ARKANSAS POWER & LIGHT COMPANY
POST OFFICE BOX 551 LITTLE ROCK, ARKANSAS 72203 (501) 371-4000

November 12, 1982

ØCAN118204

Mr. Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

SUBJECT: Arkansas Nuclear One - Units 1 & 2
Docket Nos. 50-313 and 50-368
License Nos. DPR-51 and NPF-6
NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants"

Gentlemen:

The purpose of this letter is to provide you with an interim response and to update you as to the status of our response plan to the subject NUREG.

Interim Response

Attachment 1 is an engineering evaluation of the special lifting devices used at Arkansas Nuclear One in the lifting of heavy loads against the requirements of ANSI N14.6-1978. Attachment 2 contains the completion of the design evaluation of cranes L2, L3 and L7 against certain requirements of ANSI B30.2-1976 and CMAA-70. This work was prompted by Franklin Research Center's October 1, 1981, draft technical evaluation report (TER) for ANO-1 & 2 which evaluated our response to Section 2.1 of your December 22, 1980, generic letter on "Control of Heavy Loads."

Response Plan

AP&L has procedures which address items specified in your December 22, 1980, letter (N-81-03). The content of these procedures was used as input during the preparation of a draft response to Sections 2.2, 2.3 and 2.4 of your December 22, 1980, letter. Per our August 23, 1982, letter (ØCANØ88211), this response was scheduled for submittal by September 1, 1982. Subsequent review has indicated, however, that the affected procedures required modification in order to fully address NRC's concerns.

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Consequently, AP&L is developing plans and schedules to remedy the concerns and we expect to submit to you by December 22, 1982, a report summarizing our resolution of the following items:

1. Section 2.2 response on handling systems operating in the vicinity of fuel storage pools.

2. Section 2.3 response on handling systems operating in containment.

3. Section 2.4 response on handling systems operating in plant areas containing equipment required for reactor shutdown, core decay heat removal or spent fuel pool cooling.

4. Safe load paths.

5. Sling load testing program.

We anticipate this report to be an essentially complete and final submittal on NUREG-0612.

Sincerely,

John R. Marshall

John R. Marshall
Manager, Licensing

JRM:DET:sl

Attachments

SECTION 2.1.3(d) GUIDELINE 4 ON SPECIAL LIFTING DEVICES

Request: "Verification that lifting devices identified in 2.1.3-c, above, comply with the requirements of ANSI N14.6-1978, or ANSI B30.9-1971 as appropriate. For lifting devices where these standards, as supplemented by NUREG-0612, Sections 5.1.1(4) or 5.1.1(5), are not met, describe any proposed alternatives and demonstrate their equivalency in terms of load-handling reliability."

Response: We have investigated several previously identified special lifting devices per the applicable sections of ANSI N14.6-1978 "Standards for Special Lifting Devices for Shipping Containers Weighing 10,000 pounds (4500 Kg) or more for Nuclear Materials". These sections are Sections 3.1 (Designers Responsibilities), 3.2 (Design Criteria), 3.3 (Design Consideration), 4.1 (Fabricator's Responsibilities) and 5.0 (Acceptance Testing, Maintenance and Assurance of Continued Compliance) and were identified in our conference call with NRC and Franklin Research Center (FRC) on November 30, 1981.

The lifting devices that were investigated on Unit 1 were the Head and Internals Handling Fixture (Tripod), the Internals Handling Adapter, the Internals Handling Extension, and the ISI (ARIS) Tool Lift Rig. The lifting devices that were investigated on Unit 2 were the Reactor Head Maintenance Structure Lift Beam, the Refueling Seal Plate Lift Rig, the Closure Head Lift Rig, the Upper Guide Structure Lift Rig, the Core Support Barrel Lift Rig and the ISI (PAR) Tool Lift Rig.

