland, Washington 99352

Certification Number 1207

Date: 4-25-78

Purchase Order No. G01-75-85

Contract No. 9779-18

MSA Job No. B-853667

It is hereby certified that all material and/or parts furnished comply with the terms and specifications of the subject Purchase Order and/or Contract number.

Exceptions as follows: None

Two Witnesses:

Ralph G. Rush

Larry H. Kuschke

Frank A. Michalek
(Authorized Signature)

Manager, Quality Assurance
(Title or Position in Firm)

The Mine Safety Appliances Company, Evans City Plant, Quality Control system conforms to the requirements of 10CFR50 Appendix B and ANSI 45.2.

POOR ORIGINAL

Unit No. WNP-1 HSG-ACT-1A

Part No. A. 462714 B. 464065

Serial No. See Attached Test Results

Part Name A. Carbon Cell B. Test Cell

Quantity 72

DOCUMENT REVIEWED
APR 27 1978
By ISV

Telephone: 412/538-3510

Cells

Pt. # H62417 HSG-ACT 1A 72 pcs.

77-221 •	76-3109	
77-226	76-2963	76-3317
77-227	76-2982	77-297
76-2731	76-3142	77-762
76-2001 •	76-3350	77-373
76-3416 •	76-3405	76-3003
76-2983 •	76-2951	76-3002
76-3404 •	76-1751	77-345
76-3421	76-3407	77-376
76-2969	76-3420	76-2008
77-230	77-728	77-374 •
76-3402	76-3348	76-2004
77-653	76-3349	77-370 •
76-3401	77-234	76-3001
76-3417	76-3405	76-2239
76-2971	76-2005	76-2265 •
77-229	76-3053	77-299 •
76-2007	76-2958	
76-3130	77-724	
76-3141	76-2006	
76-3002	77-225 •	
77-231 •	77-223 •	
76-3132 •	76-3154	
76-3406	76-3346 •	
77-729	76-3325	
77-742	76-3324	
77-747	76-3326	
76-2954	76-3329	

CONTRACTOR WAIVER REQUEST

RECD JAN 30 1976

TO: UNITED ENGINEERS & CONSTRUCTORS INC.

ADDRESS: 2000 Market Street, Phila., Pa. 19103

ATTN: Project Engineering Manager

REFERENCE: WPPSS Nuclear Projects No. 1 & 4 (A) (A)

FROM: Mine Safety Appliances Co.

ADDRESS: Evans City, Pa. 16033

Page 1 of 1

Transmittal No. CWR-3

Date Submitted 12/10/75

Contract No. 9779-18

REVIEW BY

QA/QC ACTIVITY	APPLICABLE	DATE COMMENTS RECEIVED
ELEC.	N/A	
MECH.	N/A	
MECH. SER	[illegible]	
STRUCT.	N/A	
I & C	N/A	
NUCLEAR	N/A	
Q.A.	N/A	
PURCH		
COST CON		
CONSTRUC.		

The following request is made for: 1-30-76 DKM

(X) Design-Change ( ) Waiver Approval ( ) Repair Authorization

Drawing No. D-462713 for reference Title Gas Adsorber, Flat Bed, AACC-CS-8, Type II

Spec. Sect No. 15A - 3.5.6 Title Adsorbers

Submitted by: Walter Milich

Title: Contract Administrator

Specification/Drawing Requirement: In AACC Standard CS-8, dimension of Carbon Cell is listed as 24 in. width x 30 in. long.

Change Requested/Justification: Dimension of the Carbon Cell to be 23 in. wide x 31-1/2 in. long maintaining all other requirements of AACC Std. CS-8. Necessary to meet Seismic requirements within the maximum width specified for the Filter Train Units.

DOCUMENT REVIEWED MAR 29 1976 Br ISV

Cost Differential: (X) NO ( ) YES Detail:

Repair Procedure:

DOCUMENT REVIEWED [illegible] Br [illegible]

Mine Safety Appliances Co.
Checked and Approved for Submittal
H.C. Reynolds
Project Manager

The condition listed on this request are: Approved (X) Not Approved ( ) *

Based on the listed action:

( ) Design-Change ( ) Waiver Approval ( ) Repair Authorization

* See attached comments

Cognizant Engineer [signature] Date 1-20-76

Quality Assurance Concurrence [signature] Date 1/21/76

Project Engineer Project Mgr. [signature] Date 1-21-76

CONTRACTOR NOTE

If a waiver is authorized, an approved copy of this request must accompany material shipment.

DOCUMENT REVIEWED APR 27 1978 ISV

3

D. K. Manley

CONTRACTOR WAIVER REQUEST

TO: UNITED ENGINEERS & CONSTRUCTORS INC.

ADDRESS: 2000 Market Street, Phila., Pa. 19103

ATTN: Project Engineering Manager

REFERENCE: WPPSS Nuclear Projects No. [X] 1 & [X] 4

FROM: Mine Safety Appliances Co.

ADDRESS: Evans City, PA 16033

(MSA 13)

Page 1 W.M. JUN 16 1977

Transmittal No. CWR-11

Date Submitted 5/18/77

Contract No. 9779-18

REVIEW BY

UE & C ACTIVITY	APPLICABLE	DATE COMMENTS RECEIVED
ELEC.		
MECH.		
MECH. SER	N/C KLS	6-1-77
STRUCT.		
I & C	–	
NUCLEAR		
Q.A.		
PURCH	–	
COST CON		
CONSTRUC		

The following request is made for:

[ ] Design-Change [X] Waiver Approval [ ] Repair Authorization

Drawing No 18-3.5.6 / 22-3.5.8.4 Title

Spec. Sect. No. 15A-37-5.2.3.5 / 39-5.3.2 Title Adsorber Test

Submitted by: W. Milich

Title: Contract Administrator

Specification/Drawing Requirement: Specifies Freon 112 refrigerant as tracer gas for Leak Testing of carbon adsorbers.

Change Requested/Justification: Change all Specification tracer gas requirements to Freon-11 since Freon 112 is no longer commercially available.

DOCUMENT REVIEWED MAR 29 1978 BY JSV UE&C

Cost Differential [X] NO [ ] YES Detail

Repair Procedure

FILTER SALES JUN 18 1977 M.S.A.

Mine Safety Appliances Co. Checked and Approved for Submittal

K.E. Reynolds

Project Manager

The condition listed on this request are: Approved [X] Not Approved [ ] *

Based on the listed action: Disposition by C.O. [ ]

[ ] Design-Change [X] Waiver Approval [ ] Repair Authorization

* See attached comments

Cognizant Engineer [signature] Date 6/1/77

Quality Assurance Concurrence [signature] Date 6-2-77

Project Engineer Project Mgr [signature] Date 6/13/77

CONTRACTOR NOTE

If a waiver is authorized, an approved copy of this request must accompany material shipment.

Reviewed with & approved by WPPSS, F. Matz - Appr'l #0614F [signature] 6-14-77

Mine Safety Appliances Company · Evans City, Pennsylvania 16033

463563 IMPREGNATED CARBON (SUTCLIFFE)

BATCH NO. C-224

FOR

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

WPPSS NUCLEAR PROJECTS NO. 1 & 4

	Requirements	Actual
#6 ASTM E-11 Sieve	0.0%	0.0%
#8 ASTM E-11 Sieve	5.0% Max.	0.8%
#12 ASTM E-11 Sieve	40% - 60%	45.5%
#16 ASTM E-11 Sieve	40% - 60%	49.0%
Pan	5.0% Max.	4.1%
Apparent Density	0.5 ± 0.05 g/cc	0.53 g/cc
Iodine Collection Test	0.1% Max.	< 0.1%
Wash Test	80% Min.	82.0%
Ignition Test	340°C Min.	396°C
Entrapment Efficiency Test		
(1) Methyl Iodide CH_3I_{131} 212°F, 95% R.H.	95 Min.	99.39%
(2) Iodine I_{131} 212°F, 95% R.H.	99.9% Min.	99.93%

Date of Report 4-5-78

Prepared By Conrad C. Gaibel

Telephone: 412/538-3510

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853667 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
4/3/78	C-224	76-1751	39	52	91	0.48	99.99	4/14/78
"	"	2951	39	52	91	0.48	99.99	"
"	"	2958	39	53	92	0.48	99.99	"
"	"	3142	39	53	92	0.48	99.99	"
"	"	2971	39	52	91	0.48	99.99	"
"	"	2969	39	52	91	0.48	99.99	"
"	"	77-747	39	53	92	0.50	99.99	"
"	"	76-3154	39	52	91	0.50	99.99	"
"	"	3109	39	52	91	0.50	99.99	"
"	"	2963	39	52	91	0.47	99.99	"
4/4/78	"	77-742	39	52	91	0.47	99.99	"
"	"	729	39	52	91	0.47	99.99	"
"	"	76-3401	39	52	91	0.46	99.98	"
"	"	77-728	39	52	91	0.46	99.98	"

1156-ACT-1A

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853667 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
4/4/78	C-224	77-724	39	52	91	0.46	99.98	4/14/78
4/13/78	"	76-3401	39	52	91	0.47	99.99	"
"	"	3417	39	52	91	0.47	99.99	"
"	"	3421	39	52	91	0.47	99.99	"
"	"	3441	39	52	91	0.47	99.99	"
4/4/78	"	77-653	39	53	92	0.47	99.99	"
"	"	229	39	52	91	0.47	99.99	"
4/13/78	"	76-3132	39	52	91	0.46	99.99	"
"	"	3130	39	52	91	0.46	99.99	"
"	"	3420	39	53	92	0.46	99.99	"
"	"	3083	39	52	91	0.48	99.98	"
"	"	2007	39	52	91	0.48	99.98	"
"	"	2006	39	53	92	0.48	99.98	"
"	"	3402	39	53	92	0.48	99.99	"

MSG-ACT-1A

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853667 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. AP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
4/13/78	C-224	76-2931	39	52	91	0.48	99.99	4/14/78
"	"	2983	39	53	92	0.48	99.99	"
4/14/78	"	77-226	39	53	92	0.46	99.99	"
"	"	221	39	52	91	0.46	99.99	"
"	"	230	39	52	91	0.46	99.99	"
"	"	228	39	52	91	0.46	99.99	"
"	"	223	39	52	91	0.46	99.99	"
"	"	224	39	52	91	0.46	99.99	"
"	"	231	39	52	91	0.46	99.98	"
"	"	76-3407	39	52	91	0.46	99.98	"
"	"	77-227	39	52	91	0.46	99.98	"
"	"	76-3405	39	52	91	0.47	99.99	"
"	"	3350	39	53	92	0.47	99.99	"
"	"	3349	39	52	91	0.47	99.99	"

HSG-ACT-1A

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853667 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
4/4/78	C-224	76-3416	39	52	91	0.48	99.99	4/14/78
"	"	3408	39	52	91	0.48	9999	"
"	"	3348	39	52	91	0.48	99.99	"
4/13/78	"	2005	39	52	91	0.50	99.99	"
"	"	2982	39	53	92	0.50	99.99	"
"	"	2002	39	53	92	0.50	99.99	"
"	"	2984	39	52	91	0.48	99.99	"
"	"	3404	39	52	91	0.48	99.99	"
"	"	2001	39	52	91	0.48	99.99	"
4/15/78	"	3346	39	52	91	0.48	99.99	4/17/78
"	"	3329	39	52	91	0.48	99.99	"
"	"	3326	39	52	91	0.48	99.99	"
"	"	3324	39	52	91	0.46	99.99	"
"	"	3325	39	52	91	0.46	99.99	"

NSG-ACT-1A

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. A853667 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
4/15/78	C-224	77-297	39	52	91	0.46	99.99	4/17/78
"	"	76-3317	39	52	91	0.46	9999	"
"	"	77-299	39	53	92	0.45	99.99	"
4/18/78	"	76-2239	39	52	91	0.47	99.99	4/18/78
"	"	2265	39	52	91	0.47	99.99	"
"	"	3001	39	52	91	0.47	99.99	"
4/15/78	"	77-762	39	52	91	0.46	99.99	"
4/18/78	"	76-3002	39	52	91	0.47	99.99	"
"	"	3003	39	52	91	0.47	99.99	"
"	"	77-373	39	52	91	0.47	99.99	"
"	"	374	39	52	91	0.48	99.99	"
"	"	376	39	52	91	0.48	99.99	"
"	"	345	39	52	91	0.48	99.99	"
4/15/78	"	370	39	52	91	0.47	99.99	"

NSG-ACT-1A

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853667 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. DP-1092

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
4/3/78	C-224	76-2004	39	52	91	0.47	99.99	4/18/78
"	"	2008	39	52	91	0.47	99.99	"
		"						

NSG-ACT-1A

4-10-79

- Mech. Struct. Weld Piping

26 of 90

RECEIVING CHECKLIST/INSPECTION REPORT

~~127~~ Carbon Filter Ce
Identification No.

JOB NO. ____

P.O.NO. ____ REQUISITION NO. ____ ITEM NO. ____

SPECIFICATION: ENGINEERING GED-RS-~~19~~ 3 Rev. 0 ASTM ____

CLASS LEVEL: ____ VENDOR Mine safety appliances

MATERIAL DESCRIPTION: Carbon filter cells (see attached quality shipment release)

CHECKLIST ITEMS	REQUIRED	VERIFIED
CHEM. & PHYS.	( )	
HYDRO	( )	
RT	( )	
MP	( )	
LP	( )	
UT	( )	
LETTER OF COMPLIANCE	(X)	A. Salcido
MARKINGS	( )	
SAMPLE INSP. PER AQL 2.5	( )	
OTHER Test Reports	(X)	A. Salcido

REMARKS: ____

MRT. NO. ____

HOLD TAG NO. ____ WAIVER TAG NO. ____

ACCEPT TAG NO. ____

— SEE ADDITIONAL CHECKLIST ITEMS ENTERED ON REVERSE OF CARD

QC RECEIVING INSPECTOR [signature] 5-9-79
Signature Date

QA ENGINEER Antonio Salcido 5-8-79
Signature Date

POSITIVE IDENTIFICATION OF ITEMS: By serial numbers

VISUAL INSPECTION FOR SHIPPING DAMAGE No damage

SPECIFIC CHECKLIST ATTACHED ( )

OTHER REQUIRED CHECK-POINT ITEMS:

THOSE CARBON FILTER CELLS MARKED WITH A DOT IN THE ENCLOSED LIST WERE INSTALLED ON TOP OF THE AUX. BUILDING

QUALITY ASSURANCE Date

United engineers

DATE March 29 1978

QUALITY SHIPMENT RELEASE
WPPSS NUCLEAR PROJECTS

☒ WNP-1
☐ WNP-4

CONTRACTOR Mine Safety Appliances Co
LOCATION Evans City, Pennsylvania
CONTRACT SPECIFICATION 9779-16 + Add #5
DWG. NO. 46-27-14 REV. 3
QUALITY CLASS: I II G (CIRCLE ONE)

ITEM DESCRIPTION Carbon Filter Cells
NO RELEASED THIS SHIPMENT 180
S/N(S) _____ MK NO(S) _____
90 UNIT TAG [redacted]-HAT-ACT-3
TO UNIT TAG HAT-ACT-4

NOTES:
1. THIS RELEASE DOES NOT CONSTITUTE FINAL ACCEPTANCE AND DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY ACCORDING TO CONTRACT.
2. UE&C QUALITY ASSURANCE RESERVES THE RIGHT TO WAIVE ANY VERIFICATION.
3. DISTRIBUTION: UE&C QA REPRESENTATIVE SENDS ONE COPY TO FIELD SUPT.-QA, ONE COPY TO QA HOME OFFICE AND PROVIDES ONE COPY TO VENDOR FOR TRANSMITTAL WITH DATA PACKAGE.

NOMENCLATURE: REVIEW OF A QUALITY REQUIREMENT AND ITS STATUS IS DENOTED BY: (A) FOR ACCEPTABLE, (W) FOR WAIVED [SEE REMARKS], (C) CONDITIONAL [SEE REMARKS], (F) FOR FOLLOWUP [SEE REMARKS], OR (NR) FOR NOT REQUIRED.

QUALITY REQUIREMENTS

A - VERIFICATION CHECKLIST

1. FINAL VISUAL EXAMINATION	N/A
2. FINAL DIMENSIONAL	N/A
3. COATING/LINING INSPECTION	N/A
4 CLEANLINESS INSPECTION	N/A
5. MARKING/IDENTIFICATION	A
6. NAMEPLATE/CODESTAMP	N/A
7. PACKAGING	A

B - DOCUMENTATION CHECKLIST
(at time of final Verification)

1. SUBMITTED DOCUMENTS	A
2. NCR's CLOSED	N/A
3. CONTRACT WAIVERS APPROVED (Waivers #5 & #11)	A
4. VENDOR DRAWING STATUS (REVISION PRESENTED BY CONTRACTOR)	3
5. DATA PACKAGE REVIEWED (AVAILABLE AND CORRECT)	A

C - CERTIFICATE OF COMPLIANCE: A

D - REMARKS: Carbon Cells are purchased as a standard commercial item.
See attached pages for list of S/N's.
Only items applicable to Carbon Cells in the VSCP appear on page 5 of Section "A."

UE&C QUALITY ASSURANCE REPRESENTATIVE

I HEREBY CERTIFY THAT ABOVE APPLICABLE VERIFICATIONS WERE PERFORMED OR WITNESSED AND DOCUMENTATION CHECKED AS INDICATED.

Arnold J Stiebler 3/24/78

2(6)-1-77

MSA

Mine Safety Appliances Company · Evans City, Pennsylvania 16033

CERTIFICATE OF COMPLIANCE

Customer: Washington Public Power Supply System

Address: 3000 George Washington Way

Richland, Washington 99352

Certification Number 1167

Date 3-28-78

Purchase Order No. G01-75-85

Contract No. 9779-18

MSA Job No. B-853670

It is hereby certified that all material and/or parts furnished comply with the terms and specifications of the subject Purchase Order and/or Contract number.

Exceptions as follows: None

Two Witnesses:

R. G. Rush

F. C. Kuschler

Frank J. Michalek
(Authorized Signature)

Manager, Quality Assurance
(Title or Position in Firm)

The Mine Safety Appliances Company, Evans City Plant, Quality Assurance Program conforms to the requirements of 10CFR50 Appendix B and ANSI 45.2.

POOR ORIGINAL

Unit No. WNP-1 HPA-ACT-4

Part No. A. 462714 B. 464065

Serial No. See Attached Test Results

Part Name A. Carbon Cell B. Test Cell

Quantity 90

DOCUMENT REVIEWED
MAR 29 1978
By JSV

Telephone: 412/538-3510

CONTRACTOR WAIVER REQUEST

WPPSS Unit 3 & 4

TO: UNITED ENGINEERS & CONSTRUCTORS INC

ADDRESS: 2000 Market Street, Phila., Pa. 19103

ATTN: Project Engineering Manager

REFERENCE: WPPSS Nuclear Projects No. 1 [X] & 4 [X]

FROM: Mine Safety Appliances Co.

ADDRESS: Evans City, Pa. 16033

Page 1 of 1

Transmittal No. CWR-3

Date Submitted 12/10/75

Contract No. 9779-18

REVIEW BY

W.A.E. ACTIVITY	APPLICABLE	DATE COMMENTS RECEIVED
ELEC.	N/A	
MECH.	N/A	
MECH. SER.	[illegible]	
STRUCT.	N/A	
I & C	N/A	
NUCLEAR	N/A	
Q.A.	N/A	
PURCH		
COST CON.		
CONSTRUC.		

The following request is made for: 1-30-76 DKM

[X] Design-Change [ ] Waiver Approval [ ] Repair Authorization

Drawing No. D-462713 for reference Title Gas Adsorber, Flat Bed, AACC-CS-8, Type II

Spec. Sec. No. 15A - 3.5.6 Title Adsorbers

Submitted by: Walter Milich

Title: Contract Administrator

Specification/Drawing Requirement In AACC Standard CS-8, dimension of Carbon Cell is listed as 24 in. width x 30 in. long.

Change Requested/Justification Dimension of the Carbon Cell to be 23 in. wide x 31-1/2 in. long maintaining all other requirements of AACC Std. CS-8. Necessary to meet Seismic requirements within the maximum width specified for the Filter Train Units.

DOCUMENT REVIEWED MAR 29 1978 USV

Cost Differential [X] NO [ ] YES Detail

Repair Procedure

DOCUMENT REVIEWED [illegible]

Mine Safety Appliances Co.

Checked and Approved for Submittal

K.C. Reynolds

Project Manager

The condition listed on this request are: Approved [✓] Not Approved [ ] *

Based on the listed action:

[ ] Design-Change [ ] Waiver Approval [ ] Repair Authorization

* See attached comments

Cognizant Engineer [signature] Date 1-20-76

Quality Assurance Concurrence [signature] Date 1/21/76

[illegible] 1-21-76

CONTRACTOR NOTE

If a waiver is authorized, an approved copy of this request must accompany material shipment.

CONTRACTOR WAIVER REQUEST   D. K. Manley

MSA (3)

TO: UNITED ENGINEERS & CONSTRUCTORS INC.

ADDRESS: 2000 Market Street, Phila., Pa. 19103

ATTN: Project Engineering Manager

REFERENCE: WPPSS Nuclear Projects No. [X] 1 & [X] 4

FROM: Mine Safety Appliances Co.

ADDRESS: Evans City, PA 16033

Page 1 W.M. JUN 16 1977

Transmittal No. CWR-11

Date Submitted 5/18/77

Contract No. 9779-18

REVIEW BY

UE&C ACTIVITY	APPLICABLE	DATE COMMENTS RECEIVED
ELEC.		
MECH.		
MECH. SER	N/C KKF	6-1-77
STRUCT.		
I&C		
NUCLEAR		
Q.A.		
PURCH		
COST CON		
CONSTRUC		

The following request is made for:

☐ Design-Change ☒ Waiver Approval ☐ Repair Authorization

Drawing No 18-3.5.6 / 22-3.5.8.4 Title

Spec. Sect. No. 15A-37-5.2.3.5 / 39-5.3.2 Title Adsorber Test

Submitted by: W. Milich

Title Contract Administrator

Specification/Drawing Requirement Specifies Freon 112 refrigerant as tracer gas for Leak Testing of carbon adsorbers.

Change Requested/Justification Change all Specification tracer gas requirements to Freon-11 since Freon 112 is no longer commercially available.

DOCUMENT REVIEWED MAR 29 1978 J.S.V.

Cost Differential ☒ NO ☐ YES Detail

Repair Procedure

FILTER SALES JUN 16 1977 M.S.A.

Mine Safety Appliances Co.
Checked and Approved for Submittal

R.E. Reynolds

Project Manager

POOR ORIGINAL

The condition listed on this request are: Approved ☒ Not Approved ☐ *

Based on the listed action: Disposition by C.O. ☐

☐ Design-Change ☒ Waiver Approval ☐ Repair Authorization

* See attached comments

Cognizant Engineer [signature] Date 6/1/77

Quality Assurance Concurrence [signature] Date 6-2-77

Project Engineer Project Mgr [signature] Date 6/13/77

CONTRACTOR NOTE

If a waiver is authorized, an approved copy of this request must accompany material shipment.

