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AUTH.NAME AUTHOR AFFILIATION
FULLER,R.E. Washington Public Power Supply System
POWERS,C.M. Washington Public Power Supply System
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 89-004-00:on 890226,mobile crane located near safety-related structures & components w/o safety evaluation.

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TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

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NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Washington Nuclear Plant - Unit 2	0 5 0 0 0 3 9 7	1 OF 0 6

TITLE (4) Mobile Crane Near Safety Related Structures and Components without a Safety Evaluation Due to Lack of Procedures

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)
0 2	2 6	8 9	8 9	0 0 4	0 0	0 3	3 1	8 9		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	4	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)					
POWER LEVEL (10)	0 0 0	20.402(b)	20.405(c)		50.73(a)(2)(iv)		73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	X	50.73(a)(2)(v)		73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)		50.73(a)(2)(vii)		OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		
		20.405(a)(1)(iv)	50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)		
		20.405(a)(1)(v)	50.73(a)(2)(iii)		50.73(a)(2)(x)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
R.E. Fuller, Compliance Engineer	AREA CODE 5 1 0 9 3 1 7 7 1 - 1 2 1 5 1 0 1 1 EXT. 2797

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On March 2, 1989, as a result of a Technical Evaluation, it was determined that an event which occurred on February 26, 1988 was reportable in accordance with the requirements of 10 CFR 50.73. On February 26, 1988, a mobile crane (Model 3900T) was brought within reach of safety related structures and components without a safety evaluation being performed.

The boom was swung over the Radwaste Building and the Diesel Generator (DG) Building in separate attempts to reach a Turbine Exhaust Air (TEA) fan motor on the roof of the Radwaste Building. After approximately 30 minutes in the area, Plant Technical personnel realized the crane was over safety related structures and components and the crane was immediately moved outside of the protected area.

The root cause of bringing a mobile crane in the protected area without a safety evaluation is the lack of procedures controlling use of mobile cranes around safety related structures and components. Associated causes include: (1) Inadequate training and experience of the Supply System individual responsible for supervision of the crane movement while in the protected area resulted in failure to recognize the potential hazards of the crane around safety related structures and components, and (2) Less than adequate planning to identify potential hazards and define zones of restricted operation.

The immediate corrective action was removal of the crane from the protected area. This was performed without incident.

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

Abstract (Cont'd)

As corrective actions, a procedure will be prepared to control the use of mobile cranes in the Protected Area and selected plant personnel will be trained on the procedures to qualify for supervision of cranes in the Protected Area.

Based upon an event probability evaluation, there is no unacceptable safety significance associated with this event. The evaluation determined that the probability of losing the plant safe shutdown capability, or causing an unintentional radionuclide release from the spent fuel pool, due to crane failure is at least one to two orders of magnitude less than the probability of occurrence of beyond postulated design basis events that result in the same or greater consequences. The additional event sequences posed by the presence of the crane without a safety evaluation and operating restrictions negligibly increased the core damage frequency.

Plant Conditions

a) Power Level - 0%
b) Plant Mode - 4 (Cold Shutdown)

Event Description

On March 2, 1989, as a result of an engineering review and reportability evaluation, it was determined that an event which occurred on February 26, 1988 was reportable in accordance with the requirements of 10 CFR 50.73. On February 26, 1988 at approximately 1330 hours, a Model 3900T mobile crane was used inside the Protected Area in an attempt to retrieve a Turbine Exhaust Air (TEA) fan motor from the Radwaste Building roof. The crane boom was swung over the Radwaste Building and the Diesel Generator (DG) Building in separate attempts, within an approximate 40 minute period, to retrieve the fan motor (See Figure 1). Both attempts failed to reach the fan motor because the crane boom was not long enough. As a result, the crane was never loaded when it was over either the Radwaste Building or the DG Building. Subsequent to the last attempt, Plant Technical personnel realized the crane was near safety related structures and components. They determined that a safety analyses had not been performed to evaluate the consequences of a crane failure. Accordingly, the crane was immediately removed from the Protected Area.

During this event, the Reactor Building roof was undergoing repair of damage caused by overpressurization of the Reactor Building due to improper operation of the Reactor Building HVAC fans (LER 88-007). The fuel pool was covered with a steel plate at the time to protect the stored fuel from missiles that could have been generated from the repair work.

Earlier, the crane had been used to assemble a Model 4100 tower crane that was used for the Reactor Building roof repairs. While the 3900T crane was en route to the WNP-2 parking lot after completing assembly of the 4100 crane, plant maintenance personnel decided the crane could be used to retrieve the TEA fan motor. The 3900T crane had been lifting loads of approximately 10,000 pounds with a 200-foot boom during the assembly of the 4100 crane. The 3900T configuration had not been altered following assembly of the 4100 crane and prior to its return to the protected area for retrieval of the TEA fan motor.