The results of these investigations are tabulated in Tables 2.1.3(d)-1 and -2. Table 2.1.3(d)-1 lists the above lifting devices and compares the existing design and Q.A. documentation on them to the requirements of the ANSI standard. Table 2.1.3(d)-2 lists the average and minimum factors of safety found in the load bearing members when actual stresses were compared to the materials ultimate and yield stresses. The materials ultimate and yield stresses are per the appropriate ASTM standard. A complete list of load bearing components, their actual stresses, and their yield and ultimate stresses have been tabulated and are available for your inspection. The average factors of safety to yield and to ultimate for the Unit 1 and Unit 2 lifting devices exceed the minimum requirements of a factor of safety of 3 to yield and 5 to ultimate with the exception of the Hydraset device. In determining the factor's of safety, we utilized a dynamic load factor based on impact loading required by CMAA-70, section 3.3.2.1.1.3 where the dynamic load is calculated to be 15% of the load weight ≤½% x hoist speed (feet per minute) x load weight ≤50% of the load weight, and where the minimum dynamic load must be greater than or equal to 15% of the load's static weight. This dynamic load was then added to the load's static weight to arrive at a design load from which the factors of safety were determined.

All of the lifting devices utilized at Arkansas Nuclear One, Units 1 and 2 were specifically designed as lifting devices. All of the lifting devices utilized in Unit 1 and the Reactor Head Maintenance Structure Lift Beam, the Hydraset device and the PAR (ISI) tool in Unit 2 were designed per AISC criteria and all of their stresses are within AISC allowables. The remainder of the lifting devices utilized in Unit 2 were designed to an in-house Combustion Engineering, Inc. criteria similar to ASME Section III, Division 1, Subsection NF.

One Unit 2 special lifting device that was not previously identified is the Hydraset Precision Load Positioner (Equipment No. 2L32). This device was manufactured by Delmar Engineering Labs under Bechtel Purchase Order M-2312 AC. The device was purchased to the vendor's standard specifications and was purchased non-Q.

The Hydraset is used in the removal and reinstallation of reactor vessel components during refueling and required inspection operations. Even though this equipment was bought non-Q, it was load tested to 200% of its capacity (300 tons) prior to delivery and certified for a safe working load of 150 tons which is the Unit 2 polar crane's rated capacity. We have calculated the average and minimum factors of safety to yield and to ultimate on this device's clevises and yokes based on a load of 150 tons and they are included in Table 2.3.1(d)-2.

We have determined that the special lifting devices in Unit 1 meet the intent of ANSI N14.6-1978 with the following exceptions:

1) There is no documentation available on the load tests performed on the Head and Internals Handling Fixture, and the Internals Handling Fixture Extension. Each of the three legs of the Internals Handling Adapter were load tested to the full weight of the Core Barrel Assembly and a portion of the ISI (ARIS) tool lift rig was load tested at the weight of the ARIS tool.

2) While design specifications for all lifting devices do not exist, design requirements were satisfactorily documented in design calculations and on the design drawings.

We have determined that the special lifting devices utilized in Unit 2 meet the intent of ANSI N14.6-1978 with the following exceptions:

1) The Closure head lift rig, the Reactor Head Maintenance Structure Lift Beam, the Refueling Seal Plate Lift Rig, and the ISI (PAR) Tool were not load tested.

2) The Core Support Barrel Lift Rig and the Upper Guide Structure Lift Rig were subjected to a 125% load test not the 150% load test required by ANSI N14.6.

A 150% load test followed by NDE of all load bearing welds at 14-month intervals or prior to the device's first use during a refueling outage will not be performed. This testing would involve decontamination of the device and load testing outside the Reactor Building and possibly off-site. Also, this testing sequence could extend the outage for approximately two weeks and result in an annual cost to AP&L of approximately $1,800,000. In addition, any testing of the lifting devices inside containment will add unwarranted stress and fatigue to the polar cranes.

Table 2.3.1(d)-1

ANO LIFTING DEVICES COMPARED TO ANSI N14.6-1978

Legend:
C - Complies
NA - Not Applicable
NE - Documentation Does Not Exist
NR - Not Required by Design Spec.
NC - Does Not Comply
C* - 125% Load Testing Required by Design Spec.

