TENNESSEE VALLEY AUTHORITY
Division of Nuclear Operations

SECONDARY CONTAINMENT LEAK RATE TEST

BROWNS FERRY NUCLEAR PLANT

UNIT 3

CONDUCTED AUGUST 22, 1979

Submitted to
The United States Nuclear Regulatory Commission
Pursuant to
Facility Operating License Number DPR-68

1.0 Browns Ferry Nuclear Plant Unit 3 Secondary Containment Leak Rate Test Report

2.0 Purpose

This report describes the results and analysis of the test data taken during leak rate testing of the Browns Ferry Nuclear Plant Unit 3 secondary containment pursuant to Technical Specification 4.7.C.1.b prior to each refueling outage.

3.0 Procedure

The attached surveillance instruction, SI 4.7.C-1, outlines the procedures followed during secondary containment leak rate testing.

4.0 Data

The attached surveillance instruction data sheets list the following test data:

(1) Standby gas treatment system flow rate: 8,600 scfm

(2) Reactor building differential pressures:

Unit 3 reactor zone: -0.25" H_2O

Refueling zone average: -0.25" H_2O

(3) Wind Speed: 4 mph

(4) Wind Direction: South

5.0 Analysis and Interpretation

Technical Specification 4.7.C.1.b requires that secondary containment capability to maintain 1/4-inch water vacuum under calm (<5 mph) wind conditions with a total system inleakage rate of not more than 12,000 scfm shall be demonstrated at each refueling outage prior to refueling. Following shutdown of Unit 3 on August 20, 1979, the secondary containment for the common refuel zone and the Unit 3 reactor zone were leak rate tested. The results show that Unit 3 reactor zone and refuel zones are capable of maintaining <-.25" H_2O with less than the allowed flow.

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT

SURVEILLANCE INSTRUCTION 4.7.C

SECONDARY CONTAINMENT

UNIT 1, 2, OR 3

Approved: Plant Superintendent

Date: August 21, 1979

General Revision

[illegible] ment

[illegible]

[illegible] ply with the requirements of portions of technical [illegible] The following table lists the requirements satisfied by this [illegible]

[illegible]	Tech. Spec. Referenced	Surveillance Requirements
[illegible]	[illegible].b	Demonstrate the capability of secondary containment to maintain - 1/4" water pressure with a system inleakage of not more than 12,000 cfm under calm wind conditions ≤ 5 mph. SI 4.7.C-1 will be used to satisfy this requirement.
[illegible]	[illegible]	Isolate the affected zone from the other zones and demonstrate secondary containment capability to maintain - 1/4" water pressure under calm wind conditions using the SGTS. SI 4.7.C-1 will be used to satisfy the requirements for the zones.

[illegible] into four zones, each of which can be isolated [illegible] the unit 1 reactor zone (U1RZ), the unit 2 Reactor [illegible] zone (U3RZ), and the refueling zone (RFZ) which is [illegible].

[illegible] written to use the SGTS fans A and C, B and C, [illegible] demonstrate that at a flow of ≤ 12 000 cfm all [illegible] zones can be maintained at a static pressure [illegible] conditions. Manual isolation of the zones will be [illegible] help prevent steam line tunnel temperature increases, [illegible]

SI 4.7.C - Secondary Containment

Description (Continued)

SI 4.7.C-1 will be used to demonstrate secondary containment capability. This is to be accomplished by isolating the secondary containment for the reactor building or the required zones, starting the standby gas treatment trains, adjusting the flow to less than the allowable flow and verifying the static pressure of the tested zone(s) is -1/4" H_2O (or less as required by Table 1 for varying wind speeds). This procedure will normally be used to test the secondary containment capability of the reactor building prior to refueling.

Note: Wind speed and direction measurements will be taken from the site meteorological tower instrumentation and will be assumed to be acceptably accurate representation for the conditions at the reactor building.

CAUTION: This testing should be limited to 30 minutes if at all possible since the main steam line tunnel temperatures may trip an operating unit.

SI 4.7.C - Secondary Containment Capability

1. PURPOSE

This procedure is used to isolate the zones to be leak tested and to verify secondary containment capability to maintain -1/4" H_2O with allowable system in-leakage.

2. REFERENCES

2.1 Technical specifications for units 1, 2, and 3, Section 4.7.C.

2.2 The following drawings:

Number	Revision	Number	Revision
45N614-5	5	47W610-64	15
45N614-6	5	47W610-65	15

2.3 FSAR Volume 5, Section 12.2.2.9

3. PREREQUISITES

3.1 Notify each unit operator and assistant shift engineer such that they may communicate and be aware of the ventilation and SGTS status during this test.

3.2 Verify that the reactor building ventilation system is in a normal operational status per OI 30.

3.3 Verify that the SGTS is in standby readiness per OI 65.

3.4 Verify that each units' main steam line tunnel temperature is not above 150° F.

3.5 Verify switch 16A-S34 is not in DRYWELL BYPASS or TORUS BYPASS on each unit or the unit that is to be tested.

SI 4.7.C-1 Secondary Containment Capability

3. PREREQUISITES (Continued)

3.6 Station a man at the Reactor Building 480V Vent Board in case any breakers need to be reset during this test, and in the SGTS building to adjust manual dampers.

