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SUBJECT: Discusses actions taken to maintain high diesel generator reliability, in response to Generic Ltrs 83-41 & 84-15 concerning cold fast starts & prelube sys, respectively. Mod to provide complete prelubrication of diesels initiated.

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May 13, 1986

Director of Nuclear Reactor Regulation
Attention: Mr. G. E. Lear, PWR Project Directorate-1
Operating Reactors Branch No. 1
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gentlemen:

Docket 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant
Diesel Generator Reliability

References:
1) Letter from D. G. Eisenhut (NRC) dated December 16, 1983 transmitting Generic Letter 83-41
2) Letter from C. W. Giesler (WPSC) to D. G. Eisenhut (NRC) dated January 6, 1986
3) Letter from D. G. Eisenhut (NRC) dated July 2, 1982 transmitting Generic Letter 84-15
4) Letter from D. C. Hintz (WPSC) to D. G. Eisenhut (NRC) dated October 22, 1984
5) Letter from D. C. Hintz (WPSC) dated April 25, 1986 transmitting LER 86-003
6) Letter from C. W. Giesler (WPSC) to H. R. Denton (NRC) dated April 15, 1986 transmitting Proposed TS Amendment #74

Generic Letter 83-41 (Reference 1) requested that WPSC voluntarily respond to questions regarding "cold fast starts" of diesel generators (DG). The request defined a cold fast start as "Without prelubrication and warmup of any moving parts," which implies that partial lubrication suffices to preclude cold fast starts.

Reference 2 transmitted our response in which we stated that "[a continuous lubrication] system provides warm lube oil to main engine bearings at all times." We noted that this continuous lubrication system was supplied as original equipment and that fast cold starts therefore did not apply.

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WPSC reiterated the statement concerning our prelube system made above in our response (reference 4) to Generic Letter 84-15 (reference 3).

These responses were based on general information from manufacturer documents and system descriptions. For example, the maintenance manual states, "the lube oil circulating pump circulates warm oil through the oil system and keeps the engine in a constant state of readiness for an immediate start."

During the 1986 refueling shutdown, a number of planned diesel generator upgrades were implemented in accordance with the manufacturer's recommendations. In the process of installation of these upgrades, a crack was discovered in the No. 1 idler gear stub shaft floating bushing in each of the diesel generators. Details of this incident were provided in LER 86-003, reference 5. An investigation into the cause of these cracks, although inconclusive, leads us to believe that they can be attributed to numerous fast starts without complete prelubrication. It was further determined from this investigation that the warm prelube system provided lube oil to only a few selected bearings and components.

We have begun a modification with the concurrence of the manufacturer to provide the complete prelubrication of our diesels which we erroneously thought we had. This modification will allow us to manually valve in the current prelube system to the discharge of the main oil pump and thereby provide warm lube oil to all major components prior to all planned starts of the diesel.

Since the current configuration maintains oil and water jacket temperatures at 115° and 125°F respectively, the additional lubrication routed to the main oil system for a few minutes prior to starting the diesel generator will not significantly alter the ambient conditions from which the engine would be expected to start on demand. Therefore, planned starts with proper prelubrication, while providing protection to critical parts, would remain representative of on demand starts. Such activities are not prohibited by KNPP technical specifications; therefore, we are intending to apply the additional prelube to all planned starts.

Further measures to improve and maintain diesel generator reliability are being taken. Our technical specification commits us, through reference to IEEE 387-1977, to a yearly load rejection test from "maximum rated load." In the past we have conservatively interpreted this to be the one-half hour emergency diesel generator rating of 3050 KW. In the spirit of Generic Letter 84-15 we feel it prudent to perform this test at the 2950 KW rating since this bounds our expected safeguard loads. This action is also not precluded by the current KNPP Technical Specifications.

Lastly, our current technical specifications require us to test the diesel generator monthly at their seven day rating of 2950 KW (114% of continuous rating), due to an inappropriate reference to a section of IEEE 387-1977. We have submitted a Technical Specification amendment (Reference 6) to rectify this situation.

The measures described above will serve to ameliorate the severe mechanical stress and wear inherent to diesel generator starts. We have also taken measures to group surveillance procedures where possible to lessen the number of starts required.

WPSC recognizes the importance of maintaining the high reliability of our diesel generators which we reported to you in reference 4. We feel that these collective actions will act synergistically to minimize degradation, maintain reliability and most importantly, provide an overall improvement in safety through continued high diesel generator reliability.

Sincerely,

D/H

D. C. Hintz
Manager - Nuclear Power

DR/jms

cc - Mr. Robert Nelson, US NRC