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AUTH.NAME AUTHOR AFFILIATION
PARKER,W.O. Duke Power Co.
RECIP.NAME RECIPIENT AFFILIATION
DENTON,H.R. Office of Nuclear Reactor Regulation, Director
STOLZ,J.F. Operating Reactors Branch 4

SUBJECT: Forwards evaluation of turbine bldg area,per NUREG-0612 re controls for handling heavy loads.Auxiliary & reactor bldgs evaluations will be submitted by 810731.Ten oversize drawings encl.Aperture cards will be in PDR.

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WILLIAM O. PARKER, JR.
VICE PRESIDENT
STEAM PRODUCTION

TELEPHONE: AREA 704
373-4083

June 26, 1981

50-269

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. J. F. Stolz
Operating Reactors Branch No. 4

Re: Oconee Nuclear Station
Docket Nos.

Dear Sir:

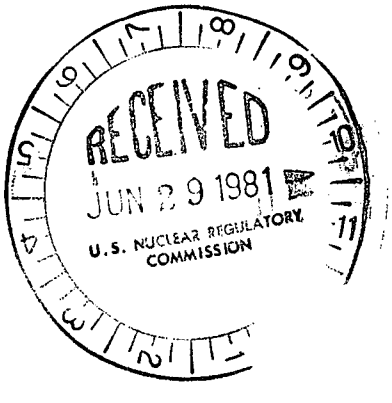
In response to your letter dated December 22, 1980, requesting a review of the controls for handling heavy loads, please find the attached results of the evaluation of the Oconee Nuclear Station Turbine Building area in Attachment 1 and the associated drawings in Attachment 2. Currently, this is the only area that is complete. The evaluations of the Auxiliary Building and the Reactor Building will be completed and the results submitted to your office no later than July 31, 1981.

Very truly yours,

William O. Parker Jr. by WAH

William O. Parker, Jr.

JLJ:pw
Attachment



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ATTACHMENT 1

DUKE POWER COMPANY
OCONEE NUCLEAR STATION

TURBINE BUILDING

CONTROL OF HEAVY LOADS

(NUREG 0612)

INTRODUCTION

The information presented in this report is the result of a detailed evaluation of load handling systems as requested by the NRC in their letter dated December 22, 1980 concerning NUREG 0612 "The Control of Heavy Loads at Nuclear Power Plants."

SCOPE

This report addresses the requirements set forth in Section 2.1 of Enclosure 3 of the NRC's letter as they pertain to the Turbine Building at the Oconee Nuclear Station.

INITIAL REVIEW

Crane/Load List

A list containing all load handling systems and their respective loads was compiled and compared to the Turbine Building General Arrangement drawings to verify "as built" conditions.

Development of Load Drop Areas

Load drop areas were developed for each load handling system and shown on the General Arrangement drawings. For cranes, the load drop area was defined as the area over which the hook may pass if trolley and bridge travel is unrestricted. The load drop area for monorails is the vertical projection of the monorail on the floor plus an allowance for load shape. In all cases the load drop area was projected to the basement.

Load Handling Systems to Receive Further Consideration

The list of load handling systems with their respective loads was reviewed to determine which systems handle heavy loads (1500 lbs. or more). Systems handling heavy loads received further evaluation. The remaining systems were dropped from consideration.

Locating "Vital Systems" in Load Drop Areas

"Vital Systems", defined as those systems necessary for safe shutdown or decay heat removal, lying in the load drop areas of heavy load handling systems were identified and superimposed on the General Arrangement drawings.

Table 1

Table 1 summarizes the results of the initial review of load handling systems in the Turbine Building. This Table identifies heavy load handling systems having vital equipment in their load drop areas which will require further analysis. These systems are listed in column 5 of Table 1.

ADDITIONAL INFORMATION

Scope

The load handling systems identified in Table I as handling heavy loads over vital equipment were reviewed for compliance with Section 2.1-3 of Enclosure 3 of the December 22, 1980 letter. The results of that review are described in the following sections and summarized in Table II.

Establishment of Safe Load Paths

Safe load paths were established for all load handling systems identified in column 5 of Table I. The safe load paths for cranes follow beams and avoid vital systems where possible. The safe load paths for monorails are the vertical projections of the beams on the floor.

Locate Safe Load Paths on General Arrangement Drawings

The cranes safe load paths are shown on the General Arrangement drawings. The safe load paths of monorails are not shown on the drawings since the load paths are constrained by the beams themselves.

