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Nuclear
Operations

April 18, 1991
NRC-91-0060

Dr. Thomas E. Murley
Director, Office on Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

References: 1) Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43
2) NRC Letter, "Operational Events While Shutdown",
dated March 21, 1991

Subject: Actions Taken to Manage Shutdown Risks at Fermi 2
During Current Refueling Outage

Dear Dr. Murley:

As we discussed on the telephone recently, Detroit Edison has and is taking extensive actions to enhance the safety of Fermi 2 during the current refueling outage. Industry events over the past year have resulted in an increased level of management attention in planning, coordinating and executing this outage. Some of the actions we have taken are described in this letter.

We are most concerned about maintaining adequate decay heat removal and electrical power. The majority of the more significant shutdown events recently analyzed by the NRC Office for Analysis and Evaluation of Operational Data (AEOD) involved loss of one or both of these functions. To minimize the vulnerability of Fermi 2 during this refueling outage, equipment outages were scheduled to take full advantage of the plant design capabilities and thereby maximize the availability of decay heat removal capability and electrical power systems.

Whenever there is any fuel in the reactor, a primary means and alternate means of decay heat removal have been scheduled to be available. In addition to these two methods, another means of full or partial heat removal will be available. This redundancy of decay heat removal methods exceeds Technical Specification requirements and will minimize the vulnerability of the primary system to a loss of cooling event. The configuration of the plant, with 2 Residual Heat Removal (RHR) Pumps per each of 2 RHR divisions plus the existence of 2 BOP

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Standby Feedwater Pumps, enables us to schedule this defense in-depth approach to maintaining the decay heat removal function.

Our electrical system design also enables us to maintain redundancy of power supplies while conducting necessary maintenance. There are 2 separate off-site power supplies, each feeding into a physically separate switchyard. Currently, no electrical work is scheduled in the switchyard. We have also determined that there is no work scheduled for the substations supplying the off-site power lines that could affect their availability during the outage. This means we will have 2 separate sources of off-site electrical power throughout the outage. The Fermi 2 design includes two redundant divisions of essential buses. The loads in each division are divided into 2 groups, each of which includes an RHR pump and is supplied by a separate emergency diesel generator. During the entire outage at least 2 EDGs will be available, even when the core is offloaded. We also have 4 combustion-turbine generators (CTG), one of which has "black start" capability. Since we have currently scheduled 2 off-site power supplies and 2 EDGs as a minimum to be available at all times during the refueling outage, our vulnerability to a loss of electrical power event has been minimized.

We have implemented work control and access protective measures in our switchyards. These measures should minimize the probability of a switchyard event (like the Vogtle incident or the Diablo Canyon event described in Information Notice 91-22) causing a loss of one of our off-site power supplies. Operators will escort all off-site personnel in the switchyards to monitor and control their activities.

Decay heat removal capability can also be threatened during an outage by loss of coolant inventory events. To mitigate the consequences of such events, emergency core cooling (ECCS) capability was recognized as an important consideration in scheduling outage activities. The refueling schedule provides for at least two low pressure ECCS subsystems to be available throughout the refueling outage, even when not required by Technical Specifications. Additionally, the High Pressure Coolant Injection system was maintained operable following shutdown until the reactor vessel pressure boundary was breached to provide another means of coolant injection and/or pressure control.

Our Independent Safety Engineering Group (ISEG) performed a detailed safety review of our refueling outage plan. Their goal was to determine that the plant conditions and system outages scheduled would maintain a satisfactory level of nuclear safety. The primary areas ISEG investigated were shutdown cooling systems, emergency core cooling systems, primary containment, secondary containment, fuel offload and reload, key outage tasks, operations with the potential to drain the reactor vessel, schedule logic, and the Vogtle event. Several scheduling changes were made based on ISEG's recommendations.

Dr. Thomas E. Murley
April 18, 1991
NRC-91-0060
Page 3

The final ISEG report was completed March 13, 1991, two weeks before the start of the outage.

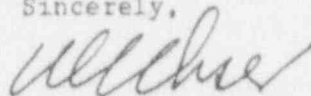
Changes to the outage schedule involving availability of decay heat removal and electrical power systems are reviewed by the Shift Manager, who is the management person on shift responsible for outage activities, the Operations Engineer and the Operations Work Coordinator to ensure that the impact of the change is fully evaluated. ISEG also reviews such schedule changes for their impact on our planned electrical and decay heat removal capabilities.

Information Notice 91-22, which was discussed in Reference 2, addressed 2 events in which reactor coolant was lost. The Fermi 2 ISEG, as part of their safety review, evaluated operations with the potential to drain the reactor vessel or reduce water inventory. Such tasks included main steam line valve work, control rod blade changeout, and control rod drive mechanism replacement. Procedures and methods planned for the work were reviewed and determined to be adequate for the scheduled tasks.

We have taken serious note of the shutdown events that have recently occurred. In addition to taking actions to enhance the safety of our current outage, we are actively participating in the NUMARC Shutdown Plant Issues Working Group and the Boiling Water Reactors Owners Group's Shutdown Issues Committee to learn more about shutdown risk issues and effective methods that can be used to minimize these risks in future outages.

If you have any questions regarding the actions we are taking to achieve a safe and successful refueling outage, please call me at (313) 586-5201.

Sincerely,



cc: A. B. Davis
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