Reviewed with & APPROVED By WPPSS, F. MATZ. APPR-#0614F [signature] 6-14-

E 553670

Pt. # 462714 HPA-ACT -4 3-23-78

2392	2490	1754	77-66
2166	1738	1757	77-55
2284	1739	2306	77-56
2491	2539	2394	77-55
2628	2540	2332	77-55
2303	2795	2800	77-56
1758	2165	2403	77-57
2802	2538	2449	77-54
2152	2164	2304	77-55
1759	2781	2274	
2439	2302	2542	
2290	1755	2319	
2080	2331	2406	
2078	2292	2391	
1760	2283	2073	
2075	2074	2077	
2404	2545	2541	
2544	2543	2132	
2143	77-571	77-559	
2072	76-2180	77-670	
77-547	77-663	77-560	
77-574	77-664	77-557	
77-545	77-553	76-2139	
77-554	77-573	77-555	
77-662	76-2140	77-564	
77-576	76-2142	77-543	
77-575	77-577	77-546	

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853670 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
3/15/78	C-220	76-2180	39	56	95	0.56	99.99	3/20/78
3/16/78	"	1760	39	57	96	0.58	99.99	3/21/78
3/14/78	"	2303	39	57	96	0.58	99.99	"
3/16/78	"	2490	39	56	95	0.58	99.99	"
3/14/78	"	2628	39	57	96	0.58	99.99	"
"	"	2802	39	57	96	0.58	99.99	"
"	"	2795	39	57	96	0.58	99.99	"
"	"	2781	39	57	96	0.56	99.99	"
"	"	2302	39	57	96	0.56	9999	"
3/17/78	"	1755	39	56	95	0.56	99.99	"
"	"	2331	39	56	95	0.54	99.99	"
"	"	1757	39	56	95	0.54	9999	"
"	"	1754	39	56	95	0.54	99.99	"
3/16/78	"	2292	39	56	95	0.55	99.99	"

HPA-ACT-4

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853670 Type of Carbon 463563

Customer Order No. G01-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
3/16/78	C-220	76-2283	39	56	95	0.55	99.99	3/21/78
"	"	2491	39	56	95	0.55	99.99	"
"	"	2284	39	56	95	0.55	99.99	"
"	"	2290	39	56	95	0.55	99.99	"
"	"	2489	39	56	95	0.55	99.99	"
3/17/78	"	2078	39	56	95	0.58	99.99	"
"	"	2080	39	56	95	0.58	99.99	"
"	"	2152	39	56	95	0.58	99.99	"
"	"	1759	39	56	95	0.60	99.99	"
"	"	1758	39	56	95	0.60	99.99	"
"	"	1738	39	56	95	0.56	99.99	"
"	"	1739	39	56	95	0.56	99.99	"
3/15/78	"	2539	39	57	96	0.56	99.99	"
"	"	2540	39	56	95	0.57	99.99	"

HPA-ACT-4

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853670 Type of Carbon 463563

Customer Order No. G01-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
3/15/78	C-220	76-2164	39	56	95	0.57	99.99	3/21/78
"	"	2538	39	56	95	0.57	99.99	"
3/14/78	"	2165	39	57	96	0.58	99.99	"
"	"	2166	39	57	96	0.58	99.99	"
"	"	2392	39	56	95	0.58	99.99	"
"	"	2394	39	56	95	0.56	99.99	3/22/78
"	"	2406	39	56	95	0.56	99.99	"
"	"	2391	39	56	95	0.56	99.99	"
"	"	2800	39	57	96	0.55	99.99	"
"	"	2332	39	56	95	0.55	99.99	"
"	"	2306	39	56	95	0.55	99.99	"
"	"	2449	39	56	95	0.58	99.99	"
"	"	2542	39	56	95	0.58	99.99	"
"	"	2319	39	56	95	0.58	99.99	"

HPA-ACT-4

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853670 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
3/14/78	C-220	76-2274	39	57	96	0.60	99.99	3/22/78
"	"	2304	39	56	95	0.60	99.99	"
"	"	2403	39	56	95	0.60	99.99	"
"	"	2543	39	56	95	0.58	99.99	"
"	"	2544	39	56	95	0.58	99.99	"
"	"	2541	39	56	95	0.58	99.99	"
"	"	2545	39	57	96	0.60	99.99	"
"	"	2404	39	56	95	0.60	99.99	"
3/17/78	"	2077	39	56	95	0.60	99.99	"
"	"	2074	39	56	95	0.56	99.99	"
"	"	2075	39	56	95	0.56	99.99	"
"	"	2073	39	56	95	0.56	99.99	"
"	"	2072	39	56	95	0.56	99.99	"
"	"	2143	39	56	95	0.56	99.99	"

HPA-ACT-4

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853670 Type of Carbon 463563

Customer Order No. G01-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
3/17/78	C-220	76-2132	39	56	95	0.56	99.99	3/22/78
3/22/78	"	2140	39	56	95	0.57	99.99	"
"	"	2142	39	56	95	0.57	99.99	"
"	"	2139	39	57	96	0.55	99.99	"
"	"	77-555	39	56	95	0.55	99.99	"
"	"	566	39	56	95	0.55	99.99	"
"	"	543	39	56	95	0.56	99.99	"
"	"	562	39	56	95	0.56	99.99	"
"	"	556	39	56	95	0.56	99.99	"
"	"	553	39	56	95	0.58	99.99	"
"	"	573	39	56	95	0.58	99.99	"
3/23/78	"	664	39	58	97	0.57	99.99	"
"	"	663	39	57	96	0.58	99.99	"
3/22/78	"	571	39	56	95	0.57	99.99	"

WPPA-ACT - 4

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853670 Type of Carbon 4/63563

Customer Order No. G01-75-85 Spec. No. AP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
3/23/78	C-220	77-557	39	56	95	0.57	99.99	3/23/78
"	"	560	39	56	95	0.57	99.99	"
"	"	670	39	56	95	0.57	99.99	"
3/22/78	"	559	39	56	95	0.57	99.99	"
3/23/78	"	558	39	57	96	0.60	99.99	"
"	"	665	39	58	97	0.60	99.99	"
"	"	662	39	56	95	0.60	99.99	"
"	"	576	39	57	96	0.57	99.99	"
"	"	578	39	57	96	0.57	99.99	"
"	"	577	39	57	96	0.57	99.99	"
"	"	550	39	56	95	0.60	99.99	"
"	"	549	39	57	96	0.60	99.99	"
"	"	547	39	58	97	0.60	99.99	"
"	"	574	39	57	96	0.57	99.99	"

HPA - ACT - 4

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853670 Type of Carbon 4/6356 3

Customer Order No. G01-75-85 Spec. No. AP-1083

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
3/23/78	C-220	77-554	39	57	96	0.57	99.99	3/23/78
"	"	546	39	58	97	0.57	99.99	"
"	"	545	39	58	97	0.58	99.99	"
"	"	575	39	58	97	0.58	99.99	"
"	"	552	39	58	97	0.58	99.99	"
"	"	563	39	58	97	0.57	99.99	"

HPA - ACT - 4

Mine Safety Appliances Company · Evans City, Pennsylvania 16033

463563 IMPREGNATED CARBON

BATCH NO. C-220

FOR

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

WPPSS NUCLEAR PROJECTS NO. 1 & 4

	Requirements	Actual
#6 ASTM E-11 Sieve	0.0%	0.0 %
#8 ASTM E-11 Sieve	5.0% Max.	1.3 %
#12 ASTM E-11 Sieve	40% - 60%	42.0 %
#16 ASTM E-11 Sieve	40% - 60%	54.1 %
Pan	5.0% Max.	2.0 %
Apparent Density	0.5 ± 0.05 g/cc	0.545 gm/cc
Iodine Collection Test	0.1% Max.	NIL
Wash Test	80% Min.	82.9%
Ignition Test	340°C Min.	418 °C
Entrapment Efficiency Test		
(1) Methyl Iodide CH_3I_{131} 212°F, 95% R.H.	95% Min.	99.38%
(2) Iodine I_{131} 212°F, 95% R.H.	99.9% Min.	99.99%

Date of Report 3-10-78

Prepared By Beibel

Telephone: 412/538-3510

Mech. Struct. Weld Piping

16 of 81

RECEIVING CHECKLIST/INSPECTION REPORT

~~XXX~~ Carbon Filter Ce
Identification No.

JOB NO. _____

P.O.NO. _____ REQUISITION NO. _____ ITEM NO. _____

SPECIFICATION: ENGINEERING GED-RS 10 Rev 0 ASTM _____

CLASS LEVEL: _____ VENDOR Mine Safety Appliances

MATERIAL DESCRIPTION: Carbon Filters (see attached quality shipment release)

CHECKLIST ITEMS	REQUIRED	VERIFIED
CHEM. & PHYS.	( )	
HYDRO	( )	
RT	( )	
MP	( )	
LP	( )	
UT	( )	
LETTER OF COMPLIANCE	(X)	A. Salcido
MARKINGS	( )	
SAMPLE INSP. PER AQL 2.5	( )	
OTHER Test Reports	(X)	A. Salcido

REMARKS: _____

MRT. NO.

HOLD TAG NO. WAIVER TAG NO.

ACCEPT TAG NO.

— SEE ADDITIONAL CHECKLIST ITEMS ENTERED ON REVERSE OF CARD

QC RECEIVING INSPECTOR _____ 5-9-79
Signature Date

QA ENGINEER Antonio Salcido 5-8-79
Signature Date

POSITIVE IDENTIFICATION OF ITEMS: By serial numbers

VISUAL INSPECTION FOR SHIPPING DAMAGE No damage (verified by SPUSO/QA upon installation

SPECIFIC CHECKLIST ATTACHED ( )

OTHER REQUIRED CHECK-POINT ITEMS:

THOSE CARBON FILTER CELLS MARKED WITH A DOT IN THE ENCLOSED LIST WERE INSTALLED ON TOP OF THE AUX. BUILDING.

A. Salcido 5-8-79
QUALITY ASSURANCE Date

FORM 4557
REV. 3/78

United Engineers & Constructors Inc.

PROJECT: WNP-5 ... PROJECT: WACSS

UNIT(S): WNP-1

DATE April 27 1978

QUALITY SHIPMENT RELEASE

CONTRACTOR Mine Safety Appliances Co.	ITEM DESCRIPTION Carbon Filter Cells
LOCATION Evans City Pennsylvania	NO RELEASED THIS SHIPMENT 306
CONTRACT/PO. 9779-18 + ADD #5	S/N(S) ~~MK NO(S)~~
DWG. NO. 46-27-14 REV. 3	See "Remarks" & attachment.
QUALITY/SAFETY CLASS: All (I, II & G)	

NOTES: 1. THIS RELEASE FOR SHIPMENT DOES NOT CONSTITUTE FINAL ACCEPTANCE AND DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY ACCORDING TO THE CONTRACT.

2. UE&C QUALITY ASSURANCE RESERVES THE RIGHT TO WAIVE ANY VERIFICATION.

3. DISTRIBUTION: UE&C QA REPRESENTATIVE SENDS ONE COPY TO FIELD SUPERINTENDENT-QA AND SENDS ONE COPY TO QA HOME OFFICE AND PROVIDES ONE COPY TO VENDOR FOR TRANSMITTAL WITH DATA PACKAGE.

NOMENCLATURE: REVIEW OF A QUALITY REQUIREMENT AND ITS STATUS IS DENOTED BY: (A) FOR ACCEPTABLE, (W) FOR WAIVED [SEE REMARKS], (C) FOR CONDITIONAL [SEE REMARKS], (F) FOR FOLLOWUP [SEE REMARKS], OR (NR) FOR NOT REQUIRED.

QUALITY REQUIREMENTS

A- VERIFICATION CHECKLIST

Item	Status
1. FINAL VISUAL EXAMINATION (WORKMANSHIP)	N/A
2. FINAL DIMENSIONAL	N/A
3. COATING / LINING	N/A
4. LUBRICANTS/OILS	N/A
5. CLEANLINESS	N/A
6. ELECTRICAL INSTALLATION	N/A
7. MARKING/IDENTIFICATION	A
8. NAMEPLATE/CODESTAMP	N/A
9. PACKAGING	A

B- DOCUMENTATION CHECKLIST

(AT TIME OF FINAL VERIFICATION)

Item	Status
1. SUBMITTED DOCUMENTS	A
2. NCR's CLOSED	N/A
3. CHANGE ORDERS APPROVED	A
4. VENDOR DRAWING STATUS (REVISION PRESENTED BY CONTRACTOR)	A Rev 3
5. DATA PACKAGE (INCLUDING PHYSICAL PROPERTY DATA) REVIEWED (AVAILABLE AND CORRECT)	A

C- CERTIFICATE OF CONFORMANCE A

D-REMARKS Carbon Filter Cells

Unit Tag No	Qty	Unit Tag No	Qty.
HRW-ACT-1	81	HSG-ACT-1A	72
HRW-ACT-2	81	HSG-ACT-1B	72

Total 306 Carbon cells. Lists of S/N's are attached to Vendor Surveillance tags.

UE&C QUALITY ASSURANCE REPRESENTATIVE

POOR ORIGINAL

I HEREBY CERTIFY THAT ABOVE APPLICABLE VERIFICATIONS WERE PERFORMED OR WITNESSED AND DOCUMENTATION CHECKED AS INDICATED.

Joseph S. Vertealy — SIGNATURE

4/27/78 — DATE

MSA

Mine Safety Appliances Company · Evans City, Pennsylvania 16033

CERTIFICATE OF COMPLIANCE

Customer: Washington Public Power Supply System

Address: 3000 George Washington Way

Richland, Washington 99352

Certification Number 1202

Date: 4-21-78

Purchase Order No. G01-75-85

Contract No. 9779-18

MSA Job No. B-853668

It is hereby certified that all material and/or parts furnished comply with the terms and specifications of the subject Purchase Order and/or Contract number.

Exceptions as follows: None

Two Witnesses:

Ralph G. Rush

L. H. Kuschler

(Authorized Signature)

Manager, Quality Assurance

(Title or Position in Firm)

The Mine Safety Appliances Company, Evans City Plant, Quality Control system conforms to the requirements of 10CFR50 Appendix B and ANSI 45.2.

Unit No. WNP-1 HRW-ACT-1

Serial No. See Attached Test Results

Quantity 81

Part No. A. 462714 B. 464065

Part Name A. Carbon Cell B. Test Cell

Telephone: 412/538-3510

HRW-ACT-1

B 55 E 663 Carbon cells

P.E. 462.714 HRW-ACT 1 (81)

76-2255	77-624	76-2151
76-2944	77-589	76-2150
76-2263	76-2321	77-622
77-249	76-2318	77-588
76-2243	77-623	76-2145
77-247	77-629	77-488
76-2926	76-2295	77-232
77-246	77-592	76-2322
77-244	77-628	77-237
77-243	77-569	76-2343
76-2916	76-2317	77-236
76-2315	76-2155	76-2273
76-2245	77-621	77-627
77-245	77-591	77-636
76-2259	76-2340	77-195
76-2262	76-2344	77-233
76-2718	77-~~256~~ 238	76-2159
76-2271	77-545	77-635
77-245	76-2146	76-2157
76-2261	76-2296	77-490
76-2298	77-626	76-2147
76-2940	77-~~256~~ 620	77-625
76-2274	77-196	76-2342
76-2266	76-2149	77-570
76-2316	77-637	76-~~2252~~ 2293
76-2342	76-1753	77-634
76-2272	76-1750	76-1746

CONTRACTOR WAIVER REQUEST

WPPSS JAN 30 1976

TO: UNITED ENGINEERS & CONSTRUCTORS INC.

ADDRESS: 2000 Market Street, Phila., Pa. 19103

ATTN: Project Engineering Manager

REFERENCE: WPPSS Nuclear Projects No 1 & 4 [A] [A]

FROM: Mine Safety Appliances Co.

ADDRESS: Evans City, Pa. 16033

Page 1 of 1

Transmittal No. CWR-3

Date Submitted 12/10/75

Contract No. 9770-18

REVIEW BY

E & C ACTIVITY	APPLICABLE	DATE COMMENTS RECEIVED
ELEC.	N/A	
MECH	N/A	
MECH. SER	N/A	
STRUCT.	N/A	
I & C	N/A	
NUCLEAR	N/A	
Q.A.	N/A	
PURCH		
COST CON		
CONSTRUC		

The following request is made for: 1-30-76 DKM

[A] Design-Change [ ] Waiver Approval [ ] Repair Authorization

Drawing No. D-462713 for reference Title Gas Adsorber, Flat Bed, AACC-CS-8, Type II

Spec. Sect. No. 15A - 3.5.6 Title Adsorbers

Submitted by: Walter Milich

Title: Contract Administrator

Specification/Drawing Requirement In AACC Standard CS-8, dimension of Carbon Cell is listed as 24 in. width x 30 in. long.

Change Requested/Justification Dimension of the Carbon Cell to be 23 in. wide x 31-1/2 in. long maintaining all other requirements of AACC Std. CS-8. Necessary to meet Seismic requirements within the maximum width specified for the Filter Train Units.

DOCUMENT REVIEWED MAR 26 1976 BY

Cost Differential [A] NO [ ] YES Detail

Repair Procedure

Mine Safety Appliances Co.
Checked and Approved for Submittal
M.C. Reynolds
Project Manager

DOCUMENT REVIEWED 3 75

The condition listed on this request are: Approved [A] Not Approved [ ] *

Based on the listed action:

[ ] Design-Change [ ] Waiver Approval [ ] Repair Authorization

* See attached comments

Cognizant Engineer [signature] Date 1-20-76

Quality Assurance Concurrence [signature] Date 1/21/76

Project Engineer Project Mgr. [signature] Date 1-21-76

CONTRACTOR NOTE

If a waiver is authorized, an approved copy of this request must accompany material shipment.

DOCUMENT REVIEWED APR 27 1978 BY

CONTRACTOR WAIVER REQUEST

D. K. Manlow

TO: UNITED ENGINEERS & CONSTRUCTORS INC.

ADDRESS: 2000 Market Street, Phila., Pa 19103

ATTN: Project Engineering Manager

REFERENCE: WPPSS Nuclear Projects No. 1 & 4 [X] [X]

FROM: Mine Safety Appliances Co.

ADDRESS: Evans City, PA 16033

Page 1 W.M. JUN 16 1977

Transmittal No. CWR-11

Date Submitted 5/18/77

Contract No. 9779-18

REVIEW BY

UE&C ACTIVITY	APPLICABLE	DATE COMMENTS RECEIVED
ELEC.		
MECH.		
MECH. SER	Mc KEE	6-1-77
STRUCT.		
I & C		
NUCLEAR		
Q.A.		
PURCH		
COST CON		
CONSTRUC		

The following request is made for:

☐ Design-Change ☒ Waiver Approval ☐ Repair Authorization

Drawing No 18-3.5.6 / 22-3.5.8.4 Title

Spec. Sect. No. 15A-37-5.2.3.5 / 39-5.3.2 Title Adsorber Test

Submitted by: W. Milich

Title: Contract Administrator

Specification/Drawing Requirement Specifies Freon 112 refrigerant as tracer gas for Leak Testing of carbon adsorbers.

Change Requested/Justification Change all Specification tracer gas requirements to Freon-11 since Freon 112 is no longer commercially available.

DOCUMENT REVIEWED
MAR 30 1978
BY IBM
U.E.&C.

Cost Differential ☒ NO ☐ YES Detail

Repair Procedure

FILTER SALES
JUN 16 1977
U.S.A.

Mine Safety Appliances Co.
Checked and Approved for Submittal
K. E. Rumbaugh
Project Manager

The condition listed on this request are: Approved ☒ Not Approved ☐ *

Based on the listed action: Disposition by C.O. ☐

☐ Design-Change ☒ Waiver Approval ☐ Repair Authorization

* See attached comments

Cognizant Engineer [signature] Date 6/1/77

Quality Assurance Concurrence [signature] Date 6-2-77

Project Engineer Project Mgr [signature] Date 6/3/77

CONTRACTOR NOTE

If a waiver is authorized, an approved copy of this request must accompany material shipment.

Reviewed with & Approved by WPPSS, F. Mintz, April # 0614 F [signature] 6-14-77

Mine Safety Appliances Company • Evans City, Pennsylvania 16033

463563 IMPREGNATED CARBON (SUTCLIFFE)

BATCH NO. C-223

FOR

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

WPPSS NUCLEAR PROJECTS NO. 1 & 4

	Requirements	Actual
#6 ASTM E-11 Sieve	0.0%	0.0%
#8 ASTM E-11 Sieve	5.0% Max.	0.8%
#12 ASTM E-11 Sieve	40% - 60%	45.4%
#16 ASTM E-11 Sieve	40% - 60%	49.2%
Pan	5.0% Max.	4.3%
Apparent Density	0.5 ± 0.05 g/cc	0.52 g/cc
Iodine Collection Test	0.1% Max.	< 0.1%
Wash Test	80% Min.	82.0%
Ignition Test	340°C Min.	395°C
Entrapment Efficiency Test		
(1) Methyl Iodide CH_3I_{131} 212°F, 95% R.H.	95 Min.	99.94%
(2) Iodine I_{131} 212°F, 95% R.H.	99.9% Min.	99.98%

Date of Report 4-3-78

Prepared By Conrad C Seibel

DOCUMENT REVIEWED
APR 27 1978
BY JSV
U E A

Telephone: 412/538-3610

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853668 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
4/4/78	C-223	76-2151	39	52	91	0.45	99.99	4/6/78
"	"	2149	39	52	91	0.45	9999	"
"	"	77-629	39	52	91	0.45	99.99	"
"	"	627	39	52	91	0.45	9999	"
"	"	625	39	52	91	0.45	99.99	"
"	"	626	39	52	91	0.46	99.99	"
"	"	76-2146	39	52	91	0.46	9999	"
"	"	2340	39	52	91	0.46	9999	"
"	"	2148	39	52	91	0.47	99.99	"
"	"	2150	39	52	91	0.47	99.99	"
"	"	2147	39	52	91	047	99.99	"
"	"	2159	39	52	91	0.48	99.99	"
"	"	2157	39	52	91	048	9999	"
4/4/78	"	2346	39	52	91	0.48	9999	"

11RW-ACT-1

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853668 Type of Carbon 463563

Customer Order No. G01-25-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
4/6/78	C-223	76-2316	39	52	91	0.45	99.99	4/6/78
4/4/78	"	2273	39	52	91	0.45	99.99	"
4/6/78	"	2272	39	52	91	0.45	9999	"
4/4/78	"	2293	39	52	91	0.45	99.99	"
4/6/78	"	77-628	39	52	91	0.46	99.99	"
"	"	569	39	52	91	0.46	99.99	"
4/4/78	"	76-2158	39	52	91	0.46	99.99	"
4/6/78	"	77-591	39	52	91	0.45	99.99	"
"	"	592	39	52	91	0.45	99.99	"
"	"	589	39	52	91	0.45	99.99	"
"	"	588	39	52	91	0.45	99.99	"
"	"	196	39	52	91	0.45	99.99	"
"	"	238	39	52	91	0.45	99.99	"
"	"	237	39	52	91	0.45	99.99	"

HRW-ACT-1

RECEIVING CHECKLIST/INSPECTION REPORT

Carbon Filter Cells
Identification No.

JOB NO. _____

P.O.NO. _____ REQUISITION NO. _____ ITEM NO. _____

SPECIFICATION: ENGINEERING GED-RS-10 Rev.0 ASTM _____

CLASS LEVEL: _____ VENDOR Mine Safety Appliances

MATERIAL DESCRIPTION: Carbon Filters (see attached quality shipment release)

CHECKLIST ITEMS	REQUIRED	VERIFIED
CHEM. & PHYS.	( )	
HYDRO	( )	
RT	( )	
MP	( )	
LP	( )	
UT	( )	
LETTER OF COMPLIANCE	(X)	A. Salcido
MARKINGS	( )	
SAMPLE INSP. PER AQL 2.5	( )	
OTHER Test Reports	(X)	A. Salcido

REMARKS: _____

MRT. NO. _____

HOLD TAG NO. _____ WAIVER TAG NO. _____

ACCEPT TAG NO. _____

— SEE ADDITIONAL CHECKLIST ITEMS ENTERED ON REVERSE OF CARD

QC RECEIVING INSPECTOR J. Peter 5-9-79
Signature Date

QA ENGINEER Antonio Salcido 5.8.79
Signature Date

POSITIVE IDENTIFICATION OF ITEMS: By serial numbers

VISUAL INSPECTION FOR SHIPPING DAMAGE No damage (verified by GPUSC/QA upon installation)

SPECIFIC CHECKLIST ATTACHED ( )

OTHER REQUIRED CHECK-POINT ITEMS:

THOSE CARBON FILTER CELLS MARKED WITH A DOT IN THE ENCLOSED LIST WERE INSTALLED ON TOP OF THE AUX. BUILDING.