Lifting Device	ANSI N14.6-1978 SECTIONS								
	3.1.1	3.1.2	3.1.3	3.1.4	3.2.1.1	3.2.4	3.2.5	3.2.6	3.3.1
UNIT 1									
1. Tripod & Turnbuckles	NE	NA	NE	NE	NC	C	NE	NE	NE
2. Internals Handling Adapter	NE	NA	NE	NE	NC	C	NA	NE	NE
3. Internals Handling Fixture Extension	NE	NA	NE	NE	C	C	NA	NE	NE
4. ISI (ARIS) Tool Lift Rig	NE	NA	C	NE	NC	NC	C	NE	NE

Table 2.3.1(d)-1 (continued)

ANO LIFTING DEVICES COMPARED TO ANSI N14.6-1978

Lifting Device	ANSI N14.6-1978 SECTIONS							
	3.1.1	3.1.2	3.1.3	3.1.4	3.2.1.1	3.2.4	3.2.5	3.2.6	3.3.1
UNIT 2									
1. Closure Head Lift Rig	C	NA	C	NE	C	C	NA	C	C
2. Upper Guide Structure Lift Rig	C	NA	C	NE	C	C	NA	NR	C
3. Core Support Barrel Lift Rig	C	NA	C	NE	C	C	NA	NR	C
4. Refueling Seal Plate Lift Rig	C	NA	C	NE	C	C	C	NR	NA
5. Reactor Maintenance Structure Lift Beam	NE	NA	C	NE	NC	NC	C	NR	NA
6. ISI (PAR) Tool	NE	NA	C	NE	NC	C	NA	NR	NE
7. Hydra Set	NE	NE	NE	NE	NC	NC	NA	NR	C

Table 2.3.1(d)-1 (continued)

ANO LIFTING DEVICES COMPARED TO ANSI N14.6-1978

Lifting Device	ANSI N14.6-1978 SECTIONS								
	3.3.4	3.3.5	3.3.6	4.1.3	4.1.4	4.1.5	4.1.6	4.1.7	4.1.9
UNIT 1									
1. Tripod & Turnbuckles	C	C	NA	NE	NE	NE	NE	NE	NE
2. Internals Handling Adapter	C	C	C	NE	NE	NE	NE	NE	NE
3. Internals Handling Fixture Extension	C	C	NA	NE	NE	NE	NE	NE	NE
4. ISI (ARIS) Tool Lift Rig	C	C	NA	NE	NE	NE	NE	NE	NE

Table 2.3.1(d)-1 (continued)

ANO LIFTING DEVICES COMPARED TO ANSI N14.6-1978

Lifting Device	ANSI N14.6-1978 SECTIONS							
	3.3.4	3.3.5	3.3.6	4.1.3	4.1.4	4.1.5	4.1.6	4.1.7	4.1.9
UNIT 2									
1. Closure Head Lift Rig	C	C	NA	C	C	C	C	C	C
2. Upper Guide Structure Lift Rig	C	C	NA	C	C	C	C	C	C
3. Core Support Barrel Lift Rig	C	C	C	C	C	C	C	C	C
4. Refueling Seal Plate Lift Rig	C	NA	NA	C	C	C	C	C	C
5. Reactor Maintenance Structure Lift Beam	C	NA	NA	C	C	C	C	C	C
6. ISI (PAR) Tool	C	NA	NA	NA	NA	NA	NA	NA	NA
7. Hydra Set	C	NA	NA	NA	NA	NA	NA	NA	NA

Table 2.3.1(d)-1 (continued)

