

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

June 3, 1982

Director of Licensing  
Attention: Mr. Domenic B. Vassallo, Chief  
Operating Reactors Branch No. 2  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Dear Mr. Vassallo:

In the Matter of the	)	Docket Nos. 50-259
Tennessee Valley Authority	)	50-260
		50-296

By letter to All Licensees of Operating Plants, Applicants for an Operating License, and Holders of Construction Permits from D. G. Eisenhut dated December 22, 1980, TVA was requested to provide information regarding NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants." Enclosed is information regarding section 2.1 of NUREG-0612. This information addresses heavy load control at Browns Ferry Nuclear Plant. In accordance with my letter to you dated April 12, 1982 on this subject, we will submit the remaining information required by July 15, 1982.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

*D S Kammer*

D. S. Kammer  
Nuclear Engineer

Subscribed and sworn to before  
me this 3<sup>rd</sup> day of June 1982.

*Paulette H. White*  
\_\_\_\_\_  
Notary Public

My Commission Expires 9-5-84

Enclosure

cc: See page 2

*A033*  
*Asenture*  
*Card Dist*  
*Drawings To: BC*

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Mr. Domenic B. Vassallo

June 3, 1982

cc (Enclosure):

U.S. Nuclear Regulatory Commission  
Region II  
ATTN: James P. O'Reilly, Regional Administrator  
101 Marietta Street, Suite 3100  
Atlanta, Georgia 30303

Mr. R. J. Clark, Project Manager  
Browns Ferry Nuclear Plant  
U.S. Nuclear Regulatory Commission  
7920 Norfolk Avenue  
Bethesda, Maryland 20014

ENCLOSURE 1

SECTION 2.1 RESPONSE TO NRC REQUEST  
FOR ADDITIONAL INFORMATION ON CONTROL  
OF HEAVY LOADS FOR  
BROWNS FERRY NUCLEAR PLANT

Section 2.1-1

The following is a list of overhead handling systems from which a load drop may result in damage to a system required for safe shutdown and/or decay heat removal. This list is based on information obtained from issued drawings and does not account for field-routed or installed piping and equipment for which a location cannot be established.

<u>Load Handling</u> <u>Device No.</u>	<u>Unit No.</u>	<u>Name</u>	<u>BFNP Drawing No.</u>
6	1-3	125-ton reactor bldg. crane	44N220-223
24	Yard	Two operator, self-propelled, full revolving, truck type, rubber tired, diesel powered, truck crane	14N206 & 14N205
47B&C	1, 2 & 3	4-ton hook type, manual chain hoist (for equipment hatches from lower floors to El. 565)	44N330 (use slings A & B on drawing 44N334)

NOTE: Devices 47B and 47C are the same hoist except used at different hatches.

Section 2.1-2

The following is a list of overhead handling systems from which a load drop would not result in damage to any system required for plant shutdown or decay heat removal for one of the following reasons:

- A. There is sufficient physical separation from any system or component required for safe shutdown or decay heat removal.
- B. The system or component over which the load is carried is out of service while the load handling system is used.
- C. The load weighs less than the combined weight of a fuel assembly and its handling device. This is conservatively estimated as 1,000 pounds.

<u>Load Handling No.</u>	<u>Unit</u>	<u>Name</u>	<u>Drawing No.</u>	<u>Reason for Exclusion</u>
1	1-3	4-ton jib crane	44N329	A
2	Common	Mobile gantry crane	44W317 & 44W319	A
3	1-3	1/2-ton monorail	44N211	C
4	Common	500-lb. jib crane	44N358	A
5	Common	1/2-ton jib crane	44N359	A
8	3	3-ton monorail	44N370	A
9	1-3	1/2-ton monorail	48N855 & 48N856	A
10	1-3	8-ton monorail	44N332	B
11	Stack	3-ton monorail	44N332	A
12	1-3	3-ton monorail	44N332	A
13	1-3	3-ton monorail	44N332	A
14	1-3	2-ton monorail	44N332	A
15	1-3	10-ton monorail	44N332	A
16	RW Bldg	2-ton monorail	44N332	A
17	RW Bldg	3-ton monorail	44N332	A
18	1-3	2-ton monorail	44N332	B
19	SB	1/2-ton monorail	44B258	A
22	2	1/2-ton jib	44N213	C
23	Common	Misc. slings	44N213	A
25	1-3	2-ton monorail	44N338 mk 2	B
26A	DG Bldg 1, 2 & 3	1/2-ton monorail	44N338 mk 2	C
26B	DG Bldg 1, 2 & 3	1/2-ton monorail	44N338 mk 2	C
26C	DG Bldg 1, 2 & 3	1/2-ton monorail	44N338 mk 2	C

