PHILADELPHIA ELECTRIC COMPANY

LIMERICK GENERATING STATION

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SANATOGA, PENNSYLVANIA 19464

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M. J. McCORMICK, JR., P.E.
PLANT MANAGER
LIMERICK GENERATING STATION

March 12, 1990

Docket No. 50-352
License No. NPF-39

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

SUBJECT: Licensee Event Report
Limerick Generating Station - Unit 1

This LER reports a condition prohibited by Technical Specifications (TS) in that the required TS ACTION and TS Surveillance Requirements for the primary coolant and gaseous effluent chemistry sampling were not performed within the specified time period, due to a procedural deficiency.

Reference:	Docket No. 50-352
Report Number:	1-90-004
Revision Number:	00
Event Date:	July 8, 1989
Discovery Date:	February 9, 1990
Report Date:	March 12, 1990
Facility:	Limerick Generating Station P.O. Box A, Sanatoga, PA 19464

This LER is being submitted pursuant to the requirements of 10 CFR 50.73(a)(2)(i)(B).

Very truly yours,

M J McCormick Jr

DMS:nlk

cc: W. T. Russell, Administrator, Region I, USNRC
T. J. Kenny, USNRC Senior Resident Inspector, LGS

IE22
1/1

NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES 8/31/88

LICENSEE EVENT REPORT (LER)

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TITLE (4) This LER Reports a Condition Prohibited by Technical Specification for Primary Coolant and Gaseous Effluent Sampling and Radiological Analysis due to a Procedural 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 NAMES	DOCKET NUMBER(S)
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0 7	0 8	8 9	9 0	— 0 0 4	— 0 0	0 3	1 2	9 0		0 5 0 0 0

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 9 3	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
G. J. Madsen, Regulatory Engineer, Limerick Generating Station	2 1 5 — 3 2 7 1 — 1 2 1 0

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

On February 9, 1990, Station personnel discovered that on July 8, 1989, a twenty-two second reactor power transient occurred in which reactor thermal power changed by more than 15% of Rated Thermal Power in one hour, and primary coolant and gaseous effluent samples were not obtained and analyzed within the allowed time interval as required by Technical Specifications (TS) ACTION and Surveillance Requirements, resulting in a condition prohibited by TS. The consequences of this event were minimal since analysis results from a "routine daily" primary coolant chemistry sample, taken six hours and twenty-one minutes after the reactor thermal power change, showed little variation in primary coolant radionuclide concentration and the sample results were well within TS allowable limits, indicating no apparent fuel cladding leakage problems. This event was caused by a procedural deficiency in that General Plant (GP) procedures did not provide an adequate mechanism for communications between Operations and Chemistry Shift personnel following a transient. Main Control Room personnel did not inform Station Chemistry personnel of the twenty-two second transient. Applicable GP and Chemistry Procedures were revised by December 5, 1989, as a result of a similar event which occurred on September 10, 1989. Therefore, no further corrective actions are necessary.

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

Unit Conditions Prior to the Event:

Unit 1 Operating Condition: 1 (Power Operation)
Unit 1 Power Level: 93%

Description of the Event:

On February 9, 1990, Station personnel discovered that on July 8, 1989, a twenty-two second reactor power transient occurred in which reactor thermal power changed by more than 15% of Rated Thermal Power (RTP) in one hour, and primary coolant and gaseous effluent samples were not obtained and analyzed within the specified time period as required by Technical Specifications (TS) ACTION and Surveillance Requirements (SR). This constitutes a condition prohibited by TS.

On January 12, 1990, during a review of Plant Operations Review Committee (PORC) meeting minutes from September 1, 1989, Chemistry personnel identified that during a transient on July 8, 1989, reactor thermal power had possibly changed by more than 15% of RTP in one hour. TS require that chemistry samples be obtained and analyzed to determine the isotopic concentration of iodine between two and six hours following a transient in which reactor thermal power changed by more than 15% of RTP in one hour. An evaluation and analysis of this event was performed by Station and Corporate personnel between January 12, 1990 and February 9, 1990. This evaluation verified that reactor thermal power had changed by more than 15% of RTP in one hour on July 8, 1989, and therefore, the required TS ACTION and TS SR for primary coolant and gaseous effluent sampling should have been performed.

