UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

AEOD/E210

FEB 23 1982

MEMORANDUM FOR: Ronald C. Haynes, Regional Administrator
Region I

FROM: Carlyle Michelson, Director
Office for Analysis and Evaluation
of Operational Data

SUBJECT: INADEQUATE SWITCHGEAR COOLING AT BEAVER VALLEY, UNIT 1

Two events occurred at Beaver Valley during the past summer of potential safety significance regarding adverse environmental effects on safety-related equipment. The enclosed LERs (81-59/03L and 81-71/03L) report that the Number 2 battery charger output breaker tripped on thermal overload during surveillance testing. The switchgear rooms are provided with the same flow-through ventilation system circulating outside air. The chargers are located in the switchgear rooms and contribute to increasing the room temperature when operating. Similar breakers in the rooms have not tripped. Portable fans have been used to increase the airflow around the battery charger.

The potential for tripping the output breaker would increase if more than one battery charger is operating during elevated ambient temperatures because of increased heat load. For a loss-of-offsite power event, the heat contribution of the operating battery charger could potentially affect other safety-related switchgear equipment. The ventilation system is not safety related and would not be available during this event.

Corrective actions taken by the licensees include rebalancing the ventilation flow in the switchgear rooms and revising the surveillance procedure for testing the battery chargers, to prevent more than one charger operating at the same time. In addition, a station modification request has been made to increase the ventilation flow in the switchgear rooms. The licensee has tested the breakers under full load (without high ambient temperatures) and believes that there is no problem with the breakers.

Our evaluation of the events indicated that the licensee had not expanded his investigation to verify the environmental qualification of the breaker. Since the breaker was not found defective, the qualification of the breaker for mild environments should be evaluated by the licensee to ascertain the root cause for the failures.

We recommend that the licensee complete the appropriate analyses and modifications to prevent recurrence of this type of failure before the summer of 1982. The current refueling outage may be an appropriate time for modifications. The resident inspector is following the licensee's investigations into the problem.

The implications of this event suggest that the loss of the ventilation system could have potential safety significance requiring additional generic review by the NRC. Operational occurrences at other plants have already attuned this office to possible inadequate ventilation design and performance situations which could result in subjecting electrical equipment to adverse mild environmental conditions. As a result of IE Bulletin 79-01, 79-01B and others related to environmental qualification of electrical equipment, it is our understanding that the staff is reviewing in detail the adequacy of equipment to withstand accident environments. We were not able to confirm that the same level of review will be performed for non-accident conditions exemplified by the Beaver Valley events and events involving inadvertent actuation of the fire protection system addressed in another AEOD memorandum. In responding to the Bulletin, it may not be apparent to the licensees to address qualification of electrical equipment which are required to operate, but not exposed to postulated accident conditions. These occurrences may be useful in evaluating the scope of the licensee's response to the bulletins.

This effort has been coordinated with the Environmental Qualification Branch, Division of Engineering, NRR. The AEOD contact is Wayne Lanning.

Carlyle Michelson

Carlyle Michelson, Director
Office for Analysis and Evaluation
of Operational Data

Enclosures:
As stated

cc w/enclosures:
HDenton, NRR
DBeckman, RI, Beaver Valley
ZRosztoczy, NRR
RDeYoung, IE
VStello, CRGR

LICENSEE EVENT REPORT

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

0 1	P A B V S 1 (2)	0 0 - 0 0 0 0 0 - 0 0 (3)	4 1 1 1 1 (4)		(5)
7 8	9 LICENSEE CODE 14	15 LICENSE NUMBER 25	26 LICENSE TYPE 30	57 CAT 58	

CON'T 0 1	REPORT SOURCE	L (6)	0 5 0 0 0 3 3 4 (7)	0 6 1 5 8 1 (8)	0 7 1 3 8 1 (9)
7 8		60 61	DOCKET NUMBER 68	69 EVENT DATE 74	75 REPORT DATE 80

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

0 2 | On 6/15/81 at 0730 hours with reactor power at 95%, the battery charger supply to

0 3 | 125 VDC bus No. 1-2 was lost when the No. 2 battery charger output breaker tripped

0 4 | open. The charger was declared inoperable while power operation continued within

0 5 | the limitations of Technical Specification 3.8.2.3. The health and safety of the

0 6 | public was not jeopardized as the No. 2 battery remained operational.