<u>Load Handling No.</u>	<u>Unit</u>	<u>Name</u>	<u>Drawing No.</u>	<u>Reason for Exclusion</u>
26D	DG Bldg 1, 2 & 3	1/2-ton monorail	44N338 mk 2	C
27	1-3	3-ton jib crane	44N212	C
28	1-3	1-ton monorail	44N365	A
29	OGTB	1/2-ton monorail	44N365	A
30	1-3	3-ton monorail	44N365	A
31	OGTB	3-ton monorail	44N365	A
32	1-3	8-ton monorail	44N331	A
33	SB	5-ton monorail	44N331	A
34	RW Bldg	2-ton monorail	44N331	A
35	1-3	4-ton monorail	44N337	A
36	1-3	1-1/2-ton monorail	44N337	A
37	1-3	4-ton monorail	44N337	B
38	1-3	3-ton monorail	44N337	B
39	1-3	2-ton monorail	44N336	A
40	1-3	3-ton monorail	44N335	A
41	1-3	1/4-ton monorail	48N891	A
42	Cooling tower	Sling	34N342	A
43	Water treat- ment stat.	2-ton jib	34N305	A
44	Yard	Truck crane	14N205	A
45	1-3	2-ton monorail	44N330	B
46	1-3	4-ton monorail	44N330	B
47A	1-3	4-ton hoist	44N330	A
47D	1-3	4-ton hoist	44N330	A
48	2 & 3	7-1/2-ton electric wire rope hoist	44N330	A

<u>Load Handling No.</u>	<u>Unit</u>	<u>Name</u>	<u>Drawing No.</u>	<u>Reason for Exclusion</u>
49A	1-3	12-ton monorail	44N330	B
49B	1-3	12-ton monorail	44N330	B
49C	1-3	12-ton monorail	44N330	B
49D	1-3	12-ton monorail	44N330	B
50	1-3	2-ton monorail	44N330 (Regen. & Nonregen.)	B
51A	1-3	2-ton monorail	44N330 (Spent fuel hx)	B
51B	1-3	2-ton monorail	44N330 (Spent fuel hx)	B
52	1-3	500-lb. monorail	44N217-1	C
53	Common	1,000-lb. winch	44N217-2	Not in use
54	1-3	Transformer handling slings	44N333	A
55	1-3	Misc. slings	44N334	Included with the hoist that they are used with
57	Yard	Self-propelled mobile crane	TVA Spec. 1052, page 5	A
58	SB	5-ton monorail	44N250	A
59	1-3	1/4-ton channel handling boom	44N234	A (This device is included with Sect. 2.2.2 devices)
60	RW Bldg	5-ton monorail	44N320	A
61A	1-3	4-ton hoist	44N225	B
61B	1-3	4-ton hoist	44N225	B
62-1	1-3	1-ton jib	44N219	B
62-2	1-3	1-ton jib	44N219	B
62-3	1-3	1-ton jib	44N219	B



<u>Load Handling No.</u>	<u>Unit</u>	<u>Name</u>	<u>Drawing No.</u>	<u>Reason for Exclusion</u>
62-4	1-3	1-ton jib	44N219	B
62-5	1-3	1-ton jib	44N219	B
62-6	1-3	1-ton jib	44N219	B
62-7	1-3	1-ton jib	44N219	B
62-8	1-3	1-ton jib	44N219	B
63	1-3	1/2-ton monorail	44N218	B
64	1-3	180-ton overhead crane	44N200	A
65	Pumping station	Lifting beam	34N310	Included with device 44
66	LLRW storage facility	Gripper for 1,000-lb. drums	None	A
67A	DG bldg 1, 2, & 3	1/2-ton monorail	44N332	B
67B	DG bldg 1, 2, & 3	1/2-ton monorail	44N332	B
67C	DG bldg 1, 2, & 3	1/2-ton monorail	44N332	B
68	1-3	Shield plug gate sling	44N248	Used with No. 6
69	1-3	RHR lifting beam	44N335	Used with No. 49
70	1-3	Refueling platform monorail	GE 761E738	Included with Sect. 2.2.1 devices
71	1-3	Refueling platform 1/2-ton aux. hoist	GE 761E738	Included with Sect. 2.2.2 devices

### Section 2.1-3

The following pages contain a response to Section 2.1-3 for heavy load handling systems identified in Section 2.1-1.

#### Load Handling Device No. 6

125-ton capacity, overhead traveling bridge crane with 125-ton capacity main hoist and 5-ton capacity auxiliary hoist.

This crane is located in the reactor building as shown in Browns Ferry drawings 44N220 through 44N223 (see Attachment A).

Loads, safe load paths, and handling procedures are contained in Browns Ferry Mechanical Maintenance Instruction (MMI) 119 (see Attachment B).

