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NRC INSPECTION TEAM ISSUES REPORT ON FOAM SEALANT MATERIAL FOUND
IN EQUIPMENT COOLING SYSTEM AT LASALLE NUCLEAR POWER STATION

A Nuclear Regulatory Commission Augmented Inspection Team has issued its report on the foam sealant material found in the equipment cooling water system, resulting in the shutdown in late June of both units at the LaSalle Nuclear Power Station.

The LaSalle Station, which has two reactors, is operated by Commonwealth Edison Co. near Seneca, Illinois.

The NRC inspection was conducted July 1-17, and the team's preliminary findings were discussed in a July 17 meeting, which was open to the public.

In May and June, a utility contractor repairing cracks in concrete at the plant's water intake building injected a foam sealant material in the cracks. Some of this material entered a large water-filled tunnel beneath the floor of the building and, in two instances, reduced the water flow into systems which cool various plant components.

Initially, the utility believed that the foreign material would not affect any plant safety systems because it would float at the top of the tunnel. Subsequently, the sealant material was found in the lower part of the tunnel where it could affect the cooling system for safety-related components.

When it was discovered that safety systems might be affected, the utility shut both reactors down on June 28-29. The units resumed operation after the foreign material was removed and plant systems were thoroughly inspected and tested.

The NRC team found that the cause of the foreign material entering the cooling system was poor control of the concrete crack repairs. The contractor was permitted to perform the work with no knowledge of the potential impact of the work, no approved procedures, and inadequate oversight.

In addition, once water flow in the equipment cooling system was affected, the utility failed to rigorously pursue the cause of the problem and to appreciate its significance.

The NRC team's function was to gather information about the

problem, its causes, and the utility's corrective actions. Further NRC reviews will determine what violations of NRC requirements occurred, if any, and what enforcement action is appropriate.

The executive summary of the inspection report is attached.

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(NOTE: The full report may be obtained from the NRC Region III Office of Public Affairs. It is also available on the NRC's internet web site at the following address:
<<http://www.nrc.gov/OPA/reports>>.

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NRC AUGMENTED INSPECTION TEAM REPORT EXECUTIVE SUMMARY

On June 19, 1996, with both units [at the LaSalle Nuclear Power Station] operating at 100% reactor power, non-essential service water discharge pressures began to decrease due to high differential pressures across the in-line strainers. Actions were successfully taken by the operators to backwash the strainers and restore normal discharge pressures. On June 24, 1996, the same problem recurred and a diesel fire pump concurrently experienced high coolant temperatures during routine surveillance testing.

The licensee's root cause determination following the initial event on June 19 was inadequate and focussed on sandblasting material that the licensee believed had become entrained in the non-essential service water system and fouled the strainers. Subsequent to the June 24 event, the licensee determined that the cause of both events was injectable sealant being used to repair cracks in the structure of the safety-related service water intake tunnel. The intake tunnel provides a common water source for both Unit 1 and Unit 2 non-essential and emergency service water systems. The crack repair activities resulted in a large amount of the sealant getting into the tunnel and a portion of it being drawn into the non-essential service water strainers.

Following the June 19 and 24 events, the licensee incorrectly concluded that the material that fouled the non-essential service water system could not affect the emergency service water systems. On June 28, during service water intake tunnel cleaning operations, divers found sealant in the tunnel that could compromise operability of the emergency service water systems. After some delay, the licensee then declared the emergency service water systems inoperable and shut down both units.

Subsequent to the events the licensee developed and effectively implemented a plan to clean the sealant from the intake tunnel

and inspect selected system components. After discussion with licensee management regarding NRC concerns on the scope and direction of the licensee's actions, additional plans were developed by the licensee which included the inspection and cleaning of all emergency service water strainers and performance of additional testing to ensure that all emergency systems functioned and to demonstrate emergency system strainer backwash capability. These additional inspections and tests were satisfactorily performed and resulted in the discovery of several significant issues.

The AIT concluded that the root cause of the strainer fouling was poor control of work on a safety-related structure. The staff responsible for assigning and controlling this work lacked sufficient facility knowledge to appreciate the potential consequences of this work. As a result, a contractor was permitted to seal cracks in the safety-related service water intake tunnel structure with no knowledge of the potential impact of the work, no approved procedures, and inadequate oversight. Control room operator performance and command and control in the control room during event response were good. However, operators responding to the Lake Screen House lacked appropriate knowledge regarding non-essential service water strainer operation.

The AIT also concluded that an inadequate assessment of the root cause of the June 19 and 24 events, as well as the failure to develop a comprehensive and thorough inspection and recovery plan, permitted repeated challenges to key safety systems and the availability of the ultimate heat sink. Loss of the function of those safety systems, and the resultant loss of the ultimate heat sink, would have significantly impacted the licensee's ability to respond to analyzed accidents. Had the root cause evaluation for the initial event been thorough, the event of June 24 could have been avoided, reducing the time that the emergency service water systems for both units were threatened.