Attachment 2
to NG-83-3298

EDERER
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EDERER CRANES
WASHINGTON CRANES

APPENDIX B SUPPLEMENT TO
GENERIC LICENSING TOPICAL REPORT
EDR-1

SUMMARY OF PLANT SPECIFIC CRANE DATA SUPPLIED BY EDERER INCORPORATED FOR IOWA ELECTRIC LIGHT & POWER COMPANY DUANE ARNOLD ENERGY CENTER UNIT 1 REACTOR BUILDING CRANE

P.O NO. 6610
EDERER S.O. NO. F-1475

REVISION 1 9/9/83

Prepared: _____
Holloran & Associates

Checked: _____
Design Engineer
Ederer Incorporated

Reviewed: _____
Quality Assurance Manger
Ederer Incorporated

Approved: _____
Chief Engineer
Ederer Incorporated

Revision 1 9/9/83

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Regulatory Position	Topical Report Section	Information to be Provided	Specific Crane Data
C.1.a	III.C (C.1.a)	1. The actual crane duty classification of the crane specified by the applicant.	1. The crane has a Class A-1 crane duty classification in accordance with CMAA Specification #70.
C.1.b	III.C (C.1.b)	1. The minimum operating temperature of the crane specified by the applicant.	1. The trolley was designed and fabricated for a minimum operating temperature of 40 degrees F.

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C.2.a	III.C(C.2.a)	1. Provisions for accomodating or preventing load motion following a loss of one electrical phase.	1. The main hoist is designed such that the maximum load motion following loss of a single phase is less than 1 foot and the maximum kinetic energy of the load is less than that resulting from 1 inch of free fall of the maximum critical load.
C.2.b	III.C (C.2.b) III.E.4	1. The maximum extent of load motion and the peak kinetic energy of the load following a drive train failure.	1. The main hoist is designed such that the maximum load motion following a drive train failure is less than 1 foot and the maximum kinetic energy of the load is less than that resulting from 1 inch of free fall of the maximum critical load.

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		2. Provisions for actuating the Emergency Drum Brake prior to traversing with the load, when required to accommodate the load motion following a drive train failure.	2. Provisions for automatically actuating the Emergency Drum Brake prior to traversing with the load are not required since the maximum amount of load motion and kinetic energy can be accommodated by the facility design.
C.3.e	III.C (C.3.e)	1. The maximum cable loading following a wire rope failure in terms of the acceptance criteria established in Section III.C (C.3.e.)	1. The maximum cable loading following a wire rope failure in the main hoist meets the maximum allowed by the acceptance criteria established in Section III.C (C.3.e).
C.3.f	—	1. Maximum fleet angle	1. 3.5 degrees.
		2. Number of reverse bends	2. None, other than the one between the wire rope drum and the first sheave in the load block.
		3. Sheave diameter	3. Per CMAA Specification #70

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C.3.h	III.C (C.3.h) III.E.11	1. The maximum extent of motion and peak kinetic energy of the load following a single wire rope failure.	1. The main hoist is designed such that the maximum load motion following a single wire rope failure is less than 1 foot and the maximum kinetic energy of the load is less than that resulting from 1 inch of free fall of the maximum critical load.
C.3.i	III.C (C.3.i)	1. The type of load control system specified by the applicant.	1. The existing P&H Electrotorque crane drive units have not been replaced.
		2. Whether interlocks are recommended by Regulatory Guide 1.13 to prevent trolley and bridge movements while fuel elements are being lifted and whether they are provided for this application.	2. The crane will not be used to lift fuel elements from the reactor core or spent fuel racks. Therefore, interlocks to prevent trolley and bridge movements while hoisting have not been provided.

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C.3.j	III.C (C.3.j)	1. The maximum cable and machinery loading that would result in the event of a high speed two blocking, assuming a control system malfunction that would allow the full breakdown torque of the motor to be applied to the drive motor shaft.	1. The Energy Absorbing Torque Limiter (EATL) is designed such that the maximum machinery load, which would result in the event of a two blocking occurs while lifting the rated load at the rated speed that allows the full breakdown torque of the motor to be applied to the drive shaft, will not exceed twice the machinery's design rating. In addition, the EATL design does not allow the maximum cable loading to exceed the acceptance criteria established in Section III.C (C.3.e) during the above described two-blocking.
		2. Means of preventing two blocking of auxiliary hoist, if provided.	2. The auxiliary hoist has an existing slow down limit switch and a rotary control type limit switch as the first primary limit and a block actuation control type limit switch that removes power from the hoist as a secondary limit.

