

CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9607080207 DOC. DATE: 96/07/01 NOTARIZED: NO DOCKET #
FACIL: 50-400 Shearon Harris Nuclear Power Plant, Unit 1, Carolina 05000400
AUTH. NAME AUTHOR AFFILIATION
VERRILLI, M. Carolina Power & Light Co.
CLARK, B.H. Carolina Power & Light Co.
RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 96-009-00: on 960530, identified deficiencies in Reactor Auxiliary Bldg Exhaust Sys. Caused by inadequate surveillance test procedures. Revised test procedure. W/960701 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 5
TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES: Application for permit renewal filed.

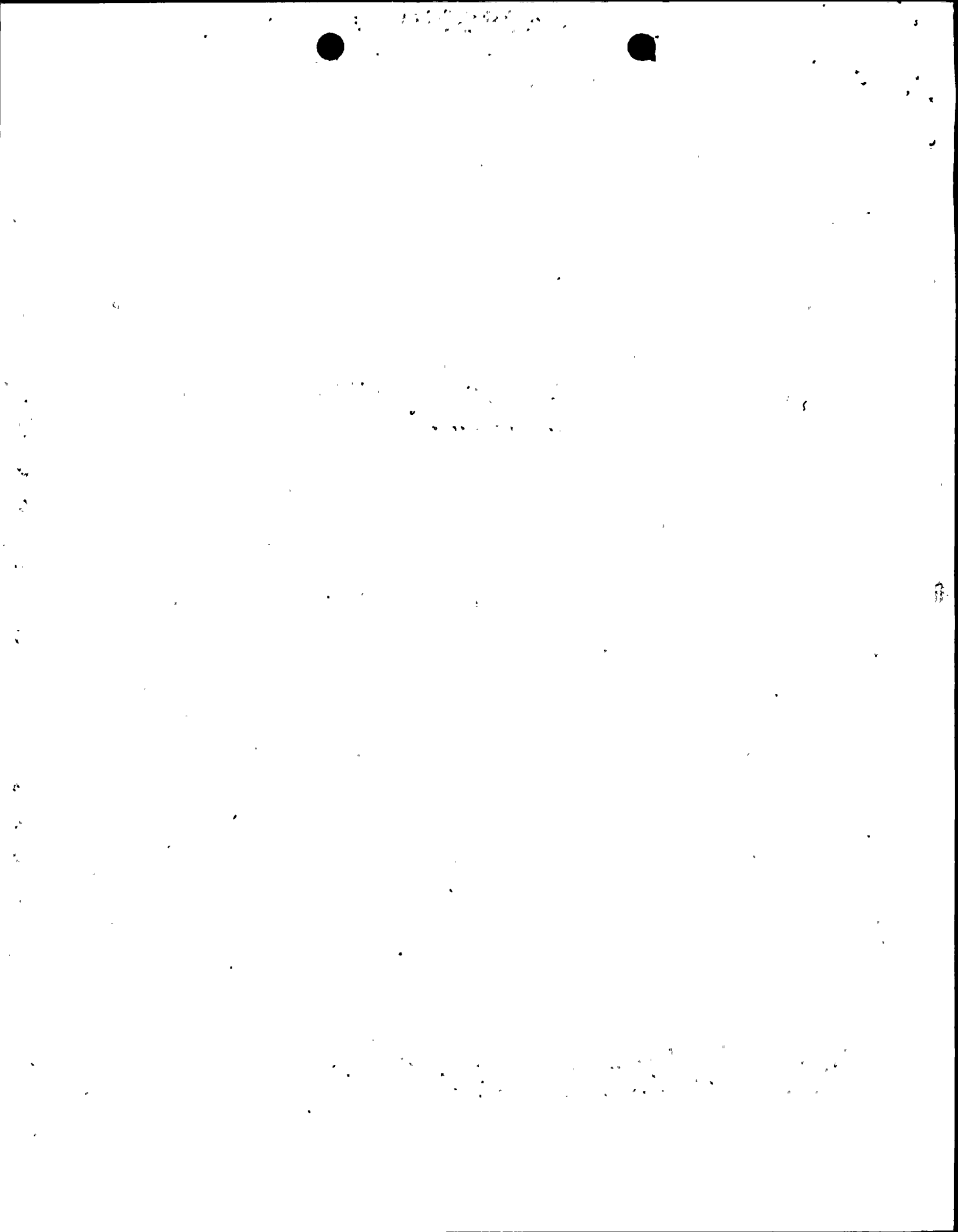
05000400

	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL
	PD2-1 PD	1 1	LE,N	1 1
INTERNAL:	ACRS	1 1	AEOD/SPD/RAB	2 2
	AEOD/SPD/RRAB	1 1	FILE CENTER	1 1
	NRR/DE/ECGB	1 1	NRR/DE/EELB	1 1
	NRR/DE/EMEB	1 1	NRR/DRCH/HHFB	1 1
	NRR/DRCH/HICB	1 1	NRR/DRCH/HOLB	1 1
	NRR/DRCH/HQMB	1 1	NRR/DRPM/PECB	1 1
	NRR/DSSA/SPLB	1 1	NRR/DSSA/SRXB	1 1
	RES/DSIR/EIB	1 1	<u>RGN2 FILE 01</u>	1 1
EXTERNAL:	L ST LOBBY WARD	1 1	LITCO BRYCE, J H	2 2
	NOAC MURPHY, G.A	1 1	NOAC POORE, W.	1 1
	NRC PDR	1 1	NUDOCS FULL TXT	1 1

NOTE TO ALL "RIDS" RECIPIENTS:
PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK,
ROOM OWEN 5D-5 (EXT. 415-2083) TO ELIMINATE YOUR NAME FROM
DISTRIBUTION LISTS FOR DOCUMENTS YOU DON'T NEED!

THIS DOCUMENT
HAS BEEN SCANNED

FULL TEXT CONVERSION REQUIRED
TOTAL NUMBER OF COPIES REQUIRED: LTTR 26 ENCL 26





Carolina Power & Light Company
Harris Nuclear Plant
PO Box 165
New Hill NC 27562

JUL 01 1996

U.S. Nuclear Regulatory Commission
ATTN: NRC Document Control Desk
Washington, DC 20555

Serial: HNP-96-107
10CFR50.73

SHEARON HARRIS NUCLEAR POWER PLANT UNIT 1
DOCKET NO. 50-400
LICENSE NO. NPF-63
LICENSEE EVENT REPORT 96-009-00

Dear Sir or Madam:

In accordance with Title 10 to the Code of Federal Regulations, the enclosed Licensee Event Report is submitted. This report concerns a testing deficiency for the Reactor Auxiliary Building Emergency Exhaust System.

