(7-77)

LICENSEE EVENT REPORT

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

- 01 — LICENSEE CODE (9–14): V A S P S 1 (2); LICENSE NUMBER (15–25): 0 0 - 0 0 0 0 0 - 0 0 (3); LICENSE TYPE (26–30): 4 1 1 1 1 (4); CAT (57–58): (5)
- CON'T 01 — REPORT SOURCE (60): X (6); DOCKET NUMBER (61–68): 0 5 0 0 0 2 8 0 (7); EVENT DATE (69–74): 0 8 2 9 7 9 (8); REPORT DATE (75–80): 1 2 0 5 7 9 (9)

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

02 On August 29, 1979, Westinghouse informed Vepco that it could be possible for
03 certain control systems, which were previously assumed to remain "as is", to fail
04 when subjected to an adverse environment thus causing an impact on present safety
05 analyses. Review of the FSAR revealed that the potential problems identified are not
06 outside the existing analyses, therefore the health and safety of the general public
07 were not affected by this event. Reportable pursuant to T.S. 6.6.2.a.9.
08

- 09 — SYSTEM CODE (9–10): Z Z (11); CAUSE CODE (11): X (12); CAUSE SUBCODE (12): Z (13); COMPONENT CODE (13–18): Z Z Z Z Z Z (14); COMP. SUBCODE (19): Z (15); VALVE SUBCODE (20): Z (16)
- (17) LER/RO REPORT NUMBER — EVENT YEAR (21–22): 7 9; (23): —; SEQUENTIAL REPORT NO. (24–26): 0 2 6; (27): /; OCCURRENCE CODE (28–29): 0 1; REPORT TYPE (30): X; (31): —; REVISION NO. (32): 1
- ACTION TAKEN (33): X (18); FUTURE ACTION (34): X (19); EFFECT ON PLANT (35): X (20); SHUTDOWN METHOD (36): (21); HOURS (37–40): 0 0 0 0 (22); ATTACHMENT SUBMITTED (41): Y (23); NPRD-4 FORM SUB. (42): N (24); PRIME COMP. SUPPLIER (43): Z (25); COMPONENT MANUFACTURER (44–47): Z 9 9 9 (26)

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

10 Reanalysis by Westinghouse has identified potential environmental interaction in the
11 steam generator power operated relief valve control system, the pressurizer pressure
12 control system, the main feedwater control system, and the rod control system. The
13 FSAR was reviewed and results determined that present analyses are unaffected.
14

- 15 — FACILITY STATUS (9): D (28); % POWER (10–12): 0 0 0 (29); OTHER STATUS (13–44): NA (30); METHOD OF DISCOVERY (45): (31); DISCOVERY DESCRIPTION (46–80): NA (32)
- 16 — ACTIVITY RELEASED (9): Z (33); CONTENT OF RELEASE (10): Z (34); AMOUNT OF ACTIVITY (11–44): NA (35); LOCATION OF RELEASE (45–80): NA (36)
- 17 — PERSONNEL EXPOSURES: NUMBER (9–11): 0 0 0 (37); TYPE (12): (38); DESCRIPTION (13–80): NA (39)
- 18 — PERSONNEL INJURIES: NUMBER (9–11): 0 0 0 (40); DESCRIPTION (12–80): NA (41)
- 19 — LOSS OF OR DAMAGE TO FACILITY: TYPE (9): Z (42); DESCRIPTION (10–80): NA (43)
- 20 — PUBLICITY: ISSUED (9): N (44); DESCRIPTION (10–68): NA (45); NRC USE ONLY (69–80)

7912110390

NAME OF PREPARER W. L. Stewart PHONE: 804-359-3184

GPO 917-926

SURRY POWER STATION, UNIT NO. 1
DOCKET NO. 50-280
REPORT NO. LER-79-026/01X-1
EVENT DATE: 08/29/79

TITLE OF REPORT: Balance of Plant Equipment on Safety Systems

1. Description of Event:

On August 29, 1979, Westinghouse informed VEPCO that existing safety analyses could be invalidated by the failure of certain control systems, which were previously assumed to remain "as is", when subjected to a severe environment following a high energy line rupture. This event is reportable pursuant to T. S. 6.6.2.a.9.