ANO LIFTING DEVICES COMPARED TO ANSI N14.6-1978

Lifting Device	ANSI N14.6-1978 SECTIONS								
	5.1.3	5.1.4	5.1.5	5.1.6	5.1.7	5.1.8	5.2.1	5.2.2	5.3.1
UNIT 1									
1. Tripod & Turnbuckles	NE	NE	NE	NE	NE	NE	NR	NE	NE
2. Internals Handling Adapter	NE	NE	NE	NE	NE	NE	C	NE	NE
3. Internals Handling Fixture Extension	NE	NE	NE	NE	NE	NE	NR	NE	NE
4. ISI (ARIS) Tool Lift Rig	NE	NE	NE	NE	NE	NE	C	NE	NE

Table 2.3.1(d)-1 (continued)

ANO LIFTING DEVICES COMPARED TO ANSI N14.6-1978

Lifting Device	ANSI N14.6-1978 SECTIONS							
	5.1.3	5.1.4	5.1.5	5.1.6	5.1.7	5.1.8	5.2.1	5.2.2	5.3.1
UNIT 2									
1. Closure Head Lift Rig	NE	NE	NE	NE	NE	NE	NR	NA	NE
2. Upper Guide Structure Lift Rig	NE	NE	NE	NE	NE	NE	C*	NA	NE
3. Core Support Barrel Lift Rig	NE	NE	NE	NE	NE	NE	C*	NA	NE
4. Refueling Seal Plate Lift Rig	NE	NE	NE	NE	NE	NE	C	NA	NE
5. Reactor Maintenance Structure Lift Beam	NE	NE	NE	NE	NE	NE	NR	NR	NE
6. ISI (PAR) Tool	NE	NE	NE	NE	NE	NE	NR	NR	NE
7. Hydra Set	NE	NE	NE	NE	NE	NE	C	NR	NE

Table 2.3.1(d)-1 (continued)

ANO LIFTING DEVICES COMPARED TO ANSI N14.6-1978

Lifting Device	ANSI N14.6-1978 SECTIONS			
	5.3.2	5.3.4	5.3.6	5.3.7
UNIT 1				
1. Tripod & Turnbuckles	NE	NE	NE	NE
2. Internals Handling Adapter	NE	NE	NE	NE
3. Internals Handling Fixture Extension	NE	NE	NE	NE
4. ISI (ARIS) Tool Lift Rig	NE	NE	NE	NE

Table 2.3.1(d)-1 (continued)

ANO LIFTING DEVICES COMPARED TO ANSI N14.6-1978

Lifting Device	ANSI N14.6-1978 SECTIONS			
	5.3.2	5.3.4	5.3.6	5.3.7
UNIT 2				
1. Closure Head Lift Rig	NE	NE	NE	NE
2. Upper Guide Structure Lift Rig	NE	NE	NE	NE
3. Core Support Barrel Lift Rig	NE	NE	NE	NE
4. Refueling Seal Plate Lift Rig	NE	NE	NE	NE
5. Reactor Maintenance Structure Lift Beam	NE	NE	NE	NE
6. ISI (PAR) Tool	NE	NE	NE	NE
7. Hydra Set	NE	NE	NE	NE

Table 2.3.1(d)-2

Lift Rig	Avg. F.S. to Yield	Min. F.S. to Yield	Avg. F.S. to Ultimate	Min. F.S. to Ultimate
UNIT 1				
1. Tripod & Turnbuckle	9.02	1.5	14.54	3.8
2. Internals Handling Adapter	3.43	1.2	5.54	1.44
3. Internals Handling Fixture Extension	9.00	3.8	11.85	6.1
4. ISI (ARIS) Tool Lift Rig	5.82	1.77	14.36	4.42

Table 2.3.1(d)-2 (continued)

Lift Rig	Avg. F.S. to Yield	Min. F.S. to Yield	Avg. F.S. to Ultimate	Min. F.S. to Ultimate
UNIT 2				
1. Tripod	16.07	4.63	22.97	9.00
2. Upper Guide Structure Lift Rig	7.82	3.2	14.76	5.06
3. Core Support Barrel Lift Rig	7.1	3.2	12.43	5.06
4. Refueling Seal Plate Lift Rig	7.46	5.2	12.04	8.4
5. Reactor Maintenance Structure Lift Beam	6.58	2	10.45	3.2
6. ISI (PAR) Tool	13.77	2.63	21.50	4.73
7. Hydra Set	5.6	2	4.85	3.7

