TECHNICAL SPECIFICATIONS

LIST OF FIGURES

LIMITING CONDITION FOR OPERATION	SURVEILLANCE REQUIREMENT
C. Emergency Service Water System	C. Emergency Service Water System
1. Except as specified in 3.8.C.2 below, both emergency service water system loops shall be OPERABLE whenever irradiated fuel is in the reactor vessel and reactor coolant temperature is greater than 212°F.	1. Emergency Service Water Subsystem Testing a. Simulated automatic actuation test. — Once/operating cycle b. Pump and motor operated valve operability — Once/3 months c. Flow Rate Test Each emergency service water pump shall deliver at least 800 gpm at a TDH of 170 ft. or more. — After major pump maintenance and once per 3 months.
2. From and after the date that one of the emergency service water system pumps or loops is made or found to be inoperable for any reason, reactor operation must be limited to seven days unless OPERABILITY of that system is restored within this period. During such seven days all active components of the other Emergency Service Water System shall be OPERABLE, provided the requirements of 3.5.G are met.	2. When one emergency service water system pump or loop becomes inoperable, the OPERABLE pump and loop shall be demonstrated to be OPERABLE immediately and daily thereafter. In addition, the requirements of 4.5.G.1 shall be met.
3. If the requirements of 3.8.C cannot be met, an orderly SHUTDOWN shall be initiated and the reactor shall be in a COLD SHUTDOWN condition within 24 hours.	

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The Emergency Service Water System has two loops supplied by one pump each. If one emergency service water system loop becomes inoperable, the other loop provides cooling to components sufficient to assure performance of the safety function after an accident. Continued plant operation with one loop inoperable is restricted to a seven-day period during which time the operable emergency service water loop is tested immediately and daily thereafter. The diesel-generator providing emergency power to the operable loop is tested within eight (8) hours and daily thereafter.

The surveillance test intervals for the Emergency Service Water pumps and associated valves are based on Section XI of the ASME Code. A comprehensive analysis was performed to evaluate the maximum individual design heat loads of the components cooled by the Emergency Service Water System. The analysis established the minimum cooling water flow rate requirement of the Emergency Service Water System to be 628 gpm for a river water inlet temperature of 95°F. The surveillance requirement reflects a pump flow rate of 800 gpm which ensures a conservative margin above the actual flow requirement of 628 gpm and allows for future system expansion.

RTS-240

EVALUATION OF CHANGE WITH RESPECT TO 10 CFR 50.92

Background:

The Emergency Service Water (ESW) system provides a reliable source of cooling water to essential safeguards equipment under a loss-of-offsite power (LOOP) condition or after a loss-of-coolant accident (LOCA). The System provides cooling water to the following components:

- Emergency diesel generator coolers
- Residual heat removal (RHR) and corespray pump room cooling units
- Reactor core isolation cooling (RCIC) room cooling units
- High pressure coolant injection (HPCI) room cooling units
- Control building chiller condensers
- RHR pump seal coolers
- Core spray pump motor coolers
- Control building HVAC instrument air compressors
- RHR service water pump motor coolers

The ESW system consists of two independent trains each supplied by one full-sized ESW pump rated at 1200 gpm. The capability of the ESW system to remove heat from the aforementioned loads is a function of the system inlet temperature (i.e. the Cedar River temperature). The maximum design inlet temperature of the ESW system is 95°F. At lower inlet temperatures, the flow required to remove a constant quantity of heat changes proportionally. Presently, the DAEC Technical Specifications (TS) require that the total flow rate of the ESW system meet or exceed the required flow rate shown in TS Figure 4.8.C-1 for a specified river water temperature. Figure 4.8.C-1 was developed by calculating the ESW system flow rates required to provide adequate component cooling at river water temperatures of 80°F, 85°F, 90°F and 95°F and was incorporated into the TS by Amendment 10 to our Operating License in 1975. Amendment 10 also incorporated the requirement to perform weekly surveillance testing of the ESW pumps at river water temperatures greater than 80°F. At elevated river water temperatures, the ESW flow rates required by TS Figure 4.8.C-1 approached flow rate limitations of the pumps. The weekly surveillance provided additional assurance that the required flow rates would be achieved under those conditions.