3.7 Set up communication between panel 9-25-1 and 9-25-2 and the following panels:

25-219-1
25-215-2
25-215-3
25-213-1
25-213-2
25-213-3

3.8 Verify the following process instruments to be within a current calibration period.

FI-65-50	1-PdIC-64-2
FI-65-71	2-PdIC-64-2
1-PdIC-64-1	3-PdIC-64-2
2-PdIC-64-1	
3-PdIC-64-1	

3.9 Verify the inboard equipment access lock doors closed with seals inflated.

3.10 Verify that a drywell or suppression chamber purge is not in process or planned during this test.

3.11 Verify on Data Sheet SI 4.7.C-1 that each of the doors are closed for the respective zones to be tested or the doors indicated by number (See Table 3.11 of Data Sheet SI 4.7.C-1) for all four zones.

4. PRECAUTIONS

4.1 Do not allow the main steam line tunnel temperature on any unit in operation to exceed 160° F. If this temperature is approached to within 10° F, stop the test and reestablish normal ventilation per OI 30 or provide another means for ventilating the main steam line tunnel to prevent a unit trip (trip point is 186° F).

4.2 Attempt to restrict testing time to 30 minutes.

5.0 LIMITATIONS AND ACTIONS

5.1 If this test is being performed prior to refueling, notify the Results Section Supervisor or Reactor Engineer to review results prior to

SI 4.7.C-1 - Secondary Containment Capabilities

6. PROCEDURE

6.1 Initial and perform the indicated sections on the configuration to be tested on Data Sheet SI 4.7.C-1 and perform steps indicated below. Sections 6.12 and 6.13 must be performed in addition to the sections listed below for the applicable zone.

6.1.1 U1RZ - Perform section 6.2 and section 6.5.

6.1.2 U2RZ - Perform section 6.2 and section 6.6.

6.1.3 U3RZ - Perform section 6.2 and section 6.7.

6.1.4 RFZ - Perform section 6.3 and section 6.8.

6.1.5 U1RZ and RFZ - Perform sections 6.2, 6.3 and section 6.9.

6.1.6 U2RZ and RFZ - Perform sections 6.2, 6.3 and section 6.10.

6.1.7 U3RZ and RFZ - Perform sections 6.2, 6.3 and section 6.11.

6.1.8 Reactor Building - Perform section 6.2 for each RZ, and section 6.3 for the RFZ and section 6.4.

6.2 Manual Isolation of a Reactor Zone - Perform only as required per section 6.1.
NOTE: HS-64-117, HS-64-120, HS-64-119, & HS-64-122 are spring return to normal.

6.2.1 Place HS-64-117 (Panel 9-25) in the TEST position for the reactor zone to be isolated. (Inboard and common valves)

6.2.2 Place HS-64-120 (Panel 9-25) in the TEST position for the reactor zone to be isolated. (Outboard valves)

6.2.3 Start SGTS trains A and B in accordance with OI 65 and verify actions and/or take data as indicated on Data Sheet SI 4.7.C-1 for the reactor zone that is being isolated.

6.3 Manual Isolation of the Plant Refueling Zone - Perform only as required per section 6.1.

6.3.1 Place HS-64-119 (Panel 9-25-1) in the TEST position. (Inboard and common valves)

SI 4.7.C-1 - Secondary Containment Capabilities

6. PROCEDURE (Continued)

6.3 Manual Isolation of the Plant Refueling Zone (Continued)

6.3.2 Place HS-64-122 (Panel 9-25-1) in the TEST position. (Outboard valves)

6.3.3 Start SGTS trains A and B, if not already running, in accordance with OI 65 and verify actions and/or take data as indicated on Data Sheet SI 4.7.C-1 for the refueling zone.

6.4 Secondary Containment Capability - Reactor Building (All Zones)

NOTE: This section is to verify that the secondary containment is capable of maintaining a -1/4" H_2O with a system inleakage of $\leq$ 12,000 cfm for the entire reactor building.

6.4.1 Adjust the total flow indicated on FI-65-50 and FI-65-71 (panel 9-25-2) to $\leq$ 12,000 cfm for entire reactor building by closing a SGTS fan discharge damper or if two fans are running it may be necessary to shut one fan off.

NOTE: Let the flow stabilize for 5 minutes before the next step.

6.4.2 Record flows indicated on FI-65-50 and FI-65-71 (panel 9-25-2) and total on Data Sheet SI 4.7.C-1.

6.4.3 Record the following static pressures and the air temperatures at the differential pressure indicator locations.

Zone	Instrument	Panel
U1RZ	1-PdIC-64-2	1-25-213
U2RZ	2-PdIC-64-2	2-25-213
U3RZ	3-PdIC-64-2	3-25-213
U1RFZ	1-PdIC-64-1	1-25-219
U2RFZ	2-PdIC-64-1	2-25-215
U3RFZ	3-PdIC-64-1	3-25-215

6.4.4 Record the wind direction (XR-90-102-2) and velocity (XR-90-102-1) at the 33 ft. level. Instrumentation is located behind Unit 2 Panel 9-4. Also, record the air temperature outside the reactor building at ground level.

