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 FACIL: 50-331 Duane Arnold Energy Center, Iowa Electric Light & Pow 05000331
 AUTH. NAME AUTHOR AFFILIATION
 MCGAUGHY, R. W. Iowa Electric Light & Power Co.
 RECIP. NAME RECIPIENT AFFILIATION
 DENTON, H. R. Office of Nuclear Reactor Regulation, Director (post 851125)

SUBJECT: Provides results of control room panels emergency illumination test. Results confirm 850405 info re util estimate of overall lighting levels assuming loss of one div of control room lighting. Test configuration encl.

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Iowa Electric Light and Power Company
January 29, 1986
NG-86-0114

Mr. Harold Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Duane Arnold Energy Center
Docket No: 50-331
Op. License No: DPR-49
Control Room Emergency Lighting
Illumination Levels
Reference: Letter, R. McGaughy (Iowa Electric) to
H. Denton (NRC) dated April 5, 1985
(NG-85-1338)
File: P-72a

Dear Mr. Denton:

The purpose of this letter is to provide the results of our control room panels illumination test. The purpose of the test was to confirm the information provided to the NRC in the referenced letter regarding our estimate of the overall lighting levels in the Control Room assuming the loss of one division of Control Room lighting. In the DAEC control room, half of the lights (alternating rows of fluorescent lights) are powered by Division I emergency power (backed up by one emergency diesel generator) with the other half powered by Division II emergency power (backed up by the other emergency diesel generator). In the referenced letter we stated that we expected the lighting levels following the loss of either division of Control Room lighting power to be approximately 20 to 30 footcandles throughout the Control Room. However, due to the physical location of the lighting soffit immediately above the control panel benchboards, we found that the lighting levels were less than the 20 to 30 footcandles stated under worst case conditions. This is due to the fact that the soffit blocks direct illumination from the operating Division II lights onto the upper portion of the benchboards (see Attachment 1).

The illumination test was conducted in the most conservative test configuration possible, i.e., with the Division II lights on and Division I lights off. To achieve this most conservative lighting condition requires the occurrence of a highly unlikely event, the postulated loss of offsite power in conjunction with the loss of the Division I diesel generator or the loss of offsite power in conjunction with the loss of the Division I essential bus or associated cabling. The test configuration (see Attachment 1) precluded direct illumination onto the benchboard due to

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Mr. Harold Denton
January 29, 1986
NG-86-0114
Page Two

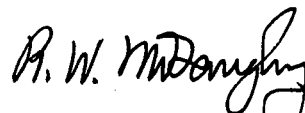
light blockage by the overhead soffit. In addition, no contribution to illumination levels was provided by the existing 90-minute battery-backed emergency lights. The test results (see Attachment 2) indicate that under the above worst case test configurations and assumptions, the illumination levels were only slightly less than the guidance of NUREG-0700, "Guidelines for Control Room Design Reviews." Section 6.1.5.4 of NUREG-0700 states, "the control room emergency illumination system should be designed to provide a minimum illumination level of 10 foot-candles at all work stations in the primary operating area."

For the purpose of comparison, a similar test conducted in June, 1985, with the Division I lights on and Division II lights off revealed illumination levels greater than 10 foot-candles (see Attachment 3).

Based upon the fact that the test configuration assumed the occurrence of a highly unlikely event scenario, no credit was taken for use of the 90-minute battery-backed emergency lights, and the lighting levels were only slightly less than the guidance of NUREG 0700, we believe the emergency lighting levels on the control room benchboard to be adequate. However, we are continuing to investigate possible options for improving the lighting levels under this scenario.

Should you have any questions, please contact my staff.

