

Iowa Electric Light and Power Company
LDR-81-338
December 14, 1981

LARRY D. ROOT
ASSISTANT VICE PRESIDENT
OF NUCLEAR DIVISION

Mr. Brian Grimes, Director
Division of Emergency Preparedness
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Grimes:

This letter is in response to Item 5 of Mr. Keppler's Letter of September 25, 1981. Attached, please find a copy of the description of the Iowa Electric Light & Power Company's Prompt Notification System for the Duane Arnold Energy Center.

Included are the existing siren system, the newly installed siren system, mobile system, and supplemental systems. Also included is a map indicating siren locations and sizes for all the sirens in the system.

The new siren system has been functionally tested and is expected to be fully operational by February 1, 1982.

If additional information is needed please call my office.

Very truly yours,

Larry D. Root

Larry D. Root
Assistant Vice President
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INTRODUCTION

The prompt notification system for the Duane Arnold Energy Center was designed to alert the population within the 10 mile EPZ in the event of an emergency. Design of the system was based upon a thorough study of all features of the area. Design of the prompt notification system includes preexisting plus newly installed warning systems to produce an effective alerting and notification system. The system provides alerting and notification capabilities according to the requirements of NUREG-0654/FEMA-REP-1,¹ as follows:

- o Alerting a major percentage of the population within the 10-mile EPZ within 15 minutes.
- o Alerting the remaining population within 45 minutes.
- o Issuance of emergency instructions using public communication media or other methods.

The system design process involved the following steps:

1. Key background data relating to the site demography, topography, and meteorology were assembled and carefully reviewed to identify site characteristics which may influence system design;
2. On-site evaluation of the 10 mile EPZ was performed to verify key site characteristics, identify existing warning systems, and measure average ambient noise levels;
3. Basic warning system design criteria were established for outdoor warning siren signal ranging, minimum mounting heights for warning sirens, and existing warning system effectiveness;

¹Nuclear Regulatory Commission, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, Interim Guidance," NUREG-0654/FEMA-REP-1, Revision 1, November 1980.

4. The final system design was established in concert with the Civil Defense Directors of Linn and Benton Counties, with the essential goal of providing an effective alerting system for the population occupying the 10 mile EPZ.

PROMPT NOTIFICATION SYSTEM FOR DAEC

The Prompt Notification System for the Duane Arnold Energy Center consists of an outdoor warning siren system that is designed to alert 100 percent of the population within the 5 mile EPZ and over 95 percent of the population between the 5 and 10 mile EPZ within 15 minutes. The remaining population between the 5 and 10 mile EPZ will be alerted within 45 minutes by mobile ground units or aircraft supplied by Linn and Benton Counties¹. Emergency instructions will be broadcast via the Emergency Broadcast System. Voice messages can also be transmitted if necessary by the electronic sirens covering a major portion of the 10 mile EPZ.

OUTDOOR ALERTING SYSTEM

The design of the outdoor siren system, in conformance with the criteria established by FEMA², provides minimum outdoor alerting signal levels of 70 dB(C) in areas where the population density exceeds 2,000 people per square mile, and minimum alerting signal levels of 60 dB(C) in other areas of lesser population density. Application of these criteria to the system design results in coverage of 100 percent of the population within the 5 mile EPZ and over 95 percent of the population between the 5 and 10 mile EPZ. The remainder of the population between the 5 and 10 mile EPZ will be alerted using existing mobile systems.

¹Linn County Radiological Emergency Response Plan, and Benton County Radiological Emergency Response Plan.

²Federal Emergency Management Agency, "Outdoor Warning Systems Guide," CPG-1-17, March 1, 1968.

The outdoor alerting system utilizes 27 new sirens, rated at 124 dB(C) and 115 dB(C) at a horizontal distance of 100 ft. The extent of sirens coverage was established through an independent analysis of signal propagation in the expected environment with the result that ranges slightly more conservative than proposed in CPG-1-17 were used. The selection of these design factors is based on a study conducted for IELP.

The new sirens are built by Whelen Engineering Company Inc. The 124 dB units are comprised of loudspeakers mounted on a directional horn; this assembly rotates through a 359° angle once every 15 seconds. The 115 dB units are mounted such that four clusters of speakers provide omnidirectional coverage. All units provide the capability of generating the required alerting signal as well as an optional voice message.

The outdoor alerting system also utilizes 20 existing sirens, rated at 125 dB(C) and 113 dB(C) at a horizontal distance of 100 ft. These sirens are located in the areas of Cedar Rapids, Hiawatha, and Marion. The existing siren system has been used primarily for civil defense, and severe weather purposes.

Nineteen of the existing sirens are Federal Signal Corporation Thunderbolts; these units are comprised of a blower assembly and a compressor located in the base of the siren to provide air to the siren rotor above. A separate rotor turns the projector continuously, completing a cycle in approximately 30 seconds. One of the existing sirens is a Federal Signal Corporation 2T22, a fixed mechanical siren which provides for omni-direction coverage. Both sirens are capable of emitting a 3 to 5 minute steady signal.

The enclosed map illustrates the locations of both existing and new sirens. In densely populated areas, especially the areas of Cedar Rapids, Hiawatha, and Marion, siren signal level ranges of 70 dB(C) are shown, while in the remaining areas signal level ranges of 60 dB(C) are indicated.

Mobile Alerting System

Mobile units stationed in both Benton and Linn Counties will be responsible for alerting those segments of the population in their respective counties which are not covered by the siren system. Mobile units, both air and ground, will be deployed in accordance with the County Plans.

Supplemental Systems

Messages will be transmitted via the Emergency Broadcast System (EBS). The local EBS Command Program Control Station covering the area within the 10 mile EPZ are WMT Radio (AM, FM) and KGAN Television. In accordance with the county plans, the public is directed to tune to a local broadcast station for information and instructions following siren activation. Arrangements will be made to ensure that the EBS system is placed on alert prior to the physical need for a public broadcast.

As mentioned previously, the electronic sirens used in the DAEC 10 mile EPZ are capable of generating optional voice messages. This capability could be used to broadcast information and instructions to a large portion of the area covered by the electronic sirens. Both Benton and Linn Counties have remote activation capability to transmit voice messages through the electronic siren system.

ACTIVATION AND TESTING

Activation of the Prompt Notification System will be in accordance with the County Plans. Various components of the siren system will be activated periodically, (present plans are to perform a complete cycle test once per month) and the entire system will be tested annually according to the requirements of NUREG-0654.