Locate Safe Loads on the Station Floor

The safe load paths for cranes located in the Turbine Building have been painted on the floor. Monorails do not require their safe load paths to be painted since the loads can not deviate from the monorail alignment.

Safe Load Paths Described in Directives

Directives have been written explaining the purpose of the safe load paths including Enclosures showing the actual paths.

Measures Taken to Ensure Load Handling Operations Remain Within Safe Load Paths

Monorails require no measures to ensure loads travel along their safe load paths. Measures taken to insure that heavy loads handled by cranes remain within safe load paths include; placing the safe load paths on the General Arrangement drawings, painting the paths on the floor at the Station, and the implementation of Station Directives with Enclosures for each crane. The Enclosures are attached to or placed in the appropriate crane or hoist and include; a sketch of its safe load path, instructions for special lifts, the appropriate procedures where required and any restrictions placed on the crane or hoist. These Directives have been incorporated into the Operator Training Program.

Designated Laydown Areas

Laydown areas have been established for turbine and generator parts that must be moved during maintenance work. These areas are located on Station drawings and the load movements are described in procedures.

Establishment of Load Handling Procedures

The Directives described above fully comply with the requirements set forth in Section 5.1.1.(2) of NuReg 0612 for load handling precedures.

Table II

Table II was prepared for each load handling system in column 5 of Table I and summarizes the information requested in Sections 2.1-3c through 2.1-3g. The Table is self-explanatory.

CONCLUSION

Our initial review of the load handling systems in the Turbine Building revealed a total of four crane hoists and ten monorails which handle heavy loads over vital equipment. Further investigation of these systems showed that each one complies fully with the requirements set forth in Section 2.1-3 of Enclosure 3.

All information requested under Section 2.1 of Enclosure 3 for the Turbine Building is included in this submittal.

TABLE I

TURBINE BUILDING

CRANE OR HOIST (1)	G. A. NUMBER SEE DWG 0-28	DOES NOT HANDLE HEAVY LOADS	VITAL EQUIPMENT NOT LOCATED IN THE LOAD DROP AREA	HANDLES HEAVY LOADS AND HAS VITAL EQUIPMENT LOCATED IN THE LOAD DROP AREA
Pump Isle Crane	TB-1			X
Turbine Isle Crane	TB-2			X
Turbine Isle Aux. Crane	TB-3			X
Heater Bay Crane	TB-4			X
Jib Crane	TB-5	X		
Monorail (2)	TB-6	X	X	
MSRH Pump Monorail	TB-7	X	X	
Monorail (2)	TB-8	X	X	
MSRH Pump Monorail	TB-10	X	X	
Heater Drain Pump Monorail	TB-11	X	X	
Heater Drain Pump Monorail	TB-12	X		
CBP Monorail	TB-13			X
CBP Monorail	TB-14			X
CBP Monorail	TB-15			X
Hotwell Strainer Monorail	TB-16	X	X	
Hotwell Strainer Monorail	TB-17	X		

TABLE I

TURBINE BUILDING

CRANE OR HOIST (1)	G. A. NUMBER SEE DWG 0-28	DOES NOT HANDLE HEAVY LOADS	VITAL EQUIPMENT NOT LOCATED IN THE LOAD DROP AREA	HANDLES HEAVY LOADS AND HAS VITAL EQUIPMENT LOCATED IN THE LOAD DROP AREA
RCWP Monorail	TB-18	X	X	
RCWP Monorail	TB-19	X	X	
RCWP Monorail	TB-20	X	X	
Oil Drum Monorail	TB-21	X		
Backwash Pump Monorail	TB-23	X		
Backwash Pump Monorail	TB-24	X		
LPSW Pump Monorail	TB-25		X	
Hotwell Strainer Monorail	TB-26	X	X	
Chiller Monorail	TB-27	X	X	
Chiller Monorail	TB-28	X	X	
CBP Monorail	TB-30			X
CBP Monorail	TB-31			X
CBP Monorail	TB-32			X
CBP Monorail	TB-33			X
Heater Drain Monorail	TB-34	X		
Heater Drain Monorail	TB-35	X	X	
Heater Drain Monorail	TB-36	X	X	
MSRH Drain Monorail	TB-37	X	X	
Monorail (2)	TB-38	X	X	
MSRH Drain Monorail	TB-39	X	X	