6.4.5 Verify all zones static pressures are less than the value listed in Table 1 for wind velocity.

SI 4.7.C-1 - Secondary Containment Capabilities

6. PROCEDURE (Continued)

6.5 Secondary Containment Capability - U1RZ only

NOTE: This section is to verify that the secondary containment is capable of maintaining a -1/4" H_2O with a system inleakage of $\leq$ 1,524 cfm for the unit 1 reactor zone.

6.5.1 Adjust the total flow indicated on FI-65-50 and FI-65-71 (panel 9-25-2) to $\leq$ 1,524 cfm by closing a SGTS fan discharge damper or if two fans are running it may be necessary to shut one fan off.

NOTE: Let the flow stabilize for 5 minutes before the next step.

6.5.2 Record flows indicated on FI-65-50 and FI-65-71 (panel 9-25-2) and total on Data Sheet SI 4.7.C-1.

6.5.3 Record the following static pressures and the air temperatures at the differential pressure indicator locations.

Zone	Instrument	Panel
U1RZ	1-PdIC-64-2	1-25-213

6.5.4 Record the wind direction (XR-90-102-2) and velocity (XR-90-102-1) at the 33 ft. level. Instrumentation is located behind Unit 2 Panel 9-4. Also, record the air temperature outside the reactor building at ground level.

6.6 Secondary Containment Capability - U2RZ only

NOTE: This section is to verify that the secondary containment is capable of maintaining a -1/4" H_2O with a system inleakage of $\leq$ 1,308 cfm for the Unit 2 reactor zone.

6.6.1 Adjust the total flow indicated in FI-65-50 and FI-65-71 (panel 9-25-2) to $\leq$ 1,308 cfm by closing a SGTS fan dishcarge damper or if two fans are running it may be necessary to shut one fan off.

NOTE: Let the flow stabilize for 5 minutes before the next step.

SI 4.7.C-1 - Secondary Containment Capabilities

6. PROCEDURE (Continued)

6.6 Secondary Containment Capability - U2RZ only (Continued)

6.6.2 Record flows indicated on FI-65-50 and FI-65-71 (panel 9-25-2) and total on Data Sheet SI 4.7.C-1.

6.6.3 Record the following static pressures and the air temperatures at the differential pressure indicator locations.

Zone	Instrument	Panel
U2RZ	2-PdIC-64-2	2-25-213

6.6.4 Record the wind direction (XR-90-102-2) and velocity (XR-90-102-1) at the 33 ft. level. Instrumentation is located behind Unit 2 Panel 9-4. Also, record the air temperature outside the reactor building at ground level.

6.6.5 Verify static pressures are less than the value listed in Table 1 for wind velocity.

6.7 Secondary Containment Capability - U3RZ only

NOTE: This section is to verify that the secondary containment is capable of maintaining a -1/4" H_2O with a system inleakage of $\leq$ 1,488 cfm for the Unit 3 reactor zone.

6.7.1 Adjust the toal flow indicated on FI-65-50 and FI-65-71 (panel 9-25-2) to $\leq$ 1,488 cfm by closing a SGTS fan discharge damper or if two fans are running it may be necessary to shut one fan off.

NOTE: Let the flow stabilize for 5 minutes before the next step.

6.7.2 Record flows indicated on FI-65-50 and FI-65-71 (panel 9-25-2) and total on Data Sheet SI 4.7.C-1.

6.7.3 Record the following static pressures and the air temperatures at the differential pressure indicator locations.

Zone	Instrument	Panel
U3RZ	3-PdIC-64-2	3-25-213

SI 4.7.C-1 - Secondary Containment Capabilities

6. PROCEDURE (Continued)

6.7 Secondary Containment Capability - U3RZ only (Continued)

6.7.4 Record the wind direction (XR-90-102-2) and velocity (XR-90-102-1) at the 33 ft. level. Instrumentation is located behind Unit 2 Panel 9-4. Also, record the air temperature outside the reactor building at ground level.

6.7.5 Verify all static pressures are less than the value listed in Table 1 for wind velocity.

6.8 Secondary Containment Capability - Refule Zone only

NOTE: This section is to verify that the secondary containment is capable of maintaining a -1/4" H_2O with a system inleakage of $\leq$ 7,680 cfm for the Refuel Zone.

6.8.1 Adjust the total flow indicated on FI-65-50 and FI-65-71 (panel 9-25-2) to $\leq$ 7,680 cfm by closing a SGTS fan discharge damper or if two fans are running it may be necessary to shut one fan off.

NOTE: Let the flow stabilize for 5 minutes before the next step.

6.8.2 Record flows indicated on FI-65-50 and FI-65-71 (panel 9-25-2) and total on Data Sheet SI 4.7.C-1.

6.8.3 Record the following static pressures and the air temperatures at the differential pressure indicator locations.

Zone	Instrument	Panel
U1RFZ	1-PdIC-64-1	1-25-219
U2RFZ	2-PdIC-64-1	2-25-215
U3RFZ	3-PdIC-64-1	3-25-215

6.8.4 Record the wind direction (XR-90-102-2) and velocity (XR-90-102-1) at the 33 ft. level. Instrumentation is located behind Unit 2 Panel 9-4. Also, record the air temperature outside the reactor building at ground level.