During the Service Water Safety System Functional Inspection performed at the DAEC in 1990, it was noted that the calculations

for the flow rate requirements which formed the basis of the ESW surveillance and TS Figure 4.8.C-1 could not be retrieved. In response to this concern, a comprehensive re-evaluation of the maximum individual design heat loads was performed. the analysis was performed using the ESW design fouling factor of 0.0005. This value is typical for river water systems. The only exception was the control building chiller condensers which were purchased with assumed fouling factors of 0.001 on the ESW side. Therefore, the fouling factor of 0.001 was used when determining the design basis heat load for the control building chiller condensers. The results of the analysis indicates that a minimum ESW flow rate of 628 gpm is required for a river water inlet temperature of 95°F. This value is substantially less than the current Technical Specification requirement of 1129 gpm at a river water inlet temperature of 95°F. (Figure 4.8.C-1). This reduction in the required flow rate results from the improved modeling methodology, current design information, and the reduction of component heat loads through the installation of additional insulation.

This proposed amendment will delete Figure 4.8.C-1 from the Technical Specifications and revise the ESW flow rate surveillance to reflect a required pump flow of 800 gpm at a total developed head of 170 ft. The revised flow rate ensures a conservative margin above the actual flow requirement of 628 gpm and allows for future system expansion. As a result of this analysis, the previous concerns of having the required pump flow rate approaching the design pump flow rate at river water inlet temperatures greater than 80°F have been eliminated. Consequently, the requirement for testing the pumps weekly when the river water temperature exceeds 80°F is no longer warranted and has been deleted. The quarterly testing of each pump is still required and will assure that the ESW system is capable of removing the design heat loads of essential safeguards equipment with an ESW inlet temperature up to 95°F. This will eliminate unnecessary operation and testing of the ESW pumps.

IOWA ELECTRIC LIGHT AND POWER COMPANY, DOCKET NO. 50-331,
DUANE ARNOLD ENERGY CENTER, LINN COUNTY, IOWA
DATE OF AMENDMENT REQUEST: MAY 10, 1991
DESCRIPTION OF AMENDMENT REQUEST:

The proposed License Amendment would revise Section 4.8.C.1.c. of the DAEC Technical Specifications to reflect the revised ESW system flow requirements.

Specifically the proposed change:

1. Deletes Figure 4.8.C-1, "DAEC Emergency Service Water Flow Requirement" and associated references to this figure in Section 4.8.C.1.c.

2. Revises Section 4.8.C.1.c to add a specific flow rate requirement of 800 gpm at a total developed head of 170 ft.

3. Deletes the requirement to perform flow rate testing weekly when the river water temperature exceeds 80°F.

4. Adds information to the bases describing the development of the 800 gpm requirement.

Basis for proposed no significant hazards consideration determination:

The Commission has provided standards (10 CFR 50.92(c)) for determining whether a significant hazards consideration exists. A proposed amendment to an operating license for a facility involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety.

In reviewing this proposed request for Technical Specification change, we have reached these conclusions:

1. The proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated. No physical changes will result from this amendment. The ESW system will still maintain its ability to support various safety related equipment which is designed to mitigate the consequences of certain accidents and transients. These safety related systems play no part in the probability of these accidents or transients occurring. Since the ESW system will continue to fully support the cooling requirements of the safety related equipment which mitigates the consequences of certain accidents and transients, this amendment will not affect the consequences of these accidents and transients. The re-analysis of the component heat loads assumed worse case conditions and involved conservative assumptions. Our continuing program for monitoring heat exchanger performance established in response to Generic Letter 89-13 will still verify that the individual components are capable of performing their design function. Therefore, the proposed amendment does not involve a change in the probability or consequences of an accident previously evaluated.

2. The proposed license amendment does not create the possibility of a new or different kind of accident from any previously evaluated. The safety function of the ESW system is unchanged. The revised flow requirements for the system have been established using conservative assumptions and worse case heat loads and are appropriately documented. This amendment will result in no physical changes to the ESW system and therefore, will not affect its ability to continue to provide reliable cooling water. Consequently, the proposed license amendment does not create the possibility of a new or different kind of accident from any previously evaluated.

3. The proposed change will not reduce the margin of safety. The re-analysis of the ESW flow rate requirements and component heat loads was performed using worst case assumptions and maximum component heat loads. Additionally, the 800 gpm requirement ensures sufficient margin above the minimum flow rate requirement while allowing for potential system expansion. The actual operation of the ESW system will not be changed. The ESW system is normally run at full flow and does not approach the 800 gpm limit. Any degradation of ESW pump performance would be detected long before reaching the 800 gpm requirement by the Inservice Testing (IST) program which requires quarterly testing of these pumps and monitoring of the pump's differential pressure. The 800 gpm limit represents the minimum flow rate requirement for the ESW system to satisfactorily perform its design function. Deleting the requirement to perform the surveillance weekly when river water temperature exceeds 80°F will not reduce the margin of safety because even at 95°F river water temperatures, the required ESW flow rate is well below the flow capacity of the pump. Deleting the weekly surveillance only eliminates unnecessary testing of the ESW pumps, thereby, reducing wear on the pump.