A. Salcido 5-8-79
QUALITY ASSURANCE Date

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853668 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. AP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
4/4/78	C-223	76-2263	39	52	91	0.46	99.99	4/4/78
"	"	2258	39	52	91	0.46	99.99	"
"	"	2944	39	52	91	0.46	99.99	"
"	"	2916	39	52	91	0.45	99.99	"
"	"	2926	39	52	91	0.45	99.99	"
"	"	2243	39	52	91	0.45	99.99	"
"	"	77-243	39	52	91	0.48	99.99	"
"	"	244	39	52	91	0.48	99.99	"
"	"	245	39	52	91	0.48	99.99	"
"	"	76-2245	39	52	91	0.47	99.99	"
"	"	2259	39	52	91	0.47	99.99	"
"	"	2262	39	52	91	0.47	99.99	"
"	"	77-246	39	52	91	0.45	99.99	"
"	"	247	39	52	91	0.45	99.99	"

HRW - ACT - 1

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. 6853668 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
4/4/78	C-223	77-248	39	52	91	0.45	99.99	4/4/78
"	"	76-2266	39	52	91	0.48	99.99	"
"	"	2918	39	52	91	0.48	99.99	"
"	"	2940	39	52	91	0.48	99.99	"
"	"	2271	39	52	91	0.47	99.99	"
"	"	2261	39	52	91	0.47	99.99	"
"	"	77-249	39	52	91	0.47	99.99	"
"	"	76-2315	39	52	91	0.45	99.99	"
"	"	2294	39	52	91	0.45	99.99	"
"	"	2298	39	52	91	0.45	99.99	"
"	"	2296	39	52	91	0.46	99.99	4/6/78
"	"	2344	39	52	91	0.46	99.99	"
"	"	2295	39	52	91	0.46	99.99	"
4/6/78	"	2322	39	52	91	0.45	99.99	"

HRW-ACT-1

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853668 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. AP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
4/1/78	C-223	76-2321	39	52	91	0.46	99.99	4/6/78
"	"	2318	39	52	91	0.46	99.99	"
4/6/78	"	2317	39	52	91	0.46	99.99	"
"	"	77-621	39	52	91	0.47	99.99	"
"	"	623	39	52	91	0.47	99.99	"
"	"	624	39	52	91	0.47	99.99	"
"	"	622	39	52	91	0.48	99.99	"
"	"	620	39	52	91	0.48	99.99	"
"	"	548	39	52	91	0.48	99.99	"
"	"	488	39	52	91	0.47	99.99	"
"	"	490	39	52	91	0.47	99.99	"
"	"	590	39	52	91	0.47	99.99	"
"	"	76-2343	39	52	91	0.45	99.99	"
4/4/78	"	2342	39	52	91	0.45	99.99	"

HRW-ACT-1

u ed engineers

DATE March 29 1978

QUALITY SHIPMENT RELEASE
WPPSS NUCLEAR PROJECTS

☒ WNP-1
☐ WNP-4

CONTRACTOR Mine Safety Appliances Co

LOCATION Evans City, Pennsylvania

CONTRACT SPECIFICATION 9779-16 + add #5

DWG. NO. 46-27-14 REV. 3

QUALITY CLASS: I II G (CIRCLE ONE)

ITEM DESCRIPTION Carbon Filter Cells

NO RELEASED THIS SHIPMENT 180

S/N(S) ______ MK NO(S) ______

90 Unit Tag HPT-ACT-3

90 Unit Tag HPT-ACT-4

NOTES: 1. THIS RELEASE DOES NOT CONSTITUTE FINAL ACCEPTANCE AND DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY ACCORDING TO CONTRACT.

2. UE&C QUALITY ASSURANCE RESERVES THE RIGHT TO WAIVE ANY VERIFICATION.

3. DISTRIBUTION: UE&C QA REPRESENTATIVE SENDS ONE COPY TO FIELD SUPT.-QA, ONE COPY TO QA HOME OFFICE AND PROVIDES ONE COPY TO VENDOR FOR TRANSMITTAL WITH DATA PACKAGE.

NOMENCLATURE: REVIEW OF A QUALITY REQUIREMENT AND ITS STATUS IS DENOTED BY: (A) FOR ACCEPTABLE, (W) FOR WAIVED [SEE REMARKS], (C) CONDITIONAL [SEE REMARKS], (F) FOR FOLLOWUP [SEE REMARKS], OR (NR) FOR NOT REQUIRED.

QUALITY REQUIREMENTS

A - VERIFICATION CHECKLIST

1. FINAL VISUAL EXAMINATION	N/A
2. FINAL DIMENSIONAL	N/A
3. COATING/LINING INSPECTION	N/A
4. CLEANLINESS INSPECTION	N/A
5. MARKING/IDENTIFICATION	A
6. NAMEPLATE/CODESTAMP	N/A
7. PACKAGING	A

B - DOCUMENTATION CHECKLIST (at time of Final Verification)

1. SUBMITTED DOCUMENTS	A
2. NCR's CLOSED	N/A
3. CONTRACT WAIVERS APPROVED (CWRS #37 #11)	A
4. VENDOR DRAWING STATUS (REVISION PRESENTED BY CONTRACTOR)	3
5. DATA PACKAGE REVIEWED (AVAILABLE AND CORRECT)	A

C - CERTIFICATE OF COMPLIANCE A

D - REMARKS: Carbon Cells are purchased as a standard commercial item.

See attached pages for list of S/N's.

Only items applicable to Carbon Cells in the VSCP appear on page 5 of Section "A."

POOR ORIGINAL

UE&C QUALITY ASSURANCE REPRESENTATIVE

I HEREBY CERTIFY THAT ABOVE APPLICABLE VERIFICATIONS WERE PERFORMED OR WITNESSED AND DOCUMENTATION CHECKED AS INDICATED.

Joseph S Vojtecky   3/29/78

Mine Safety Appliances Company • Evans City, Pennsylvania 16033

CERTIFICATE OF COMPLIANCE

Customer: Washington Public Power Supply System

Address: 3000 George Washington Way
Richland, Washington 99352

Certification Number 1164

Date 3-27-78

Purchase Order No. G01-75-85

Contract No. 9779-18

MSA Job No. B-853670

It is hereby certified that all material and/or parts furnished comply with the terms and specifications of the subject Purchase Order and/or Contract number.

Exceptions as follows: None

Two Witnesses:

R. H. Rusch

L H Kuschke

(Authorized Signature)

Manager, Quality Assurance
(Title or Position in Firm)

The Mine Safety Appliances Company, Evans City Plant, Quality Assurance Program conforms to the requirements of 10CFR50 Appendix B and ANSI 45.2.

Unit No. WNP-1 HPA-ACT-3

Serial No. See Attached Test Results

Quantity 90

Part No. A. 462714
B. 464065

Part Name A. Carbon Cell
B. Test Cell

Telephone: 412/538-3510

CONTRACTOR WAIVER REQUEST

W.R. JAN 30 1976

TO: UNITED ENGINEERS & CONSTRUCTORS INC.

ADDRESS: 2000 Market Street, Phila., Pa. 19103

ATTN: Project Engineering Manager

REFERENCE: WPPSS Nuclear Projects No. 1 & 4 (A) (A)

FROM: Mine Safety Appliances Co.

ADDRESS: Evans City, Pa. 16033

Page 1 of 1

Transmittal No. CWR-3

Date Submitted 12/10/75

Contract No. 9779-18

REVIEW BY

WPPSS ACTIVITY	APPLICABLE	DATE COMMENTS RECEIVED
ELEC.	N/A	
MECH.	N/A	
MECH SER	[illegible]	
STRUCT.	N/A	
I & C	N/A	
NUCLEAR	N/A	
Q.A.	N/A	
PURCH		
COST CON		
CONSTRUC		

The following request is made for: 1-30-76 DKM

(X) Design-Change ( ) Waiver Approval ( ) Repair Authorization

Drawing No. D-462713 for reference Title Gas Adsorber, Flat Bed, AACC-CS-8, Type II

Spec. Sect. No. 15A - 3.5.6 Title Adsorbers

Submitted by: Walter Milich

Title: Contract Administrator

Specification/Drawing Requirement In AACC Standard CS-8, dimension of Carbon Cell is listed as 24 in. width x 30 in. long.

Change Requested/Justification Dimension of the Carbon Cell to be 23 in. wide x 31-1/2 in. long maintaining all other requirements of AACC Std. CS-8. Necessary to meet Seismic requirements within the maximum width specified for the Filter Train Units.

DOCUMENT REVIEWED MAR 23 1976 B.

Cost Differential. (X) NO ( ) YES Detail

Repair Procedure

DOCUMENT REVIEWED

Mine Safety Appliances Co.
Checked and Approved for Submittal
K.C. Reynolds
Project Manager

The condition listed on this request are: Approved (X) Not Approved ( ) *

Based on the listed action:

( ) Design-Change ( ) Waiver Approval ( ) Repair Authorization

* See attached comments

Cognizant Engineer [signature] Date 1-20-76

Quality Assurance Concurrance [signature] Date 1/21/76

Project Engineer Project Mgr. [signature] Date 1-21-76

CONTRACTOR NOTE

If a waiver is authorized, an approved copy of this request must accompany material shipment.

CONTRACTOR WAIVER REQUEST

D. K. Hanley

TO: UNITED ENGINEERS & CONSTRUCTORS INC.

ADDRESS: 2000 Market Street, Phila., Pa. 19103

ATTN: Project Engineering Manager

REFERENCE: WPPSS Nuclear Projects No. 1 & 4 [X] [X]

FROM: Mine Safety Appliances Co.

ADDRESS: Evans City, PA 16033

Page 1 W.M. JUN 16 1977

Transmittal No. CWR-11

Date Submitted 5/18/77

Contract No. 9779-18

REVIEW BY

UE&C ACTIVITY	APPLICABLE	DATE COMMENTS RECEIVED
ELEC.		
MECH.		
MECH. SER.		6-1-77
STRUCT.		
I & C		
NUCLEAR		
Q.A.		
PURCH		
COST CON		
CONSTRUC		

The following request is made for:

[ ] Design-Change [X] Waiver Approval [ ] Repair Authorization

Drawing No 18-3.5.6 / 22-3.5.8.4 Title

Spec. Sect. No. 15A-37-5.2.3.5 / 39-5.3.2 Title Adsorber Test

Submitted by: W. Milich

Title: Contract Administrator

Specification/Drawing Requirement Specifies Freon 112 refrigerant as tracer gas for Leak Testing of carbon adsorbers.

Change Requested/Justification Change all Specification tracer gas requirements to Freon-11 since Freon 112 is no longer commercially available.

DOCUMENT REVIEWED MAR 29 1978 By JSY

Cost Differential [X] NO [ ] YES Detail

Repair Procedure

Mine Safety Appliances Co.
Checked and Approved for Submittal
K.E. Reynolds
Project Manager

FILTER SALES JUN 18 1977 M.S.A.

The condition listed on this request are: Approved [X] Not Approved [ ] *

Based on the listed action: Disposition by C.O. [ ]

[ ] Design-Change [X] Waiver Approval [ ] Repair Authorization

* See attached comments

Cognizant Engineer [signature] Date 6/1/77

Quality Assurance Concurrence [signature] Date 6-2-77

Project Engineer Project Mgr [signature] Date 6/13/77

CONTRACTOR NOTE

If a waiver is authorized, an approved copy of this request must accompany material shipment.

Reviewed with & APPROVED By WPPSS, F. MATZ. Approval #0614F [signature] 6-14-77

POOR ORIGINAL

B863670

Pt.# 462714 WPPS TAG NO. HPA-ACT-3

2327 •	2291 •
2811 •	1737 •
2477 •	2794 •
2634	2320
2393	2405
2799	2407
2534	2671
2533	2536
2480	1736
2299	2680
2676	2629
2637 •	2633 •
2636 •	2167
2301 •	2638
2168	2162
2175	2179
2257 •	2255
2300 •	2324
2535	2492
2323	2259

E 853670 HPA - Act - 3

2497	2495	2079
2511	2518	2076
2469	2506	1357
1988	2466	1365
1998	1999	2326
1985	1980	2784
1987	1979	2145
2509	2514	2144
2485	1168	2325
2484	2532	2141
2531	2529	2285
2488	2486	2286
2481	2530	1756
2483	2464	1743
2482	1978	1819
2487	1986	1762
2537		
2515		

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853670 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
1/6/78	C-217	76-2483	39	56	95	0.56	99.99	1/10/78
"	"	2481	39	56	95	0.56	99.99	"
"	"	2488	39	58	97	0.56	99.99	"
"	"	2515	39	58	97	0.60	99.99	"
"	"	2537	39	59	98	0.60	99.99	"
"	"	2487	39	57	96	0.60	99.99	"
"	"	2532	39	57	96	0.57	99.99	"
"	"	2529	39	56	95	0.57	99.99	"
"	"	2482	39	56	95	0.57	99.99	"
"	"	2486	39	56	95	0.56	99.99	"
1/9/78	"	2530	39	56	95	0.56	99.99	"
"	"	2531	39	56	95	0.56	99.99	"
"	"	2484	39	56	95	0.58	99.99	"
"	"	2485	39	56	95	0.58	99.99	"

WPPSS-PCT-3

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853670 Type of Carbon 463563

Customer Order No. G01-75-85 Spec. No. AP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
1/9/78	C-217	7E-1168	39	59	98	0.58	99.99	1/10/78
1/5/78	"	2466	39	57	96	0.62	99.99	"
"	"	1988	39	58	97	0.62	99.99	"
"	"	2506	39	58	97	0.62	99.99	"
"	"	2469	39	56	95	0.58	99.99	"
"	"	1980	39	57	96	0.58	99.99	"
"	"	1985	39	56	95	0.58	99.99	"
"	"	1999	39	56	95	0.60	99.99	"
"	"	1998	39	56	95	0.60	99.99	"
"	"	2509	39	57	96	0.60	99.99	"
"	"	2514	39	57	96	0.64	9999	"
"	"	1979	39	58	97	0.64	99.99	"
"	"	1987	39	57	96	0.64	99.99	"
"	"	2464	39	58	97	0.60	99.99	"

HPA-ACT-3

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B 853670 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. AP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
1/5/78	C-217	76-1978	39	56	95	0.60	99.99	1/10/78
"	"	1986	39	56	95	0.60	99.99	"
"	"	2518	39	57	96	0.58	99.99	"
"	"	2495	39	57	96	0.58	99.99	"
"	"	2497	39	56	95	0.58	99.99	"
"	"	2511	39	56	95	0.58	99.99	"
3/17/78	C-220	2141	39	56	95	0.56	99.99	3/20/78
	"	2145	39	56	95	0.56	99.99	"
	"	2144	39	56	95	0.56	99.99	"
3/14/78	"	2784	39	56	95	0.60	99.99	"
3/16/78	"	2492	39	56	95	0.60	99.99	"
"	"	2535	39	56	95	0.60	99.99	"
"	"	1357	39	57	96	0.60	99.99	"
"	"	2326	39	56	95	0.60	99.99	"

HPA-ACT-3

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. A 853670 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. AP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
3/16/78	C-220	76-1365	39	57	96	0.60	99.99	3/20/78
"	"	2324	39	56	95	0.57	99.99	"
3/17/78	"	2079	39	56	95	0.57	99.99	"
"	"	2076	39	56	95	0.57	99.99	"
3/16/78	"	2325	39	56	95	0.60	99.99	"
"	"	2285	39	56	95	0.60	99.99	"
3/15/78	"	2286	39	56	95	0.60	99.99	"
"	"	2287	39	56	95	0.57	99.99	"
"	"	2288	39	56	95	0.57	99.99	"
"	"	2300	39	56	95	0.57	99.99	"
"	"	2175	39	56	95	0.56	99.99	"
"	"	2179	39	56	95	0.56	99.99	"
"	"	2162	39	56	95	0.55	99.99	"
"	"	2168	39	56	95	0.55	99.99	"

HPA-ACT-3

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B353620 Type of Carbon 463563

Customer Order No. 601-25-85 Spec. No. AP-1032

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
3/14/78	C-220	76-2629	39	56	95	0.60	99.99	3/21/78
"	"	2671	39	56	95	0.60	99.99	"
3/13/78	"	2811	39	58	97	0.60	99.99	"
"	"	2799	39	58	97	0.60	99.99	"
3/14/78	"	2407	39	56	95	0.60	99.99	"
"	"	2393	39	57	96	0.58	99.99	"
"	"	2405	39	56	95	0.58	99.99	"
"	"	2634	39	57	96	0.58	99.99	"
"	"	2320	39	56	95	0.57	9999	"
"	"	2794	39	56	95	0.57	99.99	"
3/17/78	"	2477	39	56	95	0.57	99.99	"
"	"	1737	39	56	95	0.55	9999	"
"	"	2327	39	57	96	0.55	99.99	"
"	"	2291	39	56	95	0.55	99.99	"

HPA-ACT-3

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B 853670 Type of Carbon 463563

Customer Order No. G01-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
3/15/78	C-220	76-2167	39	56	95	0.55	99.99	3/20/78
3/14/78	"	2301	39	56	95	0.58	99.99	"
"	"	2638	39	56	95	0.58	99.99	"
"	"	2636	39	57	96	0.58	99.99	"
"	"	2637	39	57	96	0.57	99.99	"
"	"	2676	39	56	95	0.57	99.99	"
3/16/78	"	1736	39	56	95	0.57	99.99	"
"	"	2536	39	56	95	0.58	99.99	"
"	"	2534	39	56	95	0.58	99.99	"
"	"	2533	39	56	95	0.58	99.99	"
"	"	2480	39	56	95	0.57	99.99	"
"	"	2299	39	56	95	0.57	99.99	"
3/14/78	"	2680	39	56	95	0.57	99.99	"
"	"	2633	39	56	95	0.60	99.99	3/21/78

HPA-ACT-3

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853670 Type of Carbon 463563

Customer Order No. G01-75-85 Spec. No. AP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
3/17/78	C-220	76-1756	39	57	96	0.60	99.99	3/21/78
3/16/78	"	2289	39	57	96	0.60	99.99	"
"	"	2323	39	57	96	0.60	99.99	"
"	"	1762	39	58	97	0.60	9999	"
"	"	1819	39	57	96	0.58	99.99	"
"	"	1743	39	57	96	0.58	99.99	"

HPA-ACT-3

Mine Safety Appliances Company · Evans City, Pennsylvania 16033

463563 IMPREGNATED CARBON

BATCH NO. C-217

FOR

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

WPPSS NUCLEAR PROJECTS NO. 1 & 4

	Requirements	Actual
#6 ASTM E-11 Sieve	0.0%	0.0 %
#8 ASTM E-11 Sieve	5.0% Max.	1.5 %
#12 ASTM E-11 Sieve	40% - 60%	51.5 %
#16 ASTM E-11 Sieve	40% - 60%	45.3 %
Pan	5.0% Max.	1.2 %
Apparent Density	0.5 ± 0.05 g/cc	0.547 gm/cc
Iodine Collection Test	0.1% Max.	< 0.1 %
Wash Test	80% Min.	82.9%
Ignition Test	340°C Min.	432° C
Entrapment Efficiency Test		
(1) Methyl Iodide CH_3I_{131} 212°F, 95% R.H.	95% Min.	99.50%
(2) Iodine I_{131} 212°F, 95% R.H.	99.9% Min.	99.99%

Date of Report 12-16-77

Prepared By [signature]

Telephone: 412/538-3510

Mine Safety Appliances Company • Evans City, Pennsylvania 16033

463563 IMPREGNATED CARBON

BATCH NO. C-220

FOR

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

WPPSS NUCLEAR PROJECTS NO. 1 & 4

	Requirements	Actual
#6 ASTM E-11 Sieve	0.0%	0.0 %
#8 ASTM E-11 Sieve	5.0% Max.	1.3 %
#12 ASTM E-11 Sieve	40% - 60%	42.0 %
#16 ASTM E-11 Sieve	40% - 60%	54.1 %
Pan	5.0% Max.	2.0 %
Apparent Density	0.5 ± 0.05 g/cc	0.545 gm/cc
Iodine Collection Test	0.1% Max.	NIL
Wash Test	80% Min.	82.9%
Ignition Test	340°C Min.	418 °C
Entrapment Efficiency Test		
(1) Methyl Iodide CH_3I_{131} 212°F, 95% R.H.	95% Min.	99.38%
(2) Iodine I_{131} 212°F, 95% R.H.	99.9% Min.	99.99%

Date of Report 3-10-78

Prepared By C Seibel

Telephone: 412/538-3510

— Mech. Struct. Weld Piping

41 of 72

RECEIVING CHECKLIST/INSPECTION REPORT

Carbon filter Cell
Identification No.

JOB NO. _____

P.O.NO. _____ REQUISITION NO. _____ ITEM NO. _____

SPECIFICATION: ENGINEERING GED-RS-3 Rev. 0 ASTM _____

CLASS LEVEL: _____ VENDOR Mine Safety Appliances

MATERIAL DESCRIPTION: Carbon Filters (see attached quality shipment release)

CHECKLIST ITEMS	REQUIRED	VERIFIED	REMARKS:
CHEM. & PHYS.	( )		
HYDRO	( )		
RT	( )		
MP	( )		
LP	( )		
UT	( )		
LETTER OF COMPLIANCE	(X)	A. Salcido	
MARKINGS	( )		
SAMPLE INSP. PER AQL 2.5	( )		
OTHER Test Reports	(X)	A Salcido	MRT. NO.
			HOLD TAG NO. WAIVER TAG NO.
			ACCEPT TAG NO.

— SEE ADDITIONAL CHECKLIST ITEMS ENTERED ON REVERSE OF CARD

QC RECEIVING INSPECTOR _____ 5-9-79
Signature Date

QA ENGINEER Antonio Salcido 5-8-79
Signature Date

POSITIVE IDENTIFICATION OF ITEMS: By serial numbers

VISUAL INSPECTION FOR SHIPPING DAMAGE No damage (verified by GPUSC/QA upon installation

SPECIFIC CHECKLIST ATTACHED ( )

OTHER REQUIRED CHECK-POINT ITEMS:

THOSE CARBON FILTER CELLS MARKED WITH A DOT IN THE ENCLOSED LIST WERE INSTALLED ON TOP OF THE AUX. BLDG.

A. Salcido 5-8-79
QUALITY ASSURANCE Date

FORM 4557
REV-3-79

United Engineers & Constructors Inc

DATE May 17, 1978

PROJECT: WPPSS
UNIT(S): WNP-1

QUALITY SHIPMENT RELEASE

CONTRACTOR Mine Safety Appliances Company	ITEM DESCRIPTION Carbon Filter Cells
LOCATION Evans City, Pennsylvania	NO RELEASED THIS SHIPMENT 144
CONTRACT/P.O. 9779-18 + Add. #5	S/N(S) MK NO(S)
DWG. NO. 46-27-14 REV. 3	See 'Remarks' & attachment
QUALITY/SAFETY CLASS: I, II & C	

NOTES:
1. THIS RELEASE FOR SHIPMENT DOES NOT CONSTITUTE FINAL ACCEPTANCE AND DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY ACCORDING TO THE CONTRACT.
2. UE&C QUALITY ASSURANCE RESERVES THE RIGHT TO WAIVE ANY VERIFICATION.
3. DISTRIBUTION: UE&C QA REPRESENTATIVE SENDS ONE COPY TO FIELD SUPERINTENDENT-QA AND SENDS ONE COPY TO QA HOME OFFICE AND PROVIDES ONE COPY TO VENDOR FOR TRANSMITTAL WITH DATA PACKAGE.

NOMENCLATURE: REVIEW OF A QUALITY REQUIREMENT AND ITS STATUS IS DENOTED BY: (A) FOR ACCEPTABLE, (W) FOR WAIVED [SEE REMARKS], (C) FOR CONDITIONAL [SEE REMARKS], (F) FOR FOLLOWUP [SEE REMARKS], OR (NR) FOR NOT REQUIRED.

QUALITY REQUIREMENTS

A-VERIFICATION CHECKLIST

1. FINAL VISUAL EXAMINATION (WORKMANSHIP)	N/A
2. FINAL DIMENSIONAL	N/A
3. COATING / LINING	N/A
4. LUBRICANTS / OILS	N/A
5. CLEANLINESS	N/A
6. ELECTRICAL INSTALLATION	N/A
7. MARKING / IDENTIFICATION	A
8. NAMEPLATE / CODESTAMP	N/A
9. PACKAGING	A

B-DOCUMENTATION CHECKLIST
(AT TIME OF FINAL VERIFICATION)

1. SUBMITTED DOCUMENTS	A
2. NCR's CLOSED	N/A
3. CHANGE ORDERS APPROVED	A
4. VENDOR DRAWING STATUS (REVISION PRESENTED BY CONTRACTOR)	A Rev 3.
5. DATA PACKAGE (INCLUDING PHYSICAL PROPERTY DATA) REVIEWED (AVAILABLE AND CORRECT)	A

C-CERTIFICATE OF CONFORMANCE A

D-REMARKS Carbon Filter Cells

Unit Tag No.	Qty
HSG-ACT-2A	72
HSG-ACT-2B	72

Total 144 Carbon Cells. Lists of S/N's are attached to copies of the Vendor Surveillance Tags.

UE&C QUALITY ASSURANCE REPRESENTATIVE

POOR ORIGINAL

I HEREBY CERTIFY THAT ABOVE APPLICABLE VERIFICATIONS WERE PERFORMED OR WITNESSED AND DOCUMENTATION CHECKED AS INDICATED.