Very truly yours,



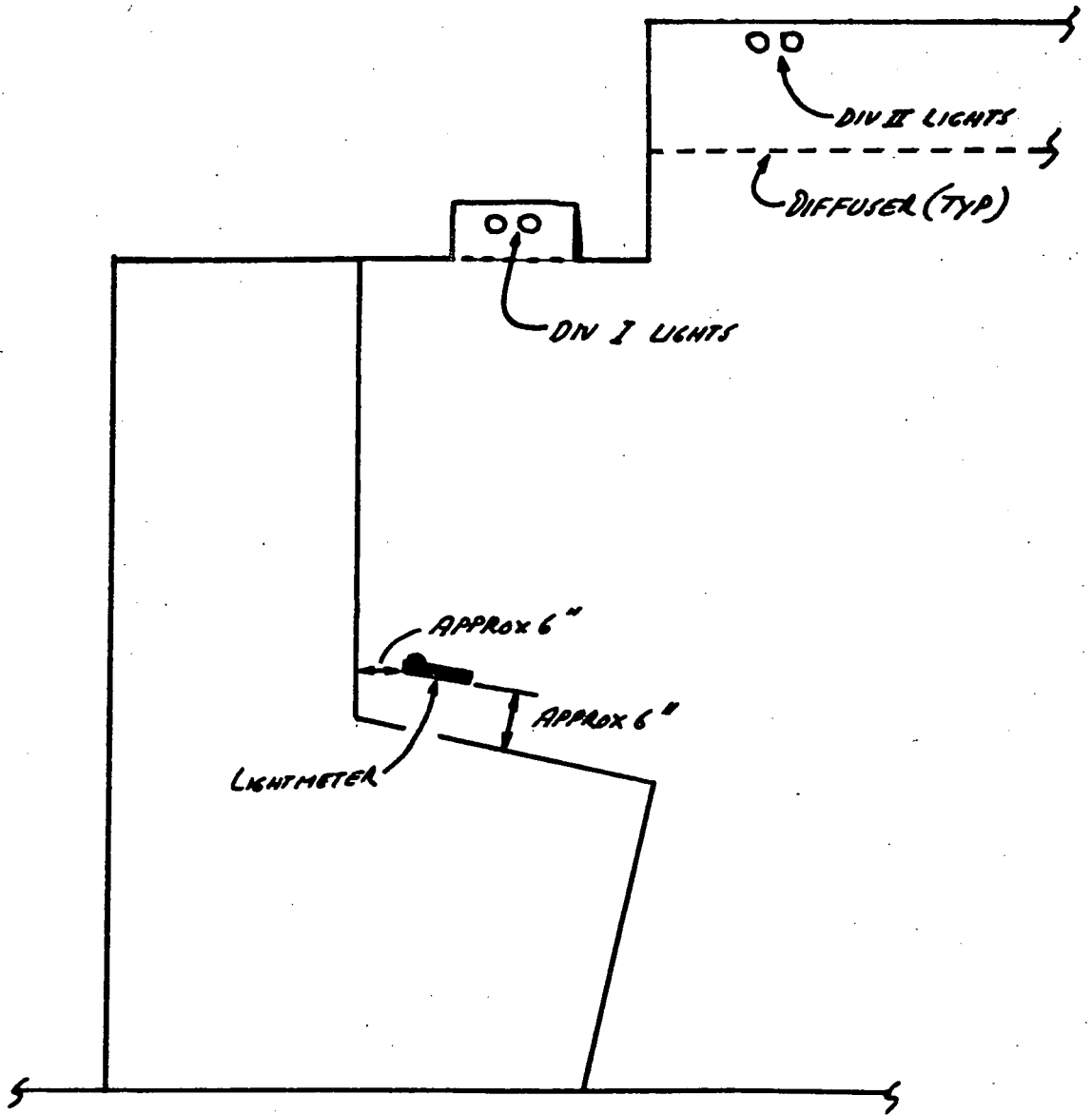
Richard W. McGaughey
Manager, Nuclear Division

RWM/MSG/dmb*

Attachments: 1) Test Configuration
2) Results of Division II Control Room Illumination Test
3) Results of Division I Control Room Illumination Test

cc: M. Grim
L. Liu
L. Root
M. Thadani
NRC Resident Office

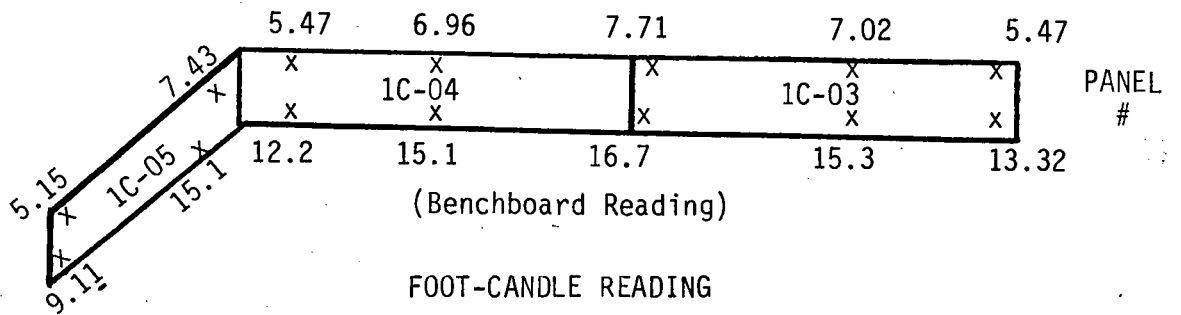
EMERGENCY LIGHTING TEST CONFIGURATION



CROSS SECTION OF CONTROL ROOM BENCHBOARD SHOWING
LOCATION OF LIGHTMETER & LIGHT FIXTURES
(NTS)

DIVISION II CONTROL ROOM ILLUMINATION TEST RESULTS

(DIVISION II LIGHTS ON, DIVISION I LIGHTS OFF)



x = location of lightmeter

DIVISION I CONTROL ROOM ILLUMINATION TEST RESULTS



DIV I CONTROL ROOM LIGHTS ON

DIV II CONTROL ROOM LIGHTS OFF