SECTION 2.1.3(f): GUIDELINE 7 ON CRANE DESIGN

During our continued investigation of NUREG-0612 requirements, it was discovered that two (2) additional cranes should have been considered under the NUREG's criteria. These two cranes are the Unit 1 CRD and General Maintenance Crane (Equipment Number L-21) and the Unit 2 Main Steam Isolation Valves Bridge Crane (Equipment Number 2L-10). Investigation of the design specifications reveal that both were manufactured to CMAA-70 criteria.

In their evaluation of AP&L's response to Section 2.1.3(f) of Enclosure 3 of NRC's December 22, 1980 letter, Franklin Research Center (FRC) identified fourteen (14) areas where further clarification was needed to insure that the Unit 1 Polar Crane (L2), Fuel Handling Crane (L3) and the Intake Structure Gantry Crane (L7) complied with CMAA-70, ANSI B30.2-1976 and other current industry standards. Six (6) of these items were resolved in our December 22, 1981, submittal. AP&L's verification of these and other items from pages 19 and 20 of the FRC's report follows:

A. "Either longitudinal stiffners were not used or their design installations substantially conform with the requirements of CMAA-70 and allowable h/t ratios in box girders using longitudinal stiffners do not exceed those specified in CMAA-70."

   1) Intake Structure Gantry Crane (L7) - In the crane vendor's design evaluation, Kranco, Inc. indicated that longitudinal stiffners were not used in the girder design and would not have been required by CMAA-70 Section 3.3.3.1.1.

   2) Unit 1 Polar Crane (L2) - In the crane vendor's design evaluation, the Harnischfeger Corp. indicated that this crane utilizes three (3) longitudinal stiffeners on each girder web. Placement and size of the stiffners were also chosen to satisfy seismic loading criteria and would substantially meet the CMAA-70 requirements for operating conditions.

   3) Unit 1 and Unit 2 Fuel Handling Crane (L3) - In the crane vendor's design evaluation, the Harnischfeger Corp. indicated that this crane incorporates two (2) longitudinal stiffners on each girder web. Placement and size of the stiffners were selected to meet the requirements imposed by seismic loading and are in substantial conformance to CMAA-70 requirements for operating conditions.

B. "Fatigue failure was considered in crane design and the numbers of design loading cycles at or near rated load was less than 20,000."

   1) Intake Structure Gantry Crane (L7) - In the crane vendor's design evaluation, Kranco, Inc. indicated that crane vendor, in their design evaluation, the structural design load combinations included seismic forces and 20 lb/sq.ft. wind forces (78 MPH). These are extraordinary loads that would not be included in a fatigue analysis. Under normal operations (5% lateral per

3.3.2.1.2.1 and 5 lb/sq. ft. wind per 3.3.2.1.1.1) the resulting stress ranges are well within the allowables for CMAA Class D service (500,000 cycles) for any stress category (Refer to Table 3.3.3.1.3-1). Actual stresses were calculated to be 8.83 ksi and 6.16 ksi for the girders and the legs, respectively, which are both less than the 12 ksi allowable stress for any stress category.

2) Unit 1 Polar Crane (L2) and Unit 1 and Unit 2 Fuel Handling Crane (L3) - In the crane vendor's design evaluation, the Harnischfeger Corp. indicated that both cranes were designed for EOCI-61 Class A service structurally. When compared to CMAA-70 listed service classes, this is equivalent to either A1 or A2 service structurally. Table 3.3.3.1.3-1 indicates a permissible stress range of 15 ksi or higher depending on the weld category. Harnischteger designs typically do not employ joint details whose category of welding is worse than Category C. Consequently, for cranes structurally designed to Class A service or less than 20,000 full load cycles, the allowable stress range does not become critical and the structure is governed by other criteria.