Joseph J. Ventecky — SIGNATURE

5/17/78 — DATE

MSA

Mine Safety Appliances Company • Evans City, Pennsylvania 16033

CERTIFICATE OF COMPLIANCE

Customer: Washington Public Power Supply System

Address: 3000 George Washington Way

Richland, Washington 99352

Certification Number 1217

Date: 5-15-78

Purchase Order No. G01-75-85

Contract No. 9779-18

MSA Job No. B-853667

It is hereby certified that all material and/or parts furnished comply with the terms and specifications of the subject Purchase Order and/or Contract number.

Exceptions as follows: None

Two Witnesses:

Ralph H Rush

Marian A. Knauff

Frank J. Michalec

(Authorized Signature)

Manager, Quality Assurance

(Title or Position in Firm)

The Mine Safety Appliances Company, Evans City Plant, Quality Control system conforms to the requirements of 10CFR50 Appendix B and ANSI 45.2.

Unit No. WNP-1 HSG-ACT-2A

Serial No. See Attached Test Results

Quantity 72

Part No. A. 462714 B. 464065

Part Name A. Carbon Cell

B. Test Cell

DOCUMENT REVIEWED
MAY 17 1978
By JSV

Telephone: 412/538-3510

CONTRACTOR WAIVER REQUEST

WM JAN 30 1976

TO: UNITED ENGINEERS & CONSTRUCTORS INC.

ADDRESS: 2000 Market Street, Phila., Pa 19103

ATTN: Project Engineering Manager

REFERENCE: WPPSS Nuclear Projects No. 1 & 4 [A] [A]

FROM: Mine Safety Appliances Co.

ADDRESS: Evans City, Pa. 16033

Page 1 of 1

Transmittal No. CWR-3

Date Submitted 12/10/75

Contract No. 9779-18

REVIEW BY

NSAC ACTIVITY	APPLICABLE	DATE COMMENTS RECEIVED
ELEC.	N/A	
MECH	N/A	
MECH. SER	[illegible]	[illegible]
STRUCT.	N/A	
I & C	N/A	
NUCLEAR	N/A	
Q.A.	N/A	
PURCH		
COST CON.		
CONSTRUC.		

The following request is made for: 1-30-76 DKM

[A] Design-Change [ ] Waiver Approval [ ] Repair Authorization

Drawing No. D-462713 for reference Title Gas Adsorber, Flat Bed, AACC-CS-8, Type II

Spec. Sect. No. 15A - 3.5.6 Title Adsorbers

Submitted by: Walter Milich

Title: Contract Administrator

Specification/Drawing Requirement In AACC Standard CS-8, dimension of Carbon Cell is listed as 24 in. width x 30 in. long.

Change Requested/Justification Dimension of the Carbon Cell to be 23 in. wide x 31-1/2 in. long maintaining all other requirements of AACC Std. CS-8. Necessary to meet Seismic requirements within the maximum width specified for the Filter Train Units.

DOCUMENT REVIEWED MAR 29 1976 By [illegible]

Cost Differential [X] NO [ ] YES Detail

Repair Procedure

DOCUMENT REVIEWED 3-25-76 By [illegible]

Mine Safety Appliances Co.
Checked and Approved for Submittal
M.C. Reynolds
Project Manager

The condition listed on this request are: Approved [✓] Not Approved [ ] *

Based on the listed action:

[ ] Design-Change [ ] Waiver Approval [ ] Repair Authorization

* See attached comments

Cognizant Engineer [signature] Date 1-20-76

Quality Assurance Concurrance [signature] Date 1/21/76

Project Engineer Project Mgr. [signature] Date 1-21-76

CONTRACTOR NOTE

If a waiver is authorized, an approved copy of this request must accompany material shipment.

Mech. Struct. Weld Piping

45 of 72

RECEIVING CHECKLIST/INSPECTION REPORT

~~Job~~ Carbon Filters
Identification No.

JOB NO. _____

P.O.NO. _____ REQUISITION NO. _____ ITEM NO. _____

SPECIFICATION: ENGINEERING GED-RS-10 Rev. 2 ASTM _____

CLASS LEVEL: _____ VENDOR Mine Safety Appliances

MATERIAL DESCRIPTION: Carbon filter cells (see attached quality shipment release)

CHECKLIST ITEMS	REQUIRED	VERIFIED
CHEM. & PHYS.	( )	
HYDRO	( )	
RT	( )	
MP	( )	
LP	( )	
UT	( )	
LETTER OF COMPLIANCE	(X)	A. Salcido
MARKINGS	( )	
SAMPLE INSP. PER AQL 2.5	( )	
OTHER Test Reports	(X)	A. Salcido

REMARKS: _____

MRT. NO. _____

HOLD TAG NO. _____ WAIVER TAG NO. _____

ACCEPT TAG NO. _____

— SEE ADDITIONAL CHECKLIST ITEMS
— ENTERED ON REVERSE OF CARD

QC RECEIVING INSPECTOR _____ 5-9-79
Signature Date

QA ENGINEER Antonio Salcido 5-8-79
Signature Date

POSITIVE IDENTIFICATION OF ITEMS: By serial numbers

VISUAL INSPECTION FOR SHIPPING DAMAGE No damage (verified by GPUSC/QA upon installation)

SPECIFIC CHECKLIST ATTACHED ( )

OTHER REQUIRED CHECK-POINT ITEMS:

THOSE CARBON FILTER CELLS MARKED WITH A DOT IN THE ENCLOSED LIST WERE INSTALLED ON TOP OF THE AUX. BUILDING.

A. Salcido 5-8-79
QUALITY ASSURANCE Date

Docket No. 2714 HSG-ACT-2A WNP-1 72 pcs.

76-1610	76-1685 •	76-1650 •
76-1611	76-1721 •	76-1679 •
76-1612 •	76-1674 •	76-1729 •
76-1649 •	76-2363	76-1651
76-1688	76-1648 •	76-1667
76-1727 •	77-669	76-1321 •
76-2353 •	76-1607	76-1728 •
76-1719 •	76-1670 •	76-1671
76-2359 •	76-1665	76-1705 •
76-2362 •	76-1613	76-1664 •
76-1761 •	76-1657 •	76-1704
76-1608 •	76-1666 •	76-1668 •
76-1722 •	76-1734 •	76-2367 •
77-564	76-1645 •	76-2365 •
76-1725	76-1718 •	76-2357
76-1720	76-1655 •	76-1716
76-1657	76-1723 •	76-1715
76-1660	76-1659 •	76-2555
76-1724	76-1690 •	76-1717
76-1726	76-1732 •	76-1643
76-1644	76-1731 •	
76-1659	76-1338 •	
76-1614	76-1324 •	
76-2424	76-1651 •	
76-1672	76-1354	
76-1609	76-1652	

CONTRACTOR WAIVER REQUEST

TO: UNITED ENGINEERS & CONSTRUCTORS INC.	Page 1 W.M. JUN 16 1977
ADDRESS: 2000 Market Street, Phila., Pa. 19103	Transmittal No. CWR-11
ATTN: Project Engineering Manager	Date Submitted 5/18/77
REFERENCE: WPPSS Nuclear Projects No. [X] 1 [X] 4	Contract No. 9779-18
FROM: Mine Safety Appliances Co.	
ADDRESS: Evans City, PA 16033	

The following request is made for:

☐ Design-Change ☒ Waiver Approval ☐ Repair Authorization

Drawing No 18-3.5.6 / 22-3.5.8.4 Title

Spec. Sect. No. 15A-37-5.2.3.5 / 39-5.3.2 Title Adsorber Test

Submitted by: W. Milich

Title Contract Administrator

REVIEW BY

UE&C ACTIVITY	APPLICABLE	DATE COMMENTS RECEIVED
ELEC.		
MECH.		
MECH. SER	No KEP	6-1-77
STRUCT.		
I & C		
NUCLEAR		
Q.A.		
PURCH		
COST CON		
CONSTRUC		

Specification/Drawing Requirement Specifies Freon 112 refrigerant as tracer gas for Leak Testing of carbon adsorbers.

Change Requested/Justification Change all Specification tracer gas requirements to Freon-11 since Freon 112 is no longer commercially available.

DOCUMENT REVIEWED MAR 29 1978 BY JSV WPPSS

Cost Differential ☒ NO ☐ YES Detail

Repair Procedure

FILTER SALES JUN 13 1977 M.S.A.

Mine Safety Appliances Co. Checked and Approved for Submittal

K.E. Reynolds

Project Manager

The condition listed on this request are: Approved ☒ Not Approved ☐ *

Based on the listed action: Disposition by C.O. ☐

☐ Design-Change ☒ Waiver Approval ☐ Repair Authorization

* See attached comments

Cognizant Engineer [signature] Date 6/1/77

Quality Assurance Concurrence [signature] Date 6-2-77

Project Engineer Project Mgr [signature] Date 6/13/77

CONTRACTOR NOTE

If a waiver is authorized, an approved copy of this request must accompany material shipment.

Reviewed with & approved by WPPSS, F. Hintz. Appr'l #0614F [signature] 6-14-77

POOR ORIGINAL

MSA

Mine Safety Appliances Company • Evans City, Pennsylvania 16033

463563 IMPREGNATED CARBON

BATCH NO. C-322

FOR

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

WPPSS NUCLEAR PROJECTS NO. 1 & 4

	Requirements	Actual
#6 ASTM E-11 Sieve	0.0%	0.0%
#8 ASTM E-11 Sieve	5.0% Max.	1.3%
#12 ASTM E-11 Sieve	40% - 60%	51.4%
#16 ASTM E-11 Sieve	40% - 60%	45.2%
Pan	5.0% Max.	1.6%
Apparent Density	0.5 ± 0.05 g/cc	0.546 gm/cc
Iodine Collection Test	0.1% Max.	< 0.1%
Wash Test	80% Min.	82.9%
Ignition Test	340°C Min.	407°C
Entrapment Efficiency Test		
(1) Methyl Iodide CH_3I_{131} 212°F, 95% R.H.	95% Min.	99.22%
(2) Iodine I_{131} 212°F, 95% R.H.	99.9% Min.	99.99%

Date of Report 4-19-78

Prepared By [signature]

Telephone: 412/538-3510

Mine Safety Appliances Company • Evans City, Pennsylvania 16033

463563 IMPREGNATED CARBON (SUTCLIFFE)

BATCH NO. C-224

FOR

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

WPPSS NUCLEAR PROJECTS NO. 1 & 4

	Requirements	Actual
#6 ASTM E-11 Sieve	0.0%	0.0%
#8 ASTM E-11 Sieve	5.0% Max.	0.8%
#12 ASTM E-11 Sieve	40% - 60%	45.5%
#16 ASTM E-11 Sieve	40% - 60%	49.0%
Pan	5.0% Max.	4.1%
Apparent Density	0.5 ± 0.05 g/cc	0.53 g/cc
Iodine Collection Test	0.1% Max.	< 0.1%
Wash Test	80% Min.	82.0%
Ignition Test	340°C Min.	396°C
Entrapment Efficiency Test		
(1) Methyl Iodide CH_3I_{131} 212°F, 95% R.H.	95 Min.	99.39%
(2) Iodine I_{131} 212°F, 95% R.H.	99.9% Min.	99.98%

Date of Report 4-5-78

Prepared By Conrad C. Gibbs

Telephone: 412/538-3510

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853667 Type of Carbon 463563

Customer Order No. G01-75-85 Spec. No. AP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
4/26/78	C-224	77-669	39	52	91	0.46	99.99	4/27/78
"	"	76-1674	39	52	91	0.46	99.99	"
"	"	1672	39	52	91	0.46	9999	"
"	"	1645	39	52	91	0.47	9999	"
"	"	1666	39	52	91	0.47	99.99	"
"	"	1670	39	52	91	0.47	99.99	"
"	"	1726	39	52	91	0.48	99.99	"
"	"	1724	39	52	91	0.48	99.99	"
"	"	1725	39	52	91	0.48	99.99	"
"	"	1723	39	52	91	0.46	99.99	"
"	"	1614	39	52	91	0.46	99.99	"
"	"	1644	39	52	91	0.46	99.99	"
"	"	1727	39	52	91	0.45	99.99	"
"	"	1688	39	52	91	045	1999	"

HSG-ACT-2A

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853667 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
4/26/78	C-224	76-1649	39	52	91	0.45	99.99	4/27/78
4/27/78	"	1659	39	52	91	0.45	99.99	"
"	"	1660	39	52	91	0.45	99.99	"
"	"	1687	39	52	91	0.45	99.99	"
"	"	1685	39	52	91	0.46	99.99	"
"	"	2353	39	52	91	0.46	99.99	"
"	"	2424	39	52	91	0.46	99.99	"
"	"	2362	39	52	91	0.45	99.99	"
"	"	2363	39	52	91	0.45	99.99	"
"	"	2359	39	52	91	0.45	99.99	"
4/25/78	"	1607	39	52	91	0.45	99.99	"
"	"	1609	39	52	91	0.45	99.99	"
"	"	1608	39	52	91	0.45	99.99	"
4/27/78	"	77-564	39	52	91	0.47	99.99	4/28/78

1156-ACT-2A

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853667 Type of Carbon 463563

Customer Order No. G01-75-85 Spec. No. OP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
4/27/78	C-224	76-1761	39	52	91	0.47	99.99	4/28/78
"	"	1719	39	52	91	0.47	99.99	"
4/25/78	"	1612	39	52	91	0.48	99.99	"
"	"	1611	39	52	91	0.48	99.99	"
"	"	1610	39	52	91	0.48	99.99	"
"	"	1613	39	52	91	0.46	99.99	"
"	"	1721	39	52	91	0.46	99.99	"
"	"	1722	39	52	91	0.46	99.99	"
"	"	1734	39	52	91	0.46	99.99	"
4/27/78	"	1648	39	52	91	0.46	99.99	"
"	"	1720	39	52	91	0.46	99.99	"
"	"	1665	39	52	91	0.45	99.99	"
"	"	1718	39	52	91	0.45	99.99	"
"	"	1657	39	52	91	0.45	99.99	"

HSG-ACT-2A

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853667 Type of Carbon 463563

Customer Order No. G01-75-85 Spec. No. AP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
4/27/78	C-224	76-1658	39	52	91	0.45	99.99	4/28/78
5/2/78	"	2357	39	52	91	0.46	99.99	5/3/78
"	"	2368	39	52	91	0.46	99.99	"
"	"	2367	39	52	91	0.46	99.99	"
"	C-222	1643	39	56	95	0.57	99.99	"
"	"	1728	39	56	95	0.56	99.99	"
"	"	1729	39	56	95	0.56	99.99	"
"	"	1651	39	56	95	0.58	99.99	"
"	"	1667	39	56	95	0.58	99.99	"
"	"	1321	39	56	95	0.58	99.99	"
"	"	1664	39	55	94	0.58	99.99	"
"	"	1671	39	55	94	0.58	99.99	"
"	"	1705	39	56	95	0.58	99.99	"
"	C-224	2855	39	52	91	0.52	99.99	"

HSG-ACT-2A

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853667 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. OP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
5/2/78	C-224	76-1668	39	52	91	0.52	99.99	5/3/78
"	C-222	1704	39	56	95	0.52	99.99	"
"	"	1717	39	57	96	0.60	99.99	"
"	"	1716	39	56	95	0.60	99.99	"
"	"	1715	39	56	95	0.60	99.99	"
5/3/78	"	1731	39	56	95	0.60	99.99	"
"	"	1732	39	56	95	0.60	99.99	"
"	"	1690	39	56	95	0.60	99.99	"
"	"	1681	39	56	95	0.58	99.99	"
"	"	1324	39	56	95	0.58	99.99	"
"	"	1689	39	56	95	0.58	99.99	"
"	"	1682	39	56	95	0.60	99.99	"
"	"	1338	39	56	95	0.60	99.99	"
"	"	1354	39	56	95	0.60	99.99	"

HSG-ACT-2A

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853667 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. AP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
5/3/78	C-222	26-1679	39	56	95	0.56	99.99	5/3/78
"	"	1680	39	56	95	056	99.99	"

HSG-9677-2A

FORM 4567
REV. 3/78

United engineers & constructors

PROJECT: WPSS
UNIT(S): WNP-1

DATE April 27 1978

QUALITY SHIPMENT RELEASE

CONTRACTOR: MSA Safety Appliances Co.
LOCATION: Evans City, Pennsylvania
CONTRACT/PO: 9779-1E-ADD #5
DWG. NO: 46-27-14 REV: 3
QUALITY/SAFETY CLASS: QA (I II & G)

ITEM DESCRIPTION: Carbon Filter Cells
NO RELEASED THIS SHIPMENT: 306
S/N(S): ~~MK NO(S)~~ See "Remarks" & attachment.

NOTES:
1. THIS RELEASE FOR SHIPMENT DOES NOT CONSTITUTE FINAL ACCEPTANCE AND DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY ACCORDING TO THE CONTRACT.
2. UE&C QUALITY ASSURANCE RESERVES THE RIGHT TO WAIVE ANY VERIFICATION.
3. DISTRIBUTION: UE&C QA REPRESENTATIVE SENDS ONE COPY TO FIELD SUPERINTENDENT-QA AND SENDS ONE COPY TO QA HOME OFFICE AND PROVIDES ONE COPY TO VENDOR FOR TRANSMITTAL WITH DATA PACKAGE.

NOMENCLATURE: REVIEW OF A QUALITY REQUIREMENT AND ITS STATUS IS DENOTED BY: (A) FOR ACCEPTABLE, (W) FOR WAIVED [SEE REMARKS], (C) FOR CONDITIONAL [SEE REMARKS], (F) FOR FOLLOWUP [SEE REMARKS], OR (NR) FOR NOT REQUIRED.

QUALITY REQUIREMENTS

A-VERIFICATION CHECKLIST

1. FINAL VISUAL EXAMINATION (WORKMANSHIP)	N/A
2. FINAL DIMENSIONAL	N/A
3. COATING/LINING	N/A
4. LUBRICANTS/OILS	N/A
5. CLEANLINESS	N/A
6. ELECTRICAL INSTALLATION	N/A
7. MARKING/IDENTIFICATION	A
8. NAMEPLATE/CODESTAMP	N/A
9. PACKAGING	A

B-DOCUMENTATION CHECKLIST
(AT TIME OF FINAL VERIFICATION)

1 SUBMITTED DOCUMENTS	A
2 NCR's CLOSED	N/A
3. CHANGE ORDERS APPROVED	A
4 VENDOR DRAWING STATUS (REVISION PRESENTED BY CONTRACTOR)	A Rev 3
5. DATA PACKAGE (INCLUDING PHYSICAL PROPERTY DATA) REVIEWED (AVAILABLE AND CORRECT)	A

C-CERTIFICATE OF CONFORMANCE: A

D-REMARKS: Carbon Filter Cells

Unit Tag No	Qty	Unit Tag No	Qty.
HRW-ACT-1	81	HSG-ACT-1A	72
HRW-ACT-2	81	HSG-ACT-1B	72

Total 306 Carbon Cells. Lists of S/Ns are attached to Vendor Surveillance Tags.

UE&C QUALITY ASSURANCE REPRESENTATIVE

I HEREBY CERTIFY THAT ABOVE APPLICABLE VERIFICATIONS WERE PERFORMED OR WITNESSED AND DOCUMENTATION CHECKED AS INDICATED.

Joseph J Vorticky — SIGNATURE
4/27/78 — DATE

MSA

Mine Safety Appliances Company · Evans City, Pennsylvania 16033

CERTIFICATE OF COMPLIANCE

Customer: Washington Public Power Supply System

Address: 3000 George Washington Way

Richland, Washington 99352

Certification Number 1206

Date: 4-25-78

Purchase Order No. G01-75-85

Contract No. 9779-18

MSA Job No. B-853667

It is hereby certified that all material and/or parts furnished comply with the terms and specifications of the subject Purchase Order and/or Contract number.

Exceptions as follows: None

Two Witnesses:

[signature]

[signature]

[signature]
(Authorized Signature)

Manager, Quality Assurance
(Title or Position in Firm)

The Mine Safety Appliances Company, Evans City Plant, Quality Control system conforms to the requirements of 10CFR50 Appendix B and ANSI 45.2.

POOR ORIGINAL

Unit No. WNP-1 HSG-ACT-1B

Serial No. See Attached Test Results

Quantity 72

Part No. A. 462714 B. 464065

Part Name A. Carbon Cell B. Test Cell

DOCUMENT REVIEWED
APR 27 1978
By LSV

Telephone: 412/538-3510

Cells

Pt #462417 HSG-ACT LB 72 pcs.

76-3418	77-737 •	76-2237 ✓
77-302 •	76-2235 •	76-2545
77-301 •	76-3074 •	76-2836
77-300 •	76-2240	76-2842
76-3063 •	76-3006	76-2547
76-3081 •	76-3082	76-2837
76-3347 •	76-2235	76-2840
76-2242 •	77-726	76-2844
77-368 •	77-734	76-2541
77-639 •	77-736	76-2843 •
77-294	76-3314	76-1839 •
77-369 •	76-2003 •	76-1535 •
77-296 •	76-2917 •	76-1836 •
77-298 •	76-1843 •	76-1542 •
77-765 •	77-453 •	76-1840 •
77-749	77-451 •	76-1541 •
77-743 •	77-452 •	
77-295 •	77-458 •	
77-375 •	77-457	
76-2009 •	77-456	
76-2241 •	76-3004	
76-2236 •	76-3321	
77-372 •	76-2964	
76-3121	77-462	
76-3117 •	76-3402	
76-3322	77-455	
76-3323	76-1544	
77-371	76-1545 •	

CONTRACTOR WAIVER REQUEST

W.M. JAN 30 1976

TO: UNITED ENGINEERS & CONSTRUCTORS INC.

ADDRESS: 2000 Market Street, Phila., Pa. 19103

ATTN: Project Engineering Manager

REFERENCE: WPPSS Nuclear Projects No. 1 [A] & 4 [A]

FROM: Mine Safety Appliances Co.

ADDRESS: Evans City, Pa. 16033

Page 1 of 1

Transmittal No. CWR-3

Date Submitted 12/10/75

Contract No. 9770-18

REVIEW BY

NEAC ACTIVITY	APPLICABLE	DATE SCHEDULE RECEIVED
ELEC.	N/A	
MECH	N/A	
MECH. SER	[illegible]	
STRUCT.	N/A	
I & C	N/A	
NUCLEAR	N/A	
Q.A.	N/A	
PURCH		
COST CON		
CONSTRUC.		

The following request is made for: 1-30-76 DKM

[X] Design-Change [ ] Waiver Approval [ ] Repair Authorization

Drawing No. 0-462713 for reference Title Gas Adsorber, Flat Bed, AACC-CS-8, Type II

Spec. Sect No. 15A - 3.5.6 Title Adsorbers

Submitted by: Walter Milich

Title: Contract Administrator

Specification/Drawing Requirement: In AACC Standard CS-8, dimension of Carbon Cell is listed as 24 in. width x 30 in. long.

Change Requested/Justification: Dimension of the Carbon Cell to be 23 in. wide x 31-1/2 in. long maintaining all other requirements of AACC Std. CS-8. Necessary to meet Seismic requirements within the maximum width specified for the Filter Train Units.

DOCUMENT REVIEWED MAR 26 1976 By ISV

Cost Differential [X] NO [ ] YES Detail

Repair Procedure

Mine Safety Appliances Co.
Checked and Approved for Submittal
K.C. Reynolds
Project Manager

DOCUMENT REVIEWED [illegible] By [illegible]

The condition listed on this request are: Approved [X] Not Approved [ ] *

Based on the listed action:

[ ] Design-Change [ ] Waiver Approval [ ] Repair Authorization

* See attached comments

Cognizant Engineer [signature] Date 1-20-76

Quality Assurance Concurrence [signature] Date 1/21/76

Project Engineer Project Mgr [signature] Date 1-21-76

CONTRACTOR NOTE

If a waiver is authorized, an approved copy of this request must accompany material shipment.

DOCUMENT REVIEWED APR 27 1976 ISV

D. K. Manley

CONTRACTOR WAIVER REQUEST

TO: UNITED ENGINEERS & CONSTRUCTORS INC.	
ADDRESS: 2000 Market Street, Phila., Pa. 19103	Page 1 W.M. JUN 1 3 1977
ATTN: Project Engineering Manager	Transmittal No. CWR-11
REFERENCE: WPPSS Nuclear Projects No. 1 [X] & 4 [X]	Date Submitted 5/18/77
FROM: Mine Safety Appliances Co.	Contract No. 9779-18
ADDRESS: Evans City, PA 16033	REVIEW BY

UE & C ACTIVITY	APPLICABLE	DATE COMMENTS RECEIVED
ELEC.		
MECH.		
MECH. SER	[illegible]	6-1-77
STRUCT.		
I & C		
NUCLEAR		
Q.A.		
PURCH		
COST CON		
CONSTRUC		

The following request is made for:

☐ Design-Change [X] Waiver Approval ☐ Repair Authorization

Drawing No. 18-3.5.6 / 22-3.5.8.4 Title

Spec. Sect. No. 15A-37-5.2.3.5 / 39-5.3.2 Title Adsorber Test

Submitted by: W. Milich

Title: Contract Administrator

Specification/Drawing Requirement: Specifies Freon 112 refrigerant as tracer gas for Leak Testing of carbon adsorbers.