SI 4.7.C-1 - Secondary Containment Capabilities

6. PROCEDURE (Continued)

6.8 Secondary Containment Capability - Refuel Zone only (Continued)

6.8.5 Verify all static pressures are less than the values listed in Table 1 for wind velocity.

6.9 Secondary Containment Capability - U1RZ and Refuel Zone only

NOTE: This section is to verify that the secondary containment is capable of maintaining a -1/4" H_2O with a system inleakage of $\leq$ 9,204 cfm for the Unit 1 Reactor Zone and Refuel Zone.

6.9.1 Adjust the total flow indicated on FI-65-50 and FI-65-71 (panel 9-25-2) to $\leq$ 9,204 cfm for entire reactor building by closing a SGTS fan discharge damper or if two fans are running it may be necessary to shut one fan off.

NOTE: Let the flow stabilize for 5 minutes before the next step.

6.9.2 Record flows indicated on FI-65-50 and FI-65-71 (panel 9-25-2) and total on Data Sheet SI 4.7.C-1.

6.9.3 Record the following static pressures and the air temperatures at the zone differential pressure indicator locations.

Zone	Instrument	Panel
U1RZ	1-PdIC-64-2	1-25-213
U1RFZ	1-PdIC-64-1	1-25-219
U2RFZ	2-PdIC-64-1	2-25-215
U3RFZ	3-PdIC-64-1	3-25-215

6.9.4 Record the wind direction (XR-90-102-2) and velocity (XR-90-102-1) at the 33 ft. level. Instrumentation is located behind Unit 2 Panel 9-4. Also, record the air temperature outside the reactor building at ground level.

6.9.5 Verify all static pressures are less than the value listed in Table 1 for wind velocity.

SI 4.7.C-1 - Secondary Containment Capabilities

6. PROCEDURE (Continued)

6.10 Secondary Containment Capability - U2RZ and Refuel Zone only

NOTE: This section is to verify that the secondary containment is capable of maintaining a -1/4" H_2O with a system inleakage of $\leq$ 8,988 cfm for the Unit 2 Reactor Zone and Refuel Zone.

6.10.1 Adjust the total flow indicated on FI-65-50 and FI-65-71 (panel 9-25-2) to $\leq$ 8,988 cfm by closing a SGTS fan discharge damper or if two fans are running it may be necessary to shut one fan off.

NOTE: Let the flow stabilize for 5 minutes before the next step.

6.10.2 Record flows indicated on FI-65-50 and FI-65-71 (panel 9-25-2) and total on Data Sheet SI 4.7.C-1.

6.10.3 Record the following static pressures and the air temperatures at the differential pressure indicator locations.

Zone	Instrument	Panel
U2RZ	2-PdIC-64-2	2-25-213
U1RFZ	1-PdIC-64-1	1-25-219
U2RFZ	2-PdIC-64-1	2-25-215
U3RFZ	3-PdIC-64-1	3-25-215

6.10.4 Record the wind direction (XR-90-102-2) and velocity (XR-90-102-1) at the 33 ft. level. Instrumentation is located behind Unit 2 Panel 9-4. Also, record the air temperature outside the reactor building at ground level.

6.10.5 Verify all static pressures are less than the value listed in Table 1 for wind velocity.

SI 4.7.C-1 - Secondary Containment Capabilities

6. PROCEDURE (Continued)

6.11 Secondary Containment Capability - U3RZ and Refuel Zone

NOTE: This section is to verify that the secondary containment is capable of maintaining a -1/4" H_2O with a system inleakage of $\leq$ 9,168 cfm for the Unit 3 Reactor Zone and Refuel Zone.

6.11.1 Adjust the total flow indicated on FI-65-50 and FI-65-71 (panel 9-25 2) to $\leq$9,168 cfm by closing a SGTS fan discharge damper or if two fans are running it may be necessary to shut one fan off.

NOTE: Let the flow stabilize for 5 minutes before the next step.

6.11.2 Record flows indicated on FI-65-50 and FI-65-71 (panel 9-25-2) and total on Data Sheet SI 4.7.C-1.

6.11.3 Record the following static pressures and the air temperatures at the differential pressure indicator locations.

Zone	Instrument	Panel
U3RZ	3-PdIC-64-2	3-25-213
U1RFZ	1-PdIC-64-1	1-25-219
U2RFZ	2-PdIC-64-1	2-25-215
U3RFZ	3-PdIC-64-1	3-25-215

6.11.4 Record the wind direction (XR-90-102-2) and velocity (XR-90-102-1) at the 33 ft. level. Instrumentation is located behind Unit 2 Panel 9-4. Also, record the air temperature outside the reactor building at ground level.

6.11.5 Verify all static pressures are less than the value listed in Table 1 for wind velocity.

SI 4.7.C-1 - Secondary Containment Capabilities

6. PROCEDURE (Continued)

6.12 Check those switches that were put in the TEST position under sections 6.2 and/or 6.3 in their NORMAL position and verify on Data Sheet SI 4.7.C-1.

6.13 Verify on Data Sheet SI 4.7.C-1 those actions listed under RETURN TO NORMAL for the zones tested.

6.14 Notify the unit operators and assistant shift engineers that the test is complete and systems returned to normal.

6.15 If this test was performed for a refueling outage, notify the cognizant engineer to review the results prior to breaking primary containment.

