



TOLEDO EDISON COMPANY  
DAVIS BESSE NUCLEAR POWER STATION UNIT ONE  
SUPPLEMENTAL INFORMATION FOR LER NP-33-82-61

DATE OF EVENT: September 28, 1982

FACILITY: Davis-Besse Unit 1

IDENTIFICATION OF OCCURRENCE: Reactor Quadrant Power Tilt slightly exceeding the steady state Technical Specification limit.

Conditions Prior to Occurrence: The unit was in Mode 1 with Power (MWT) = 1663 and Load (Gross MWE) = 552

Description of Occurrence: At 0745 hours on September 28, 1982, while continuously monitoring the computer display of reactor parameters, the Shift Supervisor found the reactor quadrant power tilt (QPT) in the WX quadrant to be exceeding its Technical Specification steady state limit (3.03%) by approximately 0.2%, as measured by the symmetrical incore detector system. This placed the unit in the action statement of Technical Specification 3.2.4. This requires within two hours either reduce the QPT to within limits or reduce the thermal power, high flux trip setpoints and the flux-delta flux-flow setpoint per Technical Specification Action Statement 3.2.4 (a)(1)(b). QPT was brought within the steady state limit at 0930 hours.

Designation of Apparent Cause of Occurrence: Due to the natural flow characteristics of the Davis-Besse Reactor Coolant System and the "cross-core" shuffle of the fuel for Cycle 3 which was done during the 1982 Refueling, a QPT of approximately 2.60% has existed since startup of this cycle in the WX quadrant. This tilt was reduced to approximately 2.40% by reratioing feedwater inducing a  $\Delta T_c$  across the core of about 2°F. On September 27, 1982 a plant transient occurred which caused the 2°  $\Delta T_c$  to be removed and an axial xenon oscillation. The combination of these two things caused the QPT in the WX quadrant to exceed the steady state limit as the xenon oscillation produced a large negative imbalance on September 28, 1982.

Analysis of Occurrence: There was no danger to the health and safety of the public or station personnel. For there to be any adverse effects on the fuel when the QPT is beyond its steady state limit, three conditions must be met: (1) control rods beyond their insertion limits, (2) the imbalance outside its Technical Specification limits, and (3) a loss of coolant accident must occur. Since these three conditions did not exist and tilt was only slightly above its steady state limit, there was no adverse effect on the fuel.

Corrective Action: The Control Rod Group 7 was borated out to reduce the negative imbalance and a feedwater induced  $\Delta T_c$  of approximately 2°F was produced across the core. These two actions reduced the QPT to less than the steady state limit within the two hour requirement of the Technical Specification action statement. A memo was written to the reactor operators explaining why we have a higher than normal tilt within the core this cycle, what to expect this tilt to do over core life, and what steps to take should the Technical Specification limit on QPT be approached. Over core life the natural tilt of the core should reduce to .6 to .8 in the WX quadrant due to burnup of the fuel. The  $\Delta T_c$  induced will be removed when the QPT is reduced by fuel burnup to the point where removing the  $\Delta T_c$  won't cause QPT to approach the T:S. limit.

Failure Data: There have been no previous similar occurrences.