Change Requested/Justification: Change all Specification tracer gas requirements to Freon-11 since Freon 112 is no longer commercially available.

DOCUMENT REVIEWED MAR 29 1979 BY [illegible] WPSS

Cost Differential [X] NO ☐ YES Detail

Repair Procedure

FILTER SALES JUN 13 1977 M.S.A.

Mine Safety Appliances Co. Checked and Approved for Submittal [signature] Project Manager

The condition listed on this request are: Approved [X] Not Approved ☐ *

Based on the listed action: Disposition by C.O. ☐

☐ Design-Change [X] Waiver Approval ☐ Repair Authorization

* See attached comments

Cognizant Engineer [signature] Date 6/1/77

Quality Assurance Concurrence [signature] Date 6-2-77

Project Engineer Project Mgr [signature] Date 6/13/77

CONTRACTOR NOTE

If a waiver is authorized, an approved copy of this request must accompany material shipment.

Reviewed with & APPROVED By WPPSS, F. MATZ - APPR'L # 0614F [signature] 6-14-77

4

POOR ORIGINAL

Mine Safety Appliances Company • Evans City, Pennsylvania 16033

463563 IMPREGNATED CARBON (SUTCLIFFE)

BATCH NO. C-224

FOR

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

WPPSS NUCLEAR PROJECTS NO. 1 & 4

	Requirements	Actual
#6 ASTM E-11 Sieve	0.0%	0.0%
#8 ASTM E-11 Sieve	5.0% Max.	0.8%
#12 ASTM E-11 Sieve	40% - 60%	45.5%
#16 ASTM E-11 Sieve	40% - 60%	49.0%
Pan	5.0% Max.	4.1%
Apparent Density	0.5 ± 0.05 g/cc	0.53 g/cc
Iodine Collection Test	0.1% Max.	< 0.1%
Wash Test	80% Min.	82.0%
Ignition Test	340°C Min.	396°C
Entrapment Efficiency Test		
(1) Methyl Iodide CH_3I_{131} 212°F, 95% R.H.	95 Min.	99.39%
(2) Iodine I_{131} 212°F, 95% R.H.	99.9% Min.	99.98%

Date of Report 4-5-78

Prepared By Conrad C. Gilbert

Telephone: 412/538-3510

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853667 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. AP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
4/15/78	C-224	76-3322	39	52	91	0.46	99.99	4/17/78
"	"	3323	39	52	91	0.46	99.99	"
4/14/78	"	3418	39	52	91	0.47	9999	"
"	"	77-639	39	52	91	0.47	99.99	"
"	"	368	39	52	91	0.47	99.99	"
4/15/78	"	302	39	52	91	0.46	99.99	"
"	"	301	39	52	91	0.46	99.99	"
"	"	300	39	52	91	0.46	9999	"
"	"	298	39	52	91	0.45	99.99	"
"	"	296	39	52	91	0.45	99.99	"
"	"	295	39	52	91	0.46	99.99	"
"	"	375	39	52	91	0.46	99.99	"
"	"	371	39	52	91	0.46	99.99	"
4/13/78	"	76-2000	39	52	91	0.45	99.99	"

11.56 - ACT - 1B

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853667 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
4/13/78	C-224	76-3121	39	52	91	0.45	99.99	4/17/78
"	"	3117	39	52	91	0.45	99.99	"
4/15/78	"	77-294	39	52	91	0.47	99.99	4/18/78
"	"	76-2242	39	52	91	0.47	99.99	"
"	"	3347	39	52	91	0.47	99.99	"
4/18/78	"	3006	39	52	91	0.50	99.99	"
"	"	3082	39	52	91	0.50	99.99	"
"	"	2238	39	52	91	0.50	99.99	"
"	"	2240	39	52	91	0.47	99.99	"
"	"	2241	39	52	91	0.47	99.99	"
"	"	3074	39	52	91	0.47	99.99	"
"	"	3081	39	52	91	0.45	99.99	"
"	"	2235	39	52	91	0.45	99.99	"
"	"	2236	39	52	91	0.45	99.99	"

HSG-ACT-1B

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853667 Type of Carbon 4/63.563

Customer Order No. 601-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
4/18/78	C-224	26-2237	39	52	91	0.48	99.99	4/18/78
"	"	3063	39	52	91	0.48	99.99	"
"	"	27-737	39	52	91	0.48	99.99	"
4/15/78	"	743	39	52	91	0.47	99.98	"
"	"	372	39	52	91	0.47	99.98	"
"	"	749	39	52	91	0.47	99.98	"
"	"	369	39	52	91	0.46	99.99	"
"	"	765	39	52	91	0.46	99.99	"
4/18/78	"	452	39	52	91	0.46	99.99	"
"	"	451	39	52	91	0.46	99.99	"
"	"	453	39	52	91	0.46	99.99	"
"	"	456	39	52	91	0.45	99.99	"
"	"	457	39	52	91	0.45	99.99	"
"	"	458	39	52	91	0.45	99.99	"

NSG-ACT-1B

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853667 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
4/18/78	C-224	77-736	39	52	91	0.47	99.99	4/18/78
"	"	734	39	52	91	0.47	9999	"
"	"	726	39	52	91	0.47	99.99	"
"	"	76-3004	39	52	91	0.48	99.99	"
4/13/78	"	2003	39	52	91	0.48	99.99	"
"	"	3314	39	52	91	0.48	9999	"
"	"	2964	39	52	91	0.47	99.99	"
"	"	3321	39	52	91	0.47	99.99	"
"	"	2917	39	52	91	0.47	99.99	"
4/18/78	"	77-455	39	52	91	0.48	99.99	"
4/13/78	"	76-3403	39	52	91	0.48	99.99	"
4/18/78	"	77-462	39	52	91	0.48	9999	"
"	"	76-1845	39	52	91	0.49	99.98	"
"	"	1844	39	52	91	0.49	99.98	"

NSG-ACT-18

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853662 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
4/18/78	C-224	76-1843	39	52	91	0.49	99.98	4/18/78
"	"	1842	39	52	91	0.47	99.99	4/19/78
"	"	1840	39	52	91	0.47	9999	"
"	"	1841	39	52	91	0.47	99.99	"
"	"	1839	39	52	91	0.48	99.99	"
"	"	1838	39	52	91	0.48	99.99	"
"	"	1836	39	52	91	0.48	99.99	"
"	"	2844	39	52	91	0.47	99.99	"
"	"	2841	39	52	91	0.47	99.99	"
"	"	2843	39	52	91	0.47	9999	"
"	"	2847	39	52	91	0.46	99.99	"
"	"	2837	39	52	91	0.46	99.99	"
"	"	2849	39	52	91	0.46	99.99	"
"	"	2848	39	52	91	0.47	99.99	"

HSG-ACT-18

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853667 Type of Carbon 463563

Customer Order No. 601-25-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
4/18/78	C-224	7C-2836	39	52	91	0.47	9999	4/19/78
"	"	2842	39	52	91	0.47	9999	"

HSG ACT - 18

Mech. Struct. Weld Piping

RECEIVING CHECKLIST/INSPECTION REPORT

8 of 90 ~~Test~~ Carbon Filter
Identification No.

JOB NO. _____

P.O.NO. _____ REQUISITION NO. _____ ITEM NO. _____

SPECIFICATION: ENGINEERING GED-RS-10 Rev. 2 ASTM _____

CLASS LEVEL: _____ VENDOR Mine Safety Appliances

MATERIAL DESCRIPTION: Carbon filter cells (see attached quality shipment release)

CHECKLIST ITEMS	REQUIRED	VERIFIED	REMARKS:
CHEM. & PHYS.	( )		
HYDRO	( )		
RT	( )		
MP	( )		
LP	( )		
UT	( )		
LETTER OF COMPLIANCE	(X)	A. Salcido	
MARKINGS	( )		
SAMPLE INSP. PER AQL 2.5	( )		
OTHER Test Report	(X)	A. Salcido	MRT. NO.

HOLD TAG NO. WAIVER TAG NO.

ACCEPT TAG NO.

— SEE ADDITIONAL CHECKLIST ITEMS ENTERED ON REVERSE OF CARD

QC RECEIVING INSPECTOR _____ 5-9-79
Signature Date

QA ENGINEER Antonio Salcido 5-8-79
Signature Date

POSITIVE IDENTIFICATION OF ITEMS: By serial numbers

VISUAL INSPECTION FOR SHIPPING DAMAGE No damage (verified by GPUSC/QA upon installation)

SPECIFIC CHECKLIST ATTACHED ( )

OTHER REQUIRED CHECK-POINT ITEMS:

THOSE CARBON FILTER CELLS MARKED WITH A DOT IN THE ENCLOSED LIST WERE INSTALLED ON TOP OF THE AUX. BLDG.

A. Salcido 5-8-79
QUALITY ASSURANCE Date

DATE November 22, 1977 QUALITY SHIPMENT RELEASE

WPPSS NUCLEAR PROJECTS

☒ WNP-1
☐ WNP-4

CONTRACTOR Mine Safety Appliances Co.	ITEM DESCRIPTION Carbon Filter Cells
LOCATION Evans City, Pennsylvania	NO RELEASED THIS SHIPMENT 180
CONTRACT SPECIFICATION 9779-18 + ADD #5	S/N(S) ______ MK NO(S) See Remarks
DWG. NO. See Remarks	
QUALITY CLASS: I II G (CIRCLE ONE)	

NOTES: 1. THIS RELEASE DOES NOT CONSTITUTE FINAL ACCEPTANCE AND DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY ACCORDING TO CONTRACT.

2. UE&C QUALITY ASSURANCE RESERVES THE RIGHT TO WAIVE ANY VERIFICATION.

3. DISTRIBUTION: UE&C QA REPRESENTATIVE SENDS ONE COPY TO FIELD SUPT.-QA, ONE COPY TO QA HOME OFFICE AND PROVIDES ONE COPY TO VENDOR FOR TRANSMITTAL WITH DATA PACKAGE.

NOMENCLATURE: REVIEW OF A QUALITY REQUIREMENT AND ITS STATUS IS DENOTED BY: (A) FOR ACCEPTABLE, (W) FOR WAIVED [SEE REMARKS], (C) CONDITIONAL [SEE REMARKS], (F) FOR FOLLOWUP [SEE REMARKS], OR (NR) FOR NOT REQUIRED.

QUALITY REQUIREMENTS

A - VERIFICATION CHECKLIST

1. FINAL VISUAL EXAMINATION	N/A
2. FINAL DIMENSIONAL	N/A
3. COATING/LINING INSPECTION	N/A
4 CLEANLINESS INSPECTION	N/A
5. MARKING/IDENTIFICATION	A
6. NAMEPLATE/CODESTAMP	N/A
7. PACKAGING	A

B - DOCUMENTATION CHECKLIST
(at time of Final Verification)

1. SUBMITTED DOCUMENTS	A
2. NCR's CLOSED	N/A
3. CONTRACT WAIVERS APPROVED	A
4. VENDOR DRAWING STATUS (REVISION PRESENTED BY CONTRACTOR) See Remarks	A
5. DATA PACKAGE REVIEWED (AVAILABLE AND CORRECT)	A

C - CERTIFICATE OF COMPLIANCE A

D - REMARKS: Carbon Filter Cells

Unit Tag No	Dwg/Rev	Qty
HCA-ACT-1B	46-27-14 Rev 3	90
HCA-ACT-2B	46-27-14 Rev 3	90

See attached sheets for serial nos

UE&C QUALITY ASSURANCE REPRESENTATIVE

I HEREBY CERTIFY THAT ABOVE APPLICABLE VERIFICATIONS WERE PERFORMED OR WITNESSED AND DOCUMENTATION CHECKED AS INDICATED.

Joseph J. Vutecky — 11/22/77
SIGNATURE DATE

QAP-2 (D) - 1-77

Mine Safety Appliances Company · Evans City, Pennsylvania 16033

CERTIFICATE OF COMPLIANCE

Customer: Washington Public Power Supply System

Address: 3000 George Washington Way

Richland, Washington 99352

Certification Number 1073

Date: 11-22-77

Purchase Order No. G01-75-85

Contract No. 9779-18

MSA Job No. B-853671

It is hereby certified that all material and/or parts furnished comply with the terms and specifications of the subject Purchase Order and/or Contract number.

Exceptions as follows: None

Two Witnesses:

L H Kuschler

Ralph G. Rush

(Authorized Signature)

Manager, Quality Assurance

(Title or Position in Firm)

The Mine Safety Appliances Company, Evans City Plant, Quality Control system conforms to the requirements of 10CFR50 Appendix B and ANSI 45.2.

Unit No. WNP-1 HCA-ACT-2B

Serial No. See Attached Test Results

Quantity 90

Part No. A. 462714 B. 464065

Part Name A. Carbon Cell B. Test Cell

DOCUMENT REVIEW

NOV 22 77 J.S.V.

By: Q.C.A.C.

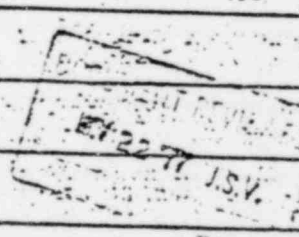
Telephone: 412/538-3510

2.3

1	2	3	4	5
697	847	652	800	703
708	870	840	806	744
698	841	871	757	781
819	704	858	830	652
810	845	892	641	732
817	709	651	648	773
826	699	856	649	645
828	692	707	650	646

6	7	8	9
753	864	855	756
765	740	874	858
656	741	731	886
776	733	849	763
772	875	755	700
655	853	730	750
750	706	754	739
752	698	872	746

10	11	12
881	175	330
659	374	371
819	375	
779	356	
733	767	
759	769	
755	735	
647	660	



BLDG 27 → CONTRACTOR WAIVER REQUEST (WPPSS FILE) D. K. Manley

TO: UNITED ENGINEERS & CONSTRUCTORS INC.	(MAN F.S.)
ADDRESS: 2000 Market Street, Phila., Pa. 19103	Page 1 W.M. of JUN 16 1977
ATTN: Project Engineering Manager	Transmittal No. CWR-11
REFERENCE: WPPSS Nuclear Projects No. 1 [X] 4 [X]	Date Submitted 5/18/77
FROM: Mine Safety Appliances Co.	Contract No 9779-18
ADDRESS: Evans City, PA 16033	REVIEW BY

UE&C ACTIVITY	APPLICABLE	DATE COMMENTS RECEIVED
ELEC		
MECH.		
MECH. SER	No KLP	6-1-77
STRUCT.		
I & C		
NUCLEAR		
Q A.		
PURCH		
COST CON		
CONSTRUC		

The following request is made for:

☐ Design-Change [X] Waiver Approval ☐ Repair Authorization

Drawing No 18-3.5.6 / 22-3.5.8.4 Title

Spec. Sect. No. 15A-37-5.2.3.5 / 39-5.3.2 Title Adsorber Test

Submitted by: W. Milich

Title: Contract Administrator

Specification/Drawing Requirement: Specifies Freon 112 refrigerant as tracer gas for Leak Testing of carbon adsorbers.

Change Requested/Justification: Change all Specification tracer gas requirements to Freon-11 since Freon 112 is no longer commercially available.

DOCUMENT REVIEWED
By: 6 22 77 J.S.V.
U.E.&C.

Cost Differential [X] NO ☐ YES Detail

Repair Procedure

FILTER SALES
JUN 08 1977
M.S.A.

Mine Safety Appliances Co.
Checked and Approved for Submittal
K.E. Reynolds
Project Manager

The condition listed on this request are: Approved [X] Not Approved ☐ *

Based on the listed action: Disposition by C.O. ☐

☐ Design-Change [X] Waiver Approval ☐ Repair Authorization

* See attached comments

Cognizant Engineer [signature] Date 6/1/77

Quality Assurance Concurrence [signature] Date 6-2-77

Project Engineer Project Mgr [signature] Date 6/13/77

CONTRACTOR NOTE

If a waiver is authorized, an approved copy of this request must accompany material shipment.

Reviewed with & Approved by WPPSS, F. MATL. APPRL #0614F [signature] 6-14-77

POOR ORIGINAL

MSA

Mine Safety Appliances Company · Evans City, Pennsylvania 16033

463563 IMPREGNATED CARBON

BATCH NO. C-215

FOR

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

WPPSS NUCLEAR PROJECTS NO. 1 & 4

	Requirements	Actual
#6 ASTM E-11 Sieve	0.0%	0.0%
#8 ASTM E-11 Sieve	5.0% Max.	2.4%
#12 ASTM E-11 Sieve	40% - 60%	54.6%
#16 ASTM E-11 Sieve	40% - 60%	42.1%
Pan	5.0% Max.	1.1%
Apparent Density	0.5 ± 0.05 g/cc	0.532 gm/cc
Iodine Collection Test	0.1% Max.	<0.1%
Wash Test	80% Min.	82.9%
Ignition Test	340°C Min.	429°C
Entrapment Efficiency Test		
(1) Methyl Iodide CH_3I_{131} 212°F, 95% R.H.	95% Min.	96.28%
(2) Iodine I_{131} 212°F, 95% R.H.	99.9% Min.	99.99%

DOCUMENT REVIEWED 22 '77 J.S.V. By

Date of Report 9-14-77

Prepared By C. Giehl

Telephone: 412/538-3510

Mine Safety Appliances Company · Evans City, Pennsylvania 16033

463563 IMPREGNATED CARBON

BATCH NO. C-216

FOR

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

WPPSS NUCLEAR PROJECTS NO. 1 & 4

	Requirements	Actual
#6 ASTM E-11 Sieve	0:0%	0.0%
#8 ASTM E-11 Sieve	5.0% Max.	1.8%
#12 ASTM E-11 Sieve	40% - 60%	53.1%
#16 ASTM E-11 Sieve	40% - 60%	43.2%
Pan	5.0% Max.	1.7%
Apparent Density	0.5 ± 0.05 g/cc	.536 g/cc.
Iodine Collection Test	0.1% Max.	<0.1%
Wash Test	80% Min.	82.9%
Ignition Test	340°C Min.	432°C
Entrapment Efficiency Test		
(1) Methyl Iodide CH_3I_{131} 212°F, 95% R.H.	95% Min.	98.70%
(2) Iodine I_{131} 212°F, 95% R.H.	99.9% Min.	99.99%

DOCUMENT REVIEWED
DEC 22 '77 J.S.V.
By ______

Date of Report Nov. 15, 1977

Prepared By Conrad C. Geibel

POOR ORIGINAL

Telephone: 412/538-3510

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853671 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
9/15/77	C-215	77-271	39	59	98	0.63	99.99	9/23/77
"	"	330	39	59	98	0.63	99.99	"
"	"	274	39	58	97	0.61	99.99	"
10/11/77	"	275	39	60	99	0.63	99.99	11/3/77
"	"	178	39	58	97	0.63	99.99	"
"	"	286	39	57	96	0.63	99.99	"
11/11/77	C-216	856	39	58	97	0.62	99.99	11/14/77
"	"	707	39	59	98	0.62	99.99	"
"	"	881	39	59	98	0.62	99.99	"
"	"	879	39	58	97	0.60	99.99	"
"	"	779	39	58	97	0.60	99.99	"
"	"	659	39	57	96	0.60	99.99	"
"	"	783	39	57	96	0.60	9999	"
"	"	759	39	57	96	0.60	99.99	"

HCA-ACT-2B

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853671 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
11/11/77	C-216	77-758	39	57	96	0.60	99.99	11/14/77
"	"	647	39	57	96	0.58	99.99	"
"	"	757	39	57	96	0.58	99.99	"
"	"	661	39	58	97	0.58	99.99	"
"	"	648	39	59	98	0.62	99.99	"
"	"	649	39	58	97	0.62	99.99	"
"	"	650	39	59	98	0.62	99.99	"
"	"	651	39	59	98	0.60	99.99	"
"	"	657	39	57	96	0.60	99.99	"
"	"	360	39	57	96	0.60	99.99	"
"	"	871	39	59	98	0.60	99.99	"
"	"	658	39	57	96	0.60	99.99	"
"	"	882	39	57	96	0.60	99.99	"
"	"	660	39	58	97	0.58	99.99	"

HCA-ACT-2B

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853471 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. AP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
11/11/77	C-216	77-702	39	58	97	0.58	99.99	11/14/77
"	"	781	39	57	96	0.58	99.99	"
"	"	773	39	57	96	0.60	9999	"
"	"	772	39	57	96	0.60	99.99	"
"	"	780	39	59	98	0.60	99.99	"
"	"	782	39	59	98	0.62	99.99	"
11/14/77	"	656	39	58	97	0.62	99.99	"
"	"	776	39	59	98	0.62	9999	"
"	"	655	39	60	99	0.64	99.99	"
"	"	768	39	60	99	0.64	99.99	"
"	"	761	39	60	99	0.64	99.99	"
"	"	733	39	59	98	0.60	99.99	"
"	"	760	39	57	96	0.60	9999	"
"	"	864	39	57	96	0.60	9999	"

HCA-ACT-2B

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853671 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. NP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
11/14/77	C-216	77-767	39	57	96	0.58	99.99	11/14/77
"	"	769	39	57	96	0.58	99.99	"
"	"	735	39	57	96	0.58	99.99	"
"	"	766	39	57	96	0.60	99.99	"
"	"	732	39	57	96	0.60	99.99	"
"	"	753	39	58	97	0.60	99.99	"
"	"	652	39	57	96	0.60	99.99	"
"	"	645	39	58	97	0.60	99.99	"
"	"	646	39	58	97	0.60	99.99	"
11/15/77	"	746	39	57	96	0.57	99.99	11/16/77
"	"	739	39	57	96	0.57	99.99	"
"	"	750	39	57	96	0.57	99.99	"
"	"	756	39	58	97	0.60	99.99	"
"	"	700	39	58	97	0.60	99.99	"

MCA-ACT-28

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853671 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
11/16/77	C-216	77-699	39	57	96	0.60	99.99	11/16/77
"	"	709	39	57	96	0.58	9999	"
"	"	704	39	57	96	0.58	99.99	"
"	"	861	39	58	97	0.58	99.99	"
"	"	865	39	58	97	0.60	9999	"
"	"	858	39	57	96	0.60	99.99	"
"	"	886	39	58	97	0.60	99.99	"
11/15/77	"	731	39	58	97	0.60	99.99	"
"	"	755	39	59	98	0.60	99.99	"
"	"	730	39	57	96	0.60	99.99	"
"	"	763	39	57	96	0.58	99.99	"
"	"	754	39	58	97	0.58	99.99	"
11/16/77	"	872	39	58	97	0.58	9999	"
"	"	697	39	57	96	0.58	9999	"

HCA-ACT-28

POOR ORIGINAL

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853671 Type of Carbon 463563

Customer Order No. G01-75-85 Spec. No. DA-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
11/16/77	C-216	77-708	39	58	97	0.58	99.99	11/16/77
"	"	698	39	57	96	0.58	99.99	"
"	"	810	39	57	96	0.58	99.99	"
"	"	819	39	57	96	0.58	99.99	"
"	"	817	39	58	97	0.58	99.99	"
"	"	826	39	58	97	0.62	99.99	"
"	"	828	39	58	97	0.62	99.99	"
"	"	870	39	58	97	0.62	99.99	"
"	"	849	39	58	97	0.58	99.99	"
"	"	874	39	57	96	0.58	99.99	"
"	"	855	39	58	97	0.58	99.99	"
"	"	867	39	59	98	0.60	99.99	"
"	"	688	39	58	97	0.60	99.99	"
"	"	706	39	58	97	0.60	99.99	"

HC9- ACT - 2B

DOCUMENT REVIEWED
FEB 22 '77 J.S.V.
By: U.E.&C.

6

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853671 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. 0-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Car Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
11/16/77	C-216	77-883	39	59	98	0.60	99.99	11/16/77
"	"	696	39	59	98	0.60	99.99	"
"	"	878	39	57	96	0.60	99.99	"
"	"	800	39	57	96	0.56	9999	"
"	"	830	39	56	95	0.56	9999	"
"	"	806	39	57	96	0.56	9999	"

HCA-ACT-28

Mech. Struct. Weld Piping

1 of 90

RECEIVING CHECKLIST/INSPECTION REPORT

Carbon Filter Cell Identification No.