TABLE 1

Zone Static Pressure Requirements for Given Wind Velocity at 33 feet

$\Delta P \leq -.25 - 3.44 \times 10^{-4} (V^2 - 25)$ (1)

Wind Velocity	Required ΔP (in H_2O)
0-5 (MPH)	-.250
6	-.254
7	-.258
8	-.263
9	-.269
10	-.276
11	-.283
12	-.291
13	-.299
14	-.309
15	-.319
16	-.329
17	-.341
18	-.353
19	-.365
20	-.379
21	-.393
22	-.408
23	-.423
24	-.439
25	-.456
>25	Calculate using the formula above

(1) Equation developed from reference 2.3

Appendix A

Secondary Containment Leak Rate Test Criteria

During preoperational testing for unit 3 the following in-leakage rates at -1/4" H_2O static pressure were documented.

	Documented Inleakage	*Percentage
Common refuel floor (units 1, 2, & 3)	6250	64%
Unit 1 reactor zone	1239	12.7%
Unit 2 reactor zone	1064	10.9%
Unit 3 reactor zone	1211	12.4%
Total secondary containment	9764 CFM	100%

Leak rate testing will normally be done with all zones simultaneously lined up for testing; however, plant operating conditions and the technical specification do not always permit this. When less than four zones (3-unit plant) are being tested, the total allowable inleakage will be based on preoperational testing and will be based on the sum of the allowable inleakages for the zones being tested. After a secondary containment violation, the total inleakage must not be greater than the total of the allowable inleakage for each individual zone as indicated below.

The technical specifications require the total secondary containment inleakage to be less than 12,000 cfm at -1/4" differential pressure. The following are therefore established for surveillance testing various combinations of zones when secondary containment has been violated.

Zone	Allowable Inleakage
Common refuel floor	7680
Unit 1 reacto zone	1524
Unit 2 reactor zone	1308
Unit 3 reactor zone	1488
Reactor Building	$\leq$ 12000 CFM

DATA COVER SHEET SI 4.7.C

SECONDARY CONTAINMENT CAPABILITY

UNIT 1, 2 OR 3

Performed By J. McCollister Date 8-22-79
Unit Operator

Were criteria satisfied? ✓ Yes ____ No

If no, notify shift engineer.
If no, was a Limiting Condition for Operation violated? ____ Yes (explain in remarks)
____ No (explain in remarks)

Verified by Shift Engineer _____, Date _____

Reason for test:

____ Maintenance complete on _____

____ Another system (_____) inoperable

____ Required by schedule

✓ Plant condition (explain) Refuel Outage

____ Other (explain) _____

Results reviewed M E Ullough Date 8-22-79
Assistant Shift Engineer

Results Review and Approval

(1) Cognizant Engineer [signature] Date 8-22-79

Rescheduled

QA Staff Ruin Date 9-24-79

REMARKS _____

(1) Notify Maintenance that inleakage is excessive if criteria are not satisfied.

Data Sheet SI 4.7.C-1

Step	Component/Process Variable	Verify and/or Record	Initials/Date
3.2	Rx. Bldg. Ventilation System	Normal	JM
3.3	SGTS	Standby Readiness	JM
3.4	Main Steam Line Tunnel Temperature for units being tested	$\leq 150^{\circ}$ F	JM
3.5	16A-S34 for units tested	Not in Drywell or Torus Bypass	JM
3.8	FI-65-50	Currently Calibrated	JM
	FI-65-71	Currently Calibrated	JM
	PdIC-64-1 (All three units)	Currently Calibrated	JM
	PdIC-64-2 (All three units)	Currently Calibrated	JM
3.9	Inboard Equipment Access Lock Doors	Closed and Seals Inflated	JM
3.10	Drywell or Suppression Chamber	Purge Not Inprocess	JM
3.11	Doors in the following table for the tested zone(s) or the number doors for all zones.	Closed	JM

Table 3.11

Data Sheet SI 4.7.C-1

Elevation	U1RZ	U2RZ	U3RZ	RFZ
519.0	30 31	34, 36 35, 37	40 41	
541.5	42	43, 44	45	
565.0	#221 #231 224 #229 #228 #232 #230 #230a	#236, #241 #237 #238 240 242	#249 #250 #251 255	255 242 226 231
583.0	#298		#826, #827	
593.0	#538 #539 490	497, 501 #540 #541	506 #513 #514	
621.25	#534 #637 635	640, 647 #648 #649	651 #657 #658	
639.0	670	672 673	675	
664.0	704 700 705 701 706 712 707 708	713 717 714 715 716	724 715 725 716 722 717 723	700, 702, 724, 715, 713 701, 703, 725, 716, 714 704, 720, 722, 706, 717 705, 721, 723, 708, 707

DATA SHEET SI 4.7.C-1 (Continued)