C. "Maximum crane load weight plus the weight of the bottom block, divided by the number of parts of rope, does not exceed 20% of the manufacturer's published breaking strength."

1) Intake Structure Gantry Crane (L7) - Per the following vendor calculation, the maximum rope load does not exceed 20% of the manufacturer's published breaking strength. (25 ton load plus .5375 ton block) divided by 8 parts of line = 3.19 ton. (6 x 37-5/5 IPS - 1W RC rope is rated at 17.9 tons breaking strength.) .20 times 17.8 = 3.58 ton > 3.19 ton okay.

2) Unit 1 Polar Crane (L2) and Unit 1 and 2 Fuel Handling Crane (L3) - In the crane vendor's design evaluation, the Harnischfeger Corp. indicated that this criteria, as stated in CMAA-70, Article 4.2.1, is satisfied for both cranes.

D. "Drum design calculations were based on the combination of crushing and bending loads."

1) Intake Structure Gantry Crane (L7) - Per the attached vendor calculation (Attachment 1), the drum design satisfies CMAA-70 Section 4.4.1 for combined crushing and bending loads.

2) Unit 1 Polar Crane (L2) and Unit 1 and 2 Fuel Handling Crane (L3) - In the crane vendor's design evaluation, the Harnischfeger Corp. indicated that the drum design satisfies the criteria in CMAA-70, Article 4.4.1 for both cranes.

E. "Drum grove depth and pitch substantially conform to the recommendations of CMAA-70." (Intake Structure Gantry Crane only)

1) Intake Structure Gantry Crane (L7) - Per CMAA-70 Section 4.4.3, the recommended minimum drum groove depth is 3/8 times the rope

diameter, and the recommended minimum drum groove pitch is either 1.14 times the rope diameter or the rope diameter plus 1/8-inch, whichever is smaller. We have determined that our groove-depth is .25 inches, which is greater than the minimum required depth of .234 inches. Also, the actual pitch is .726 inches, which is greater than the minimum requirement of .7125 inches. The product of 1.14 times the rope diameter (5/8-inch) is .7125 inches, which is smaller than the rope diameter plus 1/8-inch.

F. "Gear horsepower ratings were based on design allowables and calculation methodology equivalent to that incorporated in CMAA-70."

1) Intake Structure Gantry Crane (L7) - The crane vendor, Kranco, Inc., has stated that the gear boxes were commercial grade and were selected using a service factor of 1.4 which exceeds CMAA-70 class C requirements of a service factor equal to .55.

2) Unit 1 Polar Crane (L2) and Unit 1 and 2 Fuel Handling Crane (L3) - In the crane vendor's design evaluation, the Harnischfeger Corp. indicated that the gear horsepower ratings for both the bridge and trolley drives in both cranes comply with CMAA-70, Article 4.5.1.

G. "Either a mechanical load brake was used or hoist holding brakes have torque ratings in excess of the hoist motor torque (approximately 125%)."

1) Intake Structure Gantry Crane (L7) - The crane vendor, Kranco, Inc., has stated that a mechanical load brake was not used, but that two holding brakes were supplied with each having a one-hour torque rating of 200 lb/ft. CMAA-70 Section 4.7.4.2 states that when two holding brakes are provided, they should each be rated at a minimum of 100% motor torque. The vendor has determined that 100% motor torque for the hoist motors is 137 lb/ft., which is less than the rating of the brakes that were supplied. Therefore, we are in compliance with CMAA-70.

2) Unit 1 Polar Crane (L2) and Unit 1 and 2 Fuel Handling Crane (L3) - In the crane vendor's design evaluation, the Harnischfeger Corp. indicated that both cranes comply with the load brake torque rating criteria of CMAA-70, Article 4.7.4.2.

H. "Crane operation under load near the end of bridge or trolley travel is not allowed or is compensated for by bumpers and stops in substantial conformance to the requirements of CMAA-70."

