(7-77)

LICENSEE EVENT REPORT

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

Line	Field	Value
01	LICENSEE CODE (9–14) (2)	I L Q A D 1
01	LICENSE NUMBER (15–25) (3)	0 0 0 - 0 0 0 - 0 0 0
01	LICENSE TYPE (26–30) (4)	4 1 1 1 1
01	CAT (57–58) (5)	
CON'T 01	REPORT SOURCE (60) (6)	L
01	DOCKET NUMBER (61–68) (7)	0 5 0 0 0 2 5 4
01	EVENT DATE (69–74) (8)	1 0 1 2 7 9
01	REPORT DATE (75–80) (9)	1 1 0 1 7 9

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

02 On October 12, 1979, the station received an extention of the Maximum Average
03 Planner Linear Heat Generation Rate (MAPLHGR) limit curves for GEB UO_2 and Pu-UO_2
04 fuel. Comparison of the actual limits and extrapolated values used by the computer
05 showed the extrapolated values to be slightly non-conservative for UO_2 and PuO_2 fuel
06 for exposures greater than 25,000 MWD/T and 26,500 MWD/T respectively.
07
08

Line	Field	Value
09	SYSTEM CODE (9–10) (11)	Z Z
09	CAUSE CODE (11) (12)	B
09	CAUSE SUBCODE (12) (13)	A
09	COMPONENT CODE (13–18) (14)	Z Z Z Z Z Z
09	COMP. SUBCODE (19) (15)	Z
09	VALVE SUBCODE (20) (16)	Z
(17) LER/RO REPORT NUMBER	EVENT YEAR (21–22)	7 9
	(23)	—
	SEQUENTIAL REPORT NO. (24–26)	0 3 0
	(27)	/
	OCCURRENCE CODE (28–29)	0 3
	REPORT TYPE (30)	L
	(31)	—
	REVISION NO. (32)	0
	ACTION TAKEN (33) (18)	X
	FUTURE ACTION (34) (19)	Z
	EFFECT ON PLANT (35) (20)	Z
	SHUTDOWN METHOD (36) (21)	Z
	HOURS (37–40) (22)	0 0 0 0
	ATTACHMENT SUBMITTED (41) (23)	Y
	NPRD-4 FORM SUB. (42) (24)	N
	PRIME COMP. SUPPLIER (43) (25)	Z
	COMPONENT MANUFACTURER (44–47) (26)	Z Z Z Z

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

10 The cause of this occurrence was the failure to have specific MAPLHGR limits for high
11 exposure GEB fuel. Corrective action was for G.E. to extend the MAPLHGR limit curves
12 for GEB UO_2 and Pu-UO_2 fuel to their licensed exposure limit of 40,000 MWD/T and
13 enter them into the computer.
14

Line	Field	Value
15	FACILITY STATUS (9) (28)	E
15	% POWER (10–12) (29)	0 9 8
15	OTHER STATUS (13–44) (30)	NA
15	METHOD OF DISCOVERY (45) (31)	D
15	DISCOVERY DESCRIPTION (46–80) (32)	External Source
16	ACTIVITY RELEASED (9) (33)	Z
16	CONTENT OF RELEASE (10) (34)	Z
16	AMOUNT OF ACTIVITY (11–44) (35)	NA
16	LOCATION OF RELEASE (45–80) (36)	NA
17	PERSONNEL EXPOSURES NUMBER (9–11) (37)	0 0 0
17	TYPE (12) (38)	Z
17	DESCRIPTION (13–80) (39)	NA
18	PERSONNEL INJURIES NUMBER (9–11) (40)	0 0 0
18	DESCRIPTION (12–80) (41)	NA
19	LOSS OF OR DAMAGE TO FACILITY TYPE (9) (42)	Z
19	DESCRIPTION (10–80) (43)	NA
20	PUBLICITY ISSUED (9) (44)	N
20	DESCRIPTION (10–68) (45)	NA
20	NRC USE ONLY (69–80)	

