UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, D.C. 20555

February 18, 1992

NRC INFORMATION NOTICE 92-13: INADEQUATE CONTROL OVER VEHICULAR TRAFFIC AT NUCLEAR POWER PLANT SITES

Addressees

All holders of operating licenses or construction permits for nuclear power reactors.

Purpose

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice to alert addressees to continuing problems resulting from the failure of some licensees to maintain adequate control over vehicular traffic at their plants. These licensees failed to follow established administrative procedures related to the use of self-propelled cranes. Their failures resulted in unnecessary challenges to safety systems and threatened the health and safety of plant personnel. It is expected that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, suggestions contained in this information notice are not NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances

Diablo Canyon Unit 1: On March 7, 1991, during a refueling outage, the Diablo Canyon Nuclear Power Plant, Unit 1, experienced a total loss of offsite power (LOOP). The event was caused when an electrical flashover occurred between a 500 kV transmission line and the boom of a mobile crane. The boom was positioned approximately three feet from the transmission line. At the time of the event, power to plant loads was being supplied from offsite by back-feeding through the main output transformer from the 500 kV switchyard. Two standby startup transformers, the normal sources of offsite power to the plant, had been removed from service for scheduled maintenance. The flashover caused protective relaying to actuate to isolate the faulted line and, as a result, offsite power to plant loads was interrupted.

All three emergency diesel generators started and loaded successfully. Operation of the residual heat removal system was restored within about 1 minute. The temperature of the core did not increase. No radiological release resulted. The fault did not affect Diablo Canyon, Unit 2, which was operating at full power.

Palo Verde Unit 3: On November 15, 1991, while the Palo Verde Nuclear Generating Station, Unit 3, was shutdown in hot standby, the boom of a 35-ton truck-mounted

crane made contact with one of two 13.8 kV offsite power feeder lines located in the plant's protected area. The crane was being used to replace the "A" phase bushing on the main output transformer. The original bushing had been damaged by lightning a day earlier. Prior to final installation and after high voltage testing had been completed, the bushing was returned to its shipping cask. The crane operator shut down the crane motor and engaged one of several braking devices on the crane boom. The crane operator then exited the crane cab to discuss replacement procedures with other maintenance personnel.

A wind gust caused the boom of the crane to rotate and contact one of the phases of the 13.8 kV feeder. The feeder was transmitting power from the startup transformer to various vital and non-vital loads in the "A" train. The electrical fault current which was generated was not of sufficient magnitude to cause protective devices to actuate because the crane had not been grounded as required by plant procedure. Therefore, the feeder remained energized and the fault current initiated small asphalt fires in the areas where the crane's front outrigger pads made ground contact. The rear outrigger pads were not extended.

The maintenance foreman (the foreman) contacted the shift supervisor and incorrectly identified the "B" train feeder as being faulted. The shift supervisor opened the supply circuit breaker for the "B" train feeder before the foreman could correct his misstatement. Electrical power was interrupted to non-vital loads, including two of four reactor coolant pumps (RCPs). Power to vital train "B" loads was momentarily interrupted but was reestablished following the successful start and loading of the train "B" emergency diesel generator (EDG).

The correct "A" feeder was subsequently deenergized, resulting in the start and loading of the "A" EDG and causing the loss of power to the remaining two operating RCPs. The reactor was cooled by natural circulation for about 28 minutes until a reactor coolant pump was started. A notification of an unusual event was made by the licensee based on a fire located in the protected area lasting longer than 10 minutes. The event resulted in no personnel injuries and no release of radioactive material.

Fermi Unit 2: On December 12, 1991, an event involving a self-propelled crane occurred at the Enrico Fermi Atomic Power Plant, Unit 2. The Fermi Unit was in cold shutdown in preparation for replacing a main output transformer. The crane, with its boom extended, attempted to turn onto a roadway that is outside the protected area but inside the owner controlled area at the plant. While the crane spotter was directing traffic, the crane operator proceeded to turn onto the roadway. A lifting strap, which was dangling from the end of the crane boom made momentary contact with one phase of a 120 kV transmission line which was providing offsite power to the plant. The circuit breaker for the line immediately opened and reclosed, interrupting and reestablishing the power supply in a matter of cycles. No LOOP resulted.

When the operator stopped the crane, the crane came to rest with the end of the boom extended above the transmission line and with the transmission line passing between the boom and lifting strap. The operator then backed up the crane. A second contact occurred between the transmission line and the lifting

strap. The circuit breaker again opened and reclosed rapidly so that no actual LOOP occurred. The crane operator then informed his supervisor of the event. No personnel injuries or equipment damage resulted. No challenge to plant safety systems occurred.