TABLE I

TURBINE BUILDING

CRANE OR HOIST (1)	G. A. NUMBER SEE DWG 0-28	DOES NOT HANDLE HEAVY LOADS	VITAL EQUIPMENT NOT LOCATED IN THE LOAD DROP AREA	HANDLES HEAVY LOADS AND HAS VITAL EQUIPMENT LOCATED IN THE LOAD DROP AREA
Monorail (2)	TB-40	X	X	
Shield Block Monorail	TB-41	X		
FDW Monorail	TB-42	X	X	
FDW Monorail	TB-43	X	X	
MSRH Bundle Monorail	TB-44		X	
Monorail (2)	TB-45		X	
MSRH Bundle Monorail	TB-46		X	
MSRH Bundle Monorail	TB-47		X	
MSRH Bundle Monorail	TB-48		X	
MSRH Bundle Monorail	TB-49		X	
MSRH Bundle Monorail	TB-50		X	
MSRH Bundle Monorail	TB-51		X	
MSRH Bundle Monorail	TB-52		X	
MSRH Bundle Monorail	TB-53		X	
MSRH Bundle Monorail	TB-54		X	
MSRH Bundle Monorail	TB-55		X	
MSRH Bundle Monorail	TB-56		X	
MSRH Bundle Monorail	TB-57		X	
MSRH Bundle Monorail	TB-58		X	
MSRH Bundle Monorail	TB-59			
FDW Monorail	TB-60	X		

TABLE I

TURBINE BUILDING

CRANE OR HOIST (1)	G. A. NUMBER SEE DWG 0-28	DOES NOT HANDLE HEAVY LOADS	VITAL EQUIPMENT NOT LOCATED IN THE LOAD DROP AREA	HANDLES HEAVY LOADS HAS VITAL EQUIPMENT LOCATED IN THE LOAD DROP AREA
MSRH Bundle Monorail	TB-61		X	
MSRH Bundle Monorail	TB-62		X	
MSRH Bundle Monorail	TB-63		X	
MSRH Bundle Monorail	TB-64		X	
Oil Strainer Monorail	TB-65	X	X	
MTOT Pump Monorail	TB-66	X	X	
MSRH Bundle Monorail	TB-67		X	
MSRH Bundle Monrail	TB-68		X	
MSRH Bundle Monorail	TB-69		X	
MSRH Bundle Monorail	TB-70		X	
Drain Pump Monorail	TB-71	X	X	
Drain Pump Monorail	TB-72	X		
Drain Pump Monorail	TB-73	X		
LPSW Pump Monorail	TB-74		X	
Hotwell Strainer Monorail	TB-76	X	X	
CBP Monorail	TB-77			X
CBP Monorail	TB-78			X
CBP Monorail	TB-79			X
LPSW Pump Monorail	TB-80		X	

(1) All monorails listed below are used to handle a specific piece of equipment and have no permanent trolley or hoist attached

(2) This piece of equipment has been permanently removed eliminating the need to use this monorail.

TABLE II

Crane or Hoist: Pump Isle Crane

General Arrangement No: TB-1

Capacity: 12 Tons

Compliances

Crane Inspection

ANSI B30.2-1976, Ch. 2-2: Yes

Crane Design

CMAA Spec. 70: (1)

ANSI B30.2-1976, Ch. 2-1: (1)

Operator Training

ANSI B30.2-1976: Yes

Load	Load Weight	Safe Load Paths			Is Movement Governed by a Load Handling Procedure?	Procedures For Deviation From SLP?	Lifting Device Used	Compliance To ANSI & NUREG 0612 Specs.
		Located on G. A. Dwgs.	Painted on Floor at Plant	Described in Procedures				
Pump	8 Tons	Yes	Yes	Yes	Yes		(2)	Yes
Misc.	10 Tons	Yes	Yes	Yes	Yes		(2)	Yes

TABLE II

Crane or Hoist: Turbine Isle Crane

General Arrangement No: TB-2

Capacity: 180 Tons

Compliances

Crane Inspection

ANSI B30.2-1976, Ch. 2-2: Yes

Crane Design

CMAA Spec. 70: (1)

ANSI B30.2-1976, Ch. 2-1: (1)

Operator Training

ANSI B30.2-1976: Yes

Load	Load Weight	Safe Load Paths			Is Movement Governed by a Load Handling Procedure?	Procedures For Deviation From SLP?	Lifting Device Used	Compliance To ANSI & NUREG 0612 Specs.
		Located on G.A. Dwgs.	Painted on Floor at Plant	Described in Procedures				
Generator	183 Tons	Yes	Yes	Yes	Yes		Lifting Beam	Yes
Low Pressure Rotor	120 Tons	Yes	Yes	Yes	Yes		Lifting Beam	Yes
Diaphrams	4 Tons	Yes	Yes	Yes	Yes		(2)	Yes
Bearings	2 Tons	Yes	Yes	Yes	Yes		(2)	Yes