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C.3.k	III.C(C.3.k)	1. Type of drum safety support provided.	1. The primary design drum safety restraint shown in figure III.D.4 of EDR-1 is used for the main hoist drum.
C.3.o	—	1. Type of hoist drive to provide incremental motion.	1. The existing P&H Electrotorque crane drive control units, which have not been replaced, provide incremental load motion.
C.3.p	—	1. Maximum trolley speed.	1. 50 FPM
		2. Maximum bridge speed.	2. See Appendix C Supplement.
		3. Type of overspeed protection for the trolley and bridge drives.	3. Both the trolley and bridge drives are powered by AC motors that can inherently not overspeed, since their maximum speed is limited by the 60 HZ line frequency. Therefore, overspeed sensors that actuate the trolley and bridge drive brakes have not been provided.

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C.3.q	—	1. Control station location.	1. The complete operating control system, including the emergency stop button, is located on a pendant.
--	III.D.1	1. The type of Emergency Drum Brake used, including type of release mechanism.	1. A single pneumatically released band brake will be used in the main hoist.
		2. The relative location of the Emergency Drum Brake.	2. The Emergency Drum Brake engages the wire rope drum in the main hoist.
		3. Emergency Drum Brake Capacity.	3. The Emergency Drum Brake in the main hoist has a minimum capacity of 130% of that required to hold the design rated load.
--	III.D.2	1. Number of friction surfaces in EATL.	1. The EATL has 21 friction surfaces.
		2. EATL Torque Setting.	2. The specified EATL torque setting is approximately 130% of the rated motor torque at the design rated speed that corresponds to lifting the design rated load.

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--	III.D.3	1. Type of Failure Detection System.	1. A totally mechanical drive train continuity detector and emergency drum brake actuator have been provided in accordance with Appendix G of Revision 3 of EDR-I in the main hoist.
--	III.D.5	1. Type of Hydraulic Load Equalization System.	1. The main hoist's Hydraulic Load Equalization System includes both features described in this section.
--	III.D.6	1. Type of hook.	1. Both the main and auxiliary hooks have a single load path.
		2. Hook design load.	2. The main hook design load is 100 Tons with a 10:1 factor of safety on ultimate.
		3. Hook test load.	3. The test load for each load path of the main hook will be 200 Tons.

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--	III.F.1	1. Design rated load.	1. Main hoist - 100 Tons. Auxiliary hoist - 5 Tons.
		2. Maximum critical load rating.	2. Main hoist - 100 Tons. Auxiliary hoist - NA
		3. Trolley weight (net).	3. 82,000 lbs. (including hook)
		4. Trolley weight (with load).	4. 282,000 lbs.
		5. Hook lift.	5. Main hook - 122 feet Auxiliary hook - 125 feet
		6. Number of wire rope drums.	6. The main and auxiliary hoists each have one wire rope drum.
		7. Number of parts of wire rope.	7. Main hoist - 8 parts per wire rope. Auxiliary hoist - 4 parts per wire rope.
		8. Drum size (pitch diameter).	8. Main hoist - 54 inches. Auxiliary hoist - 20 inches.

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--	III.F.1	9. Wire rope diameter.	9. Main hoist - 1 inch. Auxiliary hoist - 1/2".
		10. Wire rope type.	10. 6x37 class IWRC.
		11. Wire rope material.	11. Main Hoist - Very high strength carbon steel. Auxiliary Hoist - Stainless steel.
		12. Wire rope breaking strength.	12. Main hoist - 115,000 lbs. Auxiliary hoist - 24,80000 lbs.
		13. Wire rope yield strength.	13. Main hoist - 97,700 lbs. Auxiliary hoist - 19,80000 lbs.
		14. Wire rope reserve strength.	14. Main hoist - .649 Auxiliary hoist - .588
		15. Number of wire ropes.	15. The main hoist has two ropes. The auxiliary hoist has one rope.