Sincerely,

B. H. Clark
General Manager
Harris Plant

MV

Enclosure

c: Mr. J. B. Brady (NRC - HNP)
Mr. S. D. Ebnetter (NRC - RII)
Mr. N. B. Le (NRC - PM/NRR)

9607080207 960701
PDR, ADOCK 05000400
S PDR

IE 22
1/1

U. S. Nuclear Regulatory Commission
Document Control Desk / HNP-96-107
Page 2 of 2

cc: Ms. P. B. Brannan
Mr. W. R. Campbell (BNP)
Mr. J. M. Collins
Mr. J. P. Cowan
Mr. G. W. Davis
Ms. S. F. Flynn
Mr. G. D. Hicks (BNP)
Mr. M. D. Hill
Mr. W. J. Hindman
Ms. C. W. Hobbs (HEEC)
Mr. R. M. Krich (RNP)
Ms. W. C. Langston
Mr. C. W. Martin (BNP)
Mr. R. D. Martin
Mr. J. W. McKay
Mr. P. M. Odom (RNP)
Mr. W. R. Robinson
Mr. G. A. Rolfson
Mr. R. F. Saunders
Mr. R. S. Stancil
Mr. G. M. Stokes
Mr. C. N. Sweely
Mr. J. P. Thompson (BNP)
Mr. T. D. Walt
Mr. R. L. Warden (RNP)
HNP Real Time Training
INPO
NLS File: HI/A-2D
Nuclear Records

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Harris Nuclear Plant Unit-1	DOCKET NUMBER (2) 50-400	PAGE (3) 1 OF 3
---	------------------------------------	---------------------------

TITLE (4)
Reactor Auxiliary Building Emergency Exhaust System testing deficiency.

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
5	30	96	96	-- 009	-- 00	7	1	96		05000
									FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9) 1	POWER LEVEL (10) 100%	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)								
		20.2201(b)	20.2203(a)(2)(v)	<input checked="" type="checkbox"/>	50.73(a)(2)(i)	50.73(a)(2)(viii)				
		20.2203(a)(1)	20.2203(a)(3)(i)		50.73(a)(2)(ii)	50.73(a)(2)(x)				
		20.2203(a)(2)(i)	20.2203(a)(3)(ii)		50.73(a)(2)(iii)	73.71				
		20.2203(a)(2)(ii)	20.2203(a)(4)		50.73(a)(2)(iv)	OTHER				
		20.2203(a)(2)(iii)	50.36(c)(1)		50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A				
	20.2203(a)(2)(iv)	50.36(c)(2)		50.73(a)(2)(vii)						

LICENSEE CONTACT FOR THIS LER (12)	
NAME Michael Verrilli Sr. Analyst - Licensing	TELEPHONE NUMBER (Include Area Code) (919) 362-2303