Immediate Corrective Action

Plant Technical personnel realized the crane boom was inappropriately over safety related structures and components and informed maintenance personnel. The crane was then immediately moved outside of the protected area.

Further Evaluation and Corrective Action

A. Further Evaluation

1) This event is reportable under 10 CFR 50.73(a)(2)(v), any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems. Subsequent engineering estimates of a nonmechanistic failure of the crane determined the Diesel Generator Building roof (safety structure) probably would not withstand the load. In addition, missiles could be directed toward the fuel pool if the crane tipped accidentally into the Reactor Building above the 606-foot elevation.

2) Other than the failed TEA motor, there were no structures, components or systems inoperable prior to the event which contributed to the event.

3) A safety analysis had been performed on the Model 4100 tower crane that was over the Reactor Building during the event. As a result of the analysis, loads were restricted to analyzed zones while passing over the DG building and the Reactor Building.

4) The earlier loadings of the 3900T crane with the 200-foot boom configuration gives some assurance the crane was stable in the unloaded condition. As noted above, prior to erection of the 4100 tower crane, a safety analysis was performed resulting in limiting conditions for operation. The decision to use the 3900T crane did not receive the same level of review. Consequently, no load testing (except for the loads encountered during assembly of the 4100 tower crane) or safety analyses were performed, and no limiting conditions were placed on its operation.

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TEXT *(If more space is required, use additional NRC Form 366A's)* (17)

5) The root cause of bringing a mobile crane in the protected area without a safety evaluation is the lack of procedures controlling use of mobile cranes around safety related structures and components. Associated causes include: (1) Inadequate training and experience of the Supply System individual responsible for supervision of the crane movement while in the protected area resulted in failure to recognize the potential hazards of the crane around safety related structures and components, and (2) Less than adequate planning to identify potential hazards and define zones of restricted operation.

B. Further Corrective Action

1) A procedure will be prepared providing appropriate control of mobile cranes within reach of safety related structures and components.

2) Appropriate plant personnel will be trained on the new procedure for control of mobile cranes. Training will include, but not be limited to, instruction on failure modes of cranes and important considerations to prevent failure.

Safety Significance

There is no unacceptable safety significance associated with this event. An event probability evaluation determined the event was less probable than the probability of occurrence of beyond FSAR-postulated design basis events that result in the same or greater consequences, i.e., the failure rate of standby DGs and the return frequency of seismic events with a magnitude slightly greater than the Safe Shutdown Earthquake. The additional event sequences posed by the presence of the crane without a safety evaluation and operating restrictions negligibly increased the core damage frequency.

If the crane boom had collapsed, a preliminary engineering evaluation determined that the Diesel Generator Building roof would fail in a manner that would not have protected the diesel generators. By a similar evaluation, the Reactor Building steel structure above the 606-foot elevation could fail if struck by the crane in a manner that generates secondary missiles which could have reached the spent fuel pool. However, during this event, the fuel pool was covered by a steel plate to prevent entry of credible missiles from the Reactor Building roof repair effort, further reducing the chances of a crane-accident-generated missile from entering the fuel pool.

Since there was no actual failure of the crane while it was over the DG building, this event did not threaten the health and safety of the public or Plant personnel.

Similar Events

None

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TEXT *(If more space is required, use additional NRC Form 366A's)* (17)

EIIS Information

Text Reference	EIIS Reference	
	System	Component
Turbine Building HVAC (TEA Fan Motor)	VK	MO
Emergency Onsite Power Building (Diesel Generator Bldg)	NB	
Reactor Building	NG	
Radwaste Building	NE	
Turbine Building	NB	
Emergency Power System for HPCS	EK	
Reactor Building HVAC Fans	VA	FAN

