UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
631 PARK AVENUE
KING OF PRUSSIA, PENNSYLVANIA 19406

[redacted]
TERA

Docket Nos. 50-317
50-318

NOV 26 1979

Baltimore Gas and Electric Company
ATTN: Mr. A. E. Lundvall, Jr.
Vice President, Supply
P. O. Box 1475
Baltimore, Maryland 21203

Gentlemen:

The enclosed IE Circular No. 79-24 is forwarded to you for information. No written response is required. Should you have any questions related to your understanding of the recommendations on this matter, please contact this office.

Sincerely,

for Boyce H. Grier
Director

Enclosures:
1. IE Circular No. 79-24 w/Attachment
2. List of Recently Issued IE Circulars

CONTACT: W. H. Baunack
(215-337-5253)

cc w/encls:
R. M. Douglass, Manager, Quality Assurance
L. B. Russell, Chief Engineer
W. Gibson, General Supervisor, Operational QA
R. C. L. Olson, Senior Engineer
K. H. Sebra, Principal Engineer

1540 100

ENCLOSURE 1

Accession No: 7910250492
SSINS No. 6830

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

IE Circular No. 79-24
Date: November 26, 1979

PROPER INSTALLATION AND CALIBRATION OF CORE SPRAY PIPE BREAK DETECTION EQUIPMENT ON BWRs

Description of Circumstances:

During 1976 the Iowa Electric Light and Power Company identified and corrected a potential problem involving the core spray (CS) pipe break detection system at the Duane Arnold Energy Center (DAEC). The problem relates to the setpoint, function, and installation of the differential pressure (dp) instrument which monitors for a CS pipe break that is located in the annulus area of the reactor vessel (i.e., located outside the core shroud but inside the reactor vessel). The installed instrument, range of 0 - 24 psid, was found deflecting downscale (i.e., reading negative psid) during operation.

The licensee's investigation of the downscale deflection revealed that the original piping arrangement and calibration did not adequately take into account the effect of density changes of the water in the pressure leg connections. The original installation had the high pressure side of the dp instrument (see attached Figure 1) connected to the reference leg in the vessel (Figure 1 Connection X) and the low pressure side to the core spray piping outside the vessel but inside the drywell (Figure 1 Connection Y). With the piping intact, this arrangement senses the pressure difference between bottom and top of core. With a break in CS piping in the annulus area the instrument then senses the additional pressure drop across the separators (dp $\approx$ 7 psi additional) and dryers (dp $\approx$ 7-inches water). This installation was in accordance with GE design requirements.

Also in accordance with GE instructions the calibration of the dp instrument was performed with the reactor in the cold condition and the alarm was set to trip at 5 psid increasing. Because of this cold calibration the dp instrument then indicated full downscale negative during operation. This negative dp was due to the heat up of the reference leg (Figure 1 Connection X) which caused the fluid density to decrease as the plant reach
was determined to be about 3.5 psid fo
discussed below.

Adding the 3.5 psi downscale deflectio
in a total required deflection of 8.5
Since the total dp available across th