

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401  
400 Chestnut Street Tower II

February 28, 1984

Director of Nuclear Reactor Regulation  
Attention: Ms. E. Adensam, Chief  
Licensing Branch No. 4  
Division of Licensing  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Ms. Adensam:

In the Matter of ) Docket Nos. 50-327  
Tennessee Valley Authority ) 50-328

- References: 1. D. G. Eisenhower's letter dated December 22, 1980 regarding  
NUREG-0612, Control of Heavy Loads at Nuclear Plants
2. D. G. Eisenhower's letter dated February 3, 1981 regarding  
Control of Heavy Loads (Generic Letter 81-07)

TVA's response to Section 2.1 of Enclosure 3 to references 1 and 2 was submitted to you for our Sequoyah Nuclear Plant by my March 1, 1982 letter. A draft technical evaluation report on the control of heavy loads for our Sequoyah Nuclear Plant was transmitted to TVA by your June 30, 1982 letter to H. G. Parris. A subsequent telephone conversation was held with NRC staff members on December 3, 1982 to discuss TVA comments on the draft technical evaluation report. A supplemental response, which provided additional information and commitments, as requested by the NRC in the December 3, 1982 telephone conversation was submitted on February 25, 1983.

Enclosed are additional comments to guidelines 5a, 7a, and 7b as requested by your June 30, 1982 letter to H. G. Parris.

If you have any questions concerning this matter, please get in touch with Jerry Wills at FTS 858-2683.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

*L. M. Mills*  
L. M. Mills, Manager  
Nuclear Licensing

Sworn to and subscribed before me  
this 28<sup>th</sup> day of Feb 1984

*Bryant M. Lowery*  
Notary Public  
My Commission Expires 4/8/86

cc: See page 2

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Director of Nuclear Reactor Regulation

February 28, 1984

Enclosure

cc: U.S. Nuclear Regulatory Commission (Enclosure)  
Region II  
Attn: Mr. James P. O'Reilly Administrator  
101 Marietta Street, NW, Suite 2900  
Atlanta, Georgia 30303

ENCLOSURE

RESPONSE TO GUIDELINES 4, 5a, 7a, AND 7b

OF THE TECHNICAL EVALUATION REPORT

(TER) C5257-449 - NUREG-0612

SEQUOYAH NUCLEAR PLANT UNITS 1 AND 2

#### Revised Response to Guideline 4

As discussed with Carl Stahle of your staff, all commitments specified in my February 25, 1983 letter to you will be completed before startup from the current unit 1, cycle 2 refueling outage except for NRC Guideline 4 regarding special lifting devices. For that guideline, we stated that we would implement inspection requirements in accordance with Section 5 of ANSI N14.6-1978. However, the Westinghouse analysis of the reactor vessel head lifting rig, the reactor vessel internals lifting rig, the load cell and the load cell linkage was not released by Westinghouse until January 4, 1984. This delay did not allow TVA sufficient time to determine and incorporate repair procedures in accordance with the original design specification (Section 5.4 of ANSI N14.6-1978) before the unit 1, cycle 2 refueling outage. Therefore, we now plan to complete implementation of the inspection requirements for the special lifting devices before startup from the unit 2, cycle 2 refueling outage.

TER C5257-449  
Response to Guideline 5a

This guideline requires verification that the slings and lifting devices are selected and marked with rated loads based upon the maximum static and dynamic loads. This analysis will be performed in accordance with "Synopsis of Issues Associated with NUREG-0612" furnished by the NRC in a letter to H. G. Parris dated May 26, 1983. This report states that for those critical lift systems evaluated to have dynamic load capabilities (typically 5-15 percent of the static load) no consideration of the dynamic load is required. This dynamic capability is based upon the industrial standard for dynamic loading of cranes specified in CMAA-70-1976. The lift systems in question are those identified in the Technical Evaluation Report (TER) C5257-449. (See attached table)

DYNAMIC LOADING  
OF CRITICAL LIFT SYSTEMS  
SEQUOYAH NUCLEAR PLANT

<u>Lift System</u>	<u>TVA Drawing Number</u>	<u>Dynamic Loading (Percent)</u>
175-ton/35-ton Reactor Building Polar Crane (main/aux hoist)	44N230-234	2.0/12.5
125-ton/10-ton Auxiliary Building Crane (main/aux hoist)	44N300-304	3.0/15.0
20-ton/7-1/2 ton <sup>(1)</sup> ERCW Hydraulic Pedestal Crane	34N230	(2) 20.0/50.0
5-ton Electric Monorail Auxiliary Building	48N1347 Mk 122 44N387 Mk 11	15.0
4-ton Chain Monorail Auxiliary Building	48N1348 Mk 224 44N389	12.5
3-ton Jib Crane - Reactor Building	44N384	15.0
80-ton Truck Crane - Intake Pumping Station	14N206	10.0

Response to Guideline 5a  
Footnotes

1. The 7-1/2 ton rating refers to a separate load block which shows a 50 percent increase in the design load due to dynamic effects; however, no lift has been identified with this load block. If a lift is designated in the future it is recommended that a lifting device be designed to include a 50 percent increase in design load.
2. Since the dynamic response for the 20 ton ERCW pedestal crane is greater than the allowable 15 percent, the design of lifting devices for this lift system should consider an increase of 20 percent of static load. The only lifting device identified for this crane is the stoplog lifting beam (34N215). This device has been reevaluated for the above design requirements and found to comply.

TER C5257-449  
Response to Guideline 7a

This guideline requires verification that design of the reactor building polar crane is in compliance with the criteria of CMAA-70-1976 and ANSI B30.2-1976 section 2-1. A comprehensive review of the polar crane against the CMAA-70 standard was performed. Additionally, the requirements of ANSI B30.2 were compared directly to the requirements of CMAA-70 specification and the exceptions were comprehensively reviewed.