TABLE II

Crane or Hoist: Turbine Isle Auxiliary Crane

General Arrandement No: TB-3

Capacity: 25 Tons

Compliances

Crane Inspection

ANSI B30.2-1976, Ch. 2-2: Yes

Crane Design

CMAA Spec. 70: (1)

ANSI B30.2-1976, Ch. 2-1: (1)

Operating Training

ANSI B30.2-1976: Yes

Load	Load Weight	Safe Load Paths			Is Movement Governed by a Load Handling Procedure?	Procedures For Deviation From SLP?	Lifting Device Used	Compliance To ANSI & NUREG 0612 Specs.
		Located on G.A. Dwgs.	Painted on Floor at Plant	Described in Procedures				
Diaphram	4 Tons	Yes	Yes	Yes	Yes		(2)	Yes
Bearings	2 Tons	Yes	Yes	Yes	Yes		(2)	Yes
Misc.	10 Tons	Yes	Yes	Yes	Yes		(2)	Yes

TABLE II

Crane or Hoist: Heater Bay Crane

General Arrangement No: TB-4

Capacity: 80 Tons

Compliances

Crane Inspection

ANSI B30.2-1976, Ch. 2-2: Yes

Crane Design

CMAA Spec. 70: (1)

ANSI B30.2-1976, Ch. 2-1: (1)

Operator Training

ANSI B30.2-1976: Yes

Load	Load Weight	Safe Load Paths			Is Movement Governed by a Load Handling Procedure?	Procedures For Deviation From SLP?	Lifting Device Used	Compliance To ANSI & NUREG 0612 Specs.
		Located on G.A. Dwgs.	Painted on Floor at Plant	Described in Procedures				
Feedwater Heater Shell	20 Tons	Yes	Yes	Yes	Yes		Lifting Beam	Yes
Pumps	13 Tons	Yes	Yes	Yes	Yes		(2)	Yes
Misc.	10 Tons	Yes	Yes	Yes	Yes		(2)	Yes

TABLE II

Crane or Hoist: Condensate Booster Pump Monorail

General Arrangement No: TB-13,14,15,30,31,32,33,77,78,79

Capacity: 4 1/2 Tons

Compliances

Crane Inspection

ANSI B30.2-1976, CH.2-2: Yes

Crane Design

CMAA Spec. 70: (3)

ANSI B30.2-1976, Ch. 2-1: (3)

Operator Training

ANSI B30.2-1976: Yes

Load	Load Weight	Safe Load Paths			Is Movement Governed by a Load Handling Procedure?	Procedures For Deviation From SLP?	Lifting Device Used	Compliance to ANSI & NUREG 0612 Specs.
		Located on G.A. Dwgs.	Painted on Floor at Plant	Described in Procedures				
Motor	3 1/2 Tons	(4)	(4)	(4)	Yes	(4)	(2)	Yes

(1) This crane was designed in accordance with Duke Power Company Specification #OS-108 in addition to Electric Overhead Crane Institute Spec. # 61 and USAS B30.2.0-1967

The combination of requirements set forth in these specifications generally meet or exceed those specified in CMAA Spec #70 and ANSI B30.2.0-1976. A review of the past performance of this crane indicated there have been no problems attributable to its design.

For these reasons we feel that the design of this crane is comparable to cranes designed in accordance with CMAA Spec. #70 and ANSI B30.2.0-1976.

(2) The lifting devices used in handling these loads consist of the appropriate size and number of chain-falls, chokers and slings as determined by the rigger.

In making his selection, the rigger draws on his experience and his Elementary and Advanced Rigger Training provided at the Duke Power Company Training Center. Choker and Sling sizing is determined by the estimated weight of the load. If additional information is needed, the Riggers Handbook is used. All lifts are made by qualified people who, by experience and/or training, are cognizant in the movement of loads.

(3) These specifications do not apply to the design of monorails. Our monorails were designed in accordance with the applicable AISC code.

(4) The Safe Load Path of a monorail can only be the vertical projection of the monorail on the underlying floor. For this reason it is unnecessary to perform this work.

ATTACHMENT 2

DUKE POWER COMPANY
OCONEE NUCLEAR STATION

O-28, Rev. 1
O-15, Rev. 5
O-13, Rev. 1
O-15, Rev. 0
O-1015, Rev. 5
O-1014, Rev. 0
O-1013, Rev. 0
O-2015, Rev. 7
O-2014, Rev. 0
O-2013, Rev. 0