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NAME OF PREPARER H. Lihou PHONE: 309-654-2241, Ext. 187

LER NUMBER: 79-30/03L-0

LICENSEE NAME: Commonwealth Edison Company
Quad Cities Nuclear Power Station

FACILITY NAME: Unit One

DOCKET NUMBER: 050-254

EVENT DESCRIPTION:

Shortly after Unit One Cycle 5 startup, Commonwealth Edison Nuclear Fuel Services (NFS) became concerned by the fact that some GEB (improved 7 x 7) type fuel exposures were starting to exceed the exposures for which Maximum Average Plainer Linear Heat Generation Rate (MAPLHGR) limits had been analyzed. Thus, NFS requested further high exposure MAPLHGR analysis from General Electric. The Station process computer calculates actual operating MAPLHGR values and compares them with the analyzed MAPLHGR limits to determine the fraction of the MAPLHGR limit (MAPRAT = MAPLHGR ÷ MAPLHGR Limit) at which the reactor is operating. Since the computer had no GEB MAPLHGR limit curve data points greater than 25,000 MWD/T for UO_2 fuel and 20,000 MWD/T for Pu-UO_2 fuel, it extrapolated the MAPLHGR limit curve through higher exposures. This extrapolated limit curve was then used to calculate MAPRAT for GEB fuel with exposures greater than 25,000 MWD/T for UO_2 Fuel and 20,000 MWD/T for Pu-UO_2 fuel. Operation with these extrapolated limits, until G.E. provided additional analysis, was considered to be conservative since the extrapolated limits had a negative slope and the actual full power MAPLHGR had significant margin to the extrapolated MAPLHGR limits.

On October 12, 1979, the station received, from G.E., NEDO 24146A LOCA Analysis Report for Dresden 2, 3 and Quad Cities 1, 2 Nuclear Power Stations, Errata and Addenda Sheet #1, which provided an extention of MAPLHGR limit curves for GEB UO_2 and GEB Pu-UO_2 fuel up to 40,000 MWD/T. Comparison of the actual limits and extrapolated values used by the computer showed the extrapolated values to be slightly non-conservative for UO_2 and Pu-UO_2 fuel for exposures greater than 25,000 MWD/T and 26,500 MWD/T, respectiveiy. The new G.E. MAPLHGR limit curve extentions were immediately entered into the computer.

PROBABLE CONSEQUENCES OF THE OCCURRENCE:

Due to the high exposure depletion of the GEB fuels, it was highly unlikely to obtain MAPLHGR limits using standard control rod sequencing techniques. Review of the data revealed that the MAPLHGR limit was never non-conservative by more than 1.2% for UO_2 fuel and 0.4% for Pu-UO_2 fuel, all other fuel types never exceeded exposures for which MAPLHGR was analyzed. The smallest margin between any actual operating MAPLHGR and MAPLHGR limit was always greater than 4% for all types of fuel during Unit One Cycle 5, and typical full power margins were 10-20% of the limits. GEB fuel type margins are significantly larger than these. Thus, MAPLHGR limits were never exceeded.

CAUSES:

The cause of this occurrence was the failure of General Electric to provide the station specific MAPLHGR limits for high exposure GEB fuel.

CORRECTIVE ACTION:

The MAPLHGR limit curves for GEB UO_2 and $Pu-UO_2$ fuel have been extended to their licensed exposure limit of 40,000 MWD/T. In addition the Unit Two MAPLHGR limit curve for 7 x 7 fuel, which extends to 30,000 MWD/T, was reduced by 10% of its 35,000 MWD/T extrapolated value of 11.6 KW/ft. Thus, the limit for 35,000 MWD/T is presently about 10.44 KW/ft and will remain so until end of Unit Two Cycle 4, at which time G.E. will provide high exposure MAPLHGR limits for Unit Two Cycle 5. These actions should preclude any further events of this type.

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