The pertinent design requirements of these standards are listed in the following table with compliance indicated by (C), noncompliance (NC), and equivalency (E). Those requirements marked by an asterisk (\*) are essential to load drop integrity, others are primarily for operator safety, building requirements, and electrical controls; however, all subsections were reviewed.

POLAR CRANE DESIGN COMPLIANCE  
VERIFICATION

<u>Pertinent</u> <u>Sections</u>	<u>Verification</u>	<u>Pertinent</u> <u>Sections</u>	<u>Verification</u>
<u>CMAA-70-1976</u>		<u>ANSI B30.2.0-1976</u>	
1.2 Building	C	2-1.1 Marking	C
1.3 Clearance	C	2-1.2 Clearances	C
1.4 Runway	C	2-1.3.2 Runways	C
1.5 Conductors	C	2-1.4.1 Welding*	C
1.6 Rated Capacity*	C	2-1.4.2 Girders*	C
1.7 Design Stresses*(1)	NC	2-1.5.1 Cabs	C
1.9 Painting	C	2-1.5.3 Access	C
1.11 Testing*	C	2-1.5.5 Fire Extinguishers	C
3.1 Material*(2)	C	2-1.5.6 Lighting	C
3.2 Welding*	E	2-1.6.1 Lubrication	C
3.3 Girders*	C	2-1.7.1 Footwalks	C
3.4 Bridge Trucks*	C	2-1.7.2 Footwalk Const	C
3.5 Footwalks, H'Rails	C	2-1.7.3 Handrails Toeboards	C
3.6 Operator Cab	C	2-1.7.4 Ladders Stairways	C
3.7 Trolley Frame*	C	2-1.7.5 Egress	C
3.8 Rails*	C	2-1.8.1 Trolley Stops	C
4.1 Load Blocks*	C	2-1.8.2 Bridge Bumpers	C
4.2 Hoist Ropes*	C	2-1.8.3 Trolley Bumpers	C
4.3 Sheaves*	C	2-1.8.4 Railsweeps	C
4.4 Drums*	C	2-1.8.5 Rope Guards	C
4.5 Gearing*	C	2-1.8.6 Wheel and Truck*	C
4.6 Bearings*	C	2-1.8.7 Guards	C
4.7 Brakes*	C	2-1.9.1 Hoist Brakes*	C
4.8 Bridge Drives*	C	2-1.9.2 Holding Brakes*	C
4.9 Shafts*	C	2-1.9.3 Control Braking*	C
4.10 Couplings*	C	2-1.9.4 Trolley/Bridge	
4.11 Wheels*	C	Brakes	C
4.12 Bumpers	C	2-1.9.5 Braking Means	C
5.1 Electrical	C	2-1.9.6 Brake Application	
5.2 Motors AC-DC	C	Trolley	C
5.3 Motor Brakes	C	2-1.9.7 Brake Application	
5.4 Controllers	C	Bridge	C
5.5 Resistors	C	2-1.10.1 General-Elec.	C
5.6 Protection	C	2-1.10.2 Equipment-Elec.	C
5.7 Cab Masterswitch	C	2-1.10.3 Elec. Controllers	C
5.9 Hoist Limit Switch*	C	2-1.10.4 Resistors	C
5.10 Installation	C	2-1.10.5 Switches	C
5.11 Bridge Conductors	C	2-1.10.6 Collectors	C
		2-1.10.7 Receptacle	C
		2-1.11 Sheaves*	C
		2-1.11.2 Ropes*	C
		2-1.11.3 Equalizers*	C
		2-1.11.4 Hooks*	C
		2-1.12 Warning Devices	C

Response to Guideline 7a  
Footnotes

1. Noncompliance - Section 1.7 of CMAA-70 requires load carrying parts to be designed not to exceed 20 percent of the ultimate strength of the material. The lower load block sheave pin, bridge truck pin, and bridge saddle pin meet the design requirements, but the materials specified cannot be verified. Since the pins are accessible without disassembling the lower block/truck/saddle, a test will be performed to determine the material properties throughout the pins.
2. Equivalent - Section 3.2 of CMAA-70 requires the crane to be designed and fabricated to the standards of The American Welding Society Manual AWS D14.1-70 "Specification for Welding Industrial and Mill Cranes." The procurement specification for this crane requires the design for structural members and their connections be in accordance with the applicable parts of AWS D2.0-69 "Welded Highway and Railway Bridges." Additionally, the fabrication of all structural steel shall be in accordance with section 1.23, part I of the AISC "Specification for Design, Fabrication and Erection of Structural Steel for Buildings." These two specifications are equivalent to the requirements set forth in AWS D14.1.

TER C5257-449  
Response to Guideline 7b

Guideline 7b requires a demonstration that other lift systems not governed by CMAA-70-1976 or ANSI B30.2-1976 were designed in accordance with acceptable ANSI Standards.

The lift systems, applicable standards, and statement of compliance (C) or noncompliance (NC) are listed as follows:

<u>Lift System</u>	<u>Referenced Standard</u>	<u>Verification</u>
20 ton ERCW Hydraulic Pedestal Crane	ANSI B30.15-1973, "Mobile Hydraulic Cranes"	C
5 ton Electric Monorail - Auxiliary Building	ANSI B30.16-1973, "Overhead Hoists"	C
4 ton Monorail Chain Hoist - Auxiliary Building	ANSI B30.16-1973	C
3 ton Jib Crane - Reactor Building	ANSI B30.16-1973	C
8 ton Truck Crane - Intake Pumping Station	ANSI B30.5-1968, "Crawler, Locomotive and Truck Cranes"	C