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AUTH.NAME AUTHOR AFFILIATION
NEVINSKI,D.E. Northern States Power Co.
RECIP.NAME RECIPIENT AFFILIATION
Region 3, Chicago, Office of the Director

SUBJECT: LER 79-023/011-0:on 791214,during evaluation of fuel assembly exposures for next cycle,discovered that current cycle exposure of several nodes for one fuel type exceeded exposure values in Tech Specs.Caused by inadequate review.

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NSP

NORTHERN STATES POWER COMPANY

MINNEAPOLIS, MINNESOTA 55401

December 28, 1979

Mr J G Keppler
Office of Inspection & Enforcement
U S Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

Dear Mr Keppler:

MONTICELLO NUCLEAR GENERATING PLANT
Docket No. 50-263 License No. DPR-22

MAPLHGR Exposure Oversight

The Licensee Event Report for this occurrence is reproduced on the back of this letter. Enclosed are three copies.

This event is reported in compliance with Technical Specification 6 7.B.1.i.

Yours very truly,

L. O. Mayer

L O Mayer, PE
Manager of Nuclear Support Services

LOM/ak

cc: Director, IE, USNRC (40)
Director, MIPC, USNRC (3)
MPCA
Attn: J W Ferman

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LICENSEE EVENT REPORT

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01 REPORT SOURCE L (6) 0500263 (7) 121479 (8) 122879 (9)
DOCKET NUMBER (61–68) | EVENT DATE (69–74) | REPORT DATE (75–80)

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

02 Evaluation of fuel assembly exposures for next cycle led to the discovery that
03 current cycle exposure of several nodes for one fuel type exceeded the exposure
04 values for which MAPLHGR limits are specified in Tech Spec Table 3.11.1, MAPLHGR
05 vs. Exposure. Actual kw/ft. values were and continue to be conservatively below
06 appropriate allowable maximum values. No affect on public health and safety.
07 No similar previous occurrences.
08

09	SYSTEM CODE: ID (11)	CAUSE CODE: X (12)	CAUSE SUBCODE: Z (13)	COMPONENT CODE: ZZZZZZ (14)	COMP. SUBCODE: Z (15)	VALVE SUBCODE: Z (16)

(17) LER/RO REPORT NUMBER: EVENT YEAR 79 — SEQUENTIAL REPORT NO. 023 / OCCURRENCE CODE 01 REPORT TYPE T — REVISION NO. 0

ACTION TAKEN	FUTURE ACTION	EFFECT ON PLANT	SHUTDOWN METHOD	HOURS (22)	ATTACHMENT SUBMITTED	NPRD-4 FORM SUB.	PRIME COMP. SUPPLIER	COMPONENT MANUFACTURER
G (18)	G (19)	Z (20)	Z (21)	0000	Y (23)	N (24)	N (25)	Z099 (26)

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

10 Occurrence caused by inadequate internal and external review. Corrective actions
11 include changes in process computer constants, determination that future analysis
12 review methods prevent recurrence, and procedural changes to increase nodal expo-
13 sure monitoring at the plant. See additional pages attached.
14

15 FACILITY STATUS: E (28) % POWER: 091 (29) OTHER STATUS (30): NA METHOD OF DISCOVERY: D (31) DISCOVERY DESCRIPTION (32): Confirmation of NRC observation

16 ACTIVITY RELEASED: Z (33) CONTENT OF RELEASE: Z (34) AMOUNT OF ACTIVITY (35): NA LOCATION OF RELEASE (36): NA

17 PERSONNEL EXPOSURES NUMBER: 000 (37) TYPE: Z (38) DESCRIPTION (39): NA

18 PERSONNEL INJURIES NUMBER: 000 (40) DESCRIPTION (41): NA

19 LOSS OF OR DAMAGE TO FACILITY (43) TYPE: Z (42) DESCRIPTION: NA

20 PUBLICITY ISSUED: N (44) DESCRIPTION (45): NA

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NRC USE ONLY

NAME OF PREPARER D. E. Nevinski PHONE: 612/295-5151 ext. 118

GPO 917-926

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Cause Description and Corrective Actions:

NSP/GE discussions regarding the Extended Burnup Program originated in 1978. During the first half of 1979 MAPLGHR analysis was completed by GE for the Reload 2 fuel (designations "MTB") to extend exposure from 30,000 MWD/ST to 45,000 MWD/ST. Results were submitted to NSP in a DRAFT report (NEDO-24202) dated June, 1979. Subsequent to the required NSP reviews, the report was submitted to NRC dated September 17, 1979. Discussions in December, 1979 with NRC regarding the current and expected maximum bundle average, maximum average planar, and maximum local pellet exposures led to the observation that EOC-7 exposures, as projected by GE, appeared to be high. Specifically, maximum average planar exposure of 38,360 MWD/MT converted to 34,870 MWD/ST, and this was above the highest value listed in the MAPLHGR table (Table 3.11.1 in the Technical Specifications) applicable to the current operating cycle (7). It was confirmed by interrogating various process computer edits and BUCLE edits that current nodal exposures at several core locations were above 30,000 MWD/ST.

BUCLE (Backup Core Limits Evaluation) edits are obtained from the GE Mark III System approximately twice each month. BUCLE automatically prints out the highest nodal exposure in the core, information which is also available via the process computer (P/C), but not directly edited by any program. A review of BUCLE edits indicates peak nodal exposure on April 11, 1979 below 30,000 MWD/ST and on May 1 it was at 30,028 MWD/ST. Therefore, May 1 may be indicated as the time in CYCLE 7 when planar exposure first exceeded 30,000 MWD/ST.

Evaluation of actual MAPLHGR data from the P/C for Reload 2 (MTB fuel) while the plant was operating at or near 100% power indicates the following:

DATE	MAPLHGR (kw/ft.)	NODAL EXPOSURE (MWD/ST)	CORE LOCATION
5-2-79	8.14	25,881	41,28,6
6-1-79	8.06	26,749	41,28,5
7-2-79	7.55	25,911	11,28,5
8-1-79	6.97	26,655	11,28,4
9-5-79	6.97	27,633	35,24,12
10-1-79	6.91	26,872	37,26,15
11-2-79	7.81	27,283	37,26,16
12-3-79	6.96	28,521	37,26,15
12-10-79	7.11	28,683	37,26,15
12-17-79	6.79	28,864	37,26,15

The Extended Burnup Program MAPLHGR analysis for MTB fuel indicates a maximum allowable value of 9.8 kw/ft. at 35,000 MWD/ST. The information above then suggests two things:

1. At no time since 30,000 MWD/ST was exceeded did the MAPLHGR exceed the analyzed limit; thus, no Limiting Condition for Operation (LCO) was violated.
2. The MAPLGHR always occurred at core locations having lower exposure than the peak exposure; specifically, the exposures in locations where MAPLGHR has occurred for the MTB fuel have continually been below 30,000 MWD/ST since May 1, 1979.

Because of the above two conclusions, the occurrence has no consequence from the standpoint of public health and safety.

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Corrective action has been completed as follows:

1. The plant process computer has been reprogrammed for 9.8 kw/ft at 35,000 MWD/ST and for 8.9 kw/ft at 40,000 MWD/ST. This corrects the current situation with adequate exposure margin through the end of the current operating cycle.

   The bases for these changes are contained in GE document NEDO-24202, which has been submitted to NRC in a License Amendment Request dated September 21, 1979, in support of the Extended Burnup Program at Monticello scheduled to begin with the upcoming operating cycle in 1980.

   NOTE: A check of bundle and nodal exposure arrays has been completed for all other fuel types in the core with the determination that no other fuel type will exceed 30,000 MWD/ST through the remainder of the current operating cycle.

2. A Technical Specification License Amendment Request dated December 21, 1979, has been submitted to change Table 3.11.1 by adding the values shown in 1., above.

3. A letter has been written to GE requesting determination that review methods be revised to assure prevention of a similar future occurrence. Additionally, the letter suggests a permanent software change to the process computer to edit maximum planar exposure for each fuel type, as well as the currently programmed maximum value of planar exposure, with each MAPLGHR interrogation of the computer by operating personnel.

4. The monthly Reactivity Anomaly surveillance test completed by the nuclear engineers and reviewed by the Supt., Technical Engineering, has been revised to include a verification, with documentation, that the maximum planar exposure of each fuel type in the core is less than the maximum value listed in Technical Specification Table 3.11.1.