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)										
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)			
YES (If yes, complete EXPECTED SUBMISSION DATE).	<input checked="" type="checkbox"/>	NO			MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On May 30, 1996 with the plant operating in Mode-1 at 100% power, deficiencies were identified in the Reactor Auxiliary Building (RAB) Emergency Exhaust System surveillance test. Technical Specification 4.7.7.d.3 requires the system to maintain the areas served at a negative pressure of greater than or equal to 1/8 inch water gauge relative to the outside atmosphere. This differential pressure is measured by sensing taps in three locations within the RAB. However, due to the location of these sensing taps, the pressure of each area served by the exhaust system has not been verified during past surveillance testing. Specifically, there are no pressure sensing taps located in the Charging/Safety Injection Pump rooms and since they are enclosed spaces and not connected to adjacent areas via ductwork, past testing has not verified the pressure inside these rooms. To resolve this concern the plant entered Technical Specification 4.0.3 at 12:37 hours. Revisions were made to existing test procedures to verify that the local pressure in the CSIP rooms met the negative 1/8 inch water gauge requirement. These test results were satisfactory and at 1215 on April 31, 1996, Technical Specification 4.0.3 was exited.

During the above testing on May 30 and 31, 1996, an additional concern was identified with the RAB Emergency Exhaust System surveillance testing process. The Waste Processing Building (WPB) and Fuel Handling Building (FHB) normal ventilation exhaust fans, which serve areas adjacent to the RAB, had normally been running during past RAB ventilation testing. Testing showed that these exhaust fans aided in achieving the required 1/8 inch negative pressure and since they might not be available following a loss of off-site power accident, they should have been secured. To correct this, the test procedure was revised to secure non-safety ventilation fans serving areas adjacent to the RAB. Both of these conditions were caused by improper surveillance test procedure development due to an incorrect interpretation of Technical Specification testing requirements.



Faint, illegible text at the top of the page, possibly a header or title.

A single line of faint, illegible text in the middle of the page.

A block of faint, illegible text in the lower middle section of the page.

A single line of faint, illegible text near the bottom of the page.

A block of faint, illegible text at the bottom of the page, possibly a footer.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Shearon Harris Nuclear Plant - Unit #1	50-400	96	009	00	2 OF 3

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

EVENT DESCRIPTION:

On May 30, 1996 with the plant operating in Mode-1 at 100% power, a deficiency was identified in the 18-month Reactor Auxiliary Building (RAB) Emergency Exhaust System (EIS Code: VF) Operations Surveillance Test Procedure (OST-1052). This deficiency was identified as a result of the investigation performed for Licensee Event Report #96-007, submitted on May 28, 1996, which reported the failure to properly test the Control Room Ventilation System.

Technical Specification 4.7.7.d.3 requires the RAB Emergency Exhaust System to be capable of maintaining the areas served, "at a negative pressure of greater than or equal to 1/8 inch water gauge relative to the outside atmosphere." This differential pressure is measured by an instrumentation configuration (PDI-4823) that uses sensing taps in three locations within the RAB. However, due to the location of these sensing taps, the pressure of each area served by the exhaust system has not been verified during past surveillance testing. Specifically, there are no pressure sensing taps located in the Charging/Safety Injection Pump rooms and since they are enclosed spaces and are not connected to adjacent areas via ductwork, past testing has not included verification of the pressure inside these rooms.

To resolve this concern the plant entered Technical Specification 4.0.3 at 1237 hours on May 30, 1996. Revisions were made to the existing test procedure (OST-1052) to verify that the local pressure in the CSIP rooms met the negative 1/8 inch water gauge requirement. Calibrated manometers were used to measure the pressure inside each CSIP room and at 1215 on May 31, 1996, satisfactory results were achieved using the E6-A Exhaust Fan (EIS Code VF-FAN) and Technical Specification 4.0.3 was exited. During this testing however, differential pressure readings in other areas of the RAB did not achieve the negative 1/8 inch pressure requirement, so the E-6A Exhaust Fan was declared inoperable placing the unit in a 7-day LCO.

An additional concern was identified with the RAB Emergency Exhaust System surveillance testing process during the May 30 - 31 performance of OST-1052. This concern involved the Waste Processing Building (WPB, EIS Code: VH-FAN) and Fuel Handling Building (FHB, EIS Code: VG-FAN) normal ventilation exhaust fans, which serve areas adjacent to the RAB. These fans were normally running during past RAB ventilation operability testing which unintentionally aided the development of negative 1/8 inch pressure. Since the FHB and WPB fans are not safety related, and may not be available following a loss of off-site power accident, they should have been secured during past RAB ventilation system testing. Test procedure OST-1052 was revised to include securing the non-safety WPB and FHB ventilation fans. At approximately 1230, initial testing using the E-6B Exhaust Fan (with the non-safety WPB and FHB fans secured) was unsuccessful in obtaining the required differential pressure. Investigation determined that the main control room differential pressure gage was not functioning properly. This was confirmed at approximately 1745, when satisfactory differential pressure results were obtained using local pressure gage readings within the RAB. Based on these results, the E-6B RAB Emergency Exhaust Fan was considered operable. Until the main control room differential pressure indication is functioning properly, local pressure readings will continue to be used for testing.