1) Intake Structure Gantry Crane (L7) - We have determined that the bumpers and trolley and stops meet the requirements of CMAA-70 Section 4.12. The three major requirements of Section 4.12 are:

a) "The (Bridge) bumpers shall be capable of stopping the crane (not including the lifted load) at an average rate of deceleration not to exceed 3 feet per second per second

(Ft/S/S) when traveling in either direction at 20 percent of rated load speed."

The average rate of deceleration for the bridge has been determined to be 1.7 Ft/S/S, which is less than the required 3 Ft/S/S and is therefore okay.

b) "The bumpers shall have sufficient energy absorbing capacity to stop the crane when traveling at a speed of at least 40 percent of rated load speed."

The deflection of the bumpers when the crane is traveling at 40% of rated load speed has been determined to be 3.13 inches and, since the available deflection is 3.375 inches, we are in compliance.

c) "The (trolley) bumpers shall be capable of stopping the trolley (not including the lifted load) at an average rate of deceleration not to exceed 4.7 Ft/S/S when traveling in either direction at one-third of the rated load speed."

The average rate of deceleration for the trolley at 1/3 of the rated load speed has been determined to be 4.26 Ft/S/S, which is less than the allowable of 4.7 Ft/S/S. Therefore, we are in compliance.

The runway stops that were provided and installed by Bechtel Power Corporation were designed to resist 11.6% of the combined weight of the bridge and trolley which exceeds the AISC requirement of 10% of the maximum wheel loads.

2) Unit 1 Polar Crane (L2) and Unit 1 and 2 Fuel Handling Crane (L3) - In the crane vendor's design evaluation, the Harnischfager Corp. indicated that the cranes comply with CMAA-70, Article 4.12.3 except that only the trolley of crane L2 has bumpers. This is because circular cranes do not have bridge bumpers.

The runway stops that were provided and installed by Bechtel Power Corporation for the Fuel Handling Crane (L3) were designed to resist 14% of the combined weight of the bridge and trolley which exceeds the AISC requirement of 10% of the maximum wheel loads.

I. "Static control systems were not used or substantially conform to the requirements of CMAA-70."

1) Intake Structure Gantry Crane (L7) - We have determined that the Square D Co. Class 6401 static-stepless thyrister controls furnished for all crane drives conforms with the requirements of CMAA-70 Section 5.4.6.

2) Unit 1 Polar Crane (L2) and Unit 1 and 2 Fuel Handling Crane (L3) - In the crane vendor's design evaluation, the Harnischfeger Corp. indicated that both cranes comply with the intent of CMAA-70, Article 5.4.6. Both cranes utilize magnetic contactors

which comply with CMAA-70 Section 5.4.5.2. Section 5.4.5.3 of CMAA-70 requires the minimum NEMA Size contractor used on a crane to be based upon the service class. Neither crane specification lists a CMAA crane service class. The main motions for crane L3 utilize a minimum NEMA size 2 contactor, which makes it acceptable for all CMAA crane service classes. The main motions for crane L2 utilize a minimum NEMA size 1 contactor, which makes it acceptable for all CMAA crane service classes except Class E. Section 5.4.6.8 of CMAA-70 requires "the failure of any hoist control component shall not permit excessive hoist motor speed in either direction". This cannot be guaranteed to regard to cranes L2 or L3 except that a complete loss of power not permit excessive hoist motor speed in the lowering direction.

J. Intake Structure Gantry Crane - Wind Velocity Indicator - In their final Technical Evaluation Report dated December 21, 1981, Franklin Research Center concluded that Criterion 2-1.3.1(d) of ANSI B30.2-1976 is satisfied by the existing crane storm locks and the use of AP&L's administrative procedures to terminate load handling operations in the event of severe weather conditions. NRC concurred in their Safety Evaluation Report dated February 11, 1982. Based on this conclusion, we will not install a wind velocity indicator at the Intake Structure.