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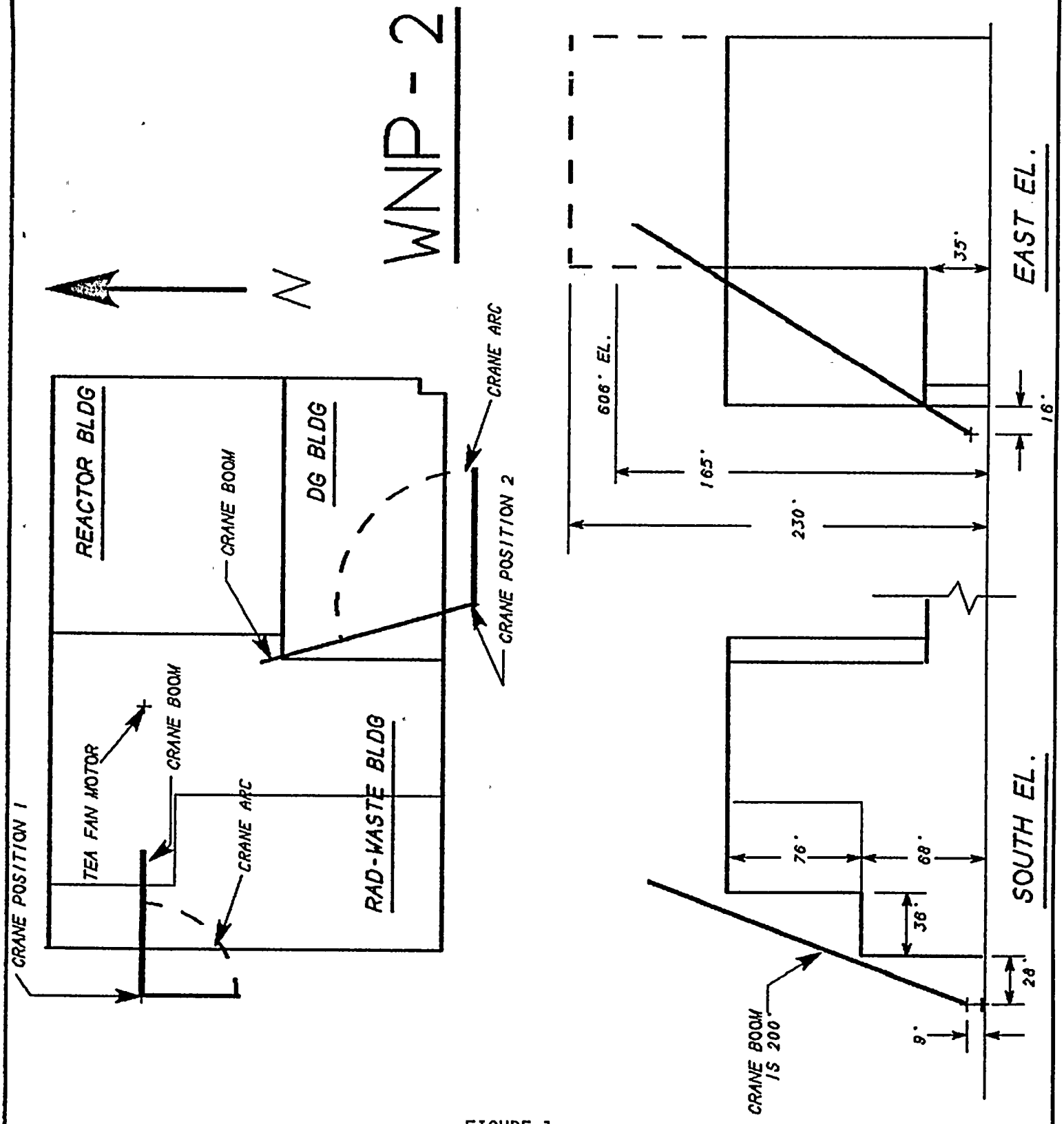

FIGURE 1

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

P.O. Box 968 • 3000 George Washington Way • Richland, Washington 99352

Docket No. 50-397

March 31, 1989

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: NUCLEAR PLANT NO. 2
LICENSEE EVENT REPORT NO. 89-004

Dear Sir:

Transmitted herewith is Licensee Event Report No. 89-004 for the WNP-2 Plant. This report is submitted in response to the report requirements of 10CFR50.73 and discusses the items of reportability, corrective action taken, and action taken to preclude recurrence.

The LER describes an event where, on February 26, 1988, a mobile crane boom was moved over safety-related structures. Following the event, a Nonconformance Report (NCR) was written and, as part of the NCR disposition, an Engineering evaluation was requested to evaluate the credibility of a crane failure and the consequences of such a failure while over the Diesel Generator Building. This information was needed to evaluate the event reportability. On February 9, 1989, after expending a considerable number of manhours, engineering determined: 1) A crane failure was a credible event, 2) That failure of the Diesel Generator Building Roof due to a crane failure could not be easily confirmed or dismissed; and 3) It would take a substantial amount of engineering manhours to mechanistically determine the possible effects on the Diesel Generators.

An event probability evaluation was also performed which determined that the probability of losing the plant safe shutdown capability, or causing an unintentional radionuclide release, from crane failure was less than the probability of occurrence of beyond postulated design basis events that result in the same or greater consequences. Therefore, the additional event sequences posed by the presence of the crane without a safety evaluation and operating restrictions negligibly increased the core damage frequency.

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However, on March 2, 1989 the Supply System determined it was not an effective use of manpower to continue the engineering evaluation and, in the absence of a formal conclusion that safety systems would not have been damaged in the unlikely event of a crane failure, made the decision to report the event per 10CFR50.73(a)(2)(v).

Very truly yours,

C.M. Powers (M/D 927M)
WNP-2 Plant Manager

CMP:lg

Enclosure:
Licensee Event Report No. 89-004

cc: Mr. John B. Martin, NRC - Region V
Mr. C.J. Bosted, NRC Site (M/D 901A)
INPO Records Center - Atlanta, GA
Ms. Dottie Sherman, ANI
Mr. D.L. Williams, BPA (M/D 399)