JOB NO. _____

P.O.NO. _____ REQUISITION NO. _____ ITEM NO. _____

SPECIFICATION: ENGINEERING GED-RS-10 Rev. 0 ASTM _____

CLASS LEVEL: _____ VENDOR Mine Safety Appliances

MATERIAL DESCRIPTION: Carbon filter cells (see attched quality shipment release)

CHECKLIST ITEMS	REQUIRED	VERIFIED
CHEM. & PHYS.	( )	
HYDRO	( )	
RT	( )	
MP	( )	
LP	( )	
UT	( )	
LETTER OF COMPLIANCE	(X)	A. Salcedo
MARKINGS	( )	
SAMPLE INSP. PER AQL 2.5	( )	
OTHER Test Reports	(X)	A Salcedo

REMARKS: _____

MRT. NO. _____

HOLD TAG NO. _____ WAIVER TAG NO. _____

ACCEPT TAG NO. _____

— SEE ADDITIONAL CHECKLIST ITEMS
— ENTERED ON REVERSE OF CARD

QC RECEIVING INSPECTOR _____ 5-9-79
Signature Date

QA ENGINEER Antonio Salcedo 5-8-79
Signature Date

POSITIVE IDENTIFICATION OF ITEMS: By serial numbers

VISUAL INSPECTION FOR SHIPPING DAMAGE No damage verified by GEJSC/QA upon installation

SPECIFIC CHECKLIST ATTACHED ( )

OTHER REQUIRED CHECK-POINT ITEMS:

THOSE CARBON FILTER CELLS MARKED WITH A DOT IN THE ENCLOSED LIST WERE INSTALLED ON TOP OF THE AUX. BUILDING.

A. Salcedo 5-8-79
QUALITY ASSURANCE Date

United Engineers & Constructors

☒ WNP-1
☐ WNP-4

DATE November 22 1977 QUALITY SHIPMENT RELEASE

WPPSS NUCLEAR PROJECTS

CONTRACTOR Mine Safety Appliances Co.

LOCATION Evans City, Pennsylvania

CONTRACT SPECIFICATION 9779-15 + ADD #5

DWG. NO. See Remarks

QUALITY CLASS: I II G (CIRCLE ONE)

ITEM DESCRIPTION Carbon Filter Cells

NO RELEASED THIS SHIPMENT 180

S/N(S) ______ MK NO(S) See Remarks

NOTES: 1. THIS RELEASE DOES NOT CONSTITUTE FINAL ACCEPTANCE AND DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY ACCORDING TO CONTRACT.

2. UE&C QUALITY ASSURANCE RESERVES THE RIGHT TO WAIVE ANY VERIFICATION.

3. DISTRIBUTION: UE&C QA REPRESENTATIVE SENDS ONE COPY TO FIELD SUPT.-QA, ONE COPY TO QA HOME OFFICE AND PROVIDES ONE COPY TO VENDOR FOR TRANSMITTAL WITH DATA PACKAGE.

NOMENCLATURE: REVIEW OF A QUALITY REQUIREMENT AND ITS STATUS IS DENOTED BY: (A) FOR ACCEPTABLE, (W) FOR WAIVED [SEE REMARKS], (C) CONDITIONAL [SEE REMARKS], (F) FOR FOLLOWUP [SEE REMARKS], OR (NR) FOR NOT REQUIRED.

QUALITY REQUIREMENTS

A - VERIFICATION CHECKLIST

1. FINAL VISUAL EXAMINATION	N/A
2. FINAL DIMENSIONAL	N/A
3. COATING/LINING INSPECTION	N/A
4. CLEANLINESS INSPECTION	N/A
5. MARKING/IDENTIFICATION	A
6. NAMEPLATE/CODESTAMP	N/A
7. PACKAGING	A

B - DOCUMENTATION CHECKLIST (at time of Final Verification)

1. SUBMITTED DOCUMENTS	A
2. NCR's CLOSED	N/A
3. CONTRACT WAIVERS APPROVED	A
4. VENDOR DRAWING STATUS (REVISION PRESENTED BY CONTRACTOR) See Remarks	A
5. DATA PACKAGE REVIEWED (AVAILABLE AND CORRECT)	A

C - CERTIFICATE OF COMPLIANCE A

D - REMARKS: Carbon Filter Cells

Unit Tag No.	Dwg/Rev	Qty
HCA-ACT-1B	46-27-14 Rev 3	90
HCA-ACT-2B	46-27-14 Rev 3	90

See attached sheets for serial nos.

POOR ORIGINAL

UE&C QUALITY ASSURANCE REPRESENTATIVE

I HEREBY CERTIFY THAT ABOVE APPLICABLE VERIFICATIONS WERE PERFORMED OR WITNESSED AND DOCUMENTATION CHECKED AS INDICATED.

Joseph J. Vutechy 11/21/77
SIGNATURE DATE

QAP-2 (6)- 1-77

Mine Safety Appliances Company · Evans City, Pennsylvania 16033

CERTIFICATE OF COMPLIANCE

Customer: Washington Public Power Supply System

Address: 3000 George Washington Way

Richland, Washington 99352

Certification Number 1074

Date: 11-22-77

Purchase Order No. G01-75-65

Contract No. 9779-18

MSA Job No. B-853671

It is hereby certified that all material and/or parts furnished comply with the terms and specifications of the subject Purchase Order and/or Contract number.

Exceptions as follows: None

Two Witnesses:

L H Kusshly

Ralph G. Rush

[signature]
(Authorized Signature)

Manager, Quality Assurance
(Title or Position in Firm)

The Mine Safety Appliances Company, Evans City Plant, Quality Control system conforms to the requirements of 10CFR50 Appendix B and ANSI 45.2.

Unit No. WNP-1 HCA-ACT-1B

Serial No. See Attached Test Results

Quantity 90

Part No. A. 462714
B. 464065

Part Name A. Carbon Cell
B. Test Cell

POOR ORIGINAL

DOCUMENT REVIEW
By: NOV 22 '77 J.S.V.
Q. & C.

Telephone: 412/538-3510

1 B Cells

1.	391	2.	327	3.	177	4.	155	5.	38[illegible]
	393		269		326		248		33[illegible]
	379		258		184		325		285
	353		381		312		132		216
	166		335		319		240		384
	357		337		1789		322		234
	279		382		2172		278		284
	250		336		1788		180		324

6.	2171	7.	253	8.	168	9.	385	10.	15[illegible]
	235		323		171		289		31[illegible]
	385		174		387		329		173
	350		320		336		328		25[illegible]
	176		256		242		283		175
	378		255		321		316		37[illegible]
	172		332		318		179		27[illegible]
	175		157		317		327		27[illegible]

11.	254	12.	333
	276		331
	272		
	382		
	314		
	151		
	257		
	313		

Case #27 → CONTRACTOR WAIVER REQUEST WPPSS #NB II, V. Nation

TO: UNITED ENGINEERS & CONSTRUCTORS INC.	[illegible]
ADDRESS: 2000 Market Street, Phila., Pa 19103	Page 1 W.M. of JUN 16 1977
ATTN: Project Engineering Manager	Transmittal No. CWR-11
REFERENCE: WPPSS Nuclear Projects No. 1 & 4 [X] [X]	Date Submitted 5/18/77
FROM: Mine Safety Appliances Co.	Contract No 9779-18
ADDRESS: Evans City, PA 16033	REVIEW BY

UE&C ACTIVITY	APPLICABLE	DATE COMMENTS RECEIVED
ELEC		
MECH		
MECH SER	[illegible]	6-1-77
STRUCT.		
I & C		
NUCLEAR		
Q A		
PURCH		
COST CON		
CONSTRUC		

The following request is made for:

☐ Design-Change ☒ Waiver Approval ☐ Repair Authorization

Drawing No 18-3.5.6 / 22-3.5.8.4 Title

Spec. Sect. No. 15A-37-5.2.3.5 / 39-5.3.2 Title Adsorber Test

Submitted by: W. Milich

Title: Contract Administrator

Specification/Drawing Requirement: Specifies Freon 112 refrigerant as tracer gas for Leak Testing of carbon adsorbers.

Change Requested/Justification: Change all Specification tracer gas requirements to Freon-11 since Freon 112 is no longer commercially available.

DOCUMENT REVIEWED
NOV 22 77 J.S.Y.

Cost Differential ☒ NO ☐ YES Detail

Repair Procedure

FILTER SALES
JUN 16 1977
H.S.A.

Mine Safety Appliances Co.
Checked and Approved for Submittal
K.E. [signature]
Project Manager

The condition listed on this request are: Approved ☒ Not Approved ☐ •

Based on the listed action: Disposition by C.O ☐

☐ Design-Change ☒ Waiver Approval ☐ Repair Authorization

• See attached comments

Cognizant Engineer [signature] Date 6/1/77

Quality Assurance Concurrence [signature] Date 6-7-77

Project Engineer Project Mgr [signature] Date 6/13/77

CONTRACTOR NOTE

If a waiver is authorized, an approved copy of this request must accompany material shipment.

Reviewed with & approved by WPPSS, F. Mathews Appr. # 0614F [signature] 6-14-77

POOR ORIGINAL

Mine Safety Appliances Company · Evans City, Pennsylvania 16033

463563 IMPREGNATED CARBON

BATCH NO. C-208

FOR

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

WPPSS NUCLEAR PROJECTS NO. 1 & 4

	Requirements	Actual
#6 ASTM E11 Sieve	0.0%	00.0 %
#8 ASTM E11 Sieve	5.0% Max.	1.5 %
#12 ASTM E11 Sieve	40% - 60%	54.4 %
#16 ASTM E11 Sieve	40% - 60%	42.6 %
Pan	5.0% Max.	0.8%
Apparent Density	0.5 ± 0.05 g/cc	.55 g/cc
Iodine Collection Test	0.1% Max.	<0.1 %
Wash Test	80% Min.	82.9 %
Ignition Test	340°C Min.	445 °C
Entrapment Efficiency Test		
(1) Methyl Iodide CH_3I_{131} 212°F, 95% R.H.	95% Min.	99.46 %
(2) Iodine I_{131} 212°F, 95% R.H.	99.9% Min.	99.92 %

Date of Report Nov. 19 1976

Prepared By R A Rule

Mine Safety Appliances Company · Evans City, Pennsylvania 16033

463563 IMPREGNATED CARBON

BATCH NO. C-215

FOR

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

WPPSS NUCLEAR PROJECTS NO. 1 & 4

	Requirements	Actual
#6 ASTM E-11 Sieve	0.0%	0.0%
#8 ASTM E-11 Sieve	5.0% Max.	2.4%
#12 ASTM E-11 Sieve	40% - 60%	54.6%
#16 ASTM E-11 Sieve	40% - 60%	42.1%
Pan	5.0% Max.	1.1%
Apparent Density	0.5 ± 0.05 g/cc	0.532 gm/cc
Iodine Collection Test	0.1% Max.	< 0.1%
Wash Test	80% Min.	82.9%
Ignition Test	340°C Min.	429°C
Entrapment Efficiency Test		
(1) Methyl Iodide CH_3I_{131} 212°F, 95% R.H.	95% Min.	96.28%
(2) Iodine I_{131} 212°F, 95% R.H.	99.9% Min.	99.99%

Date of Report 9-14-77

Prepared By [signature]

Telephone: 412/538-3510

Mine Safety Appliances Company · Evans City, Pennsylvania 16033

463563 IMPREGNATED CARBON

BATCH NO. C-216

FOR

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

WPPSS NUCLEAR PROJECTS NO. 1 & 4

	Requirements	Actual
#6 ASTM E-11 Sieve	0.0%	0.0%
#8 ASTM E-11 Sieve	5.0% Max.	1.8%
#12 ASTM E-11 Sieve	40% - 60%	53.1%
#16 ASTM E-11 Sieve	40% - 60%	43.2%
Pan	5.0% Max.	1.7%
Apparent Density	0.5 ± 0.05 g/cc	.536 g/cc.
Iodine Collection Test	0.1% Max.	< 0.1%
Wash Test	80% Min.	82.9%
Ignition Test	340°C Min.	432°C
Entrapment Efficiency Test		
(1) Methyl Iodide CH_3I_{131} 212°F, 95% R.H.	95% Min.	98.70%
(2) Iodine I_{131} 212°F, 95% R.H.	99.9% Min.	99.99%

Date of Report Nov. 15, 1977

Prepared By Conrad C. Seibel

Telephone: 412/538-3510

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853671 Type of Carbon 463563

Customer Order No. 301-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
9/15/77	C-215	77-331	39	59	98	0.63	99.99	9/23/77
"	"	333	39	59	98	0.61	99.99	"
"	"	335	39	56	95	0.61	99.99	"
11/1/77	C-208	269	39	57	96	0.60	99.99	11/3/77
"	"	281	39	57	96	0.60	99.99	"
"	"	277	39	58	97	0.60	99.99	"
"	"	336	39	58	97	0.62	99.99	"
"	"	282	39	58	97	0.62	99.99	"
"	"	337	39	59	98	0.62	99.99	"
10/11/77	C 215	76-2160	39	57	96	0.64	99.99	"
"	"	77-285	39	57	96	0.64	99.99	"
"	"	381	39	57	96	0.64	9999	"
"	"	181	39	58	97	0.62	9999	"
"	"	314	39	58	97	0.62	99.99	"

HCA-ACT-18

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853671 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
10/11/77	C-215	77-382	39	58	97	0.62	99.99	11/3/77
"	"	272	39	58	97	0.65	99.99	"
"	"	326	39	58	97	0.65	99.99	"
"	"	276	39	58	97	0.65	99.99	"
"	"	384	39	57	96	0.60	99.99	"
"	"	258	39	56	95	0.60	99.99	"
"	"	254	39	57	96	0.60	99.99	"
"	"	334	39	57	96	0.60	99.99	"
"	"	234	39	58	97	0.60	99.99	"
"	"	257	39	59	98	0.60	99.99	"
"	"	182	39	56	95	0.62	99.99	"
"	"	322	39	57	96	0.62	99.99	"
"	"	290	39	57	96	0.62	99.99	"
"	"	284	39	59	98	0.60	99.99	"

HCA-ACT-1B

POOR ORIGINAL

DOCUMENT REVIEWED
By: NOV 22 '77 J.S.V.
U. I. & C.

MSA 635-4 QC

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853671 Type of Carbon 463563

Customer Order No. 601-15-85 Spec. No. AP-1052

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
11/1/77	C-208	77-278	39	57	96	0.60	99.99	11/3/77
"	"	180	39	57	96	0.60	99.99	"
"	"	177	39	58	97	0.62	99.99	"
"	"	268	39	58	97	0.62	99.99	"
11/2/77	"	313	39	60	99	0.62	99.99	"
"	"	324	39	59	98	0.64	99.99	"
"	"	184	39	59	98	0.64	99.99	"
"	"	325	39	59	98	0.64	99.99	"
"	"	312	39	59	98	0.62	99.99	"
"	"	319	39	59	98	0.62	99.99	"
"	C-215	185	39	59	98	0.62	99.99	"
11/9/77	C-216	166	39	59	98	0.65	99.99	11/10/77
"	"	287	39	59	98	0.65	99.99	"
"	"	279	39	59	98	0.65	99.99	"

NCA - ACT - 1B

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853671 Type of Carbon 463563

Customer Order No. G01-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
11/9/77	C-216	77-280	39	59	98	0.66	99.99	11/10/77
"	"	283	39	59	98	0.66	99.99	"
"	"	316	39	59	98	0.66	99.99	"
"	"	179	39	59	98	0.66	99.99	"
"	"	327	39	59	98	0.66	99.99	"
"	"	288	39	60	99	0.66	99.99	"
"	"	289	39	59	98	0.63	99.99	"
"	"	329	39	59	98	0.63	99.99	"
"	"	328	39	59	98	0.63	99.99	"
"	"	292	39	59	98	0.64	99.99	"
"	"	321	39	59	98	0.64	99.99	"
"	"	318	39	59	98	0.64	99.99	"
"	"	317	39	59	98	0.65	99.99	"
"	"	168	39	59	98	0.65	99.99	"

HCA-ACT-13

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853671 Type of Carbon 4/63563

Customer Order No. 601-75-85 Spec. No. AP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
11/9/77	C-216	77-171	39	58	97	0.65	99.99	11/10/77
"	"	387	39	57	96	0.62	99.99	"
"	"	336	39	57	96	0.62	99.99	"
"	"	291	39	57	96	0.62	99.99	"
"	"	293	39	57	96	0.60	99.99	"
"	"	379	39	57	96	0.60	99.99	"
"	"	383	39	57	96	0.60	99.99	"
"	"	377	39	57	96	0.58	99.99	"
"	"	256	39	57	96	0.58	99.99	"
"	"	255	39	58	97	0.58	99.99	"
"	"	187	39	58	97	0.62	99.99	"
"	"	332	39	57	96	0.62	99.99	"
"	"	253	39	57	96	0.62	99.99	"
"	"	323	39	56	95	0.62	99.99	"

HCA-ACT-1B

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853671 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
11/9/77	C-216	77-174	39	59	98	0.62	99.99	11/10/77
"	"	320	39	59	98	0.62	99.99	"
"	"	270	39	58	97	0.64	99.99	"
"	"	273	39	59	98	0.64	99.99	"
"	"	183	39	57	96	0.64	99.99	"
"	"	315	39	59	98	0.62	99.99	"
"	"	173	39	57	96	0.62	99.99	"
"	"	252	39	59	98	0.62	99.99	"
"	"	385	39	58	97	0.58	99.99	"
"	"	380	39	57	96	0.58	99.99	"
"	"	176	39	57	96	0.58	99.99	"
"	"	378	39	57	96	0.56	99.99	"
"	"	172	39	57	96	0.56	99.99	"
"	"	175	39	58	97	0.60	99.99	"

HCA-ACT-1B

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. R853671 Type of Carbon 463563

Customer Order No. G01-75-85 Spec. No. NP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TEST
11/9/77	C-216	76-1789	39	58	97	0.60	99.99	11/10/77
"	"	2172	39	58	97	0.60	99.99	"
"	"	1788	39	59	98	060	99.99	"
"	"	1787	39	58	97	0.60	99.99	"
"	"	2171	39	58	97	060	9999	"
"	"	77-235	39	57	96	0.60	9999	"

HCA-ACT-1B

Mech., Struct. Weld Piping

41 of 72

RECEIVING CHECKLIST/INSPECTION REPORT

Carbon Filter Cells
Identification No.

JOB NO. _____

P.O.NO. _____ REQUISITION NO. _____ ITEM NO. _____

SPECIFICATION: ENGINEERING GED-PS-10 Rev. 0 ASTM _____

CLASS LEVEL: _____ VENDOR Mine Safety Apliances

MATERIAL DESCRIPTION: Carbon Filter Cells (see attached quality release)

CHECKLIST ITEMS	REQUIRED	VERIFIED	REMARKS:
CHEM. & PHYS.	( )		
HYDRO	( )		
RT	( )		
MP	( )		
LP	( )		
UT	( )		
LETTER OF COMPLIANCE	(X)	A Salcido	
MARKINGS	( )		
SAMPLE INSP. PER AQL 2.5	( )		
OTHER Test Reports	(X)	A. Salcido	MRT. NO.

HOLD TAG NO. _____ WAIVER TAG NO. _____

ACCEPT TAG NO. _____

— SEE ADDITIONAL CHECKLIST ITEMS ENTERED ON REVERSE OF CARD

QC RECEIVING INSPECTOR _____ 5-9-79
Signature Date

QA ENGINEER Antonio Salcido 5-8-79
Signature Date

POSITIVE IDENTIFICATION OF ITEMS: By serial numbers

VISUAL INSPECTION FOR SHIPPING DAMAGE No damage (verified by GPUSC/QA upon installation)

SPECIFIC CHECKLIST ATTACHED ( )

OTHER REQUIRED CHECK-POINT ITEMS:

THOSE CARBON FILTER CELLS MARKED WITH A DOT IN THE ENCLOSED LIST WERE INSTALLED ON TOP OF THE AUX BUILDING.

A. Salcido 5-8-79
QUALITY ASSURANCE Dat.

FORM 4057 REV 3/78

United Engineers & Constructors Inc.

PROJECT: WPPSS
UNIT(S): WNP-1

DATE May 30, 1978

QUALITY SHIPMENT RELEASE

CONTRACTOR: Mine Safety Appliances Co.	ITEM DESCRIPTION: Carbon Filter Cells
LOCATION: Evans City, Pennsylvania	NO. RELEASED THIS SHIPMENT: 144
CONTRACT/PO: 9779-18 + add #5	S/N(S): See Remarks & MK NO(S): Attachment
DWG NO: 46-27-14 REV: 3	
QUALITY/SAFETY CLASS: I, II & G	

NOTES: 1. THIS RELEASE FOR SHIPMENT DOES NOT CONSTITUTE FINAL ACCEPTANCE AND DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY ACCORDING TO THE CONTRACT.

2. UE&C QUALITY ASSURANCE RESERVES THE RIGHT TO WAIVE ANY VERIFICATION.

3. DISTRIBUTION: UE&C QA REPRESENTATIVE SENDS ONE COPY TO FIELD SUPERINTENDENT-QA AND SENDS ONE COPY TO QA HOME OFFICE AND PROVIDES ONE COPY TO VENDOR FOR TRANSMITTAL WITH DATA PACKAGE.

NOMENCLATURE: REVIEW OF A QUALITY REQUIREMENT AND ITS STATUS IS DENOTED BY: (A) FOR ACCEPTABLE, (W) FOR WAIVED [SEE REMARKS], (C) FOR CONDITIONAL [SEE REMARKS], (F) FOR FOLLOWUP [SEE REMARKS], OR (NR) FOR NOT REQUIRED.

QUALITY REQUIREMENTS

A-VERIFICATION CHECKLIST

1. FINAL VISUAL EXAMINATION (WORKMANSHIP)	N/A
2. FINAL DIMENSIONAL	N/A
3. COATING/LINING	N/A
4. LUBRICANTS/OILS	N/A
5. CLEANLINESS	N/A
6. ELECTRICAL INSTALLATION	N/A
7. MARKING/IDENTIFICATION	A
8. NAMEPLATE/CODESTAMP	N/A
9. PACKAGING	A

B-DOCUMENTATION CHECKLIST
(AT TIME OF FINAL VERIFICATION)

1. SUBMITTED DOCUMENTS	A
2. NCR's CLOSED	N/A
3. CHANGE ORDERS APPROVED	A
4. VENDOR DRAWING STATUS (REVISION PRESENTED BY CONTRACTOR)	A Rev 3.
5. DATA PACKAGE (INCLUDING PHYSICAL PROPERTY DATA) REVIEWED (AVAILABLE AND CORRECT)	A

C-CERTIFICATE OF CONFORMANCE A

D-REMARKS Carbon Filter Cells.

Unit Tag No	Qty
HSG-ACT-3A	72
HSG-ACT-3B	72

Total 144 Carbon filter cells. See attached lists for serial numbers.

POOR ORIGINAL

UE&C QUALITY ASSURANCE REPRESENTATIVE

I HEREBY CERTIFY THAT ABOVE APPLICABLE VERIFICATIONS WERE PERFORMED OR WITNESSED AND DOCUMENTATION CHECKED AS INDICATED.

Joseph S. Vojtechy — SIGNATURE

5/30/78 — DATE

MSA

Mine Safety Appliances Company • Evans City, Pennsylvania 16033

CERTIFICATE OF COMPLIANCE

Customer: Washington Public Power Supply System

Address: 3000 George Washington Way
Richland, Washington 99352

Certification Number 1223

Date: 5-30-78

Purchase Order No. G01-75-85

Contract No. 9779-18

MSA Job No. B-853667

It is hereby certified that all material and/or parts furnished comply with the terms and specifications of the subject Purchase Order and/or Contract number.

Exceptions as follows: None

Two Witnesses:

[signature]

[signature]

[signature]
(Authorized Signature)

Manager, Quality Assurance
(Title or Position in Firm)

The Mine Safety Appliances Company, Evans City Plant, Quality Control system conforms to the requirements of 10CFR50 Appendix B and ANSI 45.2.