2. Probable Consequences of Occurrence:

The consequences of this event were minimal. The FSAR was reviewed to determine the impact of adverse environment on the control systems affecting present analyses and results determined that present analyses are unaffected by this event. Unit No. 2 has the same design and is similarly unaffected

3. Cause of Occurrence:

Reanalysis by Westinghouse has identified potential environmental interaction in the steam generator power operated relief valve control system, pressurizer pressure control system, main feedwater control system, and rod control system.

4. Immediate Corrective Action:

The FSAR was reviewed for a feedwater line break and a steamline break and it was determined that the new potential problems identified by Westinghouse are not outside the existing analyses.

5. Subsequent Corrective Action and Action Taken To Prevent Recurrence:

Since the initial Westinghouse notification, Westinghouse and VEPCO met with the staff on September 18, 1979, and discussed the scenarios. An agreement was reached that we would address these four scenarios immediately and then continue the review of other items including unaddressed interactions. This continuing review will be done with the assistance of the appropriate vendor.

The initial review indicates that Surry has no additional potential interaction between balance of plant (BOP) systems and NSSS safety grade equipment for the indicated systems. There are no potential problems with the Feedwater Control or Automatic Rod Control Systems. The specifics of each case are addressed below:

5. Subsequent Corrective Action and Action Taken to Prevent Recurrence -cont'd

1. The three steam generator power operated relief valves (SG-PORV) are postulated to fail open as a result of a main feed line break outside the containment between the penetration and the feedline check valve which would affect the SG-PORV control system.

The SG-PORV's are located in the Main Steam Valve House which is immediately adjacent to the reactor containment. This building is designed to release the energy of a High Energy Line Break to the atmosphere. The main feed line exits the containment within this building and the distance from the main feed line penetration to the main feed line check valve is less than five feet. The SG-PORV's are designed to fail closed on a loss of air or loss of electrical signal to the controls.

The Westinghouse recommended short term action is to instruct the control room operators that a loss of main feed may cause the SG-PORV's to fail open which could cause a loss of the steam driven auxiliary feedwater pump. Surry has two half-size motor driven auxiliary feedwater pumps in addition to the full size turbine driven auxiliary feedwater pump, and as the Surry FSAR states, one motor-driven pump alone provides sufficient feed flow. In addition, an auxiliary feedwater cross-connect exists which enables one unit's steam generators to be fed by the other unit's auxiliary feedwater system. Considering these design features, the short term action is considered sufficient.

2. The main feedwater control system is postulated to fail and this reduces the mass in the steam generator to less than analyzed. This failure of the main feed control system is assumed to occur as a result of a small main feedline break (less than 0.2 sq. ft.) between the steam generator nozzle and the feedline check valve.

The main feed control system is located outside the containment in the Service Building. The postulated break would have to occur within the containment as the first check valve is located within containment. Only protection grade equipment associated with the main feedwater control system would be affected and not the lesser quality control grade equipment as postulated. Therefore, this scenario is not applicable to Surry.

3. The pressurizer power operated relief valves (P-PORV) are postulated to fail open upon a feedline break between the steam generator and the containment penetration. The P-PORV's are designed to fail closed on a loss of air, or loss of electrical signal to the controlling solenoid valves. The postulated events require that for the short term resolution the Westinghouse recommendation is followed and that the control room operators are instructed that a High Energy Line Break within the containment might cause the P-PORV's to fail open or to fail closed. The action will be to close the block valves in the P-PORV lines after the problem has been analyzed.

5. Subsequent Corrective Action and Action Taken To Prevent Recurrence (Continued):

4. The automatic rod control system was postulated to receive an erroneous signal from the excore detection system following an inside containment intermediate steamline break (0.1-0.25 sq. ft.) between 70-100 percent power. This erroneous signal must occur within the first two minutes of the accident and will cause the rods to withdraw.

Westinghouse has provided VEPCO with a generic intermediate steamline rupture analysis which resulted in a rod withdrawal due to a control system environmental interaction prior to a reactor trip. Westinghouse states that the results of the analysis indicated that no fuel damage occurred, which is consistent with the assumptions made in the Safety Analysis Report.

6. Generic Implications:

The systems were reviewed as required, and it was determined that the present analysis was unaffected. The generic implication of the potential systems problems does not apply to this station.