Step	Component/Process Variable	Verify and/or Record	Initials/Date
6.1	Initial only the configuration(s) to be tested and perform the steps indicated. NOTE: Steps 6.12 and 6.13 are to be performed for all configurations.		
	U1RZ only Configuration - Perform sections 6.2, 6.5		NA
	U2RZ only Configuration - Perform sections 6.2, 6.6		NA
	U3RZ only Configuration - Perform sections 6.2, 6.7		NA
	RFZ only Configuration - Perform sections 6.3, 6.8		NA
	U1RZ and RFZ only Configuration - Perform sections 6.2, 6.3, 6.9		NA
	U2RZ and RFZ only Configuration - Perform sections 6.2, 6.3, 6.10		NA
	U3RZ and RFZ only Configuration - Perform sections 6.2, 6.3, 6.11		JM
Entire	Reactor Building Configuration - Perform sections 6.2 - 6.4		NA
6.2	Complete only for the reactor zone(s) listed		
6.2.1	1-HS-64-117	TEST Position	NA
	2-HS-64-117	TEST Position	NA
	3-HS-64-117	TEST Position	JM
6.2.2	1-HS-64-120	TEST Position	NA
	2-HS-64-120	TEST Position	NA
	3-HS-64-120	TEST Position	JM
6.2.3	SGTS Train A	START	JM
	or SGTS Train B	START	NA
	or SGTS Train C	START	NA
	Unit 1 Reactor Zone		
	U-1 Reactor Zone Ventilation Sys.	Shutdown	NA
	1-FCO-64-13	Closed	NA
	1-FCO-64-14	Closed	NA
	1-FCO-64-42	Closed	NA
	1-FCO-64-43	Closed	NA

Data Sheet SI 4.7.C-1 (Continued)

Step	Component/Process Variable	Verify and/or Record	Initials/Date
6.2.3	(Continued)		
	1-FCO-64-15	Open	NA
	1-FCO-64-40	Open	NA
	1-FCO-64-41	Open	NA
	1-FCO-64-60A	Closed	NA
	1-FCO-64-60B	Closed	NA
	1-FCO-64-60C	Closed	NA
	1-FCO-64-60D	Closed	NA
	U-1 Stair Hall Supply Fan	Shutdown	JM
	Unit 2 Reactor Zone		
	U-2 Reactor Zone Ventilation Sys	Shutdown	NA
	2-FCO-64-13	Closed	NA
	2-FCO-64-14	Closed	NA
	2-FCO-64-42	Closed	NA
	2-FCO-64-43	Closed	NA
	2-FCO-64-15	Open	NA
	2-FCO-64-40	Open	NA
	2-FCO-64-41	Open	NA
	Unit 3 Reactor Zone		
	U-3 Reactor Zone Ventilation Sys	Shutdown	JM
	3-FCO-64-13	Closed	JM
	3-FCO-64-14	Closed	JM
	3-FCO-64-42	Closed	JM
	3-FCO-64-43	Closed	JM
	3-FCO-64-15	Open	JM
	3-FCO-64-40	Open	JM

Data Sheet SI 4.7.C-2

NOTE: Complete this sheet only if entire reactor zone is to be tested.

Step	Component/Process Variable	Verify and/or Record	Initials/Date
6.4.2	FI-65-50	_____ sfcm	NA
	FI-65-71	_____ sfcm	NA
	Total (must be ≤ 12,000)	[ ] sfcm	NA
6.4.3	1-PdIC-64- Rx Zone	[ ] "H_2O	NA
	Thermometer Rx Zone	_____ F^o	NA
	2-PdIC-64- Rx Zone	[ ] "H_2O	NA
	Thermometer Rx Zone	_____ F^o	NA
	3-PdIC-64- Rx Zone	[ ] "H_2O	NA
	Thermometer Rx Zone	_____ F^o	NA
	1-PdIC-64- Refueling Zone	[ ] "H_2O	NA
	2-PdIC-64- Refueling Zone	[ ] "H_2O	NA
	3-PdIC-64- Refueling Zone	[ ] "H_2O	NA
	Thermometer Refueling Zone	_____ F^o	NA
6.4.4	Wind direction (behind Unit 2 pnl 9-4)	_____ Direction	NA
	33 ft. level/Windspeed (behind Unit 2 pnl 9-4)	_____ mph	NA
	Thermometer/Outside temp.	_____ F^o	
6.4.5	All zones $\Delta P \leq$ appropriate value in Table 1	_____ ΔP req'd	[NA]

Data Sheet SI 4.7.C-3

NOTE: Complete this sheet if the Unit 1 Rx Zone only is to be tested.

Step	Component/Process Variable	Verify and/or Record	Initials/Date
6.5.2	FI-65-50	_____ sfcm	NA
	FI-65-71	_____ sfcm	NA
	Total (must be ≤ 1,524)	[ ] sfcm	NA
6.5.3	1-PdIC-64- Rx Zone	[ ] "H_2O	NA
	Thermometer Rx Zone	_____ F°	NA
6.5.4	Wind direction (behind Unit 2 pnl 9-4)	_____ Direction	NA
	33 ft. level/Windspeed (behind Unit 2 pnl 9-4)	_____ mph	NA
	Thermometer/Outside temperature	_____ F°	NA
6.5.5	Zone ΔP ≤ Value in Table 1	_____ ΔP req'd	[ ] NA

Data Sheet SI 4.7.C-4

NOTE: Complete this sheet if the Unit 2 Rx Zone only is to be tested.