0 7 |

0 8 |

	SYSTEM CODE	CAUSE CODE	CAUSE SUBCODE	COMPONENT CODE	COMP. SUBCODE	VALVE SUBCODE
0 9	E C (11)	X (12)	Z (13)	Z Z Z Z Z Z (14)	Z (15)	Z (16)

(17) LER/RO REPORT NUMBER	EVENT YEAR		SEQUENTIAL REPORT NO.		OCCURRENCE CODE	REPORT TYPE		REVISION NO.
	8 1	—	0 5 9	/	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
X (18)	F (19)	Z (20)	Z (21)	0 0 0 0	Y (23)	N (24)	Z (25)	Z 9 9 9

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

1 0 | Excessive heat in the emergency switchgear area caused the breaker to trip on

1 1 | thermal overload. A portable fan was placed in the vicinity of the battery charger

1 2 | to cool the breaker. At 1120 hours the charger was returned to service. Future

1 3 | actions will be to investigate improvements to the ventilation system on the

1 4 | battery charger.

	FACILITY STATUS	% POWER	OTHER STATUS (30)	METHOD OF DISCOVERY	DISCOVERY DESCRIPTION (32)
1 5	E (28)	0 9 5 (29)	N/A	A (31)	Control Room Alarm

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

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

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

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

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

8107240335 810713
PDR ADOCK 05000334
S PDR

NAME OF PREPARER N. S. Lacey PHONE 412-643-8525

Several times
No A/C
Late coming in August of 81-II
perform S.T. when load charger
trip on breaker may be too high
other breakers [illegible] with high setting
may replace breaker in this area
Also UKU switchgear in area
[illegible] cooling [illegible] in circuit vent [illegible]

→ Brian Sheny Shift Tech inv.

LICENSEE EVENT REPORT

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

Licensee Code	License Number	License Type	CAT
P A B V S 1 (2)	0 0 - 0 0 0 0 0 - 0 0 (3)	4 1 1 1 1 (4)	(5)

Report Source	Docket Number	Event Date	Report Date
L (6)	0 5 0 0 0 3 3 4 (7)	0 8 0 5 8 1 (8)	0 9 0 - 8 1 (9)

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

On 8/5/81 at 0231 hours with the reactor at 99% power the battery charger supply to 125 VDC bus No. 1-2 was lost when No. 2 battery charger output breaker tripped open. The charger was declared inoperable while power operation continued within the limitations of Technical Specifications 3.8.2.3. The health and safety of the public was not jeopardized as the battery remained operational. This is the second reported event.

System Code	Cause Code	Cause Subcode	Component Code	Comp. Subcode	Valve Subcode
E C (11)	X (12)	Z (13)	Z Z Z Z Z Z (14)	Z (15)	Z (16)

LER/RO Report Number (17)	Event Year		Sequential Report No.		Occurrence Code	Report Type		Revision No.
	8 1	—	0 7 1	/	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
X (18)	F (19)	Z (20)	Z (21)	0 0 0 0	Y (23)	N (24)	Z (25)	Z 9 9 9 (26)

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

Excessive heat in the charger enclosure area caused the breaker to trip on a thermal overload. A portable fan was used to remove the heat and at 0333 hours the charger was back in service. The station engineering group has begun an investigation looking towards improving the present area or battery charger ventilation system.

Facility Status	% Power	Other Status (30)	Method of Discovery	Discovery Description (32)
E (28)	0 9 9 (29)	N/A	A (31)	Control Room Alarm

Activity Released	Content of Release	Amount of Activity (35)	Location of Release (36)
Z (33)	Z (34)	N/A	N/A

PERSONNEL EXPOSURES

Number	Type	Description (39)
0 0 0 (37)	Z (38)	N/A

PERSONNEL INJURIES

Number	Description (41)
0 0 0 (40)	N/A

LOSS OF OR DAMAGE TO FACILITY (43)

Type	Description
Z (42)	N/A

8109210060 810904
PDR ADOCK 05000334
S PDR

PUBLICITY

Issued	Description (45)	NRC USE ONLY
N (44)	N/A	

NAME OF PREPARER W. S. Lacey PHONE 412-643-3525