Unit No. WNP-1 HSG-ACT-3A

Serial No. See Attached Test Results

Quantity 72

Part No. A. 462714
B. 464065

Part Name A. Carbon Cell
B. Test Cell

POOR ORIGINAL

DOCUMENT REVIEWED
MAY 30 1978
BY JSV

Telephone: 412/538-3510

51-178

72 pc

PL 4-2714 HSG-ACT:3A B 853667

77-355	76-2652	76-2349
76-2067	76-2519	76-2305
76-2625	76-2351	76-2325
76-2071	76-2329	76-2335
77-433	76-2522	76-2064
77-436	76-2524	77-356
77-349	76-2619	76-2066
76-2527	77-343	76-2335
77-435	77-340	76-2031
77-358	77-454	76-2063
77-357	77-431	76-2065
76-2193	77-341	76-2069
76-2631	77-430	76-2730
77-347	77-432	76-2731
76-2635	77-353	76-2711
77-342	77-350	76-2712
77-346	77-437	76-2729
77-354	77-434	76-2710
76-2668	76-2070	76-2727
76-2348	76-2621	76-2705
76-2684	77-344	
76-2678	76-2617	
77-352	76-2516	
77-351	76-2652	
76-2517	76-2065	
77-345	76-2350	

CONTRACTOR WAIVER REQUEST

W.R. JAN 30 1976

TO: UNITED ENGINEERS & CONSTRUCTORS INC.

ADDRESS: 2000 Market Street, Phila., Pa. 19103

ATTN: Project Engineering Manager

REFERENCE: WPPSS Nuclear Projects No. 1 & 4 [X] [X]

FROM: Mine Safety Appliances Co.

ADDRESS: Evans City, Pa. 16033

Page 1 of 1

Transmittal No. CWR-3

Date Submitted 12/10/75

Contract No. 9779-18

REVIEW BY

WPPSS ACTIVITY	APPLICABLE	DATE COMMENTS APPROVED
ELEC.	N/A	
MECH	N/A	
MECH SER	[illegible]	
STRUCT.	N/A	
I & C	N/A	
NUCLEAR	N/A	
Q.A.	N/A	
PURCH		
COST CON		
CONSTRUC.		

The following request is made for: 1-30-76 DKM

[X] Design-Change [ ] Waiver Approval [ ] Repair Authorization

Drawing No. D-462713 for reference Title Gas Adsorber, Flat Bed, AACC-CS-8, Type II

Spec. Sect No. 15A - 3.5.6 Title Adsorbers

Submitted by: Walter Milich

Title: Contract Administrator

Specification/Drawing Requirement: In AACC Standard CS-8, dimension of Carbon Cell is listed as 24 in. width x 30 in. long.

Change Requested/Justification: Dimension of the Carbon Cell to be 23 in. wide x 31-1/2 in. long maintaining all other requirements of AACC Std. CS-8. Necessary to meet Seismic requirements within the maximum width specified for the Filter Train Units.

DOCUMENT REVIEWED MAR 25 1976 By LSV

Cost Differential [X] NO [ ] YES Detail

Repair Procedure

Mine Safety Appliances Co.
Checked and Approved for Submittal
W.C. Reynolds
Project Manager

DOCUMENT REVIEWED MAR 25 1976 By LSV

The condition listed on this request are: Approved [✓] Not Approved [ ] *

Based on the listed action:

[ ] Design-Change [ ] Waiver Approval [ ] Repair Authorization

* See attached comments

Cognizant Engineer [signature] Date 1-20-76

Quality Assurance Concurrance [signature] Date 1/21/76

Project Engineer Project Mgr [signature] Date 1-21-76

CONTRACTOR NOTE

If a waiver is authorized, an approved copy of this request must accompany material shipment.

DOCUMENT REVIEWED MAY 30 1978 By LSV

CONTRACTOR WAIVER REQUEST

D. K. Manley

TO: UNITED ENGINEERS & CONSTRUCTORS INC.	MAA (5)
ADDRESS: 2000 Market Street, Phila., Pa. 19103	Page 1 W.M. JUN 16 1977
ATTN: Project Engineering Manager	Transmittal No. CWR-11
REFERENCE: WPPSS Nuclear Projects No [X] 1 [X] 4	Date Submitted 5/18/77
FROM: Mine Safety Appliances Co.	Contract No. 9779-18
ADDRESS: Evans City, PA 16033	REVIEW BY

The following request is made for:

☐ Design-Change [X] Waiver Approval ☐ Repair Authorization

Drawing No 18-3.5.6 / 22-3.5.8.4 Title

Spec. Sect. No. 15A-37-5.2.3.5 / 39-5.3.2 Title Adsorber Test

Submitted by: W. Milich

Title: Contract Administrator

UE & C ACTIVITY	APPLICABLE	DATE COMMENTS RECEIVED
ELEC.		
MECH.		
MECH. SER	N/C KEP	6-1-77
STRUCT.		
I & C		
NUCLEAR		
Q.A.		
PURCH		
COST CON		
CONSTRUC		

Specification/Drawing Requirement: Specifies Freon 112 refrigerant as tracer gas for Leak Testing of carbon adsorbers.

Change Requested/Justification: Change all Specification tracer gas requirements to Freon-11 since Freon 112 is no longer commercially available.

DOCUMENT REVIEWED MAR 29 1978 BY ISV UE&C

Cost Differential [X] NO ☐ YES Detail

Repair Procedure

FILTER SALES JUN 18 1977 M.S.A.

Mine Safety Appliances Co.
Checked and Approved for Submittal
K.E. [signature]
Project Manager

The condition listed on this request are: Approved [X] Not Approved ☐ *

Based on the listed action. Disposition by C.O. ☐

☐ Design-Change [X] Waiver Approval ☐ Repair Authorization

* See attached comments.

Cognizant Engineer [signature] Date 6/1/77

Quality Assurance Concurrence [signature] Date 6-2-77

Project Engineer Project Mgr [signature] Date 6/13/77

CONTRACTOR NOTE

If a waiver is authorized, an approved copy of this request must accompany material shipment.

Reviewed with & APPROVED By WPPSS, F. MATZ - APP'L #0614F [signature] 6-14-77

POOR ORIGINAL

Mine Safety Appliances Company · Evans City, Pennsylvania 16033

463563 IMPREGNATED CARBON

BATCH NO. C-222

FOR

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

WPPSS NUCLEAR PROJECTS NO. 1 & 4

	Requirements	Actual
#6 ASTM E-11 Sieve	0.0%	0.0%
#8 ASTM E-11 Sieve	5.0% Max.	1.3%
#12 ASTM E-11 Sieve	40% - 60%	51.4%
#16 ASTM E-11 Sieve	40% - 60%	45.2%
Pan	5.0% Max.	1.6%
Apparent Density	0.5 ± 0.05 g/cc	0.546 gm/cc
Iodine Collection Test	0.1% Max.	< 0.1%
Wash Test	80% Min.	82.9%
Ignition Test	340°C Min.	407°C
Entrapment Efficiency Test		
(1) Methyl Iodide CH_3I_{131} 212°F, 95% R.H.	95% Min.	99.22%
(2) Iodine I_{131} 212°F, 95% R.H.	99.9% Min.	99.99%

Date of Report 4-19-78

Prepared By C. Mitchell

Telephone: 412/538-3510

Mine Safety Appliances Company · Evans City, Pennsylvania 16033

463563 IMPREGNATED CARBON

BATCH NO. C-225

FOR

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

WPPSS NUCLEAR PROJECTS NO. 1 & 4

	Requirements	Actual
#6 ASTM E-11 Sieve	0.0%	0.0%
#8 ASTM E-11 Sieve	5.0% Max.	1.7%
#12 ASTM E-11 Sieve	40% - 60%	48.0%
#16 ASTM E-11 Sieve	40% - 60%	48.0%
Pan	5.0% Max.	1.4%
Apparent Density	0.5 ± 0.05 g/cc	0.55 g/cc
Iodine Collection Test	0.1% Max.	< 0.1%
Wash Test	80% Min.	82.9%
Ignition Test	340°C Min.	403°C
Entrapment Efficiency Test		
(1) Methyl Iodide CH_3I_{131} 212°F, 95% R.H.	95% Min.	98.42%
(2) Iodine I_{131} 212°F, 95% R.H.	99.9% Min.	99.98%

Date of Report 5-18-78

Prepared By Gribel

Telephone: 412/538-3510

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853667 Type of Carbon 463563

Customer Order No. G01-75-85 Spec. No. A?-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
5/26/78	C-225	77-348	39	55	94	0.60	9999	5/22/78
"	"	352	39	55	94	0.60	9999	"
"	"	351	39	55	94	0.60	9999	"
"	"	350	39	55	94	0.55	9999	"
"	"	353	39	55	94	0.55	9999	"
"	"	431	39	55	94	0.55	9999	"
"	"	437	39	55	94	0.57	9999	"
"	"	341	39	55	94	0.57	9999	"
"	"	76-2070	39	55	94	0.57	9999	"
"	"	77-430	39	55	94	0.60	9999	"
"	"	432	39	55	94	0.60	9999	"
"	"	434	39	55	94	0.60	9999	"
"	"	435	39	55	94	0.60	9999	"
5/19/78	C-222	76-2527	39	57	96	0.60	9999	"

POOR ORIGINAL

HSG-ACT-3A

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853667 Type of Carbon 463563

Customer Order No. G01-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
5/19/78	C-225	76-2652	39	55	94	0.60	99.99	5/22/78
5/20/78	"	2193	39	55	94	0.57	99.99	"
"	"	77-357	39	55	94	0.57	99.99	"
"	"	358	39	55	94	057	99.99	"
"	"	349	39	55	94	0.53	99.99	"
"	"	436	39	55	94	0.53	9999	"
"	"	433	39	55	94	0.53	99.99	"
5/22/78	"	76-2067	39	55	94	0.56	99.99	"
"	"	2071	39	55	94	0.56	99.99	"
"	"	77-355	39	55	94	0.56	99.99	"
"	"	76-2069	39	55	94	0.56	99.99	"
"	"	2068	39	55	94	0.56	9999	"
"	"	2063	39	55	94	056	99.99	"
"	"	2066	39	55	94	0.55	99.99	"

NSG-ACT-3A

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853667 Type of Carbon 563563

Customer Order No. G01-75-85 Spec. No. AP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
5/26/78	C-225	77-356	39	55	94	0.55	99.99	5/22/78
5/22/78	"	76-2064	39	55	94	0.55	99.99	"
5/26/78	"	2328	39	55	94	0.58	99.99	"
"	"	2335	39	55	94	0.58	9999	"
"	"	2338	39	55	94	0.58	9999	"
"	"	2350	39	56	95	0.57	99.99	"
"	"	2349	39	55	94	0.57	99.99	"
"	"	2305	39	55	94	0.57	99.99	"
5/19/78	C-222	2516	39	57	96	0.60	99.99	"
"	C-225	2682	39	55	94	0.60	99.99	"
5/22/78	"	2065	39	55	94	0.60	99.99	"
"	"	77-454	39	55	94	0.60	9999	"
"	"	340	39	55	94	0.60	99.99	"
"	"	343	39	55	94	0.60	99.99	"

HSG-ACT-3A

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853667 Type of Carbon 463563

Customer Order No. G01-25-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
5/19/78	C-222	76-2519	39	57	96	0.60	99.99	5/22/78
"	"	2517	39	57	96	0.60	99.99	"
"	"	2524	39	57	96	0.60	9999	"
"	"	2522	39	57	96	0.56	9999	"
"	C-225	2329	39	57	96	0.56	99.99	"
"	"	2351	39	56	95	0.56	99.99	"
"	"	2348	39	55	94	0.56	99.99	"
"	"	2678	39	55	94	0.56	99.99	"
"	"	2684	39	55	94	0.56	9999	"
"	"	2668	39	55	94	0.62	99.99	"
5/22/78	"	77-354	39	56	95	0.62	99.99	"
"	"	346	39	56	95	0.62	9999	"
"	"	76-2635	39	56	95	0.58	99.99	"
"	"	77-347	39	55	94	0.58	99.99	"

HSG Act - 34

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853667 Type of Carbon 463563

Customer Order No. G01-75-85 Spec. No. AP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
5/22/78	C-225	76-2631	39	55	94	0.58	99.99	5/22/78
"	"	77-342	39	55	94	0.60	99.99	"
"	"	344	39	56	95	0.60	99.99	"
"	"	76-2617	39	55	94	0.60	99.99	"
"	"	2625	39	55	94	0.58	99.99	"
"	"	2619	39	55	94	0.58	99.99	"
"	"	2621	39	55	94	0.58	99.99	"
5/24/78	"	2727	39	56	95	0.58	99.99	5/24/78
"	"	2731	39	56	95	0.60	99.99	"
"	"	2730	39	56	95	0.60	99.99	"
"	"	2708	39	56	95	0.60	99.99	"
"	"	2711	39	56	95	0.58	99.99	"
"	"	2712	39	56	95	0.58	99.99	"
"	"	2031	39	57	96	0.58	99.99	"

HSG-ACT-3A

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853667 Type of Carbon 463563

Customer Order No. G01-75-85 Spec. No. BP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
5/19/78	C-222	76-2710	39	56	95	0.58	99.99	5/24/78
"	"	2729	39	56	95	0.58	99.99	"

HSG-ACT-3A

Mech. Struct. Weld Piping

RECEIVING CHECKLIST/INSPECTION REPORT

5990
100 Carbon Filter
Identification No.

JOB NO. _____

P.O.NO. _____ REQUISITION NO. _____ ITEM NO. _____

SPECIFICATION: ENGINEERING GPU-3S-10 Rev. 0 ASTM _____

CLASS LEVEL: _____ VENDOR Mine Safety Appliances

MATERIAL DESCRIPTION: Carbon Filters (see attached quality shipment release)

CHECKLIST ITEMS	REQUIRED	VERIFIED
CHEM. & PHYS.	( )	_____
HYDRO	( )	_____
RT	( )	_____
MP	( )	_____
LP	( )	_____
UT	( )	_____
LETTER OF COMPLIANCE	(X)	A. Salcido
MARKINGS	( )	_____
SAMPLE INSP. PER AQL 2.5	( )	_____
OTHER Test Reports	(X)	A. Salcido

REMARKS: _____

MRT. NO. _____

HOLD TAG NO. _____ WAIVER TAG NO. _____

ACCEPT TAG NO. _____

— SEE ADDITIONAL CHECKLIST ITEMS ENTERED ON REVERSE OF CARD

QC RECEIVING INSPECTOR _____ 5-9-79
Signature Date

QA ENGINEER A. Salcido 5-8-79
Signature Date

POSITIVE IDENTIFICATION OF ITEMS: By serial numbers

VISUAL INSPECTION FOR SHIPPING DAMAGE No damage verified by GPUSC/QA upon installation)

SPECIFIC CHECKLIST ATTACHED ( )

OTHER REQUIRED CHECK-POINT ITEMS:

THOSE CARBON FILTER CELLS MARKED WITH A DOT IN THE ENCLOSED LIST WERE INSTALLED ON TOP OF THE AUX. BUILDING.

A. Salcido 5-8-79
QUALITY ASSURANCE Date

United engineers & constructors

DATE December 22, 1977 QUALITY SHIPMENT RELEASE

WPPSS NUCLEAR PROJECTS

☒ WNP - 1
☐ WNP - 4

CONTRACTOR Mine Safety Appliances Co.
LOCATION Evans City Pennsylvania
CONTRACT SPECIFICATION 9779-E-ADD. #5
DWG. NO See Remarks REV. ____
QUALITY CLASS: I II G (CIRCLE ONE)

ITEM DESCRIPTION Carbon Filter Cells
NO RELEASED THIS SHIPMENT 180
S/N(S) ____ MK NO(S) ____
See Remarks

NOTES:
1. THIS RELEASE DOES NOT CONSTITUTE FINAL ACCEPTANCE AND DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY ACCORDING TO CONTRACT.
2. UE&C QUALITY ASSURANCE RESERVES THE RIGHT TO WAIVE ANY VERIFICATION.
3. DISTRIBUTION: UE&C QA REPRESENTATIVE SENDS ONE COPY TO FIELD SUPT.-QA, ONE COPY TO QA HOME OFFICE AND PROVIDES ONE COPY TO VENDOR FOR TRANSMITTAL WITH DATA PACKAGE.

NOMENCLATURE: REVIEW OF A QUALITY REQUIREMENT AND ITS STATUS IS DENOTED BY: (A) FOR ACCEPTABLE, (W) FOR WAIVED [SEE REMARKS], (C) CONDITIONAL [SEE REMARKS], (F) FOR FOLLOWUP [SEE REMARKS], OR (NR) FOR NOT REQUIRED.

QUALITY REQUIREMENTS

A - VERIFICATION CHECKLIST

1. FINAL VISUAL EXAMINATION	N/A
2. FINAL DIMENSIONAL	N/A
3. COATING/LINING INSPECTION	N/A
4. CLEANLINESS INSPECTION	N/A
5. MARKING/IDENTIFICATION	A
6. NAMEPLATE/CODESTAMP	N/A
7. PACKAGING	A

B - DOCUMENTATION CHECKLIST (at time of Final Verification)

1. SUBMITTED DOCUMENTS	A
2. NCR's CLOSED.	N/A
3. CONTRACT WAIVERS APPROVED	A
4. VENDOR DRAWING STATUS (REVISION PRESENTED BY CONTRACTOR) See Remarks	A
5. DATA PACKAGE REVIEWED (AVAILABLE AND CORRECT)	A

C - CERTIFICATE OF COMPLIANCE: A

D - REMARKS: Carbon Filter Cells.

Unit Tag No	Dwg/Rev	QTY.
HPA-ACT-1	46-27-14 Rev 3	90
HPA-ACT-2	46-27-14 Rev 3	90

See attached sheets for S/N's

UE&C QUALITY ASSURANCE REPRESENTATIVE

I HEREBY CERTIFY THAT ABOVE APPLICABLE VERIFICATIONS WERE PERFORMED OR WITNESSED AND DOCUMENTATION CHECKED AS INDICATED.

Charles J. Stiteler 12/22/77

-2(6)- 1-77

MSA

Mine Safety Appliances Company • Evans City, Pennsylvania 16033

CERTIFICATE OF COMPLIANCE

Customer: Washington Public Power Supply System

Address: 3000 George Washington Way

Richland, Washington 99352

Certification Number 1111

Date: 12-20-77

Purchase Order No. G01-75-85

Contract No. 9779-18

MSA Job No. B-853670

It is hereby certified that all material and/or parts furnished comply with the terms and specifications of the subject Purchase Order and/or Contract number.

Exceptions as follows: None

Two Witnesses:

Ralph D. Rush

Conrad C. Geibel

(Authorized Signature)

Manager, Quality Assurance

(Title or Position in Firm)

The Mine Safety Appliances Company, Evans City Plant, Quality Control system conforms to the requirements of 10CFR50 Appendix B and ANSI 45.2.

Unit No. WNP-1 HPA-ACT-2

Serial No. See Attached Test Results

Quantity 90

Part No. A. 462714
B. 464065

Part Name A. Carbon Cell

B. Test Cel

Telephone: 412/538-3510

HPA - CT - 2

①	④	⑦	⑩
2752	2104	2499	310
2736	2103	2500	875
2745	2701	2744	862
2702	2688	2751	2681
2693	115	2502	2498
2737	114	2743	259
2686	2616	2734	367
2696	2614	2733	311

②	⑤	⑧	⑪
138	140	2700	2673
139	143	2699	2660
141	144	2670	2674
100	128	2658	2662
1741	2591	2653	2669
1740	097	2677	2659
098	099	2698	1744
133	104	2697	1742

③	⑥	⑨
2615	091	2461
2612	092	2643
2597	135	2647
2603	090	2504
108	096	2501
101	093	2496
2605	094	2494
2598	2685	2493

⑫ ~~105~~ 106

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CONTRACTOR WAIVER REQUEST

W.M. JAN 30 1976

TO: UNITED ENGINEERS & CONSTRUCTORS INC.	
ADDRESS: 2000 Market Street, Phila., Pa. 19103	Page 1 of 1
ATTN: Project Engineering Manager	Transmittal No. CWR-3
REFERENCE: WPPSS Nuclear Projects No. [X] 1 & [X] 4	Date Submitted 12/10/75
FROM: Mine Safety Appliances Co.	Contract No. 9779-18
ADDRESS: Evans City, Pa. 16033	REVIEW BY

The following request is made for: 1-30-76 DKM

[X] Design-Change [ ] Waiver Approval [ ] Repair Authorization

Drawing No. D-462713 for reference Title Gas Adsorber, Flat Bed, AACC-CS-8, Type II

Spec. Sect No. 15A - 3.5.6 Title Adsorbers

Submitted by: Walter Milich

Title: Contract Administrator

UE&C ACTIVITY	APPLICABLE	DATE COMMENTS RECEIVED
ELEC.	N/A	
MECH.	N/A	
MECH. SER.	[illegible]	[illegible]
STRUCT.	N/A	
I & C	N/A	
NUCLEAR	N/A	
Q.A.	N/A	
PURCH		
COST CON		
CONSTRUC.		

Specification/Drawing Requirement In AACC Standard CS-8, dimension of Carbon Cell is listed as 24 in. width x 30 in. long.

Change Requested/Justification Dimension of the Carbon Cell to be 23 in. wide x 31-1/2 in. long maintaining all other requirements of AACC Std. CS-8. Necessary to meet Seismic requirements within the maximum width specified for the Filter Train Units.

DOCUMENT [illegible] MAR [illegible] BY [illegible]

Cost Differential [X] NO [ ] YES Detail

Repair Procedure

DOCUMENT REVIEWED [illegible] 1975 BY [illegible]

Mine Safety Appliances Co.
Checked and Approved for Submittal
K. C. Reynolds
Project Manager

The condition listed on this request are: Approved [✓] Not Approved [ ] *

Based on the listed action:

[ ] Design-Change [ ] Waiver Approval [ ] Repair Authorization

* See attached comments

Cognizant Engineer [signature] Date 1-20-76

Quality Assurance Concurrence [signature] Date 1/21/76

Project Engineer Project Mgr [signature] Date 1-21-76

CONTRACTOR NOTE

If a waiver is authorized, an approved copy of this request must accompany material shipment.

POOR ORIGINAL

CONTRACTOR WAIVER REQUEST

K. Manley

TO: UNITED ENGINEERS & CONSTRUCTORS INC.	[illegible]
ADDRESS: 2000 Market Street, Phila., Pa 19103	Page 1 W.M. JUN 16 1977
ATTN: Project Engineering Manager	Transmittal No. CWR-11
REFERENCE: WPPSS Nuclear Projects No. 1 [X] 3 [X] 4	Date Submitted 5/18/77
FROM: Mine Safety Appliances Co.	Contract No. 9779-18
ADDRESS: Evans City, PA 16033	REVIEW BY

UE&C ACTIVITY	APPLICABLE	DATE COMMENTS RECEIVED
ELEC		
MECH		
MECH SER	N/C [illegible]	6-1-77
STRUCT.		
I & C		
NUCLEAR		
Q.A.		
PURCH		
COST CON		
CONSTRUC		

The following request is made for:

☐ Design-Change ☒ Waiver Approval ☐ Repair Authorization

Drawing No 18-3.5.6 / 22-3.5.8.4 Title

Spec. Sect. No. 15A-37-5.2.3.5 / 39-5.3.2 Title Adsorber Test

Submitted by: W. Milich

Title: Contract Administrator

Specification/Drawing Requirement: Specifies Freon 112 refrigerant as tracer gas for Leak Testing of carbon adsorbers.

Change Requested/Justification: Change all Specification tracer gas requirements to Freon-11 since Freon 112 is no longer commercially available.

DOCUMENT REVIEWED DEC 28 1977

Cost Differential ☒ NO ☐ YES Detail

Repair Procedure

FILTER SALES JUN 14 1977

Mine Safety Appliances Co. Checked and Approved for Submittal

[signature]

Project Manager

The condition listed on this request are: Approved ☒ Not Approved ☐ •

Based on the listed action. Disposition by C.O. ☐

☐ Design-Change ☒ Waiver Approval ☐ Repair Authorization

• See attached comments

Cognizant Engineer [signature] Date 6/1/77

Quality Assurance Concurrence [signature] Date 6-7-77

Project Engineer Project Mgr [signature] Date 6/13/77

CONTRACTOR NOTE

If a waiver is authorized, an approved copy of this request must accompany material shipment.

