NRC FORM 366
(7-77)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT

CONTROL BLOCK: (1) (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

0 1 | LICENSEE CODE: V A S P S 1 (2) | LICENSE NUMBER: 0 0 - 0 0 0 0 0 - 0 0 (3) | LICENSE TYPE: 4 1 1 1 1 (4) | CAT (5)

CON'T 0 1 | REPORT SOURCE: L (6) | DOCKET NUMBER: 0 5 0 0 0 2 8 0 (7) | EVENT DATE: 0 4 0 9 8 2 (8) | REPORT DATE: 0 5 0 7 8 2 (9)

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

0 2 On the 9th of April, 1982, with the unit at 100 percent power, both containment
0 3 vacuum pumps were declared inoperable when they failed to develop flow. This event
0 4 is contrary to T.S.3.15.B and is reportable as per T.S.6.6.2.b.(2). At no time did
0 5 the containment exceed the limits allowed by the operating envelope governed by
0 6 containment temperature, containment pressure, and service water temperature as
0 7 set forth in T.S.-3.8. Thus, the health and safety of the public were not affected.
0 8

0 9 SYSTEM CODE	S A (11)
CAUSE CODE	E (12)
CAUSE SUBCODE	B (13)
COMPONENT CODE	P U M P X X (14)
COMP. SUBCODE	H (15)
VALVE SUBCODE	Z (16)

(17) LER/RO REPORT NUMBER

EVENT YEAR		SEQUENTIAL REPORT NO.		OCCURRENCE CODE	REPORT TYPE		REVISION NO.
8 2	—	0 4 2	/	0 3	L	—	0

ACTION TAKEN	FUTURE ACTION	EFFECT ON PLANT	SHUTDOWN METHOD	HOURS (22)	ATTACHMENT SUBMITTED	NPRD-4 FORM SUB.	PRIME COMP. SUPPLIER	COMPONENT MANUFACTURER
C (18)	Z (19)	Z (20)	Z (21)	0 0 0 0	Y (23)	N (24)	A (25)	G 0 4 6 (26)

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

1 0 Pump inoperability was the result of sliding vanes held in the pump rotor becoming
1 1 bound in their respective guide slots due to water damage to the carbon vanes.
1 2 Pump 1-CV-P-1A was immediately replaced with the ready-spare. The removed
1 3 inoperable pump was rebuilt and placed in service as 1-CV-P-1B.
1 4

1 5 FACILITY STATUS: E (28) | % POWER: 1 0 0 (29) | OTHER STATUS (30): N/A | METHOD OF DISCOVERY: A (31) | DISCOVERY DESCRIPTION (32): Operator Observation

1 6 ACTIVITY RELEASED: Z (33) | CONTENT OF RELEASE: Z (34) | AMOUNT OF ACTIVITY (35): N/A | LOCATION OF RELEASE (36): N/A

PERSONNEL EXPOSURES
1 7 NUMBER: 0 0 0 (37) | TYPE: Z (38) | DESCRIPTION (39): N/A

PERSONNEL INJURIES
1 8 NUMBER: 0 0 0 (40) | DESCRIPTION (41): N/A

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LOSS OF OR DAMAGE TO FACILITY (43)
1 9 TYPE: Z (42) | DESCRIPTION: N/A

PUBLICITY
2 0 ISSUED: N (44) | DESCRIPTION (45): N/A | NRC USE ONLY

NAME OF PREPARER: J. L. Wilson PHONE: (804) 357-3184

ATTACHMENT 1
SURRY POWER STATION, UNIT NO. 1
DOCKET NO: 50-280
REPORT NO: 82-042/03L-0
EVENT DATE: 04-09-82

TITLE OF EVENT: Containment Vacuum Pumps Inoperable

1. DESCRIPTION OF EVENT:

On the 9th of April, 1982, with the Unit at 100 percent power, both containment vacuum pumps, 1-CV-P-1A and B, were found to be inoperable. This is contrary to Technical Specification 3.15.B and is reportable as per Technical Specification 6.6.2.b(2).

2. PROBABLE CONSEQUENCES OF OCCURRENCE:

At no time during this event did the containment pressure exceed the limits of the operating envelope set forth in Technical Specification 3.8. These limits are governed by containment temperature and service water temperature. Because the containment air pressure remained subatmospheric and one containment vacuum pump was returned to service within the time allowed by Technical Specification 3.0.1, the health and safety of the public were not affected.

3. CAUSE OF THE EVENT:

Containment Vacuum Pumps 1-CV-P-1A and 1B were inoperable due to binding of the sliding vanes in the pump rotor. These vanes fit in machined slots in the rotor, one vane per slot, with the rotor housed in the pump casing. As the rotor spins, the vanes are thrown outward causing their outer edge to come in contact with the pump casing. The distance between the rotor and the inner surface of the casing is not constant around the perimeter, (maximum near inlet port, minimum near discharge port) thus for pump operation, the carbon vanes must be free to slide in and out. Condensation of moisture from the containment building atmosphere in combination with entrained particles resulted in the vanes binding in their slots. In pump 1A this allowed free rotation of the rotor, but inhibited the intake-exhaust cycle of the pump. In pump 1B, the vane binding resulted in a frozen rotor with a broken drive belt.

4. IMMEDIATE CORRECTIVE ACTION:

The immediate corrective actions were to blow the water from the lines, then replace inoperable containment vacuum pump 1-CV-P-1A with a readily available spare within the time allowed by Technical Specification 3.0.1.

5. SUBSEQUENT CORRECTIVE ACTION:

The pump removed from 1-CV-P-1A was rebuilt and returned to service as 1-CV-P-1B. The pump removed from 1-CV-P-1B was rebuilt and stored as the shop spare.

6. ACTION TAKEN TO PREVENT RECURRENCE:

An Engineering Study is presently in progress to assess the best pump for the expected application.

7. GENERIC IMPLICATIONS:

Moisture laden air is quite often detrimental to the operation of carbon-vane type pumps.