Step	Component/Process Variable	Verify and/or Record		Initials/Date
6.6.2	FI-65-50	_____	sfcm	NA
	FI-65-71	_____	sfcm	NA
	Total (must be $\leq$ 1,308)	[ ]	sfcm	NA
6.6.3	2-PdIC-64- Rx Zone	[ ]	"H_2O	NA
	Thermometer Rx Zone	_____	F^o	NA
6.6.4	Wind direction (behind Unit 2 pnl 9-4)	_____ Direction		NA
	33 ft. level/Windspeed (behind Unit 2 pnl 9-4)	_____	mph	NA
	Thermometer/Outside temperature	_____	F^o	NA
6.6.5	Zone $\Delta P \leq$ Value in Table 1	_____ ΔP req'd		[NA]

Data Sheet SI 4.7.C-5

NOTE: Complete this sheet if the Unit 3 Rx Zone only is to be tested.

Step	Component/Process Variable	Verify and/or Record	Initials/Date
6.7.2	FI-65-50	_____ sfcm	NA
	FI-65-71	_____ sfcm	NA
	Total (must be $\leq$ 1,488)	[ ] sfcm	NA
6.7.3	3-PdIC-64- Rx Zone	[ ] "H_2O	NA
	Thermometer Rx Zone	_____ F^o	NA
6.7.4	Wind direction (behind Unit 2 pnl 9-4)	_____ Direction	NA
	33 ft. level/Windspeed (behind Unit 2 pnl 9-4)	_____ mph	NA
	Thermometer/Outside temperature	_____ F^o	NA
6.7.5	Zone $\Delta P \leq$ Value in Table 1	_____ ΔP req'd	[NA]

Data Sheet SI 4.7.C-6

NOTE: Complete this sheet if the Refuel Zone only is to be tested.

Step	Component/Process Variable	Verify and/or Record	Initials/Date
6.8.2	FI-65-50	_____ sfcm	NA
	FI-65-71	_____ sfcm	NA
	Total (must be ≤ 7,680)	[ ] sfcm	NA
6.8.3	1-PdIC-64- Refueling Zone	[ ] "H_2O	NA
	2-PdIC-64- Refueling Zone	[ ] "H_2O	NA
	3-PdIC-64- Refueling Zone	[ ] "H_2O	NA
	Thermometer Refueling Zone	_____ F^o	NA
6.8.4	Wind direction (behind Unit 2 pnl 9-4)	_____ Direction	NA
	33 ft. level/Windspeed (behind Unit 2 pnl 9-4)	_____ mph	NA
	Thermometer/Outside temperature	_____ F^o	NA
6.8.5	All zones $\Delta P \leq$ Value in Table 1	_____ ΔP req'd	[NA]

Data Sheet SI 4.7.C-7

NOTE: Complete this sheet if the U1Rx and Refuel Zones only are to be tested.

Step	Component/Process Variable	Verify and/or Record	Initials/Date
6.9.2	FI-65-50	_____ sfcm	NA
	FI-65-71	_____ sfcm	NA
	Total (must be ≤ 9,204)	[ ] sfcm	NA
6.9.3	1-PdIC-64- Rx Zone	[ ] "H_2O	NA
	Thermometer Rx Zone	_____ F^o	NA
	1-PdIC-64- Refueling Zone	[ ] "H_2O	NA
	2-PdIC-64- Refueling Zone	[ ] "H_2O	NA
	3-PdIC-64- Refueling Zone	[ ] "H_2O	NA
	Thermometer Refueling Zone	_____ F^o	NA
6.9.4	Wind direction (behind Unit 2 pnl 9-4)	_____ Direction	NA
	33 ft. level/Windspeed (behind Unit 2 pnl 9-4)	_____ mph	NA
	Thermometer/Outside temperature	_____ F^o	NA
6.9.5	All zones $\Delta P \leq$ Value in Table 1	_____ ΔP req'd	[NA]

Data Sheet SI 4.7.C-8

NOTE: Complete this sheet if the U2 Rx and Refuel Zones only are to be tested.

Step	Component/Process Variable	Verify and/or Record	Initials/Date
6.10.2	FI-65-50	_____ sfcm	NA
	FI-65-71	_____ sfcm	NA
	Total (must be ≤ 8,988)	[ ] sfcm	NA
6.10.3	2-PdIC-64- Rx Zone	[ ] "H_2O	NA
	Thermometer Rx Zone	_____ F°	NA
	1-PdIC-64- Refueling Zone	[ ] "H_2O	NA
	2-PdIC-64- Refueling Zone	[ ] "H_2O	NA
	3-PdIC-64- Refueling Zone	[ ] "H_2O	NA
	Thermometer Refueling Zone	_____ F°	NA
6.10.4	Wind direction (behind Unit 2 pnl 9-4)	_____ Direction	NA
	33 ft. level/Windspeed (behind Unit 2 pnl 9-4)	_____ mph	NA
	Thermometer/Outside temperature	_____ F°	NA
6.10.5	All zones ΔP ≤ Value in Table 1	_____ ΔP req'd	NA

Data Sheet SI 4.7.C-9

NOTE: Complete this sheet if the U3 Rx and Refuel Zones only are to be tested.