On July 8, 1989, at 1749 hours, following an earlier increase of reactor recirculation flow to maintain steady reactor power, the '1B' reactor recirculation pump (EIIS:AD) motor generator (MG)(EIIS:MG) set was unintentionally operating on its electrical high speed stop. This resulted in a deviation between the actual recirculation pump speed and the demand recirculation pump speed on the '1B' recirculation pump deviation meter (EIIS:SIT) which is located on the Main Control Room (MCR) Reactor Operator's (RO) console.

When an MG set electrical stop is encountered, the scoop tube positioner (EIIS:POS) logic prevents further scoop tube positioner motor travel in the direction of the stop (i.e., the

high speed stop prevents the MG set fluid coupling scoop tube positioner motor from increasing MG set speed, but permits the scoop tube positioner motor to decrease MG set speed).

Encountering the electrical stop also applies the scoop tube brake which is controlled by a separate logic. Before the scoop tube can move, the scoop tube positioner motor must generate enough torque to overcome the scoop tube brake.

In an effort to correct the deviation between the actual recirculation pump speed and demand pump speed, a licensed RO decreased the recirculation pump speed controller demand not realizing that the scoop tube brake had been engaged, as previously described. Following this decrease in demand, the recirculation control signal generator (EIIS:IT) increased the scoop tube positioner motor current until enough torque was generated to overcome the force of the scoop tube brake. When the scoop tube brake released, a large scoop tube motion resulted causing a rapid recirculation flow and associated reactor power reduction. The recirculation pump control logic recognized the excessive flow change and overcompensated, causing a rapid increase in reactor power. Within a twenty-two second time period, reactor thermal power fluctuated 24.5%, changing from 93% to 74% to 98.5% and returning to 93% power, after the signal to the positioner stabilized. The RO placed the scoop tube brake control switch to the locked position. This prevented recurrence of the transient until the reason for the transient could be determined.

As a result of this 24.5% power change, a primary coolant isotopic analysis for iodine is required by ACTION c.1 of TS Limiting Condition for Operation (LCO) 3.4.5, "Reactor Coolant System Specific Activity," whenever reactor thermal power is changed by more than 15% of RTP in one hour. The sample is required to be taken between two and six hours following this power change. In addition, sampling and analysis of gaseous effluents must be performed within one hour as required by TS SR Table 4.11.2.1.2-1, whenever reactor thermal power is changed by more than 15% of RTP in one hour if primary coolant, condenser offgas, or South Stack effluent radioactivity increases by more than a factor of three. The basis for these requirements is to alert plant staff of possible fuel cladding failures resulting from the power transient.

The MCR personnel did not inform Station Chemistry personnel of the 24.5% power transient on July 8, 1989, or any time after.

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

Consequently, the applicable primary coolant sample was not obtained and analyzed within the two to six hour TS ACTION period and gaseous effluent samples were not obtained and analyzed following the power transient. However, on July 9, 1989, at 0015 hours, six hours and twenty-one minutes after the initiation of the power transient, the Shift Chemistry Technician obtained a "routine daily" reactor coolant sample. Analysis of this daily sample determined than the isotopic concentration of iodine and its calculated dose equivalent in the primary coolant were within TS allowable limits, indicating no apparent fuel cladding leakage problems.

On February 9, 1989, this event was determined to be reportable since the reactor thermal power did change by more than 15% of RTP in one hour on July 8, 1989. However, the primary coolant sample was not obtained as required by TS LCO 3.4.5 ACTION c.1 and the gaseous effluent sampling SR of TS Table 4.11.2.1.2-1 was not met. The failure to perform the required TS ACTION and TS SR within the TS allowed time period, resulted in a condition prohibited by TS. This report is being submitted in accordance with 10 CFR 50.73(a)(2)(i)(B).

Consequences of the Event:

The consequences of this event were minimal since the analysis result from the "routine daily" sample, taken six hours and twenty-one minutes after the reactor thermal power change, showed little variation in primary coolant chemistry and were well within TS allowable limits, indicating no apparent fuel cladding leakage problems. There was no indication of an elevated gaseous release from the South Stack (Station release point) following the transient. A significant increase in primary coolant iodine concentration during the twenty-two second reactor power change period would have been detected by the continuous sampling offgas radiation monitors (EIIS:IL), which were in service during this event.