To resolve the problem with the E-6A Exhaust Fan, additional investigation was performed. These efforts determined that the fan's gravity actuated/weighted discharge damper (EIS Code VF-DMP) and vortex flow control inlet damper were not functioning properly. With the adjacent non-safety fans secured and the malfunctioning dampers, the E-6A fan was capable of reaching negative 0.094 inches. This problem was masked in previous RAB testing because the non-safety WPB and FHB exhaust fans aided the E-6A Fan in achieving the required negative pressure. Investigation was unable to determine the exact length of time that the A-train was in this deficient condition. Following repairs and adjustments on the E-6A Fan discharge damper and flow control loop, testing was performed that verified the Technical Specification differential pressure requirements. The fan was declared operable and returned to service at 0130 on June 6, 1996.

CAUSE:

Both of the testing deficiencies, (1) not verifying pressure inside the CSIP rooms and (2) performing RAB testing without securing the adjacent non-safety fans, were caused by inadequate surveillance test procedures, due to an incorrect interpretation of Technical Specification testing requirements during initial procedure development. The failure of the E-6A Exhaust Fan to achieve the required flow and differential pressure was caused by improper setup and adjustment of the gravity discharge damper and vortex flow control inlet damper.



Small cluster of illegible marks in the top right corner.

A horizontal line of scattered, illegible marks across the middle of the page.

A small, faint cluster of illegible marks in the lower right quadrant.

A horizontal line of scattered, illegible marks near the bottom of the page.

A single small mark at the very bottom center of the page.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Shearon Harris Nuclear Plant - Unit #1	50-400	96	009	00	3 OF 3

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

SAFETY SIGNIFICANCE:

There were no adverse safety consequences associated with the RAB Emergency Exhaust System surveillance testing deficiencies. Testing completed on May 31, 1996 validated that pressures inside the CSIP rooms met the negative 1/8 inch Technical Specification requirement.

The safety significance of the E-6A Fan's inability to attain the required differential pressure due to the malfunctioning dampers and performing the test with adjacent non-safety ventilation systems secured is determined by evaluating the system's ability to contain and filter radioactive contaminants potentially generated in an accident. Testing initially performed in the "as-found" condition indicated that a negative pressure of approximately 0.094 inches could be achieved. Calculations performed using methodology from the Industrial Ventilation Handbook and Industrial Hygienist Handbook, determined that with a negative pressure of approximately 0.094 inches, an air flow velocity of 736 fpm would be created through crack openings in the RAB boundary. With this velocity radioactive contaminants are expected to have remained within the RAB and have been exhausted through the proper filtration units. Following repairs and adjustments to the E-6A Fan's dampers, the Technical Specification negative 1/8 inch pressure requirement was achieved.

PREVIOUS SIMILAR EVENTS:

These conditions were identified as a result of the investigation performed for the Control Room Ventilation testing deficiency reported in LER #96-007. During the process of HNP's on-going NRC Generic Letter 96-01 "Technical Specification Testing Program Review," a heightened level of awareness has resulted in the identification of testing deficiencies that were caused by incorrectly interpreting Technical Specification testing requirements during initial test procedure development. LER #96-002 was submitted on February 16, 1996 and has been revised several times to report the results of the on-going review process.

CORRECTIVE ACTIONS COMPLETED:

1. Testing was successfully performed on May 31, 1996 to verify that the pressure inside the CSIP rooms met Technical Specification requirements.
2. Operations Surveillance Test Procedure (OST-1052) was revised on June 24, 1996 to ensure that future testing included verification of CSIP room pressure and that adjacent non-safety ventilation systems are secured.
3. Repairs and adjustments were completed on the RAB Emergency Exhaust E-6A Fan Damper and the fan was returned to service on June 6, 1996. Similar repairs and adjustments were also made to improve the performance of the E-6B Exhaust Fan.
4. A review was performed during the investigation of this event to ensure that similar testing deficiencies did not exist in other Technical Specification ventilation systems.

CORRECTIVE ACTIONS PLANNED:

1. RAB differential pressure indication in the main control room will be evaluated and improved as needed. The evaluation will be completed by December 31, 1996.

EIIS Codes:

Reactor Auxiliary Building Emergency Exhaust System - VF



2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100

1

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100