Step	Component/Process Variable	Verify and/or Record	Initials/Date
6.11.2	FI-65-50	3100 sfcm	JM
	FI-65-71	5500 sfcm	JM
	Total (must be ≤9168)	8600 sfcm	JM
6.11.3	3-PdIC-64- Rx Zone	-.25 H_2O	JM
	Thermometer Rx Zone	84 F°	JM
	1-PdIC-64- Refueling Zone	-.25 H_2O	JM
	2-PdIC-64- Refueling Zone	-.25 H_2O	JM
	3-PdIC-64- Refueling Zone	-.26 H_2O	JM
	Thermometer Refueling Zone	84 F°	JM
6.11.4	Wind direction (behind Unit 2 pnl 9-4)	South Direction	JM
	33 ft level/windspeed (behind Unit 2 pnl 9-4)	4 mph	JM
	Thermometer/Outside temp.	86 F°	JM
6.11.5	All zones ΔP ≤ value in table	-.25 ΔP req'd	JM

Data Sheet SI 4.7.C-10

Complete the appropriate portions of this sheet (for zones tested).

Step	Component/Process Variable	Verify and/or Record	Initials/Date
6.12	1-HS-64-117	NORMAL	NA
	2-HS-64-117	NORMAL	NA
	3-HS-64-117	NORMAL	JMA
	1-HS-64-120	NORMAL	NA
	2-HS-64-120	NORMAL	NA
	3-HS-64-120	NORMAL	JM
	1-HS-64-119	NORMAL	JM
	1-HS-64-122	NORMAL	JMA

Data Sheet SI 4.7.C-1 0 (Continued)

Step	Component/Process Variable	Verify and/or Record	Initials/Date
	Return to Normal		
6.13	Complete the appropriate portions of this sheet (for zones tested).		
	SGTS Fan A	OFF	JM
	FCO-65-3	Closed	JM
	A-SGTS humidity control heater	OFF	JM
	A-SGTS charcoal heater	ON	JM
	SGTS Fan B	OFF	JM
	FCO-65-25	Closed	JM
	B-SGTS humidity control heater	OFF	JM
	B-SGTS charcoal heater	ON	JM
	SGTS Fan C	OFF	JM
	FCO-65-51	Closed	JM
	C-SGTS humidity control heater	OFF	JM
	C-SGTS charcoal heater	ON	JM
	Unit 1 Reactor Zone		
	U-1 Reactor Zone Ventilation System	In operation as required	
	1-FCO-64-13	OPEN	NA
	1-FCO-64-14	OPEN	NA
	1-FCO-64-42	OPEN	NA
	1-FCO-64-43	OPEN	NA
	1-FCO-64-15	Closed	NA
	1-FCO-64-40	Closed	NA
	1-FCO-64-41	Closed	NA
	1-FCO-64-60A	Open	NA
	1-FCO-64-60B	Open	NA
	1-FCO-64-60C	Open	NA
	1-FCO-64-60D	Open	NA
	U-1 Stair Hall Supply Fan	In operation as required	

Data Sheet SI 4.7.C-10 (Continued)

Step	Component/Process Variable	Verify and/or Record	Initials/Date
6.13	(Continued)		
	Unit 2 Reactor Zone		
	U-2 Reactor Zone Ventilation System	In operation as required	
	2-FCO-64-13	Open	NA
	2-FCO-64-14	Open	NA
	2-FCO-64-42	Open	NA
	2-FCO-64-43	Open	NA
	2-FCO-64-15	Closed	NA
	2-FCO-64-40	Closed	NA
	2-FCO-64-41	Closed	NA
	Unit 3 Reactor Zone		
	U-3 Reactor Zone Ventilation System	In operation as required	
	3-FCO-64-13	Open	JM
	3-FCO-64-14	Open	JM
	3-FCO-64-42	Open	JM
	3-FCO-64-43	Open	JM
	3-FCO-64-15	Closed	JM
	3-FCO-64-40	Closed	JM
	3-FCO-64-41	Closed	JM
	3-FCO-64-60A	Open	JM
	3-FCO-64-60B	Open	JM
	3-FCO-64-60C	Open	JM
	3-FCO-64-60D	Open	JM
	U-3 Stair Hall Supply Fan	In Operation as Required	

Data Sheet SI 4.7.C-1 (Continued)

Step	Component/Process Variable	Verify and/or Record	Initials/Date
6.13	(Continued)		
	Refueling Zone		
	U-1 Area Refueling Zone Vent Sys	In Operation as required	
	U-2 Area Refueling Zone Vent Sys	In Operation as required	
	U-3 Area Refueling Zone Vent Sys	In Operation as required	
	1-FCO-64-6	Open	
	2-FCO-64-6	Open	
	3-FCO-65-6	Open	
	1-FCO-64-5	Open	
	2-FCO-64-5	Open	
	3-FCO-64-5	Open	
	1-FCO-64-10	Open	
	2-FCO-64-10	Open	
	3-FCO-64-10	Open	
	1-FCO-64-9	Open	
	2-FCO-64-9	Open	
	3-FCO-64-9	Open	
	1-FCO-64-63	Close	
	1-FCO-64-7	Close	
	1-FCO-64-65A	Open	
	1-FCO-64-65B	Open	
	1-FCO-64-65C	Open	
	1-FCO-64-65D	Open	
	1-FCO-64-44	Close	
	1-FCO-64-45	Close	
	Equipment Access Lock Exhaust Fan	In Operation as required	
	U-1 Stair Hall Supply Fan	In Operation as required	
	U-2 Stair Hall Supply Fan	In Operation as required	