Reviewed with & approved by WPPSI, F. [illegible] Report F-0614F [signature] 6-14-77

POOR ORIGINAL

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. 83-53670 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
12/8/77	C-216	77-367	39	56	95	0.58	99.99	12/12/77
"	"	875	39	56	95	0.58	9999	"
"	"	862	39	56	95	0.60	99.99	"
"	"	310	39	56	95	0.60	9999	"
12/9/77	"	311	39	57	96	0.60	99.99	"
"	"	259	39	58	97	0.57	99.99	"
"	"	2662	39	56	95	0.55	99.99	12/16/77
12/15/77	C-217	2669	39	56	95	0.55	99.99	"
"	"	2659	39	56	95	0.55	9999	"
"	"	2674	39	56	95	0.55	9999	"
"	"	2660	39	56	95	0.55	99.99	"
"	"	2673	39	55	94	0.55	9999	"
"	"	2681	39	55	94	0.58	99.99	"
"	"	2653	39	55	94	0.58	99.99	"

HPA-ACT-2

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853670 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. DP 1032

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
12/15/77	C-217	76-2677	39	57	96	0.58	99.99	12/16/77
"	"	2698	39	58	97	0.57	99.99	"
"	"	2697	39	57	96	0.57	99.99	"
"	"	2700	39	57	96	0.57	99.99	"
"	"	2699	39	56	95	0.60	99.99	"
"	"	2670	39	57	96	0.60	99.99	"
"	"	2658	39	57	96	060	9999	"
"	"	2661	39	57	96	0.55	9999	"
"	"	2643	39	57	96	0.55	9999	"
"	"	2647	39	57	96	0.55	99.99	"
"	"	2504	39	56	95	0.54	99.99	"
"	"	2501	39	56	95	0.54	99.99	"
"	"	2496	39	57	96	0.54	99.99	"
"	"	2498	39	57	96	0.56	99.99	"

HPA-ACT-2

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853670 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. DP-1032

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
12/15/77	C-217	76-2494	39	57	96	0.56	9999	12/16/77
12/19/77	"	2493	39	57	96	0.56	99.99	12/19/77
"	"	2499	39	58	97	0.56	99.99	"
"	"	2500	39	58	97	0.56	99.99	"
"	"	2502	39	57	96	0.58	99.99	"
"	"	2743	39	58	97	0.58	99.99	"
"	"	2734	39	58	97	0.58	99.99	"
"	"	2744	39	59	98	0.60	99.99	"
"	"	2751	39	59	98	0.60	99.99	"
"	"	2733	39	59	98	0.60	99.99	"
"	"	2752	39	57	96	0.56	99.99	"
"	"	2736	39	56	95	0.56	99.99	"
"	"	2737	39	56	95	0.56	99.99	"
"	"	2745	39	56	95	0.55	99.99	"

HPA-ACT-2

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853670 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. DF-1032

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
12/19/77	C-217	76-2702	39	56	95	0.55	99.99	12/19/77
"	"	2693	39	56	95	0.55	99.99	"
"	"	2686	39	57	96	0.60	99.99	"
"	"	2696	39	58	97	0.60	9999	"
"	"	2685	39	57	96	0.60	99.99	"
"	"	2688	39	57	96	0.58	99.99	"
"	"	2701	39	57	96	0.58	99.99	"
"	"	2703	39	57	96	0.58	99.99	"
"	"	2704	39	57	96	0.56	99.99	"
"	"	77-090	39	56	95	0.56	99.99	"
"	"	135	39	56	95	0.56	99.99	"
"	"	092	39	57	96	0.58	99.99	"
"	"	091	39	57	96	0.58	99.99	"
"	"	094	39	57	96	0.58	99.99	"

HPA-ACT-2

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. 8853670 Type of Carbon 463563

Customer Order No. 601 75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
12/19/77	C-217	77-093	39	58	97	0.60	99.99	12/19/77
"	"	096	39	58	97	0.60	99.99	"
"	"	115	39	57	96	0.60	99.99	"
"	"	116	39	58	97	0.58	99.99	"
"	"	76-2616	39	58	97	0.58	99.99	"
"	"	2614	39	58	97	0.58	99.99	"
"	"	2615	39	59	98	0.58	99.99	"
"	"	2612	39	58	97	0.58	99.99	"
"	"	2597	39	58	97	0.58	99.99	"
"	"	2603	39	57	96	0.60	99.99	"
"	"	2598	39	58	97	0.60	99.99	"
"	"	2605	39	58	97	0.60	99.99	"
"	"	2591	39	59	98	0.60	99.99	"
"	"	77-098	39	58	97	0.60	99.99	"

HPA-ACT-2

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853670 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. DP 1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
12/19/77	C-217	77-097	39	57	96	0.60	99.99	12/19/77
"	"	099	39	58	97	0.55	99.99	"
"	"	104	39	56	95	0.55	99.99	"
"	"	100	39	58	97	0.55	99.99	"
"	"	106	39	59	98	0.58	9999	12/20/77
"	"	105	39	58	97	0.58	9999	"
"	"	108	39	58	97	0.58	99.99	"
"	"	101	39	58	97	0.60	99.99	"
"	"	133	39	59	98	0.60	99.99	"
"	"	138	39	58	97	0.60	99.99	"
"	"	139	39	57	96	0.57	99.99	"
"	"	141	39	57	96	0.57	99.99	"
"	"	140	39	57	96	0.57	99.99	"
"	"	143	39	57	96	0.56	99.99	"

HAD-ACT-2

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853670 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. DP 1052

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
12/19/77	C-217	77-144	39	57	96	0.56	99.99	12/20/77
"	"	128	39	57	96	0.56	99.99	"
12/20/77	"	76-1740	39	57	96	0.57	99.99	"
"	"	1741	39	56	95	0.57	99.99	"
"	"	1744	39	56	95	0.57	99.99	"
"	"	1742	39	57	96	0.57	99.99	"

HAA-ACT-2

MSA

Mine Safety Appliances Company • Evans City, Pennsylvania 16033

463563 IMPREGNATED CARBON

BATCH NO. C-216

FOR

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

WPPSS NUCLEAR PROJECTS NO. 1 & 4

	Requirements	Actual
#6 ASTM E-11 Sieve	0.0%	0.0%
#8 ASTM E-11 Sieve	5.0% Max.	1.8%
#12 ASTM E-11 Sieve	40% - 60%	53.1%
#16 ASTM E-11 Sieve	40% - 60%	43.2%
Pan	5.0% Max.	1.7%
Apparent Density	0.5 ± 0.05 g/cc	.536 g/cc.
Iodine Collection Test	0.1% Max.	< 0.1%
Wash Test	80% Min.	82.9%
Ignition Test	340°C Min.	432°C
Entrapment Efficiency Test		
(1) Methyl Iodide CH_3I_{131} 212°F, 95% R.H.	95% Min.	98.70%
(2) Iodine I_{131} 212°F, 95% R.H.	99.9% Min.	99.99%

Date of Report Nov. 15, 1977

Prepared By Conrad C. Geibel

Telephone: 412/538-3510

Mech. Struct. Weld Piping

RECEIVING CHECKLIST/INSPECTION REPORT

16 of 72
Carbon Filters
Identification No.

JOB NO. _____

P.O. NO. _____ REQUISITION NO. _____ ITEM NO. _____

SPECIFICATION: ENGINEERING GDD-BS-10 Rev. 2 ASTM _____

CLASS LEVEL: _____ VENDOR Mine Safety Appliances

MATERIAL DESCRIPTION: Carbon Filter Cells (see attached quality shipment release)

CHECKLIST ITEMS	REQUIRED	VERIFIED	REMARKS:
CHEM. & PHYS.	( )		
HYDRO	( )		
RT	( )		
MP	( )		
LP	( )		
UT	( )		
LETTER OF COMPLIANCE	(X)	A. Salcido	
MARKINGS	( )		
SAMPLE INSP. PER AQL 2.5	( )		
OTHER Test Reports	(X)	A. Salcido	

MRT. NO.

HOLD TAG NO. WAIVER TAG NO.

ACCEPT TAG NO.

— SEE ADDITIONAL CHECKLIST ITEMS ENTERED ON REVERSE OF CARD

QC RECEIVING INSPECTOR _____ 5-9-79
Signature Date

QA ENGINEER Antonio Salcido 5-8-79
Signature Date

POSITIVE IDENTIFICATION OF ITEMS: By serial numbers

VISUAL INSPECTION FOR SHIPPING DAMAGE No damage (verified by GPUSC/QA upon installation)

SPECIFIC CHECKLIST ATTACHED ( )

OTHER REQUIRED CHECK-POINT ITEMS:

THOSE CARBON FILTER CELLS MARKED WITH A DOT IN THE ENCLOSED LIST WERE INSTALLED ON TOP OF THE AUX. BUILDING.

A. Salcido 5-8-79
QUALITY ASSURANCE Date

Mine Safety Appliances Company · Evans City, Pennsylvania 16033

463563 IMPREGNATED CARBON

BATCH NO. C-217

FOR

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

WPPSS NUCLEAR PROJECTS NO. 1 & 4

	Requirements	Actual
#6 ASTM E-11 Sieve	0.0%	0.0 %
#8 ASTM E-11 Sieve	5.0% Max.	1.5 %
#12 ASTM E-11 Sieve	40% - 60%	51.5 %
#16 ASTM E-11 Sieve	40% - 60%	45.3 %
Pan	5.0% Max.	1.2 %
Apparent Density	0.5 ± 0.05 g/cc	0.547 gm/cc
Iodine Collection Test	0.1% Max.	< 0.1 %
Wash Test	80% Min.	82.9%
Ignition Test	340°C Min.	432° C
Entrapment Efficiency Test		
(1) Methyl Iodide CH_3I_{131} 212°F, 95% R.H.	95% Min.	99.50%
(2) Iodine I_{131} 212°F, 95% R.H.	99.9% Min.	99.99%

Date of Report 12-16-77

Prepared By C Gilbert

Telephone: 412/538-3510

FORM 4557
REV 3/78

United engineers & constructors

PROJECT: WPPSS

UNIT(S): GNP-1

DATE May 30, 1978

QUALITY SHIPMENT RELEASE

CONTRACTOR: Mine Safety Appliances Co.

LOCATION: Evans City, Pennsylvania

CONTRACT/PO: 9779-18 + add #5

DWG. NO: 46-27-14 REV: 3

QUALITY/SAFETY CLASS: I, II, & G

ITEM DESCRIPTION: Carbon Filter Cells

NO. RELEASED THIS SHIPMENT: 144

S/N(S): _____ MK NO(S): _____

See Remarks & Attachment

NOTES:
1. THIS RELEASE FOR SHIPMENT DOES NOT CONSTITUTE FINAL ACCEPTANCE AND DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY ACCORDING TO THE CONTRACT.
2. UE&C QUALITY ASSURANCE RESERVES THE RIGHT TO WAIVE ANY VERIFICATION.
3. DISTRIBUTION: UE&C QA REPRESENTATIVE SENDS ONE COPY TO FIELD SUPERINTENDENT-QA AND SENDS ONE COPY TO QA HOME OFFICE AND PROVIDES ONE COPY TO VENDOR FOR TRANSMITTAL WITH DATA PACKAGE.

NOMENCLATURE: REVIEW OF A QUALITY REQUIREMENT AND ITS STATUS IS DENOTED BY: (A) FOR ACCEPTABLE, (W) FOR WAIVED [SEE REMARKS], (C) FOR CONDITIONAL [SEE REMARKS], (F) FOR FOLLOWUP [SEE REMARKS], OR (NR) FOR NOT REQUIRED.

QUALITY REQUIREMENTS

A-VERIFICATION CHECKLIST

1. FINAL VISUAL EXAMINATION (WORKMANSHIP)	N/A
2. FINAL DIMENSIONAL	N/A
3. COATING/LINING	N/A
4. LUBRICANTS/OILS	N/A
5. CLEANLINESS	N/A
6. ELECTRICAL INSTALLATION	N/A
7. MARKING/IDENTIFICATION	A
8. NAMEPLATE/CODESTAMP	N/A
9. PACKAGING	A

B-DOCUMENTATION CHECKLIST
(AT TIME OF FINAL VERIFICATION)

1. SUBMITTED DOCUMENTS	A
2. NCR's CLOSED	N/A
3. CHANGE ORDERS APPROVED	A
4. VENDOR DRAWING STATUS (REVISION PRESENTED BY CONTRACTOR)	A Rev 3.
5. DATA PACKAGE (INCLUDING PHYSICAL PROPERTY DATA) REVIEWED (AVAILABLE AND CORRECT)	A

C-CERTIFICATE OF CONFORMANCE: A

D-REMARKS: Carbon Filter Cells.

Unit Tag No	Qty
HSG-ACT-3A	72
HSG-ACT-3B	72

Total 144 Carbon Filter Cells. See attached lists for Serial Numbers.

UE&C QUALITY ASSURANCE REPRESENTATIVE

I HEREBY CERTIFY THAT ABOVE APPLICABLE VERIFICATIONS WERE PERFORMED OR WITNESSED AND DOCUMENTATION CHECKED AS INDICATED.

Joseph S. Vuticky
SIGNATURE

5/30/78
DATE

MSA

Mine Safety Appliances Company · Evans City, Pennsylvania 16033

CERTIFICATE OF COMPLIANCE

Customer: Washington Public Power Supply System

Address: 3000 George Washington Way

Richland, Washington 99352

Certification Number 1224

Date: 5-30-78

Purchase Order No. G01-75-65

Contract No. 9779-18

MSA Job No. B-853667

It is hereby certified that all material and/or parts furnished comply with the terms and specifications of the subject Purchase Order and/or Contract number.

Exceptions as follows: None

Two Witnesses:

Ralph G. Rush

C. E. Lman

(Authorized Signature)

Manager, Quality Assurance
(Title or Position in Firm)

The Mine Safety Appliances Company, Evans City Plant, Quality Control system conforms to the requirements of 10CFR50 Appendix B and ANSI 45.2.

Unit No. WNP-1 HSG-ACT-3B

Part No. A. 462714
B. 464065

Serial No. See Attached Test Results

Part Name A. Carbon Cell
B. Test Cell

Quantity 72

Telephone: 412/538-3510

5/25/78 72 pcs.

2" 462-714 HSG-ACT-3B BT53667

76-2058	76-2620	76-3000
77-486	76-2060	76-2602
77-451	76-2057	76-2627
76-2716	76-2055	76-2649
76-2059	76-2056	76-2592
76-2610	76-2054	76-2645
76-2037	76-2713	76-2644
76-2029	76-2728	76-2030
76-2624	76-2250	76-2032
76-2061	76-2017	76-2035
76-2062	76-2034	76-2590
76-2721	76-2218	76-2594
76-2715	76-2225	76-2594
76-2639	76-2251	76-2611
76-2623	76-2209	76-2600
76-2790	76-2211	76-2604
76-2630	76-2217	76-2651
76-2714	76-2520	76-2654
76-2722	76-2033	76-2632
76-2626	76-2210	76-2618
76-2521	76-2655	
76-2513	76-2667	
76-2715	76-2646	
76-2664	76-2650	
76 2663	76-2622	
76-2665	76-2640	

CONTRACTOR WAIVER REQUEST

W.M. JAN 30 1976

TO: UNITED ENGINEERS & CONSTRUCTORS INC.

ADDRESS: 2000 Market Street, Phila., Pa. 19103

ATTN: Project Engineering Manager

REFERENCE: WPPSS Nuclear Projects No. 1 & 4 [A] [A]

FROM: Mine Safety Appliances Co.

ADDRESS: Evans City, Pa. 16033

Page 1 of 1

Transmittal No. CWR-3

Date Submitted 12/10/75

Contract No. 9770-19

REVIEW BY

U.E. & C. ACTIVITY	APPLICABLE	DATE COMMENTS RECEIVED
ELEC.	N/A	
MECH	N/A	
MECH SER	[illegible]	
STRUCT.	N/A	
I & C	N/A	
NUCLEAR	N/A	
Q.A.	N/A	
PURCH		
COST CON		
CONSTRUC.		

The following request is made for: 1-30-76 DLM

[X] Design-Change [ ] Waiver Approval [ ] Repair Authorization

Drawing No. D-462713 for reference Title Gas Adsorber, Flat Bed, AACC-CS-8, Type II

Spec. Sect No. 15A - 3.5.6 Title Adsorbers

Submitted by: Walter Milich

Title: Contract Administrator

Specification/Drawing Requirement In AACC Standard CS-8, dimension of Carbon Cell is listed as 24 in. width x 30 in. long.

Change Requested/Justification Dimension of the Carbon Cell to be 23 in. wide x 31-1/2 in. long maintaining all other requirements of AACC Std. CS-8. Necessary to meet Seismic requirements within the maximum width specified for the Filter Train Units.

DOCUMENT REVIEWED
MAR 28 1976
By: JSV

Cost Differential, [X] NO [ ] YES Detail

Repair Procedure

Mine Safety Appliances Co.
Checked and Approved for Submittal
W.C. Reynolds
Project Manager

DOCUMENT REVIEWED
[illegible]

The condition listed on this request are: Approved [✓]
Not Approved [ ] *

Based on the listed action:

[ ] Design-Change [ ] Waiver Approval [ ] Repair Authorization

* See attached comments

Cognizant Engineer L. V. Pahl Date 1-20-76

Quality Assurance Concurrence [illegible] Date 1/21/76

Project Engineer Project Mgr. [illegible] Date 1-21-76

CONTRACTOR NOTE

If a waiver is authorized, an approved copy of this request must accompany material shipment.

D. K. Manley

CONTRACTOR WAIVER REQUEST

TO: UNITED ENGINEERS & CONSTRUCTORS INC.

ADDRESS: 2000 Market Street, Phila., Pa 19103

ATTN: Project Engineering Manager

REFERENCE: WPPSS Nuclear Projects No 1 [X] & 4 [X]

FROM: Mine Safety Appliances Co.

ADDRESS: Evans City, PA 16033

MSA (3)

Page 1 W.M. JUN 16 1977

Transmittal No. CWR-11

Date Submitted 5/18/77

Contract No. 9779-18

Review by

UE & C ACTIVITY	APPLICABLE	DATE COMMENTS RECEIVED
ELEC.		
MECH.		
MECH. SER	N/C KEP	6-1-77
STRUCT.		
I & C		
NUCLEAR		
Q.A.		
PURCH		
COST CON		
CONSTRUC		

The following request is made for:

☐ Design-Change ☒ Waiver Approval ☐ Repair Authorization

Drawing No. 18-3.5.6 / 22-3.5.8.4 Title

Spec. Sect. No. 15A-37-5.2.3.5 / 39-5.3.2 Title Adsorber Test

Submitted by: W. Milich

Title: Contract Administrator

Specification/Drawing Requirement: Specifies Freon 112 refrigerant as tracer gas for Leak Testing of carbon adsorbers.

Change Requested/Justification: Change all Specification tracer gas requirements to Freon-11 since Freon 112 is no longer commercially available.

DOCUMENT REVIEWED MAR 26 1979 By JSV UE&C

Cost Differential ☒ NO ☐ YES Detail

Repair Procedure

FILTER SALES JUN 18 1977 M.S.A.

Mine Safety Appliances Co.
Checked and Approved for Submittal
K.E. Reynolds
Project Manager

The condition listed on this request are: Approved ☒ Not Approved ☐ *

Based on the listed action, Disposition by C.O. ☐

☐ Design-Change ☒ Waiver Approval ☐ Repair Authorization

* See attached comments

Cognizant Engineer [signature] Date 6/1/77

Quality Assurance Concurrence [signature] Date 6-7-77

Project Engineer Project Mgr [signature] Date 6/13/77

CONTRACTOR NOTE

If a waiver is authorized, an approved copy of this request must accompany material shipment.

Reviewed with & APPROVED By WPPSS, F. MATZ - APPRL #0614F [signature] 6-14-77

POOR ORIGINAL

Mine Safety Appliances Company • Evans City, Pennsylvania 16033

463563 IMPREGNATED CARBON

BATCH NO. C-222

FOR

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

WPPSS NUCLEAR PROJECTS NO. 1 & 4

	Requirements	Actual
#6 ASTM E-11 Sieve	0.0%	0.0%
#8 ASTM E-11 Sieve	5.0% Max.	1.3%
#12 ASTM E-11 Sieve	40% - 60%	51.4%
#16 ASTM E-11 Sieve	40% - 60%	45.2%
Pan	5.0% Max.	1.6%
Apparent Density	0.5 ± 0.05 g/cc	0.546 gm/cc
Iodine Collection Test	0.1% Max.	< 0.1%
Wash Test	80% Min.	82.9%
Ignition Test	340°C Min.	407°C
Entrapment Efficiency Test		
(1) Methyl Iodide CH_3I_{131} 80°F, 95% R.H.	95% Min.	99.22%
(2) Iodine I_{131} 212°F, 95% R.H.	99.9% Min.	99.99%

Date of Report 4-19-78

Prepared By C Gilbert

DOCUMENT REVIEWED
MAY 30 1978
BY JCV
JFS

Telephone: 412/538-3510

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853667 Type of Carbon 463563

Customer Order No. G01-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
5/19/78	C-222	76-2521	39	56	95	0.60	99.99	5/23/78
"	"	2513	39	56	95	0.60	99.99	"
"	"	2715	39	56	95	0.60	99.99	"
"	"	2714	39	56	95	0.60	99.99	5/24/78
"	"	2722	39	56	95	0.60	99.99	"
5/18/78	"	2626	39	56	95	0.60	99.99	"
"	"	2623	39	56	95	0.58	9999	"
"	"	2790	39	56	95	0.58	99.99	"
"	"	2630	39	56	95	0.58	99.99	"
"	"	2721	39	56	95	0.56	99.99	"
"	"	2718	39	56	95	0.56	9999	"
"	"	2639	39	56	95	0.56	99.99	"
"	"	2624	39	56	95	0.58	99.99	"
"	"	2061	39	56	95	0.58	99.99	"

Mine Safety Appliances Company · Evans City, Pennsylvania 16033

463563 IMPREGNATED CARBON

BATCH NO. C-225

FOR

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

WPPSS NUCLEAR PROJECTS NO. 1 & 4

	Requirements	Actual
#6 ASTM E-11 Sieve	0.0%	0.0%
#8 ASTM E-11 Sieve	5.0% Max.	1.7%
#12 ASTM E-11 Sieve	40% - 60%	48.0%
#16 ASTM E-11 Sieve	40% - 60%	48.0%
Pan	5.0% Max.	1.4%
Apparent Density	0.5 ± 0.05 g/cc	0.55 g/cc
Iodine Collection Test	0.1% Max.	< 0.1%
Wash Test	80% Min.	82.9%
Ignition Test	340°C Min.	403°C
Entrapment Efficiency Test		
(1) Methyl Iodide CH_3I_{131} 212°F, 95% R.H.	95% Min.	98.42%
(2) Iodine I_{131} 212°F, 95% R.H.	99.9% Min.	99.98%

Date of Report 5-18-78

Prepared By C Weibel

Telephone: 412/538-3510

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853667 Type of Carbon 463563

Customer Order No. G01-75-85 Spec. No. DP-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
5/18/78	C-222	76-2062	39	56	95	0.58	99.99	5/24/78
"	"	2716	39	56	95	0.58	99.99	"
"	"	2520	39	56	95	0.60	99.99	"
5/24/78	C-225	2033	39	55	94	0.60	99.99	"
"	"	2210	39	56	95	0.60	99.99	"
5/23/78	"	2030	39	56	95	0.66	99.99	5/23/78
"	"	2032	39	56	95	0.66	99.99	"
"	"	2035	39	56	95	0.66	99.99	"
"	"	2610	39	55	94	0.62	99.98	"
"	"	2028	39	55	94	0.62	99.98	"
"	"	2029	39	56	95	0.62	99.98	"
5/18/78	C-222	2059	39	56	95	0.60	9999	"
"	"	2618	39	56	95	0.60	99.99	"
"	"	2632	39	56	95	0.60	99.99	"

CARBON CELLS DATA SHEET

Customer WPPSS MSA Job No. B853662 Type of Carbon 463563

Customer Order No. 601-75-85 Spec. No. DF-1082

Date of Fill	Carbon Lot No.	Cell No.	Cell Weight Empty (lbs.)	Carbon Weight (lbs.)	Total Weight (lbs.)	Pressure Drop (ΔP)	Freon Test (%)	DATE TESTED
5/18/78	C-222	77-481	39	57	96	0.60	99.99	5/23/78
"	"	486	39	56	95	0.60	99.99	"
"	"	76-2058	39	56	95	0.60	9999	"
"	"	2055	39	56	95	0.60	99.99	"
"	"	2056	39	56	95	0.60	99.99	"
"	"	2054	39	57	96	0.60	99.99	"
"	"	2620	39	56	95	0.58	99.99	"
"	"	2060	39	56	95	0.58	99.99	"
"	"	2057	39	56	95	0.58	99.99	"
5/19/78	"	2664	39	57	96	0.64	9999	"
"	"	2663	39	57	96	0.64	9999	"
"	"	2665	39	57	96	0.64	9999	"
5/23/78	C-225	2592	39	55	94	0.58	9999	"
"	"	2648	39	55	94	0.58	99.99	"