

GENERAL INFORMATION or OTHER

EVENT NUMBER: 34119

LICENSEE: SIEMENS POWER CORP-NUCLEAR DIVISION
 CITY: RICHLAND REGION: 4
 COUNTY: BENTON STATE: WA
 LICENSE#: SNM-1227 AGREEMENT: Y
 DOCKET:

NOTIFICATION DATE: 04/22/98
 NOTIFICATION TIME: 12:40 [ET]
 EVENT DATE: 04/21/98
 EVENT TIME: 12:00 [PDT]
 LAST UPDATE DATE: 04/22/98

NOTIFICATIONS

ELMO COLLINS, R4	RDO
JIM GAVULA, R3	RDO
VERN HODGE	NRR

NRC NOTIFIED BY: DON CURET
 HQ OPS OFFICER: DICK JOLLIFFE

EMERGENCY CLASS: NOT APPLICABLE
 10 CFR SECTION:
 CCCC 21.21 UNSPECIFIED PARAGRAPH

EVENT TEXT

10CFR PART 21 REPORT - NONCONSERVATIVE PREDICTION OF MONITORED CORE MCPR -
 SIEMENS POWER CORPORATION (SPC) PERSONNEL DETERMINED THAT ADDITIVE
 CONSTANTS USED IN MINIMUM CRITICAL POWER RATIO (MCPR) DETERMINATION FOR
 SIEMENS ATRIUM-9B FUEL BY THE CORE MONITORING SYSTEM WERE FOUND TO BE
 NON-CONSERVATIVE (UP TO 7.6% BASED ON THE ORIGINAL ADDITIVE CONSTANTS).
 ALSO SPC PERSONNEL DETERMINED THAT THE UNCERTAINTY IN THE ADDITIVE CONSTANT
 FOR THIS FUEL DESIGN WAS LARGER THAN PREVIOUSLY ESTIMATED. THE REVISED
 UNCERTAINTY HAS THE POTENTIAL TO AFFECT THE MCPR SAFETY LIMIT.

SPC PERSONNEL NOTIFIED ALL SPC CUSTOMERS WITH ATRIUM-9B LEAD TEST
 ASSEMBLIES OR RELOAD QUANTITIES OF THE FUEL OF THE POSSIBLE NONCONSERVATIVE
 PREDICTION OF THE MONITORED MCPR AT CONDITIONS WHERE A SEVERELY UP-SKEWED
 AXIAL POWER SHAPE COULD OCCUR.

PLANTS AFFECTED ARE DRESDEN UNIT 3 (CYCLE 15), QUAD CITIES UNIT 2
 (CYCLE 15) AND KUOSHENG UNITS 1 & 2.

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 S PDR

NRC Operations Center
U.S. Nuclear Regulatory Commission
Washington, D. C.

Attachment to Siemens Power Corporation - Nuclear Division 10 CFR Part 21 Report (Fuel Cycle and Materials Event Notification Worksheet/NRC Form 361A) of April 21, 1998

10 CFR Part 21 Notification of Defect Relative to Non-Conservative Prediction of Monitored Core MCPR.

Additive constants used in MCPR determination for Siemens ATRIUM™-9B fuel by the core monitoring system were found to be non-conservative. Also the uncertainty in the additive constant for this fuel design was determined to be larger than previously estimated. The revised uncertainty has the potential to affect the MCPR safety limit. However, an interim additive constant uncertainty larger than the value calculated using new CHF data, had been used in safety limit calculations. Because the monitored MCPR could be non-conservative (up to 7.6%) based on the original additive constants, the MCPR safety limit could have been exceeded during the limiting transient while operating with less than 7.6% MCPR margin and with a severely up-skewed axial power shape in the limiting MCPR assembly.

SPC took immediate steps to determine the potential safety impact on plants operating with ATRIUM-9B fuel and completed an operability assessment on February 26, 1998. The assessment addressed the potential impact on both monitored MCPR and the MCPR operating limit. Where necessary, the operability assessment identified conservative compensatory actions to ensure that MCPR limits were adequate for ATRIUM-9B fuel. For operation with a positive axial offset (up-skewed power profile), restrictions on the Maximum Fraction of Limiting CPR (MFLCPR) were determined which ensure that adequate MCPR margin exists to cover the potential non-conservatism in ANFB. MFLCPR restrictions of up to 8% were calculated for plants using ATRIUM-9B fuel. For operation when the axial power offset is less than zero (down-skewed power profile), the ANFB correlation is conservative and no limitation on MFLCPR is required.

All SPC customers with ATRIUM-9B lead test assemblies or reload quantities of the fuel were notified of the possible non-conservative prediction of the monitored MCPR at conditions where a severely up-skewed axial power shape could occur.

PLANTS AFFECTED

DRESDEN-3 (CYCLE 15)
QUAD CITIES-2 (CYCLE 15)
HUOSHENG 1 & 2