Discussion

Information Notice 90-25, Supplement 1, "Loss of Vital AC Power with Subsequent Reactor Coolant System Heat-up," informed licensees of problems that can occur when vehicular traffic is not properly controlled near safety systems or systems important to safety. A significant operating event occurred at the Alvin W. Vogtle Generating Plant (Vogtle) on March 20, 1990. An NRC incident investigation team described the circumstances of the event in detail in NUREG-1410 titled, "Loss of Offsite AC Power and the Residual Heat Removal System During Mid-Loop Operations at Vogtle Unit 1 on March 20, 1990." The Vogtle Unit 1 event was initiated when a fuel and lubricants truck, conducting routine operations in the switchyard, backed into a support column for a 230 kV feeder which was supplying offsite power to the Unit. Ensuing events led to the total loss of vital ac power at the plant and operation in natural circulation while the reactor coolant system was drained down to mid-loop.

One of the lessons learned from the Vogtle incident was the need for licensees to develop appropriate programs for controlling vehicular traffic at their sites. Although the events at the Diablo Canyon, Palo Verde, and Fermi plants were of less safety significance than the Vogtle event, they demonstrate that problems associated with inadequate control of vehicles continue to occur.

This information notice requires no specific action or written response. If you have any questions about the information in this notice, please contact the technical contact listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

Charles E. Rossi, Director
Division of Operational Events Assessment
Office of Nuclear Reactor Regulation

Technical contact: N. Fields, NRR
(301) 504-1173

Attachment: List of Recently Issued NRC Information Notices

LIST OF RECENTLY ISSUED
NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
92-12	Effects of Cable Leakage Currents on Instrument Settings and Indications	02/10/92	All holders of OLs or CPs for nuclear power reactors.
92-11	Soil and Water Contamination at Fuel Cycle Facilities	02/05/92	All uranium fuel fabrication and conversion facilities.
92-10	Brachytherapy Incidents Involving Iridium-192 Wire Used in Endobronchial Treatments	01/31/92	All Nuclear Regulatory Commission (NRC) licensees authorized to use iridium-192 for brachytherapy; manufacturers and distributors of iridium-192 wire for use in brachytherapy.
92-09	Overloading and Subsequent Lock Out of Electrical Buses During Accident Conditions	01/30/92	All holders of OLs or CPs for nuclear power reactors.
92-08	Revised Protective Action Guidance for Nuclear Incidents	01/23/92	All fuel cycle and materials licensees authorized to possess large quantities of radioactive material.
92-07	Rapid Flow-Induced Erosion/ Corrosion of Feedwater Piping	01/09/92	All holders of OLs or CPs for pressurized water reactors.
92-06	Reliability of ATWS Mitigation System and Other NRC Required Equipment Not Controlled by Plant Technical Specifications	01/15/92	All holders of OLs or CPs for nuclear power reactors.
92-05	Potential Coil Insulation Breakdown in ABB RXMH2 Relays	01/08/92	All holders of OLs or CPs for nuclear power reactors.

OL = Operating License
CP = Construction Permit

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for Carl H. Berlinger
Charles E. Rossi, Director
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Office of Nuclear Reactor Regulation

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*SEE PREVIOUS CONCURRENCE

OFC	DOEA:OEAB	ADM:RPB	DRPW:PD5	DRPW:PD5	DRPW:PD3-1	SC:DOEA:OEAB	
NAME	NFields*	JMain*	HRood*	CTrammell*	TColburn*	DFischer*	
DATE	01/22/92	01/14/92	01/23/92	01/22/92	01/28/92	01/30/92	

OFC	C:DOEA:OEAB	C:DOEA:OGCB	D:DOEA				
NAME	AChaffee*	CBerlinger*	CRossi				
DATE	01/31/92	02/10/92	02/11/92				

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One of the lessons learned from the Vogtle incident was the need for licensees to develop appropriate procedures governing vehicular traffic in protected areas. Although the events at the Diablo Canyon and Palo Verde plants were of less safety significance than the Vogtle event, they nevertheless call into question the adequacy of the affected licensees' programs for controlling vehicular traffic at their sites. The Diablo Canyon and Palo Verde events may prompt licensees to reevaluate the adequacy of their followup actions regarding the lessons learned from the Vogtle event.

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