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

Cause of the Event:

This event was caused by a procedural deficiency in that the General Plant (GP) Procedures did not provide an adequate mechanism for communications between Operations and Chemistry Shift personnel following a transient. Procedure GP-5, "Power Operations," identifies the applicable Chemistry sampling procedures to be performed when reactor power is changed by more than 15% of RTP in one hour. Both Operations and Chemistry personnel are aware of these requirements. However, details for the method of monitoring the power change and notifying Chemistry personnel are not specified in the procedures. Investigation of this event revealed that Operations personnel were aware of the magnitude of the reactor thermal power change, however, they failed to inform Chemistry personnel of the twenty-two second transient.

Due to conservatism in the calculation of the scoop tube electrical high speed stop settings, the scoop tube electrical high speed stops were set one-half percent lower into the normal operating range. Since the high speed stops were set in the normal operating range, the high speed stops were encountered at a lower total reactor core flow than the ROs expected. Additionally, these settings established maximum MG set speed to ensure core flow was within TS allowable limits. Therefore, the settings of the scoop tube electrical high speed stops were in compliance with TS during the power transient.

Corrective Actions:

Immediately following the power transient that occurred on July 8, 1989, the RO placed the scoop tube brake control switch to the locked position. This prevented recurrence of the transient until the reason for the transient could be determined.

Chemistry samples were not obtained between two and six hours following the power transient. However, a "routine daily" primary coolant chemistry sample obtained and analyzed on July 9, 1989, six hours and twenty-one minutes following the initiation of the event, indicated that reactor coolant chemistry was within TS allowable limits indicating no apparent fuel cladding leakage problems.

Actions Taken to Prevent Recurrence:

On September 10, 1989 a similar event occurred in that Unit 1 reactor power was changed by more than 15% RTP in one hour to perform routine control rod pattern adjustments. As a result of procedure deficiency that resulted in miscommunication between Operations and Chemistry personnel, the TS ACTION and SR for Chemistry sampling of the primary coolant and gaseous effluent was not obtained and analyzed within the TS required time period. This event was reported in LER 1-89-052 dated October 10, 1989.

The actions taken to prevent recurrence reported in LER 1-89-052 addressed the revision of GP procedures and Chemistry procedures. These procedure revisions were implemented to standardize the method of monitoring reactor power changes, and to assure Chemistry personnel are notified and are aware of any planned or unplanned reactor power changes exceeding 15% of RTP in one hour. The following three GP procedures and the two Chemistry procedures were revised by December 5, 1989.

GP-2, NORMAL PLANT STARTUP
GP-3, NORMAL PLANT SHUTDOWN
GP-5, POWER OPERATIONS
RT-5-000-876-1 (and -2), "Evaluating the Surveillance Test Initiating Event Parameters Following a Unit (Unit 2) Startup, Shutdown, and Greater Than 15% Change of RTP in One Hour."

The above stated procedure revisions have been described in the "October 1989 Licensed Reactor Operator Required Reading" package, and have been addressed to all licensed ROs in continuing training. Additionally, the revisions to the Chemistry procedures were addressed to all Station Chemistry Technicians.

Since the July 8, 1989 event occurred previous to the event reported by LER 1-89-052, the above procedure revisions could not have prevented the occurrence of the July 8, 1989 event. However, since LER 1-89-052 and this event both resulted from similar causes, the procedure revisions stated above are the same actions that would have been required to prevent recurrence of this event. Therefore, no further corrective actions are necessary.

Further, the following actions were taken to prevent recurrence of the power transient that occurred on July 8, 1989.

1. Supplementary procedural guidance was issued on July 11, 1989, for GP-5 to instruct licensed ROs on the actions to be taken when a scoop tube electrical stop is encountered.

2. System Procedure S43.0.C, "Clearing an Electrical Stop," was written and implemented to address the actions necessary to clear a scoop tube electrical high speed stop.

3. When plant power and flow conditions permitted resetting of the scoop tube electrical high speed stops, the electrical high speed stops were reset to 106 percent core flow (outside normal flow operations). The surveillance test for verifying operability of the electrical and mechanical high speed stops was satisfactorily performed on August 17, 1989.

4. Licensed RO training has been conducted to address the items described in actions 1 through 3 listed above.

Previous Similar Occurrences:

LER 1-89-052 reported an event where reactor thermal power exceeded 15% of RTP in one hour and the TS ACTION Chemistry sample requirements were not performed due to procedural deficiencies which resulted in miscommunication between Operations and Chemistry Shift personnel.

Tracking Codes: D2 - Inadequate Procedure; did not cover situation
A7 - Failure to properly communicate