All Nuclear Steam Supply System (NSSS) special lifting devices, such as the drywell/reactor vessel head strongback and steam dryer and moisture separator lifting devices were supplied by the General Electric Company (GE) and specified in terms of performance data rather than design criteria. The Nuclear Engineering Branch, Division of Engineering Design (EN DES), is negotiating with GE to obtain the requested information. Special lifting devices used with the reactor building crane that were designed by EN DES were analyzed using the guidelines of ANSI N14.6-1978 and ANSI B30.9-1971 and supplemented by sections 5.1.1.(4) and (5). Included in this analysis is a statement of the fracture toughness criteria used for evaluating the Browns Ferry fuel cask redundant link. The results of this analysis are summarized in Attachment D.

Inspection and testing requirements for all slings used with the reactor building crane are contained in Browns Ferry MMI 102 (see Attachment C), which implements the requirements of ANSI B30.9-1971.

Inspection, testing, and maintenance requirements for the reactor building crane are contained in Browns Ferry MMI 117 (see Attachment C), which implements the requirements of ANSI B30.2.0-1976.

A review of the referenced documents (below) indicates that portions of the reactor building crane have been analyzed applying the guidelines of CMAA Specification No. 70-1975. The remaining portions of the crane were analyzed by imposing the guidelines of CMAA Specification 70 and ANSI B30.2.0. The results of this review and analysis indicate that this crane meets the requirements of CMAA Specification 70 and ANSI B30.2.0.

#### Reference Documents

Letter from H. G. Parris to A. Schwencer, of NRC, dated June 30, 1976 with enclosure.

Letter from L. M. Mills to T. A. Ippolito, of NRC, dated February 10, 1981 with enclosure.

Qualification requirements for reactor building crane operators are in Browns Ferry Standard Practice BF 4.3 (see Attachment C), which implements the requirements of ANSI B30.2.0-1976.

Load Handling Device No. 24

Two operator, self-propelled truck crane.

This crane is used in the yard as shown in Browns Ferry drawing 14N206 (see Attachment A).

This crane removes reactor building exhaust fan motors (1,700 pounds each) and other miscellaneous motors (500-1,000 pounds each) from the reactor building roof and lifts condenser circulating water (CCW) pumps (40,700 pounds), CCW pump motors (48,700 pounds), fire pumps (2,530 pounds), and RHR service water pumps (3,400 pounds) at the intake pumping station using miscellaneous slings. Safe load paths have been determined by EN DES as shown in Browns Ferry drawings 37W300-1 and 47W220-1 and -2 of Attachment B. Handling procedures will be developed and implemented to meet the requirements of the interim guidelines delineated in NUREG-0612.

Inspection and testing requirements for all slings used with this crane are in Browns Ferry MMI 102 (see Attachment C), which complies with ANSI B30.9-1971.

ANSI B30.2.0-1976 is not applicable for inspection, testing, and maintenance of this crane. These requirements are imposed by ANSI B30.5-1968, and implemented in Browns Ferry MMI 130 (see Attachment C). Periodic inspections are performed by the TVA's Power Service Shops crane inspection team in accordance with these requirements.

This crane cannot be analyzed in accordance with CMAA Specification 70 and ANSI B30.2.0-1976, as these standards address the design of multiple girder, overhead and gantry cranes. Purchase specifications of this crane required that all applicable parts of ANSI B30.5-1968 be met.

Operators for this crane are journeymen operators from the International Union of Operating Engineers, Local 320.

Load Handling Device Nos. 47B & 47C

4-ton hook type, manual chain hoist.

These hoists are used over hatches to remove the following equipment from lower floors to the El. 565 floor as shown in Browns Ferry drawing 44N330 (see Attachment A):

<u>Load Identification</u>	<u>Weight</u>	<u>Lifting Device</u>
Core Spray Pump Motor	5,200 lbs.	Sling mk 44N334 A & B
CRD Pump Motor	2,500 lbs.	Sling mk 44N334 A & B
Hatch Shield Blocks	1,500 lbs.	Sling mk 44N334 A & B

When operating over the hatches shown on Browns Ferry drawings 47W220-6, -7, -13, and -14 (see Attachment B) during unit operation, these hoists must not lift heavy loads over the core spray pumps and piping as shown. When used to lift the core spray pumps and/or related equipment with the unit not operating, these devices fall into Category B of Section 2.1-2. Administrative control will be invoked to ensure that safe handling operations are maintained over these hatches during unit operation.

Inspection and test requirements for these hoists and all slings used with these hoists are contained in Browns Ferry MMI 102 (see Attachment C), which complies with ANSI B30.9-1971 and ANSI B30.16-1973.

Qualification for operators of hand-powered chain hoists is not required.

ATTACHMENT A

CRANE AND HOIST DRAWINGS

SEE

APERTURE

CARDS

APERTURE CARD NO# \_\_\_\_\_

• AVAILABILITY PDR CF \_\_\_\_\_ HOLD \_\_\_\_\_

NUMBERS OF PAGES. 6

ATTACHMENT B

SAFE LOAD PATHS AND HANDLING INSTRUCTIONS